Statewide Fisheries Management Program and Guide:

PART II

Fisheries Management Direction for Drainages and Waterbodies

Part II of the Guide provides specific fisheries management direction for 40 drainages in the state of Montana (statewide map Figure 1 on page 57). Each drainage section includes a map, a narrative, and a management direction table. The narrative provides an overview of conditions and consists of four parts: Physical Description, Fisheries Management, Habitat, and Access. The table provides management direction and habitat needs for individual species or groups of species by waterbody in each drainage.

Table definitions are as follows:

Water: Waters are listed beginning at the upstream end of the drainage and proceeding downstream. Mainstem waters are listed first, followed by tributaries and lakes off the mainstem.

Species: Not all species in the waterbody are listed. Only those for which specific management direction has been established are listed. This list typically includes most principal game species, important forage species, and Species of Concern. If the species is native to the water, an (N) is included after the name.

Recruitment Source: Defined generally as where new members of a fish population come from. Three types of recruitment sources are indicated. More than one type may apply in any given situation:

A. **Hatchery.** Fish are stocked directly from a state, federal or private hatchery as fry, fingerlings or larger individuals. Applied primarily to lakes and ponds where natural reproduction is lacking or unable to meet angler demands. Includes eggs that were produced from wild brood, but hatched and raised in a hatchery prior to stocking.

B. **Wild.** Fish naturally spawn and rear in their natural habitat. This applies to almost all stream and river fisheries in the state, as well as to some lakes and ponds where natural reproduction is capable of meeting angler needs.

C. **Transfer**. Wild fish are transferred from one waterbody to another. Used primarily to "seed" barren ponds/lakes which have suffered from drought or winterkill, or to provide forage for game species in receiving waters. Also used in native species recovery efforts. Transfer may also refer to unauthorized introductions where fish were moved illegally.

Management Type: Nine management types are identified. More than one type may apply in any given situation:

A. **Put and Take**. A management approach using stocking of catchable size hatchery fish to provide high angler catch rates. Used where long-term survival and growth are limited due to habitat characteristics or high harvest rates.

B. **Put, Grow and Take.** A management approach using hatchery fish and growth after stocking to provide angling opportunities. Used where long-term survival and growth are not limiting but spawning and rearing capacity are.

C. **Liberal Regulations.** Exceptions to Fishing District Standard regulations are put in place to allow greater harvest to limit impacts of one species on another, to reduce densities of a species to produce larger fish for angling purposes, or to allow for enhanced harvest opportunity on very abundant fish populations.

D. **Restrictive Regulations**. Exceptions to Fishing District Standard regulations are put in place to restrict harvest to meet conservation goals for and to protect native species, or to maintain or alter the size structure of a fish population to meet angler demands.

E. **Quality.** A management approach that changes, by regulation, the size and/or numbers of fish which may be harvested in order to provide increased catch rates for larger fish which are considered quality or trophy size. A quality fish is typically considered a fish that is larger than average, while a trophy is generally considered a very large fish that is rarely caught by general anglers; trophy fish are often considered a "fish of a lifetime." This type of management may be applied to water areas or to specific species.

F. **Conservation.** A management approach to protect and rebuild the viability of a native fish population. This type is used in situations where management efforts are actively underway to protect and rebuild populations.

G. **Family Fishing Water.** A management approach applied to a water body emphasizing family-oriented fishing opportunities typically with greater harvest opportunities and simplified regulations.

H. **Suppression**. A management approach that relies on one or more means to reduce or eliminate the presence of a species. The may include liberal angler harvest limits and/or incentives, commercial fishing, and mechanical or chemical removal. Applied to situations where the species being suppressed compromises fishery goals (native and/or recreational fisheries).

I. **General.** A general management approach applied to waters which do not fit the designations above and are often considered harvest fisheries. Fishing is managed through natural production and no special regulations are applied.

Management Direction: Management direction varies by waterbody. This section may include current management priorities, limitations, or future activities.

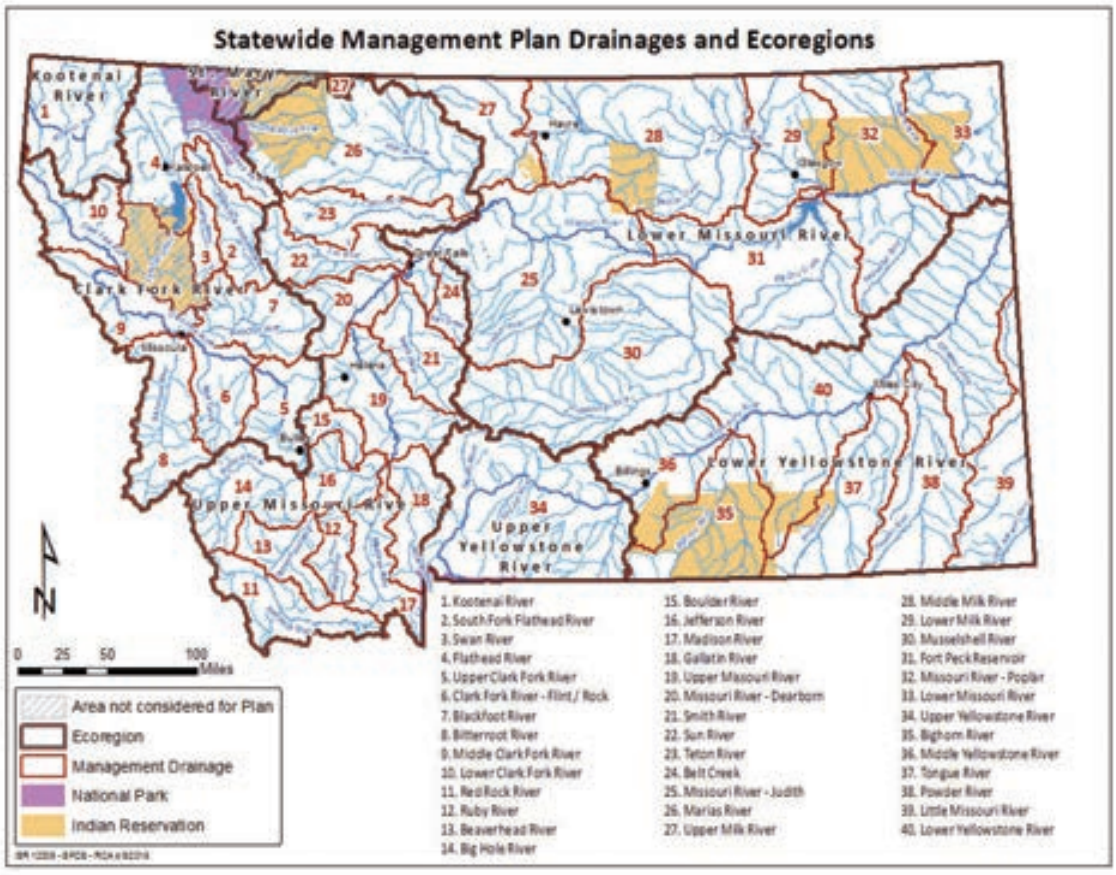
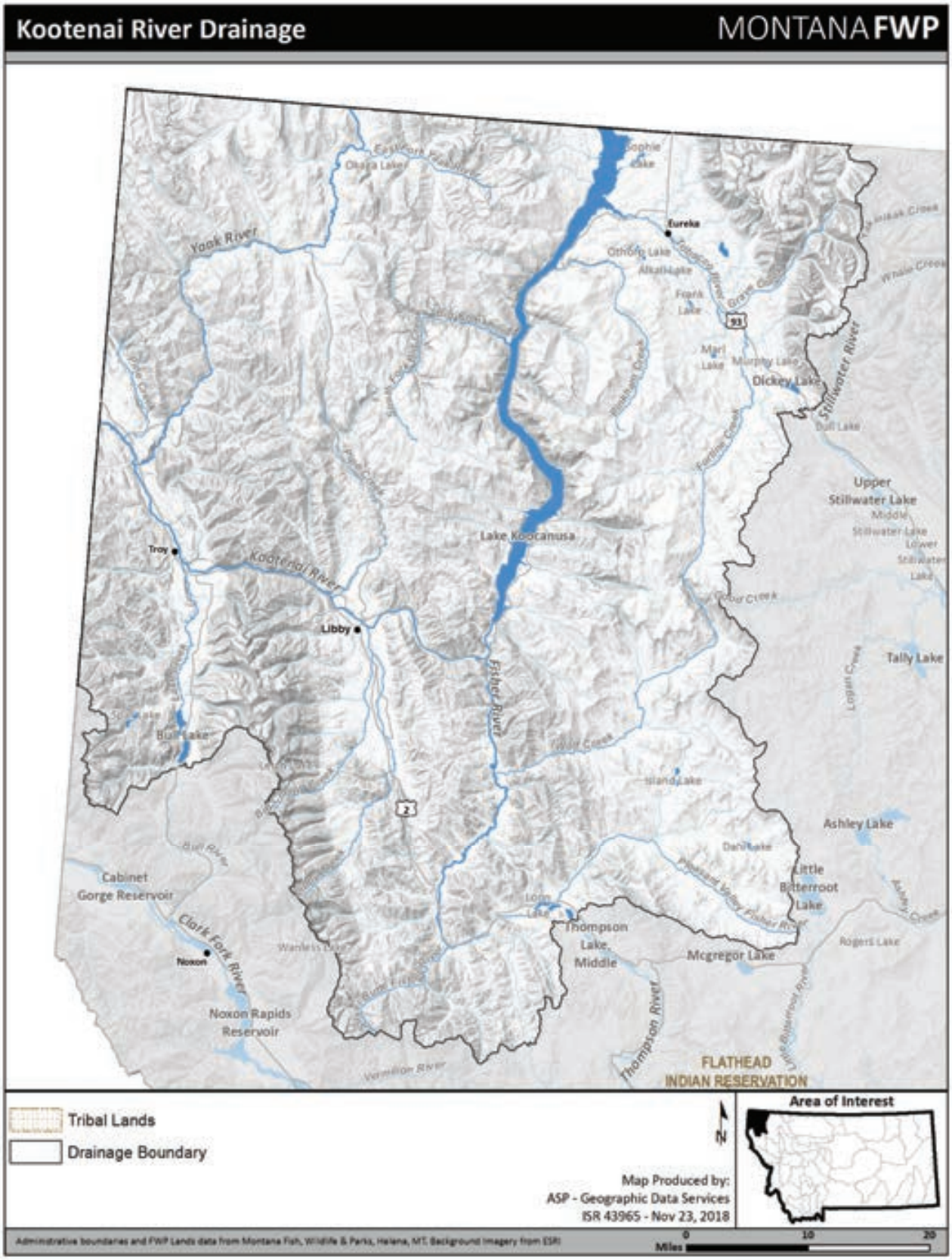


Figure 1: Drainages and Ecoregions


Kootenai River Drainage
MONTANA FWP
Yaak River
Eureka
Lake Koocanusa
Troy
Kootenai River
Libby
Fisher River
Upper Stillwater Lake
Tally Lake
Ashley Lake
Little Bitterroot Lake
Cabinet Gorge Reservoir
Clark Fork River
Noxon
Noxon Rapids Reservoir
Thompson Lake Middle
Mcgregor Lake
Thompson River
FLATHEAD INDIAN RESERVATION
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background imagery from ESRI
0
10
20
Miles

KOOTENAI RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Kootenai River drainage is in the extreme northwest corner of Montana and is entirely in Lincoln County. It originates in southeastern British Columbia (BC), flows south and west through Montana, and northwest through Idaho, then returns to Canada where it flows through Kootenay Lake and joins the Columbia River at Castlegar, BC. At the Idaho border near Leonia (lowest point in Montana 1,820 ft above sea level), it drains approximately 13,000 square miles with an average discharge of 16,100 cfs. There are 110 lakes or reservoirs in the Kootenai River Drainage, totaling 34,869 surface acres.

Libby Dam was completed in 1972 and created Lake Koocanusa which inundated and eliminated 109 miles of the mainstem Kootenai River and 40 miles of critical, low-gradient tributary habitat in Montana and BC. At full pool, Lake Koocanusa covers 46,500 acres total and 28,723 acres in Montana. A selective withdrawal system was installed on Libby Dam to control the temperature of water releases from the dam. The operation of Libby Dam for flood control and power production has changed the natural seasonal and daily flow, temperature, and productivity regimes in the Kootenai River. Mean flows during spring runoff have declined 50 percent and wintertime flows have increased substantially. Average wintertime water temperatures have increased by about 7° F, resulting in the river remaining virtually ice free. The 104 miles of Kootenai River in Montana can be divided into two distinct reaches, the 54-mile section downstream of Libby Dam (Lower Kootenai) and the 50-mile section upstream of Libby Dam (Lake Koocanusa).

LOWER KOOTENAI RIVER

The 54-mile section of Kootenai River downstream of Libby Dam is characterized by a complex combination of riffles, pools and slow moving, broad, meandering river sections. About 28 miles downstream of Libby Dam the river cascades 30 feet over the main Kootenai Falls and then drops another 60 feet through smaller falls in just less than a mile. Downstream of Kootenai Falls the river flows through a canyon which forms pools as deep as 100 feet. From there it flows similarly to the river upstream of Kootenai Falls but with deeper, slower moving runs to the Montana/Idaho border.

Numerous tributaries drain the Cabinet, Selkirk and Purcell mountain ranges and enter the Kootenai River directly or through larger tributaries. Due to past glaciations, some Kootenai River tributaries are blocked by falls near their mouths, and recruitment of fish to and from those tributaries is limited. The majority of waters in the Kootenai River drainage produce angling for trout. The Kootenai River and its tributaries, mountain lakes (including those in the Cabinet Wilderness and Northwest Peaks), lowland lakes (including portions of the Thompson Chain of Lakes), Bull, Spar, Island and Kilbrennan Lakes and Fisher River, Yaak River and Libby Creek all provide some type of recreational fishing.

LAKE KOOCANUSA

The approximately 50-mile section of Kootenai River upstream of Libby Dam is completely inundated by Lake Koocanusa. Tributaries drain the Whitefish, Salish and Purcell mountain ranges and Southern Continental Range and enter the Kootenai River in British Columbia or Lake Koocanusa directly or through larger tributaries. The majority of streams that flow into Lake Koocanusa provide fishing for trout. Lake Koocanusa and its tributaries (most notably the Tobacco River and Big Creek), mountain lakes (including in and around the Ten Lakes Scenic Area), lowland lakes (including the Eureka Chain Lakes) and Dickey and Murphy Lakes all provide some type of recreational fishing.

FISHERIES MANAGEMENT

The Kootenai River and all its tributaries are managed as wild trout fisheries, emphasizing natural reproduction. The basin is also the focus of native fish recovery efforts. There are over 60 mountain and valley lakes and reservoirs in the Kootenai drainage that consistently provide more than 100,000 angler days of fishing for trout, salmon and other species of fish. There are sixteen native fish species in the Kootenai River drainage including bull trout, white sturgeon, Columbia Basin redband trout (redband trout), westslope cutthroat trout, burbot, kokanee salmon, mountain and pygmy whitefish, northern pike minnow, peamouth chub, longnose dace, redside shiner, longnose and largescale suckers, and torrent and Columbia slimy sculpins. Eleven nonnative fish species inhabit the Kootenai including brook trout, brown trout, rainbow trout, lake trout, northern pike, smallmouth and largemouth bass, yellow perch, black crappie, pumpkinseeds and black bullheads.

Redband trout (Montana's only native rainbow trout) are found in the Kootenai River drainage in the mainstem Kootenai River downstream of Libby Dam and above barriers in some tributaries (primarily in the Yaak and Fisher rivers and Libby and Callahan creeks).

Hatchery rainbow trout were widely introduced throughout the drainage beginning before the turn of the last century. Genetics work indicates that pure-strain redband populations are rare and historic stocking of coastal strains of rainbow trout have produced naturalized wild hybridized populations that have caused loss of much of the original distribution for redband trout. Though several tributaries to the Kootenai River have relatively low levels of hybridization (less than five percent), the only truly secure pure-strain redbands are in Callahan Creek and East Fork Yaak River, where barrier falls stop access of hybridizing species.

Large (up to 30 lbs.) rainbow trout exist in Kootenai River downstream of Libby dam to near the confluence with Fisher River (3.5 river miles). The trout grow large because kokanee salmon from Lake Koocanusa are entrained through the dam and provide an excellent food source. These rainbow trout migrate very little and appear to have created a genetically unique population. Restrictive regulations have been in place since 1994 and have been periodically adjusted to protect and enhance this population.

Bull trout are found throughout the Kootenai River drainage, with fluvial populations moving throughout the Lower Kootenai and the major tributaries of the Fisher River, Libby Creek and Quartz Creek upstream of Kootenai Falls and Callahan Creek and O'Brien Creek downstream of the Falls. Two adfluvial populations exist: 1) Lake Koocanusa where some spawn in Grave

Creek, but the vast majority spawn and rear in British Columbia tributaries, especially the Wigwam River; and 2) Bull Lake, a disjunct population separated from the main Kootenai by water falls on Lake Creek. The Bull Lake population is now imperiled due to recent illegal introductions of northern pike, smallmouth bass and black crappie. Resident life forms likely exist in many smaller tributaries throughout the drainage, although the only confirmed resident population exists in Libby Creek upstream of Libby Falls. Special fishing regulations (timing closures, complete closures) exist on some spawning streams to protect bull trout. A fishing closure between Libby Dam and Fisher River from March 1 to June 1 was created to protect spawning rainbow trout, but also serves to protect bull trout during that time.

In 2004, the USFWS authorized limited sport fishing for bull trout on Lake Koocanusa as requested by FWP after those fisheries were deemed to have reached recovery goals. This activity was intended to benefit bull trout by testing the effects of restoring recreational fishing. In addition, allowing angling for bull trout increased public support for management of a stable bull trout population in Lake Koocanusa. One condition of the permit from the USFWS called for a bull trout permit and catch card system, angler survey, and development of educational information pertaining to the new fishery. The thirteenth year of the angling for bull trout in Lake Koocanusa concluded in 2016. Since 2004, over 15,000 anglers obtained catch cards; they spent nearly 40,000 days fishing for bull trout, caught more than 20,000 and harvested 2,364 bull trout from the Montana portion of the reservoir. Anglers released nearly 90 percent of the bull trout they caught at Lake Koocanusa. In 2012, MFWP determined that harvest (both in Montana and British Columbia) had negatively affected the bull trout population enough to warrant changing the regulation to catch and release. The regulation remained in effect until 2016 when FWP determined it was acceptable to re-establish a one bull trout harvest fishery. FWP continues to work with British Columbia to create commensurate regulations.

Burbot (ling) are native to the Kootenai River drainage, upstream of Libby dam in Lake Koocanusa and Sophie and Glen Lakes, and downstream in the mainstem Kootenai River. Since the creation of Libby Dam, the downstream population has decreased substantially from historic levels. Over-fishing and lack of successful reproduction were believed to be the main reasons for the population decline. This is likely caused by alteration of the natural flow regime for flood control and power production, and the changes to the river ecosystem in terms of flow, substrate, temperature and nutrients. Elimination of former sloughs and backwaters from decades of diking (in Idaho) are also suspected of contributing to their decline. Current fishing regulations do not allow harvest of burbot in the Kootenai River. The burbot population in Lake Koocanusa is in similar condition. Burbot numbers expanded substantially after Lake Koocanusa was initially formed. As the reservoir aged, numbers of burbot and fishing pressure have waned, although there is still a small stable population. A fishing closure during spawning (January 15 through February 28) was enacted in 1992 at the request of local anglers. Due to decreasing harvest, that regulation was removed and the current regulation is two burbot daily and in possession. The Kootenai Tribe of Idaho created a new hatchery near the confluence of Moyie River and Kootenai River in Idaho. Part of that hatchery's function is culture and production of burbot for conservation of the lower Kootenai River population. There is also a possibility that a new burbot facility could be created by BC upstream of Lake Koocanusa to augment the reservoir population.

The Kootenai downstream of Kootenai Falls is also home to a genetically distinct population of white sturgeon. The fishery for white sturgeon has been closed for conservation purposes since 1979 in response to major declines in this population. The Kootenai River white sturgeon was listed as an Endangered Species in 1994. The Kootenai River White Sturgeon Recovery Strategy is currently guiding recovery actions in the basin including flow manipulation, habitat improvement and hatchery supplementation.

Other native salmonids include westslope cutthroat trout and mountain whitefish. Non-native brook trout are present throughout the drainage. Brown trout were illegally introduced and first discovered in Lake Creek, but are now found in the Kootenai River downstream of Kootenai Falls and one was captured by an angler immediately downstream of Libby Dam. Because of these introductions, FWP instituted a no limit harvest downstream of Kootenai Falls and a mandatory catch and kill regulation for brown trout between Libby Dam and Kootenai Falls. Kokanee salmon from Lake Koocanusa--entrained through Libby Dam--also enter the Kootenai River. Nonnative lake trout are found in Spar Lake (closed basin) and have also been found downstream of Libby Dam. While the origin of these fish in the Kootenai River is unknown, it is probably from an illegal introduction.

HABITAT

The Kootenai River basin has annual precipitation ranging from 20-80 inches and snowfall from 40-300 inches. Except during spring runoff when the river and reservoir experience increased turbidity, suspended sediment in the river is generally minimal, making the Kootenai River and Lake Koocanusa clear with good visibility for most of the year.

Roughly 90 percent of the drainage is forested, and logging and associated road building has occurred in nearly all the lower-elevation valleys and on many higher-elevation ridges. The combination of legacy of land management, road construction and some large flood events have altered many streams and led to over-widened and braided sections. Streams in this condition tend to have mobile substrates that are less hospitable for insects and therefore numbers of salmonids.

Coal and hard rock mining are prominent activities in the Kootenai basin, particularly along the Elk and St. Mary rivers in BC and in the northern Cabinet Mountains. Recently proposed additional open pit coal mining has led the Montana Department of Environmental Quality to list Lake Koocanusa as threatened due to selenium. The Sullivan Mine at Kimberley, BC has been the largest metal producer in the basin and in 1981 it was one of the two largest lead-zinc mines in the world. From 1981 to 2010, a large copper and silver mine and chemical floatation mill has operated in the Lake Creek watershed south of Troy, MT. Another copper silver mine (Montanore) is proposed in the headwaters of the Libby Creek drainage.

Dam operations represent the greatest impact to habitat in the Kootenai River because of the biological effects associated with unnatural flow fluctuations, reversed hydrograph (high flows in winter, low flows in summer), and real potential for gas supersaturation problems arising from spilling excess water. Water temperatures and seasonal thermal regimes of the Kootenai River have been unnaturally altered by the construction of Libby Dam. The selective withdrawal system which was installed on Libby Dam to control water temperatures has provided for the release of more natural water temperatures from late spring through fall; however, the system

does not operate during winter months due to isothermal conditions of the reservoir and consequently, winter water temperatures remain warmer than prior to closure of Libby Dam.

Dam operations also impact fish populations in Lake Koocanusa. After an initial surge of productivity when the reservoir was first formed, there has been a slow decline in productivity toward oligotrophy (very low productivity). Between 1977 and 2000, reservoir drawdowns averaged 111 feet, and although they have not been as dramatic since then, they still affect all biological trophic levels and influence the probability of subsequent refill during spring runoff. The reservoir has shifted from a westslope cutthroat/mountain whitefish dominated system to one dominated by northern pike minnow, peamouth chub and kokanee salmon.

The Bonneville Power Administration is required to mitigate for the construction and operation of Libby Dam, and accomplishes much of this by funding the FWP fisheries mitigation program. Mitigation efforts, both onsite (operational) and off-site, are underway to protect, reopen, or reconstruct habitat to partially offset the loss.

Fishing Access

There are 6 publicly owned or managed access sites along the Kootenai River. Acquiring additional access sites along the Kootenai River is a goal, especially downstream of Libby. There are seven (plus one proposed) publicly owned accesses on Lake Koocanusa that access the reservoir at various drawdown levels. The Koocanusa access sites also provide convenient land-based recreation opportunities. None of the Koocanusa or Kootenai River sites are managed by FWP. There are also more than 30 publicly owned/operated boating access sites at many of the larger valley lakes in the drainage.

Special Management Issues

Rainbow trout numbers and mean relative weights directly downstream of Libby Dam have decreased dramatically in recent years and are lower than rainbow trout collected historically and in other downstream sections of the Kootenai River. Possible reasons for the lower condition near Libby Dam include water temperatures, an altered invertebrate community, and presence of a nuisance diatom, *Didymosphenia geminata* that has affected the Kootenai River since 2000. Commonly referred to as "Didymo" or “rock snot”, this diatom is found mostly in cold clear streams and rivers with high nitrogen to phosphorus ratios. This includes downstream of dams in much of North America. Didymo attaches itself to the streambed by a long stalk and poses a threat to the aquatic ecosystem because it forms extensive mats on stream beds. Those mats exclude many aquatic insect species important to salmonids. Mat production by Didymo is lowest in the summer and early fall months following elevated discharges from Libby Dam. The mats begin to die off in late March and early April and elevated discharges for white sturgeon recovery will remove varying amounts of mat material but never all the diatoms. During peak mat production, Didymo has the potential to exclude important aquatic invertebrate species including mayflies and caddisflies.

FISHERIES MANAGEMENT DIRECTION FOR KOOTENAI RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Lake Koocanusa	46,500 acres total 28,723 acres in Montana	Bull trout (N)	Wild	Conservation	Provide catch-release recreational opportunity and reinstate limited harvest if compatible. Monitor recreational fishery including by-catch by anglers fishing for large rainbow trout and during derbies. Monitor population in Montana and work with British Columbia counterparts to establish adequate protection to insure opportunity for angling on both sides of the border.
		Rainbow trout	Wild	Quality	Manage harvest to promote trophy fishery opportunity. Monitor recreational fishery all year including during derbies.
		Gerrard rainbow trout	Hatchery	Put, Grow and Take/ Restrictive Regulations/ Quality	Provide trophy harvest and recreational fishery. These are sterile progeny of trout known to reach trophy size. Monitor efficacy of no- take regulations for marked fish less than 22 inches created to promote growth to trophy size.
		Kokanee salmon	Wild	Liberal Regulations	Manage harvest to enhance numbers and sizes. Monitor population in Montana and British Columbia to identify population structure and opportunities to improve length at harvest for angling on both sides of the border.

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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Burbot (N)	Wild	Restrictive Regulations	Manage harvest to protect spawning adults. Monitor population in Montana and British Columbia to identify population structure and opportunities to improve length at harvest for angling on both sides of the border. Identify potential for population enhancement through hatchery augmentation.
Habitat needs and activities: In cooperation with DEQ, monitor lake water and sediment quality and fish to determine effects of selenium produced from British Columbia open-pit coal mines. Identify reservoir operations that improve reservoir productivity and quality angling.					
Tobacco River and Tributaries - Headwaters downstream to Lake Koocanusa	22.9 miles	Bull trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout. Educate anglers on catch-and-release techniques to reduce by-catch mortality. Continue to work with agencies to improve habitat in core areas. Work with irrigators and agencies to eliminate adult loss and reduce/eliminate fry loss in system.
		Westslope cutthroat trout (N)	Wild	General	Enhance fluvial populations for conservation and angling opportunities.
		Rainbow trout	Wild	General	Maintain current angling opportunity and harvest level.
		Brook Trout	Wild	Suppression	Where practical, maintain liberal harvest opportunities. Where feasible reduce/eliminate competing populations to meet native species goals.
Habitat needs and activities: Water rights are over allocated in Grave Creek; work with irrigators to maintain/improve flows to support native species.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Eureka Chain Lakes: Frank Rock Lost Timber Rock	 149 acres 37 acres 35 acres 31 acres	Rainbow trout, (Gerrard, Eagle Lake, Redband)	Hatchery	Put, Grow and Take	Maintain current angling opportunity and harvest level. For Lost Lake, manage trout harvest to enhance size. Do strain evaluation to determine age class success and return to creel.
Other Small Lakes		Kokanee salmon	Hatchery	Put, Grow and Take	Provide opportunity for recreational harvest when feasible (e.g., Frank Lake) based on hatchery availability and water quality (alkalinity levels).
		Brook trout	Hatchery	Put, Grow and Take	Conduct EA on feasibility of re-introducing brook trout into selected closed basin lakes.
Habitat needs and activities: Monitor total alkalinity, dissolved oxygen levels and lake elevations to help determine stocking success					
Glen Lake	301 acres	Kokanee salmon	Hatchery	Put, Grow and Take	Maintain current angling opportunity and harvest level. Continue to monitor population and determine stocking rates that promote opportunity for larger kokanee.
		Rainbow trout (Gerrard)	Hatchery	Quality	Explore opportunity to stock limited number of Gerrard rainbow trout to produce trophy fishery.
		Burbot	Wild	General	Maintain limited harvest and recreational opportunity. Monitor population to identify population structure and opportunities to improve length at harvest for quality angling through regulation. Identify potential for population enhancement through hatchery augmentation.
Habitat needs and activities: Work with Lincoln County to reduce impacts of shoreline construction. Lake elevations are controlled by Glen Lake irrigation district.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Ten Lakes Scenic area lakes: Big Therriault Little Therriault Rainbow Upper Wolverine Lower Wolverine Bat Blue Bird	 56 acres 28 acres 9 acres 8 acres 5 acres 5 acres 3 acres	Westslope cutthroat trout (N)	Wild/Hatchery	Put, Grow and Take/ General	Maintain current angling opportunity and harvest level. Where practical enhance populations to meet native species goals. Where feasible, protect non-introgressed populations and restore genetic integrity to introgressed populations. Adjust/eliminate stocking in lakes with natural reproduction.
Tetrault (Carpenter) Lake	96 acres	Rainbow trout (Gerrard, Eagle Lake, redband), Westslope cutthroat trout	Hatchery	Put, Grow and Take	Maintain current angling opportunity and harvest level.
		Largemouth bass	Wild	Suppression	Where practical, maintain current angling opportunity and harvest level. Where feasible reduce/eliminate populations to meet native species goals.
Sophie Lake	221 Acres	Rainbow trout (Gerrard, Eagle Lake, Redband) Westslope cutthroat trout	Hatchery	Put, Grow and Take	Maintain current angling opportunity and harvest level.
		Kokanee salmon	Hatchery	Put, Grow and Take	When feasible based on hatchery availability, provide opportunity for recreational harvest.
		Burbot	Wild	General	Maintain limited harvest and recreational opportunity. Monitor population to identify population structure and opportunities to improve length at harvest for quality angling through regulation. Identify potential for population enhancement through hatchery augmentation.

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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Northern pike, yellow perch, bluegill, sunfish	Wild	Suppression	Where practical, maintain current angling opportunity and harvest level. Where feasible reduce/eliminate populations to meet native species goals.
Kootenai River and Tributaries - Libby Dam Downstream to Fisher River	3.5 miles	Bull Trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout. Educate anglers on catch-and-release techniques to reduce by-catch mortality. Continue to work with agencies and mining interests to improve habitat in core areas.
		Rainbow trout	Wild	Quality/ Restrictive Regulations	Continue to improve fishery through restrictive regulations to promote trophy sizes. Identify limiting factors leading to population changes.
		Mountain whitefish (N)	Wild	General	Maintain numbers. Continue to monitor population size and trend.
Habitat needs and activities: Identify limiting factors associated with *Didymosphenia geminata* and determine if blooms/mats can be reduced to improve fishery.					
Fisher River and Tributaries - Headwaters to Kootenai River	33.2 miles	Bull trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout. Educate anglers on catch-and-release techniques to reduce by-catch mortality. Continue to work with agencies and mining interests to improve habitat in core areas.
		Redband trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Maintain current angling opportunity and harvest level. Where feasible enhance populations to meet native species goals. Where feasible, protect non-introgressed populations and restore genetic integrity to introgressed populations.

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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Rainbow trout	Wild	General/ Suppression	Where practical, maintain current angling opportunity and harvest level. Where feasible reduce/eliminate hybridized populations to meet native species goals.
		Brook trout	Wild	Suppression	Where practical, maintain liberal harvest opportunities. Where feasible reduce/eliminate competing populations to meet native species goals.
Habitat needs and activities: Fisher River impacted by road and railroad construction. Investigate methods to improve habitat.					
Happy's Inn Small Lakes: Leon Bootjack Cibid Topless Cad	 19 acres 12 acres 11 acres 9 acres 4 acres	Rainbow trout (Redband, Arlee), Westslope cutthroat trout	Hatchery	Put, Grow and Take	Maintain current angling opportunity and harvest level. In Cibid Lake, promote redband trout. In Cad Lake promote westslope cutthroat trout. In other lakes, stock rainbow trout and westslope cutthroat trout on alternate years.
Crystal Lake Lavon Lake	184 acres 17 acres	Kokanee salmon	Hatchery/ Wild	Put, Grow and Take	Manage harvest and stocking levels to enhance numbers and sizes. Continue to monitor contribution to population of hatchery versus wild kokanee and determine stocking rates that promote opportunity for larger kokanee.
		Rainbow trout (Gerrard, hatchery rainbow trout)	Hatchery	Put, Grow and Take	Maintain current angling opportunity and harvest level. Continue to monitor population to determine which strain may produce opportunity for larger trout.
		Yellow Perch	Wild	General	Reduce or eliminate yellow perch to benefit recreationally important kokanee salmon.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Horseshoe Lake	138 acres	Tiger muskie	Hatchery	Quality/ Restrictive Regulations	Manage for trophy opportunity and to maintain pressure on northern pikeminnow and sucker populations to improve opportunity to establish a limited salmonid fishery. Stock limited numbers when available.
		Kokanee salmon	Hatchery	Put, Grow and Take	Manage harvest and stocking levels to enhance numbers and sizes. Establish and monitor success of stocking in this high predator system.
		Smallmouth bass	Wild	Suppression	Illegal introduction. Maintain liberal harvest opportunities. Reduce/eliminate competing populations to meet native species goals.
Loon Lake Little Loon Lake	222 Acres 9 Acres	Redband trout	Wild	Conservation	Maintain current angling opportunity and harvest level. Where feasible enhance populations to meet native species goals. Where feasible, protect non-introgressed populations and restore genetic integrity to introgressed populations.
		Northern pike	Wild	General	Illegal introduction. Continue to provide for liberal harvest to provide for recreational opportunity and decrease predation on yellow perch and bass.
		Largemouth bass	Wild	Quality	Maintain current angling opportunity and harvest level. Through regulation, enhance opportunity for trophy sizes.

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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Smallmouth bass	Hatchery	Quality/ Put, Grow and Take	Maintain current angling opportunity and harvest level. Through regulation, enhance opportunity for trophy sizes. Determine if continued stocking is warranted.
Island Lake Lynch Lake	221 Acres 41 Acres	Yellow perch	Wild	Quality	Maintain current angling opportunity and harvest level. Monitor population structure to determine if quality perch population can be sustained.
		Largemouth bass	Wild/ Hatchery	Quality/ Put, Grow and Take	Maintain current angling opportunity and harvest level. Through regulation, enhance opportunity for trophy sizes. Identify if continued stocking is warranted
		Northern pike	Wild	General/ Suppression	Illegal introduction. Provide for liberal harvest to provide for recreational opportunity and decrease predation on yellow perch and bass.
Kootenai River and Tributaries (Fisher River to Kootenai Falls.)	28.6 Miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout. Educate anglers on catch-and-release techniques to reduce by-catch mortality. Continue to work with agencies and mining interests to improve habitat in core areas. Enhance fluvial populations for conservation and WCT angling.
		Rainbow trout	Wild	Restrictive Regulations	Manage harvest to enhance numbers and sizes.
		Mountain whitefish (N)	Wild	General	Maintain numbers. Continue to monitor population size and trend.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Brown trout	Wild	General/ Suppression	Illegal introduction. Where practical, maintain liberal harvest opportunities. Where feasible reduce/eliminate competing populations to meet native species goals.
Habitat needs and activities: Improve habitat to support ecosystem function and production of trout and whitefish. Identify limiting factors associated with *Didymosphenia geminata* and determine if blooms/mats can be reduced to improve fishery					
Libby Creek and Tributaries (Headwaters to Kootenai River)	29.2 Miles	Bull trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout. Educate anglers on catch-and-release techniques to reduce by-catch mortality. Continue to work with agencies and mining interests to improve habitat in core areas.
		Redband trout (N)	Wild	Conservation	Maintain current angling opportunity and harvest level. Where feasible enhance populations to meet native species goals. Develop conservation strategy and hatchery.
		Westslope cutthroat trout (N)	Wild	Conservation	Where feasible, protect non-introgressed populations and restore genetic integrity to introgressed populations
		Rainbow trout	Wild	General/ Suppression	Where practical, maintain current angling opportunity and harvest level. Where feasible reduce/eliminate hybridized populations to meet native species goals
		Brook trout	Wild	Suppression	Where practical, maintain liberal harvest opportunities. Where feasible reduce/eliminate competing populations to meet native species goals.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Cabinet Wilderness Lakes: Leigh Upper Cedar Granite Upper Hanging Valley Double Lower Geiger Lower Sky Lower Hanging Valley Minor Lower Cedar Wishbone Upper Geiger Barlee Big Bear Bramlet	 129 acres 63 acres 57 acres 53 acres 37 acres 34 acres 23 acres 21 acres 20 acres 19 acres 16 acres 13 acres 10 acres 9 acres 9 acres	Redband trout (N), Westslope cutthroat trout (N) Brook trout	Wild/ Hatchery Wild	Put, Grow and Take/ General General/ Suppression	Maintain current angling opportunity and harvest level for high mountain lake angling opportunity. Where practical enhance populations to meet native species goals. Where feasible, protect non-introgressed populations and restore genetic integrity to introgressed populations. Adjust/eliminate stocking in lakes with adequate natural reproduction. Where practical, maintain current angling opportunity and harvest level. Where feasible reduce/eliminate competing populations to meet native species goals
Kootenai River and Tributaries (Kootenai Falls to Idaho Border)	21.7 Miles	Bull trout (N), Westslope cutthroat trout (N) Rainbow trout	Wild Wild	Conservation General	Continue yearlong closure on angling for bull trout. Educate anglers on catch-and-release techniques to reduce by-catch mortality. Continue to work with agencies and mining interests to improve habitat in core areas. Enhance fluvial populations for conservation and WCT angling. Manage harvest to enhance numbers and sizes.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Brown trout	Wild	Suppression	Monitor status of this recently illegally introduced species. Identify opportunities to reduce or eliminate to benefit native fish and recreationally important rainbow trout
		Mountain whitefish (N)	Wild	General	Maintain numbers. Survey population size and trend.
Yaak River and Tributaries (Headwaters to Kootenai River)	53.4 Miles	Redband trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Maintain current angling opportunity and harvest level. Where feasible enhance populations to meet native species goals. Where feasible, protect non-introgressed populations and restore genetic integrity to introgressed populations
		Rainbow trout	Wild	General/ Suppression	Where practical, maintain current angling opportunity and harvest level. Where feasible reduce/eliminate hybridized populations to meet native species goals
		Brook trout	Wild	General/ Suppression	Maintain liberal harvest opportunities. Where feasible reduce/eliminate competing populations to meet native species goals.
Bull Lake	1162 Acres	Bull trout (N)	Wild	Conservation	Closed to angling. Educate anglers on catch-and-release techniques to reduce by-catch mortality. Continue to work with agencies to improve habitat in core area
		Westslope cutthroat trout (N)	Wild	General	Maintain current angling opportunity and harvest level. Consider regulations that better promote native species goals.

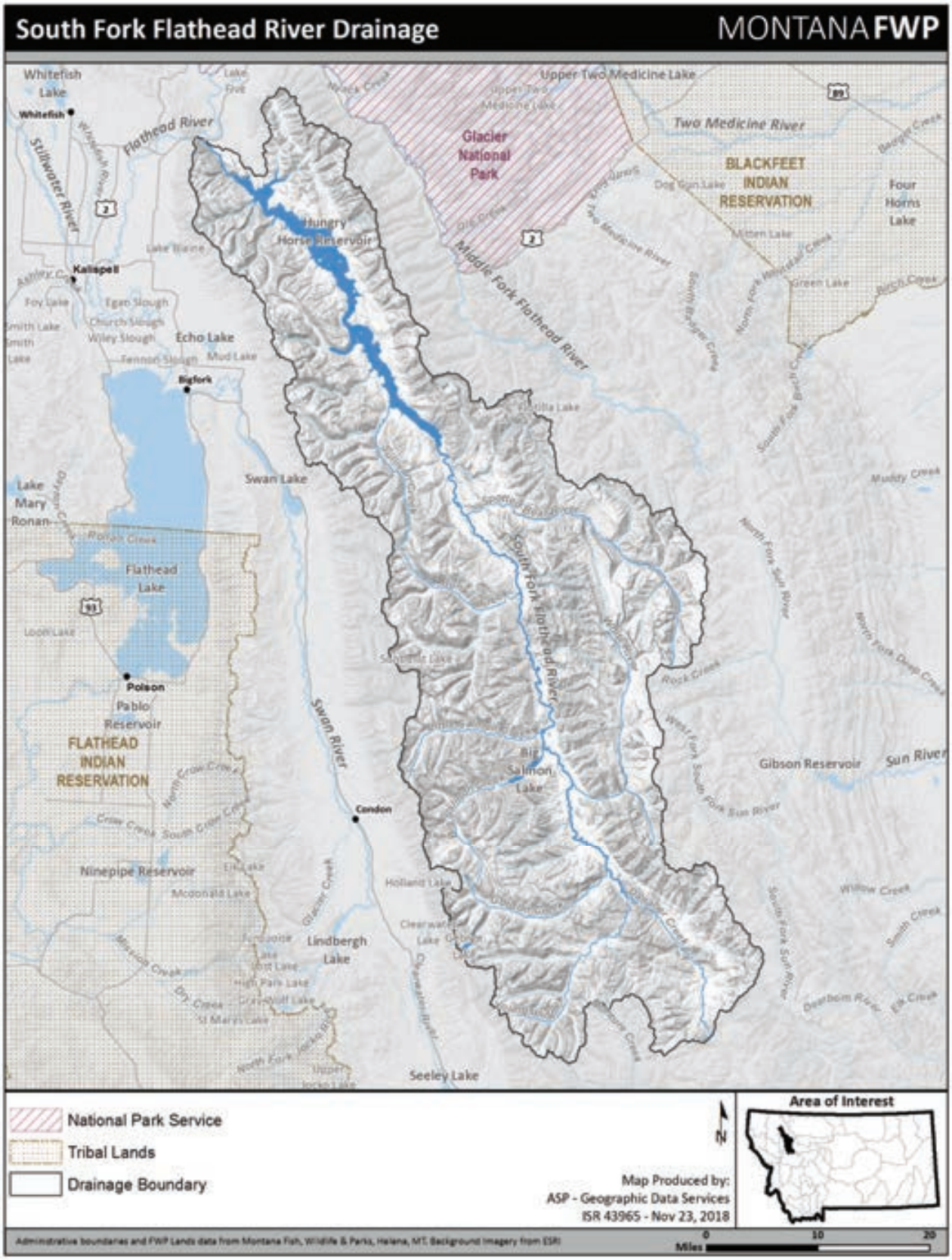
Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Kokanee salmon	Wild/ Hatchery	Put, Grow and Take	Manage harvest and stocking levels to enhance numbers and sizes. Monitor contribution to population of hatchery versus wild kokanee and determine stocking rates that promote opportunity for larger kokanee.
		Northern pike Largemouth bass smallmouth bass	Wild	Suppression	Illegal introductions. If feasible reduce/eliminate populations by liberalizing regulations to meet native species and recreational kokanee fishing goals.
Habitat needs and activities: Work with agencies and others to protect/maintain/enhance Keeler Creek spawning and rearing habitat for bull trout. Monitor lake for Eurasian water milfoil known in the vicinity (Clark Fork drainage)					
Spar Lake Little Spar Lake	383 Acres 37 Acres	Lake trout	Wild	General	Maintain current angling opportunity and harvest level. Consider liberalizing limits to reduce numbers to improve size and benefit Put-Grow-Take fisheries.
		Westslope cutthroat trout (N), Rainbow trout	Hatchery	Put, Grow and Take	Maintain current angling opportunity and harvest level. In Little Spar Lake promote westslope cutthroat trout exclusively. In Spar Lake determine stocking rates and species/strains to best promote return to creel in a lake dominated by lake trout.
		Kokanee salmon	Hatchery	Put, Grow and Take	In Spar Lake, manage harvest and stocking levels to enhance numbers and sizes.
Savage Lake	71 Acres	Largemouth bass	Hatchery/Wild	Put, Grow and Take	Maintain current angling opportunity and harvest level. Through regulation, enhance opportunity for trophy sizes. Identify if continued stocking is warranted.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Yellow perch	Wild	Quality	Maintain current angling opportunity and harvest level. Monitor population structure to determine if quality perch population can be sustained.
Grouse Lake	10 Acres	Westslope cutthroat trout	Hatchery	Put, Grow and Take	Maintain current angling opportunity and harvest level
Kilbrennan Lake	55 Acres	Redband trout	Hatchery/ Wild	Put, Grow and Take	Maintain current angling opportunity and harvest level. Determine stocking rates to best promote return to creel in a lake dominated by brook trout.
		Brook trout	Wild	General	If practical, maintain current angling opportunity and harvest level. If feasible, reduce numbers to improve size and benefit the Put-Grow-Take and wild redband population.
		Black bullhead	Wild	Suppression	Illegal introduction. If practical, maintain current angling opportunity and harvest level. If feasible, reduce/eliminate competing populations to meet native species goals.
Alvord Lake	53 Acres	Largemouth bass	Wild	Quality	Maintain current angling opportunity and harvest level. Through regulation, enhance opportunity for trophy sizes.
		Yellow perch	Wild	General	Maintain current angling opportunity and harvest level. Monitor population structure as part of effort to sustain perch population

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Hoskins Lake Vinal Lake	35 acres 16 acres	Westslope cutthroat trout (N)	Wild	Put, Grow and Take	Maintain current angling opportunity and harvest level.
Northwest Peaks Lakes: Upper Hawkins Burke Lower Hawkins Davis	 14 acres 14 acres 7 acres 5 acres	Westslope cutthroat trout (N)	Hatchery/ Wild	Put, Grow and Take/ General/ Conservation	Maintain current angling opportunity and harvest level for high mountain lakes. Where practical enhance populations to meet native species goals. Where feasible, protect non-introgressed populations and restore genetic integrity to introgressed populations. Adjust/eliminate stocking in lakes with adequate natural reproduction.
		Brook trout	Wild	Suppression	Where practical, maintain current angling opportunity and harvest level. Where feasible reduce/eliminate competing populations to meet native species goals.
Fish Lakes: South North Middle	 16 acres 9 acres 3 acres	Westslope cutthroat trout (N)	Hatchery/ Wild	Put, Grow and Take/ General/ Conservation	Maintain current angling opportunity and harvest level for mountain lakes. Where practical enhance populations to meet native species goals. Where feasible, protect non-introgressed populations and restore genetic integrity to introgressed populations. Adjust/eliminate stocking in lakes with adequate natural reproduction.


South Fork Flathead River Drainage
MONTANA FWP
Whitefish Lake
Whitefish
Flathead River
Stillwater River
Kalispell
Echo Lake
Bigfork
Swan Lake
Lake Mary Ronan
Flathead Lake
Polson
Pablo Reservoir
FLATHEAD INDIAN RESERVATION
Ninepipe Reservoir
Swan River
Condon
Lindbergh Lake
Seeley Lake
Upper Two Medicine Lake
Two Medicine River
Glacier National Park
BLACKFEET INDIAN RESERVATION
Four Horns Lake
Hungry Horse Reservoir
Middle Fork Flathead River
South Fork Flathead River
Big Salmon Lake
Gibson Reservoir
Sun River
National Park Service
Tribal Lands
Drainage Boundary
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Area of Interest
Miles
0
10
20
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI

SOUTH FORK FLATHEAD RIVER DRAINAGE

PHYSICAL DESCRIPTION

The South Fork Flathead River drainage includes Hungry Horse Reservoir, the South Fork Flathead River and its tributaries. The South Fork originates from the Bob Marshall Wilderness, at the confluence of Young's Creek and Danaher Creek. From its headwaters, the river flows north for approximately 60 miles through the Bob Marshall Wilderness before entering Hungry Horse Reservoir. Hungry Horse Dam, created in 1953, lies approximately 5.3 miles upstream of the confluence of the South Fork and the main stem of the Flathead River. At 564 feet, Hungry Horse was the third largest and second tallest concrete dam in the world at the time of completion. The dam is managed for hydroelectric production as well as for flood control. The South Fork Flathead watershed includes some of the most pristine forested landscape in the western United States. The majority of the land base in the South Fork drainage is publicly owned, with land management responsibilities belonging to the Flathead National Forest. The vast majority of this National Forest land is protected as wilderness, though there are roaded parcels around Hungry Horse Reservoir.

There are 62 natural lakes in the drainage, totaling 2,308 surface acres. The South Fork drainage is bordered by the Swan Mountains to the west and the Flathead Range to the east. The natural lakes present in the South Fork drainage are typically mountain lakes in the headwaters of many South Fork tributaries. The largest natural lake is Big Salmon Lake (972 acres). Few lower elevation lakes exist, with Handkerchief Lake (51 acres) being one of the larger, more popular destinations.

FISHERIES MANAGEMENT

The South Fork Flathead River drainage provides one of the most unique fisheries in Montana. Construction of Hungry Horse Dam left almost the entire South Fork isolated from the remainder of the Flathead system. Because of this isolation, the South Fork provides for an almost entirely native fish assemblage, with outstanding fisheries for westslope cutthroat and bull trout. The South Fork represents the largest connected population of migratory, genetically unaltered westslope cutthroat trout left in the United States. Anglers in the South Fork will find exceptional catch rates for large cutthroat in an area that provides solitude and scenery that make Montana the last best place. In addition to westslope cutthroat, anglers visiting Hungry Horse Reservoir and the upstream South Fork also have the unique opportunity to target bull trout, a species listed as threatened under the Endangered Species Act. While most waters were closed to fishing for bull trout after the listing in 1998, the South Fork drainage was reopened under a permit from the USFWS in 2004. The conditions of this permit allowed for catch and release fishing for bull trout in the South Fork Flathead River and angler harvest of two bull trout per year in Hungry Horse Reservoir. The bull trout population in Hungry Horse and the connected South Fork is typical of most adfluvial populations and anglers have the chance at targeting bull trout up to 15 pounds.

The South Fork drainage is managed as a wild, native trout fishery, emphasizing natural reproduction. The basin is also the focus of native fish recovery efforts. The South Fork drainage is home to many native fish species including bull trout, westslope cutthroat trout, mountain whitefish, pygmy whitefish, northern pikeminnow, longnose and largescale sucker, and sculpin. The only non-native fish species present in the South Fork is Arctic grayling, although this species is limited to Handkerchief Lake, which once held the state record for angler-caught grayling. Regulations in the wilderness portion of the South Fork protect against overharvest and maintain a viable recreational angling experience while allowing the adventurous anglers to enjoy a camp meal of freshly caught trout. Guided float trips exist on the South Fork, though outfitting is regulated through a permit system administered by the USFS. The remote nature of the upper South Fork largely limits the number of anglers utilizing the river. However, anecdotal evidence suggests that angler use may be increasing and future surveys may determine the need for additional regulation.

The fishery downstream of Hungry Horse Dam provides for a limited tailwater section, though access is difficult due to steep banks and swift current. This section of river is dominated by native fish species, though rainbow and lake trout have been observed in this location. Historically, water exiting Hungry Horse Dam was released from the bottom of the reservoir, altering the stream temperature for the rest of the Flathead River downstream of the confluence with the South Fork. In 1995 a selective withdrawal system was installed and has since provided a more natural temperature regime which has increased westslope cutthroat and bull trout abundance. In recent years the occurrence of the diatom algae *Didymosphenia geminata* appears to have increased below Hungry Horse Dam. Scientists are currently investigating the potential impacts of the increase in diatom density.

High mountain lakes in the South Fork were historically stocked with cutthroat trout. However, modern genetic analysis has revealed that many of these cutthroat trout plants in the early part of the 20th century had genetic material other than westslope cutthroat trout. Since the 1980's any lakes stocked have been with genetically pure westslope cutthroat from the Washoe Park State Fish Hatchery. In 2007, FWP implemented a watershed-wide restoration project aimed at removing these headwater sources of non-native genes and therefore protecting the important population of the South Fork. This project was completed in 2017 and lakes have been repopulated with diverse genetic strains of westslope cutthroat trout from the Sekokini Springs hatchery.

HABITAT

The South Fork Flathead River drainage contains some of the most pristine forest land in the lower 48 States. Much of the watershed is located within the Bob Marshall Wilderness. When combined with the neighboring Scapegoat and Great Bear Wilderness areas, the Bob Marshall Wilderness Complex is the second largest wilderness-protected land area in the lower 48 with over 1.5 million acres. Because of this level of protection, fisheries habitat remains largely in the same condition as it was prior to human civilization. Migratory fish populations thrive in connected stream networks with little man-made disturbance.

Downstream of the wilderness boundary the drainage is still largely publicly owned, with the USFS responsible for land management. As is the case with many managed forests, years of timber harvest have left a legacy of roads upon the landscape. However, while historic logging practices may have negatively impacted streams and their associated fisheries, modern forestry Best Management Practices and conservation efforts have greatly improved fisheries habitat from its previous condition. Fish passage has been provided at road crossings on either side of Hungry Horse Reservoir, maintaining connection to spawning and rearing habitat for fish inhabiting the reservoir. Funding for this restoration work has come from both BPA mitigation as well as USFS funding sources.

FISHING ACCESS

Although there are abundant recreational fishing opportunities in the South Fork drainage, FWP has no official fishing access sites. Access points along both the South Fork Flathead River and Hungry Horse Reservoir are managed by the USFS. These sites include a combination of primitive boat launches and dispersed camping as well as developed campgrounds and boat ramps designed to handle considerable traffic.

SPECIAL MANAGEMENT ISSUES

South Fork Flathead Drainage Westslope Cutthroat Trout Conservation Program

The South Fork Flathead River drainage comprises more than half of the remaining interconnected habitat for westslope cutthroat trout within this species' historic range. However, long-term persistence of this native species is threatened by hybridization with introduced rainbow trout and Yellowstone cutthroat trout that were stocked decades ago in many historically fishless headwater lakes in the South Fork drainage. To minimize the spread of hybridization, FWP developed the South Fork Flathead Drainage Westslope Cutthroat Trout Conservation Program. The objective of this multi-year project was to remove sources of nonnative trout in 21 lakes and reestablish these fisheries with pure westslope cutthroat trout. Rotenone was successfully used to chemically remove introduced trout in 15 lakes and their associated tributaries, and genetic swamping is being used in an additional six lakes as an alternative technique to restoring westslope cutthroat trout. Additional efforts in the South Fork Flathead include the development and use of local broodstocks to conserve genetic variation in this native species.

FISHERIES MANAGEMENT DIRECTION FOR SOUTH FORK FLATHEAD RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
South Fork Flathead River and Tributaries (Headwaters Downstream to the Wilderness Boundary)	40 miles	Bull trout (N)	Wild	Conservation	Manage for catch-and-release angling through a catch-card permit system.
		Westslope cutthroat trout (N)	Wild	Conservation	Maintain numbers and quality of the fishery. Provide a limited harvest fishery allowing anglers to keep small fish for camp fare while maintaining large fish and spawning fish. Eliminate threats to genetic purity. Monitor westslope cutthroat trout for increases in hook scar rates and catch rates related to increases in angler use.
		Mountain whitefish (N)	Wild	General	Maintain numbers. Begin to understand population size and trend.
South Fork Flathead River and Tributaries (Wilderness Boundary to Hungry Horse Reservoir)	20 miles	Bull trout (N)	Wild	Conservation	Manage for catch-and-release angling through a catch-card permit system.
		Westslope cutthroat trout (N)	Wild	Conservation	Provide a limited harvest fishery. Conduct population estimates as part of evaluation of the effectiveness of the short catch-and-release section. Eliminate threats to genetic purity. Monitor westslope cutthroat trout for increases in hook scar rates and catch rates related to increases in angler use.
		Mountain whitefish (N)	Wild	General	Maintain numbers. Begin to understand population size and trend.
Spotted Bear Lake	12 acres	Westslope cutthroat trout	Wild/ Hatchery	Put, Grow and Take	Provide for harvest and recreational opportunity. Continue to monitor for stocking

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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
					evaluation. Plants appear to have poor success in recent years.
Hungry Horse Reservoir	23,577 acres	Bull trout (N)	Wild	Conservation	Regulate harvest and monitor migratory populations for conservation and angling through a catch card system.
		Westslope cutthroat trout (N)	Wild	Conservation	Provide recreational angling opportunity. Eliminate threats to genetic purity
		Mountain whitefish (N)	Wild	General	Provide recreational angling opportunity
Habitat needs and activities: Improve habitat to reduce disturbance, minimize future threats, and provide ecosystem function.					
Handkerchief Lake	51 acres	Westslope cutthroat trout (N)	Wild	Conservation	Provide recreational angling opportunity. Eliminate threats to genetic purity
		Arctic grayling	Wild	General	Provide for harvest and recreational opportunity. Continue establishment of Red Rock grayling genetic reserve.
Habitat needs and activities: Lake was treated with rotenone as part of the South Fork Flathead Westslope Cutthroat Conservation project. Red Rock Arctic grayling and pure westslope cutthroat were stocked after treatment. Continued monitoring of grayling genetics will be necessary to ensure long-term viability of the population.					
South Fork Flathead River Drainage - Mountain Lakes	60 lakes 2,245 acres	Westslope cutthroat trout (N)	Wild/ Hatchery	Conservation/ Put, Grow and Take	Eliminate sources of non-native trout in 21 lakes to protect genetic purity of westslope cutthroat in the drainage. Provide recreational fishing opportunity for a variety of fish sizes and catch rates. Manage with a basic stocking rate of 100 westslope cutthroat fingerlings per acre every 3 years. Adjust number and frequency of plants based on extent of natural reproduction, fishing pressure and creating different fishing opportunities. Coordinate with wilderness management when necessary.

Swan River Drainage
MONTANA FWP
Echo Lake
Mud Lake
Hungry Horse Reservoir
Middle Fork Flathead River
Bigfork
Lake Mary Ronan
Swan Lake
Flathead Lake
South Fork Flathead River
Polson
Pablo Reservoir
FLATHEAD INDIAN RESERVATION
Big Salmon Lake
Swan River
Condon
Kicking Horse Reservoir
Ninepipe Reservoir
Flathead River
Lindbergh Lake
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Miles
0
5
10

SWAN RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Swan River drainage includes the Swan River and its tributaries, and major lakes such as Swan Lake, Holland Lake, and Lindbergh Lake and numerous smaller lakes. The Swan River originates from the Mission Mountain Wilderness, flowing out of Gray Wolf Lake, then continuing through Lindbergh Lake. From its headwaters, the river flows north for 52 miles through Missoula and Lake Counties before entering Swan Lake. The Swan River then continues north and west into Flathead County and through Bigfork Dam, a 4.1 megawatt hydroelectric facility constructed in 1902, before entering Flathead Lake. The lowest mile of the Swan River flows through a high gradient canyon (Wild Mile) that is popular among whitewater enthusiasts. The Swan watershed includes dramatic mountain peaks in the headwaters and heavily forested slopes and wetlands on the valley floor. Much of the land in the Swan drainage is publicly owned, with large parcels being managed by both the Flathead National Forest and the Swan River State Forest.

There are 72 natural lakes in the drainage totaling 7,125 acres. The Swan drainage is bordered by the Mission Mountains (and Mission Mountain Wilderness) to the west and the Swan Mountains to the east. Most natural lakes are mountain lakes in the headwaters of many Swan drainage tributaries on both the east and west sides of the watershed. The largest lake is Swan Lake (3,269 acres). Lindbergh Lake (815 acres) and Holland Lake (414 acres) are the other two large, valley bottom lakes and are located in the upstream end of the drainage. Several other valley bottom lakes exist (Van, Peck, Shay, Russ, and Fran Lakes) and are popular for recreation and angling opportunities.

FISHERIES MANAGEMENT

The Swan River drainage provides diverse fisheries opportunities typical of the northwest portion of Montana. While many opportunities exist for anglers to fish outstanding multi-species water bodies, the Swan is also home to one of Montana's last strongholds for bull trout, a species listed as threatened under the Endangered Species Act. The Swan drainage is a perfect example of FWP's dual mission of providing recreational fishing opportunity while conserving our valuable native fish resources.

The Swan River is managed as a wild trout fishery, emphasizing natural reproduction. The basin is also the focus of native fish recovery efforts. The Swan River drainage is home to many native fish species including bull trout, westslope cutthroat trout, mountain whitefish, pygmy whitefish, northern pikeminnow, peamouth, longnose and largescale sucker, and sculpin. Several introduced fish species also inhabit the Swan drainage including brook trout, rainbow trout, lake trout, northern pike, kokanee salmon, brook stickleback, central mudminnow, and yellow perch. The fishery of the Swan River itself is largely focused on rainbow and westslope cutthroat trout. Regulations for these trout species protect against overharvest and maintain a viable recreational angling experience. Brook trout are also present in the upper Swan River and make up a portion of the catch when fishing the river. Guided float trips exist on the Swan River, though outfitting is regulated through a permit system administered by the DNRC and the

USFS. Though the Swan River was once a stronghold for bull trout, intentional angling is not allowed in the river upstream of Swan Lake.

The fishery downstream of Swan Lake is considerably different from the upper river. Warm outflows from Swan Lake limit trout production; though a quality rainbow trout fishery exists during spring months. Prior to entering Flathead Lake, the Swan River is impounded by Bigfork Dam. Trout habitat in the portion of river influenced by this impoundment is minimal, and the fishery is dominated by northern pike. Below Bigfork Dam, the Swan River's gradient increases dramatically and provides recreational opportunity for whitewater enthusiasts. A limited fishery for rainbow and lake trout exists in this reach, though access and wading conditions are difficult.

The Swan drainage is home to some of the most robust populations of bull trout in Montana. Adfluvial bull trout populations exist in Swan Lake, Lindbergh Lake, and Holland Lake. The bull trout population in Swan Lake has historically been so strong that when the species was listed as threatened under the Endangered Species Act in 1998, it remained the only water body in Montana where anglers could fish for, and keep, bull trout. Angling for bull trout is still permissible, however beginning in 2012, anglers were required to release all bull trout caught in Swan Lake. Intentionally targeting bull trout in Lindbergh Lake, Holland Lake, and the Swan River and its tributaries is not allowed. Spawning tributaries Elk, Goat, Lion, and Squeezer creeks are closed on a year-round basis to prevent disturbance of bull trout and unintentional harvest of juvenile bull trout by anglers who mistake them for brook trout.

The Swan drainage contains several valley-bottom lakes that provide quality recreational fishing opportunities. Van, Shay, Fran, and Peck Lakes are all stocked with rainbow trout and provide anglers with put-and-grow fisheries with scenic value and relative solitude, as defined boat ramps do not exist. Although not directly connected to the Swan River, Loon, Horseshoe, and Echo Lakes also contain recreational fisheries for species such as largemouth bass, smallmouth bass, lake whitefish, and kokanee salmon.

High mountain lakes are predominantly stocked with westslope cutthroat trout, except Heart Lake and Island Lake which are periodically stocked with golden trout. Many of the mountain lakes in the Swan drainage are in high elevation, alpine settings within the Mission Mountain Wilderness or Swan Mountains. Because of the remote nature of these lakes, many are intentionally left fishless, many are not stocked currently, and some were never stocked officially but may have been stocked by sportsmen. Stocking records for the lakes previously planted with fish reveal that undesignated cutthroat, which may have been hybridized with rainbow or Yellowstone cutthroat trout, were planted prior to the development of a pure westslope cutthroat brood. Therefore, some lakes may still contain hybridized populations of cutthroat trout, regardless of modern stocking plans. Lakes are stocked at a basic rate of 100 westslope cutthroat per acre every 3 years. Stocking density and frequency are adjusted relative to natural reproduction, if any, and fishing pressure. Management is coordinated with wilderness management if needed.

HABITAT

The Swan River valley was historically and continues to be a working forest. Much of the land ownership is a combination of private timber land, national forest, and Montana school trust lands. As is the case with many managed forests, years of timber harvest have left a legacy of

roads upon the landscape. However, while historic logging practices may have negatively impacted streams and their associated fisheries, the Swan valley is fortunate to be at the forefront of progressive land management approaches. In 2000, Plum Creek Timber Company released its Native Fish Habitat Conservation Plan (HCP). This plan allowed for an adaptive management approach to continue to actively manage forest lands, while providing protective measures for threatened fish species such as bull trout. Since then, the DNRC has released its own habitat conservation plan providing for many of the same conservation measures included in the effort done by Plum Creek. In addition to these plans, FWP has purchased conservation easements in many bull trout spawning streams. These easements protect the riparian vegetation necessary for bull trout spawning and rearing habitat.

In recent years, land acquisitions in the Swan drainage have been designed to protect both terrestrial and aquatic species. Important bull and westslope cutthroat trout habitat are included in these lands. Land parcels that were previously checker-boarded with national forest lands have been purchased by the USFS. Similarly, former Plum Creek lands in the Swan State Forest are currently held by The Nature Conservancy, with plans to transfer ownership to the State of Montana. Additionally, FWP has purchased several large conservation easements in bull trout core areas and has placed restrictions on land management to benefit bull and westslope cutthroat trout.

FISHING ACCESS

Although there are abundant recreational fishing opportunities in the Swan valley, FWP has very few official fishing access sites. Access points provided by FWP include one on the lower Swan River, downstream of Swan Lake, and one on Bigfork Bay where the Swan River enters Flathead Lake. All other public access points in the Swan are provided by either DNRC or USFS. These sites include a combination of primitive boat launches and dispersed camping as well as developed campgrounds and boat ramps designed to handle considerable traffic.

The USFS provides the only public access point on Swan Lake. The site contains a day-use area, boat ramp, campground, and public swimming area. Because the site is the only public access point, it has been used by FWP for several angler surveys. Additionally, FWP maintains an InfoMax recording system at the site which broadcasts information regarding native species management, angling opportunities, and way to minimize the risk of spreading Aquatic Invasive Species (AIS).

SPECIAL MANAGEMENT ISSUES

Experimental removal of lake trout in Swan Lake

Nonnative lake trout represent a significant threat to the Swan Lake bull trout population. In 2009 the Swan Valley Bull Trout Working Group initiated an eight-year experimental lake trout removal project. This project was a feasibility study to examine if limited gillnetting effort could reduce lake trout numbers and improve conditions for bull trout and kokanee. The project was monitored annually using predetermined evaluation criteria to examine the efficacy of removal efforts. The methods used in this project were designed to provide consistent data for statistical analyses while maximizing lake trout removal and minimizing bycatch of other fish species.

After eight years of targeted gillnetting, a total of 59,752 lake trout were removed from Swan Lake. Incidental bycatch of other fish species was relatively low. Modeled lake trout exploitation rates suggest that this level of gillnetting effort can create mortality rates near 50% for age-3 and age-4 lake trout, as well as adult lake trout on known spawning areas. However, some age classes were less vulnerable to the netting and unknown spawning areas likely exist. Indices examining how this level of effort affects the lake trout population showed no significant trend regarding lake trout abundance or relative weight but netting on known spawning areas did appear effective in removing the larger, older individuals. During this same period, bull trout and kokanee experienced initial declines but have since stabilized. However, data suggest that further declines in bull trout may be possible.

This project provided information critical to making informed decisions about the future management of the Swan Lake fisheries. Improved monitoring of the Swan Lake fish community is being developed to further assist biologists with evaluating any future lake trout harvest scenarios. Additionally, collaborative solutions will continue to be explored for ways to protect the bull trout population of the Swan Valley.

Illegal introduction of walleye in Swan Lake

In October 2015 two walleye were captured in Swan Lake during lake trout suppression netting activities. This represented the first known occurrence/report of walleye in the Swan drainage. Walleye are not native to Swan Lake and the interconnected Flathead system. The nearest known population of walleye occurs in the lower Clark Fork River system. That population is also considered to be the result of an illegal introduction, as walleye are not native to any Montana water bodies west of the continental divide. A Swan Lake walleye population, if fully established, represents a risk to native bull trout populations in the Swan and Flathead drainages. Additional sport fish populations could also be at risk if walleye were to become established. It is unknown whether walleye would be successful in Swan Lake, but the habitat and thermal regime are similar to other water bodies where walleye live. Considerable time and money has been spent to improve conditions for native fish (bull trout and westslope cutthroat trout) in the Swan and Flathead systems, and persistence of these species could be further compromised if walleye become established.

The two Swan Lake walleye were examined, measured, weighed, and otoliths were taken for geochemical analysis. The fish were then submitted to FWP enforcement as evidence. An emergency regulation was put in place that required anglers to kill any walleye caught in Swan Lake, and to turn the fish in to FWP. This regulation was put in place to help biologists collect any additional walleye that may have been introduced, and to take away the incentive of promoting illegal introductions. Since this regulation was put in place, FWP has not received any angler-caught walleye and additional netting has not captured any walleye. In the meantime, microchemical analysis was conducted by FWP on the otoliths from the two walleye captured. This analysis confirmed that the walleye did not originate from Swan Lake, but rather were moved to the lake sometime in June of that year. Biologists also gathered walleye otoliths from across the state and performed the same microchemical analyses to determine the origin of the illegal Swan Lake walleye. Results of this analysis revealed that the walleye originated from Lake Helena, which is part of the Missouri River reservoir system in the Helena valley. The catch-and-kill regulation continues to be in place and FWP has increased monitor netting in Swan Lake.

FISHERIES MANAGEMENT DIRECTION FOR SWAN RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Swan River and Tributaries (Headwaters Downstream to Swan Lake)	52 miles	Bull trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout and minimize incidental catch of bull trout. Maintain spawning tributary mouth closures as needed.
		Westslope cutthroat trout (N)	Wild	Conservation/ General	Eliminate harvest and enhance fluvial populations for conservation and WCT angling. Consider isolation of WCT populations if hybridization is a threat and habitat is sufficient to allow persistence.
		Rainbow trout	Wild	General/ Restrictive Regulations	Minimize harvest to provide for a quality fishery in one section. Maintain numbers to allow harvest in some sections.
		Mountain whitefish (N)	Wild	General	Maintain numbers. Begin to understand population size and trend.
		Brook trout	Wild	General	Allow for harvest in tributaries that do not contain bull trout.
Habitat needs and activities: Stream crossing upgrades and road BMP's for most forest lands. Enhance habitat to favor native trout and whitefish.					
Lindbergh Lake	815 acres	Bull trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout and minimize incidental catch of bull trout. Enhance migratory populations for conservation.
		Westslope cutthroat trout (N)	Hatchery	Put and Take	Evaluate stocking to determine success to creel. Provide recreational angling opportunity.

Continue next page

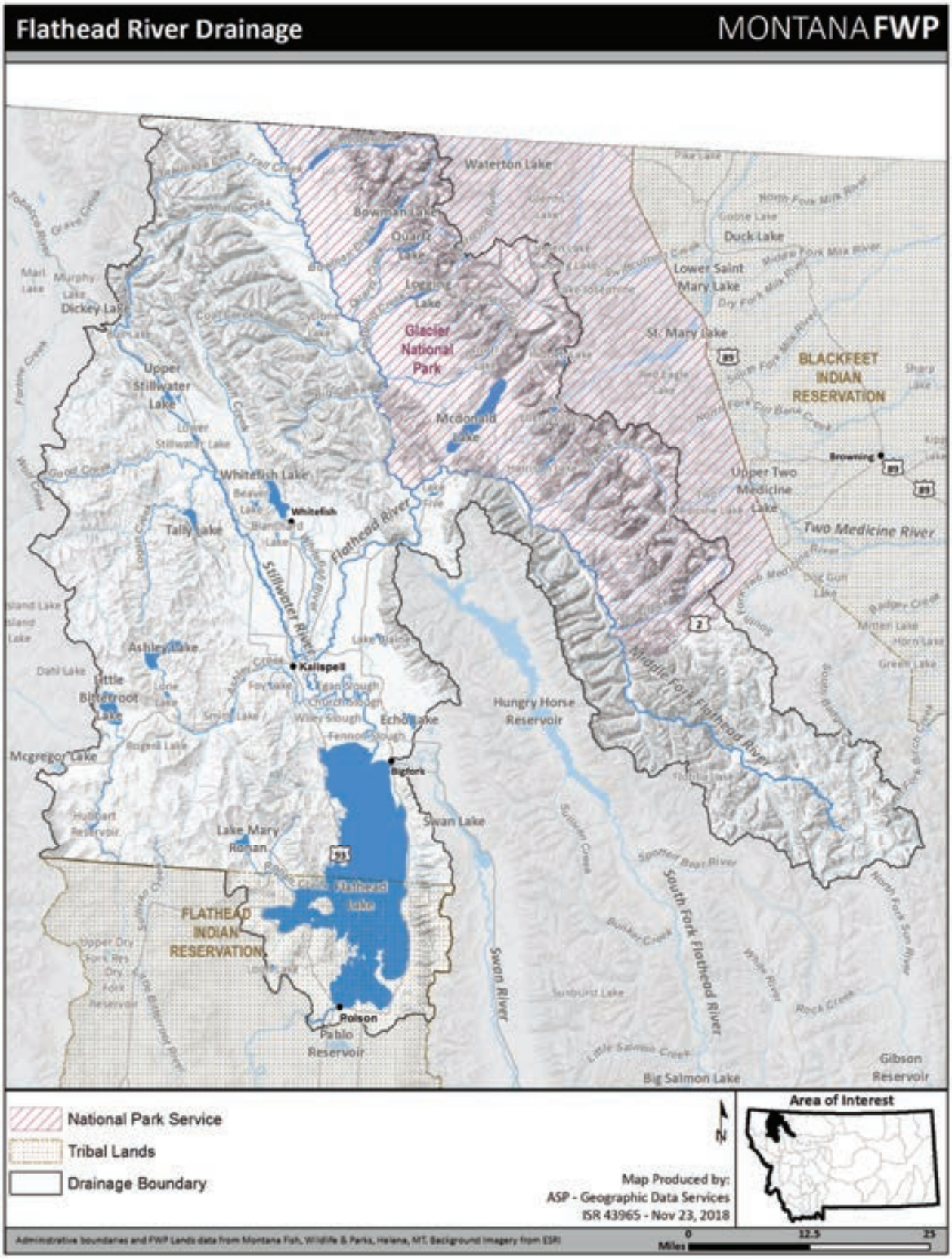
Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Kokanee salmon	Hatchery	Put, Grow and Take	Provide for harvest and recreational opportunity.
		Lake trout	Wild	Suppression	Increase monitoring and evaluate potential tools to reduce lake trout abundance to benefit native and recreationally important fish species.
Holland Lake	414 acres	Bull trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout and minimize incidental catch of bull trout. Enhance migratory populations for conservation.
		Westslope cutthroat trout (N)	Hatchery	Put and Take	Evaluate stocking to determine return to creel. Provide recreational angling opportunity.
		Kokanee salmon	Hatchery	Put, Grow and Take	Provide for harvest and recreational opportunity.
		Yellow perch	Wild	General	Provide for harvest and recreational opportunity.
		Lake trout	Wild	Suppression	Increase monitoring and evaluate potential tools to reduce lake trout abundance to benefit native and recreationally important fish species.
Habitat needs and activities: Maintain open channel at inlet to allow access for spawning bull trout.					
Swan Lake	3,269 acres	Bull trout (N)	Wild	Conservation	Catch and release fishing allowed but not harvest. Enhance migratory populations for conservation.
		Rainbow trout, Westslope cutthroat trout (N)	Wild	General	Provide recreational angling opportunity.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Kokanee salmon, Northern pike, Yellow perch	Wild	General	Provide for harvest and recreational opportunity.
		Lake trout	Wild	Suppression	Continue to evaluate tools to effectively reduce numbers to benefit native fish and recreationally important kokanee.
		Walleye	Wild	Suppression	Evaluate unauthorized introduction.
Swan River and Tributaries (Swan Lake to Flathead Lake)	12 miles	Bull trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout and minimize incidental catch of bull trout.
		Westslope cutthroat trout (N)	Wild	Conservation	Eliminate harvest and enhance fluvial populations for conservation and WCT angling. Consider isolation of WCT populations if hybridization is a threat and habitat is sufficient to allow persistence.
		Rainbow trout	Wild	General	Manage trout harvest to support recreational fishing and minimize impacts on native fish.
		Mountain whitefish (N)	Wild	General	Maintain numbers. Begin to understand population size and trend.
		Northern pike	Wild	General	Provide opportunity for harvest and recreational angling.
Habitat needs and activities: Improve habitat to support ecosystem function and production of trout and whitefish. Salvage/rescue fish entrained in Bigfork Dam canal during canal maintenance dewatering.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Echo Lake	695 acres	Largemouth bass	Wild/ Hatchery	Put, Grow and Take/ Quality/ Restrictive Regulations	Provide for a quality recreational fishery for at least 1 bass >12" at a rate of 0.25 fish per hour. Maintain 1> 12" limit to maintain larger bass and protect spawners. Assess contribution of hatchery plants.
		Rainbow trout	Hatchery	Put, Grow and Take	Provide recreational angling opportunity. Assess return of stocked trout.
		Kokanee salmon	Hatchery	Put, Grow and Take	Provide for harvest and recreational opportunity for 12" salmon.
		Northern pike	Wild	General	Provide recreational angling opportunity.
		Lake whitefish, Yellow perch	Wild	General	Provide recreational angling opportunity.
		Smallmouth bass	Wild	General	Provide recreational angling opportunity.
Habitat needs and activities: Lakeshore flooding in 2011 prompted the closing of Echo Lake to wake producing boat speeds. The lake has flooded in other high-snowpack years since 2011. Weekly lake elevation surveys now occur during summer to better inform managers of potential future flood events.					
Loon Lake	45 acres	Largemouth bass	Wild/ Hatchery	General	Provide for a recreational fishery. Assess contribution of hatchery plants. Continue to monitor largemouth bass nest counts.
		Rainbow trout	Hatchery	Put and Take/ Quality	Provide for a large (>18") rainbow trout fishery and recreational angling opportunity.
		Yellow perch	Wild	General	Provide recreational angling opportunity.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Horseshoe Lake	41 acres	Smallmouth bass	Wild/Hatchery	Restrictive Regulations	Provide recreational angling opportunity. Assess contribution of hatchery fish. Install habitat structures to improve spawning and survival.
		Pumpkinseed	Wild	General	
		Yellow perch	Transfer	Suppression	Yellow perch were first observed in Horseshoe Lake in 2011 as the result of an illegal plant. FWP monitoring confirmed presence and reproduction in May 2012. Eliminate harvest and suppress as possible to remove incentive to move to other waters.


Flathead River Drainage
MONTANA FWP
Waterton Lake
Bowman Lake
Quartz Lake
Logging Lake
Glacier National Park
Duck Lake
Lower Saint Mary Lake
St. Mary Lake
BLACKFEET INDIAN RESERVATION
Mcdonald Lake
Upper Stillwater Lake
Whitefish Lake
Whitefish
Tally Lake
Flathead River
Stillwater River
Browning
Upper Two Medicine Lake
Two Medicine River
Ashley Lake
Kalispell
Little Bitterroot Lake
Echo Lake
Hungry Horse Reservoir
Middle Fork Flathead River
Mcgregor Lake
Bigfork
Swan Lake
Lake Mary Ronan
Flathead Lake
FLATHEAD INDIAN RESERVATION
South Fork Flathead River
Swan River
Polson
Pablo Reservoir
Big Salmon Lake
Gibson Reservoir
National Park Service
Tribal Lands
Drainage Boundary
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Area of Interest
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background imagery from ESRI
0
12.5
25
Miles

FLATHEAD RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Flathead River drainage includes Flathead Lake, the Flathead River and its tributaries, including the North Fork and Middle Fork of the Flathead River (the South Fork of the Flathead is not included in this management area), the Whitefish River drainage, the Stillwater River drainage and the numerous small drainages on the westside of the Flathead Valley, draining over 7,000 square miles. The North Fork of the Flathead River begins in British Columbia, Canada and the Middle Fork in the Great Bear and Bob Marshall Wilderness areas of the Flathead National Forest. Glacier National Park lies between the two forks. Flathead Lake is bisected by the northern boundary of the Flathead Indian Reservation of the Confederated Salish and Kootenai Tribes. This management area is located in Flathead and Lake Counties. The Flathead watershed includes 10,000-foot peaks in the headwaters and heavily forested slopes, agricultural lands and wetlands on the valley floor.

There are 183 lakes in the drainage, totaling 156,966 surface acres. Numerous large lakes exist in the drainage, including Flathead Lake, Whitefish Lake, Upper and Lower Stillwater Lakes, Tally Lake, Ashley Lake, Little Bitterroot Lake, Hubbart Reservoir, Lake Mary Ronan, Lake Blaine, Echo Lake and many small valley and mountain lakes of less than 350 surface acres. There are three general types of lake settings that provide a wide diversity of fishing opportunity: high elevation alpine lakes that are ice free for less than half of the year that provide summer trout fishing; moderate elevation mountain setting lakes that are accessible most of the year providing a mix of fish species and opportunity; and valley floor lakes that are very accessible and provide opportunity for both warm and cold water fish species.

FISHERIES MANAGEMENT

Flathead Lake is the most popular fishery in the drainage and one of the top ten water bodies for fishing effort in Montana. Flathead Lake is large at about 123,000 surface acres. The lake's outstanding natural resources and diversity of recreational opportunities, combined with its proximity to Kalispell, Polson and Missoula, contribute to its popularity. It is a destination vacation site for out-of-state and foreign visitors.

Flathead Lake and river are managed as a wild trout fishery, emphasizing natural reproduction and native fish. Fishing regulations across the drainage are very restrictive for native species and very liberal for harvest of nonnative fish species. The basin is also a focus for native fish recovery efforts. Flathead Lake is home to eleven native fish species including bull trout, westslope cutthroat trout, mountain and pygmy whitefish, northern pike minnow, peamouth, longnose and largescale sucker, redside shiner, and two species of sculpin. Twelve nonnative fish species inhabit the Flathead including lake trout, lake whitefish, brook trout, rainbow trout, northern pike, brook stickleback, black bullhead, largemouth and smallmouth bass, crappie and yellow perch. Dominant fish species vary from westslope cutthroat, bull trout and brook trout in the headwaters, to a mixture of warm and cold water species at lower elevations. Angling on Flathead Lake occurs year-round and is most popular in the early spring, summer and fall. Lake

trout, lake whitefish and yellow perch comprise most of the catch. Winter ice fishing occurs annually on bays as ice allows.

The Flathead River is the most popular stream fishery in the drainage. The mainstem reach on the valley floor upstream of the lake is the most popular section providing summer fishing for westslope cutthroat trout and a fall run of lake whitefish. The connected sloughs near Flathead Lake provide a mixed fishery primarily for warm water species. The North and Middle forks of the Flathead River provide diverse recreational activities and popular westslope cutthroat trout fishing.

Bull trout exhibit two life forms, with adults residing in a lake (adfluvial) or river (fluvial) and spawning in upstream tributaries. Juveniles rear in the tributaries for one to three years before migrating to adult habitats downstream. Fish move freely throughout the entire Flathead system, including all major river tributaries and lakes. The one exception is Hungry Horse Dam which cut off about 40% of the Flathead drainage. The dam prevents Flathead Lake bull trout from migrating into the South Fork of the Flathead River. The North and Middle forks provide spawning and rearing habitat for the Flathead Lake and River population. There are other bull trout populations in other lakes and tributary systems in the Flathead drainage, including Whitefish Lake, Upper Stillwater Lake, Cyclone and Frozen Lakes, and lakes in Glacier National Park. Fishing regulations are very restrictive for bull trout in the Flathead drainage, where fishing for bull trout is not allowed. Major spawning tributaries (Big, Coal, Whale, Trail, Granite, Lodgepole, Morrison, and Long creeks) are closed all year to fishing. In addition, special fishing restrictions (stream mouth closures) exist on some spawning streams to protect spawning bull trout.

The larger lakes in the area contain mixed nonnative recreational fisheries. Ashley Lake, Little Bitterroot Lake and Lake Mary Ronan primarily provide popular kokanee salmon fisheries during both summer and winter months. Lake Mary Ronan is the kokanee egg source for the State hatchery stocking program. Echo Lake and Lake Blaine provide popular largemouth bass fisheries. With the exception of Lake Mary Ronan kokanee, these are wild self-sustaining fish populations.

Numerous small mid-elevation lakes are stocked with westslope cutthroat trout, rainbow trout or Arctic grayling providing popular put-and-grow fisheries. Lakes are stocked on a one to four-year rotation to maximize fish growth or catch rates. Four family fishing ponds in the valley are heavily stocked with catchable size trout and provide many thousands of days of angling. High mountain lakes are stocked with westslope cutthroat trout.

HABITAT

Water quality is very important to Flathead Valley residents. At this time, water quality in the Flathead Lake and river system is very good, providing for drinking and municipal uses, swimming and recreation, growth and propagation of fish and associated aquatic life, and as an agricultural and industrial water supply. FWP works to protect high water quality in many ways. FWP provides input to the permitting process for a number of stream protection laws (SPA, 310) in an effort to minimize impacts and water degradation associated with human development. Biologists administer over a hundred such permits a year in the Flathead drainage.

In the North Fork of the Flathead River drainage there are a number of large coal deposits. Over the last four decades, there has been exploration of mining reserves and attempts to begin open-pit coal mining--activities that threaten water quality in the river and Flathead Lake. A recent cooperative effort between British Columbia, Montana and numerous government agencies and non-governmental groups resulted in a prohibition to mining in the North Fork of the Flathead River. This prevents future degradation of water quality and fish habitat from coal mining and other resource development.

The USFS and FWP have completed stream habitat restoration improvements in bull trout spawning and rearing habitat. For example, large trees have been added to several miles of Hallowat and Coal creeks to provide complex habitat to impacted stream reaches. These and other projects will improve bull trout and westslope cutthroat trout habitat in these streams.

Land acquisitions in the Flathead drainage are designed to protect both terrestrial and aquatic species. Important bull trout and westslope cutthroat trout habitat are on these lands. FWP and partners have completed numerous private land conservation easements along the Flathead River, protecting miles of stream bank and many acres of riparian vegetation. This activity will help protect water quality in the Flathead drainage and important habitat and migratory routes for fish and wildlife.

The Bonneville Power Administration (BPA) is required to mitigate for the construction and operation of Hungry Horse Dam on the South Fork of the Flathead River and accomplishes much of this by funding the FWP mitigation program. In 1995, FWP, BPA and the BOR constructed a selective withdrawal structure on Hungry Horse Dam. This structure pulls water from various depth levels in the reservoir to provide natural water temperatures to the Flathead River downstream. Prior to construction the dam released cold water from the bottom of the reservoir that significantly reduced stream temperatures in the Flathead River for 49 miles downstream. Restoring natural temperatures improved conditions for fish and aquatic insects. This group of agencies also implemented a dam water release strategy to more closely mimic the natural river annual flow regime. The dam is now operated to not only provide flood protection and energy production but also maintain flows in the river downstream similar to those prior to dam construction.

FISHING ACCESS

There are more than 14 publicly owned or managed access sites along the Flathead River downstream of the confluence of the North and Middle forks. There are more than 15 publicly owned or managed access sites along the North and Middle forks. There are more than 20 publicly owned or managed access sites and six privately owned access sites along Flathead Lake. Some access sites are located near local communities and, in addition to river access, provide convenient land-based recreation opportunities. Most of the river and lake access points provide boat launching opportunities, docks, bathroom facilities and parking. FWP will continue to pursue opportunities to increase access on popular water bodies, such as Flathead Lake and Whitefish Lake, where user numbers are increasing to levels above the capacity of existing sites and on water bodies where no public access currently exists such as Lake Blaine.

SPECIAL MANAGEMENT ISSUES

Westslope Cutthroat Hybridization

Pure westslope cutthroat populations within the interconnected Flathead drainage are threatened by hybridization with rainbow trout. Hybrids have shown both increased abundance and distribution in recent decades. FWP is investigating methods to prevent rainbow trout and Westslope cutthroat trout genes from expanding in the drainage.

Illegal Fish Introductions

Illegal fish introductions are a continuing problem in Montana with more than half of the documented 600+ introductions occurring in northwest Montana. Illegal introductions impact both native and recreational fisheries, reduce fishing opportunity and increase management costs. As a disincentive to further illegal introductions, fishery managers will look to potential alternatives such as to either prohibit harvest on panfish or not provide management such as fishing limits on game fish such as pike, bass and walleye in selected waters, depending on the situation and species involved.

Aquatic Invasive Species

Introductions of aquatic invasive species into unoccupied bodies of water continues to pose a threat to Montana's waterways. The discovery of *dreissenid* mussel veligers in Tiber and Canyon Ferry Reservoirs in 2016 has increased concerns about introduction into the headwaters of the Columbia River Drainage. This threat has been a focus in the Flathead Valley due to high boater use and tourism. FWP continues to work with our partners to monitor AIS in the Flathead Valley and prevent new introductions.

FISHERIES MANAGEMENT DIRECTION FOR FLATHEAD RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Flathead River - Headwaters downstream to confluence with Flathead Lake including the North and Middle Forks, and Sloughs	198 miles	Bull trout (N)	Wild	Conservation	Continue yearlong angling closures for all fish on primary bull trout spawning streams and closure on angling for bull trout in the Flathead River and Forks.
		Westslope cutthroat trout (N)	Wild	Conservation	Eliminate harvest and maintain or expand populations for conservation and catch and release westslope cutthroat angling. Consider isolation of westslope cutthroat populations if hybridization is a threat and habitat is sufficient to allow persistence.
		Mountain whitefish (N)	Wild	General	Maintain numbers. Begin to understand population size and trend.
		Lake whitefish, Northern pike, Yellow perch, Lake trout, Brook trout, Rainbow trout, Black crappie	Wild	General/ Suppression	Provide angling harvest opportunity to reduce numbers to help meet native species goals. Investigate removal of rainbow-cutthroat trout hybrids and rainbow trout to reduce future hybridization.
Habitat needs and activities: Restore habitat to favor native bull trout, WCT and mountain whitefish in headwater stream reaches.					
Stillwater River, Ashley Creek and Tributaries, Whitefish River	75 miles, 47 miles plus Tributaries, 23 miles	Bull trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout.

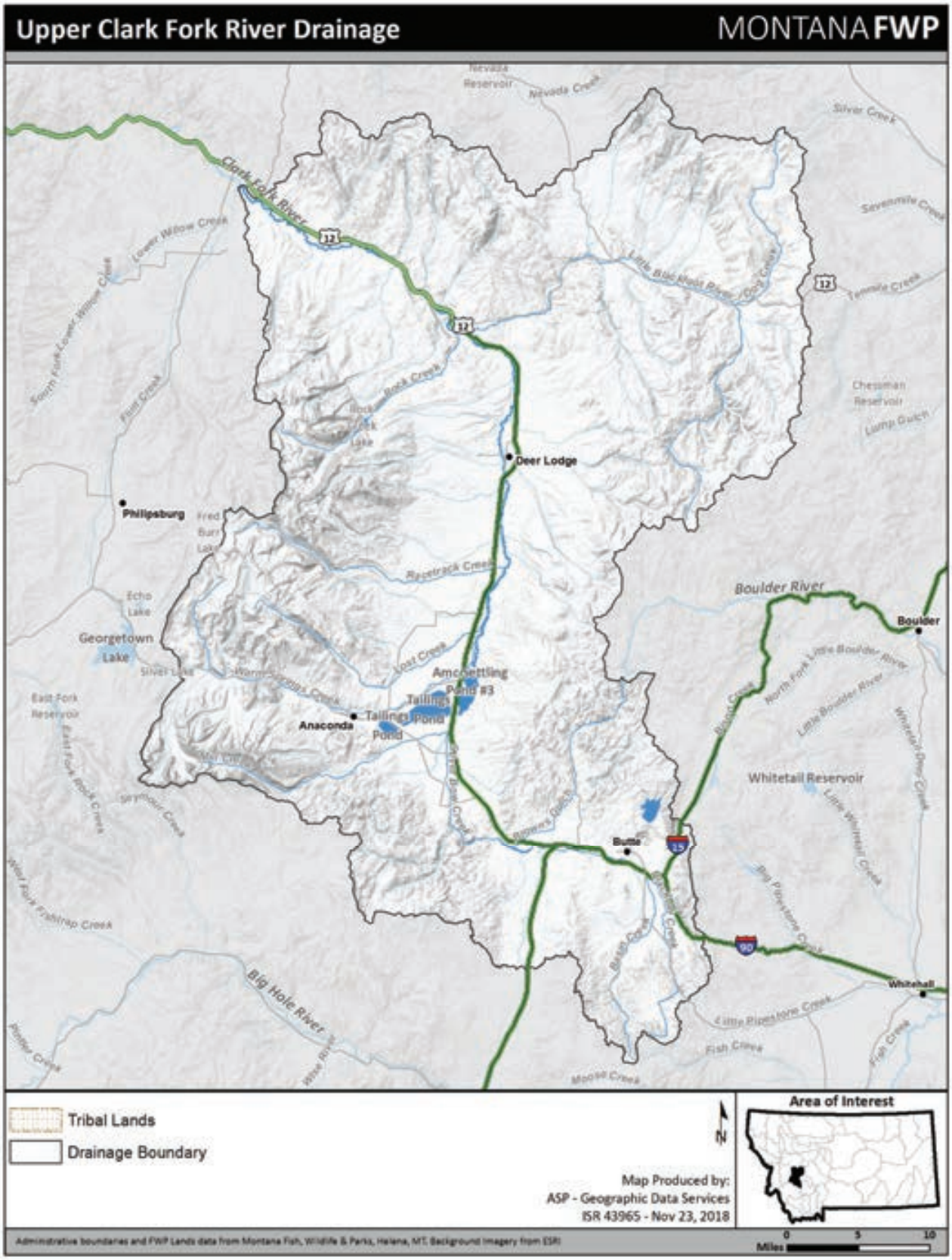
Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Westslope cutthroat trout (N)	Wild	Conservation/ General	Maintain or expand populations of westslope cutthroat trout. Consider isolation of populations if hybridization is a threat and habitat is sufficient to allow persistence. Provide angling opportunity including harvest for westslope cutthroat trout where possible.
		Rainbow trout, Brook trout, Northern pike	Wild	General	Maintain current levels of angling harvest
		Mountain whitefish (N)	Wild	General	Maintain numbers. Begin to understand population size and trend.
Habitat needs and activities: Continue to manage connectivity to favor native fishes.					
Whitefish Lake, Tally Lake, Upper Stillwater Lake, Lower Stillwater Lake	3,315 acres, 1,211 acres, 592 acres, 252 acres	Bull trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout.
		Westslope cutthroat trout	Wild	General	Maintain or expand populations of westslope cutthroat trout. Consider isolation of populations if hybridization is a threat and habitat is sufficient to allow persistence. Provide angling opportunity including harvest for westslope cutthroat trout where possible.
		Lake trout, Northern pike, Yellow perch, Rainbow trout, Lake whitefish	Wild	General/ Restrictive Regulations	Provide angling harvest opportunity.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Little Bitterroot Lake, Ashley Lake	2,970 acres 2,850 acres	Kokanee salmon	Wild	General/ Liberal Regulations	Evaluate harvest limits to increase the average size at harvest without noticeably reducing catch rates in Ashley Lake. Maintain Little Bitterroot Lake as a back up brood stock.
		Rainbow trout, Rainbow x cutthroat trout hybrid, Westslope cutthroat trout (N)	Hatchery/ Wild	Put, Grow and Take/ Quality	Evaluate stocking and/or harvest limits to produce trophy size fish and improved angler catch rates. Continue stocking triploid Gerrard rainbow trout in Little Bitterroot Lake to produce a trophy fishery. Continue hybrid trout hatchery on Ashley Lake to increase abundance.
		Yellow perch	Wild	General	Provide angling harvest opportunity
Echo Lake, Lake Blaine	695 acres, 382 acres	Kokanee salmon	Hatchery/ Wild	Put, Grow and Take	Evaluate stocking and/or harvest limits to optimize angler catch rate.
		Rainbow trout	Hatchery	Put, Grow and Take	Evaluate stocking and/or harvest limits to optimize angler catch rate and assess stocking success.
		Largemouth bass	Hatchery	Restrictive Regulations	Provide angling harvest opportunity. Maintain bass regulations on Echo Lake to protect spawning fish and an abundant bass population.
		Yellow perch, Northern pike	Wild	General	Provide angling harvest opportunity
Small valley floor lakes Continue next page	Each less than 350 acres	Largemouth bass, Yellow perch, Northern pike	Wild	General	Provide angling harvest opportunity.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Westslope cutthroat trout (N), Rainbow trout, Brook trout, Arctic grayling	Hatchery/Wild	General/ Put, Grow and Take	Evaluate stocking and/or harvest limits to optimize angler catch rate.
Small mountain lakes	Each less than 350 acres	Westslope cutthroat trout (N), Rainbow trout, Brook trout, Arctic grayling	Hatchery/ Wild	Put, Grow and Take/ General	Stock at a basic rate of 100 westslope cutthroat fingerlings every 3 years. Adjust stocking rates based on natural reproduction and fishing pressure to provide a range of fish sizes and catch rates. Replace non-native fish with westslope cutthroat when they threaten downstream native fish populations. Leave some lakes intentionally fishless.
Family Fishing Ponds - Pine Grove, Shady Lane, Dry Bridge, Buffalohead	Each less than 5 acres	Westslope cutthroat trout (N), Rainbow trout	Hatchery	Put and Take/ Family Fishing Water	Provide angling harvest opportunity for youths and fishing opportunities for families emphasizing high catch rates and safe, convenient access to urban areas.
Flathead Lake	123,000 acres	Bull trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout.
		Westslope cutthroat trout (N)	Wild	Conservation	Eliminate harvest and maintain or expand populations for conservation and catch and release cutthroat angling.
		Lake whitefish, Northern pike, Yellow perch, Lake trout, Rainbow trout	Wild	General/ Suppression	Provide angling harvest opportunity to reduce numbers to help meet native species goals. Coordinate with CSKT on lake management.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Lake Mary Ronan, Hubbart Reservoir	1,513 acres, 480 acres	Westslope cutthroat trout (N), Rainbow trout	Hatchery	Put, Grow and Take	Evaluate stocking and/or harvest limits to improve angler catch rate.
		Kokanee salmon	Hatchery	Put, Grow and Take/ Restrictive Regulations	Evaluate stocking and/or harvest limits to optimize size of fish and angler catch rate. Maintain wild brood population in Lake Mary Ronan to provide kokanee for MT waters.
		Yellow perch	Wild	General	Provide angling harvest opportunity and reduce impacts on other game fish.


Upper Clark Fork River Drainage
MONTANA FWP
Clark Fork River
Deer Lodge
Philipsburg
Georgetown Lake
Anaconda
Tailings Pond
Amc Settling Pond #3
Butte
Boulder
Boulder River
Whitetail Reservoir
Whitehall
Big Hole River
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background imagery from ESRI
Miles

UPPER CLARK FORK RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Upper Clark Fork River drainage lies near the heart of western Montana and extends from its headwaters near Butte downstream to the mouth of Flint Creek. The drainage includes the uppermost segment of the Clark Fork River and its tributaries, including Silver Bow Creek, Warm Springs Creek, and the Little Blackfoot River. The Clark Fork River begins at the junction of Silver Bow and Warm Springs Creeks, near the small community of Warm Springs. From its headwaters, the river flows northwesterly for approximately 70 miles through Deer Lodge, Powell, and Granite Counties. The Upper Clark Fork is bordered throughout much of its length by the Garnet Mountains to the north and east and the Flint Range to the south and west. The first 40 miles of the river meander through the flat plains of the Deer Lodge Valley where agriculture is the primary land use. Downstream from the mouth of the Little Blackfoot River, the Upper Clark Fork enters a narrow canyon. In this area the river channel has also been shortened by highway and railroad construction activities. However, downstream of Jens the river moves away from the transportation corridor and begins to meander downstream to its confluence with Flint Creek.

There are 76 lakes and reservoirs in the drainage, totaling 4,468 surface acres. Most natural lakes are mountain lakes in the Anaconda-Pintler and Flint Mountain Ranges. These lakes range in size from less than an acre to over 75 acres. A number of these lakes have been fitted with dams to increase storage capacity for downstream agricultural and industrial water users. The largest reservoirs in the drainage are the Warm Spring Settling Ponds, which are located near the beginning of the Clark Fork River, and Silver Lake, which is located at the head of the Warm Springs Creek drainage not far from the community of Anaconda.

FISHERIES MANAGEMENT

Located in the west-central part of the state, the Upper Clark Fork has a long history of mining related impacts that have negatively affected the fishery and aquatic resources along much of the river. This has led to the stream being one of the more underutilized rivers in western Montana. However, ongoing environmental cleanup by the State and the U.S. Environmental Protection Agency, as well as a diversity of recreational opportunities, has contributed to an increase in the Upper Clark Fork's popularity in recent years.

The Upper Clark Fork River is managed as a wild trout fishery, emphasizing natural reproduction. The basin is also the focus of native fish recovery efforts, particularly in the Little Blackfoot, Warm Springs and Silver Bow drainages. The Upper Clark Fork is home to eleven native fish species including bull trout, westslope cutthroat trout, mountain whitefish, longnose and largescale sucker, northern pike minnow, peamouth, longnose dace, redside shiner, Columbia slimy sculpin, and Rocky Mountain sculpin. Nonnative fish species with widespread distribution in the Upper Clark Fork include brown trout, rainbow trout, and brook trout. Nonnative lake trout and kokanee salmon can also be found in Silver Lake and Georgetown lakes, respectively. Dominant fish species vary from westslope cutthroat and brook trout in the

headwaters, to brown trout in the Clark Fork River and the lower reaches of valley-bottom tributary streams.

Bull trout are very rare in the mainstem of the Upper Clark Fork River above Flint Creek. The species is primarily isolated in the Warm Springs Creek drainage near Anaconda. Bull trout historically occurred in other drainages such as the Little Blackfoot and Racetrack Creek, but fish are rare to absent in these areas at present. Most of the populations in the Warm Springs Creek drainage appear to be genetically isolated from these other drainages, with little intermixing occurring. Fluvial (river dwelling) forms are rare. Adfluvial (lake dwelling) forms exist in Silver and Twin Lakes. Resident forms exist in most of the larger tributaries upstream of Anaconda including Barker, Foster, Twin Lakes, and Storm Lake Creeks.

Westslope cutthroat trout are present in many of the tributary streams in the Upper Clark Fork. Angling restrictions and habitat improvements in the Little Blackfoot and Silver Bow drainages have sought to improve westslope cutthroat numbers in these areas in particular. Many of the cutthroat populations in the Upper Clark Fork show little to no hybridization with introduced rainbow trout. Additionally, fluvial forms still remain in a number of locations. While westslope cutthroat trout are relatively uncommon in the mainstem of the Upper Clark Fork River, the species does provide a unique fishing opportunity in a river largely dominated by brown trout. Information is lacking on the abundance and life histories of mountain whitefish and non-game native fishes. Efforts are needed to describe these and monitor trends.

Angling in the Upper Clark Fork River occurs year-round and is most popular in the early spring, summer and fall. Opportunities exist for both wade and float angling and while fly-fishing is particularly popular, use of artificial lures and bait fishing are also common.

Lowland ponds and reservoirs provide valuable recreational fisheries. The Warm Springs and Job Corp Ponds are stocked primarily with rainbow trout, but westslope cutthroat trout and brown trout are also planted into some waters. Warm Springs Pond #3 is a popular location where anglers go to pursue trophy-sized trout. Racetrack Pond, Skyline Pond, and the Kids Pond at the Warm Springs Wildlife Management Area are stocked with rainbow and/or westslope cutthroat trout and have special fishing regulations that seek to provide quality angling opportunities for youth anglers.

Several high mountain lakes are stocked with westslope cutthroat trout. Lakes currently planted on a regular basis include Alpine, Alibicaulis, Little Racetrack, and Upper and Lower Barker Lakes. Other lakes are planted on a more irregular basis depending on need, while other lakes are kept fishless to help conserve amphibian populations.

HABITAT

The Upper Clark Fork Basin has a long history of human disturbance beginning in earnest in the mid-1800s when placer mining for gold began on many basin streams. By 1896, copper had become the target metal and mining and smelting operations near the town of Butte, located near the headwaters of the Clark Fork, were processing thousands of tons of copper ore per day. Mining and smelting activities in the Butte and Anaconda areas continued into the early 1980s, and while some mining activity persists near Butte to this day, most of the operations have now been completely shut down and abandoned. Nevertheless, the environmental consequences of

over 100 years of large scale mining activity in the Upper Clark Fork Basin have left their mark. Enormous amounts of fine material, mostly mine tailings, were released into the drainage, and were transported and deposited downstream. These tailings, containing heavy metals, proved toxic to aquatic life and negatively altered the aquatic biological community of the upper river.

For years, the Upper Clark Fork River was considered void of fish. It wasn't until efforts were made to retain and prevent the downstream movement of some portion of the toxic tailings in the Warm Springs Treatment Pond System that water quality improved to a level where trout could begin to re-colonize the lower sections of the river, upstream of Missoula. However, by that time, most of the trout in the river were nonnative species, including rainbow and brown trout. Brown trout have been shown to have a higher tolerance to metals and degraded habitat conditions than other trout species, and it is likely because of this that the species dominates the current trout community in much of the Upper Clark Fork River. While trout are common in the upper river today, past research has shown that trout populations are only one fifth of what would be expected without contamination from mining wastes.

The Clark Fork River from its headwaters to the former Milltown Dam site was designated a Superfund Priority Site in 1986. While cleanup activities have been underway for a number of years on Silver Bow Creek near Butte as well as at Milltown Dam near Missoula, active remediation is only just beginning on the mainstem Clark Fork River. Cleanup of metals-contaminated soils along the Upper Clark Fork River is expected to improve water quality and allow for more tolerable conditions for fish and other aquatic life.

Other factors that affect habitat quality in the Upper Clark Fork include mid-summer dewatering. Irrigation withdrawal can have severe impacts on summer stream flows in the river upstream of Deer Lodge, especially during drought years. Low flows increase water temperatures to levels not suitable for trout, and extensive algae and aquatic plant growth impact dissolved oxygen levels along much of the river.

Fishing Access

In the Upper Clark Fork above Flint Creek, there are relatively few FWP-owned or managed fishing access sites. Designated fishing access sites are located at Kohrs Bend upstream of Garrison, as well as on the lower Little Blackfoot River. There are additional public properties that serve as river and stream access, but these lands are not specifically managed for fishing access. Examples are MDT and county bridge crossings, DNRC and USFS ownership.

Regulations prohibit float fishing in the segment of the Clark Fork River from its beginning to the Perkins Lane Bridge, a distance of approximately three miles.

Special Management Issues

In recent years, recreational use of the Upper Clark Fork River has increased steadily. This is likely due to significant press related to ongoing and future efforts to restore the river's health from the devastating effects of mining contaminants on the river for more than a century. While much of the work still needs to be accomplished, the desire for a clean river to recreate on is apparent. Planning efforts by the Department of Justice (Natural Resource Damage Program), FWP, and others are underway to hopefully address the need for additional fishing access sites in the Upper Clark Fork.

FISHERIES MANAGEMENT DIRECTION FOR UPPER CLARK FORK RIVER DRAINAGE

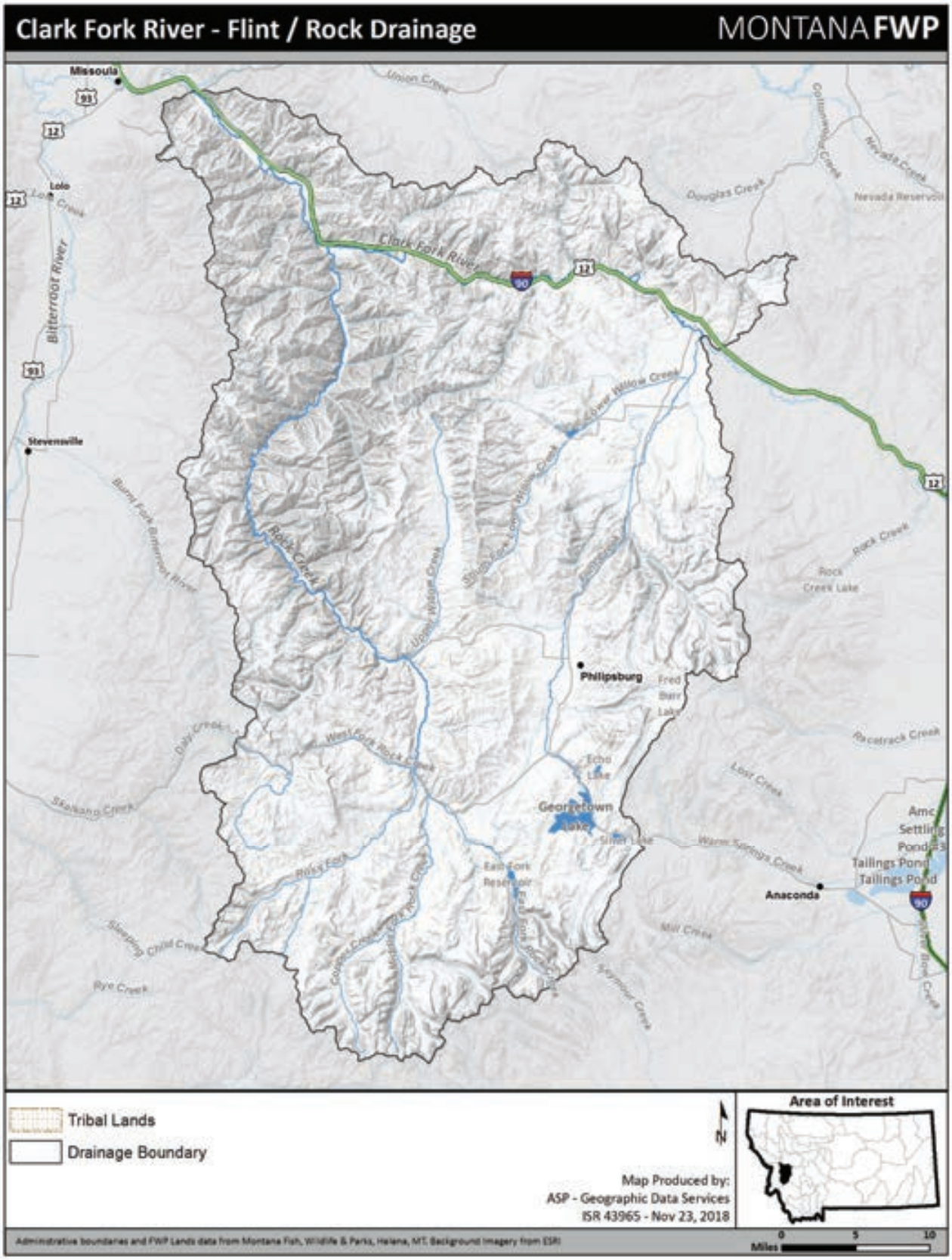
Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Silver Bow Creek and Tributaries	25 miles mainstem plus tributaries	Westslope cutthroat trout (N)	Wild	Conservation	Eliminate harvest and enhance fluvial populations for conservation and catch-and-release angling. Promote connectivity among tributary populations.
		Brook trout, Rainbow trout, Brown trout	Wild	General	Manage for the recovery of westslope cutthroat trout by continuing to allow liberal harvest of nonnative trout. Consider other options to reduce nonnative trout numbers if options are practical and would increase native trout density.
Habitat needs and activities: Clean up of mining contamination throughout reach. Increase instream flow and enhance habitat to support ecosystem function and production of native trout. Improve water quality of Butte Metro Sewage Treatment Plant discharge. Maintain a barrier on the mainstem (just below German Gulch) to prevent colonization of brown trout and rainbow trout and allow for a westslope cutthroat trout fishery to develop.					
Warm Springs Creek and Tributaries	30 miles mainstem plus tributaries	Bull trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout. Enhance migratory and resident populations for conservation.
		Westslope cutthroat trout (N)	Wild	Conservation	Preserve existing genetics in currently isolated resident populations. Improve migratory populations for angling and conservation.
		Brown trout, Brook trout, Rainbow trout	Wild	General	Manage for harvest opportunity and reduce numbers to lessen competition, hybridization with, and predation on native trout. Above Meyers Dam, consider other options to reduce numbers if options would increase native trout density and cutthroat angling opportunity.
Habitat needs and activities: Clean up of mining contamination downstream of Anaconda. Secure instream flow and enhance habitat to support ecosystem function and production of trout and whitefish. Manage connectivity to favor native trout, particularly bull trout.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Silver Lake	300 acres	Bull trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout. Enhance adfluvial population for conservation.
		Westslope cutthroat trout (N)	Wild	Conservation	Enhance population for conservation and to provide angling opportunity.
		Rainbow trout, Brook trout, Lake trout	Wild	General	Allow liberal harvest to reduce competition and hybridization with, and predation on native trout. Consider other options to reduce numbers if options would increase native trout density and cutthroat angling opportunity.
Habitat needs and activities: Better public access needed. Manage connectivity with Storm Lake Creek to favor adfluvial bull trout moving upstream to spawn. Pursue leasing or purchasing stored water to supplement Warm Springs Creek and the Clark Fork River.					
Clark Fork River Headwaters Downstream to Confluence with Flint Creek.	70 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout. Enhance migratory populations for conservation. Enhance catch-and-release westslope cutthroat trout fishery.
		Brown trout, Rainbow trout, Brook trout	Wild	Quality/ Restrictive Regulations	Manage harvest to support quality angling opportunity. Ensure adequate connectivity with important spawning tributaries to provide for natural recruitment.
Habitat needs and activities: Clean up mining contamination throughout reach. Enhance instream flow. Enhance connectivity with tributaries where appropriate. Protect and improve habitat quality in spawning and rearing areas to enhance natural recruitment of wild and native trout and whitefish.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Warm Springs and Job Corps Ponds	897 acres	Rainbow trout, Brown trout, Westslope cutthroat trout (species not present in all ponds)	Hatchery	Quality	Restrict trout harvest and manage stocking densities to promote quality catch-and-release angling opportunity for large trout.
Habitat needs and activities: Improve water quality of ponds. Slow eutrophication process by improving water quality of Butte Metro Sewage Treatment Plant discharge. Understand the effects of stored contaminants on the biota in and downstream of the Warm Springs Ponds.					
Racetrack Pond, Kids Pond at Warm Springs Wildlife Management Area, Gravel Pit Pond adjacent to Highway 48, Skyline Pond	45 acres	Rainbow trout, Westslope cutthroat trout	Hatchery	Family Fishing Water	Encourage youth angling through special regulations (Racetrack Pond and Warm Springs WMA Kids Pond), or special fishing day events (Gravel Pit Pond). Manage stocking densities and trout harvest to promote quality angling opportunity for stocked trout.
Little Blackfoot River and Tributaries	50 miles mainstem plus tributaries	Westslope cutthroat trout (N)	Wild	Conservation	Eliminate harvest and conserve and enhance migratory and resident populations for conservation and catch-and-release angling. Consider isolation of local populations only if hybridization or competition is a threat and habitat and fish numbers are sufficient to allow persistence.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Brown trout, Brook trout, Rainbow trout	Wild	General	Manage for harvest opportunity and reduce numbers to lessen competition and hybridization with, and predation on native trout, particularly above Elliston where westslope cutthroat trout are abundant. Consider other options to reduce numbers if they would increase native trout density and angling opportunity.
Habitat needs and activities: Protect and improve habitat to support ecosystem function and natural production of native trout and whitefish. Manage connectivity to favor native trout.					
Tributaries to Upper Clark Fork River Above Confluence with Flint Creek, Other Than Those Specifically Listed	---	Westslope cutthroat trout (N)	Wild	Conservation	Enhance populations for conservation and recruitment to the Clark Fork River sport fishery. Maintain currently isolated (or consider isolating) populations only if hybridization or competition is a threat and habitat is sufficient to allow persistence. Preserve connectivity with streams currently connected to allow for maintenance of migratory life histories. Monitor these populations closely for hybridization and/or competition threats.
		Brown trout, Rainbow trout, Brook trout	Wild	General	In streams with westslope cutthroat trout, continue to allow liberal harvest to reduce competition, hybridization and predation. Consider other options to reduce numbers if options and would increase native trout numbers and angling opportunity. Where native species concerns are not present, enhance migratory populations to improve recruitment to recreational fishery in the Clark Fork River.
Habitat needs and activities: Protect and improve habitat to support ecosystem function and natural production of trout. Manage connectivity to favor native trout.					


Clark Fork River - Flint / Rock Drainage
MONTANA FWP
Missoula
Lolo
Stevensville
Philipsburg
Anaconda
Georgetown Lake
Clark Fork River
Bitterroot River
Rock Creek
Rock Creek Lake
Tailings Pond
Tailings Pond
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background imagery from ESRI
0
5
10
Miles

CLARK FORK RIVER FLINT/ROCK DRAINAGE

GENERAL DESCRIPTION

The Clark Fork Flint/Rock Creek drainage includes three distinct sub-drainages: Flint Creek, Rock Creek, and the section of the Clark Fork River from its confluence with Flint Creek to its confluence with the Blackfoot River. At the mouth of Flint Creek near the town of Drummond, the Clark Fork flows through a wide valley with the surrounding lands used primarily for agriculture. A few miles downstream, the Clark Fork Valley narrows and the river, in this reach, is confined by Interstate I-90 and the railroad. Below the mouth of Rock Creek near the town of Clinton, the Clark Fork Valley widens again, allowing the river to flow more freely with less impact from transportation corridors, until it reaches the mouth of the Blackfoot River.

Flint and Rock Creeks are major tributaries to the Clark Fork River. Flint Creek enters the Clark Fork River near the town of Drummond. Flint Creek Dam impounds North Fork Flint Creek and forms Georgetown Lake, a hydropower reservoir, about 9 miles south of Philipsburg. Below Flint Creek Dam, the creek flows through agricultural lands used primarily for cattle and hay production. Water diverted from Flint Creek is a major source of water used for irrigation in the drainage. Rock Creek enters the Clark Fork River approximately 5 river miles upstream of Clinton and 34 river miles downstream of Drummond.

The headwaters of Rock Creek begin at the Continental Divide with mainstem Rock Creek beginning at the confluence of three major tributaries: Middle Fork Rock Creek, Ross Fork Rock Creek and West Fork Rock Creek. From its headwaters, Rock Creek flows approximately 52 river miles to its confluence with the Clark Fork River. The USFS is the primary land owner in the drainage, although significant portions of the valley bottom is owned by private landowners in the upper and lower reaches of the drainage.

There are 46 natural lakes and reservoirs, totaling 4,468 surface acres, in the Flint-Rock drainage including many mountain lakes. The largest flat-water body is Georgetown Lake which impounds North Fork Flint Creek and is approximately 2,080 surface acres. East Fork Reservoir is the next largest flat-water body and impounds East Fork Rock Creek. The reservoir serves as storage for irrigators in the Flint Creek Valley. A majority of the water stored in reservoir is diverted into the Flint Creek Canal just below the reservoir and delivered to irrigators in the Flint Creek Valley via a trans-basin diversion into Trout Creek, a tributary of Flint Creek. This water is used by irrigators throughout the Flint Creek Valley, but most of the water users are in the lower Flint Creek drainage and gain access to the water via the Allendale diversion and ditch.

Mountain lakes can be found throughout the Rock Creek drainage, but the majority are found in the headwaters of the drainage, including several in the Anaconda Pintler Wilderness. The Flint Creek drainage also has many mountain lakes with the highest density being in the Flint Mountain Range.

FISHERIES MANAGEMENT

Clark Fork River

The portion of the Clark Fork River in the Flint-Rock Creek drainage has a long history of mining- related impacts associated with mining and smelting operations in the Butte and Anaconda area. These operations negatively impacted the river's fishery resources and have led to this river being one of the more underused rivers in western Montana.

The Clark Fork River is managed as a wild trout fishery, emphasizing natural reproduction. The Upper Clark Fork is home to eleven native fish species including bull trout, westslope cutthroat trout, mountain whitefish, longnose and largescale sucker, Northern pikeminnow, peamouth, longnose dace, redside shiner, Columbia slimy sculpin, and Rocky Mountain sculpin. Nonnative fish species inhabiting the Upper Clark Fork include brown trout, rainbow trout, and brook trout. Brown trout are the primary recreational fish in the Clark Fork River downstream of Flint Creek, although westslope cutthroat trout and rainbow trout are also common. Information is lacking on the abundance and life histories of mountain whitefish and non-game native fishes. Efforts are needed to describe these species and monitor their trends.

Bull trout and westslope cutthroat trout are at low densities in the mainstem of the Clark Fork River downstream of Flint Creek. Spawning and rearing streams for Bull Trout include Harvey Creek, Boulder Creek, and Rock Creek and its tributaries. Westslope cutthroat trout are found in several tributaries to this section of the Clark Fork. Densities of cutthroat are lower in the mainstem reach from Flint Creek to Bearmouth than downstream of Bearmouth.

Many westslope cutthroat trout populations are found in tributaries to the Clark Fork River below Flint Creek. Some of these tributaries are physically and biologically connected to the mainstem and help with maintaining the fluvial population in the river. Other tributaries have barriers and block the return of adults to their natal streams. However, these barriers do protect the tributary populations from introgression with rainbow trout and rainbow/westslope cutthroat trout hybrids and prevent colonization by nonnative species.

Angling occurs year-round on the Clark Fork River but is most popular in the early spring, summer and fall. Opportunities exist for both wade and float angling and while fly-fishing is the most popular form of use, artificial lures and bait fishing are also common. Beavertail Pond provides a flat-water fishing opportunity and attracts a significant amount of angling pressure. Beavertail pond is managed as a put-and-take trout fishery for kids and family fishing.

Flint Creek

Flint Creek is a major tributary to the Clark Fork River that serves as an important recreational fishery. The fishing pressure is not as high in Flint Creek as other near-by important recreational fisheries in the area including Rock Creek, Georgetown Lake and the Clark Fork River. Poor public access along much of Flint Creek is one reason for the low fishing pressure.

Flint Creek is managed as a wild trout fishery, emphasizing natural reproduction. Brown trout are the most abundant salmonid and are the primary recreational fish. Native westslope cutthroat

and bull trout are present in the drainage, however bull trout are only found in the Boulder Creek drainage and mainstem Flint Creek. Westslope cutthroat trout are found in the mainstem and in many tributaries of Flint Creek. Several westslope cutthroat trout populations in the drainage are protected from hybridization with rainbow trout by fish passage barriers. The largest genetically-pure population is in the Lower Willow Creek drainage, above Lower Willow Creek Dam. Other native fish species found in the Flint Creek Drainage include mountain whitefish, largescale and longnose Suckers, Northern pikeminnow, longnose dace, redside shiner, and sculpin. Nonnative fish species present in the drainage include brown, rainbow, and brook trout. Information is lacking on the abundance and life histories of mountain whitefish and non-game native fishes. Efforts are needed to describe these species and monitor their trends.

Georgetown Lake is the largest flat-water body in this drainage and is one of the most popular trout fisheries in the state. It is managed as a put-and-grow fishery for rainbow and brook trout and as a wild kokanee salmon fishery. Georgetown Lake routinely ranks in the top 10 in Montana for angling pressure and is equally as important as both a summer and winter ice fishing destination. Hydropower, irrigation and flood control are other uses of Georgetown Lake that influence water management in this system.

Other lakes stocked in the Flint Creek drainage include Lower Boulder Lake, Stewart Lake and Echo Lake. Both Stewart and Echo Lakes can be accessed by road while Lower Boulder is a back-country lake. Many other high mountain lakes in the Flint Creek drainage provide fisheries but are sustained by natural reproduction. Several other lakes in the drainage are fishless and will likely be managed as fishless in the future to provide habitat to conserve other native populations (e.g., amphibians).

Rock Creek

Rock Creek is one of twelve renowned “Blue Ribbon” rivers in Montana and is one of the state’s most popular rivers for recreation. The river’s exceptional fish populations and abundant public land (allowing for excellent public access), combined with its proximity to Missoula, contribute to its popularity.

Rock Creek is managed as a wild trout fishery, emphasizing natural reproduction and is also a stronghold for native bull trout and westslope cutthroat trout. Other native fish species found in the drainage include mountain whitefish, largescale and longnose suckers, Northern pikeminnow, longnose dace, and sculpin. Nonnative fish species present in the drainage include brown trout, rainbow trout, brook trout, and Arctic grayling. Brown trout provide a majority of the sport fishery in the Rock Creek drainage, although westslope cutthroat trout are abundant in the upper mainstem and also provide an excellent fishery. Rainbow trout once provided a majority of the recreational fishery throughout the drainage until whirling disease became prevalent and their numbers decreased in the early 1990s. Rainbow trout are still abundant in the lower portion of the drainage and provide a significant recreational fishery, although densities are much lower now than was observed before whirling disease. The decline in rainbow trout densities is more pronounced in the upper drainage where they now make up only a small portion of the fishery. Brown trout have increased throughout the mainstem and replaced rainbow trout as the most abundant salmonid. Information is lacking on the abundance and life histories of

mountain whitefish and non-game native fishes. Efforts are needed to describe these species and monitor their trends.

Bull trout are found throughout mainstem Rock Creek and comprise a large meta-population with fish moving throughout the drainage to complete their life history. This population also contributes bull trout to the Clark Fork River. Spawning and rearing tributaries are found throughout the drainage with most of the stronger populations located closer to the headwaters.

The largest bull trout population in the drainage is found in East Fork Reservoir. This population is an adfluvial (lake dwelling) population that uses East Fork Rock Creek for spawning and rearing and juveniles eventually out-migrate to the reservoir where they reside as sub-adults and adults. A large amount of spawning also occurs annually in a portion of East Fork Rock Creek routinely inundated by stored water from East Fork Reservoir. This spawning may be a consequence of East Fork Rock Creek being intermittent approximately a half mile above the reservoir, eliminating upstream passage during summer low flow periods. Recruitment has been documented in the spring channel adjacent to the main East Fork Rock Creek channel in this reservoir inundation zone with age 0 bull trout being observed in back waters in May 2016. It is suspected that recruitment is also occurring in the main East Fork Rock Creek channel since reservoir inundation conditions are similar to the spring channel. While recruitment has been documented, the amount of recruitment to the East Fork Reservoir fishery is still unknown. Spawning also occurs in the East Fork Rock Creek above the intermittent reach and appears to provide a substantial amount of recruitment to East Fork Reservoir.

Westslope cutthroat trout are also found throughout the Rock Creek drainage, and similar to bull trout, are a meta-population with fish moving throughout the drainage and Clark Fork to complete their life history. Spawning and rearing tributaries are found throughout the drainage.

Most tributaries in the Rock Creek drainage that maintain enough stream flow for fish to spawn and rear also sustain a westslope cutthroat trout population. Fluvial westslope cutthroat trout are found throughout the mainstem and are most abundant in the upper portion of the drainage. Rock Creek above Windlass Bridge consistently maintains high enough densities to provide an excellent recreational fishery. Westslope cutthroat trout populations in the Rock Creek drainage are well connected with very few tributaries having fish passage barriers. While this connectivity allows for gene flow between populations, very few westslope cutthroat trout populations in the drainage are protected from colonization by introduced trout and hybridization.

Angling occurs year-round and is most popular in the spring, summer and fall. Opportunities exist for both wade and float angling, although float fishing is only allowed on Rock Creek from December 1 through June 30. This regulation was put into place to allow for floating during high flows when multiple stonefly hatches are occurring but protects wade anglers from disturbance by float anglers during low flows when most locations on Rock Creek are accessible via wading.

Fly fishing is the most popular form of fishing on Rock Creek, although other artificial lures are also common. Bait fishing on Rock Creek is only allowed for anglers 14 years of age and younger.

Of the lakes and reservoirs in the Rock Creek drainage, East Fork Reservoir receives the most angling pressure. East Fork Reservoir provides a quality put-and-grow fishery for large westslope cutthroat trout as well as a few large, wild rainbow trout. A westslope cutthroat trout stocking program was initiated for this reservoir in 2004 and has been quite successful in establishing a popular recreational fishery. Other mountain lakes in this drainage provide westslope cutthroat trout fisheries, although Fuse Lake does provide a self-sustaining Arctic grayling population.

Several other lakes are stocked with fish in the Rock Creek drainage including Green Canyon Lake, Whetstone Lake and Moose Lake. Moose Lake can be accessed by road while both Green Canyon and Whetstone Lakes are back-country lakes. Many other high mountain lakes in the Rock Creek drainage provide fisheries but are sustained by natural reproduction. Several other lakes in the drainage are fishless and will likely be managed as fishless in the future to promote conservation of native aquatic communities.

HABITAT

Clark Fork River

The Upper Clark Fork Basin has a long history of human disturbance beginning in earnest in the mid-1800s when placer mining for gold began on many basin streams. By 1896, copper had become the target metal, and mining and smelting operations near the town of Butte were processing thousands of tons of copper ore per day. Mining and smelting activities in the Butte and Anaconda areas continued into the early 1980s, and while some mining activity persists near Butte to this day, most of the operations have now been shut down and abandoned. Nevertheless, the environmental consequences of over 100 years of large scale mining activity in the Upper Clark Fork Basin have left their mark. Enormous amounts of fine material, mostly mine tailings, were released into the drainage, and were transported and deposited downstream throughout the river system. These tailings proved toxic to aquatic life and negatively altered the aquatic biological community of the upper river.

For years, the Upper Clark Fork River was considered void of fish. It wasn't until efforts were made (beginning in 1911 and later in the 1990s) to retain and stop downstream movement of a portion of the toxic tailings in the Warm Springs Treatment Pond System, that water quality improved to a level where trout could begin to re-colonize the river upstream of Missoula. By then, most of the trout in the river were rainbow and brown trout. Brown trout have been shown to have a higher tolerance to metals and degraded habitat conditions than other trout species and is likely the reason the species dominates the current trout community in much of the Upper Clark Fork River. While trout are common in the upper river today, past research has shown that trout populations are only one fifth of what would be expected without contamination from mining wastes.

The Clark Fork River from its headwaters to the former Milltown Dam site was designated a Superfund Priority site in 1986. While cleanup activities are complete on Silver Bow Creek near Butte as well as at Milltown Dam near Missoula, active remediation is only been underway for a few years on the mainstem Clark Fork River. Cleanup of metals contaminated soils along the Upper Clark Fork River is expected to improve water quality and allow for more tolerable

conditions for fish and other aquatic life. The reach of the Clark Fork downstream of Rock Creek has better water quality because of the addition of water from Rock Creek.

Other factors that affect habitat quality in the Upper Clark Fork include mid-summer dewatering. Irrigation withdrawal can have severe impacts on summer stream flows in the river upstream of Deer Lodge, especially during drought years. These factors likely affect habitat conditions in the Clark Fork River below Flint Creek through the cumulative impacts of high water temperatures and poor water quality. Surprisingly, trout densities are lower in the reach from Flint Creek to the mouth of Rock Creek than are observed in the reaches above and below. The factors that limit the fish populations in the reach are unclear although preliminary findings from a researcher at The University of Montana suggest that algae mats (*Cladophora spp.*) in this reach may be limiting biological productivity and thus reducing trout densities (M. Valet, pers. comm.). Extensive channelization from the development of I-90 and two railroads has significantly reduced sinuosity and extensively altered natural alluvial processes in this reach. These activities have significantly changed the fish habitat in this reach and may potentially impact fish populations. Trout densities do improve substantially again below the mouth of Rock Creek.

Flint Creek

Agriculture and mining have a played a significant role in the history of the Flint Creek Valley. Currently, the majority of land use in the Flint Creek drainage is agriculture with a focus on cattle and hay production. Flint Creek below the Allendale diversion is significantly dewatered during irrigation season which is likely the primary limiting factor for fish populations in the reach, particularly during drought years. Dewatering does not appear to be a major factor on Flint Creek above the Allendale diversion due to abundant water being delivered from East Fork Rock Creek into the Flint Creek drainage. Fish entrainment into diversion ditches also occurs throughout the drainage which also impacts fish populations in most reaches of Flint Creek. A recent pit tag study completed by FWP on Allendale diversion indicates that over 50% of the trout moving that attempt to migrate downstream of Allendale diversion are entrained into the ditch. A fish screen is currently being designed in cooperation with several partners for Allendale diversion.

Other impacts of agriculture on Flint Creek include riparian grazing that reduces woody riparian vegetation and decreases channel stability. Mining has also significantly impacted fish habitat conditions in the Flint Creek Valley with several tributaries displaying mining-related habitat degradation including South Fork Lower Willow Creek, Douglas Creek (near Hall), Henderson Creek, Douglas Creek (near Philipsburg), Fred Burr Creek and North Fork Flint Creek.

Habitat conditions in Georgetown Lake are also a significant concern in the Flint Creek drainage. Georgetown Lake is a shallow, productive reservoir which allows it to produce excellent rainbow trout, brook trout and kokanee salmon fisheries. However, these factors also create conditions that can be detrimental to these fisheries. Georgetown Lake is a high elevation (6,400 ft) reservoir that maintains ice cover for an extended period of time; typically, from early November through mid-May. During the winter, there is minimal diffusion of oxygen into the lake due to ice and snow cover, along with significant consumption of oxygen due to the decomposition of macrophytes and detritus along the substrate. Over the course of the winter, the combination leads to significant depletions of oxygen throughout the water column, creating poor habitat

conditions for the trout and salmon in the lake. These conditions can be exacerbated if water levels are drawn down too low during the previous year's operation. Thus, water management at Georgetown Lake via Flint Creek Dam operations is critical to providing adequate water to avoid poor water quality and maintaining healthy trout and salmon fisheries.

A fish kill did occur in Georgetown Lake over the 2017/2018 winter. Large numbers of fish were observed dead (at least 500-1,000) and likely many more dead fish went unobserved. Primarily larger rainbow trout (375-475 mm) were found dead although one small rainbow trout (approximately 250 mm) and a few kokanee were also found dead. The likely cause appears to be low dissolved oxygen. Dissolved oxygen was measured by FWP in March 2018 and was found to be very low. A small sample of live fish were captured within a week after ice-off and tested for pathogens and no pathogens were detected. Unfortunately, no moribund fish could be captured which would are the most useful for pathogen testing. Water levels in Georgetown Lake were excellent during the 2017/2018 winter and thus other factors led to the poor dissolved oxygen conditions. Further assessment is necessary to better understand the causes of this fish kill, but it appears that the extended length of ice cover and deep snow (not allowing sunlight penetration) are likely factors.

Rock Creek

The Rock Creek drainage maintains excellent fish habitat and water quality, largely due to the extensive public land ownership in the drainage which is generally managed to provide quality fish and wildlife habitat. The upper portion of the Rock Creek drainage is largely managed for livestock ranching. Impacts to fish populations in this portion of the drainage include irrigation withdrawal and the associated entrainment of fish and reduced riparian over-story vegetation. The middle portion of the drainage (Windlass Bridge to the mouth of Welcome Creek) is nearly entirely owned by the USFS and the habitat in this reach is in excellent condition with the main impact being a riparian road that is adjacent to the creek through much of this reach. The lower portion of Rock Creek below Welcome Creek is again primarily privately owned in the valley bottom with a majority of the land use being residential subdivisions. Temperature monitoring in the drainage indicates that water temperatures are as high at Windlass Bridge (river mile 37.5) as are observed near the mouth of the drainage (river mile 0). This indicates that impacts to the fishery that cause increased temperature are greatest in the upper portion of the drainage and improve lower in the drainage. It is suspected that the reduction in irrigation, improvement in riparian habitat conditions, and supply of cold water from tributaries in the middle reach of the drainage improves water temperatures and overall fish habitat.

The conservation value of Rock Creek has long been recognized by FWP and the citizens of western Montana. Thus, several land conservation projects have been completed in the upper portion of the drainage, mostly in the form of conservation easements. These projects include several large ranches that provide contiguous habitat with some of the easements requiring protective management of the riparian habitat. Future projects that protect additional parcels in both upper and lower Rock Creek should be high priority, particularly if they are adjacent to existing conservation easements. FWP also has a Murphy Water Right on Rock Creek which protects a minimum base flow in the river, although it is rarely necessary to exert this right due to the private ranching acreage being relatively small in the drainage.

FISHING ACCESS

Public access on the Clark Fork River from Flint Creek to the mouth of the Blackfoot River is currently relatively good. Fishing access sites owned by FWP on the Clark Fork River are located near Drummond, Bearmouth, Beavertail, Clinton (Schwatz Creek FAS), Turah, and Bonner (Milltown Dam State Park). A BLM-owned fishing access site is also available to anglers near mile marker 7 on the Drummond frontage road between Drummond and Bearmouth. In addition, there are several undeveloped sites along the Clark Fork River in this reach that are currently used by anglers, but access in the future is uncertain due to private ownership. Beavertail Pond is a site owned by FWP in this reach that provides access for flat-water fishing for kids and families. While public access is currently good in this reach, additional planning efforts are underway to improve access further including potential funding from the Department of Justice (Natural Resource Damage Program--NRDP) for acquisition of properties and improvements to current sites.

There are currently no FWP-owned or managed fishing access sites on Flint Creek. One access point has recently been improved by FWP through a cooperative agreement with a private landowner, but access is at the discretion of the landowner. The only other public access to Flint Creek currently is the use of public lands such MDT and county bridge crossings, DNRC ownership, etc. Funding is available through NRDP for development of accesses on Flint Creek, should the opportunity arise. Fishing access is abundant on Georgetown Lake including the Stuart Mill Fishing Access Site owned by FWP and multiple access sites owned by the USFS.

Fishing access in the Rock Creek drainage is excellent. The entire middle portion of the drainage is owned and managed by the USFS allowing for open access to anglers and recreationalists. Several fishing access sites are also present in the lower portion of the drainage including parcels of public land, developed fishing access sites and multiple access points via the Rock Creek Road right-of-way. Overall, very few stretches of the lower and middle reaches of Rock Creek are inaccessible to anglers willing to hike and wade. Access to Upper Rock Creek is more difficult due to the extensive private land ownership. However, FWP has leased one site in this reach and is in the process of developing another site for public access. Public land in-holdings and conservation easements negotiated to allow public access also provide access for anglers to the upper drainage.

SPECIAL MANAGEMENT ISSUES

Social Conflicts on Rock Creek

The primary social conflict present in Rock Creek is float fishing. Several residents in upper Rock Creek would like to see float fishing either more regulated or shifted to other parts of the drainage. Some wade anglers also support either limiting or eliminating float fishing in Rock Creek due to floaters making it difficult to wade fish. The current regulations which limits float fishing to December 1- June 30 prevents a majority of the conflict between wade anglers and float anglers, as most floaters are using the river during high flows when it is difficult to wade. Nonetheless, there will always be some parties that are dissatisfied with floating on Rock Creek.

Fishing derbies have occasionally been proposed on Georgetown Lake and consistently opposed by sportsman's groups and lake homeowners for the past couple of decades. Typically, the only

proponent of these contests has been the applicant. FWP proposes that derbies no longer be allowed on Georgetown Lake.

FISHERIES MANAGEMENT DIRECTION FOR CLARK FORK RIVER - FLINT/ROCK DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Clark Fork River (Flint Creek Mouth-Blackfoot River Mouth) and Tributaries	52 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Continue year-long closure on angling for bull trout. Enhance migratory populations for conservation. Enhance catch-and-release westslope cutthroat fishery.
		Brown trout, Rainbow trout	Wild	General	Consider liberal regulations to allow for harvest opportunity and reduce numbers to lessen competition with and predation on native trout if habitat conditions improve for native trout.
		Brook trout	Wild	General	Maintain liberal harvest limits to support native species goals by reducing competition and hybridization.
Habitat needs and activities: Continue efforts to clean up mining contamination in upper portion of the drainage. Enhance in-stream flows where possible and improve riparian habitat and grazing management where appropriate. Protect and improve habitat quality in spawning and rearing areas to enhance natural recruitment of wild and native trout. Gain a better understanding of factors limiting trout populations in reach between the mouth of Flint Creek and the mouth of Rock Creek.					
Flint Creek	41 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout. Enhance fluvial populations of westslope cutthroat for conservation and angling.
		Rainbow trout, Brown trout	Wild	General	Manage for harvest opportunity.
		Brook trout	Wild	General	Maintain liberal harvest limits to support native species goals by reducing numbers and competition and hybridization.
Habitat needs and activities: Enhance in-stream flows below Allendale Diversion. Reduce fish entrainment particularly below the mouth of Boulder Creek. Improve upstream fish passage where appropriate. Improve riparian habitat and grazing management throughout the drainage.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Georgetown Lake	2,080 acres	Rainbow trout	Hatchery	Put, Grow and Take	Manage stocking to support quality angling and liberal harvest opportunity.
		Brook trout	Hatchery	Trophy	Maintain current natural reproduction and supplement with hatchery fish to provide adequate fish densities for anglers. Implement harvest limits and stocking rates that provide for quality sized fish.
		Kokanee salmon	Wild	Liberal regulations	Maintain liberal harvest limits to attain quality sized fish and high angler catch rates.
		All species	N/A	N/A	Prohibit fishing contests to reduce social conflicts with other anglers.
Habitat needs and activities: Continue to work with dam operators to maintain sufficient over-winter pool elevations and improve other dam operations to minimize the impact chronic low winter dissolved oxygen levels have on fish populations.					
Boulder Creek	14 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout. Enhance migratory and resident populations of westslope cutthroat for conservation and angling.
		Brown trout, Rainbow trout, Brook trout	Wild	General	Allow liberal harvest to reduce numbers and lessen hybridization and competition with native trout. Consider other options to reduce numbers if options would increase native trout density and angling opportunity.
Habitat needs and activities: Minimize entrainment of fish into diversion ditches in the lower portion of the drainage and improve riparian habitat conditions where appropriate.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Flint Creek Tributaries- Other than Boulder Creek	36 miles	Westslope cutthroat trout (N)	Wild	Conservation	Enhance populations for conservation. Maintain isolation of westslope cutthroat populations protected by barriers to upstream fish passage if habitat and numbers are sufficient to allow persistence. Maintain connectivity to streams currently connected to allow for maintenance of migratory life histories and mainstem angling opportunities.
		Brown trout, Rainbow trout, Brook trout	Wild	General	Maintain liberal harvest and consider measures that reduce their abundance in reaches protected by a barrier or in reaches considered native species strongholds. Enhance rainbow and brown trout populations that provide recruitment to Flint Creek or the Clark Fork River and are not located in reaches with abundant native trout
Habitat needs and activities: Improve riparian habitat conditions and reduce fish entrainment particularly in reaches that maintain native trout populations or important migratory non native trout populations. Improve in-stream flows in reaches that are currently dewatered and support clean-up efforts in drainages with mining impacts.					
Harvey Creek	15 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout. Enhance migratory and resident life histories for conservation and westslope cutthroat trout angling. Maintain barrier to protect populations from invasion by brown trout and rainbow trout.
		Rainbow trout, Brown trout	Wild	General	Allow liberal harvest. Consider other options to reduce numbers if options would increase native species numbers and angling opportunity.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Habitat needs and activities: Continue to improve riparian habitat via grazing management. Reduce entrainment of out migrating fish and potentially implement selective upstream fish passage for bull trout at the barrier near the mouth.					
East Fork Reservoir and East Fork Rock Creek above Reservoir	370 acres and 5 miles	Bull trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout and enhance adfluvial populations for conservation.
		Westslope cutthroat trout (N)	Wild/ Hatchery	Quality	Manage for harvest opportunity of quality sized fish. Evaluate stocking to determine return to creel and assess expansion of population in upstream tributaries
		Rainbow trout, Brook trout	Wild	General	Allow liberal harvest. Consider other options to reduce numbers if options would increase native trout density and angling opportunity.
Habitat needs and activities: Work to maintain minimum reservoir levels to improve overwinter habitat conditions and reduce entrainment of bull trout through the dam.					
East Fork Rock Creek- Below East Fork Dam	8 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout. Enhance fluvial and resident populations for conservation.
		Brown trout, Rainbow trout, Brook trout	Wild	General	Allow liberal harvest. Consider other options to reduce numbers if options would increase native trout density and westslope cutthroat angling opportunity.
Habitat needs and activities: Improve habitat conditions below the reservoir by improving in-stream flows and maintaining periodic flushing flows. Improve riparian habitat and reduce entrainment of native fish where appropriate.					
Rock Creek	62 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout. Enhance fluvial populations of WCT for conservation and angling.

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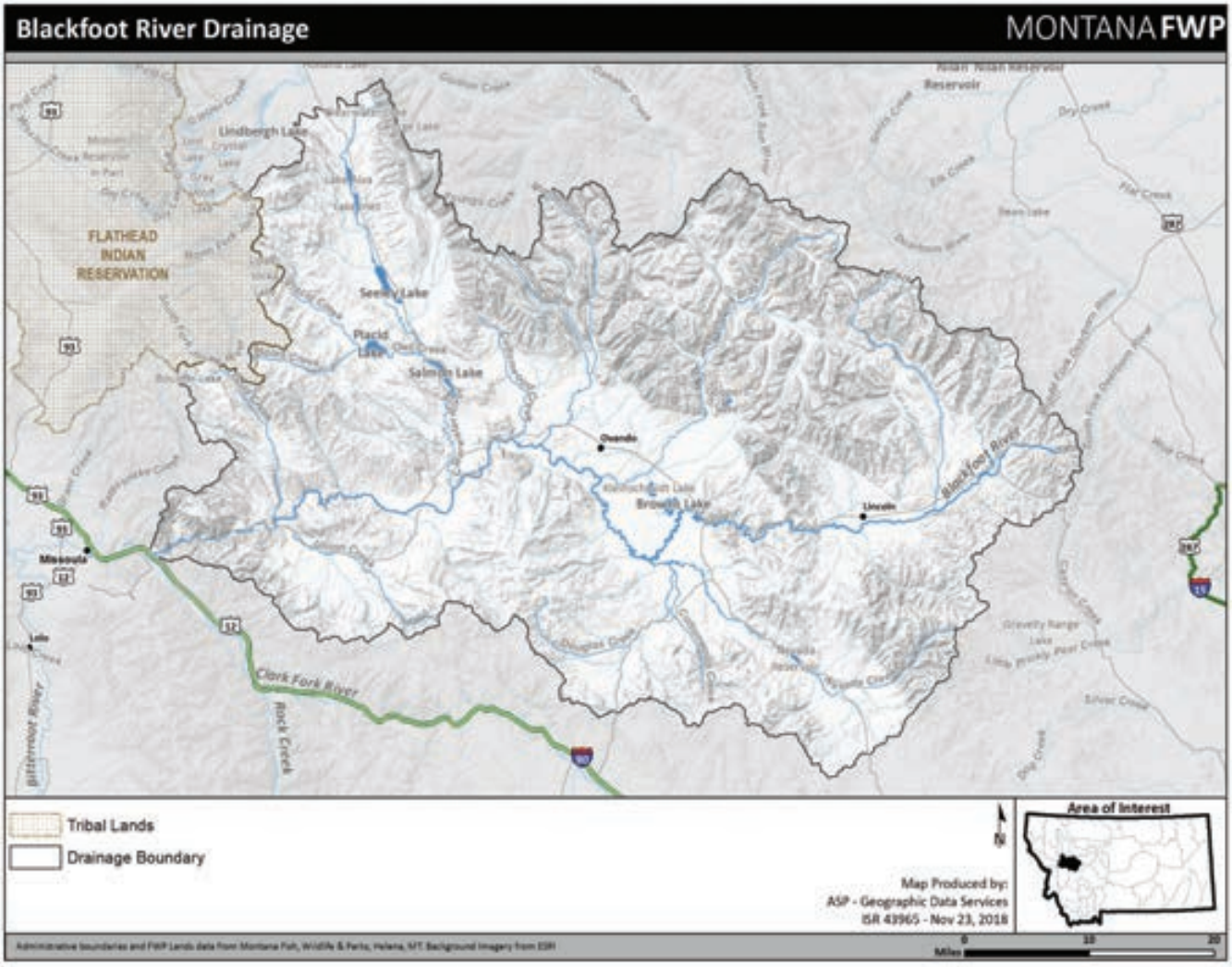
Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Rainbow trout	Wild	Restrictive Regulations	Maintain catch-and-release regulations in attempt to improve numbers while recognizing that whirling disease is likely the primary limiting factor.
		Brown trout	Wild	Liberal Regulations	Maintain liberal harvest regulations to allow for harvest opportunity and reduce numbers to lessen competition with and predation on native trout.
Habitat needs and activities: Continue efforts to protect private lands via conservation easements and land acquisition. Improve riparian habitat and grazing management in drainage where appropriate. Reduce entrainment of native and wild fish into irrigation ditches.					
Rock Creek Tributaries		Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout. Enhance fluvial and resident populations of westslope cutthroat for conservation and angling.
		Brown trout, Rainbow trout, Brook trout	Wild	General	Allow liberal harvest. Consider other options to reduce numbers if options would increase native trout density and WCT angling opportunity.
Habitat needs and activities: Improve riparian habitat where appropriate and reduce entrainment of native fish where necessary.					
Tributaries to the Clark Fork River (Other Than Harvey Creek, Flint Creek and Rock Creek)		Westslope cutthroat trout (N)	Wild	Conservation	Enhance migratory and resident populations for conservation and angling. Maintain isolation of populations protected by barriers if habitat and fish abundance are sufficient to allow persistence. Maintain connectivity to streams currently connected to allow for migratory life histories and mainstem angling.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Rainbow trout, Brown trout, Brook trout	Wild	General	Maintain liberal harvest and consider measures that reduce their abundance in reaches protected by a barrier or in reaches considered native species strongholds. Enhance rainbow and brown trout populations that provide recruitment to the Clark Fork River and are not located in reaches with abundant native trout.
Habitat needs and activities: Improve degraded riparian habitat particularly in stream reaches where native salmonids are present. Reduce fish entrainment particularly at locations where native fish are routinely entrained.					


Blackfoot River Drainage
MONTANA FWP
Lindbergh Lake
FLATHEAD INDIAN RESERVATION
Seeley Lake
Placid Lake
Salmon Lake
Ovando
Missoula
Lolo
Clark Fork River
Rock Creek
Bitterroot River
Blackfoot River
Lincoln
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Miles

BLACKFOOT RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Blackfoot River begins at the junction of Beartrap and Anaconda Creeks, located near the Continental Divide between Rogers Pass and Flesher Pass. From its headwaters, the river flows westward for 132 miles through Lewis and Clark, Powell, and Missoula Counties, draining a 2,290 square mile basin to Bonner, where it joins the Clark Fork River. The Blackfoot watershed includes 9,000-foot peaks in the headwaters, flows through heavily forested slopes, montane foothills before entering rangelands and prairie pothole topography on the valley floor. Major tributary drainages include the North Fork of the Blackfoot River and Clearwater River. The North Fork begins in the Scapegoat Wilderness, flowing much of its length through a glaciated mountain valley and a steep confined canyon within the USFS boundary. As it enters the floor of the Blackfoot valley, the North Fork flows through a more agricultural setting, bordered by private land, before entering the Blackfoot River at river-mile 54. The Clearwater watershed is comprised of a peripheral network of forested freestone, coldwater streams which lie primarily on public lands and enter an interconnected chain of glacial lakes on the valley floor. Land ownership is mixed along the valley floor, with private lands concentrated near the town of Seeley Lake.

There are 59 natural lakes totaling 5,720 acres and one large reservoir of 350 acres within the Blackfoot Drainage. Most natural lakes are mid- and high elevation "mountain" lakes that lie in remnant glacial cirques and troughs within public land holdings in backcountry settings. However, many of the larger natural lakes make up the Clearwater River chain and glacial potholes in the Ovando area. Large natural lakes include Salmon, Placid, Seeley, Alva, Inez, Rainy, Browns and Upsata Lakes. All of the larger valley floor lakes receive considerable angling pressure as well as other recreational activities. The only major reservoir is Nevada Reservoir near Helmville, which is managed primarily for irrigation purposes. Nevada Reservoir experiences considerable drawdown during dry years.

FISHERIES MANAGEMENT

Located in the west-central part of the state, the Blackfoot River is one of twelve renowned "Blue Ribbon" rivers in Montana with an instream flow (Murphy) water right and is one of Montana's most popular rivers for recreation. The river's outstanding natural resources and diversity of recreational opportunities, combined with its proximity to Missoula, contribute to its popularity. The Clearwater River watershed is the largest tributary to the Blackfoot River in terms of drainage area and is often treated as a separate system with its own unique natural resource values.

The Blackfoot River is managed as a wild trout fishery, emphasizing natural reproduction of free-ranging and naturalized nonnative trout. The basin is also a focus for native trout recovery efforts. The Blackfoot River basin is home to eleven native fish species including bull trout, westslope cutthroat trout, mountain whitefish, pygmy whitefish, peamouth, northern pikeminnow, longnose dace, redside shiner, longnose and largescale suckers, and two species of sculpin. Fourteen nonnative fish species inhabit the Blackfoot Basin including brown trout,

brook trout, rainbow trout, Yellowstone cutthroat trout, Arctic grayling, kokanee salmon, northern pike, fathead minnow, brook stickleback, central mudminnow, pumpkinseed, largemouth bass, yellow perch and white sucker. Dominant fish species and species composition vary greatly among headwater reaches, lakes and mainstem river sections. During the last 20 years westslope cutthroat trout have increased from <3% of the trout community to over one-third of the mainstem river trout community. Much of this increase has occurred since 1990, when basin-wide catch-and-release regulations were instituted and major aquatic restoration activities began. Information is lacking on the abundance and life histories of non-game native fishes. Efforts are needed to describe these and monitor trends.

Bull trout are found throughout the drainage, and particularly within the larger, coldest stream systems. Migratory bull trout move freely throughout the entire Blackfoot mainstem and rely on the larger colder tributaries including the North Fork Blackfoot, Monture and Copper Creeks for reproduction and rearing. Similarly, adfluvial (lake-dwelling) bull trout occupy the chain of lakes in the Clearwater system and spawn in tributaries such as Morrell Creek and East and West forks of the Clearwater River. Juvenile bull trout also occupy many of the smaller, colder tributaries throughout the Blackfoot drainage, where these streams are connected to larger bull trout strongholds. Both westslope cutthroat trout and bull trout have been the focus of basin-wide protection and restoration activities for over 20 years. Protection activities include special fishing regulations (e.g., stream mouth closures, gear restrictions), as well as public land acquisitions and conservation easements in native trout habitat. Restoration projects, such as instream improvements, fish passage enhancements, fish screening, and water leases have been undertaken throughout the basin in order to help recover bull trout, westslope cutthroat trout and other species. This work has occurred on both private and public land.

Angling occurs year-round on the Blackfoot River, but is most popular in the early spring, summer and fall. Opportunities exist for both wade and float angling and while fly-fishing is particularly popular, artificial lures and bait fishing are also common. Angling restrictions and habitat improvement have significantly improved native trout numbers in the Blackfoot basin. Long-term studies show native trout recovery has been most effective in the mid- to upper Blackfoot basin upstream of the Clearwater River. Because of this, habitat improvements in the Blackfoot River drainage below the Clearwater River should emphasize ecosystem function for all salmonids, including bull trout in streams like Gold and Belmont creeks. Native salmonids in the lower Blackfoot basin should be protected or enhanced where possible.

Natural lakes in the Clearwater Valley offer diverse fishing opportunities and strongholds for native fish. Upper drainage lakes, including Clearwater, Rainy, Alva, Marshall, and Inez, support coldwater fisheries for westslope cutthroat trout, kokanee, and whitefish. Although brown trout, brook trout and small populations of warmwater fish are also present in these waters, management emphasizes native trout and kokanee. Lower drainage lakes in the Clearwater chain (Seeley, Placid and Salmon Lakes) provide mixed fisheries. Although illegally introduced northern pike are abundant in Seeley and Salmon lakes, these lakes still provide viable salmonid fisheries and important habitat for migratory bull trout populations. Placid Lake, the warmest and most productive lake in the area, supports nonnative salmonids, largemouth bass and yellow perch fisheries. Bull trout in Placid Lake are not present or are in extremely low numbers.

Lowland lakes such as Harpers, Upsata, Coopers and Browns Lake also provide valuable recreational fisheries. Harpers and Browns Lakes are stocked annually with rainbow trout and

both support heavily used put-and-grow fisheries. Rainbow trout in Browns Lake exhibit outstanding growth and this lake supports one of the few trophy rainbow trout fisheries in the region. Upsata Lake is prone to periodic fish kills and is managed as a warmwater bass fishery partially supported by the stocking of largemouth bass. Coopers Lake is a low elevation oligotrophic lake managed as a put-and-grow cutthroat trout fishery.

Mountain lakes largely support self-sustaining trout populations or are stocked with westslope cutthroat trout in some instances. An exception is Heart Lake, which is stocked with both Arctic grayling and westslope cutthroat trout. Several lakes in the backcountry support self-sustaining, naturalized rainbow trout, including Parker, Twin, Otatsy and Camp Lakes. Canyon Lake, located in the upper North Fork drainage, supports genetically pure adfluvial native westslope cutthroat trout. Several high elevation lakes, as well as glacial potholes on the Blackfoot valley floor are managed as fishless and thereby emphasize the conservation of other native species (e.g., amphibians).

HABITAT

The Blackfoot River Basin has a long history of habitat protection, river restoration and riparian habitat conservation emphasizing native fish. These activities occur basin-wide and typically focus on altered tributary streams. To date, riparian habitat improvements have occurred on more than 50 tributaries. Projects typically involve livestock management changes, fish passage enhancement, augmenting instream flows, screening irrigation ditches and planting riparian vegetation. These types of activities usually involve cooperating private landowners, conservation groups (e.g., Trout Unlimited) and natural resource agencies.

The Blackfoot River basin contains about 165 miles of dewatered stream on 46 tributaries, most of which is the result of irrigation. A drought plan was developed for the Blackfoot River beginning in 2000 to help offset low-flow impacts to fisheries. This plan calls for angler restrictions and river closures in the summer when flows drop below 700 cfs at Bonner, which corresponds with FWP's 1973 Murphy Water right. If junior water users have a cooperative and effective water conservation plan, their junior water right is not subject to call.

Recent and ongoing land acquisitions and conservation easements have been completed throughout the Blackfoot drainage. The most recent acquisition and easement actives are part of the "Montana Working Forests Project", which includes large transfers of former Plum Creek Land to conservation-minded private landowners, FWP and other natural resource agencies. Two recent examples include the North Chamberlain Project and the Marshall Creek Wildlife Management Area, both of which are specifically designed to protect both fish and wildlife species. In addition, prior conservation easements have been placed on private lands throughout the Blackfoot valley in areas that support critical bull and westslope cutthroat trout habitat. These easements focus on the Ovando Valley but are expanding into the Nevada, Clearwater and Lincoln valleys as well. As of 2012, over 125,000 acres of private land are protected from development pressure under perpetual conservation easements. Where possible, FWP will continue to promote landscape protections in native fish habitat.

Low flows can limit floating opportunities above the confluence of the mainstem and North Fork during certain times of the year. Below the confluence, opportunities for float recreation are available most of the year during normal flows.

The Montana Department of Environmental Quality classifies the Blackfoot as a B-1 stream, meaning the river should be maintained for activities such as drinking and municipal uses, swimming and recreation, growth and propagation of trout and associated aquatic life, and as an agricultural and industrial water supply.

Water quality in the Blackfoot watershed is generally high with only slight or no impairment. However, lower Nevada Creek (located in the middle basin) and the Mike Horse Mine area (located in the very headwaters of the Blackfoot River) are exceptions. Nevada Creek is prone to dewatering and water quality problems due to intensive agricultural activities. The Mike Horse area is contaminated by elevated metals concentrations due to the release of mine wastes from the adits and tailings and the 1974 failure of the Mike Horse tailing dam, which further contaminated the upper Blackfoot River with toxic waste. Water quality degradation is also a concern in the Clearwater chain-of-lakes area due to human development and intensive land use. Elevated nutrient levels and eutrophication are a concern in Seeley, Salmon and Placid Lakes at the lower end of the system where impacts of human use are magnified.

Fishing Access

There are more than 30 publicly owned or managed access sites along the Blackfoot River and numerous others at lakes and streams across the watershed. Some access sites are located near local communities and, in addition to river or lake access, provide convenient land-based recreation opportunities. Public access sites on lakes are largely managed by either FWP or the USFS, depending on land ownership. Within the Blackfoot River Recreation Corridor (27 miles from Russell Gates FAS to Johnsrud Park FAS), the public is allowed to access the lower Blackfoot River via private land (up to 50 ft above the ordinary high-water mark) through a cooperative agreement with private landowners. This access agreement supplements existing public access sites within the corridor. FWP also manages BLM sites along the Blackfoot River through a cooperative management agreement. The FAS program also must consider how location, development and use of access sites affect recreational use on the water and the social experience under guidance from the Blackfoot River Recreation Management Plan of 2010. Another priority is to pursue opportunities for extended float trips using existing access sites for boat camps.

Special Management Issues

Social Conflicts on the Blackfoot River

A recreation management plan was developed for the Blackfoot River in 2010 for addressing social conflicts on the river and at access sites. The plan guides management of conflicts between user groups, congestion on the water and at access sites, littering and other resource impacts associated with high concentrations and volume of use, and behavior of users. The Corridor Agreement with private landowners and FWP establishes additional access onto private lands, restricts camping to established sites and aims to protect a scenic corridor for recreational uses. River use (including commercial and non-commercial angling) is being monitored and evaluated for possible management actions.

FISHERIES MANAGEMENT DIRECTION FOR BLACKFOOT RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Blackfoot River and Tributaries (Headwaters Downstream to Confluence with Clearwater River)	90 miles of mainstem and Connected Tributaries	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout. Enhance migratory populations for conservation. Enhance catch-and-release westslope cutthroat fishery. Consider isolation of westslope cutthroat populations only if hybridization or competitive displacement clearly threatens the persistence of local populations.
		Rainbow trout, Brown trout	Wild	Liberal regulations	Allow liberal harvest. Consider management that reduces numbers and distribution if it would improve native trout numbers and westslope cutthroat angling opportunities.
		Other introduced game fish (e.g., Yellow perch, Northern pike, Brook trout)	Wild	General	Manage for liberal harvest and contain distribution where possible.
Critical habitat needs: Clean-up of Mike Horse Mine area in headwaters of the Blackfoot River. Restore habitat to favor native salmonids based on established native trout priority streams.					
Nevada Reservoir	350 acres	Westslope cutthroat trout	Hatchery	Put-, Grow and Take	Manage for high catch rates and quality-sized fish.
		Yellow perch	Wild	General	Liberalize harvest and contain distribution.
Coopers Lake	200 acres	Westslope cutthroat trout	Hatchery	Put, Grow and Take	Manage for high catch rates and quality sized fish.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Browns Lake	530 acres	Rainbow trout	Hatchery	Put, Grow and Take	Manage for trophy rainbow trout and quality harvest opportunities with high catch rates.
North Fork Blackfoot River, Monture and Copper/Landers Fork Drainages	70 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Continue closure for intentional angling of bull trout and enhancement of angling opportunity for westslope cutthroat trout. Consider reintroductions of westslope cutthroat and introduction of bull trout in the streams and lakes in the Wilderness area of the North Fork upstream of the North Fork Falls.
		Brown trout	Wild	Liberal Regulations	Maintain liberal harvest opportunity to reduce expansion and impacts on other trout. Consider management that reduces numbers and distribution if it would improve native trout numbers and angling opportunities.
		Rainbow trout	Wild	Quality	Maintain numbers at present levels.
Lake Upsata	91 acres	Largemouth bass	Hatchery	Quality	Provide for high quality largemouth bass angling though stocking and restrictive regulations.
Clearwater River and Tributaries	50 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Conserve and enhance migratory and stream-resident populations. Continue protective regulations to prohibit bull trout harvest and limit westslope cutthroat harvest.
		Brown trout, Brook trout	Wild	Liberal Regulations	Provide liberal harvest opportunities. Consider management that reduces numbers and distribution if it would improve native trout numbers and westslope cutthroat angling opportunities.

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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Kokanee salmon	Wild/ Hatchery	General	Manage for quality harvest opportunities with high catch rates; evaluate relative contribution of wild and stocked fish.
		Yellow perch, Largemouth bass, Smallmouth bass, Northern pike, Pumpkinseed	Wild	General	Provide liberal harvest opportunity and reduce numbers where possible to reduce competition with and predation on trout and salmon. Emphasize smallmouth bass suppression in areas of population expansion.
Habitat needs and activities: continue to manage connectivity to benefit native fishes. Improve quality of tributary habitat.					
Clearwater, Rainy, Alva, Marshall and Inez Lakes	878 acres	Bull trout (N)	Wild	Conservation	Conserve and enhance migratory populations. Continue protective regulations to prohibit angler harvest.
		Westslope cutthroat trout (N)	Wild/ Hatchery	Put, Grow and Take	Manage for quality sized fish and high catch rates. Evaluate relative contributions of wild and stocked fish; evaluate performance and feasibility of sterile stocked fish.
		Kokanee salmon	Wild/ Hatchery	Put, Grow and Take	Evaluate stocking to optimize number stocked, size of fish, and catch rates; evaluate relative contribution of wild & stocked fish.
		Brook trout, Brown trout	Wild	General	Provide liberal harvest opportunity and reduce numbers where possible to reduce predation on and competition and hybridization with native trout.
		Yellow perch, Largemouth Bass, Smallmouth Bass, Pumpkinseed	Wild	General	Provide liberal harvest opportunity and reduce numbers where possible to reduce competition with and predation on trout and salmon.

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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Northern pike	Wild	Suppression	Emphasize harvest to reduce predation on trout; derbies are required to harvest fish. Explore other harvest means such as angler incentives and commercial methods that would need legislative approval.
Seeley Lake and Salmon Lakes	1,707 acres	Bull trout (N)	Wild	Conservation	Conserve and enhance migratory populations. Continue protective regulations to prohibit angler harvest.
		Westslope cutthroat trout (N)	Hatchery/ Wild	Put, Grow and Take	Evaluate stocking to determine success to creel and effects on endemic populations of westslope cutthroat. Consider stocking sterile fish after evaluation of performance.
		Kokanee salmon	Wild/ Hatchery	Put, Grow and Take	Evaluate stocking to optimize number stocked, size of fish and angler catch rate; evaluate relative contribution of wild & stocked fish.
		Brown trout, Brook trout	Wild	General	Provide liberal harvest opportunity to reduce competition and hybridization with and predation on native trout. Consider measures to reduce number if native trout numbers and angling opportunity would increase.
		Largemouth bass, Smallmouth bass	Wild	General	Suppress.
		Yellow perch, Pumpkinseed	Wild	General	Provide liberal harvest opportunity and reduce numbers where possible to reduce competition with trout.

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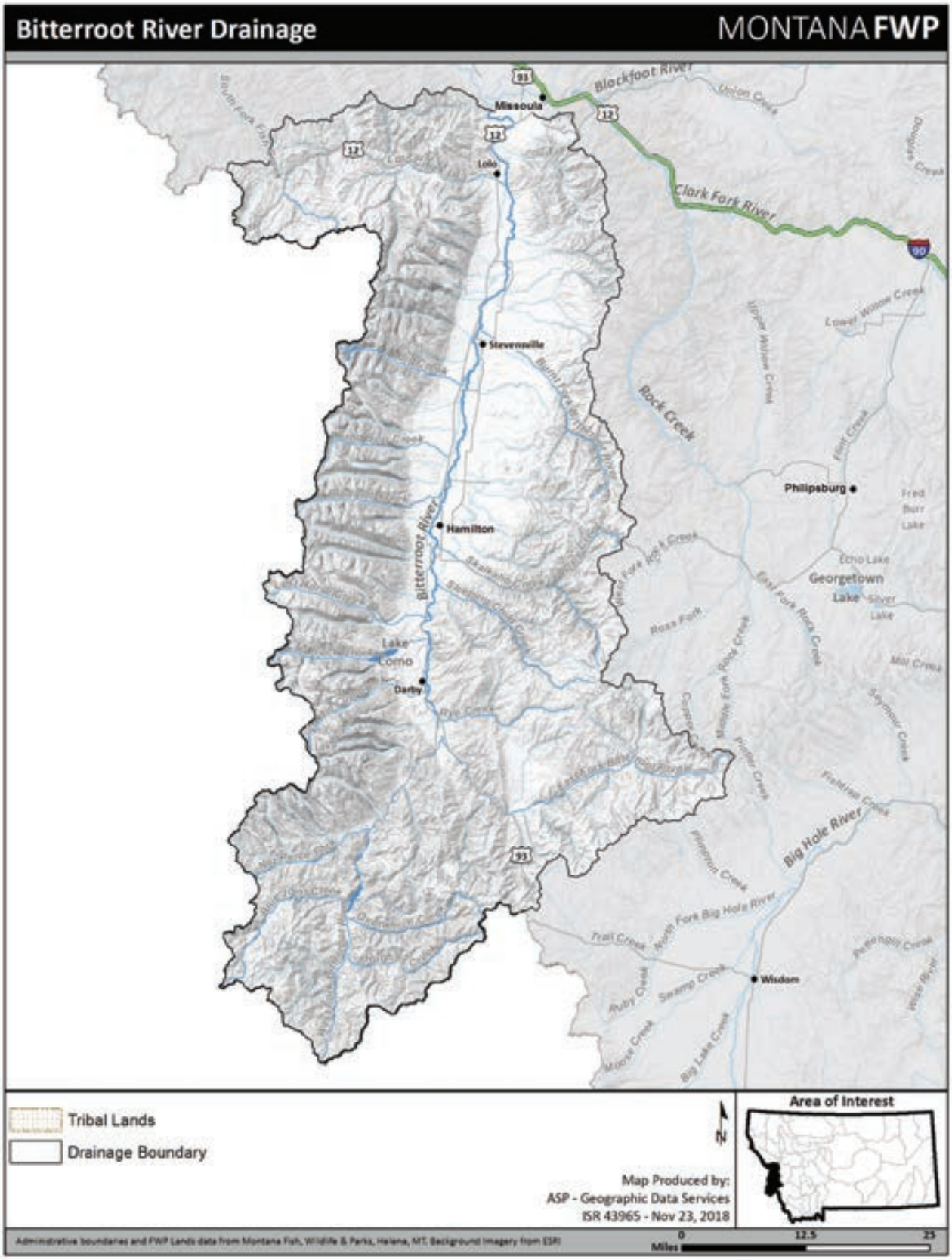
Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Northern pike	Wild	Suppression	Emphasize harvest to reduce predation on trout; derbies must harvest fish. Explore other harvest means such as angler incentives and commercial methods that would need legislative approval.
Placid Lake	1,300 acres	Bull Trout (N)	Wild	Conservation	Protect and enhance any remnant population.
		Westslope Cutthroat Trout (N)	Wild/ Hatchery	Put, Grow and Take	Evaluate stocking to optimize number stocked, size of fish, and catch rates; evaluate relative contribution of wild & stocked fish
		Kokanee Salmon	Hatchery/ Wild	Put, Grow and Take	Evaluate stocking to optimize number stocked, size of fish, and catch rates; evaluate relative contribution of wild & stocked fish
		Brook Trout, Brown Trout	Wild	General	Provide harvest opportunity for anglers with liberal regulations.
		Yellow Perch, Pumpkinseed	Wild	General	Provide quality harvest opportunity.
		Largemouth bass	Wild	Quality	Maintain and enhance quality of fishery through restrictive regulations. Consider stocking.
Harpers Lake	15 acres	Rainbow trout, Westslope cutthroat trout	Hatchery	Put, Grow and Take	Manage as a quality trout harvest opportunity with high angler catch rates.
		Yellow perch	Wild	General	Maintain liberal harvest limits and reduce numbers if possible to reduce competition with trout.
Habitat needs and activities: Monitor lake water quality and eutrophication with Clearwater Resource Council. Manage lake water levels to balance instream flow needs of outlet streams.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Blackfoot River and Tributaries (Clearwater River to Confluence with Clark Fork River)	35 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Continue with no harvest regulations to enhance fluvial populations for conservation and westslope cutthroat angling. Continue to maintain and enhance bull trout where practical. Continue to manage for genetically pure westslope cutthroat.
		Rainbow trout, Brown trout	Wild	Quality	Maintain present numbers and sizes.
		Other introduced game fish (e.g., Yellow perch, Northern pike, Brook trout)	Wild	General	Manage for liberal harvest and contain distribution where possible.
Habitat needs and activities: Improve habitat to support ecosystem function and production of wild trout and whitefish.					


Bitterroot River Drainage
MONTANA FWP
Blackfoot River
Clark Fork River
Missoula
Lolo
Stevensville
Hamilton
Darby
Lake Como
Bitterroot River
Rock Creek
Philipsburg
Georgetown Lake
Echo Lake
Silver Lake
Fred Burr Lake
Big Hole River
Wisdom
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background imagery from ESRI
0
12.5
25
Miles

BITTERROOT RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Bitterroot River drainage includes the Bitterroot River and its tributaries, including the East and West Forks of the Bitterroot River, Lolo Creek and their tributaries. The Bitterroot River begins at the junction of East and West Forks. It flows northward for 80 miles through Ravalli and Missoula Counties, draining a 1,891 square-mile basin to Missoula, where it joins the Clark Fork River. The Bitterroot watershed includes 9,000-foot peaks in the headwaters and heavily forested slopes, rangelands and wetlands on the valley floor. The headwaters of most of the tributaries originate on the Bitterroot National Forest. The East Fork of the Bitterroot River begins in the Anaconda-Pintler Wilderness. Tributaries of the West Fork Bitterroot River and the Bitterroot River from the west drain out of the Selway-Bitterroot Wilderness.

There are 83 natural lakes and reservoirs in the drainage, totaling 3,070 surface acres. Most natural lakes are mountain lakes in the headwaters of the Anaconda-Pintler and Selway-Bitterroot Wilderness areas. Two large reservoirs are Lake Como and Painted Rocks Reservoir. Lake Como receives considerable human use for fishing and other recreational activities. It also contributes about 3,000 acre-feet of water to the Bitterroot River each year. Painted Rocks Reservoir supplies 25,000 acre-feet of water to the Bitterroot River for instream flows and irrigation. Both Lake Como and Painted Rocks Reservoir experience considerable drawdown on an annual basis.

FISHERIES MANAGEMENT

Located in the southwestern part of the state, the Bitterroot River is very popular for recreation. The mainstem river is generally ranked with the top five in the state for fishing pressure, which generally exceeds 100,000 angler days a year. The river's outstanding natural resources and diversity of recreational opportunities, combined with its proximity to Missoula, contribute to its popularity.

The Bitterroot River is managed as a wild trout fishery, emphasizing natural reproduction. The basin is also a focus area for native fish recovery efforts. The Bitterroot River is home to 10 native fish species including bull trout, westslope cutthroat trout, mountain whitefish, northern pike minnow, longnose dace, redside shiner, peamouth, longnose and largescale sucker, and Columbia slimy sculpin. Nonnative fish species inhabiting the Bitterroot include brown trout, brook trout, rainbow trout, northern pike, and largemouth bass. Dominant fish species vary from westslope cutthroat in the headwaters to mountain whitefish in the Bitterroot River. Other than mountain whitefish, rainbow trout are the dominant sport fish in the mainstem of the Bitterroot River. Brown trout have increased in numbers in the East and West Forks of the Bitterroot drainage and some tributaries over the past 10 years. Coincident with the brown trout expansion is the decline of rainbow trout in the upper Bitterroot drainage. Whirling disease is believed to be the primary reason for this decline. Fishing regulations are designed to allow more harvest of brown trout in these areas. Lolo Creek is also dominated by brown trout, but transitions into brook trout and westslope cutthroat trout populations in headwater areas. Information is lacking

on the abundance and life histories of mountain whitefish and non-game native fishes. Efforts are needed to describe these and monitor trends.

Genetic data for westslope cutthroat upstream of Painted Rocks Reservoir indicates that genetic introgression (hybridization with rainbow trout and Yellowstone cutthroat trout) is rare. This area should be managed as a genetic stronghold for pure westslope cutthroat trout.

Bull trout are rare in the mainstem of the Bitterroot River. Fluvial (river dwelling) forms exist in the East and West Forks but are uncommon. Adfluvial (lake dwelling) lifeforms exist primarily in Painted Rocks Reservoir. Resident lifeforms exist in many smaller tributaries throughout the drainage.

Angling occurs year-round and is most popular in the early spring, summer and fall. Opportunities exist for both wade and float angling and while fly-fishing is particularly popular, artificial lures and bait fishing is also common.

Angling restrictions have improved westslope cutthroat trout numbers in the Bitterroot River upstream of Hamilton, but are less effective below Hamilton. Therefore, efforts in the Bitterroot River drainage to favor native salmonids (trout and whitefish) should be focused upstream of Hamilton. The greatest improvements for native salmonids are likely to be in tributaries or river sections where they dominate. Conversely, the Bitterroot River drainage below Hamilton should have an emphasis of restoring ecosystem function for all salmonids. Native salmonids in this area should be protected, or enhanced if possible.

Lake Como and Painted Rocks Reservoir offer some angling opportunity. Lake Como is stocked annually with catchable rainbow trout and westslope cutthroat trout. Due to the significant drawdowns and low productivity, fishing is only fair in each reservoir.

Some high mountain lakes are stocked with westslope cutthroat trout and some support wild populations of cutthroat, rainbow and brook trout. Most lakes are kept fishless to help conserve other native fauna (e.g., amphibian populations). Unstocked lakes comprise a geographic distribution and range of sizes and depths thought to help amphibian populations.

HABITAT

The Bitterroot River, particularly downstream of Hamilton, has been subject to dewatering. Prior to the early 1980's, irrigation demands significantly depleted streamflows during midsummer. Based on fisheries studies in the early 1980's and an agreement with the local irrigators and the Montana Department of Natural Resources and Conservation, water from Painted Rocks Reservoir began to be released during midsummer to supplement flows in the river. Since that time, a Bitterroot River water commissioner has been appointed each year to manage releases and withdrawals from the river to maintain minimum streamflows targeted at Bell Crossing, where a USGS gage was established. The target minimum flow of about 400 cfs at Bell Crossing is met during wet years, but not during very dry years, when streamflows can drop to below 200 cfs. In the early 1990's the dam at Lake Como was raised 3 feet and the extra stored water is released into the Bitterroot River after Labor Day each year.

Many of the tributaries of the Bitterroot River are also subject to midsummer dewatering. Efforts to restore streamflows to these streams have been difficult. Dewatering of tributaries

remains one of the most serious issues for the fishery in the Bitterroot River. Rainbow and brown trout spawn in the lower ends of these tributaries and the river. Native trout spawn in streams on the Bitterroot National Forest.

Water temperature in the Bitterroot River often exceeds 72ºF in the lower reaches. During particularly warm summers, fishing restrictions have been implemented until water temperatures drop to more tolerable levels for trout.

Homes and agricultural development along the Bitterroot River have led to the need for streambank stabilization. The Bitterroot River migrates laterally long distances in some years, which endangers homes and other developments that are near the river. As a consequence, approximately 12.5% of the streambanks on the river have been stabilized, mostly to protect residential development. This is an ongoing issue since streambank stabilization is usually disruptive of recreational uses and alters some of the natural functions of the river. More stringent regulations in recent years have slowed homebuilding within the floodplain, and have prevented some of the building of riverfront homes that are often threatened by the migration of the river.

Lolo Creek is also a stream that has been heavily impacted by bank stabilization. Much of the mainstem channel was relocated or altered during the construction of U.S. Highway 12. Conservation efforts have focused on the upper watershed. In 2010-2011, thousands of acres of corporate timberlands in the upper basin were converted to public ownership (managed by USFS) as part of the "Montana Legacy Project".

Water quality in the Bitterroot is high with some indication of high nutrient levels in the lower river. Suspended sediment in the river is generally low, except during spring runoff when the river experiences increased turbidity. The Montana Department of Environmental Quality classifies the Bitterroot as a B-1 stream, meaning the river should be maintained for activities such as drinking and municipal uses, swimming and recreation, growth and propagation of trout and associated aquatic life, and as an agricultural and industrial water supply.

FISHING ACCESS

Fishing access to the Bitterroot River is excellent. There are 13 fishing access sites along the mainstem of the Bitterroot River managed by FWP. In addition, there are several publicly owned or managed sites along the river that are commonly used by anglers. Along the East and West Forks of the Bitterroot River, public access is good due to the public lands managed by the Bitterroot National Forest. Some of these sites are managed as fishing access sites and others are informally used by anglers. Lolo Creek also has several public access sites that are managed by FWP and the USFS.

SPECIAL MANAGEMENT ISSUES

Social Conflicts on the Bitterroot River

Presently, there is no River Recreation Plan in effect for the Bitterroot River downstream of the Wally Crawford Fishing Access Site. Due to high angling pressure, and some social conflicts on the upper Bitterroot River and West Fork of the Bitterroot River below Painted Rocks Reservoir,

recreation rules took affect that restrict commercial outfitting on certain reaches during some days. Also, on one reach only wade angling is allowed on some days.

FISHERIES MANAGEMENT DIRECTION FOR BITTERROOT RIVER DRAINAGE

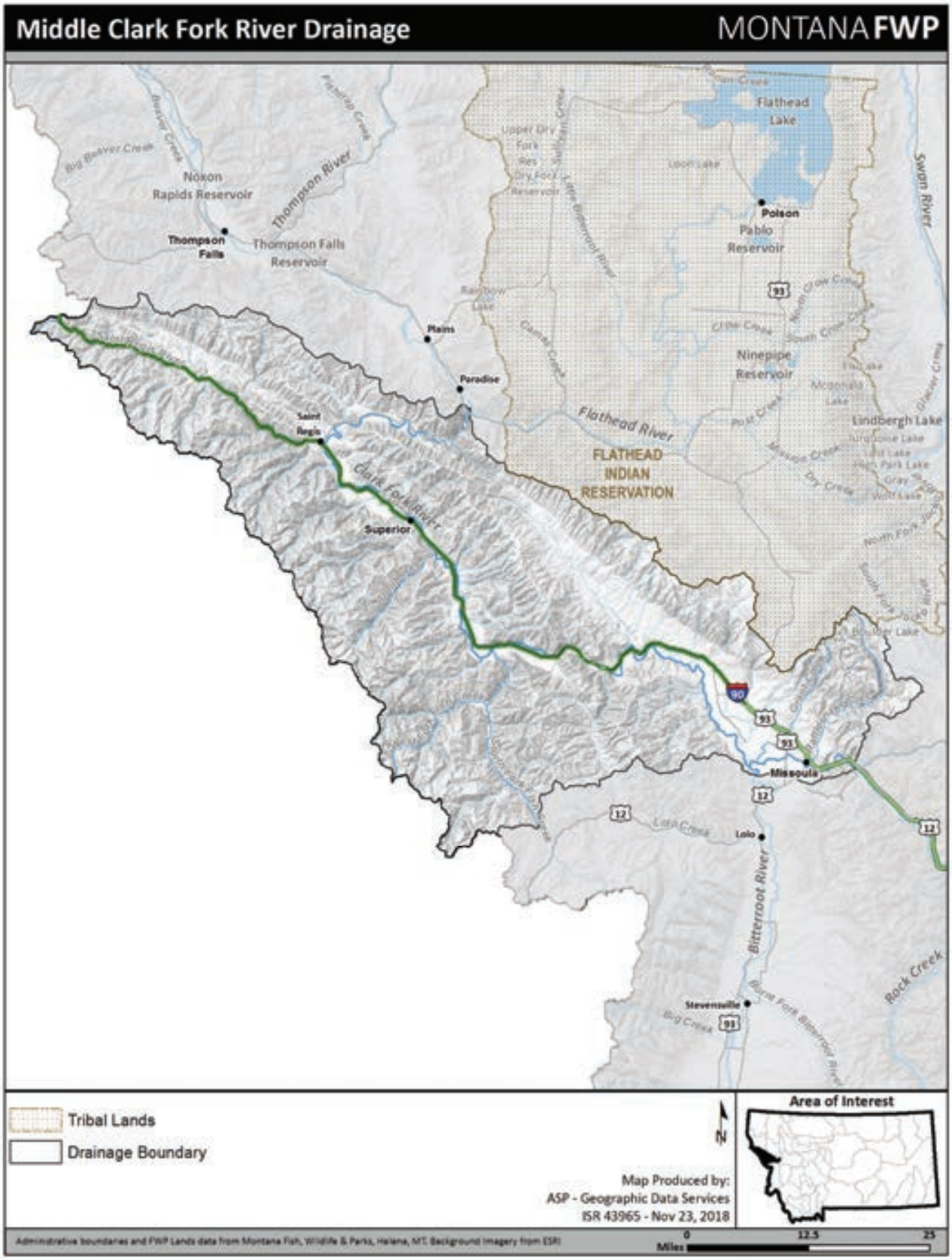
Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
West Fork Bitterroot River and Tributaries Above and Including Painted Rocks Reservoir	565 acres of reservoir and 42 miles of mainstem	Bull trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout and enhance migratory populations for conservation.
		Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance numbers above present levels for conservation and angling. Manage as a refuge for pure strain westslope cutthroat trout.
		Brook trout	Wild	General	Maintain liberal harvest regulations to lessen competition and hybridization and help meet native trout goals.
Habitat needs and activities: Continue to manage connectivity to favor native fishes.					
East Fork Bitterroot River and West Fork Bitterroot River Below Painted Rocks Reservoir	56 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout and enhance migratory populations for conservation and westslope cutthroat angling.
		Brown trout	Wild	Liberal Regulations	Maintain liberal harvest regulations to allow for opportunity to harvest brown trout and reduce competition with and predation on native trout. Consider management that reduces numbers and distribution if it would improve native trout numbers and westslope cutthroat angling opportunities.
		Rainbow trout	Wild	Restrictive Regulations	Maintain catch-and-release regulations in attempt to improve fishery while recognizing that whirling disease is likely the primary limiting factor.
Habitat needs and activities: Continue to manage connectivity to favor native fishes.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Tributary streams To the East Fork Bitterroot River and West Fork Bitterroot River Below Painted Rocks Reservoir	>100 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Conserve and enhance migratory and resident populations. Continue yearlong closure on angling for bull trout and enhance westslope cutthroat fishery. Consider isolation of westslope cutthroat populations if hybridization is a threat and habitat and numbers are sufficient to allow persistence.
		Brown trout, Rainbow trout, Brook trout	Wild	General	Maintain liberal harvest opportunity. In native species strongholds, consider management that reduces numbers and distribution if it would improve native trout numbers and angling opportunities.
Bitterroot River - Confluence of East and West Forks downstream to Blodgett Creek Near Hamilton	30 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout. Enhance fluvial populations of westslope cutthroat for conservation and angling.
		Rainbow trout, Brown trout	Wild	Restrictive Regulations	Maintain present numbers and sizes. Consider management that reduces numbers and distribution if it would improve native trout numbers and westslope cutthroat angling opportunities.
Habitat needs and activities: Enhance habitat to favor native trout and whitefish.					
Skalkaho Creek	24 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Protect and enhance numbers of fish. Continue yearlong closure on angling for bull trout. Enhance fluvial populations of westslope cutthroat for conservation and WCT angling.
		Rainbow trout, Brown trout, Brook trout	Wild	General	Maintain liberal harvest opportunity. Consider management that reduces numbers and distribution if it would improve native trout numbers and angling opportunities.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Tributary Streams to Bitterroot River (other than Skalkaho Creek) from Confluence of East and West Forks	>100 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Conserve and enhance migratory and resident populations. Continue yearlong closure on angling for bull trout and enhance westslope cutthroat trout fishery. Consider isolation of westslope cutthroat trout populations if hybridization is a threat and habitat and numbers are sufficient to allow persistence.
Downstream to Blodgett Creek Near Hamilton		Rainbow trout, Brown trout, Brook trout,	Wild	General	Maintain liberal harvest on and consider measures that reduce the abundance in reaches protected by a barrier or in reaches considered native species strongholds.
Lake Como	911 acres	Rainbow trout, Westslope cutthroat trout (N)	Hatchery	Put, Grow and Take	Provide liberal harvest opportunity
Bitterroot River - Blodgett Creek to confluence with Clark Fork	50 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout and enhance fluvial westslope cutthroat populations for conservation and angling.
		Rainbow trout, Brown trout	Wild	Quality	Manage trout harvest to support quality angling opportunity.
Habitat needs and activities: Improve habitat to support ecosystem function and production of trout and whitefish. Manage water from Painted Rocks Reservoir to maintain fishery with the goal of 400 cfs to Bell Crossing.					
Tributary streams To Bitterroot River from Blodgett Creek to the Confluence with Clark Fork River	>100 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Conserve and enhance migratory and resident populations. Continue yearlong closure on angling for bull trout and enhance cutthroat fishery. Consider isolation of westslope cutthroat populations if hybridization is a threat and habitat and numbers are sufficient to allow persistence.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Rainbow trout, Brown trout, Brook trout	Wild	General	Maintain liberal harvest on and consider measures that reduce the abundance in reaches protected by a barrier or in reaches considered native species strongholds. Enhance rainbow and brown trout that provide recruitment to the mainstem and are not located in reaches with abundant native trout.
Hieronymus Pond	2 acres	Rainbow trout Yellow perch, Largemouth bass	Hatchery Wild	Family Fishing Water General	Primarily kids fishing pond. Facilitate high catch rates and quality opportunity for kids and handicapped.


Middle Clark Fork River Drainage
MONTANA FWP
Flathead Lake
Noxon Rapids Reservoir
Thompson River
Thompson Falls
Thompson Falls Reservoir
Polson
Pablo Reservoir
Swan River
Plains
Paradise
Ninepipe Reservoir
Flathead River
FLATHEAD INDIAN RESERVATION
Lindbergh Lake
Saint Regis
Clark Fork River
Superior
Missoula
Lolo
Bitterroot River
Stevensville
Rock Creek
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background imagery from ESRI
0
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25
Miles

MIDDLE CLARK FORK RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Middle Clark Fork River drainage begins at the confluence of the Clark Fork and Blackfoot rivers at Milltown, and extends downstream for 120 miles to the mouth of the Flathead River. The river flows generally westward as it runs through Missoula, Mineral and Sanders Counties. Just downstream of the city of Missoula, the Bitterroot River enters and nearly doubles the river's discharge. Other major tributary watersheds (upstream to downstream) include Rattlesnake Creek, Grant Creek, Mill Creek, Ninemile Creek, Petty Creek, Trout Creek, Cedar Creek and the St. Regis River system. River volume roughly doubles again when the Clark Fork joins with the Flathead River near Paradise.

The main stem Clark Fork River channel is generally entrenched and stable throughout its length. The one exception is a 25-mile section through the Missoula Valley from Kelly Island (west side of Missoula) to the Ninemile Creek area (near Huson), where the river has a wide, accessible floodplain and active lateral migration. The river alternates between relatively narrow rock canyons and wider agricultural valleys as it progresses downstream. Major canyons include Hellgate Canyon (East Missoula), the Alberton Gorge (Alberton) and the "Cutoff" section between St. Regis and the Flathead River Confluence. Land ownership along the main stem is predominantly private, with scattered FWP, DNRC and USFS parcels.

Tributary watersheds include more than 50 coldwater trout streams that lie primarily on publicly-owned timberlands at high and mid-elevations. As tributaries reach foothills and near the valley floor, private land ownership becomes much more prevalent. Most tributary streams are bisected by major transportation system crossings (i.e., railroad, interstate highway, frontage roads) on the valley floor before they reach the Clark Fork River. Many of these crossings on smaller streams act as complete barriers to upstream fish movement.

There are numerous high elevation "mountain" lakes within the Middle Clark Fork Basin, as well as a few constructed lakes and ponds on the valley floor. More than 120 alpine mountain lakes (> 1 acre) occur in two general areas: (1) in the Bitterroot Mountains along the Montana-Idaho divide from Alberton to Lookout Pass; and (2) within the Rattlesnake National Recreation Area and Wilderness area near Missoula. Although some have been enhanced by dams, nearly all these waters are natural lakes formed in high glacial troughs and cirque basins. Valley ponds and small lakes (managed as public fisheries and recreation sites) are generally man-made reservoirs and reclaimed gravel pits. These include Frenchtown Pond, Kreiss Lake, Silvers Lagoon at McCormick Park and several other small water bodies.

FISHERIES MANAGEMENT

Located in the west-central part of the state, the middle Clark Fork River is a large system that runs through a major population center (Missoula) and developed valleys downstream. Although the fishery is not as renowned as in some of its major tributaries (e.g., Rock Creek, Blackfoot River, Bitterroot River), the middle Clark Fork River supports a popular trout fishery. This system has gained national notoriety in the past decade with the removal of Milltown Dam, clean-up of river contaminants at its upper end, and anticipated recovery of fishery resources.

The middle Clark Fork River is managed as a wild trout fishery, emphasizing natural reproduction. Although native bull trout (low numbers) and westslope cutthroat trout (moderate numbers) are present throughout all reaches, the river fishery is dominated by non-native rainbow trout, rainbow x westslope cutthroat trout hybrids and brown trout. Rainbow trout and their hybrids generally make up 70-80% of the trout population within this river section. Brown trout are found in moderate densities in the Missoula area, but generally decrease in abundance in lower reaches. Mountain whitefish are common throughout the mainstem river section.

In addition to salmonids, the Middle Clark Fork is home to eight other native fish species including peamouth, northern pikeminnow, longnose dace, redside shiner, longnose sucker, largescale sucker, and two species of sculpin. Ten nonnative fish species are also common in various parts of the basin, including brown trout, brook trout, rainbow trout, Yellowstone cutthroat trout, northern pike, pumpkinseed, largemouth bass, smallmouth bass, yellow perch and white sucker. Prior to removal of Milltown Dam and Milltown Reservoir, northern pike were becoming more prevalent in the Clark Fork River. The reservoir served as a primary spawning and rearing area for this species, which then dispersed downstream and occupied the mainstem river in significant numbers. Since removal of the dam, northern pike numbers have declined and are no longer considered a major threat to salmonid populations. More recently, smallmouth bass densities have increased dramatically in the lower Flathead River. There have been reports of smallmouth in the Clark Fork upstream of the Flathead River confluence, however, these appear to be related to seasonal movements with no established resident population in the Clark Fork River.

Tributary stream drainages support a range of abundant, resident trout species and are essential for spawning and rearing of fluvial (river-migratory) trout that reside in the mainstem river. Species composition varies greatly among tributaries and, in many streams, changes along a continuum from headwaters to mouth. Larger tributaries are generally “open” to fish movement with the Clark Fork, and are dominated by rainbow/cutthroat trout hybrids and brown trout. From the mainstem, species composition typically transitions to westslope cutthroat trout in an upstream direction, with pockets of brook trout also occurring in many transition areas and warmer tributaries. Smaller tributary systems and those at higher elevations are generally dominated by westslope cutthroat trout. Many of these populations are protected from hybridization with rainbow trout by artificial fish barriers associated with the extensive valley transportation system (e.g., road culverts, railroad tunnels).

The coldest remaining systems with suitable habitat still support viable bull trout populations, including Rattlesnake Creek, Fish Creek, Cedar Creek, and portions of the St. Regis River. The Fish Creek drainage supports the most intact habitat and abundant native trout populations within the middle Clark Fork region. These few remaining bull trout populations provide a limited amount of bull trout recruitment to the Clark Fork River where densities are 1-2 adults per mile in most reaches.

Although nearly all of the >100 mountain lakes in the basin were historically fishless, roughly 45% now support trout populations. Many still contain self-sustaining, wild populations of brook trout, westslope cutthroat trout, rainbow trout, and Yellowstone cutthroat trout that were introduced in the mid-1900s. Most of these lakes are no longer stocked, but many others with limited natural reproduction are stocked periodically with westslope cutthroat trout. Management of stocked lakes ranges from high density, frequently planted waters designed for

high catch rates to infrequently stocked, low density trophy waters. Many fishless lakes are also maintained to preserve natural ecological integrity (e.g., for conservation of native amphibians such as the long-toed salamander and spotted frogs). Management strategies and information for all mountain lakes in the basin are described in recent plans available from the FWP Region 2 office in Missoula.

Angling occurs year-round on the middle Clark Fork River, but is most popular in the early spring, summer and fall. Opportunities exist for both wade and float angling and while fly-fishing is particularly popular, artificial lures and bait fishing are also common. Special fishing regulations have been instituted to protect spawning fish, native fish strongholds and staging areas, and to retain the quality of trout fisheries – despite increasing fishing pressure. Summer and fall also offer excellent angling opportunities on tributary streams and mountain lakes.

Valley lakes and ponds provide popular put-and-grow trout fisheries that are accessible for most of the year. The waters are stocked frequently and offer opportunities for high catch rates and liberal harvest. All of these fisheries are geared to kids fishing and family-friendly environments with easy access.

HABITAT

The middle Clark Fork River is considered a recruitment-limited fishery where enhancing spawning access for wild fish and improving the quality of tributary habitats has been a priority for the past decade. Restoration and improvement efforts have occurred throughout the watershed, but have focused on native fish strongholds. Fish passage improvements, riparian restoration projects, instream enhancements, fish screens, etc., have involved a number of partners on both public and private lands. As the largest land manager in the basin, the USFS has undertaken many activities on their lands associated with fish passage and the forest road system. In addition, key land acquisitions have been completed in tributary drainages to protect spawning and rearing habitat. Notable projects include public acquisition of more than 50,000 acres to form the Fish Creek Wildlife Management Area and purchase of more than 5 miles of riparian corridor on Cedar Creek. Numerous other conservation easements and smaller acquisitions have been completed by public and private organizations throughout the basin.

River and stream dewatering from irrigation is generally not a significant limiting factor in the basin, particularly when compared with neighboring river systems. However, legacy impacts of historic mining and timber management (roads) remain significant factors degrading habitat quality on a large scale and in many tributary drainages. Restoration and remediation activities addressing these impacts will likely be a priority in the future that will be led by the USFS, Trout Unlimited, FWP and other partners.

FISHING ACCESS

There are more than 15 publicly owned or managed access sites along the river. Some sites are located near local communities and, in addition to river access, provide convenient land-based recreation opportunities. The section of the Middle Clark Fork River between St John's FAS and Forest Grove FAS (Alberton Gorge), is a popular stretch of river for scenery, whitewater and angling with much of the riverfront in that section owned by FWP. Overall, public access opportunities along the Middle Clark Fork are good with no urgent needs for additional access.

SPECIAL MANAGEMENT ISSUES

Habitat and Water Quality Issues

Over the past decade, a tremendous amount of resources have been invested in the removal of Milltown Dam, remediation of river contaminants, and restoration of the Clark Fork River. Monitoring of river habitat, water quality, and fish and aquatic populations will be essential in evaluating the long-term effects of this work. Similarly, possible contaminant remediation and restoration at the Smurfit-Stone Mill site near Frenchtown could have major benefits for river water quality, floodplain function, and habitat quality in that reach.

Social Conflicts

Proximity to Missoula, a large overall population base, and many conflicting demands make managing public recreation challenging on the Clark Fork River. In 2011, the reach through Missoula and downstream to the Alberton Gorge were part of a revised river recreation plan, balancing motorized and non-motorized boat use in the area. This and other issues, including management of river access and non-angling recreationists, will certainly be a focus in the future.

In 2011, FWP completed a public process to revise boating regulations for this section of the Clark Fork River. The regulation changes were in response to an increase in river use in and around Missoula, and intended to provide for diverse river recreation opportunities and to address public safety and social concerns associated with fast-moving motorboats operating in proximity to other users. These regulations took effect November 26, 2011.

FISHERIES MANAGEMENT DIRECTION FOR MIDDLE CLARK FORK RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Clark Fork River - Blackfoot River confluence downstream to confluence with Flathead River	120 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Continue yearlong closure on angling for bull trout. Enhance fluvial populations for conservation and catch-and-release westslope cutthroat fishery.
		Rainbow trout, Brown trout	Wild	Quality	Protect fishery quality through fishing regulations. Protect habitat, ensure adequate connectivity with tributaries & enhance natural recruitment in areas that are not native trout strongholds.
		Northern pike, Smallmouth bass	Wild	Suppression	No creel limit for pike; encourage harvest of both introduced warmwater species to reduce competition with and predation on trout.
Habitat needs and activities: Assess long-term impact of Milltown Dam removal. Assess contamination of Smurfit-Stone Mill site and facilitate remediation/restoration. Further enhance connectivity with tributaries where appropriate. Protect and improve habitat quality in spawning and rearing areas to enhance natural recruitment of wild and native trout.					
Kreiss Lake	10 acres	Westslope cutthroat trout	Hatchery	Put, Grow and Take	Facilitate high catch rates and quality harvest opportunity.
		Largemouth bass	Wild	General	Provide liberal harvest opportunity.
Habitat needs and activities: Evaluate westslope cutthroat trout stocking prescription. Ensure that adequate water volume is maintained in lake.					
Silvers Lagoon (McCormick Pond)	5 acres	Westslope cutthroat trout, Rainbow trout	Hatchery	Family Fishing Water	Kids fishing pond - Facilitate high catch rates and quality harvest opportunity for kids.
		Northern pike, Pumpkinseed, Yellow perch	Wild	General	Provide liberal harvest opportunity. Reduce numbers if possible.
Habitat needs and activities: Reduce entrainment of unwanted fish from water supply canal. Ensure adequate water exchange rate.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Frenchtown Pond	22 acres	Rainbow trout	Hatchery	Family Fishing Water	Facilitate high catch rates and quality harvest opportunity for kids fishing events and families.
		Largemouth bass	Transfer	Quality	Restrictive harvest regulations to ensure quality of fishery. Continue to plant adult fish if available.
		Northern pike, Pumpkinseed, Yellow perch	Wild	General	Provide liberal harvest opportunity. Reduce numbers if possible.
Habitat needs and activities: Continue adult bass transfer from Lee Metcalf Refuge. Ensure enforcement presence to promote compliance and maintenance of quality largemouth bass fishery.					
Fish Creek, Cedar Creek, Little Joe Creek, Drainages	264.7 miles 42.7 miles 37.6 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Conserve and enhance migratory and resident populations. Continue yearlong closure on angling for bull trout.
		Rainbow trout, Brown trout, Brook trout	Wild	General	Maintain present numbers and sizes. Consider management that reduces numbers and distribution if it would improve native trout numbers and westslope cutthroat angling opportunities.
Habitat needs and activities: Improve habitat to support ecosystem function and production of native trout and whitefish. Enforcement presence needed to ensure compliance. Eliminate brook trout from headwater lakes.					
Open Tributary Systems (Fish Barriers Generally Absent): St. Regis River, Ninemile Creek, Rattlesnake Cr.	38.6 miles 25.5 miles 23.3 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Conserve and enhance migratory and resident populations. Continue protective regulations to enhance westslope cutthroat trout fishery. Continue yearlong closure on angling for bull trout.

Continue next page

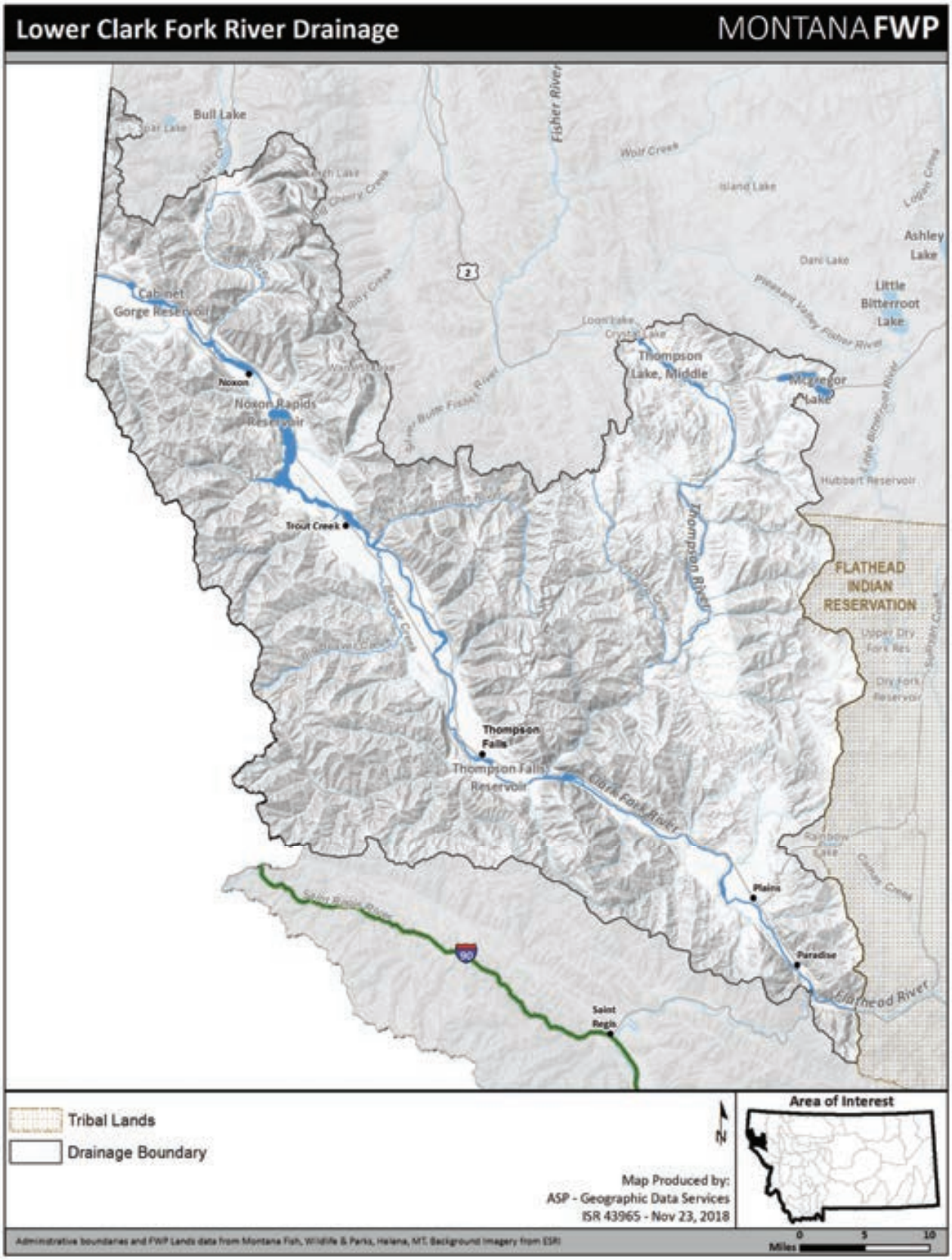
Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Grant Creek, Dry Creek, Trout Creek, Mill Creek, Albert Creek, Nemote Creek, Sixmile Creek, Siegel Creek, Petty Creek	18.3 miles 15.3 miles 14.7 miles 13.4 Miles 11.4 Miles 9.8 Miles 8.9 Miles 7.0 Miles 4.3 Miles	Rainbow trout, Brown trout Brook trout	Wild Wild	Quality General	Protect adult spawners and fishery quality through fishing regulations. Protect habitat and ensure adequate connectivity with tributaries to enhance natural recruitment in areas that are not native trout strongholds. Provide liberal harvest opportunity and reduce numbers if possible.
Habitat needs and activities: Improve habitat quality and connectivity where needed.					
Closed Tributary Systems (Barriers Prevent Upstream Movement from Clark Fork River) - Contain Genetically Pure, Isolated Westslope cutthroat trout Populations: Rock Creek Rock Creek Deep Creek Tamarack Creek Thompson Creek Flat Creek Deep Creek Second Creek Meadow Creek	 18.7 miles 9.5 miles 9.4 miles 8.7 miles 8.6 miles 8.2 miles 7.5 miles 7.4 miles 7.3 miles	Westslope cutthroat trout (N) Brook trout	Wild	Conservation General	Ensure isolation and restrict introduction of hybridizing species. Restrict harvest to maintain or enhance numbers. Provide liberal harvest opportunity and reduce numbers where possible.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Cold Creek First Creek Sevenmile Creek Johnson Creek Marshall Creek Patrick Creek West Mountain Creek Slowey Gulch Quartz Creek Butler Creek O'Keefe Creek Lavall Creek	7.2 miles 6.7 miles 6.2 miles 6.1 miles 4.8 miles 4.5 miles 4.2 miles 3.1 miles 3.1 miles 2.7 miles 1.7 miles 1.6 miles				
Habitat needs and activities: Maintain fish passage barriers isolating populations from Clark Fork River, improve habitat and connectivity within drainages, and restrict new fish introductions – particularly in fish ponds.					
High Elevation (Mountain) Lakes: 121	1-30 Acres each, 861 Acres Total	Westslope cutthroat trout (N)	Wild	Conservation	13 lakes – Self-sustaining fisheries of various quality.
Lakes Total > 1 Acre in Bitterroot Mountains and Rattlesnake Wilderness *See specific Mountain Lake Management Plan Reports for Each Water Body*		Westslope cutthroat trout (N)	Wild/ Hatchery	Put, Grow and Take	14 lakes – Management objective varies by lake, including trophy, quality, and harvest-oriented fisheries.
		Brook trout	Wild	General	18 lakes – Reduce densities or eliminate to improve quality.
		Yellowstone cutthroat trout	Wild	General	3 lakes – Self-sustaining fisheries of various quality
		Rainbow trout	Wild	General	8 lakes - Self-sustaining fisheries of various quality

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Fishless Lakes	N/A	Conservation	65 lakes – Maintain ecological integrity.
Habitat needs and activities: Evaluate stocking prescriptions for Put-Grow-Take fisheries. Maintain fishless lakes. Remove or suppress brook trout to enhance quality of fisheries and complement downstream native fishery goals.					


Lower Clark Fork River Drainage
MONTANA FWP
Bull Lake
Fisher River
Wolf Creek
Island Lake
Ashley Lake
Dami Lake
Little Bitterroot Lake
Cabinet Gorge Reservoir
Noxon
Noxon Rapids Reservoir
Thompson Lake, Middle
McGregor Lake
Hubbart Reservoir
Trout Creek
Thompson River
FLATHEAD INDIAN RESERVATION
Thompson Falls
Thompson Falls Reservoir
Clark Fork River
Plains
Paradise
Flathead River
Saint Regis
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background imagery from ESRI
0 5 10
Miles

LOWER CLARK FORK RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Lower Clark Fork River begins at its confluence with the Flathead River and terminates at the inlet to Lake Pend Oreille in Bonner County, Idaho. In Montana, this drainage falls almost entirely within Sanders County. The river flows for 94 miles through a drainage of 1.4 million acres before exiting the state. Elevations range between 2,191 and 8,735 feet. Approximately 83% of the land within the drainage is managed by the Lolo and Kootenai National Forests. Privately owned land is primarily confined to the valley floor and the Thompson River drainage. Primary land uses include agriculture, hydropower generation, forest products, recreation and wilderness.

There are 49 lakes or reservoirs in the drainage, totaling 14,483 surface acres. Numerous, natural headwater lakes are found at higher elevations. The largest of these lakes, Wanless Lake, lies within the Cabinet Mountains Wilderness area. The Thompson, Bull and Vermilion rivers are the largest tributaries to the lower Clark Fork River. Approximately 62 miles of the lower Clark Fork River is inundated by three dams: Thompson Falls, Noxon Rapids and Cabinet Gorge (completed in 1915, 1959 and 1952 respectively). Noxon Rapids Dam creates the largest reservoir, impounding an area of 8,000 acres at full pool, followed by Cabinet Gorge (3,000 acres) and Thompson Falls (1,000 acres).

FISHERIES MANAGEMENT

Diverse habitat types throughout the Lower Clark Fork River drainage provide numerous fishing opportunities, including warm, cool and cold-water sport fisheries and important habitat for native species. Largemouth and smallmouth bass, northern pike, yellow perch and several trout species are the primary species targeted by fishermen.

Native species within the drainage include bull trout, westslope cutthroat trout, mountain whitefish, longnose and largescale sucker, northern pikeminnow, peamouth, longnose dace, redside shiner, and several sculpin species. Native species management is focused on salmonids with an emphasis on bull trout recovery. The lower Clark Fork River and several of its tributaries are designated as bull trout critical habitat. Bull trout in this drainage exhibit both resident and migratory life histories with some fish moving to mainstem rivers, reservoirs or Lake Pend Oreille to mature. Primary limiting factors for this species include dams (passage barriers and altered habitat), habitat degradation in tributaries, warm water temperatures, and introduced species. Currently these impacts are being partially addressed through the Avista and Northwestern Energy hydro-mitigation programs, which are required by FERC and stipulated in their operating licenses. Fish passage at Thompson Falls Dam, owned and operated by Northwestern Energy, is facilitated by a fish ladder that began operation in spring 2011. Upstream passage at Cabinet Gorge Dam, owned and operated by Avista, is facilitated by a capture and transport program that returns adult fish to their natal tributaries based on genetic assignments. Additionally, the juvenile trap and haul program captures out-migrating juvenile bull trout from tributaries and trucks them to Lake Pend Oreille. Both utilities also contribute to habitat restoration and acquisition. In the East Fork Bull River, there is continued exclusion of

nonnative species at weir traps on the lower river. Enhanced bull trout education and enforcement is also a priority of FWP and Avista.

The lower Clark Fork drainage contains numerous high elevation ponds and lakes in tributary headwaters. Many of these waters contain fish that are supported by natural reproduction or stocking. Westslope cutthroat trout are the primary species found in most of these habitats, however, some waters have historically been stocked with brook trout, rainbow trout, or Yellowstone cutthroat trout. Access to many of these lakes is by foot with a couple accessible by vehicle. Where feasible, nonnative fish may be replaced with westslope cutthroat trout to reduce threats on downstream populations of native trout, as well as increasing angler opportunity. A five-year study on fish distribution, growth, and abundance in the lower Clark Fork mountain lakes was initiated in 2016. This information will guide stocking rates and management in the future. Some lakes are intentionally left fishless to conserve amphibians and other aquatic species.

Tributaries to the Clark Fork River provide angling opportunities for trout. The Thompson River is the most popular with approximately 13,000 angler days in 2015. Other streams receive less angling days, with only the Bull River also receiving measurable pressure. All tributaries are closed to angling between November 30 and the third Saturday in May to protect spawning westslope cutthroat trout, with the exception of the lower Thompson River. Regulations on the Thompson River also prohibit the use of bait by adult anglers to reduce hooking mortality.

The Thompson River below its confluence with the Little Thompson River remains open year-round, providing fishing opportunity for whitefish and trout anglers. Trout fishing is limited to catch and release for all species between December 1 and the third Saturday in May and cutthroat and rainbow trout must be released year-round. The upper river was closed in 2000 for winter fishing to protect spawning rainbow trout; however, this species is now rare in the upper river and a new regulation may be proposed.

Riverine portions of the Clark Fork River (downstream of Flathead River confluence) provide angling opportunities for smallmouth bass and northern pike. Native suckers, minnows, and whitefish dominate this habitat. Trout are limited due to warm summer water temperatures.

Reservoirs on the lower Clark Fork River are popular warm and cool water fisheries. Yellow perch and northern pike are pursued by anglers year-round and largemouth and smallmouth bass are popular from spring through fall. Noxon Reservoir hosts up to seven bass fishing tournaments annually and currently holds the state record for largemouth bass. A recent creel survey during the open water period found that most anglers targeted either species of bass, followed by northern pike and yellow perch. Noxon also holds the state record for northern pikeminnow, although native suckers and minnows have declined dramatically in recent years in Noxon Reservoir. Introduced yellow perch and pumpkinseed have maintained high or increasing abundances and likely provide the bulk of forage for sport fish at this point. Spring walleye fishing in upper Noxon Reservoir is common during years when conditions permit.

Walleye were illegally introduced into Noxon Reservoir in the late-1980s or early-1990s and multiple introductions were reported throughout the 1990s. The population did not reach catchable numbers until the mid-2000s, at which time FWP conducted a radio telemetry project which identified a primary spawning location at the upper end of the reservoir.

FWP will continue to monitor the walleye in Noxon Reservoir through fall gillnetting and spring electrofishing. Even during years of high abundance, walleye comprise less than 5% of species captured by gillnets in Noxon Reservoir. During spring electrofishing, sampling is biased highly towards male walleye with approximately 25% of fish being female. FWP will continue to place a "no limit" regulation on walleye in Noxon Reservoir. To prevent upstream spread, FWP will continue to prohibit Northwestern Energy from operating the fish ladder at Thompson Falls Dam in volitional mode (i.e., every fish which ascends the ladder will be inspected by fisheries staff to insure no walleye pass the dam.)

Currently the lower Clark Fork has three family fishing ponds which are stocked with rainbow trout. Triangle Pond near the town of Noxon provides a quality family fishery for stocked rainbow trout and burbot. Near Trout Creek, the Frog Pond provides a fishery for stocked rainbow trout and multiple warm-water species. Finally, a recently expanded pond at Thompson Falls State Park provides a fishery for stocked rainbow trout and other warm-water species. The Frog Pond and Thompson Falls State Park Pond is stocked with triploid (sterile) rainbow trout to reduce the risk of hybridization with native trout present in the Clark Fork River.

HABITAT

Tributary habitat in the Lower Clark Fork Drainage has been shaped by numerous natural and man-caused conditions. The Thompson River is the area's most popular stream fishery and is unique in that the lower river has colder summer water temperatures than the upper river. The headwaters of the Thompson River begin at the outlet of the Thompson Chain of Lakes and slowly meanders through a gentle landscape with sparse large vegetation. It is not until the additions of Fishtrap Creek and West Fork Thompson River that the river picks up cold water, steeper gradient, and a more favorable temperature regime for native trout. The primary habitat concern in the Thompson River is the abundance of redundant road systems throughout the drainage. Grazing and timber harvest also cause localized concerns in several areas of the Thompson River.

A unique feature of many lower Clark Fork River tributaries are sections of streams which are seasonally intermittent due to coarse sediment deposits left behind by Glacial Lake Missoula. These intermittent stream reaches have partially isolated some headwater fish populations, which in some cases has resulted in entirely native species assemblages with mostly resident life histories.

Historic land use has also shaped habitat in these other tributaries. Major impacts to certain tributaries are caused by the construction and maintenance of roads, transmission lines, and petroleum pipelines, as well as mining and grazing. Localized habitat problems include sedimentation, unstable banks, simplification of habitat, and thermal impacts. Mining impacts are limited to only a couple of tributaries (including the Vermilion River) where some small-scale mine claims are still in place. Proposed copper and silver mines near the Cabinet Mountain Wilderness areas could significantly alter habitat in the Rock Creek and Bull River drainages. Current estimates suggest mining could reduce base flows in these streams by five percent.

Approximately 66% of the Lower Clark Fork River has been converted from riverine to reservoir habitat by three hydroelectric facilities. All three reservoirs are run-of-the-river and experience little thermal stratification. Reservoir draw-downs are limited to ten feet annually to benefit the

sport fisheries present. Mainstem habitat created by the dams is unfavorable for native trout due to warm water temperatures and blocked fish passage. Currently, both utilities are attempting mitigation for blocked migrations through the implementation of fish passage programs at Thompson Falls and Cabinet Gorge dams. Thompson Falls Dam was outfitted with a fish passage ladder that has been in operation since spring 2011. Bull trout passage at the Cabinet Gorge Dam is facilitated by active capture techniques and upstream transport to the fish's tributary of origin based on genetic assignment. Permanent upstream fish passage facilities (trap and haul) are currently planned for construction in 2019.

Water quality in the lower Clark Fork River is highly impacted by mercury, PCBs, and dioxin/furans (DF). Fish consumption advisories exist for many popular sport fish with large walleye and northern pike being the most restrictive. The source of the excess mercury is primarily from past mining activities upstream. The source of PCBs and DF is from an upstream pulp mill which shut down in 2010.

FISHING ACCESS

Fish, Wildlife and Parks maintains four Fishing Access Sites between the lower Flathead River and the Clark Fork River down to Thompson Falls, as well as Thompson Falls State Park. Three additional sites are located at the headwaters of the Thompson River on McGregor Lake and the Thompson Chain of Lakes. In addition to these sites, FWP works with the US Forest Service, Avista, and Northwestern Energy to provide developed access at numerous other sites throughout the drainage. Extensive road and trail systems on many tributary streams provide endless access opportunities on public land. A property on the lower Bull River acquired through the Avista's Clark Fork Settlement Agreement (CFSA) will provide public fishing access to that river in the future. There is a need to provide more public access on the Clark Fork River between Plains and Thompson Falls.

SPECIAL MANAGEMENT ISSUES

A majority of the Lower Clark Fork River is influenced by three hydroelectric dams built and operated by private utilities. Thompson Falls Dam was built in 1917 and is now operated by Northwestern Energy. In 2011, a fishway at that dam became operational with the intent of passing bull trout. Since then, the fishway has passed thousands of native and nonnative species and approximately 15 bull trout. Further downstream, Cabinet Gorge Dam (1952) and Noxon Rapids Dam (1958) are currently operated by Avista. As part of their license with the Federal Energy Regulatory Commission (FERC), Avista developed the Clark Fork Settlement Agreement (CFSA) in 1999 with 27 primary signatories representing 42 interest groups. The CFSA is a living, adaptive license to direct fisheries and wildlife mitigation for the facilities. The Native Salmonid Restoration Plan (NSRP) aimed at the restoration of bull trout, westslope cutthroat trout, and mountain whitefish is a major part of the CFSA. Mitigation activities have included habitat acquisition and restoration, access and recreational use development, and a trap and haul program for both juvenile and adult bull trout to provide connectivity to Lake Pend Oreille. Development of a permanent fish capture facility at Cabinet Gorge Dam is slated to begin within the next two years. Currently, native fish which are trucked around the dam are captured by electrofishing.

Rock Creek Mine

A major copper and silver mine is proposed in the Rock Creek drainage. The mine would develop adits that would run beneath the Cabinet Mountains Wilderness area and would include portals in the West Fork of Rock Creek with a tailings facility near the mouth of Rock Creek. The mine is still undergoing environmental review and permitting. Potential negative impacts would be decreased groundwater inputs in both the Rock Creek and the Bull River drainages as well as impacts to water levels in mountain lakes above the adits. Increased road usage and maintenance in the West Fork Rock Creek will certainly have negative impacts on that tributary as well. Disturbance from mine development and ore removal along with tailings and wastewater disposal is expected to impact Rock Creek and possibly the Lower Clark Fork River from Noxon Rapids Reservoir downstream.

FISHERIES MANAGEMENT DIRECTION FOR LOWER CLARK FORK RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Lower Clark Fork River - Confluence with Flathead River to Idaho Border	94 miles	Bull trout (N)	Wild	Conservation	Continue to monitor population trends. Using trap and haul program, reestablish fish connectivity. Continue yearlong closure on angling for bull trout.
		All other species	Wild	General	Continue to monitor distribution and status throughout the drainage.
Habitat needs and activities: Monitor drainage for potential habitat threats and restoration opportunities.					
Thompson Falls Reservoir	969 acres	Bull trout (N)	Wild	Conservation	Continue to operate fishway at Thompson Falls Dam. Continue yearlong closure on angling for bull trout.
		All other species	Wild	General	Continue to monitor population trends.
McGregor Lake	1,522 acres	Lake trout	Wild	General	Manage harvest to support angling opportunity while reducing numbers to improve size and benefit other put and take fisheries.
		Rainbow trout	Hatchery	Put, Grow and Take	Provide harvest and recreational opportunity for occasional 1-3 pound rainbows. Continue to boat stock year-old trout throughout the lake to minimize predation by lake trout.
		Kokanee salmon	Hatchery	Put, Grow and Take	Provide quality harvest and recreational opportunity for occasional salmon up to 15". Identify if continued stocking is warranted based on predatory lake trout population.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Smallmouth bass	Wild	Suppression	Illegal introduction. Provide liberal harvest and if feasible eliminate population to promote local rainbow fishery and protect native crayfish population.
Little McGregor Lake	33 acres	Rainbow trout	Hatchery	Put, Grow and Take	Provide quality harvest and recreational opportunity for 1+ pound rainbows. Identify if stocking is warranted based on competition with stunted yellow perch population.
		Yellow perch	Wild	General	Provide for harvest of at least 8" length yellow perch. Monitor population structure to determine if quality perch population can be sustained or if lake should be rehabilitated for salmonids.
Upper Thompson Lake	294 acres	Northern pike	Wild	General	Continue to provide for liberal harvest including spearing to provide for recreational opportunity and decrease predation on Put and take fisheries and yellow perch.
		Yellow perch	Wild	General	Maintain recreational angling and harvest opportunity
		Largemouth bass	Wild	General	Maintain recreational angling and harvest opportunity. Through regulation, enhance opportunity for spawning size bass (>14").
		Smallmouth bass, Black crappie	Wild	Suppression	Illegal introduction. Provide liberal harvest and if feasible eliminate population to help protect kokanee fishery and largemouth bass population.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Middle Thompson Lake	557 acres	Northern pike	Wild	General	Continue to provide for liberal harvest including spearing to provide for recreational opportunity and decrease predation on put and take fisheries and yellow perch.
		Rainbow trout	Hatchery	Put, Grow and Take	Identify if continued stocking is warranted based on predator populations of northern pike and bass.
		Kokanee salmon	Hatchery/ Wild	Put, Grow and Take/ Restrictive Regulations	Maintain regulations that promote protection of naturally reproducing population with opportunity for larger kokanee. Continue to monitor contribution to population of hatchery versus wild kokanee. Identify if stocking is warranted based on predator populations of northern pike and bass.
		Yellow perch	Wild	General	Maintain recreational angling and harvest opportunity.
		Largemouth bass	Wild	General	Maintain recreational angling and harvest opportunity. Through regulation, enhance opportunity for spawning size bass (>14”).
		Smallmouth bass, Black crappie	Wild	Suppression	Illegal introduction. Provide liberal harvest and if feasible eliminate population to help protect kokanee fishery and largemouth bass population.
Habitat needs and activities: Monitor perched culvert between Middle Thompson Lake and Upper Thompson Lake for obstruction to fish movement. Identify if replacement is necessary.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Lower Thompson Lake	240 acres	Northern pike	Wild	Wild	Continue to provide for liberal harvest including spearing to provide for recreational opportunity and decrease predation on put and take fisheries and yellow perch.
		Rainbow trout	Hatchery	Put, Grow and Take	Identify if continued stocking is warranted based on predator populations of northern pike and largemouth bass.
		Kokanee salmon	Hatchery/ Wild	Put, Grow and Take/ Restrictive Regulations	Maintain regulations that promote protection of naturally reproducing population with opportunity for larger kokanee. Monitor contribution to population of hatchery versus wild kokanee. Identify if continued stocking is warranted based on predator populations of northern pike and bass.
		Yellow Perch	Wild	General	Maintain recreational angling and harvest opportunity.
		Largemouth bass	Wild/ Hatchery	General/ Put, Grow and Take	Maintain recreational angling and harvest opportunity. Through regulation, enhance opportunity for spawning size bass (>14”). Monitor contribution to population of hatchery versus wild bass. Identify if continued stocking is warranted.
		Smallmouth bass, Black crappie	Wild	Suppression	Illegal introduction. Provide liberal harvest and if feasible eliminate population to help protect kokanee fishery and largemouth bass population.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Thompson River	55 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild/ Transfer	Conservation	Continue to monitor population trends and migration patterns of fish with remote PIT arrays. Continue yearlong closure on angling for bull trout. Continue upstream bull trout transport program for fish from below Cabinet Gorge Dam. Assess habitat conditions and look for opportunities for improvement. Continue to prohibit bait fishing (anglers over 14) to reduce hooking mortality.
		Rainbow trout	Wild	Restrictive Regulations	Continue to manage harvest to provide angling opportunity for larger trout with restrictive regulations and minimize impacts on native fish. Evaluate effectiveness of restrictive regulations.
		Brown trout	Wild	General	Continue to allow liberal harvest and seek opportunities for extended fishing season on upper river.
		Mountain whitefish (N), Brook trout	Wild	General	Continue with general western district harvest regulations of mountain whitefish and brook trout.
Habitat needs and activities: Decrease sedimentation and stream bank instability through instream and riparian habitat restoration. Investigate causes of elevated water temperatures and restore if possible.					
Little Thompson River	20.3 miles	Westslope cutthroat trout (N)	Wild	General	Continue to monitor distribution and status throughout the drainage. Identify habitat restoration projects which may improve water quality and temperature to benefit wild cutthroat trout populations.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Brook trout	Wild	General	Maintain liberal regulations. Determine areas where brook trout may be excluded or removed.
Habitat needs and activities: Identify leading causes of habitat degradation and determine if restoration would benefit bull trout.					
Fishtrap Creek	27.5 miles	Bull trout (N)	Wild/ Transfer	Conservation	Continue to monitor population trends. Continue yearlong closure on angling for bull trout. Continue to prohibit bait fishing to reduce hooking mortality. Assess habitat conditions and look for opportunities for improvement.
		Westslope cutthroat trout (N)	Wild	Conservation	Continue to monitor distribution and status throughout the drainage. Continue to limit harvest.
		Rainbow trout, Brown trout, Brook trout	Wild	General	Monitor distribution of these species and determine ways to prevent advancement into important bull and cutthroat trout spawning and rearing areas.
Habitat needs and activities: Assess habitat and hydrologic conditions. Restore habitat where necessary.					
Prospect Creek	77.6 miles	Bull trout (N)	Wild/ Transfer	Conservation	Continue to monitor population trends. Continue yearlong closure on angling for bull trout. Assess habitat conditions and look for opportunities for improvement.
		Westslope cutthroat trout (N)	Wild	Conservation	Continue to monitor distribution and status throughout the drainage.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Rainbow trout, Brook trout, Brown trout	Wild	General	Continue to monitor distribution and status throughout the drainage and determine ways to prevent advancement into bull and cutthroat trout spawning and rearing areas. Continue to monitor effectiveness of the Blossom Lakes brook trout removal in the upper drainage.
Habitat needs and activities: Develop a working group to identify potential habitat restoration and mitigation projects. Restore habitat degraded by land use, roads, pipelines and power lines. Continue to monitor previously conducted habitat restorations.					
Graves Creek	19.2 Miles	Bull trout (N)	Wild/ Transport	Conservation	Continue to monitor distribution and status throughout the drainage.
		Westslope cutthroat trout (N),	Wild	Conservation	
		Rainbow trout, Brown trout, Brook trout	Wild	General	Continue to monitor distribution and status throughout the drainage and determine ways to prevent advancement into important bull and cutthroat trout spawning and rearing areas.
Habitat needs and activities: Monitor drainage for potential habitat threats and restoration opportunities.					
Vermilion River	43.2 Miles	Bull trout (N)	Wild/ Transport	Conservation	Continue to monitor population trends. Continue downstream and upstream bull trout transport program. Continue yearlong closure on angling for bull trout. Assess habitat conditions and look for opportunities for improvement.
		Westslope cutthroat trout (N)	Wild	Conservation	Continue to monitor distribution and status throughout the drainage.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Rainbow trout, Brown trout, Brook trout	Wild	General	Continue to monitor distribution and status throughout the drainage and determine ways to prevent advancement into bull and cutthroat trout spawning and rearing areas.
Habitat needs and activities: Continue to reduce sediment sources by stabilizing stream banks and repairing riparian habitat.					
Noxon Rapids Reservoir	7,940 Acres	Bull trout (N)	Wild	Native	Administer Montana portion of Avista fisheries mitigation program. Continue yearlong closure on angling for bull trout.
		Walleye	Wild	Suppression/ Liberal Regulations	Continue to monitor this species through spring and fall sampling. Maintain “no-limit” regulation for angler harvest.
		Largemouth bass, Smallmouth bass	Wild	General/ Restrictive Regulations	Maintain later spawning-time restriction to protect spawning bass. Continue to monitor/permit 2-3 bass tournaments per year.
		All other species	Wild	General	Continue to monitor population trends.
Trout Creek	30.2 Miles	Bull trout (N)	Wild	Conservation	Continue to monitor population trends. Continue yearlong closure on angling for bull trout. Assess habitat conditions and look for opportunities for improvement.
		Westslope cutthroat trout (N)	Wild	Conservation	Continue to monitor distribution and status throughout the drainage.

Continue next page

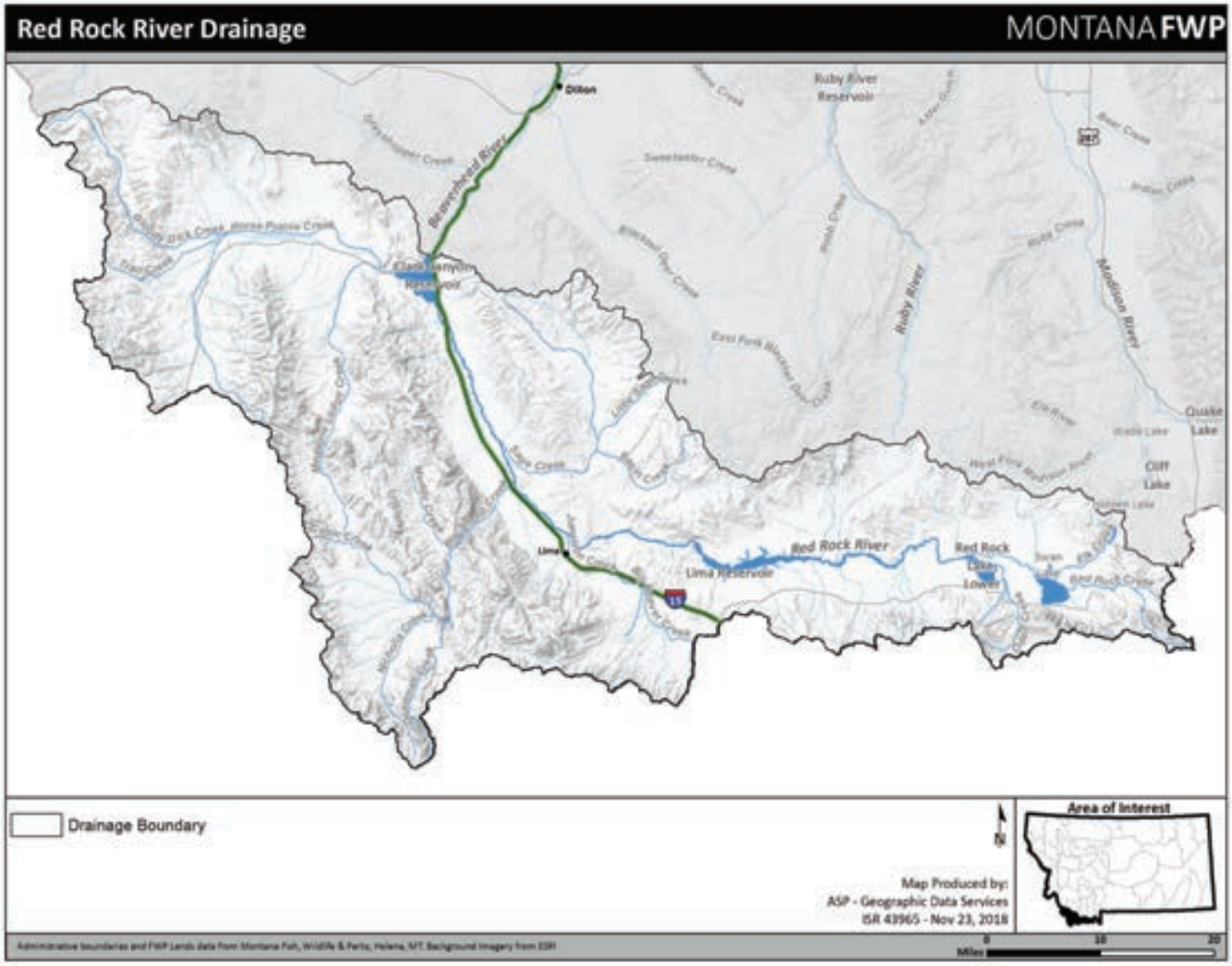
Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Rainbow trout, Brown trout, Brook trout	Wild	General	Continue to monitor distribution and status throughout the drainage and determine ways to prevent advancement into bull and cutthroat trout spawning and rearing areas.
Habitat needs and activities: Monitor drainage for potential habitat threats and restoration opportunities.					
Swamp Creek	16.6 Miles	Bull trout (N)	Wild/ Transfer	Conservation	Continue to monitor population trends. Continue upstream bull trout transport program. Continue yearlong closure on angling for bull trout.
		Westslope cutthroat trout (N)	Wild	Conservation	Continue to monitor distribution and status throughout the drainage.
		Rainbow trout, Brown trout, Brook trout	Wild	General	Continue to monitor distribution and status throughout the drainage and determine ways to prevent advancement into bull and cutthroat trout spawning and rearing areas.
Habitat needs and activities: Monitor drainage for potential habitat threats. Restore degraded habitat identified in the USFS watershed assessment.					
Rock Creek	17 Miles	Bull trout (N)	Wild/ Transfer	Conservation	Continue to monitor population trends. Continue upstream bull trout transport program. Continue yearlong closure on angling for bull trout.
		Westslope cutthroat trout (N)	Wild	Conservation	Continue to monitor distribution and status throughout the drainage. Work with partners to minimize effects of reduced base flows and habitat impacts associated with proposed mines in the headwaters.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Rainbow trout, Brown trout, Brook trout	Wild	General	Continue to monitor distribution and status throughout the drainage and determine ways to prevent advancement into bull and cutthroat trout spawning and rearing areas.
Habitat needs and activities: Monitor drainage for potential habitat threats and restoration opportunities with potential mine development.					
Cabinet Gorge Reservoir	3,200 Acres	Bull trout (N)	Wild	Conservation	Assess habitat use, survivorship and limiting factors of reservoir reared fish. Establish adult bull trout passage past Cabinet Gorge Dam through a trap and transport program. Administer Montana portion of Avista fisheries mitigation program. Continue yearlong closure on angling for bull trout.
		Westslope cutthroat trout (N)	Wild	Conservation	Work with Idaho Fish and Game Department and Avista to continue passage of westslope cutthroat from Lake Pend Oreille into Cabinet Gorge Reservoir.
		Largemouth bass,	Wild	General/ Restrictive Regulations	Maintain later spawning-time restriction to protect spawning bass.
		All other species	Wild	General	Continue to monitor population trends.
Bull River	71.6 miles	Bull trout (N)	Wild/ Transfer	Conservation	Continue to monitor population trends. Continue downstream and upstream bull trout transport program. Continue yearlong closure on angling for bull trout.
		Westslope cutthroat trout	Wild/ Transfer	General	Assess the recreational contribution of cutthroat trout passage over Cabinet Gorge Dam on the Bull River fishery. Continue to improve angling access to the Bull River.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		All other species	Wild	General	Continue to monitor distribution and status throughout the drainage. Continue to exclude introduced salmonids (rainbow, brown, brook trout) from the East Fork Bull River.
Habitat needs and activities: Continue to restore degraded habitat identified in the Bull River Watershed Assessment. Monitor potential mine impacts. Assess potential to improve recreational access.					
Mountain Lakes	1,112 acres total	Westslope cutthroat trout (N)	Wild/ Hatchery	Put, Grow and Take/ General	Utilize data collected during complete census of Mountain Lakes (to be completed by 2021) to adjust stocking rates, assess threats to native species, and determine areas of natural reproduction.
		Brook Trout	Wild	General	Survey mountain lakes to determine distribution and status of wild populations, identify populations that can be managed or where removal may be necessary if impacts to native fish are inevitable.
Other Clark Fork Tributary Streams	1,214 miles	All	Wild	General	Survey previously un-sampled creeks to determine the distribution and status of the fish. Monitor previously surveyed populations. Determine connection to and contribution to Clark Fork River fisheries.
Habitat needs and activities: Protect sections of high quality habitat where necessary and restore habitat when beneficial to native species.					


Red Rock River Drainage
MONTANA FWP
Dillon
Beaverhead River
Clark Canyon Reservoir
Ruby River Reservoir
Ruby River
Madison River
Quake Lake
Cliff Lake
Red Rock River
Lima Reservoir
Red Rock Lake Lower
Lima
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Miles
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RED ROCK RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Red Rock River originates in the Centennial Valley and flows west through Upper and Lower Red Rock Lakes and then to Lima Reservoir. Major tributaries of the Red Rock River include Big Sheep Creek and Horse Prairie Creek. The Red Rock River drains an area of 1,580 square miles, about half of which lies on the mountain slopes of the Continental Divide. There are 23 lakes or reservoirs within the drainage, totaling 14,939 surface acres. Clark Canyon is the largest reservoir in the drainage at 4,815 acres.

The Centennial Valley occurs primarily at over 6,000 ft of elevation and remains one of the least inhabited large high valleys in the state of Montana. The Centennial Mountains rise abruptly, about 3,000 ft above the valley floor to form the Continental Divide and the valley's southern boundary. The northern boundary is formed by the gently rounded sagebrush covered hills of the Gravelly Range. The Centennial Valley hosts the longest winters in the nation, excluding Alaska. Snowfall averages over 138 inches annually and frost can occur in every month of the year. Annual precipitation averages around 19 inches. The timbered slopes and rocky basins of the area capture the heavy winter snows and provide a constant supply of water for the 14,000 acres of lakes, marshes, and streams within the valley. The Valley is about 50 miles long and 7 miles wide and is drained by the Red Rock River which flows into Lima Reservoir to the west. Elevation at the headwaters of Red Rock Creek is approximately 8,100 feet and constitutes the upstream most headwaters of the Missouri River. Two large shallow lakes, Upper (2,206 acres) and Lower (1,126 acres) Red Rock lakes, dominate the valley floor in the Centennial Valley. Both lakes have uniform, shallow (< 6 ft) basins with aquatic vegetation throughout bottoms of mud, peat, and detritus. Elk Lake, which is 207 acres and about 60 feet deep, occurs in the northeast corner of the valley at 6,750 feet in elevation. Several other small lakes and reservoirs occur throughout the mountain ranges bounding the valley. Four major streams, Red Rock, Elk, Tom, and O'Dell creek occur upstream of the Red Rock Lakes. The Red Rock River begins as the outlet of Lower Red Rock Lake. In addition, many small mountain and spring fed streams occur throughout the Centennial Valley.

The Red Rock leaves the valley at about 6,450 feet in elevation. Lima Reservoir is a 6,800 acre irrigation storage facility built in 1902. From Lima Dam, the river flows an additional 57.4 miles in a northwesterly direction through agricultural and grazing lands before discharging into Clark Canyon Reservoir. It is joined by its largest tributary, Big Sheep Creek, near the town of Dell.

Horse Prairie Creek, and its primary tributary Medicine Lodge Creek, drain the eastern slope of the Continental Divide to the west of Clark Canyon Reservoir. Elevations range from 10,200 feet at Jeff Davis peak to 5,578 feet at Clark Canyon Dam. The drainage is comprised of many miles of relatively small streams and four mountain lakes.

Clark Canyon Reservoir is a 4,900 acre irrigation impoundment that was built in 1964. Prior to construction of Clark Canyon Reservoir, the Red Rock River and Horse Prairie Creek converged to form the Beaverhead River.

FISHERIES MANAGEMENT

Fish communities in the Red Rock River basin downstream from Lima Reservoir are common to Southwestern Montana. These species include: rainbow trout, brown trout, brook trout, hybrid westslope cutthroat trout, westslope cutthroat trout (primarily in isolated tributaries), mountain whitefish, common carp, longnose dace, longnose sucker, Rocky Mountain sculpin, and white sucker.

Native fish species that occur in the Centennial Valley include Arctic grayling, lake trout, westslope cutthroat trout, burbot, mountain whitefish, white sucker, longnose sucker, longnose dace, and sculpin. Nonnative species include brook trout, Yellowstone cutthroat trout, rainbow trout, and Utah chub.

Fisheries in the Centennial Valley are managed primarily for conservation and recreational angling of native species. Where nonnative species occur, they are managed as recreational fisheries. The Red Rocks National Wildlife Refuge, which was established in 1935 for trumpeter swan conservation, occupies over 39,000 acres in the eastern part of the valley. Stream and lakes that occur there are co-managed with the Refuge to ensure that their fisheries and wildlife goals and mandates are met. The remainder of the valley is private, BLM, and DNRC lands, much of which is managed primarily for cattle grazing.

Fish stocking in the Red Rock River basin occurred between the 1930s and 1970s when wild trout management philosophies were instituted. Typical species stocked included cutthroat trout, rainbow trout, and brown trout. Upstream from Lima Reservoir, documentation of historical stocking is limited, showing only one stocking of rainbow trout in 1959. Yellowstone cutthroat trout were also stocked into the Red Rock River drainage upstream from Lima reservoir; however, official records are limited to stocking that occurred once in 1936 of undesignated cutthroat trout. Like many waters in Montana, complete stocking records do not exist, and stocking likely occurred frequently prior to the 1930s.

Elk Lake was historically stocked with rainbow and Yellowstone cutthroat trout and is presently stocked with westslope cutthroat trout. In recent years, Arctic grayling have been re-established by stocking in support of conservation actions. Restoration of flow and habitat to a previously disconnected spawning tributary is being undertaken to attempt to create self-sustaining Arctic grayling and westslope cutthroat trout populations.

Fishing regulations throughout the Red Rock River basin follow Central District Standard regulations with a few exceptions. In the Red Rock River downstream from Lima Reservoir, harvest rates are reduced for Combined Trout (3 daily and in possession, only 1 over 18 inches). Arctic grayling are protected by catch-and release regulations throughout the basin, and lake trout are protected by catch-and-release regulations in Elk Lake.

The combined trout harvest limit in Clark Canyon Reservoir is three daily and in possession. Burbot harvest regulations are also exceptions to the Central District Standard regulation allowing only three burbot daily and in possession and only 1 over 28 inches. Both regulations are directed at maintaining high size structure to the trout and burbot populations within the reservoir.

Angling is currently not allowed in either Upper or Lower Red Rock Lakes. Otherwise, with the exception of Clark Canyon Reservoir, angler use of waters within the Red Rock River basin is low. Elk Lake has the highest angler use relative to the size of the water (207 acres), with effort approaching 2,000 angler days in 2009. Over the past decade, angling pressure on Clark Canyon Reservoir has varied from 15,837 angler days in 2015 to 37,709 angler days in 2009. Total use by non-resident anglers has varied from 7 to 42 percent of all angler days over the last decade.

Twenty-three mountain lakes exist within the Red Rock River drainage that are managed as trout fisheries. Management of these lakes varies from periodic hatchery stocking to wild self-sustaining fisheries.

HABITAT

The Red Rock River upstream from Lima Reservoir is a low gradient stream, flowing for 29.3 miles through open sagebrush country within the Centennial Valley. In the Centennial Valley, the river has a sand-gravel bottom that is covered in vast areas with accumulations of silt. The narrow riparian zone is vegetated with sedges, grasses and clumps of willow. Over half of this reach passes through parcels of public land controlled by the BLM, State of Montana, and FWS. The summer grazing of livestock is the major land use along this stretch of the Red Rock River.

Between Lima Dam and Clark Canyon Reservoir, the Red Rock River flows for 57.4 miles through privately owned valley lands, primarily used for hay production and the wintering of cattle. The river width averages about 45 feet at low flow, and the substrate is comprised of gravel-cobble with some silt deposition in the slower moving waters. The narrow riparian zone is primarily vegetated with grasses, willows, alders and cottonwoods. Approximately 35,000 acres of land is irrigated within this reach of river. Stream dewatering can be severe in this reach of the Red Rock River, with flow ceasing for several days at a time within short stretches of river. Wintering cattle have damaged the stream banks along portions of the reach, creating raw and eroding banks.

A USGS gage was operated from 1936 through 1967 at river mile 10.4. The mean annual flow for the six complete years of record (1937-1942) was 93.6 cfs. For the remaining period of operation, only non-winter flows were recorded. Non-winter monthly mean flows varied from 47.1 cfs in September to 408 cfs in May. Water to irrigate about 6,000 acres is diverted upstream from this historic gage.

FISHING ACCESS

No FWP Fishing Access Sites exist within the Red Rock River Basin, but public lands generally provide adequate access to waters within the basin.

SPECIAL MANAGEMENT ISSUES

In 2007, Montana Fish, Wildlife & Parks, and partners (BLM, USFWS, USFS, Montana Council Trout Unlimited, Montana Chapter American Fisheries Society, Yellowstone National Park, Montana Arctic Grayling Recovery Program, NRCS, and DNRC) all cosigned a Memorandum of Understanding (MOU) concerning Montana Arctic Grayling Conservation. This MOU defines responsibilities and procedures agreed to by all signatory agencies conserving conservation actions to benefit Arctic grayling in Montana.

The Red Rock River drainage is also home to several conservation populations of westslope cutthroat trout providing opportunities to conserve this native species in the drainage. The long-term goal of cutthroat conservation in the Red Rock is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout (see Part 1: Trout: Westslope and Yellowstone Cutthroat Trout for details).

FISHERIES MANAGEMENT DIRECTION FOR RED ROCK RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Elk Lake	207 acres	Lake trout (N)	Wild	Conservation	Continue native species conservation to maintain a viable, self-sustaining population.
		Burbot (N)	Wild	General	Continue to manage fish density through angler harvest to maintain fish growth.
		Arctic grayling (N)	Wild/ Hatchery	Conservation	Continue native species conservation to maintain or create a viable, genetically unaltered, self-sustaining population and, secondarily, to provide angling opportunity. Augment population as necessary to maintain viability and genetic diversity.
		Westslope cutthroat trout (N)	Wild/ Hatchery	General	Continue to manage stocking and harvest to maintain fish growth. Augment population as necessary to maintain viability and genetic diversity.
Habitat needs and activities: Restore and maintain suitable spawning tributary habitats.					
Red Rock Creek	26 miles	Arctic grayling (N)	Wild	Conservation	Continue native species conservation to maintain viable, genetically unaltered, self-sustaining populations.
		Yellowstone cutthroat trout, Brook trout	Wild	Liberal Regulations/ General	Continue to manage to minimize potential impact on viability of Arctic grayling and secondarily for recreational angling.
Habitat needs and activities: Implement management alternatives as prescribed by the Centennial Valley Artic Grayling Adaptive Management Plan.					
Centennial Valley Streams		Arctic grayling (N), Westslope cutthroat trout (N)	Wild	Conservation	Continue native species conservation to maintain or create viable, genetically unaltered, self-sustaining populations.

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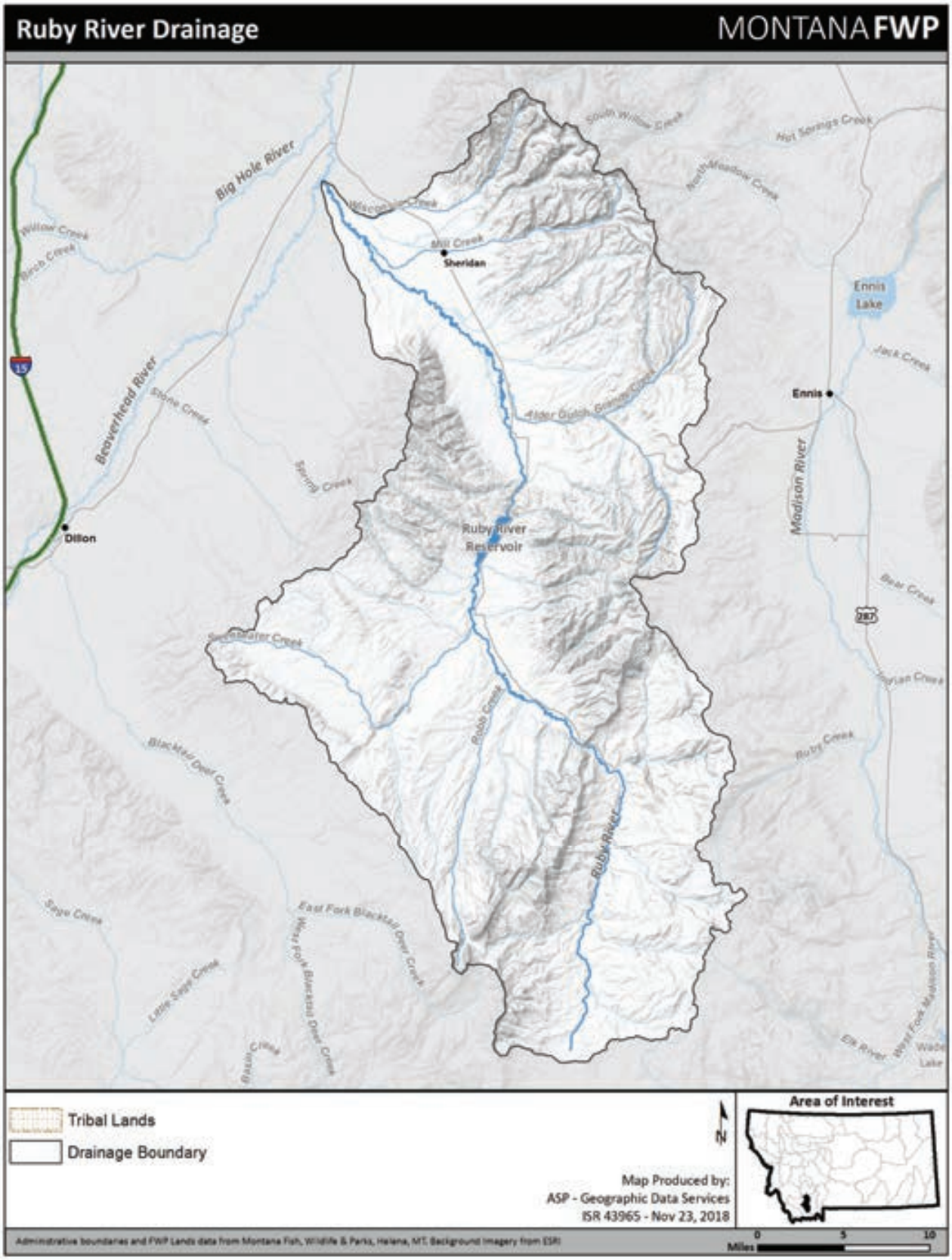
Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Hybridized cutthroat trout, Rainbow trout, Brown trout, Brook trout, Mountain whitefish	Wild	General	Continue to manage fish density through angler harvest to maintain fish growth and, in some instances, to ensure they are not limiting the viability of westslope cutthroat trout populations.
Habitat needs and activities: Implement Centennial Valley Arctic Grayling CCAA to address habitat-related threats to grayling persistence on private lands. Secure and replicate extant genetically unaltered westslope cutthroat trout populations and create meta-populations of westslope cutthroat trout in accordance with existing conservation plans. Initiate localized and watershed-scale restoration projects to address stressors and limiting factors. Develop instream flow improvements and plans in areas of need.					
Red Rock River	79 miles	Brown trout, Rainbow trout, Mountain whitefish (N)	Wild	General	Maintain present numbers and sizes.
Lima Reservoir	4,422 acres	Hybridized cutthroat trout, Burbot (N) Arctic grayling (N)	Wild Wild	General Conservation	Maintain present numbers and sizes. Continue native species conservation to maintain viable, genetically unaltered, self-sustaining populations.
Clark Canyon Reservoir	4,815 acres	Rainbow trout Brown trout Burbot (N)	Hatchery Wild Wild	Put and Take/ Quality General Restrictive Regulations	Continue to manage stocking and harvest to support quality angling opportunity for larger fish. Maintain present numbers and sizes. Manage harvest to support quality angling opportunity for larger fish.
Habitat needs and activities: Develop and implement a reservoir management plan that, in conjunction with flow management in the Beaverhead River, optimizes fisheries benefits and irrigation needs. Pursue development and implementation of alternatives that reduce likelihood of reservoir destabilization and resuspension of fine sediment. Evaluate the performance of stocking strains and wild recruitment to determine importance of tributary spawning habitat.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Mountain Lakes	23 lakes and 148 acres	Westslope cutthroat trout, Hybridized cutthroat trout, Yellowstone cutthroat trout, Rainbow trout, Brook trout	Wild/ Hatchery	Put and Take/ General	Continue to manage stocking and harvest to maintain fish growth


Ruby River Drainage
MONTANA FWP
Big Hole River
Willow Creek
Birch Creek
Beaverhead River
Stone Creek
Sheridan
Mill Creek
Wisconsin Creek
South Willow Creek
Hot Springs Creek
North Meadow Creek
Ennis Lake
Jack Creek
Ennis
Alder Gulch
Bivens Creek
Madison River
Spring Creek
Dillon
Ruby River Reservoir
Bear Creek
287
Taylor Creek
Ruby Creek
Blacktail Deer Creek
Robb Creek
Ruby River
Sage Creek
East Fork Blacktail Deer Creek
West Fork Blacktail Deer Creek
Little Sage Creek
Basin Creek
Elk River
West Fork Madison River
Wade Lake
Tribal Lands
Drainage Boundary
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Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background imagery from ESRI
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Miles

RUBY RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Ruby River arises from tributaries (its East, West and Middle Forks) located in the Gravelly and Snowcrest mountains of Southwest Montana and flows in a northwesterly direction for 41 miles through a narrow valley to Ruby Reservoir. Ruby Reservoir, built in 1939, is used for the storage of irrigation water. Downstream from Ruby Dam, the river meanders for approximately 48 miles through an agricultural valley to its confluence with the Beaverhead River. The river drains an area of approximately 935 square miles.

FISHERIES MANAGEMENT

The Ruby River basin contains fish species common to Southwestern Montana. These species include: rainbow trout, brown trout, brook trout, hybrid westslope cutthroat trout, westslope cutthroat trout (primarily in isolated tributaries), mountain whitefish, Arctic grayling, common carp, longnose dace, longnose sucker, Rocky Mountain sculpin, and white sucker. Arctic graying are historically native to the drainage, but were extirpated. Beginning in the early 2000s, Arctic grayling were restored to the headwater reaches of the Ruby River basin. As of 2018, ten years of natural reproduction had been documented, indicating that the population is self-sustaining.

Although the Ruby River basin was historically stocked with hatchery fish, stocking in the rivers and streams was discontinued by the early 1970s, and wild trout management philosophies were initiated. Ruby River Reservoir has been stocked since 1940, primarily with rainbow trout. Yellowstone cutthroat trout were stocked in 1980 through 1983. During most years since 1940, annual stocking of rainbow trout has occurred.

The Ruby River is managed under the Central District Standard regulations for the entire river. Upstream from Ruby Reservoir in the mainstem Ruby River, harvest of cutthroat trout is allowed as part of the combined trout limit, as most cutthroat trout within this section are hybridized with rainbow trout. Ruby Reservoir is managed under Central District Standard regulations with no exceptions.

The majority of river angling on the Ruby River occurs downstream from Ruby Dam. Since 2001, total angler effort on the Ruby River from the mouth to Ruby Dam has exceeded 9,000 angler days (over 14,000 in 2007 and 2009). Angler effort upstream of Ruby Dam is approximately 10% of the levels observed downstream from the dam. The number of angler days per year for Ruby Reservoir has varied between 5,600 and 12,397 between 2001 and 2009.

Conservation populations of westslope cutthroat trout exist in some Ruby River tributaries and are managed as catch-and-release fisheries. Arctic grayling in the Ruby River are also protected from harvest with catch-and-release regulations.

Nine mountain lakes exist within the Ruby River basin that are managed as trout fisheries. Management of these lakes varies from periodic hatchery stocking to wild self-sustaining fisheries.

HABITAT

The upper Ruby River valley has a broad floodplain bounded on the west by the steep, mountainous Snowcrest Range and on the east by the gentler, rolling Gravelly Range. Elevations in the upper valley range from 5,900 to 10,500 feet. Lands within the 538 square mile upper drainage are primarily controlled by the USFS and the BLM. Average gradient of the 50-foot wide river channel is fairly constant at 7 feet/1,000 feet.

The upper drainage is comprised of 61% grassland, 12% forest, and 13% subalpine grassland, 12% noncommercial timber and 2% wet meadow and willow bottom. Riparian plant species are primarily willow, alder, birch and grasses and sedges.

The soils of the upper Ruby River valley are highly susceptible to erosion and mass wasting. The overgrazing of these areas in the late 1800s resulted in the formation of extensive rills and gullies. A riparian zone survey conducted in 1976 identified 621 sites with bank instability on the upper 14 miles of river. Livestock and livestock activities were the apparent cause at 46% of these sites.

The deposition of extremely fine sediments in the main river as well as the major tributaries in the upper drainage has the potential to affect trout food production and trout eggs. Due to severe sediment deposition, the inter-gravel water permeability in most trout spawning areas is below the level needed for good survival of trout eggs.

Downstream from Ruby River Reservoir, the Ruby River meanders for 47.9 miles through private grazing and irrigated hay lands within the wide, open Ruby Valley. Channel and bank alterations are common within this stretch. As of 1973, a total of 280 river bank and 53 channel alterations were documented. These projects comprised 17 and 8 percent of the reach length, respectively.

A major habitat concern in the lower Ruby River is excessive sedimentation. Land use of the upper drainage, coupled with the fragile soil types of the area have resulted in erosion problems and the accumulations of vast sediment deposits in Ruby Reservoir. During periods of extreme drawdown, the discharge from Ruby Reservoir is excessively turbid. This is attributed to bottom sediments being drawn into suspension by currents generated on the reservoir floor. Stream incision has further aggravated the sediment problem downstream from Ruby Reservoir.

Dewatering of the Ruby River downstream from Ruby Reservoir is a serious habitat issue. When water is stored in Ruby Reservoir during the winter months, flows downstream from the dam are greatly reduced. Portions of the river are also subject to severe dewatering during the summer irrigation season. During the droughts of 1985 and 1987, stretches of the Ruby River downstream from the reservoir were totally dewatered, causing major fish kills.

FISHING ACCESS

Five fishing access sites are located on the Ruby River. These sites are located from the Ruby Dam downstream.

Special Management Issues

In 2007, Montana Fish, Wildlife & Parks and partners (the BLM, USFWS, USFS, Montana Council Trout Unlimited, Montana Chapter American Fisheries Society, Yellowstone National Park, Montana Arctic Grayling Recovery Program, NRCS, and DNRC) all cosigned a Memorandum of Understanding (MOU) concerning Montana Arctic Grayling Conservation. This MOU defines responsibilities and procedures agreed to by all signatory agencies conserving conservation actions to benefit Arctic grayling in Montana (including the Ruby River).

The Ruby River drainage is also home to several conservation populations of westslope cutthroat trout providing opportunities to conserve this native species in the drainage. The long-term goal of cutthroat conservation in the Ruby is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout (see Part 1: Trout: Westslope and Yellowstone Cutthroat Trout for details).

FISHERIES MANAGEMENT DIRECTION FOR RUBY RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Ruby River Upstream of Ruby Reservoir	48.2 miles	Arctic grayling (N)	Wild	Conservation	Continue native species conservation to maintain viable, self-sustaining populations.
		Hybridized cutthroat trout, Rainbow trout, Brown trout, Brook trout, Mountain whitefish (N)	Wild	General	Maintain present numbers and sizes.
Ruby Reservoir	943 acres	Rainbow trout	Hatchery	Put, Grow and Take	Continue to manage stocking and harvest to minimize density dependent reductions in fish growth.
		Brown trout	Wild	General	Maintain present numbers and sizes.
Habitat needs and activities: Maintain reservoir elevations in accordance with existing management plan. Model relationships between fish planting success and reservoir spilling duration, volume, etc. to develop the most effective stocking strategies.					
Ruby River Downstream of Ruby Reservoir	45.5 miles	Rainbow trout, Brown trout, Mountain whitefish (N)	Wild	General	Maintain present numbers and sizes. Work with water users to optimize flows and temperatures to meet population goals.
Habitat needs and activities: Maintain instream flow in accordance with existing flow management plans. Determine whether changes in reservoir management will improve the quality of the downstream fishery. Initiate localized and watershed-scale restoration projects to achieve TMDL compliance on 303d listed streams.					
Ruby River Tributaries	342 miles	Westslope cutthroat trout (N)	Wild	Conservation	Continue native species conservation to maintain or create viable, genetically unaltered, self-sustaining populations.
		Hybridized cutthroat trout, Rainbow trout, Brown trout, Brook trout, Mountain whitefish (N)	Wild	General	Maintain present numbers and sizes. Consider increasing harvest to reduce numbers if necessary to maintain fish growth and in some instances, ensure they are not limiting the

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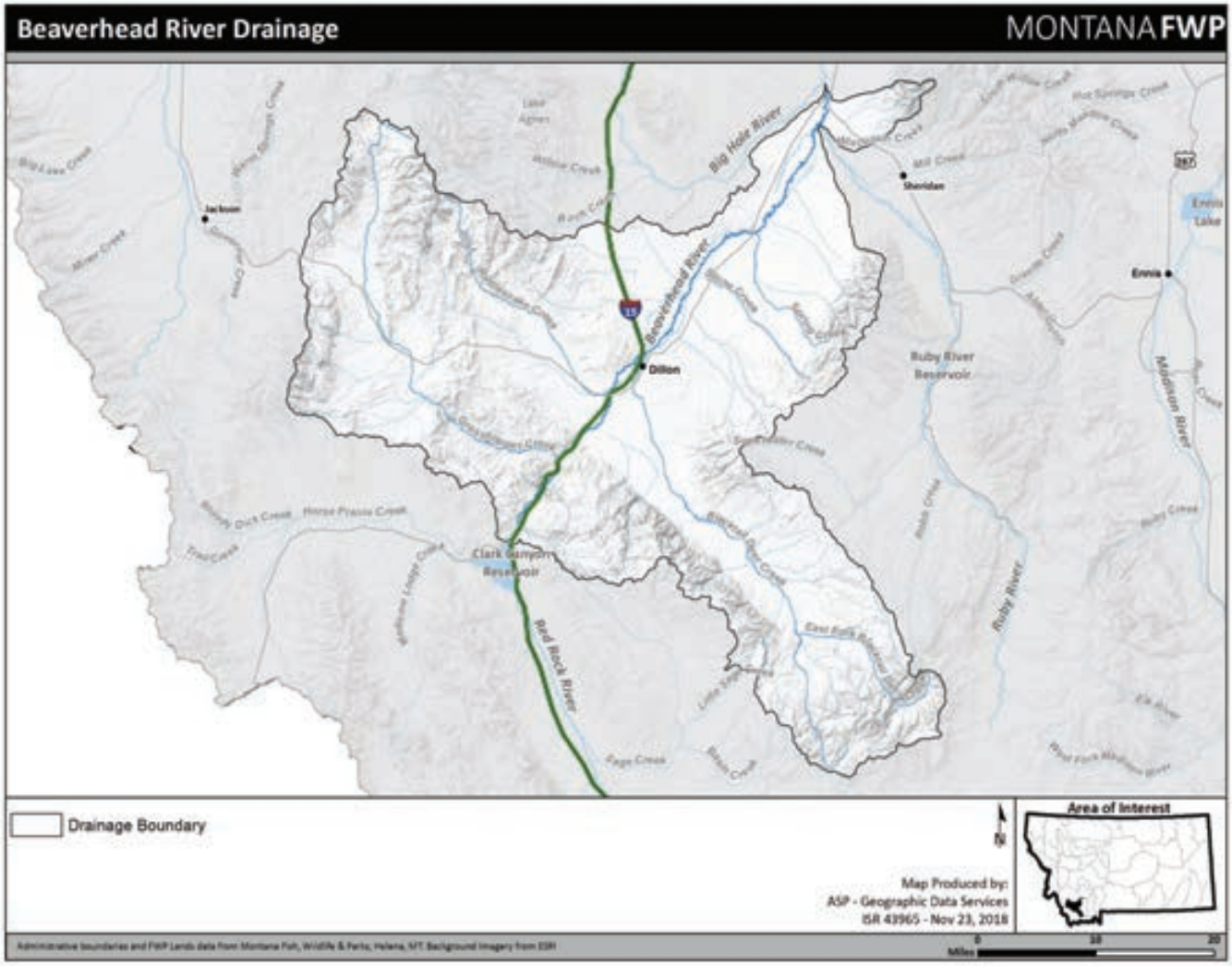
Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
					viability of westslope cutthroat trout populations.
Habitat needs and activities: Secure and replicate extant genetically unaltered westslope cutthroat trout populations and create meta-populations of westslope cutthroat trout in accordance with existing conservation plans. Initiate localized and watershed-scale restoration projects to achieve TMDL compliance on 303d listed streams. Develop instream flow improvements and plans in areas of need.					
Mountain Lakes	9 lakes and 65 acres	Westslope cutthroat trout, Hybridized cutthroat trout, Yellowstone cutthroat trout, Rainbow trout, Brook trout	Wild/ Hatchery	Put and Take/ Wild	Maintain present numbers and sizes. Consider increasing harvest or modifying stocking to reduce numbers if necessary to maintain fish growth.


Beaverhead River Drainage
MONTANA FWP
Big Hole River
Beaverhead River
Jackson
Sheridan
Ennis
Dillon
Ruby River Reservoir
Clark Canyon Reservoir
Red Rock River
Ruby River
Madison River
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Miles
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BEAVERHEAD RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Beaverhead River originates at the outlet of Clark Canyon Reservoir, an irrigation storage facility constructed by the BOR in 1964 and flows 79.5 miles before joining the Big Hole River to form the Jefferson River. Directly downstream from Clark Canyon Dam, the river flows through a canyon for 16 miles, before entering the broad, open Beaverhead Valley. At Point of Rocks, the river passes through a narrow constriction, then continues for about 20 miles through a wide, gently sloping valley to its confluence with the Big Hole River. The river drains an area of approximately 5,000 square miles. A large portion of the drainage consists of rugged mountains ranging from 9,000 to 11,000 feet in elevation. The river elevation at the dam outlet is 5,450 ft, and at the mouth is 4,600 ft. Major tributaries entering the river in downstream progression are: Grasshopper, Rattlesnake and Blacktail Deer creeks, and the Ruby River.

FISHERIES MANAGEMENT

The Beaverhead River basin contains fish species common to Southwestern Montana. These species include: rainbow trout, brown trout, brook trout, hybrid westslope cutthroat trout, westslope cutthroat trout (primarily in isolated tributaries), mountain whitefish, burbot, common carp, longnose dace, longnose sucker, Rocky Mountain sculpin, and white sucker.

Although the Beaverhead River basin was historically stocked with hatchery fish, stocking in the rivers and streams was discontinued by the early 1970s, and wild trout management philosophies were initiated. Between the 1930s and 1960s, the Beaverhead River was stocked with rainbow trout, cutthroat trout (undesignated as to which sub-species), and brown trout. Arctic grayling have also been stocked into the Ruby River basin during the late 1990s and the early 2000s as part of a FWP restoration program. The stocking was discontinued in 2002, and no natural reproduction has been subsequently detected through annual sampling. Rainbow trout have been stocked annually into Clark Canyon Reservoir since 1964.

The Beaverhead River is managed under Central District Standard regulations for the entire river with a few exceptions. Only one rainbow trout may be counted in the combined trout limit, and angling is closed from Clark Canyon Dam to Pipe Organ Bridge from 1 December until the third Saturday in May.

Angling pressure is high on the Beaverhead River downstream from Clark Canyon Dam. Angling effort has varied from 14,574 angler days in 2001 to 38,706 angler days in 2009. On average, over half of the angler days logged on the Beaverhead River are from non-resident anglers.

Twelve mountain lakes exist within the Beaverhead River basin that are managed as trout fisheries. Management of these lakes varies from periodic hatchery stocking to wild self-sustaining fisheries.

HABITAT

Throughout much of the Beaverhead River's length, it is confined to a single channel. Mean channel widths range from about 83 feet near the dam to about 93 feet near the mouth. The gradient is gentle, averaging 12 feet per mile. Willow is the dominant bank vegetation. In the upper river, the streambed consists primarily of rubble, gravel and sand. In addition to the above, silt is a common component of the streambed in the lower river. Fish cover primarily consists of submerged and overhanging bank vegetation, undercut banks, and long, deep pools.

Clark Canyon Reservoir and irrigation diversions affect the flow pattern of the Beaverhead River. Prior to the construction of the reservoir, much of the lower river was severely dewatered during the summer irrigation season. In general, reservoir management has resulted in higher flows in the lower river during the historically low flow months of May, July, August and September. However, much of the lower 64 miles still suffer from dewatering. In recent years, sections of the lower river have been totally dry. Massive withdrawals of irrigation water have virtually eliminated high water flows in the lower river. During periods of drought, the upper river is now severely affected by low flow releases during the non-irrigation season when water is being stored for the following year.

FISHING ACCESS

The Beaverhead River primarily flows through private lands. Access to the river is readily obtained through some private lands, publicly owned access sites, and at bridge crossings. Floating is popular during the fishing and waterfowl seasons.

FWP administers seven Fishing Access Sites on the Beaverhead River between Clark Canyon Dam and Dillon, Montana. Opportunities for developing additional Fishing Access Sites downstream of Dillon are a high priority.

SPECIAL MANAGEMENT ISSUES

Montana Fish, Wildlife & Parks works closely with the BOR on operations of Clark Canyon Dam, in particular concerning the need for greater overwinter flows downstream of the dam.

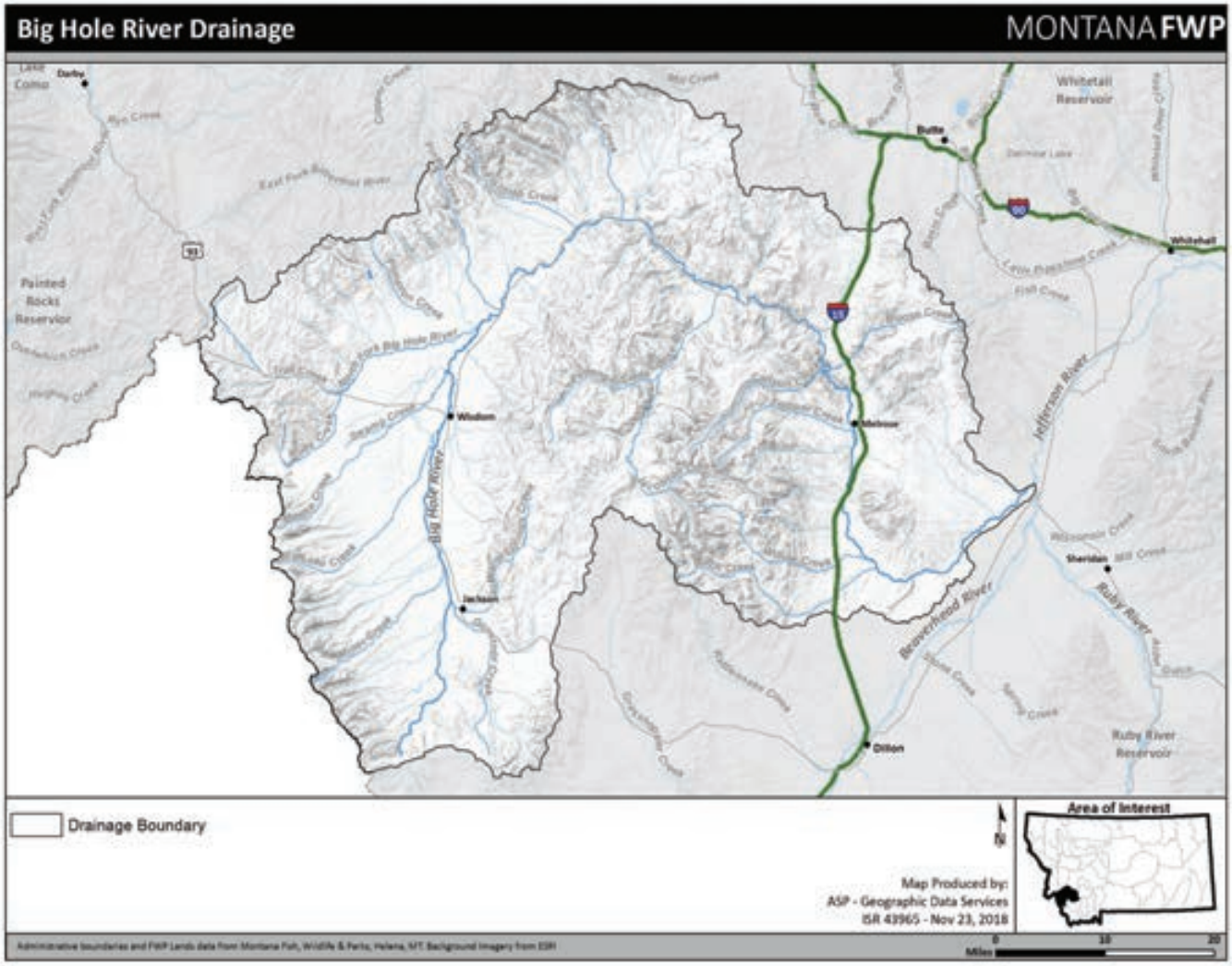
Given the popularity of the Beaverhead River, angling is managed with social rules (regulations) to minimize crowding issues. These rules prohibit angling by non-resident anglers and outfitters during particular times of the year and in specific sections.

The Beaverhead River drainage is home to several conservation populations of westslope cutthroat trout providing opportunities to conserve this native species in the drainage. The long-term goal of cutthroat conservation in the Beaverhead is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout (see Part 1: Trout: Westslope and Yellowstone Cutthroat Trout for details).

FISHERIES MANAGEMENT DIRECTION FOR THE BEAVERHEAD RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Beaverhead River	75 miles	Brown trout, Rainbow trout	Wild	Quality	Actively manage harvest, flows, and habitat to attain brown trout populations with 20% and rainbow trout populations with 35% of fish over 18" in the upper tailwater section (Clark Canyon Dam to Pipe Organ FAS). Manage to support upper tailwater goals in lower tailwater (Pipe Organ FAS to Barretts Diversion). Maintain present numbers and sizes downstream of Barretts Diversion.
		Mountain whitefish (N)	Wild	General	Continue to manage harvest to support viable populations.
Habitat needs and activities: Develop an instream flow and harvest management plan that optimizes fisheries benefits and irrigation needs to secure 1) improved winter flows upstream of Barretts Diversion and 2) improved summer flows downstream of Barretts Diversion. Release flushing flows to convey fine sediment through the reach between Clark Canyon Dam and Barretts Diversion and reduce or eliminate the effects of sediment delivery from the North Fork of Clark Canyon Creek.					
Beaverhead River Drainage Tributaries	491 miles	Westslope cutthroat trout (N)	Wild	Conservation	Continue native species conservation to maintain or create viable, genetically unaltered, self-sustaining populations.
		Hybridized cutthroat trout, Rainbow trout, Brown trout, Brook trout, Mountain whitefish (N)	Wild	General	Maintain present numbers and sizes. Modify as necessary to ensure they are not limiting the viability of westslope cutthroat trout populations.
Habitat needs and activities: Secure and replicate extant genetically unaltered westslope cutthroat trout populations and create meta-populations of westslope cutthroat trout in accordance with existing conservation plans. Initiate localized and watershed-scale restoration projects to achieve TMDL compliance on 303d listed streams. Develop instream flow improvements and plans in areas of need.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Poindexter Slough	6 miles	Brown trout, Rainbow trout, Mountain whitefish (N)	Wild	General	Maintain present numbers and sizes. Consider increasing angler harvest to reduce numbers if necessary to maintain fish growth.
Habitat needs and activities: Execute flow management plan that optimizes fisheries benefits and irrigation needs to 1) maintain minimum instream flows during summer, 2) release periodic flushing flows to convey fine sediment through the system and, 3) maximize reliance on accreted flows to enhance the spring creek character of Poindexter Slough to the extent possible.					
Mountain Lakes	12 lakes, 135 acres	Westslope cutthroat trout, Hybridized cutthroat trout, Yellowstone cutthroat trout, Rainbow trout, Brook trout,	Wild/ Hatchery	Put and Take/ General	Continue to manage stocking and harvest to maintain fish sizes and numbers.


Big Hole River Drainage
MONTANA FWP
Lake Como
Darby
Painted Rocks Reservoir
Whitetail Reservoir
Butte
Whitehall
Wisdom
Melrose
Jackson
Sheridan
Dillon
Ruby River Reservoir
Big Hole River
Jefferson River
Beaverhead River
Ruby River
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Miles

BIG HOLE RIVER DRAINAGE

GENERAL DESCRIPTION

The Big Hole River originates in the outlet of Skinner Lake at an elevation of 7,340 ft in the Beaverhead Mountains of southwest Montana. From its modest beginnings, the river gathers volume and velocity due to numerous tributaries along its 115 mile course until its confluence with the Beaverhead River near Twin Bridges at an elevation of 4,600 ft. The Big Hole drainage encompasses approximately 2,476 square miles. The river drains the Beaverhead Mountains on the west and the south side the Anaconda-Pintler Range on the north. The river also collects water from the East and West Pioneer Mountains which includes the largest tributary to the Big Hole, the Wise River. The average annual discharge of the river recorded at Melrose since the early 1900s is 1,117 cfs. The river is not dammed although there were significant attempts in the 1960s to construct a dam downstream of the town of Glen at the "Notch." From the high mountain meadows of its headwaters to the cottonwood bottoms of the lower river, the Big Hole is free-flowing and one of the most scenic rivers in Montana.

Major tributaries to the Big Hole River include the Wise River and the North Fork Big Hole River. There are 106 named high mountain lakes in the Big Hole Drainage, as well as low-land lakes such as Mussigbrod, Miner, Twin and Pintler Lakes which are accessible by vehicle and have native components to their fisheries. Outdoor recreation and angling in particular are important activities that occur in the Big Hole. The river receives significant angling pressure, particularly in the middle and lower reaches. Approximately half of this fishing pressure is from non-resident anglers. There many outfitters in local communities and from Butte, Dillon, Twin Bridges and Ennis that frequent the Big Hole and contribute to the local economy. Because of the importance of agriculture in the valley and the importance of irrigation, the river and many of its tributaries can become dewatered, particularly in dry years. One of the more recent changes that has occurred on the Big Hole is the dividing of larger ranches, particularly in the middle and lower reaches of the river, into smaller parcels including subdivisions and the development of seasonal housing. Such developments have been the cause of concern for the fisheries and river functions because large, expensive homes are being constructed in areas of the river prone to natural channel migration and as the river approaches homes, bank stabilization is often proposed.

In recent years there has been substantial interest in protecting the Big Hole River, the pristine nature of the valley, its fishery and the way of life of the people that call the valley home. Groups such as the Big Hole Watershed Committee and the Big Hole River Foundation among others have collaborated with government agencies, ranchers, sportsmen and other groups to develop conservation plans and perform projects to protect and restore the natural resources of the Big Hole. Some of these major accomplishments include the Big Hole Drought Management Plan, Arctic grayling habitat restoration, and improvement of irrigation efficiency. These groups have been highly successful at using collaboration to accomplish common conservation goals.

FISHERIES MANAGEMENT

The native fishery in the Big Hole River Drainage was westslope cutthroat trout, Arctic grayling, lake trout, mountain whitefish, white, longnose and mountain sucker, Rocky Mountain sculpin, longnose dace and burbot. Today the mainstem river contains fish species common to Southwestern Montana including rainbow trout and brown trout. Mountain whitefish and other native suckers and minnows are also common, but cutthroat trout and Arctic grayling are rare. Brook trout are the most common trout species in the upper river from Jackson through Wisdom and in most tributary streams. The Big Hole is a Blue Ribbon trout fishery and its trout population trends are closely monitored. The Upper Big Hole River drainage contains one of the last known fluvial Arctic grayling population in the Lower 48 States, with fluvial Arctic grayling also occurring in the Madison, Centennial, and Ruby Rivers. Active conservation programs are ongoing to enhance habitat conditions for this unique species in the Big Hole River. Mussigbrod, Miner and Pintler lakes have self-sustaining populations of Arctic grayling that are assumed to be native. Burbot are common in the river, some tributary streams and lower elevation lakes. Twin Lakes also has a native population of lake trout. There are 106 mountain lakes in Big Hole that contain fisheries. These fisheries include rainbow, brook, Yellowstone cutthroat, westslope cutthroat and golden trout, hybrids between rainbow and cutthroat trout, Arctic grayling and longnose suckers.

Common to many Southwestern Montana rivers, fish were stocked in the Big Hole River beginning in the early 1900s into the late 1970s when wild trout management philosophies were instituted. Prior to 1974 the Big Hole received annual plants of catchable size hatchery rainbow trout similar to most rivers of the region. Research by the Department on the Madison River and Odell Creek in the early 1970s demonstrated that these hatchery plants depressed trout numbers and that these rivers could support higher trout populations based on a wild trout fishery without hatchery support. In 1974, the stocking of hatchery trout was virtually eliminated in the Big Hole in favor of wild trout management. The results of that action were an increase in both rainbow and brown trout abundance to more than twice their numbers achieved with stocking despite a substantial increase in angling pressure. Species which were stocked into the Big Hole River include rainbow trout, Arctic grayling, brown trout, kokanee salmon, and undesignated cutthroat trout. Arctic grayling have been stocked into Rock Creek, Governor Creek, Wise River and in Trail Creek in the upper Big Hole using remote streamside incubators. Similarly, westslope cutthroat trout have been stocked into tributary streams of the Big Hole using remote site incubators as part of efforts to conserve this native species.

Many mountain lakes were stocked with trout and grayling in the early 1900s. Active stocking of mountain lakes in the Big Hole still occurs in lakes that do not support natural reproduction. Of the 106 lakes that contain fish, 30 are supported through active stocking while the rest are supported by natural reproduction. Fish stocking in alpine lakes in the Big Hole is done on a biannual basis and is performed primarily using a helicopter. Prior to 2006, Yellowstone cutthroat trout were the primary species stocked into mountain lakes, but since then the native westslope cutthroat trout has been stocked instead. Four lakes in the Big Hole drainage are currently stocked with golden trout.

Fishing regulations on the Big Hole River are complicated and diverse. In 1981 the Big Hole River from Divide to Melrose was placed under special regulations including a slot limit where trout from 13-22 inches had to be released and anglers were allowed to keep only 3 fish less than

13 inches and 1 fish over 22 inches. Angling gear was also restricted to flies and artificial lures. The public supported these regulations because their thought was that harvest was negatively affecting the numbers of larger fish in this reach of river. The remainder of the river upstream and downstream of this reach remained under the Central Fishing District standard limit of 5 fish with only 1 fish over 18 inches. In 1986 the same regulations as previously adopted for the Divide to Melrose section were also adopted for the Dickie Bridge to the Divide section of the river. After adoption of these regulations, trout numbers increased but quickly plateaued within 3-5 years. The slot limit for trout was dropped in the early 2000s for the Dickie Bridge to Melrose section, but the artificial lures only rule remains. The river from its confluence with the Beaverhead River to Dickie Bridge is closed from December 1 through the third Saturday in May to the harvest of trout, but there is an extended season for whitefish during the winter. Trout harvest is allowed year-round upstream of Dickie Bridge.

Many of the current fishing regulations on the Big Hole are associated with social issues (crowding and conflict between residents and non-residents or between residents and outfitters) and have little biological basis. Specific sections of the river are closed each day of the week from the third Saturday in May through Labor Day to outfitting and sections are closed to non-resident float fishing on the weekend days. Upstream from Dickey Bridge, harvest of trout is encouraged to help minimize impacts to Arctic grayling, and no size restriction is in place on the combined trout limit.

Angler use of the Big Hole River is high. Over the past decade estimates have ranged from 33,121 angler days in 2001 to 77,579 angler days in 2009. Use of the Wise River has varied over the last decade from a low of 2,412 angler days in 2007 to a high of 4,322 angler days in 2009.

HABITAT

Irrigation withdrawal within the Big Hole River drainage can cause periods of low flow and high water temperatures, which can be stressful to fish populations. Sections of the river are listed as impaired by the Montana Department of Environmental Quality because of high stream temperatures. Irrigation practices can also lead to reduced habitat connectivity (channel-wide pin and plank diversions) and entrainment (loss of fish in irrigation ditches). To address low flows and high temperatures and the effects they have on the fishery, the Big Hole Watershed Committee working cooperatively with water users has adopted a voluntary drought management plan with specific stream flow and temperature triggers. This plan is aimed at maintaining minimum flows and asking water users to voluntarily reduce withdrawals from the river to improve flows. There are multiple drought management sections on the Big Hole River with specific flow and temperature triggers. When those triggers are met water users are asked to reduce their water use and angling is also restricted. Those currently enrolled in the Candidate Conservation Agreement with Assurances (CCAA) and have completed an approved Site-Specific Plan are required to comply with reductions in diversions as stated in each individual plan. Landowners that have not completed Site-Specific Plans reduce irrigation diversions on a temporary agreement until the Site-Specific plan is completed or approved. The reduction in water use by irrigators and municipalities has resulted in increased river flows during drought conditions.

Land management activities in the Big Hole River basin (grazing, willow removals, etc) have caused problems with stream form and function, as well as stream shading. Because the Big

Hole River flows primarily through private land, cooperative habitat improvement projects with landowners is essential to improving fisheries habitat. To date, over 200 habitat improvement projects have been completed on private land in the Big Hole valley. These projects have been focused primarily in the upper valley and have improved riparian health, instream flows, and habitat connectivity and have reduced or eliminated entrainment. Through grazing and instream flow agreements, the Big Hole River and tributaries are showing healthier riparian habitat conditions and improved stream flows, especially during critical periods (spawning and late season). Replacing non-functioning irrigation infrastructure (headgates and diversions) and installing fish ladders and fish screens has improved irrigation efficiency, increased connectivity and reduced fish loss.

Streambank stabilization has significantly altered the function of the lower river, particularly downstream of Notch Bottom, and remains a significant threat to river function. In areas of the lower river with a wide floodplain, the river is prone to natural channel migration and channel evulsions, and abandonments are common. These natural channel changes are important in maintaining aquatic habitats in these types of rivers. However, when these channel changes affect irrigation water withdrawals or loss of land and potentially loss of structures, then bank stabilization is often proposed. Groups such as the Big Hole Watershed Committee and county governments are seeking a collaborative approach to ensuring natural river function and responsible development of the Big Hole Valley. The Big Hole was one of the first rivers to have a set-back rule where no structures could be built within 100 ft of the river in all four counties in the drainage. Further collaborative efforts are being made to better understand the floodplain of the river and guide future development in these areas.

The lower section of river from Notch Bottom to the confluence with the Beaverhead River is also a focus area for FWP with the hope of improving the fishery in this reach. The density of trout in this reach of river is only half of that present in the river 10 miles upstream. Studies indicate that the limiting factors affecting the fishery are suitable spawning and rearing areas and low summer flows due to irrigation withdrawal. The lack of spawning and rearing areas is likely due to the lack of tributary streams in this reach and the significant bank stabilization projects conducted over the past 50 years. Bank stabilization in this reach results in a less diverse river channel and causes less natural channel migration and fewer side channels. These side channels are important spawning and rearing areas because they often contain more complex habitats with log jams and other structure used by juvenile fish and they also contain smaller substrates suitable for spawning. Studies are being conducted to determine if it is possible to create off-channel spawning areas in the lower reach of the river utilizing existing spring creeks and irrigation systems. Also, efforts are underway to work cooperatively with landowners and irrigators and the Big Hole Watershed Committee to increase flows during summer to benefit the fishery.

FISHING ACCESS

FWP has 13 fishing access sites on the Big Hole River from Fishtrap Creek downstream. Additional federal and private (Anaconda Sportsmen) fishing access sites exist within this vicinity. Public land and public road crossings throughout the valley provides fishing access at various points.

SPECIAL MANAGEMENT ISSUES

The Big Hole River is home to one of the few native fluvial (river dwelling) grayling population in the contiguous United States. A decline in the abundance and distribution of the population was first documented in the 1980s, resulting in increased efforts to understand population dynamics, identify critical habitats, and implement conservation projects to address factors limiting the population. These efforts have been directed primarily through the Arctic Grayling Recovery Program (AGRP) and the Candidate Conservation Agreement with Assurances for Fluvial Arctic Grayling in the Upper Big Hole River (Big Hole CCAA).

The Big Hole CCAA was developed to help alleviate private property concerns associated with the potential ESA listing of Montana grayling and to generate support from private landowners to improve habitat conditions for grayling throughout the Big Hole CCAA project area. The project area includes the Big Hole River watershed from Dickie Bridge upstream to the headwaters. Under this agreement the USFWS issued FWP an ESA section 10(a)(1)(A) Enhancement of Survival Permit, which gave FWP the authority to enroll non-federal landowners within the project area. Currently there are 33 enrolled non-federal landowners who are provided incidental take coverage and regulatory assurances once they sign (along with the USFWS and FWP) a Certificate of Inclusion and a site-specific conservation plan for the enrolled property. Site-specific conservation plans are developed for each enrolled landowner by an interdisciplinary technical team made up of individuals representing the Big Hole CCAA partnering agencies (FWP, DNRC, NRCS, and USFWS). Conservation measures outlined in the Big Hole CCAA document are addressed in each site-specific plan by implementing actions that: 1) improve stream flows; 2) improve and protect the function of riparian habitats; 3) identify and reduce or eliminate entrainment threats to grayling; and 4) remove barriers to grayling migration.

In 2007, FWP, BLM, USFWS, USFS, Montana Council Trout Unlimited, Montana Chapter American Fisheries Society, Yellowstone National Park, Montana Arctic Grayling Recovery Program, the USDA Natural Resource Conservation Service, and DNRC all cosigned a Memorandum of Understanding (MOU) concerning Montana Arctic Grayling Conservation. This MOU defines responsibilities and procedures agreed to by all signatory agencies conserving conservation actions to benefit Arctic grayling in Montana.

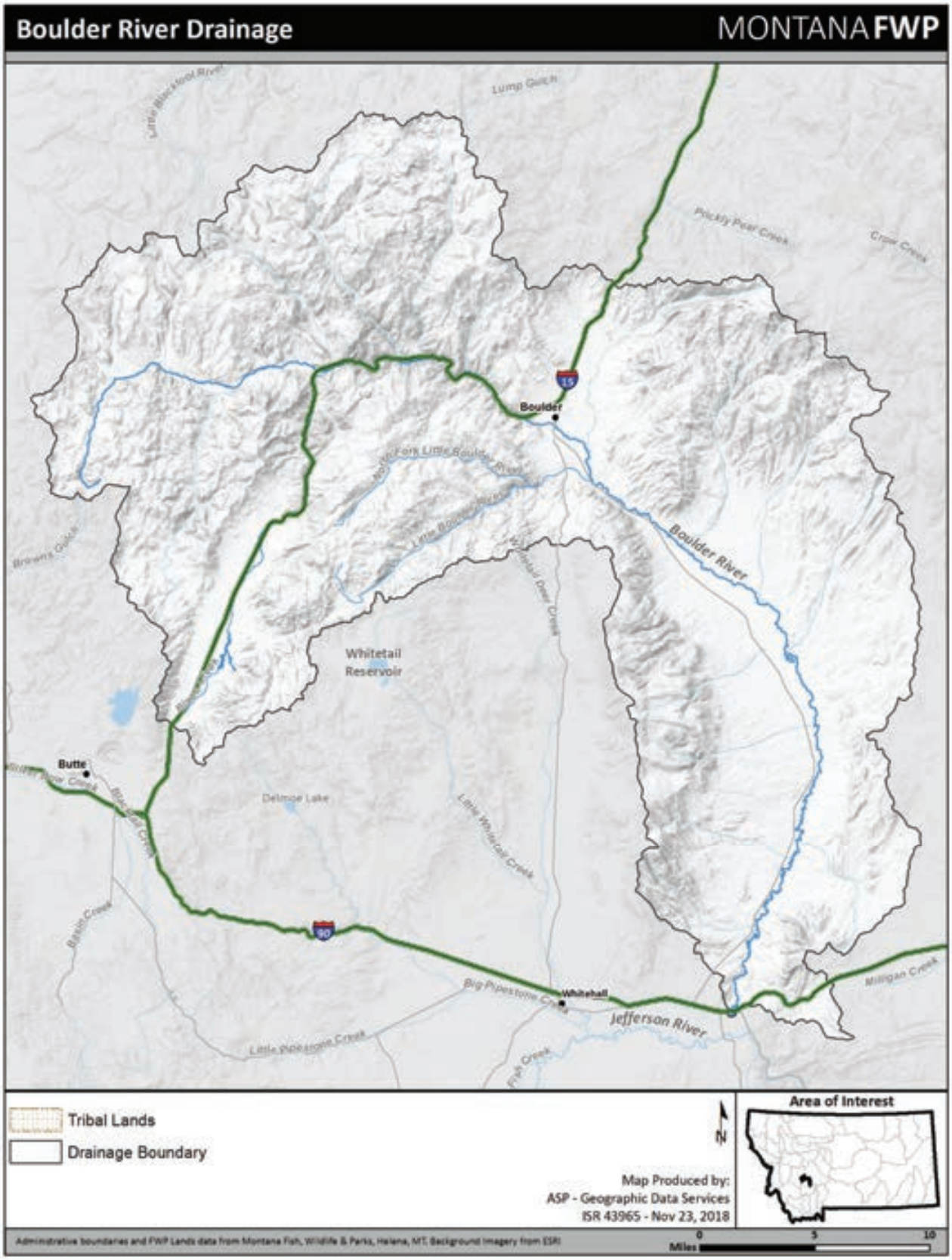
The Big Hole is also home to more conservation populations of westslope cutthroat trout (39) than any other drainage in the upper Missouri River providing several opportunities to conserve this native species in the drainage. The long-term goal of cutthroat conservation in the Big Hole River Drainage is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout (see Part 1: Trout: Westslope and Yellowstone Cutthroat Trout for details).

FISHERIES MANAGEMENT DIRECTION FOR BIG HOLE RIVER DRAINAGE

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
Big Hole River and Tributaries - Headwaters to Dickey Bridge	93 miles	Arctic grayling(N), Lake trout(N), Burbot(N), Westslope cutthroat trout(N)	Wild	Conservation	Continue native species conservation to maintain a viable, self-sustaining population.
		Brook trout, Rainbow trout, Brown trout, Mountain whitefish (N), Hybridized cutthroat trout	Wild	General	Continue to manage to minimize potential impact on viability of Arctic grayling and secondarily for recreational angling.
Habitat needs and activities: Continue to improve stream flows, improve riparian habitats, improve stream channel form and function, continue to prevent fish entrainment into irrigation ditches.					
Big Hole River and Tributaries - Dickey Bridge to Mouth	72 miles	Brook trout, Rainbow trout, Brown trout, Hybridized cutthroat trout, Mountain whitefish(N)	Wild	General	Maintain present numbers and sizes. Consider increasing angler harvest to reduce numbers if necessary to maintain fish growth and, in some instances, to ensure they are not limiting the viability of westslope cutthroat trout or Arctic grayling populations.
		Westslope cutthroat trout (N)	Wild	Conservation	Continue native species conservation to maintain a viable, self-sustaining population.
Habitat needs and activities: Implement and refine drought management plans to minimize impacts on fish populations. Continue to look for opportunities to increase river flows and develop spawning habitat in the Big Hole River downstream from Notch Bottom FAS. Pursue Fishing Access acquisition near High Road Bridge at Twin Bridges and between East Bank FAS and Jerry Creek FAS.					
Wise River and Tributaries	25 miles	Brook trout, Rainbow trout, Brown trout, Hybridized cutthroat trout, Mountain whitefish (N)	Wild	General	Maintain present numbers and sizes. Consider increasing angler harvest to reduce numbers if necessary to maintain fish growth and, in some instances, to ensure they are not limiting the viability of westslope cutthroat trout.

Continue next page

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
		Westslope cutthroat trout (N)	Wild	Conservation	Continue native species conservation to maintain a viable, self-sustaining population.
Habitat needs and activities: Develop drought management plan for Wise River. Pursue opportunities for habitat improvements in river section from Pettengill Creek to confluence with Big Hole which was affected by the Pettengill Dam breach in 1920's. Determine if Wise River could serve as possible Arctic graying reintroduction area.					
Mountain Lakes		Westslope cutthroat trout, Hybridized cutthroat trout, Yellowstone cutthroat trout, Rainbow trout, Brook trout Golden trout	Wild/hatchery	Put and Take/ General	Monitor mountain lakes. Continue to manage stocking and harvest to maintain present numbers and sizes. Consider increasing angler harvest to reduce numbers if necessary to maintain fish growth. Where appropriate pursue opportunities to expand golden trout into mountain lakes where such management would not conflict with cutthroat conservation.
Cutthroat Conservation Streams	350 miles	Westslope cutthroat trout (N) and other native fish species	Wild/ hatchery	Conservation	Secure populations in tributary streams by removing non-native fish upstream of fish barriers and restoring westslope cutthroat trout.
Habitat needs and activities: Work with Forest Service, BLM and DRNC and private landowners on grazing regimes to minimize livestock impacts to streams. Work on water conservation projects to improve stream flows. Construct or utilize natural fish barriers to preclude non-native fish movement upstream. Remove non-native fish and restore WCT upstream.					


Boulder River Drainage
MONTANA FWP
Lump Gulch
Little Blackfoot River
Prickly Pear Creek
Crow Creek
Boulder
15
Middle Fork Little Boulder River
Little Boulder River
Boulder River
Brown's Gulch
Whitetail Deer Creek
Whitetail Reservoir
Butte
Silver Bow Creek
Basin Creek
Delmoe Lake
Little Whitetail Creek
90
Big Pipestone Creek
Whitehall
Jefferson River
Milligan Creek
Little Pipestone Creek
Fish Creek
Tribal Lands
Drainage Boundary
N
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background imagery from ESRI
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10
Miles

BOULDER RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Boulder River is formed at the confluence of its South and West Forks (elevation 6,740 feet) on the east side of the Continental divide north of Butte, Montana. It flows east to Boulder Montana, then south to its confluence with the Jefferson River near Cardwell, Montana. It is 78 miles in total length. The upper 26 percent of streams are within the boundary of the Beaverhead-Deerlodge National Forest. Major tributaries—progressing downstream—are: Lowland, Bison, Basin, Cataract and Muskrat creeks and the Little Boulder River. The Boulder River drains an area of approximately 763 square miles.

Cold Springs enters the Boulder River about 10 miles upstream of the confluence with the Jefferson River, and water quality improves significantly in this reach. In addition to supporting a quality resident fishery, large numbers of spawning brown trout from the Jefferson River enter this reach of the Boulder River during the fall.

FISHERIES MANAGEMENT

The Boulder River is managed as a wild trout fishery, emphasizing natural reproduction. The basin is also suitable for westslope cutthroat trout recovery efforts in many locations. The Boulder River drainage contains fish species common to southwestern Montana. The native species found here include westslope cutthroat trout, mountain whitefish, mountain sucker, longnose dace, longnose sucker, Rocky Mountain sculpin, and white sucker. Nonnative species are rainbow trout, brown trout, brook trout, and common carp. Hybrids of rainbow trout and westslope cutthroat trout are also found in the drainage.

Fish stocking records for the Boulder River are documented to begin in the 1920s and continued through the early 1970s when wild trout management philosophies were instituted. Beginning in the late 1920s, undesignated cutthroat trout, rainbow trout, brook trout, brown trout and Arctic grayling were stocked. Between the early 1950s and early 1970s, only rainbow trout were stocked into the Boulder River drainage.

The fishing regulations for trout in the Boulder River drainage are covered by the Central District Standard regulations with the exception of a seasonal closure in the reach of the river below Boulder Cut-Off Road (Open January 1 through September 30) to protect spawning trout (from the Jefferson River) in the lower reaches of the Boulder River. Over the past decade, angler use of the Boulder River has varied from 2,962 angler days in 2001 to 11,009 angler days in 2009. The major tributaries (East Fork Boulder, Little Boulder River, and South Fork Boulder River) receive little angling use annually.

HABITAT

The Boulder River has a mean gradient of 33.7 feet per mile. At the Beaverhead-Deerlodge National Forest boundary above Basin, the stream averages 47.4 feet in width at the spring flow levels. The river upstream from Boulder, Montana has a narrow floodplain, a high elevation and steep gradient. Riparian vegetation primarily consists of willows, alders, conifers, and to a lesser

extent, cottonwoods and aspens. The reach of river downstream from Boulder has a wider floodplain through which the river meanders, a lower elevation and a more gradual gradient. Riparian vegetation primarily consists of cottonwoods, aspens and willows.

Flows in the river depend primarily on snowpack in the mountains, although a number of large springs add to the flow in the lower valley. The major use of water from the Boulder River below Boulder, Montana is for agricultural purposes.

Extensive portions of the Boulder River have been relocated as a result of mining, agricultural, road, and railroad building activities. Portions of the upper river channel (town of Boulder to Bernice) were relocated to accommodate Interstate 15. In addition, riprapping of the banks and vegetation removal has affected other stretches.

Fishing Access

Angling access is readily available in the headwaters due to the dominance of federal land ownership (USFS, BLM), and public roads located along the river upstream of Boulder provide numerous locations to gain access to the river. From the town of Boulder to the confluence with the Jefferson River, access is generally limited to county road bridges. There are no FASs administered by FWP on the Boulder River, but the Candlestick Ranch near Cardwell provides a unique access opportunity provided by Golden Sunlight Mine in coordination with FWP.

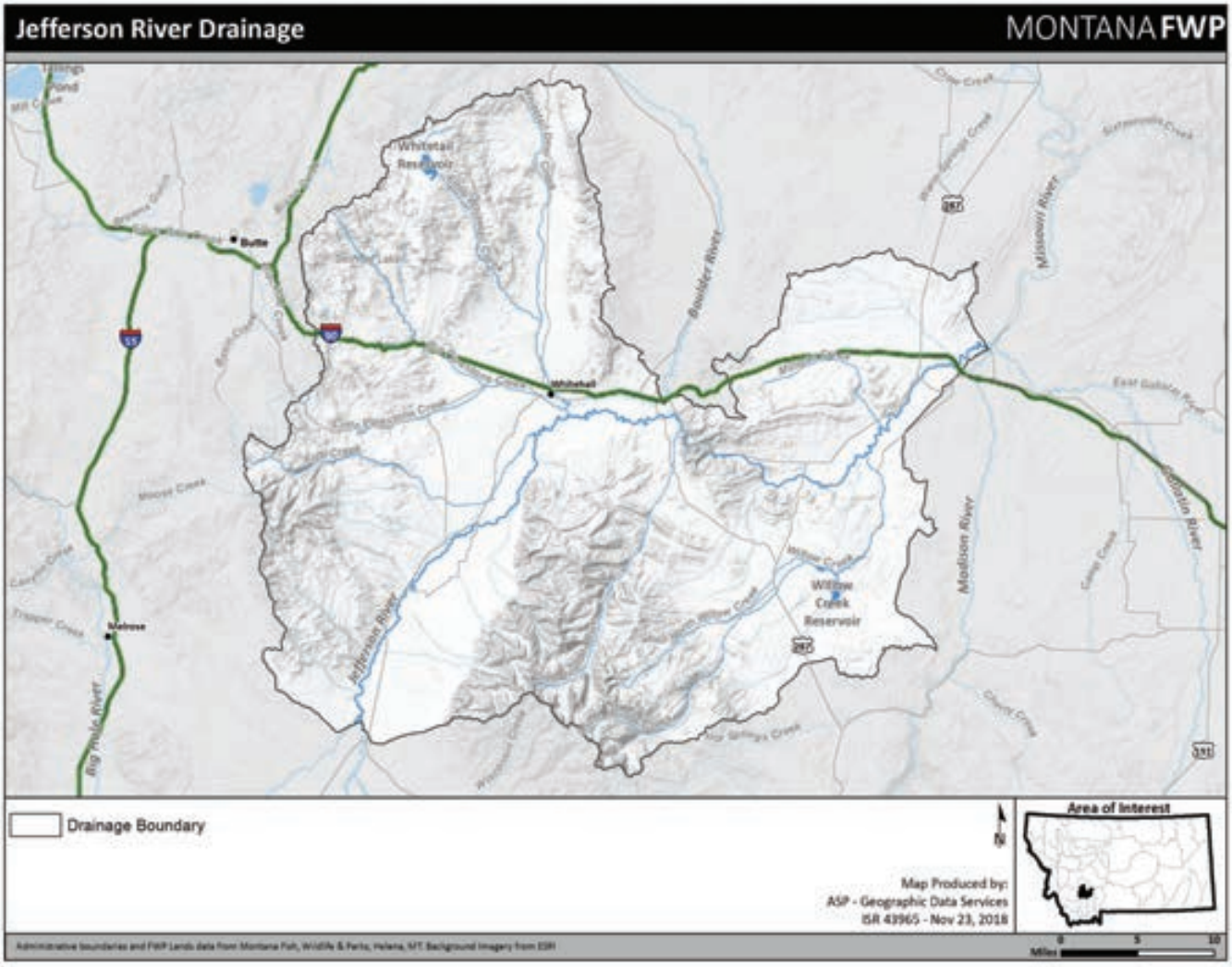
Special Management Issues

Hard rock mining for metallic minerals in the Boulder River drainage was extensive in the late 1800s and early 1900s. This past mining is still affecting the river downstream from Basin, Montana where heavy metals emanating from acid mine seeps and mill tailings cause a major water quality problem. Stream sediments in the river channel and floodplain contain high concentrations of zinc, copper and lead, extending some 25 miles downstream from the source areas. In the Boulder River downstream from the town of Basin, depressed standing crops of trout have been associated with higher metals concentrations in the river. Other studies from the 1970s showed that metals pollution and stream sedimentation were affecting the distribution and abundance of aquatic insects in the Boulder River.

The Boulder River drainage is home to several conservation populations of westslope cutthroat trout providing opportunities to conserve this native species in the drainage. The long-term goal of cutthroat conservation in the Boulder River Drainage is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout (see Part 1: Trout: Westslope and Yellowstone Cutthroat Trout for details).

FISHERIES MANAGEMENT DIRECTION FOR BOULDER RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Boulder River and Tributaries (Headwaters to Boulder)	35 miles	Brook trout, Rainbow trout, Mountain whitefish (N)	Wild	General	Maintain present numbers and sizes. Consider increasing angler harvest to reduce numbers if necessary to maintain fish growth.
		Westslope cutthroat trout (N)	Wild	Conservation	Continue native species conservation to maintain or create viable, genetically unaltered, self-sustaining populations.
Habitat needs and activities: Initiate mine reclamation to improve water quality and coordinate with Forest Service activities.					
Boulder River and Tributaries (Boulder to Cold Springs)	35 miles	Rainbow trout, Brown trout, Mountain whitefish (N)	Wild	General	Maintain present numbers and sizes. Consider increasing angler harvest to reduce numbers if necessary to maintain fish growth.
Habitat needs and activities: Continue to improve instream flow, by looking for opportunities to lease water or improve efficiency in irrigational infrastructure and methods.					
Boulder River and Tributaries (Cold Springs to Confluence with Jefferson River)	10 miles	Brown trout, Rainbow trout	Wild	General	Maintain present numbers and sizes. Consider increasing angler harvest to reduce numbers if necessary to maintain fish growth. Continue to protect spawning runs.


Jefferson River Drainage
MONTANA FWP
Whitetail Reservoir
Butte
Whitehall
Boulder River
Missouri River
Madison River
Jefferson River
Big Hole River
Willow Creek Reservoir
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Miles
0
5
10

JEFFERSON RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Jefferson River flows for 84 miles from its origin at the junction of the Big Hole and Beaverhead rivers to its mouth at Three Forks, Montana where it joins the Madison and Gallatin rivers to form the Missouri River. Much of the Jefferson River is braided, particularly in the area near Three Forks where many islands and side channels exist. During the irrigation season, virtually all the tributaries to the Jefferson are diverted before reaching the river. The Boulder River is the only tributary to contribute a significant volume of flow during the high-water period.

FISHERIES MANAGEMENT

The Jefferson River basin contains fish species common to Southwestern Montana. These species include: rainbow trout, brown trout, brook trout, hybrid westslope cutthroat trout, westslope cutthroat trout (primarily in isolated tributaries), mountain whitefish, common carp, longnose dace, longnose sucker, Rocky Mountain sculpin, mountain sucker, and white sucker. Northern pike were detected in the Jefferson River in the 2000s.

The sport fishery of the Jefferson River is primarily comprised of brown and rainbow trout. Current trout density in the upper river is approximately 600 trout per mile in the upper 40 miles of the river, and less than 300 trout per mile in the lower 40 miles of the Jefferson River. Trout abundance is closely associated with streamflow levels, with significant declines in fish populations occurring during drought cycles (late 1980s and 2000-2007), and documented recoveries during recent years of near normal streamflow. The goal of habitat and flow restoration projects in the Jefferson River and associated tributaries is to sustain 1,000 trout per mile in the upper 40 miles and 500 trout per mile in the lower 40 miles of the Jefferson River.

Hell's Canyon Creek, Parson's Slough, Willow Springs, and North Boulder River are known to be important tributaries for supporting the wild trout population of the Jefferson River. Pipestone Creek, Whitetail Creek, South Boulder River, Antelope Creek, and Willow Creek have significant flow and sediment delivery issues impairing current values for supporting the Jefferson River fishery. Fish Creek, Mill Creek, Halfway Creek, and Whitetail Creek contain conservation populations of westslope cutthroat trout (See *Status and Conservation Needs for Westslope Cutthroat Trout in Southwest Montana. FWP, 2011).*

Fish stocking records for the Jefferson River are documented to begin in the 1920s and continue through the early 1970s when wild trout management philosophies were instituted. Historically stocked species in the Jefferson River included: rainbow trout, brown trout, cutthroat trout (undesignated), and bass. In 1989 and 1990, rainbow trout and brown trout were stocked for the specific purpose of establishing a spawning run into Jefferson River tributaries. Arctic grayling were stocked in 2002 and 2003; however, no natural reproduction was detected through monitoring, and therefore reintroduction efforts were terminated.

The Jefferson River is open to angling during the entire year. The combined trout fishing regulation for the entire Jefferson River is 3 fish daily and in possession, only 1 over 18 inches and only 1 may be a rainbow trout. These regulations are in place to encourage recovery of fish populations in concert with ongoing habitat conservation activities. No limit is imposed on northern pike to help prevent the further establishment of the invading population.

The relationship between drought impacts to trout populations and subsequent angler use are well established for the Jefferson River. Prior to extended drought conditions (initially observed in 1988) angler effort reached 27,456 (1983) angler days. Within the past decade, angler effort in the Jefferson River has varied from 7,000 to nearly 14,000 angler days per year. In other words, during periods of time (years) when flow and temperature conditions are favorable for trout populations, trout densities increase and angler days increase.

Various high mountain lakes and lowland reservoirs exist within the Jefferson River basin. Willow Creek Reservoir, Delmoe Lake, Homestake Lake, and Piedmont Pond are coldwater lakes/ponds are stocked annually to provide fishing opportunities.

HABITAT

The mainstem Jefferson River has desirable habitat quality for supporting a sport fishery of brown and rainbow trout during years of average or above average streamflow. Water quantity and quality is severely impaired during drought years when water recedes from structural habitat along the shoreline, and water temperature approaches 80º F. Quality tributaries able to provide suitable trout spawning and rearing habitat are rare.

Over the past 25 years, priority habitat enhancement efforts have focused on flow improvements during summer irrigation, tributary restoration projects to enhance spawning and rearing habitat, and encouraging sound floodplain function practices through permit review processes. Participation in the implementation of the Jefferson River Drought Plan with the Jefferson River Watershed Council and water users has been the primary tool for preventing acute dewatering of the river.

The average width of the river is about 197 feet. The gradient averages 7.3 feet per mile and sinuosity is 1.6. The bottom substrate is primarily gravel-cobble. Heavy depositions of silt occur at some main river sites and in many side channels. FWP determined that the minimum instream flow for fish and other aquatic life for the Jefferson River is 1,100 cfs, based on the upper inflection point of the wetted perimeter (WETP) model.

FISHING ACCESS

Anglers and boaters can launch boats at 11 FASs distributed along the 77-mile reach of the Jefferson River.

SPECIAL MANAGEMENT ISSUES

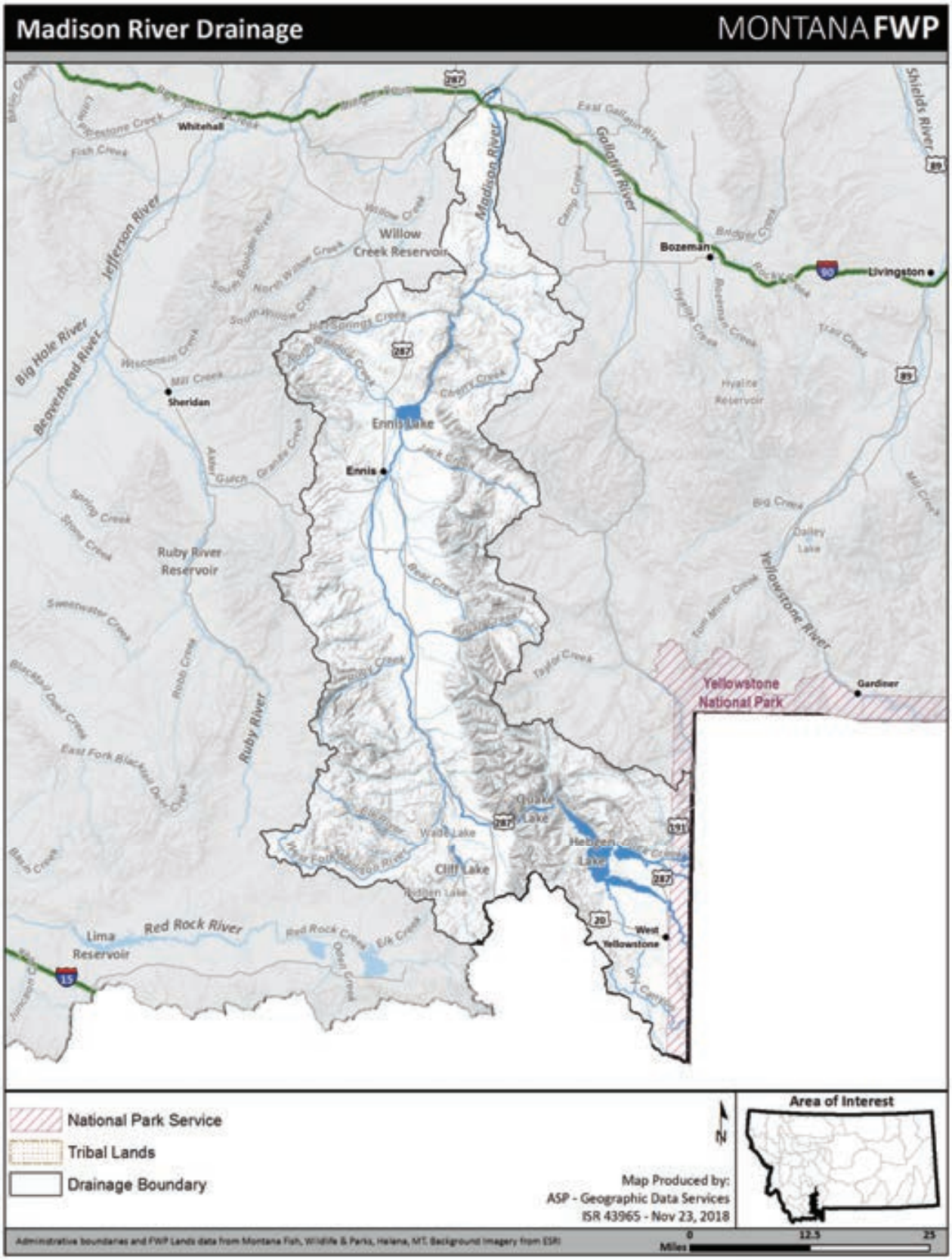
A drought management plan was developed and approved in July 2000, to attract voluntary participation in meeting stream flow targets in the Jefferson River Basin. This plan was modified in 2012. This plan identifies various flow and temperature targets that once reached initiate conservation measures to benefit the aquatic resources. Considerable work has been

completed within the basin to enhance stream flows (e.g., Hell's Canyon Water Lease) and improve spawning conditions (tributary enhancement projects). Future work will look at the potential of flow augmentation from upstream reservoirs (e.g., Ruby and Willow Creek reservoirs) to benefit aquatic resources during times of low flow. Northern pike have become established through an unauthorized introduction in the Missouri headwaters area including parts of the Jefferson River. To address threats of northern pike on trout populations, FWP removed harvest regulations on northern pike throughout the basin in 2011, and initiated removal efforts in 2012.

The Jefferson River drainage is also home to several conservation populations of westslope cutthroat trout providing opportunities to conserve this native species in the drainage. The long-term goal of cutthroat conservation in the Jefferson River Drainage is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout (see Part 1: Trout: Westslope and Yellowstone Cutthroat Trout for details).

FISHERIES MANAGEMENT DIRECTIONS FOR JEFFERSON RIVER DRAINAGE

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
Jefferson River and Tributaries (Twin Bridges to Cardwell)	40 miles mainstem	Rainbow trout, Brown trout	Wild	Restrictive Regulations	Continue to restrictive harvest to improve trout numbers to recover from drought impacts.
		Mountain whitefish (N)	Wild	General	Continue to maintain abundance.
Habitat needs and activities: The upper 40 miles of the Jefferson River and associated tributaries have periodic dewatering issues, but the reach has high potential for trout recovery. Activities: improve instream flow conditions and drought plan implementation, improve spawning tributaries, and maintain function of the river channel and floodplain health.					
Jefferson River and Tributaries (Cardwell to Confluence with Madison River)	40 miles mainstem	Rainbow trout, Brown trout	Wild	Restrictive Regulations	Continue to restrictive harvest to improve trout recovery.
		Mountain whitefish (N)	Wild	General	Continue to maintain abundance.
Willow Creek Reservoir	713 acres	Rainbow trout	Wild	General	Continue to manage fish density through angler harvest to maintain fish growth and manage wild brood stock.
		Brown trout	Wild	General	Continue to manage fish density through angler harvest to maintain fish growth.
Habitat needs and activities: Water Level Management at this DNRC Reservoir.					
Delmoe Lake	279 acres	Westslope cutthroat trout	Hatchery	Put- Take	Continue to manage stocking and harvest to maintain fish growth.
Habitat needs and activities: Private Reservoir with challenging water level issues. Occasional blue-green algae blooms during late summer.					
Tobacco Root Mountain Lakes	16 lakes and 128 acres	Westslope cutthroat trout	Wild/ Hatchery	General/ Put, Grow and Take	Continue to manage stocking and harvest to maintain fish growth.
		Brook trout, Rainbow trout	Wild	General	Continue to manage stocking to maintain fish growth.


Madison River Drainage
MONTANA FWP
Whitehall
Bozeman
Livingston
Sheridan
Ennis
Ennis Lake
Willow Creek Reservoir
Hyalite Reservoir
Ruby River Reservoir
Lima Reservoir
Cliff Lake
Quake Lake
Yellowstone National Park
Gardiner
West Yellowstone
Madison River
Jefferson River
Big Hole River
Beaverhead River
Ruby River
Red Rock River
Gallatin River
East Gallatin River
Shields River
Yellowstone River
National Park Service
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background imagery from ESRI
0
12.5
25
Miles

MADISON RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Madison River originates in Yellowstone National Park at the junction of the Firehole and Gibbon rivers. It then flows in a northerly direction for 149 miles to Three Forks, Montana, where it joins the Jefferson and Gallatin rivers to form the Missouri River. There are two impoundments on the river: Hebgen Reservoir, located 1.5 miles downstream from the park boundary, and Ennis Reservoir, located 65 miles downstream from Hebgen Reservoir. From its source in the park, the Madison crosses a high-forested plateau (7,000 ft and higher in elevation) to Hebgen Reservoir. Upon leaving Hebgen Reservoir, the Madison River flows about 3 miles through a narrow canyon to Earthquake Lake, a natural lake formed by an earth slide during a major earthquake on August 17, 1959. Below Earthquake Lake, the river enters the upper Madison River valley where it flows about 57 miles before entering Ennis Reservoir. After leaving Ennis Reservoir, the Madison enters a narrow gorge (Bear Trap Canyon) where it flows about 14 miles before entering the lower Madison River valley for the final 26 miles to its junction with the Jefferson and Gallatin rivers.

The Madison River is one of Montana's premier wild trout fisheries. High scenic values, good public access and excellent wild trout populations have all contributed to its national reputation as an outstanding sport fishery and have led to its designation as a "Blue Ribbon" trout stream by FWP.

Flows in the Madison River are regulated by the two reservoirs. Hebgen Reservoir built in 1915 by the Montana Power Company, stores water for downstream power generation. Water storage usually occurs during the snow runoff period of mid-May through early June. Stored water is released to downstream reservoirs during the fall (October-December). Fall releases usually range from 1,500 to 2,200 cfs at Hebgen Dam. Ennis Reservoir, built in 1908 by a predecessor of the Montana Power Company, has a rather stable water level with little storage capacity of its own. Its primary function is to create a head for the power generating facility immediately below Ennis Dam. Outflows from Ennis Reservoir are mainly regulated at Hebgen Dam. There are a total of 58 lakes or reservoirs in the Madison Drainage, totaling 18,334 surface acres.

Groundwater sources in Yellowstone National Park have a stabilizing influence on the seasonal flow pattern of the Madison River. As a result, the river exhibits a larger base flow in proportion to its annual runoff than most rivers in Montana; thus, the Madison River's seasonal flow pattern more closely resembles that of a giant spring-fed creek rather than a typical snow-fed mountain trout stream.

FISHERIES MANAGEMENT

The Madison River has a variety of native and nonnative fish species. The Madison River historically only had 11 native fish species including Arctic grayling, longnose dace, longnose sucker, Rocky Mountain sculpin, mountain sucker, mountain whitefish, stonecat, white sucker, and westslope cutthroat trout. Several fish species have been introduced including: brook trout, brown trout, common carp, fathead minnow, rainbow trout, Utah chub, and Yellowstone cutthroat trout. The entire river is managed to provide a diverse recreational fishery for both

native and nonnative fish with regulations designed to help protect native populations while promoting harvest on nonnative predatory species that can impact native populations. The entire Madison River is managed as a wild fishery with no normal stocking scheduled for any section of the river.

Rainbow trout, brown trout, arctic grayling, brook trout, and coho salmon were stocked over the past century; however, all fish stocking to supplement wild populations was ended in the early 1970s. The Madison River is the birthplace of Wild Trout Management, where controversial studies conducted in the 1960s and 1970s showed that hatchery rainbow trout had negative impacts on wild-produced rainbow trout. This discovery led to the philosophy of wild trout management throughout Montana's trout rivers, and eventually wild fish management policies throughout all rivers in Montana. Wild trout management also emphasized managing habitat quality to help sustain natural recruitment and healthy fish populations. Hebgen Lake has an extensive history of fish stocking, starting in 1931. Species stocked in the early to mid-1900s included brown trout, undesignated cutthroat trout, rainbow trout, and Yellowstone cutthroat trout. Fish stocking was largely shifted to rainbow trout in the mid-1950s. Ennis Lake stocking was initiated in the late 1920s and continued through the mid-1990s. Since the 1920s, rainbow trout, Arctic grayling, undesignated cutthroat trout, and Yellowstone cutthroat trout have been stocked into Ennis Lake.

Regulations on the Madison River are complicated and diverse. Many of the fishing regulations are associated with social issues (e.g., no fishing from boats) and have little biological basis. A large proportion of the river is managed with catch-and-release regulations (with the exception of anglers under 14 years of age), and artificial lures only. Hebgen and Ennis Lakes are managed under Central District Standard regulations with the exception of catch-and-release only regulations for Arctic grayling in Ennis Lake.

Fishing pressure increased more than fivefold since the early 1950s. For the 102 miles of free-flowing river in Montana, angling pressure increased from an estimated 22,660 angler-days in 1952, to 125,726 angler days between May 1983 and April 1984, to over 200,000 angler days in 2009. Nonresident anglers represent upwards of 80% of all angler days in some reaches of the Madison River. Hebgen Reservoir has been a popular fishing destination over the past decade varying from 24,742 angler days in 2007 to 43,134 angler days in 2009. Angler use of Ennis Lake over the past decade has varied from 6,022 angler days in 2005 to 17,045 angler days in 2015.

Forty-nine mountain lakes exist within the Madison drainage that are managed as trout fisheries. Management of these lakes varies from periodic hatchery stocking to wild self-sustaining fisheries.

HABITAT

The Madison River drains approximately 2,500 square miles. About 70 percent of the drainage is covered with coniferous forests. The riparian zone of the wide, open upper and lower Madison River valleys is vegetated with willow, alder, cottonwood and an occasional conifer. Vegetation in the riparian zone of the lower Madison valley is denser than that of the upper valley. Agricultural lands in the upper and lower valley are primarily used for cattle grazing and hay

production. The subdivision of agricultural lands along the river in the upper valley for residential development is increasing.

The upper Madison above Ennis Lake generally exhibits excellent water quality and quantity in most years. Stream habitat in the upper drainage is in very good condition. Once the Madison leaves the canyon below Ennis Lake it begins to suffer from sedimentation and high water temperatures which limit the trout population in the lower river.

There are about 102 tributaries to Montana's portion of the Madison River. Most are short and small. About 20 tributaries provide a significant trout fishery and/or waterfowl habitat. Important tributaries to the Madison include Jack Creek near Ennis and the West Fork in the upper river.

Fishing Access

Fishing Access is well developed throughout the Upper Madison River corridor with 14 FWP-owned Fishing Access Sites, several BLM access sites, and a variety of public land access points. The lower Madison River between Grey Cliff FAS and Milwaukee FAS has little public access and provides a unique opportunity for floaters to experience a stretch of the river with a low level of use.

Special Management Issues

The Madison River is commonly one of the most fished bodies of water in the State of Montana, with river-wide angler days exceeding 200,000 angler days. Montana Fish, Wildlife and Parks initiated the development of a Recreation Management Plan in 2012 to address social concerns and prevent future degradation of the resource or user experiences. Development of a recreation plan is ongoing, with a citizen committee scheduled to convene for Negotiated Rulemaking in early 2019.

The lower Madison River below Ennis Dam suffers from chronic high water temperatures in summer. Fish kills have been documented at water temperatures above 82.5ºF. NorthWestern Energy, which operates the two reservoirs on the river, has in place a successful operating plan to keep water temperatures in the lower river below the critical lethal temperature for fish. When model targets dictate, NWE will temporarily raise discharges from Ennis Dam (called pulsing), which holds water temperatures below 80ºF at Blacks Ford Fishing Access Site.

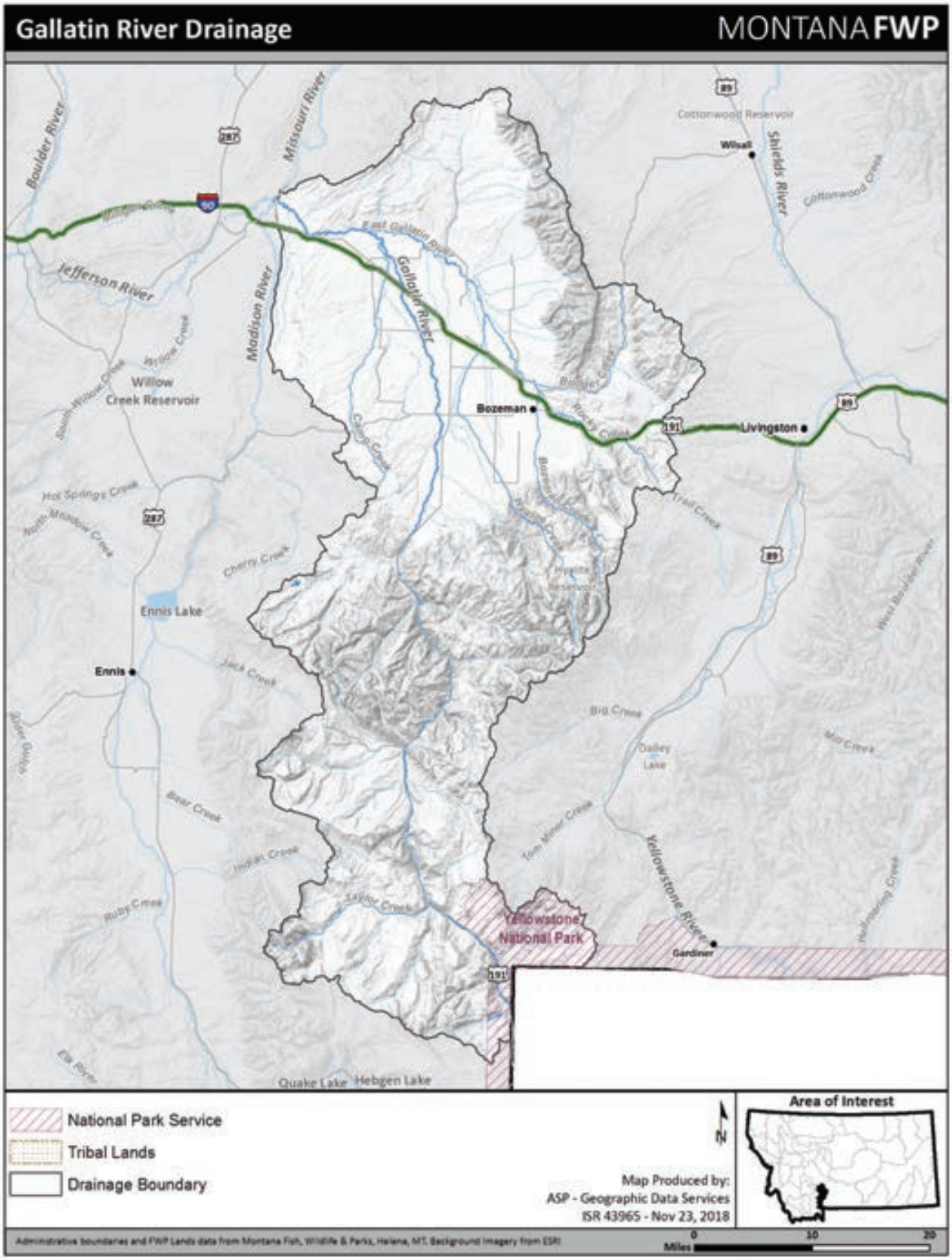
In 2010 the last nonnative fish were removed from Cherry Creek, a tributary of the lower Madison River. More than 60 miles of the stream above a high waterfall have been converted to a secure native westslope cutthroat trout refuge. Pure westslope cutthroat trout populations east of the continental divide are rare. The Cherry Creek project substantially increases the limited numbers of this special fish.

The Madison River drainage is also home to several conservation populations of westslope cutthroat trout providing opportunities to conserve this native species in the drainage. The long-term goal of cutthroat conservation in the Madison River Drainage is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout (see Part 1: Trout: Westslope and Yellowstone Cutthroat Trout for details).

FISHERIES MANAGEMENT DIRECTION FOR MADISON RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Madison River and Tributaries - Yellowstone National Park to Elk Creek	97.1 miles mainstem	Rainbow trout, Brown trout	Wild	General	Initiate regulation-change process to simplify regulations and allow for harvest opportunities while maintaining fish numbers and sizes.
		Mountain whitefish(N)	Wild	General	Continue to maintain numbers. Research has been initiated to understand population size and trend.
Hebgen Lake	12,564 acres	Rainbow trout	Wild/ Hatchery	General/ Grow and Take	Continue to manage Hebgen Lake as a wild rainbow trout fishery. Monitor long-term population trends with gill netting.
		Brown Trout, Mountain whitefish(N)	Wild	General	Continue to manage fish density through angler harvest to maintain fish numbers and sizes.
Ennis Lake	3,692 acres	Rainbow trout, Brown trout, Mountain whitefish(N)	Wild	General	Continue to manage fish density through angler harvest to maintain fish numbers and sizes.
		Arctic grayling(N)	Wild	Conservation	Continue native species conservation to maintain or create viable, genetically unaltered, self-sustaining populations.
Madison River and Tributaries - Elk Creek to Mouth	23.6 miles mainstem	Rainbow trout, Brown trout	Wild	General	Continue to manage fish density through angler harvest to maintain fish numbers and sizes.
		Mountain whitefish(N)	Wild	General	Continue to maintain numbers. Research has been initiated to understand population size and trend.
Habitat needs and activities: Investigate approaches to improve spawning and rearing habitat (tributaries), maintain form and function of river channel by preventing degradation from bank stabilization, continue to allow stream access to floodplain, allow natural channel migration, and maintain healthy riparian plant community.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Madison River Tributaries	708.2 miles	Westslope cutthroat trout (N)	Wild	Conservation	Continue native species conservation to maintain or create viable, genetically unaltered, self-sustaining populations.
Mountain Lakes	49 lakes and 1,430 acres	Westslope cutthroat trout, Hybridized cutthroat trout, Yellowstone cutthroat trout, Rainbow trout, Brook trout, Arctic grayling	Wild/ Hatchery	Put, Grow and Take/ General	Continue to manage stocking and harvest to maintain fish numbers and sizes.


Gallatin River Drainage
MONTANA FWP
Boulder River
Missouri River
Jefferson River
Madison River
Gallatin River
East Gallatin River
Willow Creek Reservoir
Bozeman
Livingston
Cottonwood Reservoir
Wilsall
Shields River
Cottonwood Creek
Hyalite Reservoir
Ennis Lake
Ennis
Cherry Creek
Hot Springs Creek
Jack Creek
Bear Creek
Indian Creek
Ruby Creek
Big Creek
Daley Lake
Mol Creek
Yellowstone River
Yellowstone National Park
Gardiner
Hellroaring Creek
Trail Creek
West Boulder River
Taylor Creek
Quake Lake
Hebgen Lake
National Park Service
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background imagery from ESRI
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20
Miles

GALLATIN RIVER DRAINAGE

PHYSICAL DESCRIPTION

The free-flowing Gallatin River originates at Gallatin Lake in Yellowstone National Park at an elevation of 8,834 feet. It flows north for 115 miles to Three Forks, Montana, where it joins the Madison and Jefferson Rivers to form the Missouri River. From the Park boundary, the river flows about 44 miles through the narrow Gallatin Canyon, and then enters the broad Gallatin Valley, where it flows an additional 45 miles to its mouth. Much of the Gallatin River is classified "Blue Ribbon" by FWP in recognition of its high recreational, fishery, and aesthetic values.

Many factors contribute to the popularity of the Gallatin River with anglers and other recreationists. Much of the river is surrounded by public lands, making it readily accessible to recreationists. The river is also near a rapidly growing population center and is paralleled by a main highway route to Yellowstone National Park. Above all, the natural beauty of the river and surrounding mountains attracts recreationists.

There are 33 natural lakes and reservoirs in the drainage totaling 434 surface acres. Most natural lakes are mountain lakes in the headwaters of the Gallatin River. The largest reservoir in the drainage is Hyalite Reservoir south of Bozeman. Lowland lakes in the valley bottom support urban fisheries which consist of put-and-take rainbow trout and illegally introduced warm water fish of various species. High mountain lake fisheries are either stocked on a regular basis or contain self-supporting populations of westslope cutthroat trout, brook trout, golden trout, or Arctic grayling.

FISHERIES MANAGEMENT

The Gallatin drainage is home to a variety of native fish species including; mountain whitefish, longnose dace, longnose suckers, Rocky Mountain Rocky Mountain sculpin, mountain sucker, white sucker, and westslope cutthroat trout. Several nonnative fish species are also found in the drainage and include: brown trout, brook trout, rainbow trout and Yellowstone cutthroat trout.

Most streams in the drainage are managed for nonnative self-sustaining wild trout fisheries. These trout populations are currently stable from year to year. Only one pure population of native westslope cutthroat trout exists in the drainage. Hybridized (westslope cutthroat with rainbow trout) populations exist in a few headwaters streams.

Common to many southwestern Montana rivers, fish stocking records for the Gallatin River are documented to begin in the 1920s and extended into the early 1970s when wild trout management philosophies were instituted. The primary fish stocked into the Gallatin River drainage has been rainbow trout; however, undesignated cutthroat trout were stocked between the 1930s and 1950s. Arctic grayling were stocked into the Gallatin River during the mid 1990s and early 2000s in an effort to establish self-sustaining populations. No natural reproduction was detected in the Gallatin River, and restoration efforts were terminated. Hyalite Reservoir is stocked annually with Yellowstone cutthroat trout.

Fishing regulations for streams in the Gallatin drainage are covered under Central District Standard limits and seasons, with three exceptions. These provide that: 1) fishing from boats or vessels from the Yellowstone National Park boundary to the East Gallatin River is not allowed; 2) the river is open to fishing during the entire year; and 3) there is no limit on northern pike to help prevent their establishment.

Angling use on the Gallatin River is high, and over the past decade has varied from 69,254 angler days in 2001 to 93,365 angler days in 2009. During the same time period, angler use of the East Gallatin River has varied from 5,512 angler days in 2007 to 11,679 angler days in 2005, while angler use of Hyalite reservoir has varied from 8,517 angler days in 2001 to 18,511 angler days in 2009. Plowing snow on the Hyalite Reservoir road during winter by the USFS has increased fishing pressure during the winter months.

HABITAT

The Gallatin River drains an area of 11,000 square miles, all above 4,000 feet. Most of the drainage basin above 5,000 feet is covered with coniferous forest, while the basin below 5,000 feet consists primarily of the Gallatin Valley, one of the richest agricultural regions in Montana.

Much of the upper 70 miles of the Gallatin River are surrounded by public lands within Yellowstone National Park and the Gallatin National Forest. This section, except for the uppermost 12 miles, is closely paralleled by US 191, which provides easy access to the river. Dude ranches, lodges and USFS campgrounds are scattered throughout the area. The steady rise in recreational and home site development and tourism is expected to have considerable impact on the canyon area in future years.

The lower 45 miles of river flow primarily through private lands within the Gallatin Valley. Access to the lower river is obtained through private lands, state fishing access sites and at bridge crossings. Bozeman, which is seven miles from the river at the closest point of contact, is the largest population center in the drainage.

The narrow canyon reach of the upper Gallatin generally exhibits good water quality and quantity. Stream habitat in the upper drainage is in good condition although the Taylors Fork contributes enough sediment after rain storms to muddy the mainstem Gallatin well downstream. Once the Gallatin leaves the canyon it begins to suffer from dewatering for irrigation and habitat concerns such as bed and bank manipulations. Low water levels, sedimentation, and high water temperature limit the trout population in the lower river. This trend is also found in the East Gallatin River drainage, with generally fish-friendly conditions in the upper tributary streams and conditions worsening in the lower river.

FISHING ACCESS

There are no FWP FASs from the Yellowstone National Park Boundary to the mouth of the Gallatin Canyon; however, public land (mostly federal) and access provided from U.S. Highway 191 provide ample opportunity for anglers to access the Gallatin River within the Canyon Reach. In the lower Gallatin River, eight FWP Fishing Access Sites provide angler access between the Canyon and the confluence with the Madison and Jefferson Rivers near Three Forks. The East Gallatin River has one FWP Fishing Access site.

Special Management Issues

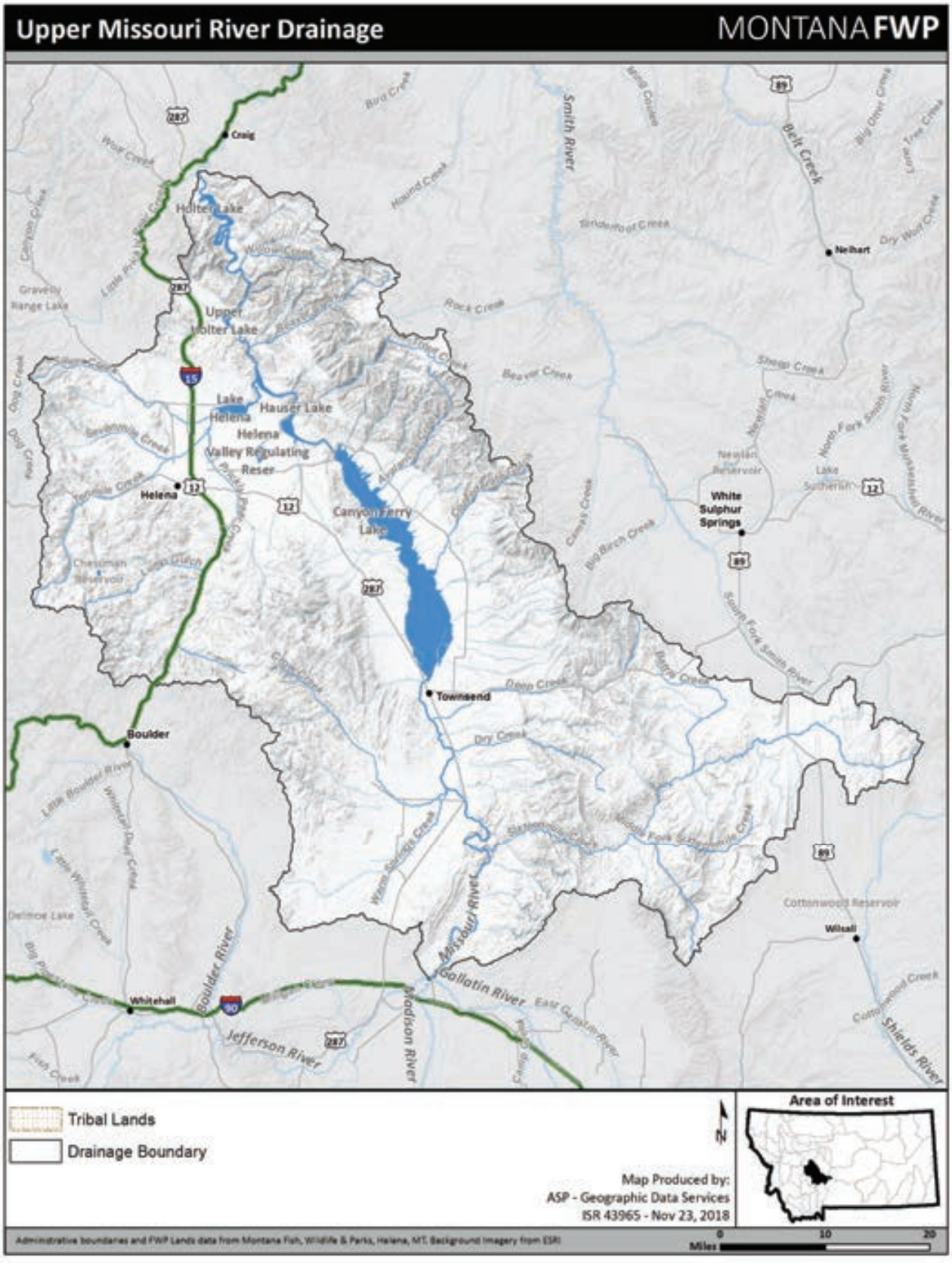
Hyalite Reservoir and other Gallatin River tributaries south of Bozeman provide municipal water for the City of Bozeman. Expansion of the human population in Bozeman and the surrounding area has caused concern over the ability of existing sources (primarily Hyalite Reservoir) to satisfy municipal demand of water. Possible impacts include the development of additional water storage (a new reservoir; potentially in Sourdough Creek) for municipal use.

The Gallatin River drainage is also home to several conservation populations of westslope cutthroat trout providing opportunities to conserve this native species in the drainage. The long-term goal of cutthroat conservation in the Gallatin River Drainage is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout (see Part 1: Trout: Westslope and Yellowstone Cutthroat Trout for details).

FISHERIES MANAGEMENT DIRECTION FOR GALLATIN RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Gallatin River and Tributaries (YNP to Shed's Bridge FAS)	56.1 miles in mainstem	Rainbow trout, Brown trout	Wild	General	Maintain present numbers and sizes. Consider increasing angler harvest to reduce numbers if necessary to maintain fish growth.
		Mountain whitefish (N)	Wild	General	Continue to maintain population. Initiate research and monitoring to better understand population size and trend.
Gallatin River and Tributaries (Shed's Bridge FAS to Confluence with Missouri River)	32.7 miles in mainstem	Rainbow trout, Brown trout	Wild	General	Maintain present numbers and sizes. Consider increasing angler harvest to reduce numbers if necessary to maintain fish growth.
		Mountain whitefish (N)	Wild	General	Continue to maintain population. Initiate research and monitoring to better understand population size and trend.
Habitat needs and activities: Improve instream-flow conditions, investigate alternatives to improve spawning and rearing habitat (tributaries), maintain form and function of river channel by preventing degradation from bank stabilization, continue to allow stream access to floodplain, allow natural channel migration, and maintain healthy riparian plant community.					
East Gallatin River and Tributaries (Headwaters to Thompson Spring Creek)	25.6 miles in mainstem	Rainbow trout, Brown trout	Wild	General	Maintain present numbers and sizes. Consider increasing angler harvest to reduce numbers if necessary to maintain fish growth.
		Mountain whitefish (N)	Wild	General	Continue to maintain population. Initiate research and monitoring to better understand population size and trend.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
East Gallatin River and Tributaries (Thompson Spring Creek to Mouth)	18.6 miles in mainstem	Rainbow trout, Brown trout	Wild	General	Maintain present numbers and sizes. Consider increasing angler harvest to reduce numbers if necessary to maintain fish growth.
		Mountain whitefish (N)	Wild	General	Continue to maintain population. Initiate research and monitoring to better understand population size and trend.
Habitat needs and activities: Improve instream-flow conditions, investigate alternatives to improve spawning and rearing habitat (tributaries), maintain form and function of river channel by preventing degradation from bank stabilization, continue to allow stream access to floodplain, allow natural channel migration, and maintain healthy riparian plant community.					
Hyalite Reservoir	158 acres	Yellowstone cutthroat trout	Wild/ Hatchery	Put, Grow and Take	Continue to manage stocking and harvest to maintain present sizes and numbers.
		Arctic grayling	Wild	Conservation	Continue monitoring population trends.
		Brook trout	Wild	General	Continue to monitor population trends.


Upper Missouri River Drainage
MONTANA FWP
Craig
Holter Lake
Upper Holter Lake
Lake Helena
Hauser Lake
Helena Valley Regulating Reser
Helena
Canyon Ferry Lake
Townsend
Boulder
Whitehall
Jefferson River
Boulder River
Missouri River
Gallatin River
Madison River
Smith River
Belt Creek
Neihart
White Sulphur Springs
Wilsall
Cottonwood Reservoir
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background imagery from ESRI
0
10
20
Miles

UPPER MISSOURI RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Upper Missouri River drainage includes the Missouri River and tributaries from the confluence of the Jefferson, Madison and Gallatin rivers (near the town of Three Forks), downstream 110 river miles to Holter Dam. The upper river reach extends from the headwaters 43 river miles to the upper end of Canyon Ferry Reservoir. Toston Dam, located 23 miles upstream from Canyon Ferry, is a barrier to upstream fish movement. The dam creates a small, run-of-the-river irrigation storage reservoir that has been retrofitted for hydro-power generation.

Riparian vegetation is limited to a narrow band along the river, except for the lower 10 miles above Canyon Ferry Reservoir where the river channel is braided and the bottomland is extensively vegetated with willows and cottonwoods. Width of the channel varies from 300 to 1,200 feet, the average gradient is 5.6 feet per mile, and the sinuosity is 1.6. Bottom substrate varies from sand-silt to cobble, but the majority is gravel-cobble. Tributaries originate mainly from the east and most are totally diverted during late summer for irrigation. Major tributaries of the Missouri River between Three Forks and Canyon Ferry Reservoir include Sixteenmile, Deep, Dry, Crow, Sixmile, Indian, Greyson and Warm Springs creeks. Many of these tributaries are chronically dewatered during late summer for irrigation. Water to irrigate about 555,400 acres is diverted above this reach. Thus, flow can be severely depleted during the summer irrigation season. Flows in this reach are partially regulated by a number of upstream reservoirs.

The remainder of the mainstem of this drainage is dominated by a reservoir complex that includes three reservoirs: Canyon Ferry, Hauser, and Holter. Canyon Ferry Reservoir is the first major storage impoundment on the Missouri River. Hauser and Holter reservoirs lie about 3 and 30 miles downstream from Canyon Ferry, respectively. Canyon Ferry Dam and Reservoir is operated by the BOR for power production, flood control, irrigation, recreation, and as a municipal water source. At full pool, Canyon Ferry has a surface area of 35,200 acres and a volume of nearly 2 million acre-feet and provides virtually all the storage available in the reservoir complex. Rapid filling of the reservoir begins in early May with peak storage occurring in late June to early July. Major tributaries to the reservoir include Duck Creek, Confederate Gulch, Hellgate Creek, Avalanche Creek, Magpie Creek, and Beaver Creek. The two reservoirs below Canyon Ferry are Hauser and Holter and are operated by NorthWestern Energy. They differ significantly from Canyon Ferry Reservoir in that they are “run-of-the-river” facilities. Hauser Reservoir has a surface area of about 3,800 acres and stores approximately 98,000 acre-feet of water at full pool. The reservoir is about 15.5 miles in length and is relatively narrow, ranging from about 0.1 to 1.1 miles in width. Important tributaries to Hauser Reservoir include Prickly Pear, Silver, Trout, Spokane and McGuire creeks. A biologically important feature of Hauser is Lake Helena, which is a large (surface area of 2,100 acres), shallow water body connected to the Causeway Arm by a narrow channel which was created when Hauser Dam inundated the lower reach of Prickly Pear Creek.

A 4.6-mile reach of the Missouri River is located between Hauser Dam and Holter Reservoir. This unique segment of river flows through a narrow, high-walled gorge for most of its length prior to entering upper Holter Reservoir. Productivity in this river segment is affected by the two

upstream reservoirs, which creates tailrace conditions where water temperatures are moderated and the water is enriched with nutrients.

Holter Reservoir has a surface area of about 4,800 acres, stores 243,000 acre-feet of water at full pool and is 25 miles long with widths ranging from 0.1 to 1.1 miles. The 4.6 mile segment of free flowing river located upstream of Holter Reservoir provides very important spawning habitat to migrant salmonids. Beaver Creek, a tributary to this river segment, is the principal spawning stream for reservoir fish, especially in the spring. Cottonwood and Willow creeks are also important tributaries that empty directly into Holter Reservoir.

FISHERIES MANAGEMENT

The Missouri River drainage contains fish species common to southwestern Montana. The native species found here include westslope cutthroat trout, mountain whitefish, mountain sucker, longnose dace, longnose sucker, Rocky Mountain sculpin, stonecat and white sucker. Nonnative species are rainbow trout, brown trout, brook trout, northern pike, smallmouth bass, largemouth bass, yellow perch, walleye and common carp. Hybrids of rainbow trout and westslope cutthroat trout are also found in the drainage.

The Missouri River upstream from Toston Dam has sparse fisheries resources, due to the poor quality of the river system in terms of temperature and physical habitat, and is managed as a wild trout fishery, emphasizing natural reproduction. The Missouri River from Toston Dam to Canyon Ferry Reservoir is managed as a naturally reproducing trout and walleye fishery. The basin is also suitable for westslope cutthroat trout recovery efforts in many locations. Up until the early 1990s, the fishery downstream from Toston Dam was seasonal and characterized by spawning runs of large rainbow and brown trout from Canyon Ferry Reservoir; however, resident brown trout fishing was also an attraction during this time period. Then, a variety of factors began to modify the composition of the fish community, including the expansion of walleye into Canyon Ferry Reservoir, changes in temperatures and flow, hydroelectric retrofits of Toston Dam, expansion of pelicans and cormorants, whirling disease, and the introduction of northern pike in Canyon Ferry Reservoir. All of these factors caused a significant reduction of spawning trout in the Missouri River downstream from Toston Dam, and as a result, angling use for trout has declined substantially. Conversely, angling use for walleye has increased as a migratory proportion of the Canyon Ferry Lake walleye population has become seasonally abundant in spring and fall in this 23 mile stretch of the Missouri River.

Over the past decade, angler use of the Missouri River reach downstream from Toston Dam has varied from 2,594 angler days in 2005 to 10,635 angler days in 2015. Upstream from Toston Dam to the confluence of the Madison and Jefferson rivers, angling pressure over the past decade has varied from 1,564 angler days in 2007 to 3,837 angler days in 2001. The Central Fishing District Standard regulations govern the Missouri River upstream from Canyon Ferry Reservoir. Exceptions include restricted harvest opportunities for brown trout, no limit on northern pike, and size and number exceptions for walleye downstream from Toston Dam.

Common to many southwest Montana rivers, fish stocking records for the Missouri River were documented beginning in the 1920s, and lasting through the early 1970s, when wild trout management philosophies were instituted. Beginning in the late 1920s, rainbow trout, brook trout, brown trout, kokanee salmon, Chinook salmon, coho salmon and Arctic grayling were

stocked. Fish stocking for the purpose of augmenting fisheries ended in the 1950s and 1960s. New sport-fish introductions (salmon species) occurred in early 1970s and conservation stocking projects were initiated in the 1990s and early 2000s to reintroduce brown trout and Arctic grayling, respectively.

Combined, the upper Missouri River reservoir system averaged over 8% of the fishing pressure in Montana from 2001-2015. These reservoirs traditionally are in the top 5 most heavily fished waters in Montana with Canyon Ferry averaging 97,072 angler days (1989-2015), Hauser averaging 54,476 angler days (1989-2015) and Holter averaging 64,398 angler days (1989-2015). This level of pressure equates to an average 2.8 angler days per acre on Canyon Ferry, 14.3 angler days per acre on Hauser, and 13.4 days per acre on Holter. Canyon Ferry was the most heavily fished water in Montana in 1989, 1993, 1995, 1999, and 2009 and is consistently the top flatwater fishery in Montana. Hauser Reservoir was the most heavily fished body of water in the state in 1991, which was attributable to a booming kokanee salmon population that resulted in a record 141,000 kokanee harvested in 1991. Over the entire reservoir system, angler use generally trended downward from 1999-2007, and use generally trended upward from 2009-2015. Angler use in the system peaked at 315,558 angler days in 2009, accounting for 9.4% of all angler use in Montana that year.

A variety of important fish species are present within the reservoir system. Rainbow trout, kokanee salmon, yellow perch, brown trout, burbot (ling), and walleye are among the species of greatest interest to the public. Downstream movement of hatchery rainbow trout from Canyon Ferry to Hauser and Holter reservoirs has been documented during periods of high surface water releases and flushing of walleye out of Canyon Ferry has heavily influenced species composition in the downstream reservoirs.

HABITAT

Toston Dam, located 23 miles above Canyon Ferry Reservoir and 6 miles southeast of Toston, is owned and operated by DNRC. It is a small, run-of-the-river irrigation storage reservoir that stores 3,000 acre-feet at full pool and was retrofitted with a 10-megawatt hydro-power generating plant in the 1980s. It has little influence on flows in the Missouri River downstream but does function as a barrier to upstream migrating fish.

Canyon Ferry Reservoir has a significant impact on the flows of the Missouri downstream to Fort Peck Reservoir. Its typical operation provides benefits to a tailwater trout fishery downstream of Holter Dam but presents challenges to development and stability of some reservoir fisheries due to fluctuating water levels. Rapid filling of the reservoir begins in early May, with peak storage occurring in late June to early July, followed by a steady decrease of about 2 feet per month during the summer period of high irrigation use (July-September). A decrease in reservoir volume continues throughout the fall and winter in preparation for storage of spring run-off. The retention time of water in the reservoir averages 135 days, but ranges from 50-200 days depending on reservoir elevation and inflow-outflow regimes. The annual water level fluctuation (drawdown) averages about 12 feet. Canyon Ferry Reservoir is typically drawn down to its minimum level in March, and then is refilled during the March to June period. A reservoir operations steering committee comprised of FWP, NorthWestern Energy, BOR, irrigators, and sportsmen, has developed operational guidelines for Canyon Ferry Reservoir to

balance recreational values and minimize impacts to fish and wildlife. This committee meets annually to review operational issues.

Discharge from Canyon Ferry Dam occurs at various outlets: the radial gates near the top of the spillway (30 feet deep); power penstocks (94 feet); the irrigation outlet (110 feet); and the river outlet (147 feet). The power penstocks are usually the main release point, except in spring and summer when additional releases are made from the spillway, irrigation, and river outlets. Releases from the radial gates typically occur during June and July following peak river run-off. Radial gate spills occur in roughly two out of every three years, with an average duration of 30-45 days. Temperature and oxygen content of the release water can vary depending on what outlets are used and the time of year.

Hauser Dam is a straight concrete gravity structure, 700 feet long and 80 feet above the riverbed. The structure consists of an overflow spillway, a non-overflow section, a forebay intake section and two abutment sections. The spillway is 493 feet long with slide gates and removable flashboards for flow control. Hauser Dam has the lowest powerhouse capacity of the three dams (19 megawatts) in the reservoir complex and consequently, spills the most water. Turbine water enters a 32-foot-deep intake channel on the east side of the dam. The six-penstock intakes draw from this channel with the openings from 16 to 30 feet below full pool. Water is spilled from five hydraulic gates and 17 manually operated gates. Water that is spilled is drawn from 0-14 feet below full pool. In a dry year, water may spill as much as 4-5 months of the year, while in a wet water year, water is spilled every day of the year. Water elevations of the reservoir are to fluctuate within a 1 foot elevation, so flows from tributaries and discharge from Canyon Ferry are passed through the facility, and it is operated as a run-of-the-river plant.

Holter Dam is also a straight concrete gravity structure, which is 1,364 feet long and 124 feet above the riverbed. The structure consists of an overflow spillway section, a powerhouse/intake section, a left non-overflow section and a right non-overflow section. It has a usable storage of approximately 81,920 acre-feet. Penstocks are between 24-32 feet below full pool. In addition, an “exciter” unit is always operating, which has a penstock opening from 25-29 feet below full pool. Water is spilled from a depth of 6-16 feet. In very high water conditions, a “cap” can be removed from the spill gates allowing the top six feet of water to be spilled. In a dry year, water may be spilled only one day, while in wet water years, spilling may occur throughout most of the year. Operation of Holter Dam has a significant impact on the fishery, wildlife and recreational resources of the reservoir and downstream as was experienced in 1986 when flows shut down. As part of the FERC re-licensing process, operational guidelines were developed for Holter Reservoir to be operated as a run-of-the-river project with pool elevations maintained within one foot between 3,543 and 3,564 feet msl. Prior to the implementation of the operating guidelines, a steering committee composed of FWP, Montana Power Company, BOR, USFS, irrigators, and sportsmen formulated operational guidelines for Holter Dam to optimize recreational values and to minimize impacts to fish and wildlife. The steering committee recommendations for the operation of Holter Dam include: 1) provide a stable reservoir level, 2) have no large spills (10,000 cfs, total turbine and spill) in August or September; and 3) accomplish facility maintenance drawdowns in March or during September (after Labor Day) through October 15. Adherence to these recommendations and the operating guidelines still serve to protect fisheries habitat today in both the reservoir and the trout fishery immediately downstream.

Fishing Access

The reach on the Missouri River above Canyon Ferry Reservoir has good access for recreationists, and access points are well placed for floaters. These points include the Toston, York's Island and Townsend fishing access sites. In addition, ample opportunities for walk-in access exist within the Canyon Ferry Wildlife Management area.

The reservoir complex has good access for recreationists and access points are well placed for boaters and campers. The BOR, Broadwater County, and private marinas provide access to Canyon Ferry Reservoir throughout its length. The BOR manages recreational areas, including campgrounds, boat ramps, and day-use areas around the reservoir. FWP administers six FAS's on Hauser and Lake Helena. The BLM also has two recreation areas that provide access to Hauser and Lake Helena, and three recreation areas that provide access to Holter Lake.

Special Management Issues

Unauthorized introductions of predatory species have significantly changed the characteristics of the fishery throughout this drainage. The Upper Missouri River Reservoirs Fisheries Management Plan 2010-2019 guides management within the plan area, which extends from Toston Dam through the reservoir complex down to Holter Dam, including short sections of the Missouri River between Canyon Ferry Reservoir and Toston Dam. The reservoir management plan is undergoing review with expected implementation in 2019. In 2012, FWP initiated an environmental assessment to remove northern pike from the entire basin upstream from Holter Dam.

The Upper Missouri River drainage is also home to several conservation populations of westslope cutthroat trout, providing opportunities to conserve this native species in the drainage. The long-term goal of cutthroat conservation in the Upper Missouri River Drainage is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout (see Part 1: Trout: Westslope and Yellowstone Cutthroat Trout for details).

MANAGEMENT DIRECTION FOR UPPER MISSOURI RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Missouri River - Confluence of the Madison and Jefferson Rivers to Toston Dam	22 miles	Rainbow trout, Brown trout, Mountain whitefish (N)	Wild	General	Maintain present numbers and sizes. Consider increasing angler harvest to reduce numbers if necessary to maintain fish growth.
		Northern pike	Wild	Suppression	Continue to allow unlimited harvest to minimize impacts on other sport fishes.
Habitat needs and activities: Continue to improve instream flow, by looking for opportunities to lease water or improve efficiency in irrigational infrastructure and methods.					
Sixteenmile Creek	69 miles	Rainbow trout, Brown trout	Wild	General	Manage as a recreational fishery with larger sized fish available to the angler.
		Brook trout	Wild	General	Manage as a recreational fishery with consumptive harvest.
Habitat needs and activities: Explore potential opportunities to restore habitat on some reaches.					
Missouri River – Toston Dam to Canyon Ferry Reservoir - See Upper Missouri River Reservoir Fisheries Management Plan	21 miles	Rainbow trout	Hatchery	General	Evaluate possible methods to restore migratory fishery in the river.
		Brown trout	Wild	Quality	Manage as a recreational fishery with little harvest.
		Mountain whitefish (N), Stonecat (N)	Wild	General	Maintain numbers within historic range.
		Northern pike	Wild	Suppression	Maximize harvest to minimize impacts on other wild & reservoir sport fishes.
		Walleye	Wild	Liberal Regulations	Manage walleye population consistent with Canyon Ferry Lake.
Habitat needs and activities: Maintain Instream Flows at 2,500 cfs to maintain side channel habitat. Look for opportunities to lease water or improve efficiency in irrigational infrastructure and methods.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Crow Creek	25.9 miles	Rainbow trout Brown trout, Brook trout	Wild	General	Manage as a recreational fishery with consumptive harvest.
		Mountain whitefish (N)	Wild	General	Manage to maintain a population.
Habitat needs and activities: Maintain habitat and instream flows of 11 cfs. Explore opportunities to improve chronic dewatering.					
Dry Creek	16.6 miles	Rainbow trout, Rb x WCT hybrids, Brook trout	Wild	General	Manage as a recreational fishery with consumptive harvest.
Habitat needs and activities: Maintain habitat and instream flows of 1.8 cfs. Explore opportunities to improve chronic dewatering.					
Deep Creek	30.3 miles	Rainbow trout, Brown trout	Wild	General	Manage as a recreational fishery and spawning stream for fluvial/adfluvial populations.
		Brook trout	Wild	General	Manage as a recreational fishery with consumptive harvest.
Habitat needs and activities: Maintain habitat and instream flows of 9 cfs. Explore opportunities to improve chronic dewatering and habitat restoration.					
Canyon Ferry Lake	35,200 acres	Rainbow trout	Hatchery	Put, Grow and Take	Manage as a high-quality, cost-effective, multi-species fishery with high levels of angler satisfaction. See Upper Missouri River Reservoir Fisheries Management Plan for species goals, strategies, and targets.
		Brown trout	Wild	Quality	
		Walleye	Wild	Liberal Regulations	
		Yellow Perch	Wild	Restrictive Regulations	
		Burbot (N)	Wild	General	
		Northern Pike	Wild	Suppression	
Habitat needs and activities: Continue to explore opportunities for enhancement of forage fish spawning habitat.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Confederate Gulch, Beaver Creek Duck Creek	17.1 miles 15.5 miles 15.0 miles	Rainbow trout, Brown trout Brook trout	Wild Wild	General General	Manage as a recreational fishery and spawning stream for fluvial/adfluvial populations. Manage as a recreational fishery with consumptive harvest.
Magpie Creek	13.6 miles	Rainbow trout Brook trout	Wild Wild	General General	Manage as a recreational fishery and spawning stream for fluvial/adfluvial populations. Manage as a recreational fishery with consumptive harvest.
Hauser Lake/ Lake Helena	3,800 acres	Rainbow trout Brown trout Walleye Yellow perch Burbot (N) Northern pike	Hatchery Wild Wild Wild Wild Wild	Put, Grow and Take Quality Liberal Regulations Restrictive Regulations General Suppression	Manage as a high-quality, cost-effective, multi-species fishery with high levels of angler satisfaction. See Upper Missouri River Reservoir Fisheries Management Plan for species goals, strategies, and targets.
Helena Valley Regulating Reservoir	553 acres	Kokanee salmon Yellow perch Burbot (N)	Wild Wild Wild	Put, Grow and Take/ Liberal Regulations General General	Maintain recreational fishery for consumptive harvest by continued stocking. Maintain recreational fishery for consumptive harvest. Maintain population numbers with some consumptive harvest.

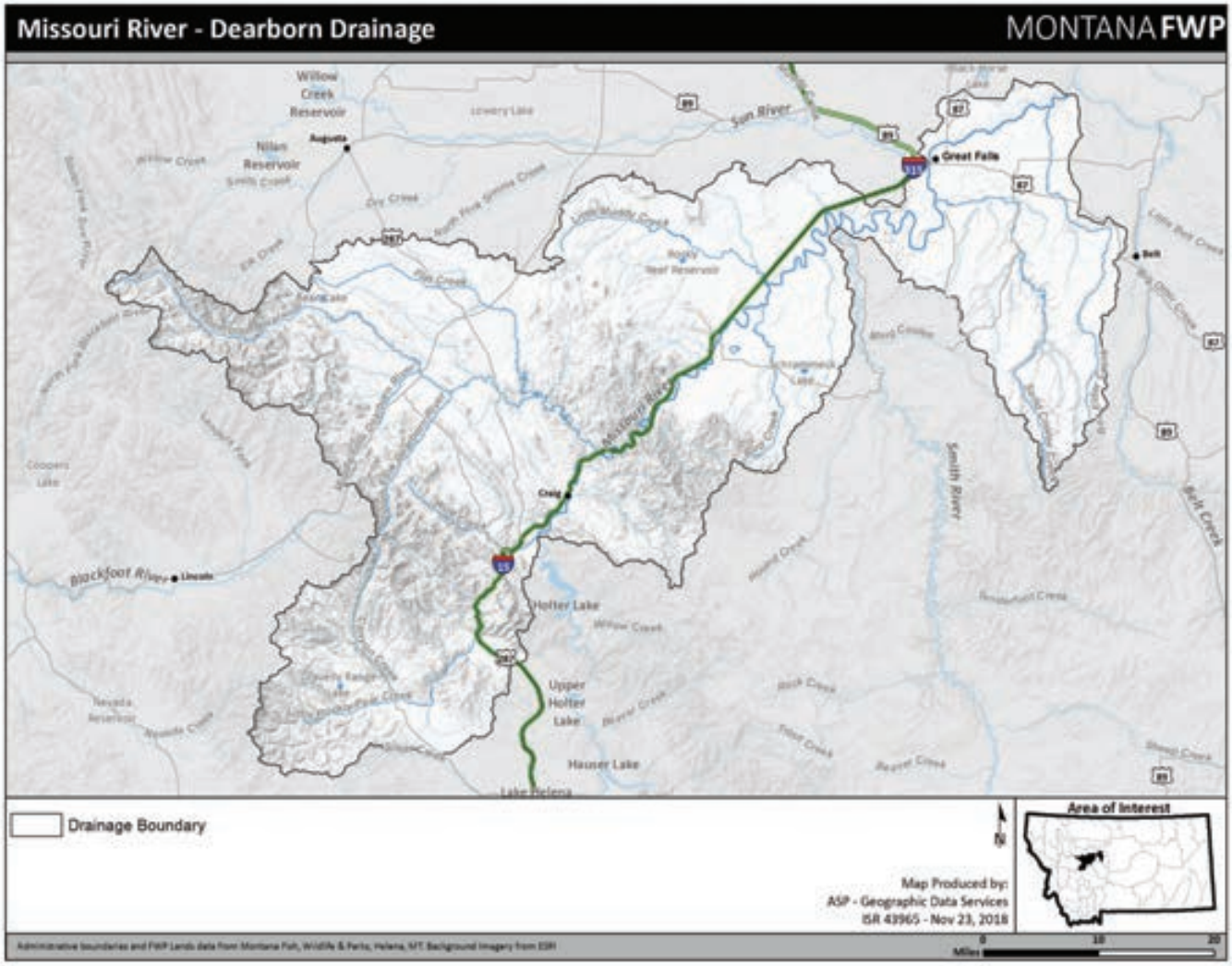
Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Spokane Creek	2.8 miles	Rainbow trout, Brown trout	Wild	General	Manage as a recreational fishery and spawning stream for fluvial/adfluvial populations.
Habitat needs and activities: Maintain habitat and instream flows of 4 cfs from May 1-Nov 30 and 3 cfs from Dec 1-April 30. Explore opportunities for habitat restoration on public land.					
Trout Creek	9.0 miles	Rainbow trout, Brown trout Mountain whitefish (N)	Wild Wild	General General	Manage as a recreational fishery and spawning stream for adfluvial populations. Maintain population numbers.
Habitat needs and activities: Maintain habitat and instream flows of 15 cfs. Maintain access to stream for migrations of adfluvial fish and minimize habitat perturbations caused by road construction and riparian impact from housing development.					
Prickly Pear Creek	43.6 miles	Rainbow trout, Brown trout Brook trout	Wild Wild	General General	Manage as a recreational fishery and spawning stream for adfluvial populations. Manage as a recreational fishery with consumptive harvest.
Habitat needs and activities: Maintain habitat and instream flows of 30 cfs below East Helena and 22 cfs above East Helena. Work to maintain agreements that have resulted in wetting chronically dewatered reaches. Maintain access to stream for migrations of adfluvial fish. Continue to cooperate in reducing pollution delivery and mining damage to the waterway above East Helena. Explore opportunities to increase public access and conserve riparian habitat.					
Silver Creek	23.5 miles	Rainbow trout, Brown trout Brook trout	Wild Wild	General General	Maintain spawning and rearing for adfluvial populations. Maintain a recreational fishery with little harvest.
Habitat needs and activities: Maintain habitat and instream flows of 13 cfs from May 1 to Nov 30 and 5.4 cfs from Dec 1 to April 30.					
Tenmile Creek	29.4 miles	Rainbow trout, Brown trout Brook trout	Wild Wild	General General	Maintain a recreational fishery and spawning for adfluvial populations. Maintain a recreational fishery with some harvest.
Habitat needs and activities: Maintain habitat and instream flow of 12 cfs. Explore opportunities to reduce chronic dewatering in the lower reaches.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Missouri River – Hauser Dam to Holter Reservoir	4.6 miles	Rainbow trout	Hatchery/ Wild	Put, Grow and Take/ General	Manage as a high-quality, cost-effective, multi-species fishery with high levels of angler satisfaction. See Upper Missouri River Reservoir Fisheries Management Plan for species goals, strategies, and targets.
		Brown trout	Wild	Quality	
		Kokanee salmon	Wild	General	
		Walleye	Wild	Liberal or Restrictive Regulations	
		Yellow perch	Wild	General	
		Burbot (N)	Wild	General	
		Northern pike	Wild	Suppression	
Beaver Creek	18.6 miles	Rainbow trout	Wild	General	Maintain a recreational fishery and spawning for fluvial/adfluvial fish.
		Brown trout, Brook trout	Wild	General	Maintain a recreational fishery with some harvest.
Habitat needs and activities: Maintain habitat and instream flows of 10 cfs. Explore opportunities for habitat restoration.					
Holter Lake	4,800 acres	Rainbow trout	Hatchery/Wild	Put, Grow and Take	Manage as a high-quality, cost-effective, multi-species fishery with high levels of angler satisfaction. See Upper Missouri River Reservoir Fisheries Management Plan for species goals, strategies, and targets.
		Kokanee salmon	Hatchery	Put, Grow and Take	
		Walleye	Wild	Restrictive/Liberal Regulations	
		Yellow perch	Wild	Restrictive Regulations	

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Burbot (N) Northern Pike	Wild Wild	General Suppression	
Willow Creek	9.8 miles	Rainbow trout, Brook trout	Wild	General	Maintain population numbers within historic levels for a recreational fishery with consumptive harvest.
Habitat needs and activities: Maintain habitat and instream flows of 3.5 cfs. Evaluate possible barrier sites that would allow establishing a WCT population in the upper reaches.					
Elkhorn Creek-Lower Reach	5.1 miles	Rainbow trout, Brook trout, Rb x WCT hybrids	Wild	General	Maintain population numbers within historic levels for a recreational fishery with consumptive harvest.
Habitat needs and activities: Maintain habitat and instream flow of 3.5 cfs.					
Elkhorn Creek – Upper Reach	5.3 miles	Westslope cutthroat trout (N)	Wild/ Transfer	Conservation	Maintain population and expand distribution to occupy all habitat above barrier with genetically unaltered WCT.
Habitat needs and activities: Maintain habitat and instream flow of 3.5 cfs. Complete barrier and remove most hybridized fish above barrier.					
Cottonwood Creek	8 miles	Westslope Cutthroat trout (N)	Wild/ Transfer	Conservation	Maintain population and expand densities to occupy all habitat above barrier.
Habitat needs and activities: Install riparian fencing in headwater area on private land to improve riparian vegetation condition. Maintain habitat and instream flow of 1.0 cfs.					
Westslope cutthroat trout Genetically Unaltered Conservation Population Streams (Isolated Single Species populations)	56.9 miles	Westslope cutthroat trout (N)	Wild / Transfer	Conservation	Maintain or enhance populations to reduce extinction risk. When biologically feasible, in robust populations, provide for limited consumptive.
Habitat needs and activities: Maintain or improve habitat and explore suitable sites for barriers to protect populations and opportunities to reduce fragmentation of WCT occupied habitat.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Westslope cutthroat trout Genetically Altered Conservation Population or Mixed Streams	36.1 Miles	Westslope cutthroat trout & hybrids	Wild/ Transfer	Conservation	Maintain or enhance populations. Allow harvest in robust populations.
Brook Trout Streams	624 Miles	Brook trout	Wild	General	Maintain or enhance populations for a recreational fishery for consumptive harvest.
Fairgrounds Pond	2 Acres	Rainbow trout	Hatchery	Family Fishing Water	Maintain as a Children's Fishing Water.
Indian Road Pond near Townsend	2 Acres	Westslope cutthroat trout	Hatchery	Family Fishing Water	Maintain as a Children's Fishing Water.
Spring Meadow Lake	14 Acres	Largemouth bass Rainbow trout, Westslope cutthroat trout	Wild Hatchery	Family Fishing Water Family Fishing Water	Maintain as an urban fishery. Maintain as an urban fishery.


Missouri River - Dearborn Drainage
MONTANA FWP
Willow Creek Reservoir
Augusta
Nilan Reservoir
Sun River
Great Falls
Holter Lake
Upper Holter Lake
Hauser Lake
Lake Helena
Craig
Lincoln
Blackfoot River
Smith River
Belt
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Miles

MISSOURI RIVER - DEARBORN DRAINAGE

PHYSICAL DESCRIPTION

The Upper Missouri River drainage includes the Missouri River and tributaries from Holter Dam near Wolf Creek downstream nearly 105 river miles to Morony Dam, 15 miles northeast of Great Falls. This river reach spans nearly 93 miles from Holter to Black Eagle dam. Below Black Eagle Dam, the river is impounded by Rainbow Dam, creating a shallow run-of-the-river reservoir that is available for public fishing. Public boat access for fishing is not available downstream of Rainbow Dam, until downstream of Morony Dam. Stream gradient averages only about 2 feet/mile and varies from 7.84 feet/mile at Pine Island Rapids to 0.52 feet/mile near Ulm. The river is surrounded by the Big Belt Mountains to the southeast and the east front of the Rocky Mountains to the northwest. Small communities along the river include Craig, Hardy, Cascade and Ulm. The river channel upstream of the Dearborn River has extensive side channel development. It becomes confined and entrenched in a single, deep channel as it flows through a mountainous canyon to the mouth of Sheep Creek. The river then meanders across a wide and flat prairie zone into Great Falls. Riparian vegetation consisting of a willow understory/cottonwood overstory lines much of the lower river.

Major tributaries in this reach include Little Prickly Pear Creek, the Dearborn River, Sheep Creek, the Smith River and the Sun River. Minor tributaries include Rock, Wegner, Stickney, Hardy, Bird, Little Muddy, and Sand Coulee creeks. The tributaries add considerable flow to the Missouri during spring runoff, but contribute little flow during the remainder of the year.

River characteristics and flow in this section are heavily influenced by the three upstream hydroelectric dams, Canyon Ferry, Hauser, and Holter. Canyon Ferry dam is operated by the BOR for irrigation, hydropower, flood control, recreation, and as a supplemental water supply for the City of Helena. Hauser and Holter reservoirs lie downstream from Canyon Ferry and provide hydroelectric power. They are operated by Northwestern Energy as run-of-the-river projects, passing out the same flows that enter the reservoirs. Water management and storage practices at Canyon Ferry Dam, the largest of the three upstream reservoirs affects flows in this tailwater reach below Holter Dam. Annual mean flow measured below Holter Dam from 1946 to 2017 ranged from 3,008 to 8,497 cubic feet per second (cfs), while annual mean inflows to Canyon Ferry ranged from 2,830 to 7,742 cfs. The mean peak flow below Holter Dam for this period is 14,078 (range 3,370-34,800) compared to a mean inflow of 18,105 cfs (range 6,580-34,000) to Canyon Ferry. From 1999 through 2007, a drought in central Montana reduced peak flows in the Missouri River substantially below the long- term average. Annual mean flow measured near Ulm (9 river miles downstream from the confluence of the Smith River) from 1948 to 2011 was 6,247, and ranged from 3,479 to 9,653 cfs; the annual peak flow ranged from 5,300 to 35,000 cfs.

FISHERIES MANAGEMENT

Game fish species of the greatest interest to the public within this management area include rainbow and brown trout, mountain whitefish, walleye, and burbot (ling). The 35-mile reach from Holter Dam to Cascade Bridge is designated as one of Montana's premier river "Blue

Ribbon" trout fisheries. This reach supports an abundance of wild rainbow and brown trout, which are the dominant sport fish; the population includes trophy sized fish.

In most years since 1982, FWP fisheries staff has conducted population monitoring for rainbow and brown trout in two sections of the 35-mile river reach between Holter Dam and the town of Cascade (Craig study section = 5.6 miles, Cascade study section = 4.1 miles). Population estimates are derived using standardized methods, including night electrofishing to mark and recapture fish in the spring and fall. Estimates are based on trout 10 inches and longer.

In fall 2017, rainbow trout in the Craig section were estimated at 4,936 per mile. This estimate represents a decline from the peak estimate in 2012 but remains well above the long term 36-year mean of 3,394 rainbow trout per mile. The 2017 sampling event represents the seventh consecutive year of above average rainbow trout population estimates in the Craig section. Brown trout 10 inches and greater in the Craig section were estimated at 892 per mile in spring 2018, which is greater than the long-term average of 563. In the Cascade section, the estimate of rainbow trout 10 inches and greater was 1,592 per mile in fall 2017, which is similar to the 34-year mean of 1,616. In the Cascade section, the brown trout estimate was 297 fish 10-inches or greater per mile in spring 2018, which is less than the long-term average of 398 fish, but within the long-term range of data (135-909). Historically, mountain whitefish have not been monitored, due to logistical constraints with sampling. However, anglers have reported catching reduced numbers of mountain whitefish in recent years. FWP will conduct additional monitoring for mountain whitefish as conditions and workload allow.

Additionally, walleye and burbot are incidentally sampled during electrofishing operations. Over the period of record there have been changes in the number of walleye sampled in the Missouri River below Holter Dam. The increase in walleye production in Canyon Ferry Reservoir since 1994 appears to have resulted in an increase in walleye in the Missouri River below Holter Dam. However, no evidence has been gathered which suggests an ecological impact to trout in this reach at the population level. Many factors are present that could negatively affect trout populations, including increased densities of walleye, increase in angler use, prolonged drought conditions, and whirling disease infections. However, despite these factors in play for much of the past 25 years, trout populations appear resilient and show no evidence of decline. The FWP Commission established a "no limit for walleye" harvest regulation on the section of the Missouri River from Holter Dam to Cascade in 2011 as an effort to protect the rainbow and brown trout fishery.

Trout numbers drop markedly below Ulm largely due to habitat changes. Consequently, the proportional abundance of burbot and walleye in the fishery increases in this reach. However, trout still remain the dominant game fish. Other common species in this reach of the Missouri River include mountain whitefish, longnose and white suckers, carp, longnose dace, and Rocky Mountain sculpin.

Fishing pressure in the reach is heavy, with the tail water fishery from Holter Dam to Cascade Bridge always ranking among the top 4 fisheries throughout the state during the past 25 years (1991-2015). This section of river has averaged over 105,000 angler days per year since 1991. A large increase in the number of anglers was observed in 2013 with record high 170,850 angler days estimated compared to 105,986 in 2011. This section of the Missouri River again ranked number one in the state in 2015 when 183,479 angler days were estimated, surpassing the

previous high set in 2013. In 2015, the average annual revenue generated by this 35-mile reach of river was estimated at $66.6 million. Economic statistics for angler use are based on goods and services anglers purchased during a typical fishing trip, including food, gasoline, bait, lures, license, outfitter-guide fees and lodging. This exercise produces a conservative estimate of the economic value of an angler day because only expenditures for non-durable goods were included and not durable goods such as boats, waders, fishing rods and vehicles.

This section of the Missouri River is popular and heavily utilized for recreation due to both the characteristics of the fishery and the excellent access throughout much of the reach. A frontage road, Old Highway 91, which has officially been designated as a state Recreation Road, parallels much of the river downstream to Cascade. The river section downstream from the Wolf Creek Bridge contains eleven FWP Fishing Access Sites. From Cascade to Morony Dam, there are six more Fishing Access Sites and Giant Springs State Park. A majority of the existing recreational use of this reach of river is angling, but recreational floating is also popular seasonally. Other activities include picnicking, camping, trapping, and hunting.

FISHING ACCESS

The reach on the Missouri River below Holter Dam down to Cascade has good access for recreationists and access points are spaced out to provide many options for floaters. Old US Highway 91 parallels the upper reaches of the Missouri River below Holter Dam. There are 14 Fishing Access Sites managed by FWP and one site managed by the Bureau of Land Management; nine of these provide developed or undeveloped boat ramps and four provide access for bank anglers. Between Cascade and Black Eagle Dam, there are four access sites with boat ramps, two managed by FWP and one each managed by the City of Cascade and the City of Great Falls. Additionally, five FWP managed access sites in this reach provide access for bank fishing. Below Black Eagle Dam, a boat ramp provides access for small boats between Black Eagle and Rainbow Dam. FWP also administers two access sites on Little Prickly Pear Creek. Access on the Dearborn River is limited to public land in the headwaters and at bridges on US Highway 287, Highway 200, and Route 435. Also in the upper Dearborn drainage, there is an access site on Bean Lake, but it is currently used exclusively by campers since low water and high total dissolved solids prevent a fishery from being maintained in the lake.

HABITAT

Previous research conducted by the FWP indicated that trout, particularly brown trout, prefer side channels of the Missouri River, rather than the main channel, for spawning. The preference for side channels was apparently related to the presence of more suitable depth, velocity, substrate, and adjacent cover characteristics. These studies further indicated that Missouri River side channels are vital for the rearing of young-of-the-year (YOY) rainbow and brown trout until mid-October, when large numbers of YOY begin moving from the side channels to the main river. Side channels therefore appear to be vital year-round for trout spawning, the incubation of trout eggs, and the rearing of young. Observations indicate that habitat conditions and utilization of the side channels decline precipitously when flows recede below 4,100 cfs. At a flow of 4,100 cfs, 64% of the side channels contained adequate flow for trout spawning, incubation and rearing, while at 3,600 cfs only 9% of the side channels contained adequate flow. Consequently, whenever possible, a year-round minimum flow of 4,100 cfs is recommended to maintain

suitable conditions in side channels for trout spawning, incubation and rearing. If water supply conditions do not allow due to drought, managers strive to maintain 2,900 cfs to maintain mainstem riffle habitat.

Housing development along the river banks has resulted in numerous boat ramps, stairs, boat docks, rip rap, retaining walls and vegetation grooming in the upper and lower reaches of this section of the Missouri River. FWP has recommended the Conservation Districts (Lewis and Clark and Cascade) do not permit new boat ramps in the reach between Holter Dam and Cascade Bridge. Housing development in the lower 26 miles has increased and resulted in FWP making stronger recommendations against bank modifications to preserve river riparian habitat.

Special Management Issues

The Missouri Advisory Committee was established in 1983 when the then operator of Holter and Hauser dams, the Montana Power Company (MPC), was considering returning the operation of Holter Dam to a power peaking facility. It had been operated in that manner prior to the early 1970s. The committee addressed the peaking issue with members representing FWP, MPC (now Northwestern Energy), the BOR, outfitters, irrigators, and sporting clubs. The committee continues to meet annually to discuss and coordinate information regarding the fisheries, water supply and weather forecasts, and reservoir operations.

Operation guidelines were integrated into the Federal Energy Regulatory Commission (FERC) order issued as part of the Madison/Missouri River 2188 Project License that included Hauser and Holter dam operations designed to protect the fishery. In addition, Northwestern Energy has entered into an MOU with FWP to cooperate in implementation of the fisheries Protection, Mitigation and Enhancement Technical Advisory Group, which meets annually to discuss potential projects. Additionally, Northwestern Energy staff works closely with FWP to implement license orders and mitigation and enhancement projects.

The Missouri River Fisheries Management Plan developed in May 1990, which officially guided management direction from 1990 through 1994, provides a partial history of management goals and actions for this reach of the river.

FISHERIES MANAGEMENT DIRECTION FOR THE MISSOURI RIVER- DEARBORN DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Missouri River - Holter Dam to Cascade Bridge	35 miles	Rainbow trout, Brown trout	Wild	Restrictive Regulations	Management priority is to maintain trout populations numbers within range observed since 1982 and with a sustainable proportion of larger sized fish available to anglers.
		Mountain whitefish (N)	Wild	General	Increase monitoring for mountain whitefish as conditions and workload allow.
		Walleye	Wild	Suppression	Maintain high harvest to protect wild trout fisheries. Recruitment primarily occurs from flushing from upstream reservoirs.
		Burbot (N)	Wild	General	Monitor population through hoop net sampling protocol.
Habitat needs and activities: Cooperate with water management agencies to maintain minimum flows of 4,100 cfs to maintain side channel habitat. During drought, strive to maintain minimum flows of 2,900 cfs to maintain mainstem riffle habitat.					
Little Prickly Pear Creek and tributaries	25.6 miles	Rainbow trout, Brown trout	Wild	General	Maintain resident and Missouri River spawning populations.
Habitat needs and activities: Maintain habitat and instream flows of 70 cfs below Clark Creek and 22 cfs above Clark Creek. Maintain access to stream for fluvial fish.					
Dearborn River and tributaries (South and Middle Forks)	73.3 miles	Rainbow trout, Brown trout	Wild	General	Maintain resident and Missouri River spawning populations.
		Mountain whitefish (N)	Wild	General	Maintain population numbers within historic range.
Habitat needs and activities: Work with water users to improve instream flow conditions in the drainage. Work with landowners to improve floating safety and maintain fences for livestock.					
Missouri River - Cascade Bridge to Black Eagle Dam	57.8 miles	Rainbow trout, Brown trout	Wild	General	Maintain trout population numbers within historic range with a sustainable proportion of larger sized fish available to the angler.
		Mountain whitefish (N)	Wild	General	

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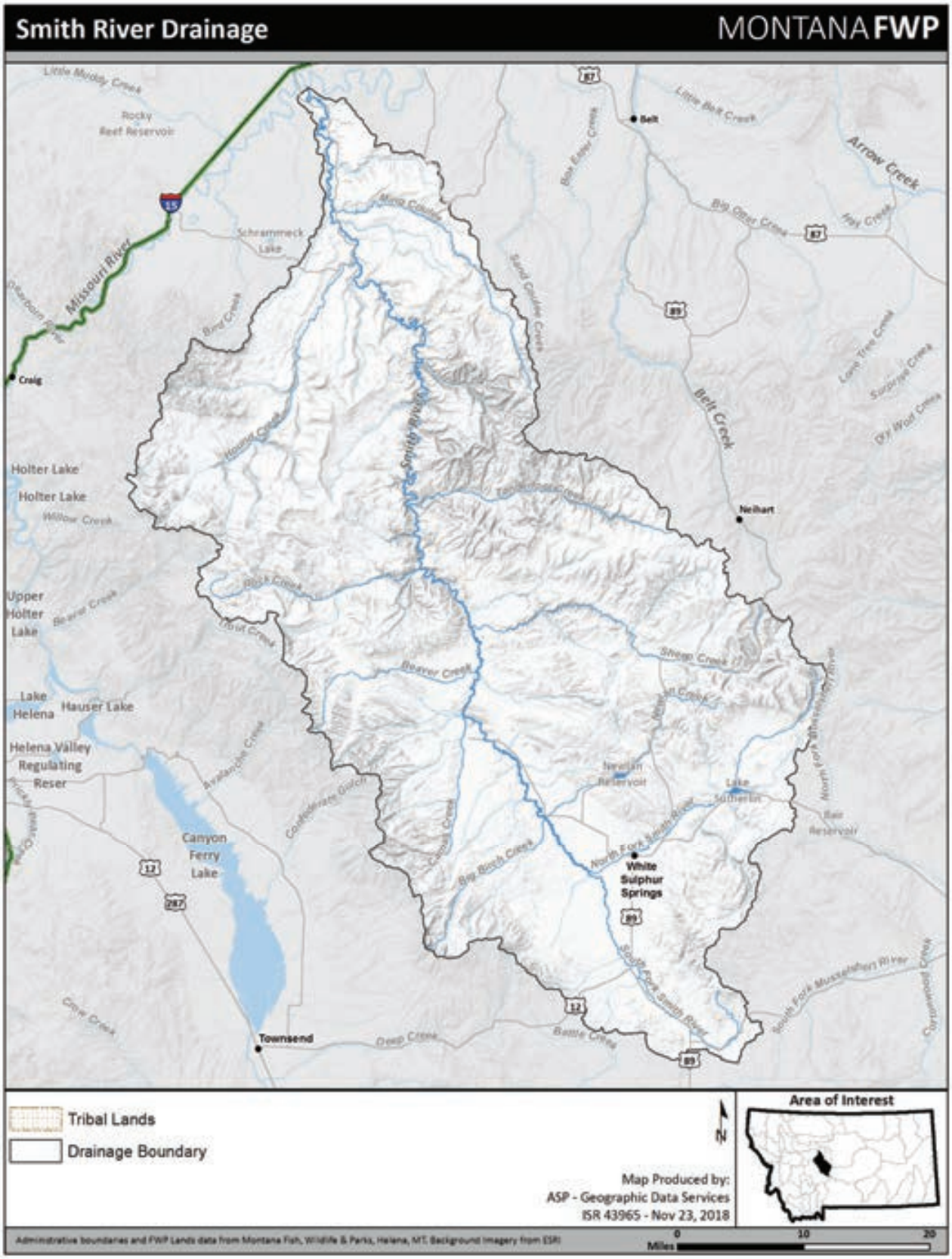
Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Walleye	Wild	Liberal Regulations	Maintain population numbers within historic range. As workload allows, determine limiting factors controlling the population level. Provide high harvest opportunities above the Central District standard daily and possession limits to protect wild trout fisheries.
Habitat needs and activities: Cooperate with water management entities/agencies to maintain minimum flows of 4.100 cfs					
Sheep Creek	2.0 miles	Rainbow trout	Wild	General	Maintain resident and Missouri River spawning populations.
Missouri River – Rainbow Reservoir	200 acres	Rainbow Trout Brown Trout	Hatchery, Wild Wild	General, Put and Take General	Manage as a recreational fishery with significant harvest. Manage as a recreational fishery.
Private/Public Ponds with public access		Trout warm water species	Hatchery/ Wild	Put and Take	Maintain existing pond fisheries available to the public for harvest.
Habitat needs and activities: Enhance structure in ponds when possible.					
Giant Springs Fishing Pond	0.3 Acres	Rainbow trout	Hatchery	Family Fishing Water	Maintain existing urban fishery for youth.


Smith River Drainage
MONTANA FWP
Little Muddy Creek
Rocky Reef Reservoir
Missouri River
Schrammeck Lake
Craig
Holter Lake
Holter Lake
Willow Creek
Upper Holter Lake
Beaver Creek
Lake Helena
Hauser Lake
Helena Valley Regulating Reser
Canyon Ferry Lake
Townsend
Deep Creek
Battle Creek
Crow Creek
Belt
Little Belt Creek
Arrow Creek
Big Otter Creek
Hay Creek
Belt Creek
Neihart
Smith River
Sheep Creek
Newlan Reservoir
Lake Sutherlin
Bair Reservoir
North Fork Smith River
White Sulphur Springs
South Fork Smith River
South Fork Musselshell River
Cottonwood Creek
Big Birch Creek
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI
0
10
20
Miles

SMITH RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Smith River drainage lies in west-central Montana in Meagher and Cascade counties, almost due south of Great Falls between the Big Belt Mountains on the west and the Little Belt and Castle mountains on the east. The drainage is approximately 75 miles in length and the width varies from 3 to 45 miles. The total area is slightly over 2,000 square miles. The elevation of the floor of the drainage varies from 3,350 to 5,400 feet. The highest mountain peaks range from 8,500 to 9,500 feet.

The Smith River is formed by the junction of the North and South forks about 4 miles southwest of the town of White Sulphur Springs. The North Fork drains part of the southwest slopes of the Little Belt Mountains and the northwest slopes of the Castle Mountains. The South Fork originates along the southwest flank of the Castle Mountains and from the bench lands between the Castle and Big Belt mountains. Hot water springs occur in the confluence area between the North and South forks, as well as at the headwaters of the South Fork and serve to elevate water temperatures in reaches of the upper drainage. The mainstem of the Smith River then meanders northwesterly about 41 miles through a broad upper valley before entering a deep mountain canyon near the confluence of Sheep Creek. The river twists north for approximately 45 miles between high limestone cliffs and conifer and grass-covered mountains before flowing another 12 miles through foothill grasslands. After Hound Creek enters the Smith, the river meanders another 24 miles through a relatively narrow, agriculturally developed valley flanked by rolling grasslands until it joins the Missouri River near the town of Ulm about 11 miles west of Great Falls.

In the early 1860s, the discovery of gold in the surrounding mountains stimulated a heavy influx of miners. As gold was depleted and mining operations abandoned, farming and ranching began to take over as the predominant land use in the basin, and they remain so today. Logging and recreation are other important land uses in the drainage.

Approximately 125 tributaries originate in the Big Belt and Little Belt mountains to join the Smith River. Some of the major tributaries originating in the Big Belt Mountains are Birch, Camas, Beaver, Rock, and Hound creeks. Those from the Little Belt Mountains are Newlan, Sheep, Eagle, Tenderfoot and Deep creeks.

Major reservoirs in the Smith River drainage include Newlan Creek and Smith River (Sutherlin) reservoirs. Both are in the Little Belt Mountains. High mountain lakes in the drainage are located in the Big Belt Mountains and include Edith, Grace, Hidden, and Upper Baldy Lakes. Other lakes with fisheries management/recreational importance include Crater and Gipsy lakes. In total there are 15 lakes or reservoirs and 801 surface acres in the drainage.

FISHERIES MANAGEMENT

The Smith River drainage holds about 1,220 miles of perennial streams, including approximately 100 named streams. There are approximately 741 miles of habitat capable of supporting salmonid fishes in the Smith River drainage.

Between 1928 and 1973, approximately 3.5 million introduced trout were stocked in the mainstem Smith River. Tributaries to the river were also stocked with large numbers of introduced trout for many years prior to 1973. The Smith River is a nationally known trout fishery and has been managed as a wild trout fishery since 1974, when the stocking of trout was discontinued.

Brook trout tend to dominate smaller, higher elevation streams, while rainbow trout and brown trout dominate the higher order, lower elevation streams. The majority of extant populations of westslope cutthroat trout in the Smith River drainage reside in high elevation streams on national forest land; six populations of pure westslope cutthroat trout occupy less than 2% of the historic range in the drainage.

Much of the life history of fish and habitat use in the Smith is not well known. Recent telemetry work has shown a high rate use of the Smith River basin by rainbow and brown trout tagged in the Missouri and Sun rivers between Ulm and Great Falls. A basic biological survey defining life history strategies in the mainstem and tributaries along with an inventory of potential habitat problems would provide critical information to enhance and protect the existing fisheries. This effort was started with a graduate research project evaluating life history strategies of trout and whitefish in the Tenderfoot Creek. A subsequent and ongoing graduate research effort has expanded on this research to evaluate life history strategies of trout and whitefish throughout the drainage. Preliminary results demonstrate the importance of major tributaries, such as Tenderfoot and Sheep creeks, in supporting the fishery in the Smith River.

In fall 2017, densities of rainbow and brown trout (8 inches and larger) in the Eagle Creek section of the Smith River were estimated at 387 and 361 per mile, respectively. The mean for this section, which is located several miles downstream from Camp Baker, based on 38 years of data (1969 to 2017) is 483 rainbow trout and 290 brown trout per mile. The Deep Creek section, also located near the bottom of the canyon reach, has not been sampled in recent years. Trout populations tend to be lower there compared to those upstream in the Eagle Creek section. The mean number of rainbow and brown trout per mile are 168 and 270, respectively, based on 20 years of data gathered from 1970-2006. A new section was sampled on the Smith River in 2015 and 2016 at the Cascade-Meagher county line. The mean number of rainbow trout and brown trout were 268 and 354, respectively.

The fisheries resource is classified as high value by FWP for the floating section between Camp Baker and the mouth of Hound Creek, where most fishing pressure occurs. An average of 14,129 angler days was expended from the top of the float section to the mouth from 1982 through 2009. In 2015, the average annual revenue generated by this reach of river was estimated at over $5.8 million.

Although fish populations appear to be regulated by environmental factors such as winter habitat and low summer streamflows, special regulations were implemented in the float

section from Rock Creek to Eden Bridge in 1986. In 2004, the special regulations were extended upstream to include the entire float reach. Water-temperature-induced fishing restrictions/closures are a recurring management strategy in drought years. High water temperatures in 2006, 2007, 2012, 2014, 2016, and 2017 caused FWP to implement mandatory time-of-day angling restrictions in mid to late summer and a complete 24 hour per day closure occurred in 2000. The Smith River is also one of 10 streams in Montana where FWP holds a "Murphy" Water Right implemented by the Montana Legislature and periodically calls on this priority water right to maintain instream flows and the aquatic community.

HABITAT

Habitat conditions are variable between the different sections. Stream and riparian habitat have great potential in the upper reaches from the headwaters of the mainstem to the upper end of the canyon (Spring Creek area) where the river meanders mostly through a broad, wide valley in a sinuous pattern. This section of stream almost resembles a large spring creek as it meanders through sedge and hay meadows. Its riparian zone would be dominated by willows and shrubs in a climax condition, and in reaches it contains good instream cover consisting of rooted aquatic vegetation and undercut banks. Other reaches are over-widened with little bank cover, which contributes to algal blooms and high water temperatures. Substrate in this section is primarily silt and gravel. FWP desires to work with willing landowners to improve riparian areas while maintaining existing land uses.

In the canyon section just downstream of Spring Creek to Rattlesnake Boat Camp, the river is incised, and the riparian zone becomes confined between steep limestone walls with limited floodplain development. Riparian vegetation consists primarily of grasses, pine and fir trees, and substrate is gravel and cobble. In some areas, the shrub component has been slowly increasing in recent years.

In the grassland reach below the canyon, the river enters a broad valley of glacial silt, and trout habitat is relatively poor. Much of this section is heavily grazed, and riparian vegetation is limited. Instream habitat is poor due to annual dewatering. Downstream from Eden Bridge, a number of steep erosive banks occur along the stream. Substrate ranges from gravel in the upper end to sand and silt in the lower end, where the gradient decreases and the stream characteristics become more warm water in nature.

The mean discharge at the USGS gage near Fort Logan (river mile 83.7) was 144 cfs for the 22-year period of record (1977-2016). The mean annual discharge of the Smith River for a 21-year period (1997-2017) that encompass a substantial period of drought at the USGS gage below Eagle Creek (River Mile 79.3) was 232 cfs and ranged from 109 to 523 cfs. Peak flows ranged from 472 cfs in 2001 to 4,030 cfs in 2011. The mean discharge of the Smith River for a 24-year period (1952-2016) at the USGS gage near Eden (river mile 27) was 341 cfs and ranged from 107 to 716 cfs. Peak flows, based on 33 years of data for the Eden gage from 1951 through 2017, varied from 719 cfs in 1961 to 12,300 cfs in 1953.

Waters in the Smith River drainage have been appropriated for irrigation, livestock and domestic uses. As in other areas of the state, appropriations are often several times the amount of water actually present. The dewatering and warm irrigation return flows affect the trout fishery of the Smith River. Temperatures above 70° F, which are considered undesirable

for trout growth and survival, occur in the river in mid-summer; water temperatures as high as 83°F have been recorded. The low water levels and elevated water temperatures are probably the greatest factor limiting present game fish populations. Enhancing in-stream flows is the key to benefitting the aquatic resources in the Smith River basin. At least two fish kills involving trout and mountain whitefish have been documented in the South Fork Smith and the mainstem near Eden Bridge; both occurred during periods of elevated water temperatures combined with dewatering of the river. Recurring fish kills involving stonecat have been reported in isolated lower sections of the floating reach over the past decade, generally occurring in late July. Investigations have not determined the cause, but disease or parasites and combined with stress are thought to be likely factors.

Fishing Access

Land ownership in the drainage is about 70% private and 30% public (USFS and State). Public access to the river is restricted throughout the drainage on larger streams and rivers. Access across private land is often difficult to obtain, especially in the canyon section. FWP manages four FASs in the in the drainage, including a leased site at Newlan Creek Reservoir, the Fort Logan (aka Smith River) FAS, approximately 19 miles northwest of White Sulphur Springs on the upper river, and Truly Bridge and Lower Smith River on the lower river, 8 and 3 miles south of Ulm. FWP's Parks Division manages two additional fishing access sites as part of the Smith River State Park at Camp Baker (put-in) and Eden Bridge (take-out) to accommodate floaters. As a result of the limited access, a large part of the recreational use of the river involves float fishing and boating on the 61-mile-long section of river from Camp Baker to Eden Bridge. FWP and the USFS maintain numerous boat camps along the floating stretch. The floating season usually begins about mid-May and continues until sometime in July in most years when water levels become too low for floating. FWP manages this popular section of river through a lottery-issued permit system.

Special Management Issues

The Smith River Management Act, passed by the Legislature in 1989, delegates to FWP the primary recreational management responsibility for the Smith River waterway between Camp Baker Fishing Access Site and the mouth of the Smith River at the Missouri River. The Fish and Wildlife Commission has rulemaking authority to regulate recreational and commercial floating and camping use on the Smith River waterway. The Act included a section that provided for part of registration fees to be deposited into the Smith River Corridor Enhancement Account to lease or acquire property in the corridor; develop projects that protect enhance and restore fisheries habitat, streambank stabilization, erosion control, and recreational values; and to maintain and enhance instream flows for recreational and aquatic values in the corridor. The FWP Parks Division administers both the recreation program and the Corridor Enhancement Account.

The Smith River Drainage is also home to several conservation populations of westslope cutthroat trout, providing opportunities to conserve this native species in the drainage. The long-term goal of cutthroat conservation in the Smith River Drainage is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout (see Part 1: Trout: Westslope and Yellowstone Cutthroat Trout for details).

FISHERIES MANAGEMENT DIRECTION FOR SMITH RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
North Fork Smith River	42.7 miles	Rainbow trout, Brown trout, Brook trout	Wild	General	Maintain a recreational fishery with harvest within historic levels.
Habitat needs and activities: Improve instream flows and irrigation water conveyance management. Maintain habitat and instream flows of 9 cfs					
Smith River (Sutherlin) Reservoir	377 acres	Rainbow Trout	Hatchery	Put, Grow and Take	Maintain recreational fishery for consumptive harvest by continued stocking.
		Brook Trout	Hatchery	General	Maintain populations and recreational fishery for consumptive harvest by continued stocking if plants exhibit good growth and survival.
		Mountain Whitefish (N)	Wild	General	Maintain populations within historic levels.
		Burbot (N)	Wild	General	Maintain populations and recreational fishery for consumptive harvest.
		Kokanee Salmon	Hatchery	Put, Grow, and Take	Establish population and recreational fishery for consumptive harvest.
Habitat needs and activities: Work to maintain water levels in reservoir with water users.					
South Fork Smith River	42 miles	Brown trout, Brook trout	Wild	General	Maintain a recreational fishery with harvest within historic levels.
Habitat needs and activities: Maintain habitat and instream flows of 7 cfs					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Smith River (Confluence of the North & South forks to the Confluence of Sheep Creek)	41 miles	Rainbow trout, Brown trout	Wild	General	Maintain populations within historic levels.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels.
		Burbot (N)	Wild	General	Maintain populations within historic levels.
Habitat needs and activities: Maintain habitat and instream flow reservation of 78.5 cfs. Protect Murphy Rights, which are 150 cfs from 5/1-6/30 and 90 cfs from 7/1-4/30. Improve habitat and flow conditions as opportunities allow.					
Newlan Creek	21.7 miles	Brook Trout, Rainbow Trout	Wild	General	Maintain a recreational fishery with harvest within historic levels. Evaluate importance of reach below Reservoir to Smith River fish populations.
Habitat needs and activities: Maintain habitat and instream flows of 3.8 cfs. Consider potential for conveyance of stored water to enhance instream flows in the Smith River. Evaluate potential solutions to reduce impacts from sediment transport from trans-basin diversion ditch.					
Newlan Creek Reservoir	265 acres	Rainbow trout	Hatchery	Put, Grow and Take	Maintain populations and recreational fishery for consumptive harvest by continued stocking. Work to prevent stunting.
		Westslope cutthroat trout	Hatchery	Put, Grow and Take	Maintain populations and recreational fishery for consumptive harvest by continued stocking.
		Brown trout, Brook trout	Hatchery	Put, Grow and Take	Maintain populations and recreational fishery for consumptive harvest by continued stocking if effective.
		Kokanee Salmon	Hatchery	Put, Grow, and Take	Establish population and recreational fishery for consumptive harvest.

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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Burbot (N)	Wild	General	Maintain populations and recreational fishery for consumptive harvest.
Habitat needs and activities: Work to maintain water levels in reservoir with water district.					
Big Birch Creek	14.4 miles	Rainbow trout, Brook trout, Brown trout	Wild	General	Maintain populations within historic levels in all reaches which have limited public access potential. Evaluate importance of stream to Smith River fish.
Habitat needs and activities: Maintain habitat and instream flows of 11 cfs.					
Sheep Creek	36.6 miles	Rainbow trout	Wild	General	Maintain populations within historic levels providing for recreational use. Evaluate importance of stream to Smith and Missouri River fish.
		Brook trout	Wild	General	Maintain populations within historic levels providing for consumptive use.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels. Evaluate importance of stream to Smith and Missouri River fish.
Habitat needs and activities: Maintain habitat and instream flows of 35 cfs. Maintain water quality and habitat if mining development proceeds in drainage on private land.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Smith River (confluence of Sheep Creek to the Confluence of Hound Creek)	73.6 miles	Rainbow trout, Brown trout	Wild	Restrictive Regulations	Maintain a recreational fishery within historic population levels.
		Mountain whitefish (N), Burbot (N)	Wild	General	Maintain populations within historic levels.
Habitat needs and activities: Maintain habitat and instream flow reservation of 150 cfs. Protect Murphy Rights, which vary from 125-400 cfs depending on location and time of year.					
Rock Creek	22.8 miles	Rainbow trout, Brown trout	Wild	General	Maintain populations within historic levels providing for recreational use. Evaluate importance of stream to Smith and Missouri River fish.
		Brook trout	Wild	General	Maintain populations within historic levels providing for consumptive use.
Habitat needs and activities: Maintain habitat and instream flows of 11 cfs.					
Tenderfoot Creek	25.9 miles	Rainbow trout	Wild	General	Maintain populations within historic levels providing for a recreational fishery. Evaluate importance of stream to Smith and Missouri River fish.
		Westslope cutthroat x Rainbow trout hybrids	Wild	General	Maintain populations providing for a recreational fishery. Evaluate the potential to provide harvest of hybrids above and below falls.
		Brown trout	Wild	General	Maintain populations within historic levels providing for a recreational fishery. Evaluate importance of stream to Smith River fish.

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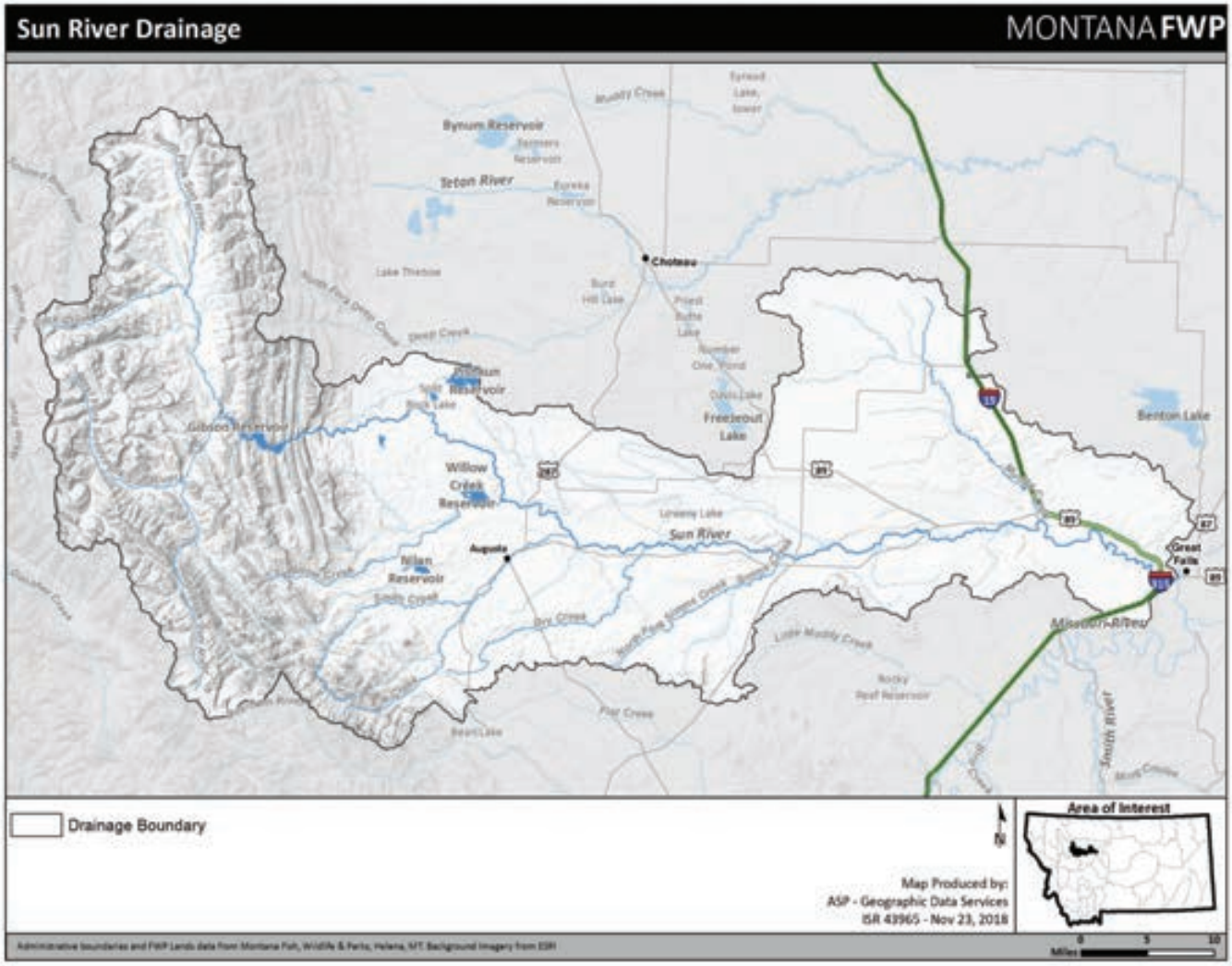
Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Brook trout	Wild	General	Maintain populations within historic levels providing for consumptive use.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels. Determine origin of fish accessing lower reaches of the stream. Identify potential importance of lower reach to Smith and Missouri River populations.
Habitat needs and activities: Maintain habitat and instream flows of 15 cfs. Support efforts for USFS to purchase Bair Ranch Foundation properties in the drainage.					
Hound Creek	25.2 miles	Rainbow trout, Brown trout	Wild	General	Maintain a recreational fishery with harvest within historic levels. Evaluate importance of stream to Smith and Missouri River fish.
		Brook trout	Wild	General	Maintain a recreational fishery with harvest within historic levels.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels. Evaluate importance of stream to Missouri River fish.
Habitat needs and activities: Maintain habitat and instream flows of 35 cfs.					
Smith River (Confluence of Hound Creek to the Mouth)	24 miles	Rainbow trout, Brown trout, Mountain whitefish (N), Burbot (N), Walleye	Wild	General	Maintain a recreational fishery with harvest within historic levels.
Habitat needs and activities: Maintain habitat and instream flows of 80 cfs.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Westslope Cutthroat Trout Genetically Unaltered Conservation Population Streams (Isolated Single Species Populations)	18.4 miles	Westslope cutthroat trout (N)	Wild	Conservation	Maintain and protect populations to reduce extinction risk. When biologically feasible provide for limited consumptive use.
Habitat needs and activities: Seek opportunities to survey for the presence of WCT and possible restoration projects on private land. Evaluate project(s) to restore WCT populations to Camas Lake and Big Camas Creek.					
Westslope Cutthroat Trout Genetically Altered Conservation Population Streams (Mixed Populations)	28 miles	Westslope cutthroat trout & hybrids	Wild	Conservation	Maintain and protect populations. Allow harvest in robust populations.
High Mountain Lakes in Big Belt Mtns	59 acres (6 lakes)	Westslope cutthroat trout, Rainbow trout	Hatchery/ Wild	Put, Grow and Take/ Quality/ Conservation	Maintain populations for recreational fishery where natural reproduction is limited. Explore opportunities to convert naturally reproducing populations to westslope cutthroat trout or Arctic grayling populations.
Habitat needs and activities: Explore opportunities to improve spawning potential in some lakes.					


Sun River Drainage
MONTANA FWP
Bynum Reservoir
Teton River
Choteau
Freezeout Lake
Benton Lake
Willow Creek Reservoir
Nilan Reservoir
Augusta
Sun River
Great Falls
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Miles

SUN RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Sun River is the second largest tributary of the Missouri River between Canyon Ferry and Fort Peck dams. This west-central mountain stream drains 1,979 square miles of the east slope of the Rocky Mountains. Its headwaters are within the Bob Marshall Wilderness. The upper Sun River basin is situated in steep limestone and shale mountains within the Lewis and Clark National Forest. Its upper tributaries originate at an elevation of about 8,400 feet and converge at Gibson Reservoir located in the Sun River Gorge. Downstream from Gibson Dam, the river flows for only a few miles to the Diversion Dam impoundment, which is located 17 miles northwest of Augusta. Below this dam, the Sun River exits the mountains onto the prairie zone, first through a series of glacial outwash terraces, then till-covered foothills, and, finally, through sedimentary bench lands. The mainstem of the Sun River downstream of Gibson and Diversion dams flows east 97 miles to its confluence with the Missouri River at Great Falls. The Sun River drainage lies within the bounds of Lewis and Clark, Teton, and Cascade counties. The drainage contains about 1,176 miles of perennial streams, of which about 321 are named. Major tributaries include the North and South forks, Willow, Elk, Mill Coulee and Muddy creeks. There are 17 lakes or reservoirs within the drainage, totaling 5,097 surface acres.

The reach of the Sun River between Diversion Dam and Elk Creek is 32 miles in length, and is entrenched in a very narrow valley about 100 yards wide for the first 12 miles, broadening to about 400 yards wide near the lower end of the reach. Riparian vegetation is sparse in the upper third of this reach because of the narrow floodplain. There are only scattered stands of cottonwoods and willows bordering the river with an undergrowth of rose and Russian olive. As the floodplain widens in the lower portion of this reach, deciduous woodland dominated by cottonwoods comprises the riparian zone. The stream gradient in the reach is fairly steep, averaging about 20 feet/mile. A considerable amount of the channel substrate in the upper 12 miles is composed of reefs of bedrock and large boulders. Areas of cobbles and gravel are limited and are usually associated with side drainages or near islands. Since the construction of Gibson and Diversion dams in 1929, very little bedload has entered this reach, thereby preventing development of a more diverse substrate composition. Channel substrates diversify somewhat further downstream, and are composed of boulders and cobbles.

The reach from the mouth of Elk Creek downstream to the Missouri River at Great Falls is 65 miles in length and occupies a wide valley. The riparian zone is cottonwood dominated woodland with rose and willows being the common shrub species found in the understory. The average stream gradient in this lower reach is 9 feet/mile and varies from 17 feet/mile at the upper end to less than 3 feet/mile near the city of Great Falls. The composition of the channel substrate reflects the gradual decrease in stream gradient as well as the geology. Substrate in the upper third of this reach consists mostly of cobbles and gravel with moderate amounts of silt. Further downstream, channel substrate decreases in size and the deposition of silt increases. Below the confluence of Muddy Creek, and for the remaining 17 miles, there is excessive silt deposition. Approximately 80-90% of the sediment load of the Sun River at its mouth originates from Muddy Creek caused by return flows of the Greenfield Irrigation District of BOR's Sun

River Project. The lower two-thirds of this reach is a major recharge area of return flows and surplus diverted irrigation water. Some tributary streams in the lower portion of the drainage transport these return flows and can function as valuable refuges providing cooler water habitat during critical times of the year. Prairie streams entering the drainage from the south harbor a number of native minnow species including the rare northern redbelly x finescale dace hybrid in Adobe Creek.

Land use in the forested upper basin is dominated by wilderness activities, since nearly two-thirds of the upper Sun River basin drains portions of the vast Bob Marshall and Scapegoat wilderness areas. The Forest Service lands outside the wilderness areas are managed for semi-primitive recreation and other uses including livestock grazing, and minor amounts of timber harvest.

FISHERIES MANAGEMENT

Since 1987, 15 species of fish have been sampled in the Sun River. Rainbow trout, brown trout, and mountain whitefish are generally the most commonly sampled species. Other species regularly sampled include: Rocky Mountain sculpin, longnose dace, longnose suckers, white suckers, and mountain suckers. Infrequently sampled species include: brook trout, common carp, northern pike, burbot, lake chubs, brassy minnow, brook stickleback, spottail shiner, yellow perch, walleye, black bullhead, and stonecats.

Currently, the North and South forks of the Sun River upstream of Gibson Reservoir support popular hybrid westslope cutthroat trout fisheries. Below Diversion Dam, anglers fish for rainbow and brown trout. This fishery tends to be seasonal in nature.

Early sampling events on the Sun River downstream from Diversion Dam did not allow for estimates of population size, only relative abundance through Catch per Unit Effort (CPUE). Comparisons with more recent data show changes in CPUE that are evident for mountain whitefish, rainbow trout, and brown trout in the Augusta and Simms areas. For example, a dramatic drop in CPUE has been observed for brown trout in the Simms area with numbers declining from 29.2 per electrofishing pass in 1987 to 3.4 per pass in 2005. Although the reasons for the differences are unknown, they likely are due to factors associated with irrigation water management, drought, and differences in season when the sampling occurred.

Three long-term fish population monitoring sections were established on the Sun River in 1997 in the Augusta/ U.S. Highway 287 area, the Simms area, and the reach below the town of Sun River. Due to the overall low numbers of trout, rainbow trout and brown trout data were pooled to calculate population estimates. On average, the Augusta/287 section has the highest trout densities. However, the overall trout densities are extremely low in the Sun River when compared to other trout rivers in north central Montana and compared to the north and south forks of the Sun River upstream of Gibson Reservoir. The long-term average trout densities are 182, 86, and 104 rainbow trout and brown trout 8 inches and longer per mile in the Augusta/287, Simms, and Sun River sections, respectively. Trout density estimates in recent years have been slightly higher than in the late 90s and early 2000s; however, the combined trout densities at these sites are still well below the long-term average trout densities of 561 and 630 in the north and south forks of the Sun River, respectively. Similarly, the long-term average density of

rainbow trout and brown trout combined, 8 inches and longer, in the Eagle Creek section of the Smith River is 754, over 4 times larger than the highest section of the Sun River.

Low trout densities are caused by year-round chronic de-watering of the Sun River Basin, resulting from large-scale irrigation withdrawals. This dewatering is especially true in the Simms section area, where the river has ceased flowing during the summer in past years, resulting in a series of disconnected pools. Recent focus on water management has resulted in some improvements to summer flows in this reach; however, minimum flows remain well below the recommended levels during many years. FWP recommends absolute minimum flows of 100 cfs from the Division Dam to Elk Creek and 130 cfs from Elk Creek to the Missouri River, and recommended minimum flows of 220 cfs throughout both reaches. These flow recommendations are based on a wetted perimeter study that determined the upper and lower inflection points based on the channel geometry.

Nilan, Willow Creek, and Pishkun reservoirs all receive hatchery plants of rainbow trout annually to provide additional fishing opportunities. Pishkun Reservoir is also regularly stocked with kokanee salmon fingerlings. Wild recruitment provides a northern pike/yellow perch fishery in Pishkun Reservoir and a rainbow/rainbow x cutthroat trout hybrid fishery in Gibson Reservoir.

The statewide angling pressure survey for the period 1982-2009 reported that the six major waters in the Sun River drainage averaged 29,619 angler days of use annually. In 2015, the total number of angler days for the major water bodies in the Sun River drainage was 30,482. The most angler days was on the mainstem Sun River with 13,178, followed by Nilan Reservoir with 7,709 angler days, Willow Creek Reservoir with 6,070 angler days, Pishkun Reservoir with 2,162 angler days, and the North Fork Sun River with 1,363 angler days.

The long-term goal of cutthroat conservation in the Sun River Drainage is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout. See Part 1: Trout: Westslope and Yellowstone Cutthroat Trout for details.

HABITAT

There are approximately 365 miles of habitat capable of supporting salmonids in the Sun River drainage. Approximately 362 miles of stream support brook trout, and 461 miles support rainbow trout. Diversion Dam was constructed on top of a large barrier waterfall; upstream of this waterfall, the Sun River was historically fishless until fish stocking efforts were initiated in the early 20th century.

Several USGS gauges monitor stream flow on the Sun River, including from upstream to downstream, on the North Fork Sun River, South Fork Sun River, below Diversion Dam, below Willow Creek, at Simms, and near Vaughn. Long-term USGS flow records are available for the lower Sun River near Vaughn, which is 14 miles upstream from the mouth. The average annual flow for the 80-year period of record is 669 cfs. From 1934 through 2017, the peak annual flow ranged from a low of 681 in 1977 to a high of 53,500 in 1964. Upstream at a USGS gage at Simms, where dewatering is most severe, the mean monthly flows for August and September is 145 and 139 cfs, respectively, for the period of record compared to 558 and 440 cfs, respectively,

at the near Vaughn gage, and 303 and 222 cfs in August and September for the combined flow of the north and south forks of the Sun River.

Present day flow regimens of the Sun River are largely regulated by Gibson Dam and the associated off-stream storage and irrigation delivery system of the Sun River Project, which includes Pishkun and Willow Creek Reservoirs. This system can accommodate a diversion of nearly 1,700 cfs from the river. Severe dewatering of the river below diversions has commonly occurred in the past. Irrigated agriculture is the largest consumptive use of water in the Sun River basin. Irrigated croplands include hay, alfalfa, and small grains including wheat and malting barley. Irrigation is widespread and intensive throughout the basin. Approximately 120,000 acres of land are irrigated by Sun River waters; 93,220 acres of that are by the BOR Sun River Project. The three major reservoirs in the drainage store about 159,000 acre-feet and supply water to the system throughout the growing season. It has been estimated that it would take about 450,000 acre-feet of controllable flow to meet all of the irrigation needs in the Sun River basin, assuming an overall irrigation efficiency of 40 percent and crops consuming 1.5 acre-feet per acre or a total of about 180,000 acre-feet. This volume of water is not available during many years. For example, although the long-term average for Sun River basin inflows is approximately 592,000 acre-feet, inflows only averaged about 440,000 acre-feet for the period from 2003-2007. During this time, all but 13 percent of the water in the Sun River was diverted at least once for the purpose of irrigation. Most of the 57,000 acre-feet that wasn't diverted was flow during the fall, winter, and spring runoff that could not be captured and stored or diverted. Of the water diverted for irrigation, approximately 27 percent or about 117,000 acre-feet was consumed, or almost one acre-foot of water consumed per acre of irrigated ground.

FISHING ACCESS

The Sun River is paralleled by a road for its entire course. However, public access to the 97 miles of river is basically limited to seven bridge crossings above Great Falls, three FWP fishing access sites, one BLM developed access site, a carry-in boat ramp near Wadsworth Park in Great Falls, another BLM parcel adjacent to US Highway 287, and state or federally owned parcels in the Alkali Flats area. Above Diversion Dam, the river is surrounded by US Forest Service lands and is an important recreation area with campgrounds.

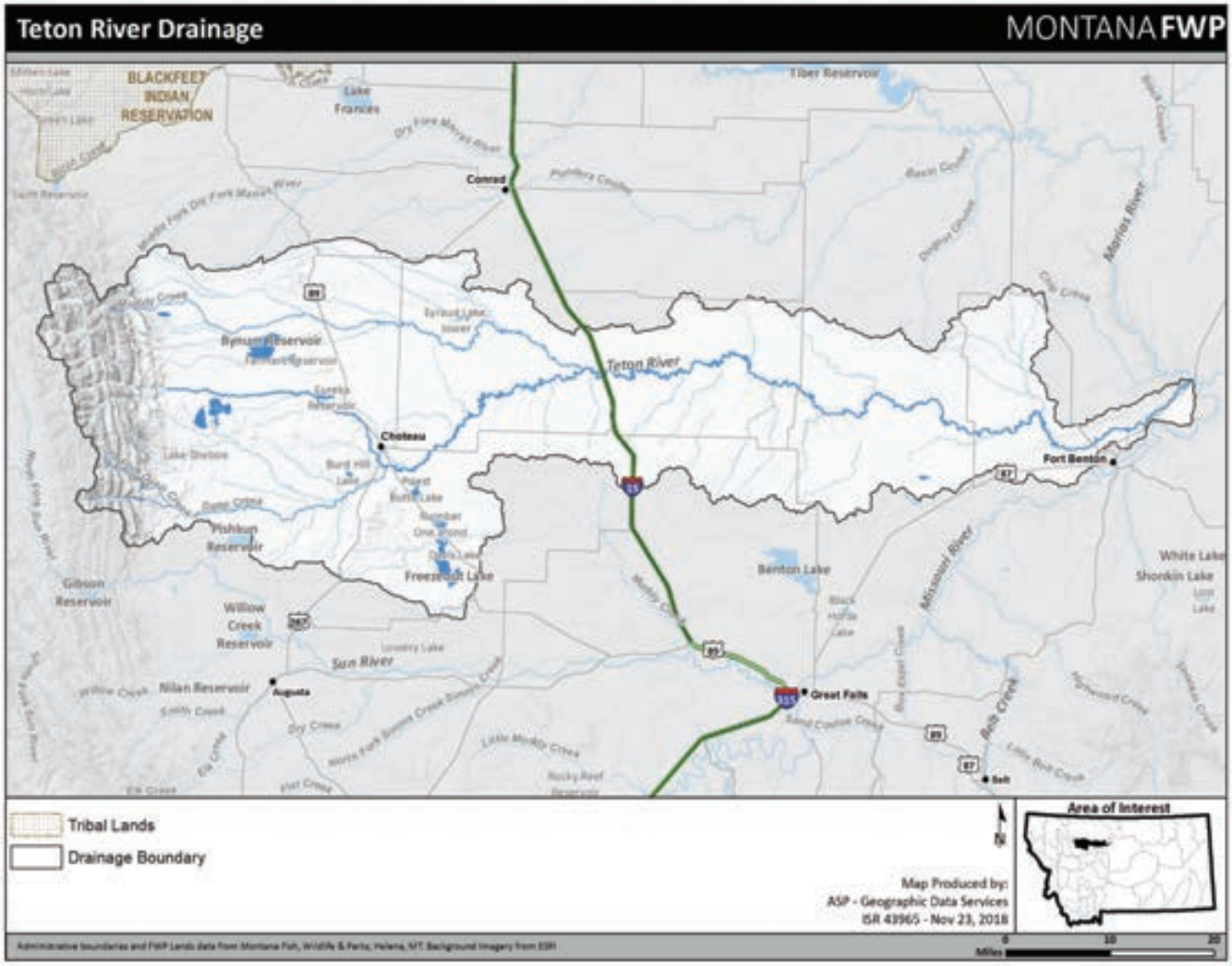
FISHERIES MANAGEMENT DIRECTION FOR THE SUN RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
North Fork Sun River	27.1 miles	Rainbow Trout, Rainbow x cutthroat trout hybrids	Wild	General	Monitor populations to maintain historic population levels.
South Fork Sun River	26.4 miles	Rainbow Trout, Rainbow x cutthroat trout hybrids	Wild	General	Monitor populations to maintain historic population levels.
Mill Coulee Creek	7.4 miles	Rainbow trout, Brown trout	Wild	General	Maintain populations within historic levels providing for a recreational fishery and consumptive use.
Habitat needs and activities: Improve connection to the Sun River and provide passage for migratory spawning fish.					
Gibson Reservoir	1,289 acres	Arctic grayling Rainbow trout, Rainbow x cutthroat trout hybrids	Wild Wild	Conservation General	Maintain population in upper reaches of the reservoir. Maintain populations providing for a recreational fishery and consumptive use taking into account the significant water elevation changes in the reservoir.
Sun River – Diversion Dam to mouth of Elk Creek	32 miles	Rainbow trout, Brown trout, Mountain whitefish (N) Burbot (N)	Wild Wild	General General	Maintain a recreational fishery and enhance population levels of all species compared to historic numbers. Enhance population numbers.
Habitat needs and activities: Improve instream flows and irrigation water and conveyance management to improve chronic dewatering. Maintain habitat and instream flows of 100 cfs as an absolute minimum and 220 cfs as a recommended minimum. Excellent potential to improve the fishery.					
Sun River Slope Canal	34.4 miles	Arctic grayling	Wild	Conservation	Maintain viable population in the canal.
Habitat needs and activities: Maintain overwinter habitat in upper reaches of the canal at drops to preserve population. Salvage fish at lower drops that are lost to the population and would perish if not transferred to other upstream waters.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Sun River – Mouth of Elk Creek to confluence with Missouri River	65 miles	Rainbow trout, Brown trout, Mountain whitefish (N)	Wild	General	Maintain a recreational fishery and enhance population levels of all species compared to historic numbers.
		Burbot (N)	Wild	General	Enhance population numbers.
		Stonecat (N)	Wild	General	Maintain and enhance existing population levels.
		Northern pike	Wild	General	Maintain minimum population levels.
		Walleye	Wild	General	Manage short reach inhabited in conjunction with Missouri River.
		Native minnow species (N)	Wild	Conservation	Safeguard species of special concern to maintain population levels.
Habitat needs and activities: Improve instream flows and irrigation water conveyance management to improve chronic dewatering and irrigation based erosion. Maintain habitat and instream flows of 130 cfs as an absolute minimum and 220 cfs as a recommended minimum. Excellent potential to improve the fishery.					
Willow Creek	28 miles	Brook trout	Wild	General	Maintain populations within historic levels providing for a recreational fishery and consumptive use.
Habitat needs and activities: Maintain habitat and instream flows of 3 cfs.					
Ford Creek	19.3 miles	Brook trout	Wild	General	Maintain populations within historic levels providing for a recreational fishery and consumptive use.
Habitat needs and activities: Maintain habitat and instream flows of 12 cfs.					
Elk Creek	32.5 miles	Rainbow trout, Brown trout, Brook trout	Wild	General	Maintain populations within historic levels providing for a recreational fishery and consumptive use.
Habitat needs and activities: Maintain habitat and instream flows of 16 cfs. Improve water management to reduce chronic dewatering. Work to maintain passage from Sun River for adfluvial spawning migrations.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Pishkun Reservoir	1,518 acres	Rainbow Trout, Kokanee salmon	Hatchery	Put, Grow and Take	Maintain recreational fishery for consumptive harvest by continued stocking.
		Yellow perch	Wild	General	Maintain recreational fishery for consumptive harvest.
		Northern pike	Wild	General	Manage size and population by recommending manipulation of water levels during spawning.
Habitat needs and activities: Request cooperation of Irrigation District to manage water elevations to control northern pike spawning success.					
Willow Creek Reservoir	1,314 acres	Rainbow trout	Hatchery	Put, Grow and Take	Maintain recreational fishery for consumptive harvest by continued stocking.
Nilan Reservoir	521 acres	Rainbow trout	Hatchery	Put, Grow and Take	Maintain recreational fishery for consumptive harvest by continued stocking.
		Brown trout	Wild	General	Maintain recreational fishery with limited consumptive harvest.
Tunnel Lake	14 acres	Westslope cutthroat trout	Hatchery	Put, Grow and Take	Maintain recreational fishery for consumptive harvest by continued stocking.
		Arctic grayling	Transfer/ Wild	General	Maintain recreational fishery with limited consumptive harvest.
Wood Lake	20 acres	Westslope cutthroat trout	Hatchery	Put, Grow and Take	Maintain recreational fishery for consumptive harvest by continued stocking.
Wadsworth Reservoir	43 Acres	Walleye, Largemouth Bass, Rainbow trout, Brook trout	Hatchery	Family Fishing Water	Maintain as an urban fishery.
		Yellow perch	Transfer	Family Fishing Water	Maintain as an urban fishery.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Westslope Cutthroat Trout Genetically Unaltered Conservation Population Streams (Isolated Single Species Populations) (2 Streams)	5.0 miles	Westslope cutthroat trout (N)	Transfer/ Wild	Conservation	Maintain and protect populations to reduce extinction risk.
Habitat needs and activities: Maintain or improve habitat. Explore opportunities to expand existing reaches for populations. Investigate potential to establish additional pure populations above barriers and potential barrier sites.					
Westslope Cutthroat Trout Genetically Altered Streams (7 streams)	24 miles	Westslope cutthroat trout (N), Rainbow x cutthroat trout hybrids	Wild	Conservation	Maintain and protect populations of genetically tested 90-99% westslope cutthroat trout.
Habitat needs and activities: Maintain or improve habitat.					


Teton River Drainage
MONTANA FWP
BLACKFEET INDIAN RESERVATION
Lake Frances
Tiber Reservoir
Conrad
Bynum Reservoir
Teton River
Choteau
Fort Benton
Pishkun Reservoir
Freezeout Lake
Benton Lake
Missouri River
White Lake
Shonkin Lake
Gibson Reservoir
Willow Creek Reservoir
Sun River
Nilan Reservoir
Augusta
Great Falls
Belt Creek
Belt
Morias River
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background imagery from ESRI
Miles
0
10
20

TETON RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Teton River Basin is located in Teton and Chouteau counties of Northcentral Montana. The headwaters originate along the east front of the Rocky Mountains, flow approximately 175 miles in an easterly direction, and enter the Marias River at Loma. The drainage contains about 734 miles of perennial streams and approximately 68 named perennial streams. There are 14 lakes or reservoirs in the drainage for a total of 7,356 surface acres. Yearly precipitation averages 12-14 inches, with higher amounts occurring near and in the mountains. The mainstem Teton River originates with the junction of its North and South forks approximately 22 air miles northwest of Choteau. It flows generally eastward to Choteau along gently rolling hills and flat terrain. Principal tributaries include Deep Creek, McDonald Creek, Spring Creek and Muddy Creek. Stream substrate is characterized by glacial materials with abundant gravel, cobble and boulders. Due to the gravelly conditions, channel movement is quite active with channel braiding occurring in some areas. Stream gradient is about 35 feet/mile. Water clarity is good but becomes turbid with sudden increases in flow. The coldwater reach is approximately 33 miles in length, extending down to the discharge from Priest Butte Lake.

The riparian area consists of willows and cottonwoods throughout most of the reach, with limber pine and aspen near the headwaters. Floods in 1964 and 1975 destroyed most of the stream bank vegetation. Much of this vegetation has recovered in some areas.

Choteau is the largest town within the basin, having a population of about 1,600. Smaller communities include Dutton, Bynum, Pendroy, Agawam, Farmington and Collins. The major land uses are for crops and livestock. Approximately 80,000 acres are irrigated in the basin by many private individuals and four local ditch companies. Off-stream storage is held in Bynum, Eureka and Farmers reservoirs, and Eyraud Lakes.

Approximately 15% of the basin is national forest. Considerable exploration for oil and gas has occurred, with several shallow wells presently producing oil in the northern part of the basin. Although coal deposits are present, no commercial mining has taken place. Oil and gas exploration and potential future development continues to be a possibility. In the 33-mile reach from the headwaters to the discharge from Priest Butte Lake near Choteau, land uses include grazing and hay land with some grain crops along the lower portions. Landownership within this stream reach is approximately 80% private and 20% state. Stream access is controlled by private landowners but is usually granted upon request. The Teton River is crossed by two highway bridges near Choteau, seven county road bridges and several private bridges and fords.

FISHERIES MANAGEMENT

The Teton River Basin provides a trout fishery for people in the local area. There are approximately 329 miles of stream in the Teton River drainage that support brook trout and 194 miles that support rainbow trout. Small populations of pure westslope cutthroat trout are found in headwater streams, which occupy less than 2% of the historic range in the drainage. While rainbow, brook and brown trout and mountain whitefish occur in the middle to upper reaches of the river and tributaries, sauger, burbot, channel catfish, shovelnose sturgeon, and northern pike

are found in the lower Teton River when water is present. Reservoir fisheries, which include Bynum, Eureka, and Eyraud, are composed of rainbow trout and northern pike/yellow perch or trout/yellow perch.

There are several diversions on the upper Teton River above Choteau that divert small amounts of water, three diversions that can divert about 200 cfs, and one large diversion capable of withdrawing 1,000 cfs during flood conditions. Portions of this stretch are subject to low flows or complete dewatering by irrigation diversions. The portion of the reach above Choteau has mostly small brook trout and fewer numbers of brown trout, rainbow trout and mountain whitefish. The lower portions of the reach below Choteau experience very low, but more stable flows due to groundwater recharge entering the stream. The fishery is composed of brown trout, mountain whitefish and rainbow trout. Fish present other than trout include blue, longnose, white, mountain, and shorthead redhorse suckers, longnose dace, Rocky Mountain sculpin, lake chub, carp, brook stickleback and goldeye.

HABITAT

USGS flow records at the Teton River below the South Fork gage show mean monthly flows of 214 and 82 cfs for the critical months of August and September for the period of record, respectively. USGS discharge records for the lower end of the near Priest Butte Lake are available from June 1913 to June 1919. Maximum discharge was 4,500 cfs on June 22, 1916, and a minimum of 1 cfs occurred between August 9 and August 16, 1916. The low readings are influenced by the many diversions above the recording station. Further downstream at the USGS gage near Dutton, the mean monthly flows drop to of 66 and 59 cfs for the months of August and September, respectively. Near the mouth of the Teton River, the mean monthly flows for the period (1998-2011) of record drop precipitously to 12 and 7.4 cfs for August and September, respectively. In fact, at this lowest gage the mean monthly flows have been 0 cfs (dry riverbed) for 50% and 43% of the months of August and September, respectively, during the period of record.

The dewatering of tributary streams and large reaches of the Teton River for irrigation is the greatest problem facing the maintenance of aquatic and fisheries resources in the Teton River basin. Adjudication of water rights in the basin implementing a final decree that recognizes downstream water rights and the work of a water commissioner to administer those rights, has the greatest potential to provide aquatic habitat now absent in the Teton drainage.

FISHING ACCESS

Public access is available throughout the public land in the headwaters area. Downstream, there are no public access sites on the Teton River; fisheries resources and habitat (i.e., flows) need to be addressed before it would be warranted to seek improved fishing access. Public access to private lands has usually been allowed with permission. The only FWP Fishing Access Sites are those associated with reservoirs at Bynum Reservoir, Eureka Reservoir, and Upper Eyraud Lake.

SPECIAL MANAGEMENT ISSUES

Water rights adjudication in the basin and enforcement of a decree will play a critical role in the future of large reaches of the mainstem and tributaries and whether they remain chronically dewatered or once again become perennial streams.

The Teton River Drainage is also home to several conservation populations of westslope cutthroat trout, providing opportunities to conserve this native species in the drainage. The long-term goal of cutthroat conservation in the Teton River Drainage is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout (see Part 1: Trout: Westslope and Yellowstone Cutthroat Trout for details).

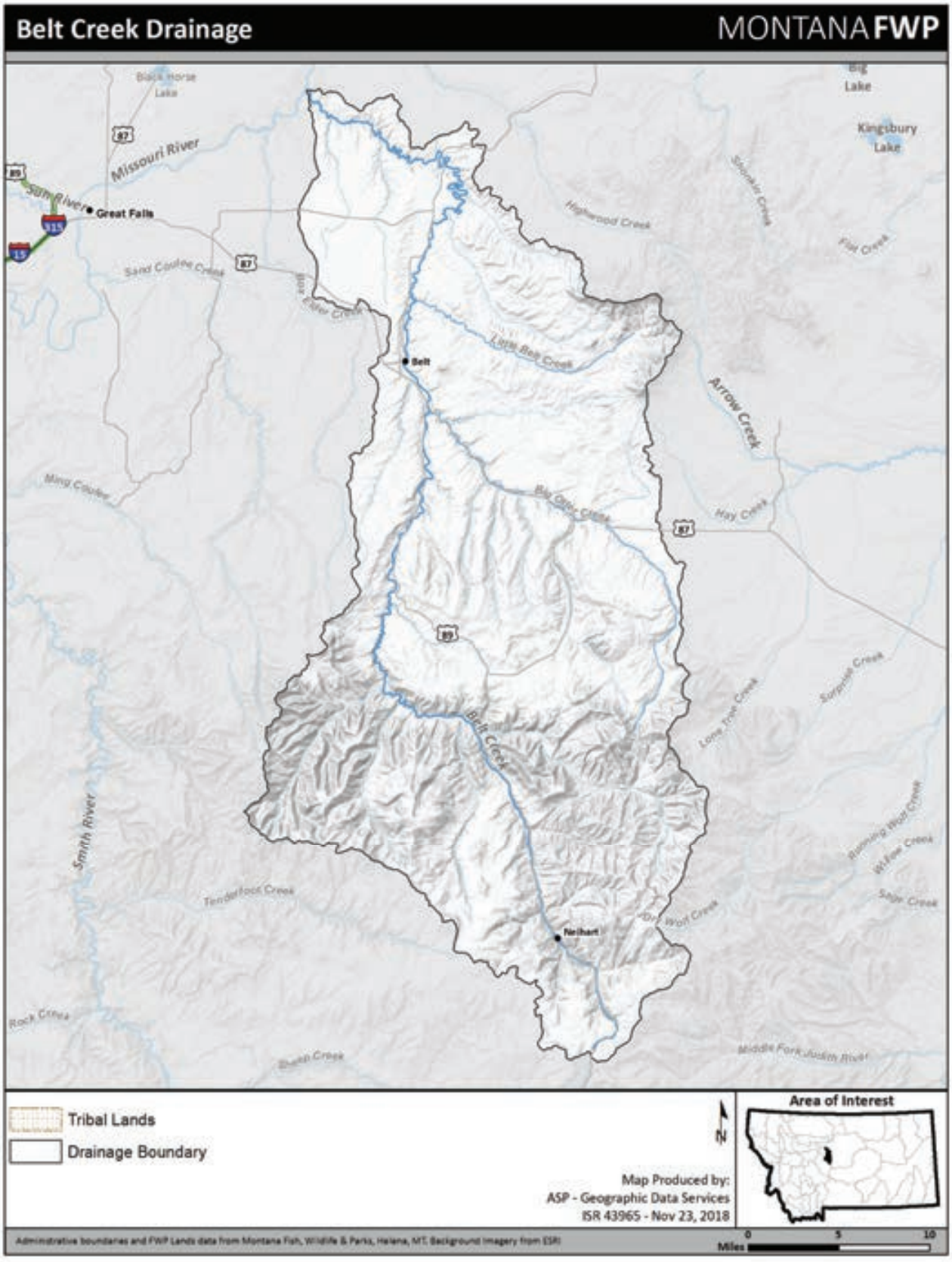
FISHERIES MANAGEMENT DIRECTION FOR THE TETON RIVER DRAINAGE

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
Teton River - Headwaters to the Discharge from Priest Butte Lake	33 miles	Brook trout, Brown trout, Rainbow trout	Wild	General	Maintain populations within historic levels providing for consumptive use.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels.
Habitat needs and activities: Maintain habitat and develop instream flows of 35 cfs. Explore strategies to prevent chronic dewatering of the mainstem of the Teton River upstream of Choteau.					
McDonald Creek	8 miles	Brook trout, Brown trout, Rainbow trout	Wild	General	Maintain populations within historic levels providing for consumptive use.
Habitat needs and activities: Maintain habitat and instream flows of 10 cfs. Explore strategies to prevent chronic dewatering.					
South Fork Deep Creek	8.8 miles	Brook trout	Wild	General	Maintain populations within historic levels providing for consumptive use.
		Westslope cutthroat trout, Rainbow trout	Wild	General	Maintain populations within historic levels providing for consumptive use.
		Westslope cutthroat trout	Wild	Conservation	Maintain and protect populations to reduce extinction risk.
Habitat needs and activities: Maintain habitat and instream flows of 6.9 cfs. Evaluate potential for greater access.					
North Fork Deep Creek	4 miles	Brook trout	Wild	General	Maintain populations within historic levels providing for consumptive use.
Habitat needs and activities: Maintain habitat and instream flows of 7.2 cfs. Explore strategies to prevent chronic dewatering.					
Deep Creek	38 miles	Rainbow trout, Brown trout, Brook trout	Wild	General	Maintain populations within historic levels providing for consumptive use.
Habitat needs and activities: Maintain habitat and instream flows of 18 cfs. Explore strategies to prevent chronic dewatering.					

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
Spring Creek	13.1 miles	Brook trout	Wild	General	Maintain populations within historic levels providing for consumptive use.
		Rainbow trout	Hatchery/Wild	General	Maintain populations within historic levels providing for consumptive use.
Habitat needs and activities: Maintain habitat and instream flows of 4.5 cfs. Evaluate strategies to prevent chronic dewatering.					
Bynum Reservoir	3,205 acres	Rainbow trout	Hatchery	Put, Grow and Take	Maintain opportunity for catching larger sized fish.
		Kokanee salmon	Hatchery	Put, Grow and Take	Manage as a consumptive fishery.
		Yellow perch	Wild	Family Fishing Water	Provide an opportunity for a fishery not available in other waters in Region 4. Restrict fishing contests incompatible with Family Fishing Water management goals.
		Walleye	Hatchery/Wild	Put, Grow and Take/ General	Evaluate reestablishing a walleye fishery if productivity of existing fisheries decline.
Habitat needs and activities: Maintain a fishery with whatever water levels irrigators maintain in the reservoir.					
Eureka Reservoir	366 acres	Rainbow trout	Hatchery	Put-Grow-Take	Manage as a recreational fishery with consumptive harvest.
Habitat needs and activities: Evaluate benefits to anglers of both fish plants and FAS lease under current water level management in the reservoir.					
Teton River - Discharge from Priest Butte Lake to Mouth	151 miles	Blue sucker (N)	Wild	Conservation	Maintain populations within historic levels.
		Channel catfish (N)	Wild	General	Manage as a consumptive fishery.
		Shovelnose sturgeon (N)	Wild	General	Reestablish a recreational fishery with consumptive harvest.
		Stonecat (N)	Wild	Conservation	Reestablish a native species fishery.

Continue next page

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
		Sauger (N) Northern pike	Wild Wild	Conservation General	Reestablish a native species fishery with some consumptive harvest. Manage as a consumptive fishery.
Habitat needs and activities: Develop methods to prevent total dewatering of the Lower Teton River.					
Eyraud Lakes	223 acres	Northern pike, Yellow perch, Largemouth bass	Wild	General	Maintain populations within historic levels for a recreational fishery with consumptive harvest.
Westslope Cutthroat Trout Genetically Unaltered Conservation Population Streams (3 streams)	5.5 miles	Westslope cutthroat trout	Wild	Conservation	Maintain or enhance populations to reduce extinction risk.
Habitat needs and activities: Replicate populations to protect them from extinction.					
Westslope Cutthroat Trout Genetically Altered Streams (7 streams)	22.5 miles	Westslope cutthroat trout & hybrids	Wild	Conservation	Maintain or enhance populations. Allow harvest in robust populations.
Habitat needs and activities: Evaluate potential sites for a major barrier on North Fork Teton River.					


Belt Creek Drainage
MONTANA FWP
Missouri River
Sun River
Great Falls
Sand Coulee Creek
Box Elder Creek
Belt
Little Belt Creek
Highwood Creek
Shonkin Creek
Flat Creek
Arrow Creek
Big Otter Creek
Hay Creek
Ming Coulee
Belt Creek
Lone Tree Creek
Surprise Creek
Smith River
Tenderfoot Creek
Running Wolf Creek
Willow Creek
Sage Creek
Dry Wolf Creek
Neihart
Rock Creek
Sheep Creek
Middle Fork Judith River
Big Lake
Kingsbury Lake
Black Horse Lake
Tribal Lands
Drainage Boundary
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Area of Interest
Miles
0
5
10
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background imagery from ESRI

BELT CREEK DRAINAGE

PHYSICAL DESCRIPTION

Belt Creek is a major tributary of the Missouri River. It originates on the northwest side of the Little Belt Mountains and flows in a northerly direction for about 88 miles to its confluence with the Missouri, 14 miles downstream of Great Falls in Cascade County. Belt Creek drains approximately 800 square miles of the Little Belt and Highwood mountains. The basin contains approximately 186 named perennial streams, comprising a total length of about 442 miles of perennial stream habitat. Major tributaries to Belt Creek include Jefferson, Dry Fork, Tillinghast, Pilgrim, Logging, Big Otter, Little Belt and Big Willow creeks.

The upper basin of Belt Creek is situated in the mountainous area of the Lewis and Clark National Forest with its headwaters at an elevation of about 8,000 feet. The landscape of the headwaters is comprised of plateau-like mountains with V-shaped valleys carved through the sedimentary Belt formation of the parent rock. The basin supports subalpine and montane forests consisting mostly of lodgepole pine, Douglas fir, ponderosa pine, and subalpine fir. Within these forest zones, the upper 33 miles of Belt Creek flows through a steep, narrow valley before entering the Sluice Boxes, a limestone gorge about 14 miles in length. The riparian vegetation of the floodplain is variable with respect to elevation, consisting of an overstory of spruce and lodgepole pine in the cool, higher areas and lodgepole pine, Douglas fir, ponderosa pine and cottonwood in the lower temperate zone. Willows, water birch, rose, and red osier dogwood are shrub species which dominate the undergrowth of the riparian. There are very few meadow areas along Belt Creek.

The gradient for this size of stream is unusually steep, averaging about 90 feet/mile near its headwaters at Neihart, to 40 feet/mile at the lower end near Monarch. Channel substrates reflect the cascading nature of Belt Creek with boulders, large cobbles, and several outcroppings of bedrock typifying the stream bottom.

Belt Creek at the lower elevations flows through prairie foothills and benchlands joining the Missouri River at an elevation of 2,800 feet. This lower section begins at the confluence with Big Otter Creek and flows for 39 miles through gently dipping sandstone and shale formations while remaining entrenched within a narrow valley. The upper 13 miles of this reach typically are intermittent during dry periods, probably losing water to cavernous limestone. Downstream of this point, the stream typically becomes effluent again and remains perennial throughout its remaining course. The riparian vegetation consists of a diverse woodland environment dominated by a cottonwood overstory with an undergrowth of willows, chokecherry, rose and snowberry. Although the stream gradient lessens from that of upper Belt Creek, the average gradient of 28 feet/mile is unusually steep for a large prairie stream. Channel substrate is comprised primarily of cobbles, although scattered boulders are still present throughout its length. Cobbles and gravel in the lower end show increased silt deposits due to heavy sediment loads entering from lowland tributaries.

Land use in the Belt Creek drainage includes most types found east of the Divide. Timber harvest has been extensive in the past; however, harvest has been substantially reduced. Mountain pine beetle infestations and spruce budworm has had significant impacts on the forest health in recent years. Nearly all of the land within the lower basin is managed for cattle ranching or farming. A substantial amount of livestock grazing occurs in this area. Only minor grazing occurs in the forested upper basin. Hay and some crop land exist along the stream, but little of it is irrigated. There has been extensive silver, lead, zinc and gold mining in the Little Belt Mountains in both the Carpenter-Snow Creek and Barker-Hughesville Mining districts. Along with the mining of various ore deposits, serious heavy metals pollution has occurred from several abandoned mining tailings. The water quality of streams in the Belt Creek drainage has been impaired as a result of runoff and groundwater. Both mining district sites are Federal Superfund sites and are in the early stages of remediation work. Numerous coal mines also operated near the town of Belt in the late 1800s and early 1900s. These mines, now abandoned, contribute acid mine drainage to Belt Creek. The abandoned coal mines discharge approximately 250 acre-feet of water each year to Belt Creek and approximately 700 pounds of iron and 500 pounds of aluminum on average to Belt Creek daily. Montana DEQ is currently evaluating the possibility of constructing a water treatment plant in the town of Belt to treat the contaminated water.

A USGS stream flow gage on Belt Creek near Monarch (river mile 52.0) recorded an average annual flow of 192 cfs for the 31-year period of record from 1951-82. A relationship was also developed to predict flows on Belt Creek at the Riceville Bridge at the lower end of Sluice Boxes State Park based on flows at the USGS Smith River below Eagle Creek Gage.

Fisheries Management

From the headwaters to the mouth of Big Otter Creek, a reach of approximately 51 miles, rainbow trout are the predominant sport fish found throughout the lower elevation, higher order stream reaches followed by mountain whitefish and brown trout. Westslope cutthroat trout and brook trout are uncommon in the lower mainstem, but good populations are present in some tributary streams and the headwaters area. Brook trout tend to dominate the smaller, higher elevation streams. There are approximately 211 miles of stream that support rainbow trout and 197 miles of stream that support brook trout in the Belt Creek Drainage. Approximately 37 miles of stream in the Belt Creek Drainage support pure westslope cutthroat trout. Due to this relatively large number of headwater streams that hold conservation populations of westslope cutthroat trout, the upper portion of the mainstem Belt Creek has good numbers westslope cutthroat trout of varying purity. This abundance of westslope cutthroat trout populations is primarily an artifact of the presence of naturally formed waterfalls and fragmented habitat in the Belt Drainage. Non-game species in the upper reaches of the drainage include mountain, white and longnose suckers, longnose dace, and Rocky Mountain sculpin.

The statewide fishing pressure and harvest survey for the period 1982-2009 reported an average of about 7,500 angler-days of use annually and ranged from 3,437 in 2001 to 13,424 angler-days in 1997. The most recent data estimated that 6,592 angler-days occurred on Belt Creek in 2015.

Because of substantial fishing pressure and problems with dewatering in the lower portion of this reach, the lower 13 miles does not maintain an adequate self-sustaining trout population.

Approximately 3,000 catchable rainbow trout were historically stocked in this section annually from the early 1960's to 1996. Tributaries to Belt Creek were also stocked with large numbers of non-native trout for many years prior to 1996.

This lower reach of Belt Creek between the mouth of Big Otter Creek and the confluence with the Missouri River (39 miles), supports both coldwater and warmwater fisheries. A marginal resident trout fishery exists in this reach and is limited because of low stream flows, high water temperatures, excessive siltation, and acid mine drainage effluent from abandoned coal mines. Rainbow trout and brown trout are the most common trout species found. To some extent both rainbow and brown trout from the Missouri River migrate up Belt Creek during their spawning season. Mountain whitefish have also been observed to migrate in large numbers into the lower mile of Belt Creek from the Missouri River to spawn. Historically, sauger migrated up Belt Creek (as high as Armington) during the late spring and resided in the stream until fall as long as flow conditions were adequate. No sauger have been observed in recent years in Belt Creek. However, credible reports of shovelnose sturgeon at Salem Bridge have been reported in recent years. In 1997 high flows in the Missouri River resulted in confirmed reports of northern pike in the sluice boxes section. Non-game fish found in lower Belt Creek include goldeye, longnose, mountain and white suckers, shorthead redhorse, carp and Rocky Mountain sculpin.

FISHING ACCESS

The Belt Creek drainage has a high scenic value. It is a popular recreation area for fishing, hunting, picnicking, camping, hiking, mountain biking, motorized trail riding, and for the adventurous, floating. U.S. Highway 89 parallels Belt Creek throughout the upper section and provides access to most portions of the stream. Much of upper Belt Creek and its tributaries receive a substantial amount of fishing pressure due to its proximity to Great Falls, the convenient access provided by Highway 89 and the availability of numerous developed and dispersed camping sites. A winter sports area is located in the upper basin, providing additional easy access to the stream. The only FWP land on Belt Creek that provides angler access is Sluice Boxes State Park. Routes 331 and 228 parallel the stream for about 25 miles of the lower section. Public access to private lands bordering lower Belt Creek has usually been allowed with permission. The remaining 14 miles of this lower portion flows through remote and rugged lands and access is difficult except at the Salem Bridge, about a mile upstream from the mouth.

SPECIAL MANAGEMENT ISSUES

Nineteen populations of genetically pure westslope cutthroat trout currently occupy less than 15% (33 miles) of the total historic range in the drainage. Four of the populations are at a moderate risk of extinction over the short term. These represent priorities where short and long term actions are required to reduce extinction risk and provide increased protection or expansion of the populations.

The Belt Creek Drainage is also home to several conservation populations of westslope cutthroat trout, providing opportunities to conserve this native species in the drainage. The long-term goal of cutthroat conservation in the Belt Creek Drainage is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout (see Part 1: Trout: Westslope and Yellowstone Cutthroat Trout for details).

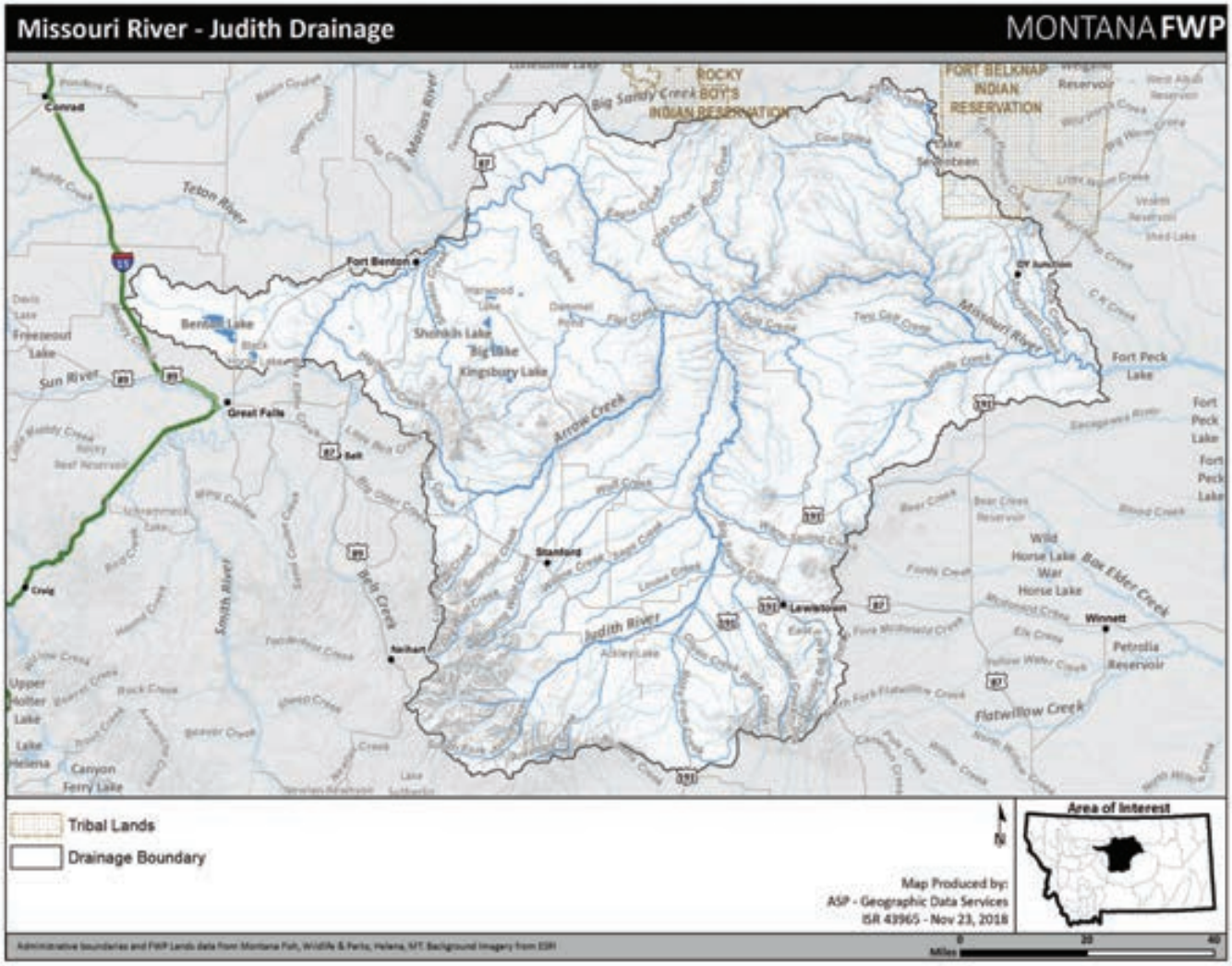
FISHERIES MANAGEMENT DIRECTION FOR BELT CREEK DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Belt Creek (Headwaters to the Mouth of Big Otter Creek)	51 miles	Rainbow trout, Brown trout, Brook trout	Wild	General	Maintain populations within historic levels.
		Mountain whitefish (N)	Wild	General	Maintain numbers within historic range.
		Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance populations in tributaries, when possible. Survey tributaries and upper reaches of mainstem to determine upstream limit of westslope cutthroat. When biologically feasible, provide for limited consumptive use.
Habitat needs and activities: Maintain habitat and instream flows of 90 cfs.					
Big Otter Creek	26.5 miles	Brown trout	Wild	General	Manage as a recreational fishery with the opportunity to catch large brown trout.
		Brook trout, Rainbow trout	Wild	General	Manage as a recreational fishery with some consumptive harvest.
Habitat needs and activities: Maintain spring creek type habitat and instream flows of 5 cfs.					
Logging Creek	11 miles	Brook trout, Rainbow trout, Brown trout	Wild	General	Manage as recreational fishery with consumptive harvest.
		Westslope cutthroat trout (N)	Wild	Conservation	Monitor the conservation population in the headwaters.
Pilgrim Creek	7.5 miles	Westslope cutthroat trout (N)	Wild	Conservation	Collect additional genetic samples and determine if headwater populations remain non-hybridized. Enhance existing barrier near the mouth and remove non-native fish from barrier to pure population in headwaters.
Habitat needs and activities: Modify/enhance existing barrier near the mouth.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Dry Fork Belt Creek	11 miles	Rainbow trout, Brook trout	Wild	Suppression	Future management to minimize presence in stream.
		Westslope cutthroat trout (N)	Wild	Conservation	Future management as westslope cutthroat trout fishery.
Habitat needs and activities: Maintain habitat and instream flows of 7 cfs. Management toward a conservation population of westslope cutthroat trout.					
Oti Park Creek	4.2 miles	Brook trout	Wild	Suppression	Manage to minimize expansion of brook trout population.
		Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance population.
Habitat needs and activities: Management toward a conservation population of westslope cutthroat trout.					
Carpenter Creek	3 miles	Westslope cutthroat trout (N)	Wild	Conservation	Evaluate opportunities to expand population and provide secure habitat throughout the Carpenter Creek drainage in anticipation of mine remediation and metals pollution in the Carpenter-Snow Creek drainage.
Habitat needs and activities: Identify potential barrier sites near mouth to develop a conservation population of Westslope cutthroat trout.					
Jefferson Creek	5.4 miles	Brook trout	Wild	General	Manage to minimize increases in population densities.
		Rainbowtrout	Wild	Suppression	Manage to minimize presence in the stream.
		Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance population to eventually allow limited harvest.
Habitat needs and activities: Explore potential barrier sites on Belt Creek to prevent non-native fish migration into Jefferson Creek.					
Chamberlain Creek	5.4 miles	Westslope cutthroat trout (N)	Wild	Conservation	Monitor Chamberlain Creek above barrier for presence of brook trout.
Habitat needs and activities: The existing barrier is suspect at high flows because of screen clogging and erosion under the splash pad. Future work should be conducted to modify the screen to pass debris and the splash pad should be extended downstream to prevent passage of non-native fish during significant flow events.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Belt Creek (Big Otter Creek to Confluence with Missouri River)	37 miles	Rainbow trout, Brown trout	Wild	General	Maintain populations with historic levels.
		Mountain whitefish (N)	Wild	General	Maintain numbers within historic range.
		Sauger (N)	Wild	Conservation	Evaluate potential to restore populations.
Habitat needs and activities: Maintain habitat and instream flows of 35 cfs. Monitor fishery before and after water treatment plant construction and the treatment of contaminated water.					
Little Belt Creek	15.8 miles	Rainbow trout, Brown trout	Wild	General	Maintain a recreational fishery with consumption in majority of stream below barriers.
		Brook trout	Wild	Suppression	Pursue removal of brook trout above a barrier on private land to benefit westslope cutthroat trout in Little Belt Creek population and provide an additional layer of security for the North Fork and Middle Fork Little Belt Creek westslope cutthroat populations.
		Westslope cutthroat trout (N)	Wild	Conservation	Pursue opportunities to expand existing Little Belt Creek population downstream to barrier on private land.
Middle Fork Little Belt Creek	2.6 miles	Brook Trout	Wild	Suppression	Suppress brook trout population above barrier to protect westslope cutthroat trout population.
		Westslope cutthroat trout (N)	Wild	Conservation	Monitor the westslope cutthroat trout population annually. Expand population downstream if private landowners are amenable.
Habitat needs and activities: Eradication of brook trout above a waterfall barrier on private land would create a westslope cutthroat trout population resistant to long-term extinction threats and would include the North Fork and Middle Fork Little Belt drainages.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
North Fork Little Belt Creek	2.4 miles	Brook Trout Westslope cutthroat trout (N)	Wild Wild	Suppression Conservation	Suppress brook trout population above barrier to protect westslope cutthroat trout population. Monitor the westslope cutthroat trout population annually. Expand population downstream if private landowners are amenable.
Habitat needs and activities: Eradication of brook trout above a waterfall barrier on private land would create a westslope cutthroat trout population resistant to long-term extinction threats and would include the North Fork and Middle Fork Little Belt drainages.					
Westslope Cutthroat Trout Genetically Unaltered Conservation Population Streams (Isolated Single Species Populations)	33 miles	Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance populations to reduce extinction risk. Allow harvest in robust populations.
Habitat needs and activities: Maintain or improve habitat and explore suitable sites for barriers or reducing fragmentation of westslope cutthroat occupied habitat.					
Westslope Cutthroat Trout Genetically Altered Conservation Population Streams	59 Miles	Westslope cutthroat trout (N), Hybrids (mixed populations)	Wild	Conservation	Maintain or enhance populations. Allow harvest in robust populations.
Brook Trout Streams	197 Miles	Brook trout	Wild	General	Manage for consumptive harvest.


Missouri River - Judith Drainage
MONTANA FWP
ROCKY BOY'S INDIAN RESERVATION
FORT BELKNAP INDIAN RESERVATION
Conrad
Teton River
Fort Benton
Big Sandy Creek
Marias River
Bentonlake
Freezeout Lake
Sun River
Great Falls
Belt
Shonkin Lake
Big Lake
Kingsbury Lake
Arrow Creek
Missouri River
Fort Peck Lake
Stanford
Lewistown
Judith River
Belt Creek
Smith River
Crevig
Neihart
Winnett
Petrolia Reservoir
Flatwillow Creek
Box Elder Creek
Wild Horse Lake
War Horse Lake
Upper Holter Lake
Lake Helena
Canyon Ferry Lake
Tribal Lands
Drainage Boundary
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Area of Interest
Miles
0
20
40

MISSOURI RIVER – JUDITH DRAINAGE

PHYSICAL DESCRIPTION

The reach of the Missouri River from Great Falls to the mouth of the Marias River is 54 miles in length. Stream gradient averages 4.8 feet/mile and varies from 18.7 feet/mile at the mouth of Belt Creek to 2.2 feet/mile near the mouth of the Marias River. The principal tributaries entering this reach are Belt, Highwood and Shonkin creeks. Belt Creek contributes a noticeable flow to the Missouri only during the spring runoff period. Belt Creek is presented in a separate section.

The Missouri River from the confluence of the Marias River to the confluence of the Judith River is 67 miles in length. The stream gradient averages 2.1 feet/mile and varies from 3.0 feet/mile near the mouth of Arrow Creek to 1.5 feet/mile at Coal Banks Landing. The Marias River is the only tributary stream in this reach which contributes a noticeable flow to the Missouri.

The reach of the Missouri River from the confluence of the Judith River to Fort Peck Reservoir is variable due to water elevations in the reservoir, but approximately 85 miles in length. Stream gradient averages 1.9 feet/mile and varies from 3.2 feet/mile near Stafford Ferry to less than 1 foot/mile as the river enters the reservoir. The Judith River is the only tributary stream in this reach that contributes a noticeable flow to the Missouri.

The Judith River is the third largest tributary to the Missouri River in the reach between Canyon Ferry and Fort Peck dams. This stream drains an estimated 2,000 square miles of the Little Belt, Big Snowy, Judith and the North and South Moccasin mountains and surrounding lands of central Montana. The Judith flows northward for 129 miles to its confluence with the Missouri River about 50 air miles north of Lewistown. Major tributaries include the Middle, South and Ross Forks, Big Spring and Warm Spring creeks, and Wolf Creek. Many of the tributary streams go subsurface near the foothills into the limestone geology and emerge downstream. Big Spring Creek and Warm Spring Creek are primarily spring-fed creeks, while Cottonwood Creek, the South Fork Judith River, and the headwaters of Wolf Creek have long reaches that are dry in at least late summer.

The upper Judith River is situated in the mountainous area of the Helena-Lewis and Clark National Forest with its tributaries originating at an elevation of about 8,000 feet. The river begins at the confluence of the Middle and South forks and flows within a broad valley through prairie foothills and bench lands. The riparian vegetation, for about half its length consists of dense willow and other shrubs adjacent to hay meadows. Below this, cottonwoods begin to dominate the overstory along with an undergrowth of willows and rose. The average stream gradient is 30 feet/mile. Channel substrate is composed mostly of cobbles and gravel with moderate amounts of siltation.

The lower Judith River, from Big Spring Creek to the confluence with the Missouri River (elevation of 2,430 feet) is a prairie stream receiving run-off from adjacent lowlands and surrounding isolated mountain ranges. It follows a narrow river valley through prairie bench

lands and rugged breaks. The river valley averages about one-half mile wide and becomes progressively more deeply entrenched in a downstream direction. Riparian vegetation consists of deciduous woodland dominated by an overstory of cottonwoods with a dense shrubby undergrowth of willows, rose and snowberry. The average stream gradient was 12 feet/mile in 2010, but historic flooding in 2011 has shortened stream length with numerous channel avulsions and increased gradient below Ross Fork Creek. Channel substrate is mostly composed of cobbles and gravel with increasing amounts of siltation downstream.

Land uses in the Judith River drainage are fairly diverse. Basin wide, timber harvest on forest lands has been moderate; however, the South Fork of the Judith has been intensively logged. Agricultural uses occur throughout the drainage. Livestock grazing is moderate on the public forest lands of the upper basin and is a major agricultural practice in the lower basin. Nearly all of the land is privately owned and managed for cattle ranching and farming. Hay and some crop lands exist along the river and are more extensive in the upstream areas. Irrigation is also more intensive here, resulting in severe dewatering of the Judith River for several miles. An off-stream storage reservoir, Ackley Lake, located along the upper section of the Judith, stores 6,140 acre-feet and provides irrigation to 1,621 acres. Mining activities in the basin date back to the late 1800s. Gold was the primary mineral sought in the Yogo area of the Little Belt Mountains, however, sapphire mining also proved to be commercially successful. Gold mining was also pursued in the North Moccasin and Judith mountains. Presently, only a minimal amount of mining is ongoing in the Judith River Basin. Water quality issues have developed at a former open-pit gold mine that operated in the North Moccasin Mountains at Kendall. The area where sapphire mining produced commercial quantities near Yogo Creek is an area also popular with recreational placer miners.

Arrow Creek originates in the Little Belt and Highwood mountain ranges and drains portions of Judith Basin, Fergus, and Chouteau counties. The Arrow Creek watershed, occupying approximately 1,224 square miles, lies west of the Judith River drainage and Arrow Creek flows northward into the Missouri River. Major tributaries include Flat Creek, Lone Tree Creek, and Cottonwood Creek. Agricultural uses occur throughout the drainage and most lands are managed for cattle ranching and farming. In the northern part of the drainage, the creek flows thorough badlands on its way to the Missouri River. Arrow Creek has a fairly natural hydrograph and may be dewatered in late summer and early fall during dry years. The Arrow Creek drainage is more arid than the Judith basin, with the headwaters holding less snow for a shorter period of time. Double peaked hydrographs can result from prairie snow melting in March and summer thunderstorms causing short-duration, high-intensity discharges. Arrow Creek's channel is very sinuous. Much of the bottomland is privately owned, although DNRC trust lands and BLM-managed lands compose a greater percentage than in the Judith River Basin.

Arrow Creek flows through a wide valley bottom of Quaternary alluvium and these deposits of modern day channels are set within a canyon of sedimentary layers. The wide alluvial valley and floodplain surround a C-channel type, which characterizes most of lower Arrow Creek, being low in gradient, meandering, and with point-bars and riffle/pool morphology. The cottonwood forest on Arrow Creek is dominated by plains cottonwood. Other riparian tree and shrub species

include peach-leaf willow, yellow willow, and sandbar willow. Although present, Russian olives are not found in high densities.

FISHERIES MANAGEMENT

The middle Missouri River supports a diverse warmwater fishery. All of the native fish species that historically occurred here are still found in this reach because of the relatively unaltered state of the river. There are substantial angling opportunities for sauger, walleye, channel catfish, shovelnose sturgeon, smallmouth bass, freshwater drum, burbot and a wide variety of nongame species. The FWP fisheries objective for the middle Missouri River is to emphasize native species management.

The reach of the Missouri River below Morony Dam includes a transition zone between coldwater and warmwater fisheries. The Highwood and Shonkin creek drainages support trout fisheries. Shonkin Creek also has a robust prairie fish assemblage. Thirteen species, including smallmouth bass, were sampled near the mouth in 2004. Sauger have been historically the most abundant game fish found throughout this reach of the Missouri that extends down to the Marias; numbers appear to have declined in recent years. The coldwater game fish include brown and rainbow trout and mountain whitefish. These species are common only in the upper 15 miles. Other cool/warmwater fish found in this reach include burbot, smallmouth bass, channel catfish, shovelnose sturgeon, northern pike, freshwater drum, blue sucker, and goldeye. Forage fish studies on the Missouri River indicate side channels are important habitat areas displaying higher fish diversity and abundance compared to open river areas. Side channel areas are also important rearing areas for goldeye, smallmouth buffalo and bigmouth buffalo. Young-of-the-year and forage fish are thought to use the side channel areas from early June through the end of August; flows of 4,500 cfs are required to keep side channels functional in this reach. Prior research also determined that paddlefish residing in Fort Peck Reservoir and the lower middle Missouri River require a flow of 14,000 cfs at Virgelle to initiate spring migrations to upstream spawning sites. Based on calculations made from USGS data gathered at the Virgelle and Fort Benton gaging stations, it was determined the Missouri River at Fort Benton contributes 80.6% of the median flow of the Missouri River at Virgelle. Therefore, to maintain the annual spring paddlefish migration in downstream reaches, it is recommended that the Missouri River discharge at Fort Benton be maintained at 80.6% of 14,000 cfs, or 11,284 cfs, during the spawning period, which was estimated to be from May 19 to July 5 annually.

Below the mouth of the Marias, the shovelnose sturgeon are amongst the largest found anywhere within the geographical range of the species. Paddlefish, a Species of Concern, inhabit the reach between the Marias and the mouth of the Judith River only during its spawning season. For most of their lives, paddlefish are found in Fort Peck Reservoir. When the Missouri rises to a flow greater than 12,000 cfs during the spring, paddlefish are triggered to leave the reservoir and migrate upstream to spawn. Females make this migration every 2-3 years and males every 1-2 years. Paddlefish have been observed as far upstream as the mouth of the Marias River when flows are extremely high. Previous research identified four spawning areas between the Marias and the Judith. Paddlefish receive light fishing pressure in the reach because of limited access and lack of paddlefish concentrations. T wenty-two non-game species have been found in this reach of the Missouri. Blue sucker, smallmouth buffalo, bigmouth buffalo and freshwater drum

are four nongame migratory species that are dependent on high spring flows for successful reproduction that inhabit this reach. In addition to the paddlefish, the endangered pallid sturgeon, the threatened shovelnose sturgeon, as well as sturgeon chub and blue sucker (Species of Concern), use this reach. Pallid sturgeon numbers have increased in this reach as a result of on-going recovery work.

The third reach of the middle Missouri, from the Judith River to Fort Peck Reservoir, supports a warm water fishery. Sauger, shovelnose sturgeon, channel catfish and walleye are the common game fish found in the reach. A major paddlefish snagging fishery exists in the lower 40-mile reach of the middle Missouri River during the spring. There is currently a harvest cap of 500 fish on this paddlefish population, but in 2011 it was estimated about 600 paddlefish were harvested during 14,000 angler days. Future management efforts will be designed to reduce chances of overharvest and maintain a self-sustaining population. FWP's management of paddlefish is discussed in more detail in the special management issues section of this drainage. Several tributaries with prairie fish assemblages, such as Armells Creek (81 miles long), Cow Creek and Eagle Creek, enter in this reach.

In the Judith River drainage, brown trout are the predominant game fish found throughout the reach from the confluence of the South and Middle Forks to Big Spring Creek, followed by mountain whitefish and rainbow trout. A population of brook trout exists in the upper portion of the reach where several springs originate and flow into the river. Non-game species include mountain, white and longnose suckers, longnose dace and Rocky Mountain sculpin. The Judith River receives a moderate amount of fishing pressure in this reach.

The reach of the Judith River from the mouth of Big Spring Creek to the Missouri is primarily a warm water fishery, where sauger and channel catfish are the most abundant game fish. Cold water game fish, including rainbow and brown trout and mountain whitefish, also inhabit this reach seasonally but occur in low numbers during the summer. Twenty-three non-game species have been found in the Judith River, including shorthead redhorse, longnose sucker, goldeye, flathead chub, stonecat, longnose dace, white sucker, common carp, cisco, fathead minnow, sand shiner, emerald shiner, lake chub, brook stickleback, freshwater drum, river carpsucker, Rocky Mountain sculpin, plains minnow, smallmouth buffalo, and western silvery minnow. In addition, blue suckers migrate into this reach to spawn. The lower Judith River has a diverse fishery, which reflects the variety of habitat conditions present and the transition from a coldwater to a warmwater environment. Additionally, the Judith River is an important tributary to the Missouri River, with shared fishery dynamics as various species utilize both rivers for aspects of their life histories. Pre- and post-spawn migrations of burbot, channel catfish, northern pike, and sauger have been documented moving between the Judith and Missouri Rivers. The lower Judith River receives only a light amount of fishing pressure, most likely due to its remote and fairly inaccessible location.

Rainbow trout are the most abundant game fish in the lower reaches of the South Fork Judith River. Westslope cutthroat trout are more abundant in the headwaters and upper tributaries. Low numbers of brook trout are found throughout the South Fork. Sculpin and mountain whitefish are common in the lower end above a dry reach. This stream receives substantial fishing pressure for its size. In the Lost Fork Judith River, brook trout are the predominant game

fish, followed by rainbow and westslope cutthroat trout hybrids. Rocky Mountain sculpin are found throughout the stream's length. The Lost Fork receives light fishing pressure because of its remote location. Rainbow trout are the most abundant game fish found throughout the Middle Fork Judith River. They are the dominant species found in the canyon area but are less numerous near the mouth. Brook trout are abundant in the headwater streams and become fairly abundant again near the mouth. Other species present include cutthroat x rainbow trout hybrids, brown trout and sculpins. The Middle Fork receives a moderate amount of fishing pressure considering its remote location. Yogo Creek, a tributary to the Middle Fork is a popular brook trout and hybrid rainbow trout fishery. It has many dispersed camping sites and a dense rainbow trout and brook trout population.

Big Spring Creek is exceptionally productive, and for its size, is rated as one of Montana's finest fishing waters. The creek is considered the most important trout stream in central Montana. Rainbow and brown trout are the major game species in this reach. Prior to the mid-2000s, rainbow trout made up most of the population, more recently brown trout have been about 75% of the population downstream of Lewistown. Mountain whitefish are also present, along with a few brook trout. Northern pike and yellow perch are occasionally found. Non-game fish species found in this reach include Rocky Mountain sculpin, longnose dace, longnose sucker, white sucker, mountain sucker, shorthead redhorse, carp and lake chub. Big Spring Creek receives a substantial amount of angler use, with an estimated 7,000 angler days in 2015. The majority of use is by bank fishermen; however, Big Spring Creek does receive a considerable amount of floating use. Most floating activity is related to swimming, canoeing, duck hunting, and bird watching. Cottonwood Creek is the main tributary to Big Spring Creek. The fisheries in Cottonwood Creek transition from westslope cutthroat trout in the headwaters to brook trout in the foothills and rainbow and brown trout toward the confluence with Big Spring Creek.

The fishery of Warm Spring Creek is dominated by non-game fish, including white sucker, longnose sucker, longnose dace, common carp, stonecat, and shorthead redhorse. Smallmouth bass are present in good numbers and were stocked in the creek from 1973 until 2013. The population now persists on natural reproduction. Rainbow trout are also present in good numbers and were stocked extensively from 1929 until 2013. Recent surveys indicate natural reproduction and recruitment are occurring and a wild population persists. Interestingly, an adfluvial population of rainbow trout utilizes Warm Spring Creek for its spawning location, before out-migrating to Fort Peck Reservoir. Spawning occurs in December through January when water temperatures in Warm Spring Creek are suitable. Brown trout, brook trout, channel catfish, and sauger are also present in low numbers. Land management practices in some reaches have induced excessive bank erosion and associated negative impacts. Generally speaking, the riparian and aquatic habitat of Warm Spring Creek are in good condition.

The Arrow Creek drainage contains a warmwater fishery in its lower reaches that includes goldeye, channel catfish, stonecat, and northern redbelly x finescale dace hybrid. In its headwaters, brook, and westslope cutthroat trout are present. There are approximately 47 miles of suitable habitat for salmonids. Probably 43 of these miles are inhabited by brook trout, and 4 miles by westslope cutthroat trout.

The long-term goal of cutthroat conservation in the Judith River Drainage is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout. See Part 1: Trout: Westslope and Yellowstone Cutthroat Trout for details.

HABITAT

Present-day flow regimens of the Missouri River in the reach from Morony Dam to the mouth of the Marias are not natural because of regulation and storage at several upstream dams. Flow is largely controlled by Canyon Ferry Reservoir. There are five hydroelectric dams within the Great Falls area that are operated by Northwestern Energy. These dams do not typically affect streamflows because the FERC order that licenses the operation of the dams, stipulates that Morony Dam is to be operated to maintain uniform flows downstream. Long-term flow records are available for two USGS gage sites within this reach. For the gage site at the head of the reach below Morony Dam, the average annual flow for a 54-year period of record (1957-2011) was 7,395 cfs. Mean monthly flows ranged from 5,520 cfs in September to 13,800 cfs in June. The average annual flow for a 121-year period of record (1891-2011) at the Fort Benton gage site was 7,608 cfs. Mean monthly flows range from 4,890 cfs in September to 18,200 cfs in June.

In the second reach from the confluence of the Marias River to the confluence of the Judith River, the Marias River discharge augments the Missouri River flows by about 10% during most of the year. Present day flow regimens in this reach are similar to the reach upstream of the Marias. The Marias does not greatly increase spring flows in the Missouri because of flood control and regulation by Tiber Reservoir. However, it may be useful in the future to restore a more natural flow regime to the Missouri River. Long-term flow records are available for the USGS Virgelle gage station located 18 miles below the confluence of the Marias River. The average annual flow for a 76-year period of record (1936-2011) was 8,320 cfs. Mean monthly flows ranged from 5,830 cfs in September to 17,800 cfs in June.

In the lowest reach from the confluence of the Judith River to the headwaters of Fort Peck Reservoir, the Judith River augments the Missouri River by about 5% throughout most of the year. Present-day flow regimens of the Missouri River are similar to the upstream reach and are regulated by upstream reservoirs. Long-term flow records are available for the Fred Robinson Bridge USGS gaging station located 23 miles above Fort Peck Reservoir. The average annual flow for a 77-year period of record (1935-2011) was 8,988 cfs. Mean monthly flows range from 6,180 cfs in September to 19,400 cfs in June.

FISHING ACCESS

Adequate access has been developed at most accessible locations on the Middle Missouri Wild and Scenic River reach. About 80% of the Missouri River in this reach lies within the Upper Missouri River Breaks National Monument and the Charles M. Russell National Wildlife Refuge. The river is also classified as a Wild and Scenic, and there are motorboat use restrictions on some segments from June 15 – September 15. Recreational access is limited in the area, with only 8 boat ramps throughout the reach located at Widow Coulee (river mile

2,102), Carter Ferry (river mile 2,089), Fort Benton (river mile 2,073), Loma (river mile 2,053), Coal Banks (river mile 2,032), Judith Landing (river mile1,982), Robinson Bridge (river mile 1,921) and Rock Creek (river mile 1,907). The reach of the Missouri River from Great Falls to the mouth of the Marias River includes the upper 21 miles of the Upper Missouri National Wild and Scenic River, which begins midway in the reach at Fort Benton. From this point, the Missouri receives heavy recreational use even though there are few access points. Access to the river is limited because of the rugged terrain and lack of development within the narrow river corridor. Public access points include a ferry crossing with adjacent FAS primitive boat ramp, a campground with a boat ramp, and a bridge crossing plus the Morony Dam area, and the Fort Benton town site.

From the confluence of the Marias to the confluence of the Judith River, the entire reach is within the Upper Missouri National Wild and Scenic River corridor, and most is within the Upper Missouri River Breaks National Monument. Nearly half of the use in this reach is recreational boating. Other activities include fishing, hunting, picnicking, camping and trapping. About 40% of the river is bordered by BLM land. The greater portion of public land is located in the lower 30 miles of the reach. Most of the public land is difficult to reach, other than by floating because of the rugged terrain and lack of development within the narrow river corridor. There is one ferry crossing, a bridge and two campgrounds where the public can access the river.

From the confluence of the Judith River to Fort Peck Reservoir, 62 miles of this reach are within the Upper Missouri National Wild and Scenic River. This portion of the Missouri includes the rugged breaks country. There is considerable recreational use in this portion of the Missouri because of its nationally renowned beauty and wilderness qualities, fishing and hunting opportunities. The upper portion of this reach is within the Upper Missouri River Breaks National Monument, and the lower 23 miles of the reach is surrounded by the Charles M. Russell National Wildlife Refuge. Nearly the entire river in this reach is bordered by land administered by the BLM or USFWS. Most of the reach is difficult to access, other than by floating, because of the rugged terrain and large areas of roadless country. Access is limited to three bridge or ferry crossings. Only a few vehicle trails lead down to the river, with most of these being located in the lower 23 miles of river.

The Judith River is a popular recreation area for fishing, hunting, picnicking, camping, hiking and floating. The headwaters of the Judith and its tributary drainages are generally on USFS lands and have sufficient public access. A considerable portion of the forested land in the upper basin is managed for semi-primitive recreation. Access to the Judith River varies along its course. The first 25 miles is paralleled by a county road with several bridge crossings. For the next 45 miles there are only a few roads near the floodplain, but several county roads and highways cross the river at bridges. The remaining 60 miles flow through remote badlands where there are only three access points, including at the confluence with the Missouri. Most of the land adjacent to the stream is privately owned, but access is generally allowed with permission. Additional access is needed on the Judith River downstream of the South and Middle forks, on Warm Spring Creek, and Big Spring Creek downstream of Cottonwood Creek. FWP already has eight FASs on Big Spring Creek, but the additional access needs are due to it being a stream that is most easily accessed from the bank, rather than boat.

SPECIAL MANAGEMENT ISSUES

FWP has worked closely with numerous partners in the Arrow, Judith and Mid Missouri drainages to help preserve and restore the unique native and wild fisheries available in these systems. Recent partners have included NorthWestern Energy, Montana State University, University of Idaho, BOR, and Western Area Power Administration, and the USFS. Projects have included assisting with pallid sturgeon restoration, paddlefish population research, and research on other native riverine species. An ongoing effort in cooperation with USFS has successfully increased and restored pure westslope cutthroat trout into the headwaters of several streams in the Judith, Arrow and Highwood drainages.

A particularly important issue in this drainage involves paddlefish management. Paddlefish anglers have seen several changes to the regulations and season structure since 2006. The current paddlefish season runs from May 1st to June 15th, and the harvest of paddlefish closes once the estimated harvest reaches the cap of 500 paddlefish. Anglers are allowed to snag and release paddlefish throughout the season, regardless of whether or not they already harvested a paddlefish. The 500-fish harvest cap has been met or exceeded in all but one year (2008) since its implementation in 2008. Furthermore, the date in which the harvest of paddlefish closed has occurred earlier each consecutive year thereafter. In 2009 the harvest cap was reached on May 22nd, in 2010 it was reached on May 16th, in 2011 and 2012 the harvest cap was reached on May 14th and May 10th, respectively. The current paddlefish season structure has put more pressure on paddlefish anglers to get to the river early enough to have a chance at harvesting a fish before the season closes. Anglers have voiced their concerns over the crowding issues created and difficulty in planning a fishing trip under the current season structure. FWP will continue to evaluate and modify the paddlefish season structure with regard to paddlefish management and concerns expressed by paddlefish anglers.

FWP will also continue to tag adults in the spring to track movement, growth, and estimate population size. Young-of-year transects will be conducted in late summer to estimate reproductive success as it pertains to spring flows on the Missouri River and Fort Peck Reservoir water elevations (rearing habitat). Creel surveys will continue to be conducted during the paddlefish season on the Missouri River from river mile 1,921 to1,899 (James Kipp Recreation Area and Campground to Lower Peggy's Bottom), and a phone creel survey will be conducted after the season. These measures are critical to maintain the paddlefish population at a sustainable level.

FISHERIES MANAGEMENT DIRECTION FOR THE MISSOURI RIVER - JUDITH DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Missouri River – Great Falls to Confluence with the Marias River	54 miles	Sauger (N)	Wild	Conservation	Maintain populations within historic levels and manage as a recreational fishery with limited harvest.
		Walleye, Northern pike, Freshwater drum (N), Smallmouth bass	Wild	General	Manage as a recreational fishery with consumptive harvest.
		Rainbow trout, Brown trout, Shovelnose sturgeon (N), Channel catfish (N)	Wild	General	Maintain populations within historic levels and manage as a recreational fishery.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels.
		Goldeye (N)	Wild	General	Manage as a recreational fishery with some consumptive harvest.
		Blue sucker (N), Stonecat (N)	Wild	Conservation	Maintain populations within historic levels.
Habitat needs and activities: Maintain stream flows of 3,700 cfs from 9/1-3/14 for maintenance of riffles, 4,887 cfs from 3/14-5/18, 11,284 cfs from 5/19-7/5 for paddlefish spawning migration, and 4,500 cfs from 7/6-8/31 for maintaining side channel habitat for forage species.					
Highwood Creek	37.6 miles	Rainbow trout, Brown trout, Brook trout	Wild	General	Maintain populations within historic levels and manage as a recreational fishery.
Habitat needs and activities: Maintain 10 cfs for instream flows to maintain aquatic habitat.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Highwood Creek Drainage - Westslope Cutthroat Trout Genetically Unaltered Conservation Population Streams (Isolated Single Species Populations) (1 Stream)	2 miles	Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance populations to reduce extinction risk.
Highwood Creek Drainage - Westslope Cutthroat Trout Genetically Unaltered Conservation Population Streams (Isolated Single Species Populations) (2 Streams)	5-7 miles	Westslope cutthroat trout (N)	Wild	Conservation	Continue work to establish two new populations of 100% genetically unaltered westslope cutthroat trout populations to reduce extinction risk.
Shonkin Creek	52 miles	Brook trout	Wild	General	Manage as a recreational fishery with consumptive harvest
Habitat needs and activities: Maintain instream flow of 7 cfs for aquatic habitat.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Missouri River - Confluence of the Marias River to the Judith River	67 miles	Sauger (N)	Wild	Conservation	Maintain populations within historic levels, manage as a recreational fishery with limited harvest.
		Walleye, Northern pike, Freshwater drum (N), Smallmouth bass	Wild	General	Manage as a recreational fishery with consumptive harvest.
		Shovelnose sturgeon (N), Channel catfish (N)	Wild	General	Maintain populations within historic levels and manage as a recreational fishery.
		Pallid sturgeon (N)	Hatchery/ Wild	Conservation	Maintain and enhance existing population levels to reduce extinction risk.
		Paddlefish (N)	Wild	Restrictive regulations	Maintain populations within biologically healthy levels and manage as a recreational fishery with limited harvest through a cap system.
		Burbot (N)	Wild	General	Maintain populations within historic levels.
		Goldeye (N)	Wild	General	Manage as a recreational fishery with some consumptive harvest.
		Blue sucker (N)	Wild	Conservation	Maintain populations within historic levels.
Habitat needs and activities: Maintain 4,300-14,000 cfs for instream flows as indicated by the following to maintain fisheries. Maintain stream flows of 4,300 cfs from 9/1-3/14 for maintenance of riffles, 5,571 cfs from 3/14-5/18, 14,000 cfs from 5/19-7/5 for paddlefish spawning migration, and 5,400 cfs from 7/6-8/31 for maintaining side channel habitat for forage species.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Missouri River - Confluence of the Judith River to the headwaters of Fort Peck Reservoir	85 miles	Sauger	Wild	Conservation	Manage to maintain populations within historic levels in upper reaches and provide a recreational fishery with limited harvest.
		Walleye, Freshwater drum (N), Smallmouth bass	Wild	General	Manage as a recreational fishery with consumptive harvest.
		Shovelnose sturgeon (N), Channel catfish (N)	Wild	General	Maintain populations within historic levels and manage as a recreational fishery.
		Pallid sturgeon (N)	Hatchery/ Wild	Conservation	Maintain and enhance existing population levels to reduce extinction risk.
		Paddlefish (N)	Wild	Restrictive Regulations	Maintain populations within biologically healthy levels and manage as a recreational fishery with limited harvest through a cap system.
		Burbot (N)	Wild	General	Maintain populations within historic levels.
		Goldeye (N)	Wild	General	Manage as a recreational fishery with some consumptive harvest.
		Stonecat (N)	Wild	Conservation	Maintain populations within historic levels.
Habitat needs and activities: Maintain 4,700-15,302 cfs for instream flows as indicated by the following to maintain fisheries. Maintain stream flows of 4,700 cfs from 9/1-3/14 for maintenance of riffles, 7,100 cfs from 3/14-5/18, 15,302 cfs from 5/19-7/5 for paddlefish spawning migration, and 5,800 cfs from 7/6-8/31 for maintaining side channel habitat for forage species.					
Arrow Creek – Lower Reaches	64 miles	Channel catfish (N)	Wild	General	Maintain populations within historic levels and manage as a recreational fishery.
		Goldeye (N)	Wild	General	Manage as a recreational fishery with some consumptive harvest.

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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Stonecat (N), Northern redbelly x finescale dace hybrid (N)	Wild	Conservation	Maintain populations within historic levels.
Arrow Creek Headwaters	4 miles	Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance populations to reduce extirpation risk.
	43 miles	Brook trout	Wild	General	Maintain recreational fishery for consumptive harvest where they pose no threat to westslope cutthroat trout populations.
Habitat needs and activities: Examine methods to protect one population from competition or hybridization.					
Judith River - South /Middle Fork Confluence to Big Spring Creek	58 Miles	Rainbow trout, Brown trout, Brook trout	Wild	General	Manage as a recreational fishery with harvest.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels.
Habitat needs and activities: Maintain 25 cfs for instream flows to maintain aquatic habitat.					
Judith River – Big Spring Creek to Mouth	71 Miles	Sauger (N)	Wild	Conservation	Manage to maintain populations within historic levels and provide a recreational fishery with limited harvest.
		Walleye, Northern pike, Rainbow trout, Brown trout Smallmouth bass	Wild	General	Manage as a recreational fishery with consumptive harvest.
		Channel catfish (N)	Wild	General	Maintain populations within historic levels and manage as a recreational fishery.
		Goldeye (N)	Wild	General	Manage as a recreational fishery with some consumptive harvest.

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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Stonecat (N)	Wild	Conservation	Maintain populations within historic levels.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels.
		Blue sucker (N)	Wild	Conservation	Maintain spawning and rearing populations within historic levels.
		Burbot (N)	Wild	Conservation	Maintain population within historic levels and manage as a recreational fishery.
Habitat needs and activities: Maintain 160 cfs for instream flows to maintain aquatic habitat. Work with partners to maintain flow monitoring gages.					
South Fork Judith River	20.6 miles	Rainbow trout, Brown trout, Brook trout	Wild	General	Manage as a recreational fishery with consumptive harvest.
		Westslope Cutthroat trout (N)	Wild	Conservation	Maintain and secure genetically altered population from competition and continued hybridization.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels.
Habitat needs and activities: Maintenance of existing trout habitat by providing 3.5 cfs of instream flow.					
Lost Fork Judith River	9 miles	Rainbow trout, Brook trout	Wild	General	Manage as a recreational fishery with consumptive harvest.
Habitat needs and activities: Maintain habitat and instream flows of 14 cfs.					
Middle Fork Judith River	13.1 miles	Rainbow trout, Brook trout, Brown trout	Wild	General	Manage as a recreational fishery with consumptive harvest.
Habitat needs and activities: Maintain habitat and instream flows of 22 cfs. Work with US Forest Service to address sedimentation issues stemming from road/trail crossings.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Big Spring Creek –hatchery to Cottonwood Creek	23.7 miles	Rainbow trout, Brown trout	Wild	General	Maintain a recreational fishery with consumptive harvest.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels.
Habitat needs and activities: Maintain habitat and instream flows of 110 cfs. Restore habitat and channel form on channelized sections. Pursue additional access for bank anglers.					
Big Spring Creek – Cottonwood Creek to Mouth	8.2 miles	Rainbow trout, Brown trout	Wild	General	Maintain a recreational fishery with consumptive harvest.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels.
		Sauger (N)	Wild	Conservation	Manage to maintain populations within historic levels and provide a recreational fishery with limited harvest.
Habitat needs and activities: Maintain habitat and instream flows of 100 cfs. Pursue additional access for bank anglers.					
East Fork Big Spring Creek	24.8 miles	Rainbow trout, Brook trout, Brown trout	Wild	General	Maintain a recreational fishery with consumptive harvest.
		Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance populations to reduce extirpation risk.
Habitat needs and activities: Maintain habitat and instream flows of 7.5 cfs.					
Cottonwood Creek	32 miles	Brook trout Rainbow trout, Brown trout	Wild	General	Maintain a recreational fishery with consumptive harvest
		Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance populations to reduce extirpation risk.
Habitat needs and activities: Maintain habitat and instream flow of 4.5 cfs in Cottonwood Creek.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Beaver Creek (Tributary to Cottonwood)	13 miles	Brook trout	Wild	General	Maintain a recreational fishery with consumptive harvest.
Warm Spring Creek	28 miles	Rainbow trout	Wild	General	Monitor and maintain adfluvial population. Manage as a recreational fishery with limited harvest.
		Brown trout	Wild	General	Manage as a recreational fishery with consumptive harvest.
		Smallmouth bass	Wild	General	Manage as a recreational fishery with consumptive harvest.
		Sauger (N)	Wild	Conservation	Maintain populations within historic levels and manage as a recreational fishery with limited harvest.
		Stonecat (N)	Wild	Conservation	Maintain populations within historic levels.
		Westslope cutthroat trout (N)		Conservation	Minimize threats to population from competition and hybridization. Evaluate headwaters to determine distribution. Evaluate potential for replication.
Habitat needs and activities: Maintain habitat and instream flows of 110 cfs.					
Yogo Creek	13.7 miles	Brook trout, Rainbow trout	Wild	General	Manage as a recreational fishery with consumptive harvest to minimize potential for competition and hybridization of mixed westslope cutthroat trout population.

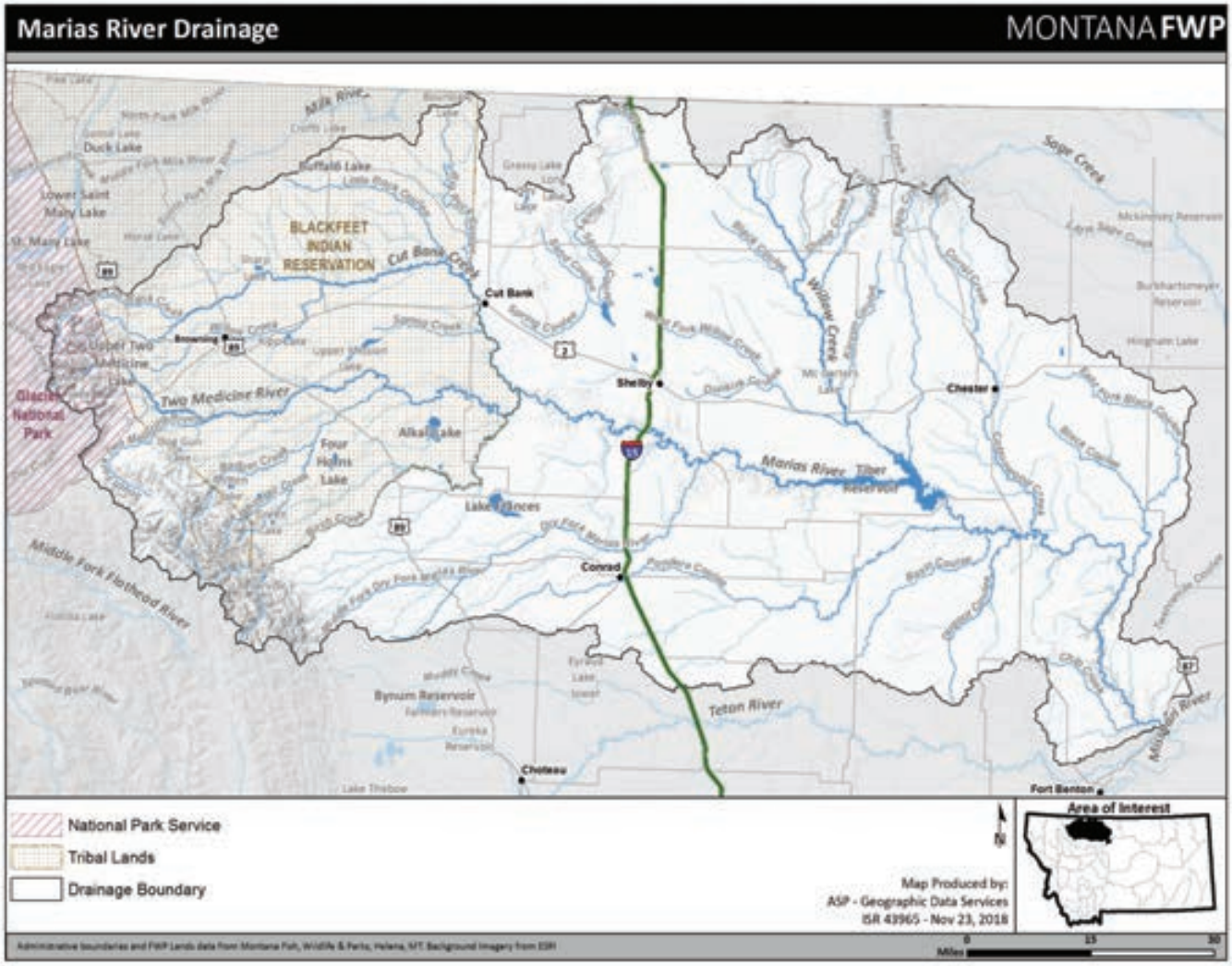
Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Westslope cutthroat trout (N)	Wild	Conservation	Minimize threats to genetically altered population from competition and additional hybridization.
Habitat needs and activities: Maintain habitat and instream flows of 3 cfs.					
Judith River Drainage - Westslope Cutthroat Trout Genetically Unaltered Conservation Population Streams (Isolated Single Species Populations) (5 Streams)	10 Miles	Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance populations to reduce extirpation risk.
Judith River Drainage - Westslope Cutthroat Trout Genetically Altered (10 Streams) & Mixed Population (10 Streams)	54.5 Miles	Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance populations to reduce extirpation risk. Explore options to limit non-natives in mixed populations.
Judith River Drainage - Brook Trout Streams	304 Miles	Brook trout	Wild	General	Maintain recreational fishery for consumptive harvest where they pose no threat to westslope cutthroat trout populations.
Ackley Lake Continue next page	226 Acres	Rainbow trout	Hatchery	Put, Grow and Take	Maintain recreational fishery for consumptive harvest by continued stocking.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Tiger muskie	Hatchery	Put, Grow and Take / Quality	Manage population via stocking and limited harvest to suppress white sucker population and provide a unique trophy opportunity.
Habitat needs and activities: Work with water users to maintain minimum pool elevation.					
East Fork Reservoir	90 acres	Yellow perch	Wild	General	Maintain recreational fishery for consumptive harvest.
		Northern pike	Wild	Suppression	Maintain recreational fishery for consumptive harvest.
		Largemouth bass	Hatchery	General	Develop recreational fishery for consumptive harvest by stocking.
		Rainbow trout	Hatchery	General	Develop recreation fishery for consumptive harvest if low levels of wild fish present.
Habitat needs and activities: Work with City of Lewistown and NRCS to explore opportunities to use stored water to meet instream flows of Big Spring Creek during time of drought.					
Lower & Upper Carter Ponds	57 acres	Rainbow trout	Hatchery	Put, Grow and Take	Maintain recreational fishery for larger sized fish and consumptive harvest by continued stocking.
Big Casino Creek Reservoir	16 acres	Yellow Perch	Wild	Suppression	Encourage harvest to control numbers. Evaluate using a predator to manage numbers.
		Largemouth bass	Hatchery	Put, Grow and Take	Develop recreational fishery for consumptive harvest by stocking.
		Black crappie	Wild	General	Develop recreational fishery for consumptive harvest via wild fish transfers.
Rhoda Lake	3 acres	Westslope cutthroat trout	Hatchery	Put, Grow and Take	Maintain native species (westslope cutthroat or Arctic grayling) recreational fishery for consumptive harvest by continued stocking.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Cow Creek-Headwaters to Cow Creek Reservoir	8 miles	Brook trout	Wild	General	Protect habitat and provide fish passage when applicable.
Cow Creek Reservoir	82 acres	Brook trout, Yellow perch, Black crappie	Wild/ Hatchery	General/ Put, Grow and Take	Continue to monitor populations and stock when necessary.
		Tiger muskie	Hatchery	Quality	Manage tiger muskie for trophy fishery (fish > 40 inches).
		Channel catfish	Wild/ Hatchery	Put, Grow and Take	Evaluate channel catfish population and supplement with stocking as needed.
		Walleye	Hatchery	Put, Grow and Take	Stock 5,000 walleye fingerling on alternate years.
Habitat needs and activities: Work with Sand Creek Ranch to repair dam and implement reservoir operations plan that benefits fish production. Maintain instream flow of 4.5 cfs in Cow Creek above reservoir to protect fish habitat.					
Cow Creek-Cow Creek Reservoir Tailwaters to Confluence with Missouri River	46 miles	Native non-game fishes (N)	Wild	Conservation	Protect habitat and provide fish passage when applicable.
Habitat needs and activities: Identify habitat issues and work closely with local conservation districts, county road crews, and landowners to implement safe water crossings which emphasis fish passage and water connectivity.					
Elks Country Club Pond	1 Acre	Rainbow trout	Hatchery	Family Fishing Water	Maintain as a Children's Fishing Water.
Lower Frog Pond	1.2 Acre	Rainbow trout	Hatchery	Family Fishing Water	Maintain as an urban fishery.
Upper Frog Pond	1.2 Acre	Rainbow trout	Hatchery	Family Fishing Water	Maintain as an urban fishery.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Private & Public Ponds	-	Trout, Warm water species	Hatchery/Wild	Put and Take/General	Maintain existing pond fisheries available to the public for harvest.
Habitat needs and activities: Enhance structure in ponds when possible.					


Marias River Drainage
MONTANA FWP
Milk River
Duck Lake
Buffalo Lake
Lower Saint Mary Lake
St. Mary Lake
BLACKFEET INDIAN RESERVATION
Cut Bank Creek
Cut Bank
Browning
Old Usher Two Medicine Lake
Two Medicine River
Glacier National Park
Four Horns Lake
Alkali Lake
Lake Frances
Middle Fork Flathead River
Bynum Reservoir
Choteau
Teton River
Conrad
Shelby
Marias River
Tiber Reservoir
Chester
Sage Creek
Willow Creek
Fort Benton
Missouri River
National Park Service
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Miles

MARIAS RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Marias River is the largest tributary of the Missouri River between Canyon Ferry and Fort Peck dams. This north-central prairie stream drains about 7,100 square miles of the Rocky Mountain Front and Lewis Mountain ranges. The Marias begins 12 miles north of Valier (elevation 3,280 feet) and flows 170 miles east and south to its confluence with the Missouri River near Loma (elevation 2,550 feet). Major tributaries include the Two Medicine River, Cut Bank, Badger, and Birch creeks. The Teton River joins the Marias about 1 mile upstream from the Marias River's mouth and is discussed in its own section. Within this geographic area there are 40 lakes or reservoirs, totaling 24,227 surface acres.

The upper Marias River basin is situated in the mountainous area of the Lewis and Clark National Forest and Glacier National Park. Its upper tributaries originate at an elevation of about 10,000 feet and flow out onto the prairie. There is little development in the foothill transition zone between the mountains and prairie. The Marias originates at the confluence of the Two Medicine River and Cut Bank Creek about 35 miles east of the mountain zone. The upper mainstem reach flows 60 miles before entering the headwaters of Tiber Reservoir (Lake Elwell). Within this reach, the Marias flows through a rolling prairie landscape while entrenched in a well-defined valley about 1 mile wide. Soft shale and sandstone bluffs flank the river, rising 200 to 400 feet above the valley floor. The riparian vegetation consists of deciduous woodlands dominated by an overstory of cottonwoods and an undergrowth of willows, rose, and buffalo berry. The overall stream gradient is 5 feet/mile and varies from 11 feet/mile in the upper portion to less than 2 feet/mile in the lower end of the reach. Channel substrate consists primarily of cobbles and gravel with moderate amounts of siltation.

The lower Marias mainstem extends from Tiber Dam and flows for 78 miles to its confluence with the Missouri River. It lies in the semi-arid prairie lands at elevations between 3,000 and 4,000 feet. This area is moderately dissected with drainages that collect lowland runoff chiefly from March through June. With the exception of the Teton River, there are no perennial tributary streams joining the Marias. In fact, due to water management upstream, the lower Teton River has also not been perennial in most recent years. Flow regimens of the lower Marias River are completely regulated by the operations of Tiber Reservoir. Tiber Dam was completed in 1955 and is operated by the Bureau of Reclamation. This reservoir stores the high spring runoff and augments base flows of the lower river.

Throughout its entire course, the lower Marias is entrenched in a well-defined river valley. The valley is about 3/4 mile wide at the upper and lower ends, and narrows in the middle to form a scenic canyon less than 400 yards wide. Shale and sandstone bluffs border the river and rise 200 to 400 feet above the narrow floodplain. The riparian vegetation is dominated by older cottonwood trees with a moderate undergrowth of rose and buffalo berry. Islands and lower floodplain areas support stands of willow. The floodplain throughout the lower river is in a static condition because of the regulated flows and the absence of regular flooding events. This has limited the abundance of early-aged cottonwood stands and other riparian vegetation dependent

on flooding. The overall stream gradient is 3.5 feet/mile and varies only slightly from 3.0-4.5 feet/mile. Channel substrate is mostly composed of cobbles and gravel. Siltation increases in a downstream progression from Tiber Dam.

Land uses in the Marias River drainage are fairly diverse. In the forested areas of the upper basin, a considerable portion is in designated wilderness that includes the Bob Marshall Wilderness Area and Glacier National Park. Forest Service lands outside the Bob Marshall Wilderness Area are managed for semi-primitive recreation, livestock grazing, and minor amounts of timber harvest. A significant part of the upper basin is contained within the Blackfeet Indian Reservation, where fisheries resources are managed by the Blackfeet Tribe in cooperation with the USFWS. Grain and hay production and livestock grazing are principal uses which occur in the prairie lands of the upper and lower basins. Most of the land in this area outside the Blackfeet Reservation is privately owned. There are a few scattered parcels of federal land managed by either the BLM or BOR. These lands are primarily located along the perimeter of Tiber Reservoir and areas adjacent to the lower Marias River. The river and surrounding lands are important recreation areas. Fishing, hunting, picnicking, and floating are popular activities associated with the river environment.

FISHERIES MANAGEMENT

The headwaters of the Marias River include Cut Bank Creek and the Two Medicine River, which join to form the Marias River just south of Cut Bank, Montana. Cut Bank Creek, from where it leaves the Blackfeet Reservation and forms the eastern reservation boundary, is primarily a coolwater stream with rainbow and brown trout and mountain whitefish in its lower 19 miles however there is historical evidence of a warmwater species assemblage comprised of sauger, goldeye, black bullhead, and river carpsucker prior to construction of Tiber Dam. FWP has limited data on the current assemblage within this reach and will work with the tribe and agency partners to obtain updated information. The Two Medicine River flows approximately 40 miles from west to east, much of it on the Blackfeet Reservation. The Two Medicine River drainage contains larger tributaries, which are Badger, Birch, and Dupuyer creeks, and consists of about 773 miles of perennial streams. Approximately 123 perennial streams are named within the Two Medicine subbasin. The headwater tributaries to the Two Medicine River are generally cold and unproductive with low densities of trout.

The headwater drainage currently supports approximately 240 miles of stream inhabited by brook trout, 194 miles that support rainbow trout, 41 miles that support genetically unaltered westslope cutthroat trout in 12 streams, and 33 miles of stream containing genetically altered (hybridized) westslope cutthroat trout in 11 streams. The brook and rainbow trout are managed as recreational fisheries with consumptive harvest, while the unaltered westslope cutthroat trout are managed to maintain or enhance their populations to reduce the risk of extinction. The genetically altered populations are managed to maintain or enhance their populations as well, although harvest of robust populations is acceptable. The long-term goal of cutthroat conservation in the Marias River Drainage is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout. See Appendix A: Trout: Westslope and Yellowstone Cutthroat Trout for details.

The reach of the Marias River above Tiber Reservoir includes both coldwater and warmwater species and becomes primarily a warmwater fishery near Tiber Reservoir (Lake Elwell) where

walleye are the most abundant game fish. Coldwater game fish, including rainbow trout and mountain whitefish, also inhabit this reach, but in lower numbers. Northern pike, yellow perch, and burbot are other resident fish species of interest to many anglers. In addition, non-game fish present include common carp, flathead chub, lake chub, emerald shiner, fathead minnow, longnose dace, and Rocky Mountain sculpin, as well as mountain, white, and longnose suckers. Walleye use the upper Marias for spawning and a segment of the population remains in the river throughout the summer. Young-of-the-year walleye have been sampled during the summer, indicating that the river also provides rearing habitat. Larger-sized rainbow trout are found in the river mainly in the spring and early summer. The upper Marias River has only a moderate fishery. Fishing pressure has averaged 1,602 angler days from 2001-2009.

Below Tiber Dam 21 miles downstream to Highway 223 (Circle Bridge), the coldwater releases from the dam have altered the aquatic environment to favor coldwater salmonid species. Mountain whitefish exist in high numbers and are the most abundant game fish in the reach. Rainbow and brown trout occur in fair numbers, exhibiting excellent growth rates. Warmwater game fish, including sauger, walleye, northern pike, and burbot also inhabit this reach, but in lower numbers. Fourteen species of non-game fish have been sampled in this reach, including goldeye, common carp, flathead chub, lake chub, emerald shiner, Western silvery minnow, fathead minnow, longnose dace, river carpsucker, shorthead redhorse, longnose sucker, white sucker, yellow perch, and Rocky Mountain sculpin. The reach has a good fishery primarily because of improved water management by the BOR, which maintained minimum instream flows. This tailwater fishery is the only trout stream within a 50-mile radius, and it receives a moderate amount of angler use. Because of limited natural reproduction, spawning is supplemented by stocking trout.

The reach of the Marias River from Highway 223 (Circle Bridge) 57 miles downstream to the mouth contains a warmwater fishery in which sauger are the most abundant resident game fish. Walleye occur in fair numbers and are more numerous in the lower portion of the reach. Channel catfish are found in moderate numbers throughout the lower Marias. Game fish that migrate from the Missouri River into the Marias to spawn are shovelnose sturgeon, sauger, walleye, and channel catfish. Shovelnose sturgeon have been sampled throughout this reach during their spawning period, late-May through June. A moderate population of mountain whitefish, and an occasional brown trout, are the coldwater game fish found throughout the lower river. Sizes of sauger and walleye are about average for Montana river populations. The sizes reported for shovelnose sturgeon are for only the adult spawning segment; however, the maximum sizes found here surpass most other records and underscore the value of this high quality population. Sixteen resident non-game fish species have been sampled in the lower Marias River, including goldeye, common carp, flathead chub, lake chub, emerald shiner, plains minnow, western silvery minnow, fathead minnow, longnose dace, river carpsucker, shorthead redhorse, longnose sucker, white sucker, mountain sucker, stonecat, and Rocky Mountain sculpin. Blue sucker, smallmouth buffalo, bigmouth buffalo, and freshwater drum are the migratory species found in the river during their spawning seasons, but they reside in the Missouri River during the rest of the year. This reach of the Marias, mostly the lower 6 miles, receives intensive angling pressure during the spring spawning season (April through mid-July). During the rest of the season, there is a moderate amount of angler use. The entire reach below Tiber Dam to the mouth averaged 3,495 angler days per year from 2001-2009.

Both Lake Frances and Tiber Reservoir support fisheries where anglers focus angling on walleye, yellow perch and northern pike. Fisheries monitoring is focused on these species and forage species in an effort to provide an adequate forage base for the top-level predators. While Lake Frances has been stocked biennially to maintain walleye numbers, Tiber Reservoir walleye have provided adequate recruitment through wild reproduction after stocking that occurred back in the early 1970s and again in 1986 and 1988. The frequency of stocking in Lake Frances is being evaluated in an effort to provide high walleye growth rates and a desirable size structure. Hatchery walleye stocking may be considered for both reservoirs based on trends in forage abundance, reservoir water levels, growth, recruitment, relative weight, and reservoir wide abundance. Angler use has averaged 12,313 angler days per year on Lake Frances and 17,878 angler days on Tiber Reservoir for the 27-year period from 1982-2009. Creel surveys will be completed as funding is available.

HABITAT

Long-term USGS flow records are available for the Marias River near Shelby (river mile 140.6) and below Tiber Dam near Chester (river mile 78.3). The mean annual flow near Shelby for a 108-year period of record (103 years of data) from 1903-2011 was 885 cfs; the peak flow was recorded in 1964 at 241,000 cfs and was associated with a dam failure in a flood year (1964). The mean annual flow below Tiber Dam for a 65-year interrupted period of record (58 years of data) between 1945-2011 was 800 cfs. Extreme flows since Tiber Dam was completed in 1955 have ranged from a low of nearly zero to a high of 10,400 cfs. A shorter period of record (13 years) for the Marias River near the mouth at Loma between 1960-72 showed a mean annual flow of 977 cfs, with a low of 45 cfs and a high of 10,800 cfs.

The largest user of water in the Marias Basin is irrigated agriculture. A total of 206,696 acre-feet or 34% of the average annual flow was consumed during 1980, a fairly typical year. Including Tiber Reservoir, four other reservoirs in the basin have storage capacities greater than 1,000 acre-feet. All except Tiber are used primarily for irrigation. These reservoirs have an estimated total storage capacity of 1,542,158 acre-feet.

Water temperatures downstream of Tiber are also affected by the operation of the dam. Deep cold water releases from the reservoir significantly reduced the river's summer temperatures at least 20 miles below the dam. The 7.5MW hydroelectric generating facility added to Tiber Dam in 2005 mitigates these temperature modifications to some extent.

FISHING ACCESS

Access to the 138 miles of river is generally limited to seven bridge crossings, including: the Loma Bridge FAS; BLM's Sullivan Bridge, Pugsley Bridge, and Moffat Bridge Recreation Areas; 2 miles of public river frontage, one immediately upstream from Tiber Reservoir and the other downstream from the dam; and FWP's Marias River Wildlife Management Area (WMA), a 5,845 acre parcel that includes 16.9 river miles between its upper and lower boundaries. The WMA is located between Sullivan Bridge Road and I-15 in the reach above Tiber Reservoir. Although the river is usually navigable, the distances between bridges in the upper river and most portions of the lower river generally require more than a day's travel and are becoming a more popular recreational float. Many reaches of the Marias River receive only light fishing pressure primarily due to its remote and relatively inaccessible location. Most of the private

landowners allow access with permission; however, the terrain bordering the river is fairly rugged making physical access difficult.

SPECIAL MANAGEMENT ISSUES

FWP continues to cooperate with the Blackfeet Fish and Wildlife Department on fisheries issues, particularly projects involving native westslope cutthroat trout on streams that traverse both reservation and adjacent public lands.

FWP will also continue to provide technical advice and work with the BOR to manage flows downstream from Tiber Dam to maintain a more natural hydrograph designed to benefit the native fish assemblage and migratory fishes in the Marias below the dam and in the Middle Missouri River downstream of the Marias River.

Suspect samples of dresenid mussels were detected during AIS monitoring in Tiber Reservoir (Lake Elwell) in fall 2016 and again during monitoring in 2017. To date, no adult invasive mussels have been detected in Tiber. The AIS program will continue monitoring and maintain boat check stations at Tiber to minimize the risk of spread of potential invasive species from Tiber to other water bodies.

FISHERIES MANAGEMENT DIRECTION FOR THE MARIAS RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
So. Fork Two Medicine River – Headwaters to Blackfeet Reservation Boundary	15.5 miles	Rainbow trout	Wild	General	Manage as recreational fishery with consumptive harvest. Promote harvest.
		Westslope cutthroat trout hybrids	Wild	Conservation	Maintain population to reduce extinction risk. Manage to prevent additional hybridization.
		Mountain whitefish (N)	Wild	General	Maintain population within historic levels.
Habitat needs and activities: Maintain habitat and instream flows of 16 cfs. Evaluate sites for a major barrier.					
Birch Creek – Swift Reservoir to Highway 358	43 miles	Brook trout, Rainbow trout, Burbot, Walleye	Wild	General	Maintain a recreational fishery with consumptive harvest.
Habitat needs and activities: Maintain habitat and instream flows of 64 cfs.					
South Fork Dupuyer Creek	8.8 miles	Brook trout	Wild	General	Manage as recreational fishery with consumptive harvest.
		Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance populations to reduce extinction risk.
Habitat needs and activities: Maintain habitat and instream flows of 6 cfs.					
North Fork Dupuyer Creek	10.5 miles	Brook trout	Wild	General	Manage as recreational fishery with consumptive harvest.
		Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance population to reduce extinction risk. Monitor to ensure hybrids do not ascend barrier at high magnitude flows.
Habitat needs and activities: Maintain habitat and instream flows of 12 cfs. Evaluate possible modification of barrier to maintain isolation at all flows.					
Dupuyer Creek	37.4 miles	Brook trout, Rainbow trout	Wild	General	Manage as recreational fishery with consumptive harvest.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Mountain whitefish (N)	Wild	General	Maintain population within historic levels.
Habitat needs and activities: Maintain habitat and instream flows of 12 cfs.					
South Badger Creek	10.9 miles	Brook trout, Rainbow trout	Wild	General	Manage as recreational fishery with consumptive harvest. Prevent competition or hybridization with WCT.
		Westslope cutthroat trout (N)	Wild	Conservation	Maintain population to reduce extinction risk. Monitor to ensure nonnatives do not ascend barrier at high magnitude flows.
Habitat needs and activities: Maintain habitat and instream flows of 40 cfs.					
North Badger Creek	20 miles	Westslope cutthroat trout (N)	Wild	Conservation	Maintain population to reduce extinction risk. Monitor to ensure nonnatives are not illegally introduced.
Habitat needs and activities: Maintain habitat and instream flows of 14 cfs.					
Badger Creek-from Confluence of North and South Badger Creeks to Blackfeet Reservation Boundary	6.5 miles	Brook trout, Rainbow trout, Westslope cutthroat trout hybrids	Wild	General	Manage as recreational fishery with consumptive harvest.
Habitat needs and activities: Maintain habitat and instream flows of 60 cfs.					
Cut Bank Creek – From the Blackfeet	19 miles	Rainbow trout, Brown trout	Wild	General	Manage as recreational fishery with consumptive harvest.
Reservation Boundary to the Mouth		Mountain whitefish (N), Burbot (N), Walleye	Wild	General	Maintain population within historic levels.
Habitat needs and activities: Maintain habitat and instream flows of 75 cfs.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Brook trout Streams in Two Medicine River Basin	240 miles	Brook trout	Wild	General	Manage for a consumptive harvest.
Swift Reservoir	450 acres	Rainbow trout	Wild	General	Marginal fishery with low fishing pressure and split jurisdiction with the Blackfeet Reservation. Maintain wild population for a recreational fishery with some consumptive harvest.
Marias River – Confluence of Two Medicine River & Cutbank Creek to the Headwaters of Tiber Reservoir	60 miles	Rainbow trout, Northern pike	Wild	General	Maintain a recreational fishery for consumptive harvest.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels.
		Burbot (N)	Wild	General	Maintain populations within historic levels.
		Walleye	Wild	General	Maintain a recreational fishery for consumptive harvest and maintain access for adfluvial spawning populations within historic levels.
		Yellow perch	Wild	General	Maintain populations within historic levels with some consumptive harvest.
Habitat needs and activities: Maintain habitat and instream flows of 200 cfs.					
Tiber Reservoir (Lake Elwell)	14,842 acres	Walleye	Wild	General	Manage for a consumptive harvest with an opportunity for a trophy fish. Manage based on the biology of the fishery. Emphasize natural recruitment.
		Yellow Perch	Wild	General	Maintain population within historic levels and provide a major component of the forage base and contribute to recreational fishery.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Cisco	Wild	General	Maintain population within historic levels and provide a major component of the forage base for large predatory species in Tiber.
		Lake trout	Wild	General	Manage for a consumptive harvest.
		Northern pike	Wild	General	Manage for a consumptive harvest with the potential for a trophy fish.
		Burbot (N)	Wild	General	Manage for a consumptive harvest.
		Rainbow trout	Wild	General	Manage as an occasional species available for a consumptive harvest.
		Shovelnose sturgeon (N)	Wild	General	Maintain existing small population present. Consider potential for reestablishing a larger population.
Marias River – Tiber Dam to Highway 223 (Circle Bridge)	21 miles	Brown trout, Rainbow trout	Wild/ Hatchery	General	Maintain a recreational fishery with some consumptive harvest.
		Mountain whitefish (N)	Wild	General	Maintain population within historic levels.
		Burbot (N), Walleye, Northern pike	Wild	General	Maintain population within historic levels.
Habitat needs and activities: Maintain habitat and instream flows of 500 cfs.					
Lake Frances	3,618 acres	Walleye	Hatchery/ Wild	General	Manage for a consumptive harvest based on biology of the fishery. Continue to evaluate the contribution of biennial walleye plants and adjust if necessary to maintain a balance with the forage base.

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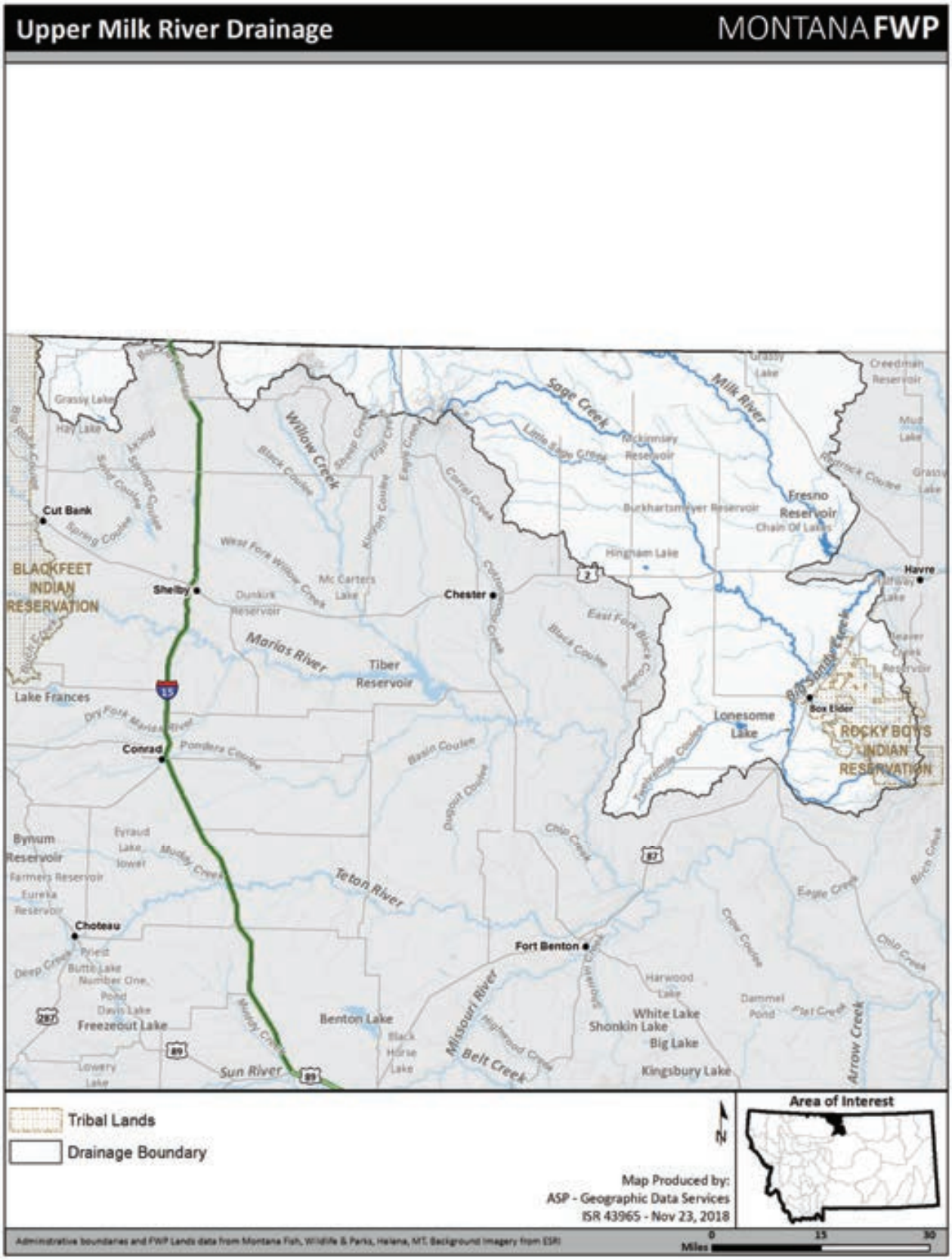
Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Northern pike, Burbot (N)	Wild	General	Manage for a consumptive harvest.
		Yellow perch	Wild	General	Maintain population within historic levels to provide a major component of the forage base and contribute to recreational fishery. Prohibit as a species in any fishing contest to optimize forage reproductive potential.
		Rainbow trout	Wild	General	Manage as an occasional species available for a consumptive harvest.
Habitat needs and activities: Manage forage base using the forage species currently present.					
Marias River – Highway 223 (Circle Bridge) to Mouth	57 miles	Sauger (N)	Wild	Restrictive Regulations	Maintain and enhance the population while maintaining a recreational fishery with some consumptive harvest.
		Mountain whitefish (N)	Wild	General	Maintain population within historic levels.
		Shovelnose sturgeon (N)	Wild	General	Maintain spawning run population within historic levels.
		Walleye, Channel catfish (N) Burbot (N), Brown trout	Wild	General	Maintain population within historic levels.
		Smallmouth bass	Wild	General	Maintain existing population levels if no observed impacts to native species.
Habitat needs and activities: Maintain habitat and instream flows of 560 cfs.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Westslope Cutthroat Trout Genetically Unaltered Conservation Population Streams (Isolated Single Species Populations) (12 Streams)	41 miles	Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance populations to reduce extinction risk.
Habitat needs and activities: Maintain or improve habitat and explore suitable sites for barriers or reducing fragmentation of westslope cutthroat trout occupied habitat.					
Westslope Cutthroat Trout Genetically Altered Conservation Population Streams (11 Streams)	32.9 miles	Westslope cutthroat trout & hybrids (Mixed populations)	Wild	Conservation	Maintain or enhance populations. Allow harvest in robust populations.
Habitat needs and activities: Manage forage base using the forage species currently present.					


Upper Milk River Drainage
MONTANA FWP
Cut Bank
BLACKFEET INDIAN RESERVATION
Shelby
Chester
Havre
Conrad
Choteau
Fort Benton
Box Elder
ROCKY BOY'S INDIAN RESERVATION
Lake Frances
Tiber Reservoir
Marias River
Teton River
Sun River
Missouri River
Belt Creek
Willow Creek
Sage Creek
Milk River
Fresno Reservoir
Chain Of Lakes
Lonesome Lake
Benton Lake
Freezeout Lake
White Lake
Shonkin Lake
Big Lake
Kingsbury Lake
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background imagery from ESRI
0
15
30
Miles

UPPER MILK RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Upper Milk River flows approximately 105 miles through Alberta before re-entering Montana in Hill County, approximately 34 miles upstream of the Fresno Reservoir headwaters. This section of the Milk River consists of badlands, native grasses, sagebrush, and shrub/forest landscapes located primarily on federal lands. The Upper Milk area encompasses approximately 2,100 square miles. Sage Creek is one of two major tributaries to the Milk River, flowing from the headwaters near the Sweetgrass Hills and coursing through Liberty and Hill counties approximately 60 miles southeast to the junction with Big Sandy Creek. Stream-side vegetation consists mainly of native grasses, rose, and sagebrush. Surrounding lands are privately owned pasture and cultivated croplands. Big Sandy Creek begins in the Bear Paw Mountains and flows approximately 52 miles northeast through Choteau and Hill counties to its confluence with the Milk River downstream of Fresno Reservoir. Surrounding lands consist of timbered mountains, prairie pastures, and cultivated croplands located on private lands and the Rocky Boy Indian Reservation.

There are numerous reservoirs constructed on ephemeral streams located throughout this area. Most of these reservoirs are too shallow for fisheries and are primarily used for stock water and irrigation. The largest reservoirs are Fresno and Bailey, both of which receive high fishing pressure and other recreational use. Fresno is managed as an irrigation storage facility by the Bureau of Reclamation and experiences considerable annual water level drawdowns.

FISHERIES MANAGEMENT

Fresno Reservoir is managed primarily for walleye. Management efforts are focused on working with the Bureau of Reclamation on water-level management as this is viewed as the principal limiting factor affecting the fishery during key spawning and rearing periods. Fresno Reservoir and the Milk River upstream of Fresno Dam support a number of fish species including, walleye, yellow perch, lake whitefish, northern pike, black crappie, burbot, sauger, rainbow trout, stonecat, white sucker, longnose sucker, emerald shiner, spottail shiner, Rocky Mountain sculpin, fathead minnow, brook stickleback, lake chub, northern redbelly dace, longnose dace, and western silvery/plains minnow. Many of these species are also found in Sage and Big Sandy creeks. Species such as black bullhead, bluegill, smallmouth bass, largemouth bass, Iowa darter, and brassy minnow are found in the smaller impoundments and tributaries. Brook trout are found in the headwaters of Big Sandy Creek.

Fresno Reservoir had been stocked with approximately 100,000 walleye fingerlings annually from 2003-2011. Walleye fingerlings stocked from 2007-2011 were oxytetracycline (OTC) marked to determine survival of hatchery walleye in Fresno. Based on this analysis, survival of stocked walleye in Fresno is high, averaging 56% from 2007-2012. High stocking densities combined with survival of naturally reproduced walleye resulted in walleye densities that were suppressing a limited forage base. In an effort to improve walleye growth and sustain a balanced predator/prey fishery, FWP began evaluating walleye stocking in Fresno in 2010-11.

In 2012, FWP made the decision to discontinue walleye stocking in Fresno Reservoir with the goal of improving walleye growth rates and size structure, while maintaining sustainable densities of forage species. Natural reproduction and survival of walleye has remained high and relative abundance of walleye reflects the average historical abundance (16 walleye/net).

From 2011-2018 FWP has transferred 3,000-9,000 pre-spawn yellow perch annually to Fresno Reservoir in an effort to increase production and bolster the forage base. In 2016 an enhancement project was initiated to increase yellow perch spawning and rearing habitat using discarded Christmas trees. In a cooperative effort with Fresno Walleyes Unlimited and FWP Future Fisheries Improvement Program, trees are bundled and submerged at optimal depths each spring, creating reefs to help boost production of yellow perch and other forage fish. The forage base (yellow perch, black crappie, and spottail shiner) will be monitored with regard to spawning success, water conditions, and predator densities. As with all multi-tiered fisheries, forage production and forage diversity is critical to maintain favorable predator growth rates, age structure, and condition.

Walleye condition (a measure of "plumpness") in Fresno has ranged from 85-92.5 (100 and above is considered good) with walleye less than 15 inches generally higher than larger walleye (greater than 20 inches). In poor forage years, walleye condition can be less than 80 contrasted by high forage production years where walleye condition can exceed 100. Historically, Fresno's walleye population has been comprised mostly of stock (10-15-inch) and quality (15.1-20-inch) sized fish. Fresno walleye exhibit good growth in the first five to six years, achieving lengths up to 20 inches. These growth rates suggest forage availability at the early life stages for walleye in Fresno is good. However, memorable (greater than 25-inch) walleye occur at very low densities leading biologists to suspect that the forage base in Fresno, which is dominated by smaller forage fish (less than 3-inches), is limiting recruitment of older aged fish to the population.

Although water level management on Fresno Reservoir has been identified as one of the key limiting factors to the fishery, efforts to have the recreational values recognized by the Bureau of Reclamation as an authorized purpose have yielded limited success. FWP will continue to work with BOR to ensure that the fishery values are communicated and continue to emphasize the recommended operational guidelines developed by FWP in 2011 (see attachment).

FWP will emphasize projects targeted at improving forage populations. Projects such as tree reefs and transferring yellow perch from disease free donors will continue as warranted. Identifying, securing and disease testing potential yellow perch donor sources for supplemental stocking events at Fresno and other surrounding reservoirs will continue. Natural reproduction will continue to be the primary means of maintaining walleye densities in Fresno. However, utilizing state fish hatcheries to supplement Fresno Reservoirs walleye population will be evaluated on an annual basis. These evaluations will consider current walleye density, forage availability and projected water levels.

Smaller reservoirs located throughout the area are managed for warm and cool water species. Trapping and transport of warm-water species such as yellow perch, bluegill, black crappie, and fathead minnows will continue to establish new fisheries, promote kids fishing, and establish forage fish populations or to supplement existing game fish populations. Hatchery-reared

rainbow trout, brook trout, and largemouth bass will continue to be stocked into those ponds with sufficient water depth and good overwinter survival. Ponds and reservoirs will be re-stocked immediately following severe drought events or winterkills if favorable habitat conditions exist. Windmill aeration systems will be maintained on those ponds with marginal depths and low winter dissolved oxygen levels.

The Milk River above Fresno Reservoir has little information identifying species composition, densities, specific interactions, and habitat use of native and non-native fishes. A collaborative effort between FWP and Alberta Sustainable Resource Development evaluated sauger genetics in the Upper Milk River. The study determined this population is genetically pure and not hybridizing with walleye located downstream in Fresno Reservoir. Development and implementation of a standardized sampling program in the Upper Milk River targeting multiple habitats is currently being developed for long-term monitoring of the fish community.

Throughout the Upper Milk River Drainage, angling opportunities occur year-round, with anglers targeting the rivers and streams during the spring, shifting to the ponds and reservoirs from late spring through the winter months. Shore, boat, and ice fishing opportunities exist throughout the area, with anglers using a variety of methods to catch multiple species. Anglers need to be aware of the no live bait fish restriction on Fresno Reservoir and the Milk River above Fresno Reservoir.

HABITAT

Flows on the Upper Milk River are highly variable and can range from intermittent pools (no flow) to flows exceeding 5,000 cfs depending on the time of year and precipitation. Flows are augmented annually through the transbasin diversion from the St. Mary River and canal system with up to 650 cfs during the irrigation season (April-September). Fresno Reservoir is a mainstem irrigation storage facility located on the Milk River with annual water fluctuations of more than 21 feet. Extreme reservoir drawdowns have negative impacts to the fishery and can result in poor spawning conditions, poor rearing habitat, poor overwinter water conditions, and increased fish entrainment downstream. Although uncommon, there have been years in which recreationists were unable to launch boats due to low reservoir water conditions.

Fish passage issues exist in the Upper Milk drainage, but little work has been done to identify these and determine passage enhancement opportunities. Plans are being developed to identify areas of impaired passage and implement safe water crossings which emphasize fish passage and habitat connectivity. Recommending best management practices for improving bank stabilization and riparian habitats, while opposing land use activities that further degrade habitat and water quality will be emphasized.

Riparian habitats associated with smaller reservoirs vary depending on rotational grazing plans and fencing. Water quality varies as well based on surrounding land use practices, water depth, and seasonal climate variables. Efforts are underway to work with land management agencies and private landowners to improve riparian health through a variety of treatments.

FISHING ACCESS

The Upper Milk River is surrounded by federal lands, but access to those lands is limited. One access site is off a county road approximately 10 miles upstream of the Fresno Reservoir

headwaters. Access to Fresno Reservoir is good (primarily BOR ownership), with campgrounds provided and managed by the Fresno Chapter of Walleyes Unlimited, and primitive camping available throughout the lower half of the reservoir. There are two concrete boat ramps located near the Dam and in Kremlin Bay.

Bailey Reservoir, a popular youth fishery and important regional fishery is the only State Fishing Access Site located in this area. Amenities at Bailey Reservoir include a fishing pier, pavilion, and boat ramp.

The FWP Region 6 pond guide will continue to be updated and distributed to anglers to increase awareness on local pond opportunities. Access and opportunity will continue to be a major emphasis throughout the area.

SPECIAL MANAGEMENT ISSUES

Fishing Tournaments

Currently, one open water walleye tournament and one ice fishing tournament are held on Fresno Reservoir annually. Tournament dates must be finalized with the BOR prior to completion of the permit application issued by MFWP. Tournaments will be reviewed on an individual basis. Evaluation of proposed tournaments will include potential biological and social impacts. Each tournament undergoes a 30-day public review and comment period. Tournament directors will be required to report post-tournament catch-rate information in a standardized format.

Milk River and Fresno Reservoir Water Management

The St. Mary canal and existing infrastructure is approaching 100 years of age and is in need of major repairs. The St. Mary's Working Group is working on a plan to update and repair the existing infrastructure to ensure supplemental water continues to provide irrigation water to agricultural producers throughout the Milk River watershed. The BOR recently completed a transbasin water analysis study that identified potential climate change related impacts to the watershed. Anticipated impacts include highly variable water supplies that have the potential to limit all water uses over the next 40-year time period.

Dace Conservation

The Upper Milk River drainage is located in historic pearl, northern redbelly and northern redbelly x finescale dace range. A recent study (Stringer 2018) found the distribution and density of all three species in Montana has declined, especially pearl dace. Declines in dace distribution were attributed to predation by northern pike, which have expanded their distribution in many prairie streams. Conservation and management strategies include: 1) Identify threats to known pearl dace populations (northern pike populations) 2) Expand sampling effort to identify additional dace populations within their historic range 3) Identify strategies to conserve current pearl dace populations (barrier construction, northern pike suppression and future northern pike stocking strategies near known pearl dace populations) 4) Long-term monitoring program to assess population trends

*Fresno Reservoir Water Management Recommendations**

In an effort to minimize the operational impacts on the fisheries resources of Fresno Reservoir and provide for a more stable and balanced fishery, the following operational statements are intended to minimize impacts if operational flexibility exists. Additionally, these guidelines remain cognizant of Fresno Reservoir Allocations; specifically, the Active Conservation Pool (2567.0 feet) that recognizes Fish, Wildlife and Recreation as components of this water allocation.

Yellow perch, black crappie are critical forage and highly prized sport fish. Spottail shiners are an important forage fish that is vital to walleye growth and survival. Populations of these species are tightly correlated with reservoir operations.

- The most favorable spawning conditions for yellow perch occur when pool elevations are greater than 2565.0 during April and May. Maximum production occurs when reservoir levels are stable or increasing during these months.
- Black crappie and spottail shiners spawning conditions are maximized when pool elevations are greater than 2570.0 during May and June.
- Average winter (Oct.-Mar) pool elevation from 1941-2011 was 2559.5 or 16 ft below full pool. At this drawdown level limited shoreline structure is submerged.
- Overwinter pool elevations of 2561.5-2562.5 feet (which represents only a 2-3 foot increase) would add 156-249 surface acres or 4,555-6,955 acre-feet and submerge critical rock/cobble substrate for young of year fishes to seek refuge from predators.
- Pool elevations below 2555.0 have been shown to be extremely detrimental to the entire fish community of Fresno Reservoir.

FWP recognizes the complexities and importance of Milk River water to the many users of the system. Additionally, FWP strongly supports agricultural production of the Hi-Line and the critical link to reliable, cost-effective Milk River water. FWP stands in support of the restoration of the Milk/St Mary system and is willing to partner with the St. Mary Rehabilitation Working Group, USBR and others to work towards this common goal. FWP appreciates the difficulty that USBR faces in operation of Fresno and Nelson Reservoirs and is grateful for concessions that have been made to balance water needs through the basin. We hope that managing for healthy fisheries resources throughout the Milk River Watershed can be a common goal for USBR and FWP into the future.

*Submitted to BOR in March 2011

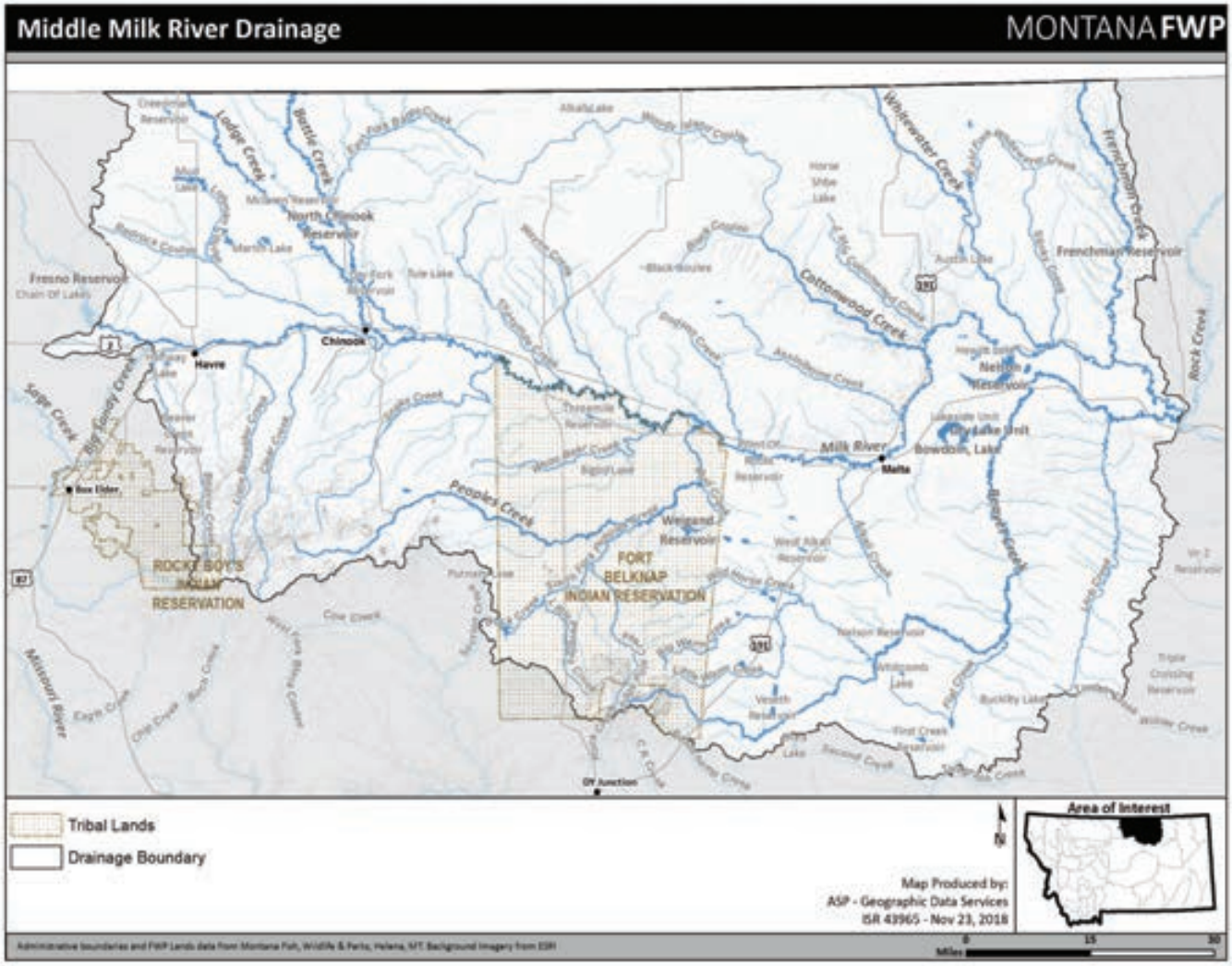
FISHERIES MANAGEMENT DIRECTION FOR UPPER MILK RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Milk River - Canadian border to Fresno Reservoir headwaters	34 miles	Walleye, Northern pike	Wild	General	Develop and implement a standardized sampling program.
		Sauger (N), Burbot (N)	Wild	General/ Conservation	Continue to work with Alberta Sustainable Resource Development to collect sauger genetics in the upper Milk River.
		Native non-game fishes (N)	Wild	Conservation	Develop and implement a standardized sampling program.
Habitat needs and activities: Improve habitat to support ecosystem function and production of all species.					
Fresno Reservoir	5,700 acres	Walleye	Wild	General	Manage for wild, naturally produced walleye at relative abundances that maximize growth and diverse population age structure. Relative abundances will be managed at sustainable levels relative to prey community. Hatchery walleye stocking will be evaluated based on forage abundance, reservoir water levels, growth, relative weight and reservoir-wide relative abundance. Implement periodic creel surveys as funding allows.
		Northern pike, Black crappie, Lake whitefish	Wild	General	Continue to evaluate and manage fish communities to ensure sustainable populations in light of widely fluctuating reservoir water levels. Periodically evaluate fishing regulations to ensure recreational harvest is sustainable.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Yellow perch	Wild	General	Implement reservoir habitat enhancement projects as funding and time allows. Transfer yellow perch from disease free sources as needed.
		Sauger (N), Burbot (N)	Wild	General/Conservation	
Habitat needs and activities: Work with Bureau of Reclamation and water users to optimize water management in Fresno Reservoir to benefit the resident fisheries. Optimal water management should target steady to rising reservoir water levels during critical spawning periods (mid April-mid June). It should also target favorable overwinter pool elevations that submerge rock substrates and increase young of year rearing habitat. Implement habitat enhancement projects such as tree reefs to increase spawning and rearing habitat.					
Big Sandy Creek	52 miles	Walleye, Northern pike, Yellow perch, Black bullhead	Wild	General	Begin to understand fish assemblage and population size of game fishes.
		Native non-game fishes (N)	Wild	Conservation	Protect habitat and provide passage where applicable.
Habitat needs and activities: Identify habitat issues and work closely with local conservation districts, county road crews, and landowners to implement safe water crossings which emphasis fish passage and water connectivity.					
Sage Creek	60 miles	Northern pike, Yellow perch	Wild	General	Begin to understand fish assemblage and population size of game fishes.
		Native non-game fishes	Wild	Conservation	Protect habitat and provide passage where applicable.
Habitat needs and activities: Identify habitat issues and work closely with local conservation districts, county road crews, and landowners to implement safe water crossings which emphasis fish passage and water connectivity.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Bailey Reservoir	70 acres	Northern pike, Yellow perch, Black crappie	Wild	General	Seek opportunities to increase reservoir habitat with use of natural or artificial structures.
		Walleye	Hatchery	Put, Grow and Take	Stock 10,000 walleye fingerlings on alternate years.
Habitat needs and activities: Seek opportunities to increase reservoir habitat with use of artificial structures.					


Middle Milk River Drainage
MONTANA FWP
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Miles
0
15
30
Chinook
Havre
Malta
Box Elder
Dr Junction
Milk River
Peoples Creek
Cottonwood Creek
Whitewater Creek
Frenchman Creek
Rock Creek
Sage Creek
Big Sandy Creek
Missouri River
Lodge Creek
Battle Creek
North Chinook Reservoir
Fresno Reservoir
Nelson Reservoir
Bowdoin, Lake
Weigand Reservoir
ROCKY BOY'S INDIAN RESERVATION
FORT BELKNAP INDIAN RESERVATION
Frenchman Reservoir

MIDDLE MILK RIVER DRAINAGE

PHYSICAL DESCRIPTION

This drainage is located in north central Montana in Hill, Blaine, and Phillips counties and encompasses approximately 8,700 square miles. The landscape is diverse with cottonwood galleries and irrigated crop and hay lands along the Milk River and major tributaries, dry-land agriculture and rangeland throughout the area, and two island mountain ranges (Bear Paws and Little Rockies). Landownership in this area consists of federal, state, and private lands, including the Fort Belknap Reservation and a portion of the Rocky Boy Reservation. In this drainage, the Milk River flows for 302 miles from Fresno Reservoir downstream to Hinsdale. There are several major tributaries to the Milk River located in this reach. Lodge, Battle, and Frenchman Creeks all originate in Alberta and Saskatchewan, Canada; whereas Beaver (Hill), Clear, Peoples, and Little Boxelder Creeks originate in the Bear Paw Mountains and Beaver Creek (Phillips) originates in the Little Rocky Mountains.

There are numerous reservoirs located throughout this area. Most of these reservoirs are generally too shallow to support perennial fisheries and are primarily used for stock and irrigation. The largest reservoirs by surface acreage are Nelson, Dry Fork, Beaver Creek, Anita, and Ester Reservoirs which receive high numbers of visitors for fishing and other recreational activities. Nelson Reservoir is managed as an irrigation storage facility by the BOR and can experience considerable drawdowns during prolonged drought cycles.

FISHERIES MANAGEMENT

This area is home to a number of fish species including, walleye, yellow perch, northern pike, black crappie, burbot, sauger, lake whitefish, goldeye, shorthead redhorse, smallmouth buffalo, bigmouth buffalo, black bullhead, bluegill, pumpkinseed, green sunfish, smallmouth bass, channel catfish, largemouth bass, Iowa darter, brassy minnow, stonecat, white sucker, longnose sucker, common carp, emerald shiner, spottail shiner, fathead minnow, brook stickleback, lake chub, northern redbelly dace, longnose dace, western silvery minnow, and western silvery/plains minnow. Species such as rainbow trout, brown trout, brook trout, and mountain sucker are found in the headwaters of Clear Creek and Beaver Creek. Brook trout are also found in some of the headwater streams located in the Little Rockies.

Nelson Reservoir is managed as a multi-species fishery with an emphasis on walleye management that promotes healthy walleye growth and favorable recreational catch rates. Since 2004, Nelson Reservoir has been annually stocked with 100,000 walleye fingerlings to augment the existing, wild population. Walleye fingerlings stocked from 2007-2017 were OTC marked to evaluate survival of stocked walleye and quantify contributions of wild walleye. Based on this analysis, survival of stocked walleye in Nelson Reservoir was determined to be variable, ranging from 11% to 43%. On average, 25% of the walleye collected during fall netting surveys from 2007-2017 were identified as hatchery reared fingerlings. This evaluation identified that a variable number of stocked walleye are surviving and recruiting into the population and identifies the contribution of natural reproduction of walleye to the Nelson Reservoir fishery.

Average annual walleye relative abundance observed during fall surveys shows little change in walleye abundance pre and post stocking of hatchery walleye. From 1991-2004, average walleye abundance in Nelson was 12.5 walleye/net. Since 2005, when annual walleye stocking of 100,000 walleye fingerlings was initiated, walleye abundance has increased only slightly to 13.4 walleye/net. Since the early 1990's, walleye abundance in Nelson has remained stable, even during extreme water drawdown events that occurred from 2000-2002 and again from 2015-2017. Walleye stocking in Nelson will continue as walleye growth, relative weight and age structure of the population remain strong. Forage populations in Nelson are more diverse than those in Fresno Reservoir and appear more resilient to extreme water level fluctuations.

FWP will continue to work with BOR on water level management that emphasizes the importance of inundation of key spawning and rearing habitats and the importance of natural reproduction of the multi-species fishery.

Very little information has been obtained identifying the species composition, densities, interactions, and habitat use of native and non-native fishes within the Middle Milk River. Therefore, development and implementation of a standardized sampling program targeting multiple habitats with maximum efficiency will aid in addressing some of these questions.

Smaller reservoirs located throughout the area are managed for diversity, recreational opportunity. Many of these waters are monitored every one to five years, based on angler use. Trap and transfer of warm-water species such as yellow perch, bluegill, black crappie, and fathead minnows is used to establish new fisheries, promote kids fishing, establish a forage base, or to supplement existing populations. Hatchery reared rainbow trout and largemouth bass are stocked into those ponds that have traditionally received them and exhibit good overwinter water conditions. Ponds and reservoirs will be re-stocked following severe drought events or winterkills. Windmill aeration systems are maintained on those ponds with marginal depths and low winter dissolved oxygen levels.

Angling opportunities occur year-round with anglers typically targeting the rivers and streams during the spring and shifting to ponds and reservoirs from late spring through winter. Shore, boat, and ice fishing opportunities exist throughout the area with anglers using a variety of methods to catch multiple species.

HABITAT

The Middle Milk is one of the most impacted sections of river in Montana. There are eight in-stream dams/diversions used to divert water for irrigation and municipal use that are barriers to fish passage. Fish passage issues also exist in the larger tributaries, with a dam located on Frenchman Creek (Frenchman Dam). Current budgets and staffing limit FWP's ability to identify and evaluate areas that restrict fish passage. Involvement with the 310 and SPA 124 permitting programs is often the only opportunity for biologists to interact with landowners and recommend best management practices on stream altering projects and voice opposition to projects that degrade aquatic habitats. Furthermore, budgets and staffing limitations preclude actively identifying stream bank stabilization and riparian enhancement projects.

Nelson Reservoir is an off-stream storage facility that draws water from the Milk River and has water levels that are relatively stable, except during extreme drought, compared to other

reservoirs within the area. Ensuring stable or rising reservoir levels during critical spawning and rearing periods allows this fishery to maintain balanced predator-prey densities and good growth rates.

Riparian habitats associated with smaller reservoirs vary depending on current rotational grazing plans and fencing. Water quality also varies based on surrounding land practices, depth, and seasonal climate. Working with federal agencies (e.g., BLM) to implement riparian fencing and off-site watering projects for livestock improves riparian habitats and increases the aesthetic values surrounding these small reservoirs.

FISHING ACCESS

The Middle Milk River is surrounded by private lands and access can be limited. There are three Fishing Access Sites (Fresno Tailwater FAS, Alkali Creek, and Bjornberg Bridge) and a number of bridges anglers can use to access the Milk River and streams. Access to the BOR managed Nelson Reservoir is good, with camping areas and two concrete boat ramps located near the dam and East shoreline. Fishing Access Sites are also located at Bear Paw Lake FAS, Cole Ponds FAS, and Faber Reservoir FAS, giving anglers a diverse fishing opportunity on some smaller bodies of water. The Region 6 pond guide will continue to be updated and distributed to anglers to increase awareness on local pond opportunities located on state, federal, and private lands. Access and opportunity will continue to be a major emphasis throughout the area.

SPECIAL MANAGEMENT ISSUES

Fishing Tournaments

Currently, one ice fishing tournament is held on Nelson Reservoir annually. Tournament dates must be finalized with the BOR prior to completion of the permit application issued by FWP. Tournaments will be reviewed on an individual basis. Evaluation of proposed tournaments will include potential biological and social impacts. Each tournament undergoes a 30-day public review and comment period. Tournament directors will be required to report post-tournament catch-rate information in a standardized format.

Milk River Water Management

The St. Mary canal and existing infrastructure is approaching 100 years of age and is in need of major repairs. The St. Mary's Working Group is working on a plan to update and repair the existing infrastructure to ensure supplemental water continues to replenish an overused Milk River watershed. The Bureau of Reclamation has finished a recent trans basin study and identified future climate change and highly variable water supplies being the biggest factors limiting all users in the next 40 years.

FISHERIES MANAGEMENT DIRECTION FOR MIDDLE MILK RIVER DRAINAGE

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
Milk River - Fresno Reservoir tailwaters to Hinsdale	302 miles	Walleye, Northern pike, Yellow perch, Black crappie, Lake whitefish, Sauger (N), Channel catfish (N), Burbot (N)	Wild	General	Develop and implement a standardized sampling program to monitor sport fish populations. Better understand entrainment losses of all fishes through diversion canals and intake structures.
		Native non-game fishes (N)	Wild	Conservation	Monitor populations to detect changes in species composition and abundance.
		Rainbow trout	Hatchery	Put, Grow and Take	Continue to stock 4,000 rainbow trout into the Fresno Tailwaters annually.
Habitat needs and activities: Work with local, state, and federal agencies along with landowners to implement best management practices that improve or maintain natural riverine habitats.					
Beaver Creek Section 03 and 04- Bear Paw Lake headwaters to East Fork Dam tailwaters	12 miles	Brook trout, Rainbow trout	Wild	General	Manage for self sustaining brook trout fishery. Develop and implement a standardized sampling program to understand fish assemblage and population size.
Habitat needs and activities: Work with Beaver Creek County Park to implement best management practices that improve or maintain natural riverine and riparian habitats.					

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
Beaver Creek Section 02- Beaver Creek Reservoir headwaters to Bear Paw Lake tailwaters.	8 miles	Brown trout	Hatchery	Put, Grow and Take	Stock 2,000 brown trout annually for put and take trout fishery.
		Rainbow trout, Brook trout, Walleye, Northern pike, Yellow perch, Smallmouth bass	Wild	General	Develop and implement a standardized sampling program to understand fish assemblage and population size.
Habitat needs and activities: Work with Beaver Creek County Parks to implement best management practices that improve or maintain natural riverine and riparian habitats.					
Bear Paw Lake	45 acres	Rainbow trout	Hatchery	Put, Grow and Take	Stock 20,000 rainbow trout annually for put and take trout fishery.
		Brook trout, Smallmouth bass	Wild/Hatchery	General/ Restrictive Regulations	Manage for self-sustaining brook trout and smallmouth bass population.
		White sucker	Wild	Suppression	Continue annual efforts to trap and remove adult white suckers to lower densities.
Beaver Creek Section 01- Confluence of Milk River to Beaver Creek Reservoir tailwaters.	22 miles	Brown trout	Hatchery	Put, Grow and Take	Stock 3,000 brown trout annually for put and take trout fishery.
		Rainbow trout, Brook trout, Walleye, Northern Pike, Yellow Perch, Smallmouth bass	Wild	General	Develop and implement a standardized sampling program to understand fish assemblage and population size.
Habitat needs and activities: Work with local, state, and federal agencies along with landowners to implement best management practices that improve or maintain natural riverine habitats.					

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
Beaver Creek Reservoir	160 acres	Rainbow trout, Walleye	Hatchery	Put, Grow and Take/ Restrictive Regulations	Stock 50,000 rainbow trout annually for put and take trout fishery. Evaluate current walleye stocking programs success. Implement a walleye stocking strategy that optimizes stocked walleye recruitment and relative abundance while maintain a good forage base.
		Northern pike, Yellow perch, Smallmouth bass, Brook trout	Wild	General	Continue to monitor these populations as well as evaluate the biological and social impacts regarding a black crappie introduction into the reservoir.
Habitat needs and activities: FWP has requested that reservoir water levels remain stable to slightly increasing during the spring spawning period (April-May).					
Clear Creek	40 miles	Walleye, Northern pike, Yellow perch, Sauger (N)	Wild	General	Better understand fish assemblage and population size of game fishes.
		Native non-game fishes (N)	Wild	Conservation	Protect habitat and provide passage where applicable.
		Brook trout	Wild	General	Manage for self-sustaining brook trout fishery.
Habitat needs and activities: Identify habitat issues and work closely with local conservation districts, county road crews, and landowners to implement safe water crossings which emphasis fish passage and water connectivity.					
Lodge Creek, Battle Creek	62 miles, 70 miles	Walleye, Northern pike, Black bullhead, Sauger (N), Yellow Perch	Wild	General	Better understand fish assemblage and population size of game fishes.

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Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
		Native non-game fishes (N)	Wild	Conservation	Protect habitat and provide passage where applicable.
Habitat needs and activities: Identify habitat issues and work closely with local conservation districts, county road crews, and landowners to install safe water crossings which emphasize fish passage and water connectivity.					
Peoples Creek	70 miles	Walleye, Northern pike, Black bullhead, Yellow perch	Wild	General	Better understand fish assemblage and population size of game fishes.
		Native non-game fishes (N)	Wild	Conservation	Protect habitat and provide passage where applicable.
		Brook trout	Wild	General	Manage for self-sustaining brook trout fishery.
Habitat needs and activities: Identify habitat issues and work closely with local conservation districts, county road crews, and landowners to implement safe water crossings which emphasis fish passage and water connectivity.					
Dry Fork Reservoir	350 acres	Walleye	Hatchery	Put, Grow and Take	Stock 10,000 walleye fingerlings biennially.
		Northern pike, Yellow perch, Black crappie	Wild	General	Maintain a quality fishing experience for all species. Continue to monitor the population.
Habitat needs and activities: Look to minimize irrigation impacts on pool elevations.					
Ross Reservoir	6 acres	Yellowstone cutthroat trout	Hatchery	Put, Grow and Take	Maintain current harvest opportunity
Faber Reservoir	38 acres	Rainbow trout	Hatchery	Put, Grow and Take	Manage for put and take rainbow trout fishery. Get feedback from anglers on possibly introducing black crappie.
Brookie Pond	4 acres	Rainbow trout	Hatchery	Put, Grow and Take	Maintain current harvest opportunity
Habitat needs and activities: Maintain windmill aerator.					
Frenchman Creek	78 miles	Walleye, Northern pike, Black bullhead, Yellow perch	Wild	General	Better understand fish assemblage and population size of game fishes.

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Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
		Native non-game fishes (N)	Wild	Conservation	Protect habitat and provide passage where applicable.
Habitat needs and activities: Identify habitat issues and work closely with local conservation districts, county road crews, and landowners to implement safe water crossings which emphasis fish passage and water connectivity.					
Beaver Creek (Phillips County)	78 miles	Walleye, Northern pike, Black bullhead, Yellow perch	Wild	General	Better understand fish assemblage and population size of game fishes.
		Native non-game fishes (N)	Wild	Conservation	Protect habitat and provide passage where applicable.
		Brook trout	Wild	General	Manage for self-sustaining brook trout fishery.
Habitat needs and activities: Identify habitat issues and work closely with local conservation districts, county road crews, and landowners to implement safe water crossings which emphasis fish passage and water connectivity.					
Nelson Reservoir	4,331 Acres	Walleye, Northern pike, Yellow perch, Black crappie, Lake whitefish, Smallmouth bass, Channel catfish (N)	Wild/Hatchery	General/ Put, Grow and Take	Evaluate current cost/benefits of walleye stocking program as it relates to walleye abundance, growth, and condition. Manage for sustainable walleye, northern pike, and yellow perch fishery year-round. Evaluate the rising smallmouth bass densities and its effects on the existing fish community.
Trout Ponds-Located throughout Hill, Blaine, and Phillips Counties	Various	Rainbow trout, Brook trout	Hatchery	Put, Grow and Take	Monitor water conditions and impacts from winterkill. Stock trout based on current 6-year stocking plan.
Habitat needs and activities: Work with Bureau of Land Management and landowners to increase riparian habitats and aesthetic landscapes surrounding the ponds. Maintain windmill aeration systems on ponds with marginal depths.					

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
Warm water Reservoirs and Ponds- Located throughout Hill, Blaine, and Phillips Counties	Various	Largemouth bass, Northern pike, Walleye, Smallmouth bass, Channel catfish (N), Black crappie, Yellow perch, Bluegill	Wild/Hatchery/ Transfer	General/ Put, Grow and Take	Manage as self-sustaining fisheries. Supplement populations with hatchery stocking and wild fish transfers as needed. Monitor water conditions and impacts from winterkill.
Habitat needs and activities: Work with Bureau of Land Management and landowners to increase riparian habitats and aesthetic landscapes surrounding the ponds. Maintain windmill aeration systems on ponds with marginal depths.					

Lower Milk River Drainage
MONTANA FWP
Coal Creek
Butte Creek
West Fork Poplar River
Frenchman Creek
Rock Creek
Willow Creek
Middle Fork Porcupine Creek
West Fork Porcupine Creek
Frenchman Reservoir
Whitewater Creek
Nelson Reservoir
Beaver Creek
Bugger Creek
East Fork Porcupine Creek
FORT PECK INDIAN RESERVATION
Porcupine Creek
Todd Lakes
Milk River
Antelope Creek
Glasgow
Mahan Andeloyt Reservoir
Vr-2 Reservoir
Little Beaver Creek
Beaver Creek
Fort Peck Powerhouse Tailrace
Fort Peck Drege Cuts
Fraser Lake
Triple Cropping Reservoir
Lone Tree Creek
Buckley Lake
Timber Creek
Willow Creek
Fort Peck Lake
Big Dry Creek
Missouri River
Shade Creek
Fort Peck Lake
Fort Peck Lake
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI
Miles
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10
20

LOWER MILK RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Lower Milk River drainage covers approximately 2,644 square miles, including the Milk River from Hinsdale downstream to its confluence with the Missouri River. The vast majority of the district is situated within Valley County, with the exception of the northwest most portion which lies within Phillips County. Significant tributaries include Rock Creek from the north and Willow creek from the south. Although the Milk River bottoms are mostly in private ownership, areas to the north and south include large tracks of BLM land as well as private lands. Along the Milk River irrigated croplands dominate the landscape with intact cottonwood galleries intermixed throughout. The areas to the north are a mix of dry land grain farming and native grass communities. Areas to the south also have dry land grain farming and native sagebrush habitats.

FISHERIES MANAGEMENT

The Milk River from Hinsdale to Vandalia Dam is greatly influenced by the complete fish barrier that Vandalia Dam has created. The richness of native fishes is greatly reduced when compared to sections downstream of Vandalia (Missouri River influence). One native species (channel catfish) and two introduced species (walleye and northern pike) dominate the fishery in this section. Other introduced game fishes including yellow perch, black crappie, bluegill and smallmouth bass are also found in this section. Although not considered a lake or a reservoir, Vandalia Dam backs water up approximately 9.35 miles to Hinsdale and boat fishing and water-based recreation is popular.

The fish populations of the Milk River downstream of Vandalia Dam are interconnected to the Missouri River, with high native and nonnative species richness. The abundance of both native and introduced fish can greatly vary on a seasonal or yearly basis depending on the river's discharge and the number of fish migrating upstream from the Missouri River. Game fish that occur in this section include channel catfish, sauger, walleye, shovelnose sturgeon, northern pike, burbot, lake whitefish, smallmouth bass, white bass and paddlefish. Non-game fish include (but are likely not limited to) pallid sturgeon, bigmouth and smallmouth buffalo, river carpsucker, blue sucker, white and longnose sucker, shorthead redhorse, freshwater drum, goldeye, stonecat, black bullhead, flathead chub, sicklefin chub, sturgeon chub, sand shiner, emerald shiner, spottail shiner, fathead minnow, brassy minnow, western silvery minnow, plains minnow and common carp.

The lower Milk River is a very important tributary to the Missouri River for fish recruitment. Studies have found that when the Milk River is flowing during the spring and early summer, countless fish of several species are produced and drift into the Missouri River. Paddlefish production in the lower Milk River occurs in years that the Milk has spring and early summer flows. In addition, blue suckers are known to enter the Milk River when flows are near 1,000 cfs and spawn, while in years where relatively little flow occurs blue suckers don't even enter the river. Furthermore, higher flows are required to scour silt from the bottom of the river into suspension and expose the many gravel bars--allowing fish like sauger and paddlefish to attach

their eggs. We continue to learn more about the importance of the Milk River and its significance to the Missouri River. Recent high-water events (2010, 2011, 2013 and 2018) and the migratory response by a variety of fishes including pallid sturgeon support enhanced funding to complete focused research, monitoring and habitat enhancement in this important fishery.

Fishing regulations in the lower Milk River are similar to that of the rest of the Eastern District, with the exception of paddlefish. Although paddlefish use the lower Milk in the spring and early summer, no fishing is allowed. This is because the size of the population and the amount of fishing pressure it can withstand is not fully understood. Furthermore, there is very limited public access on this portion of the river and spawning is sporadic and dependent on river discharge. Limited access not only makes fishing difficult but limits effective law enforcement.

Rock Creek is a relatively large tributary that enters the Milk River northwest of Hinsdale. Although the majority of angling likely occurs at its confluence with the Milk River, Rock Creek it has at least 14 species within the drainage, 12 of which are native species. Rock Creek continues to be popular with a number of commercial minnow collectors. Limited information is available on the possible impacts of this activity. Future studies should address the stainability of commercial minnow collection from this waterbody.

Several prairie ponds that provide public access are stocked with game fishes to provide fishing opportunities. The deeper ponds have been stocked with game fish that are meant to be self-sustaining, such as northern pike, yellow perch, white or black crappie, and largemouth bass. Shallower ponds that have a tendency to winter kill are often stocked with hatchery produced rainbow trout that are stocked either annually or biannually.

HABITAT

The upper section of the Milk River from Hinsdale to Vandalia Dam is shallower and has faster moving water, while the lower section consists of relatively deep slow-moving water, because of the influence of Vandalia Dam. The upper section has intact cottonwood galleries with intermixed agricultural fields to the river's banks.

The section downstream of Vandalia dam is very sinuous with a cottonwood gallery lining the majority of river with patches of agriculture adjacent to the river banks. Throughout most of the year the rivers bed is laden with silt substrate, but when the river flows increase in the spring, those sediments are put into suspension and gravel bars are exposed.

During the flooding of 2011 it was apparent how important an intact riparian zone is on the lower Milk River. Bank sloughing occurred at accelerated rates on lands butting up to agricultural field, with several areas witnessing severe erosion. Conversely, soils with intact riparian vegetation stayed relatively intact.

The largest single factor limiting the lower Milk River is the availability of water during the spring and early summer period. During years of drought, the lower Milk River is often stagnant, with flows approaching zero. From past research there is a good understanding of the relationship between spring and early summer flows and production of several species of native fishes, including game fishes like sauger and paddlefish. During wet years when the Milk River flows for extended periods, several species benefit by running up into the river from the Missouri River and spawning. The duration of flow is critical since once a fish has laid its eggs flows are

needed to keep those eggs oxygenated. If flows cease when eggs are incubating, silt will fall back out of the water column and can suffocate the eggs.

Good spring and early summer flows from the Milk River also positively influence native fish spawning within the Missouri River. During 2016 the Milk River had higher than normal flows due to the drawdown of Nelson Reservoir in Phillips County and above average rainfall within the Milk River Drainage. Flows from the Milk River significantly increased the Missouri River discharge during the spring through July. In addition, the Milk River inputs increased water temperature and the suspended sediment loads of the Missouri River. During that year, FWP observed higher than average paddlefish and shovelnose sturgeon production in the Missouri River. This observation is consistent with other years where the Milk River has higher than average discharge. While many of the 2016 paddlefish may have been produced in the Milk River, FWP has never captured a larval sturgeon in the Milk River, indicating that all shovelnose sturgeon come from the Missouri River. However, the production of shovelnose sturgeon in the Missouri River can be greatly influence by Milk River inputs.

Fishing Access

The majority of the lower Milk River flows through privately owned lands. However, some public lands do occur, particularly in the town of Hinsdale and at Vandalia Dam. From Vandalia Dam to its mouth, public access is mostly limited to county bridges. Addressing the lack of public access to the lower Milk River is a priority for FWP.

The prairie ponds within the district occur on a mix of private and public land. Private ponds stocked by FWP are accessible to the public by gaining permission from landowners. A region-wide pond booklet was published in 2011 and updated in 2013. This booklet provides recreationists with a guide to all ponds managed by FWP in Region 6. This booklet will be updated again in 2019 and as needed thereafter.

Special Management Issues

During 2010 and 2011, both wild adult and hatchery-reared pallid sturgeon migrated into the lower Milk River from the Missouri River. Additionally, in 2018 high spring discharge from the Milk River significantly increased the total flow of the Missouri River. During this period, several adult pallid sturgeon migrated out of the Missouri River below the Missouri and Yellowstone River confluence upstream to areas near the mouth of the Milk River. Attraction flows for pallid sturgeon are extremely important to getting fish to spawn as far from Lake Sakakawea as possible due to their extended free-embryo drift phase. Milk River flows in combination with Missouri River flows from the Fort Peck project can be used to trigger this long migration.

The Milk River greatly influences the temperature and suspended sediment load of the Missouri River during high flows, due to the fact that low volumes of cold, clear water are typically released from Fort Peck Dam. These physical changes in the Missouri River were observed during 2010 when the Milk River had flows of approximately 6,000 cfs for two extended periods during the spring into the early summer. These flows not only produced fish like paddlefish and sauger in the Milk River, but also contributed to the largest year class of shovelnose sturgeon produced in the Missouri River in recent history. Similarly, during the historic water year of

2011, at least five adult wild pallid sturgeon migrated up the Milk River. This was the second consecutive year that adult pallid sturgeon where in the Milk River. The 2011 migration included a prolong period where pallid sturgeon remained near the confluence with the Milk River throughout the spawning season.

During 2016, the Milk River discharge was significantly higher than average during the spring and early summer months due to the drawdown of Nelson Reservoir. These flows produced high numbers of shovelnose sturgeon, which were produced in the Missouri River. This is further evidence that the Milk River can greatly increase production of native fishes spawning in the Missouri River. Although at this point we have no evidence that pallid sturgeon have successfully spawned in the Milk River, its effects on the biotic and abiotic features of the Missouri River are significant and should not be overlooked. Therefore, water management in the Milk River could have implications in managing the restoration of pallid sturgeon in the Missouri River.

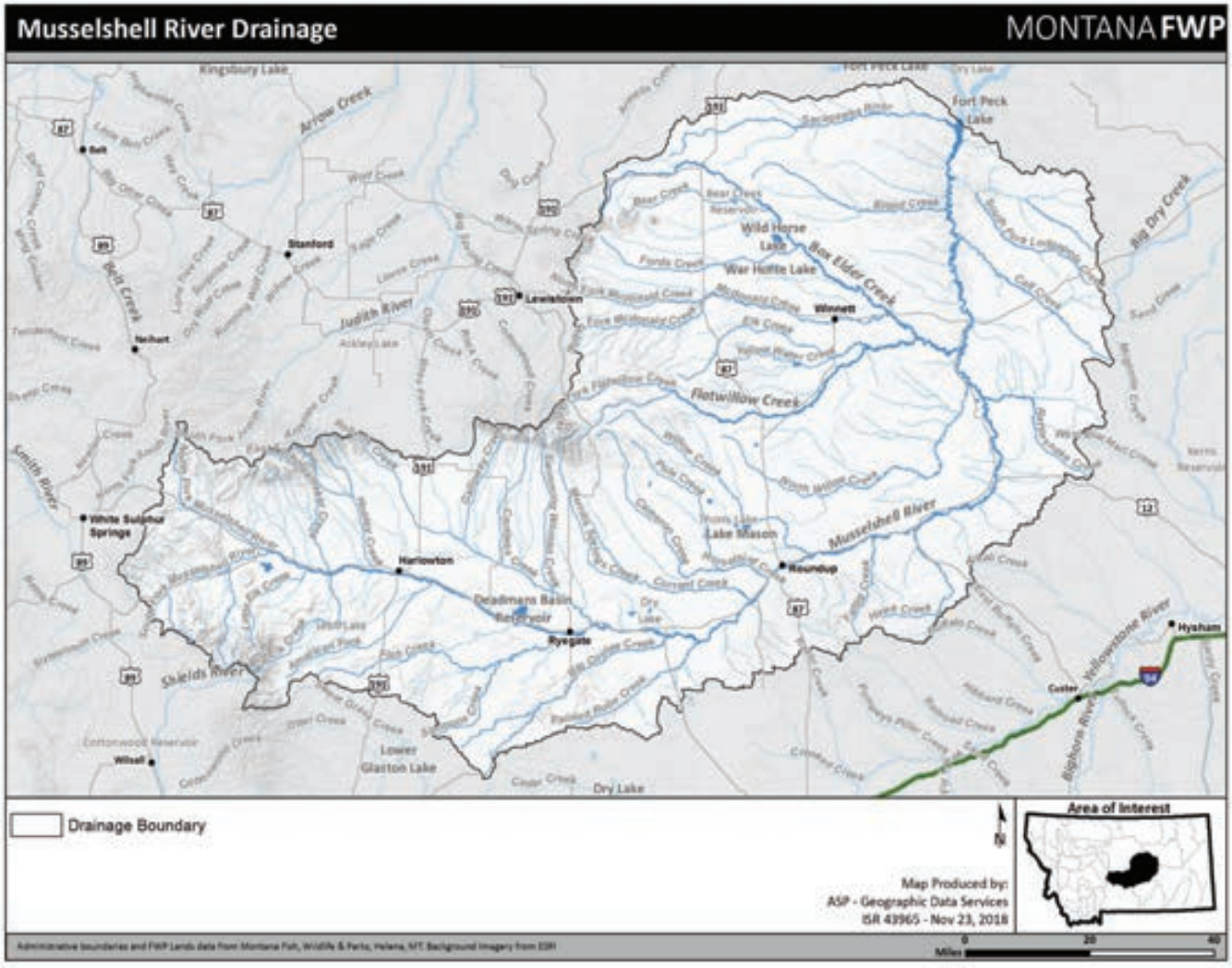
Native Species Conservation

Several native species that are listed as State Species of Special Concern are found within the lower Milk River Drainage. Many species such as sauger, paddlefish, pallid sturgeon and blue suckers are tied to the mainstem Milk and Missouri rivers. Ongoing research and surveys occur on the lower Milk River and mainstem Missouri River, however few surveys occur within the smaller tributaries to the Milk River. Montana State University surveyed many of the small tributaries in the early 2000's, but very little follow up has occurred. Future surveys could be compared to past work to better understand how native species are faring in this drainage.

FISHERIES MANAGEMENT DIRECTION – LOWER MILK RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Milk River (Hinsdale to Vandalia Dam)	16 miles	Channel catfish (N), Sauger (N), Walleye, Northern pike	Wild	General	Monitor populations for sport fishing. Continue to better understand channel catfish population dynamics.
		Native non-game fishes (N)	Wild	Conservation	Monitor populations to detect changes in species composition and abundance.
Milk River (Vandalia Dam to Missouri River)	117 miles	Pallid sturgeon (N)	Wild/ Hatchery	Conservation	Restore a self-sustaining population of pallid sturgeon in the Missouri River. Work towards modifying operations at Fort Peck Dam that are beneficial for spawning and growth.
		Channel catfish (N), Sauger (N),	Wild	Conservation	Monitor populations to be certain that over exploitation does not occur. Maintain habitat for all life stages. Study channel catfish population dynamics. Better understand spawning requirements of sauger.
		Paddlefish (N)	Wild	Restrictive Regulations	Better understand spawning requirements of paddlefish.
		Northern Pike, Walleye, Smallmouth bass, Yellow perch, Black crappie	Wild	General	Low level effort to monitor populations through native game fish surveys. Allow sustainable harvest.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Native non-game fishes (N)	Wild	Conservation	Monitor populations to detect changes in species composition and abundance. Better understand the relative contribution of Milk River fishes to the Missouri River
Rock Creek	93 miles	Channel catfish (N), Sauger (N)	Wild	General	Maintain numbers. Inventory habitat issues, such as fish passage barriers and unscreened diversions.
		Native non-game fishes (N)	Wild	Conservation	Protect habitat for native fishes. Provide fish passage at stream crossings.
Prairie Ponds	Various	Yellow perch, Largemouth bass, Northern pike	Wild/ Transfer	General	Continue to monitor these populations and stock fish when necessary. Look for opportunities to increase the quality of habitat by increasing the depth of reservoirs, building new reservoirs, etc.
		Rainbow trout	Hatchery	Put, Grow and Take	Continue to stock prairie ponds with put and take fisheries. Evaluate angler use and which ponds should be stocked. Look for opportunities to improve habitat where applicable.


Musselshell River Drainage
MONTANA FWP
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Kingsbury Lake
Arrow Creek
Fort Peck Lake
Belt
Stanford
Lewistown
Neihart
Judith River
Wild Horse Lake
War Hoffie Lake
Box Elder Creek
Winnett
Flatwillow Creek
Big Dry Creek
Smith River
White Sulphur Springs
Harlowton
Deadmans Basin Reservoir
Ryegate
Lake Mason
Roundup
Musselshell River
Shields River
Lower Glaston Lake
Dry Lake
Wilsall
Custer
Hysham
Yellowstone River
Bighorn River
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background imagery from ESRI
Miles
0
20
40

MUSSELSHELL RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Musselshell River headwaters start at approximately 9,200 feet elevation and converge with the Missouri River and Fort Peck Reservoir at 2,200 feet. The Musselshell flows from the confluence of the North and South forks (near the Wheatland and Meager county border) for nearly 340 miles. The North Fork flows nearly 32 miles, and the South Fork flows nearly 31 miles. The drainage area covers approximately 8,000 square miles and includes 7,601 surface acres of lakes or reservoirs within 36 individual waterbodies. Detailed fisheries studies from 1979 through 1986 divided the Musselshell into three zones, coldwater, transitional, and warmwater. The coldwater zone extends from the confluence of the North and South forks of the Musselshell near Martinsdale, to Barber (river mile 336 to 256). The transitional zone begins at Barber and extends to Roundup (river mile 256 to 180). The warmwater zone begins at Roundup and extends to its confluence with the Missouri River (river mile 180 to 0). Additionally, the tributaries in the coldwater zone are almost all dominated with coldwater fish species, while tributaries in the transitional and warmwater zones often start out with coldwater species then transition to warmwater species in the lower reaches.

Coldwater Zone

The coldwater zone of the Musselshell River is influenced by several tributaries in addition to the North and South forks. Major tributaries on the North Fork include Checkerboard and Spring creeks. Major tributaries to the South Fork include Alabaugh and Cottonwood creeks. Cottonwood Creek is a popular trout fishery on USFS lands with a fairly accessible mountain lake (Forest Lake). Tributaries downstream from the forks include Daisy Dean, Little Elk, Haymaker, Big Elk, Hopely, Antelope, Lebo, and American Fork creeks along with several smaller creeks. The average width of the Musselshell River in this zone in 1979 was reported to be 60 feet with a gradient of 20.5 feet per mile. Musselshell River substrates are dominated by gravels and cobble in this zone. This zone contains several irrigation storage reservoirs, which alter the natural hydrograph. Major reservoirs include, Bair Reservoir on the North Fork, Martinsdale, an off-channel reservoir on the South Fork, and Deadmans Basin an off channel reservoir on the mainstem. These three reservoirs store a combined volume of approximately 106,616 acre feet of water at full pool. Eleven irrigation diversions are found in the North Fork, South Fork, and mainstem of the Musselshell River, and are capable of diverting a total of 1,400 cfs. of water. Uncounted stock dams, smaller diversion dams and other obstructions are found in the tributary streams in this zone. The physical alterations to the river from water storage practices and irrigation infrastructure have been both beneficial and detrimental to fish populations in this reach. Some structures prevent upstream passage for fish and others, while passable, remove large quantities of water which severely limit in-channel water downstream of the diversions. Conversely, the storage reservoirs often deliver water back to the river for irrigation demands in the summer, which can help maintain some fisheries in periods of drought. Water quality is sometimes a concern in the Musselshell. Land use is dominated by grazing mixed with hay and crop land, and some riparian areas are severely degraded with loss of willow and cottonwood. Agricultural runoff and irrigation returns can increase salinity, nutrient levels

and sediment load, which increase water temperature and turbidity, and decrease dissolved oxygen. Water chemistry data indicate these influences occur throughout the Musselshell watershed starting in the upper reaches and are compounded downstream.

Transition Zone

The transition zone of the Musselshell is influenced by several tributaries including Fish, Careless, Big Coulee, Painted Robe, Dean, Currant, Goulding, Pole, and Halfbreed creeks. The tributaries in this reach are prone to dewatering and are normally dry or intermittent during irrigation season. The average width of the Musselshell River in this zone in 1979 was reported as 85 feet with a gradient of 6.6 feet per mile. The gradient is about a third of that in the coldwater section. Substrate in this section is characterized by gravels, sand, silt, and isolated sandstone rock slabs along sandstone cliffs.

Storage reservoirs are not found in this zone, although water releases from Deadmans Basin via a canal ultimately returns water into Careless Creek which is part of this zone. At least 10 irrigation diversions are found in this zone (four major diversions have been reported to be capable of diverting a total of 200 cfs), and several additional rock weirs appeared to be in place to raise the river stage for irrigation pumps. A few of the larger diversions were breached or flanked during the 2011 flood, with several still not repaired or replaced in spring of 2012. As of 2018, one diversion was removed with two flanked by the river but left in place. The physical alterations in this zone may seasonally preclude fish passage, and because the diversions lack screens, many fish are carried onto fields each year or trapped in canals and siphons when they are dewatered each fall. Water quality issues exist in this zone due to irrigation returns that increase salinity (sodium sulfate) and cause nutrient enrichment. Changes in operational releases of water from Deadmans Reservoir through Careless Creek have reduced, but not eliminated, these effects. The dewatering for irrigation purposes in this zone reduces the fishery potential by reducing available habitat.

Warmwater Zone

The warmwater zone of the Musselshell River is influenced by several tributaries: Willow, Flatwillow, Box Elder, Fattig, Hawk, Rattlesnake, Calf, and Lodgepole creeks, in addition to several small intermittent drainages. The average width of this zone in 1979 was reported as 100 feet, with an average gradient of 3 feet per mile, which is half of the transition zone's average gradient. Substrates in this zone are dominated by silt and sand, with some interspersed gravels and bedrock. Five major irrigation diversions have been reported to be capable of diverting a total of 418 cfs. Flatwillow Creek is the largest tributary in the warmwater zone. Petrolia Reservoir, an on-stream irrigation reservoir on Flatwillow Creek that has approximately 9,000 acre feet of storage, severely limits flow immediately downstream in Flatwillow Creek during low-water periods. At least seven dams can be found from Roundup to the Davis/Korenco Dam, three miles downstream of the town of Musselshell. In the spring of 2018 the uppermost diversion in this section was flanked and buried in sediment; future efforts may be made to remove this dam. No other major dams or diversions are known on the river from this point to the confluence with the Missouri River. Physical alterations to the river by diversion dams and check dams have fragmented the river during the periods outside of spring high flows. The Delphia Melstone Dam at Musselshell and the Davis/Korenko Dam downstream have been shown to preclude fish passage on a regular basis. Channel catfish and smallmouth bass were

documented moving upstream of the Delphia Melstone Dam, but the movements were made during higher than average water events and population surveys have not found substantial populations of game fish species above this dam. Other upstream dams also have the ability to reduce upstream passage of fish into the transition zone.

FISHERIES MANAGEMENT

Over 42.5 million fish were stocked in the Musselshell watershed by FWP from 1928 to 2009. An additional 3.8 million fish were stocked from July 1, 2009 through June 31, 2018. The most commonly stocked species has been rainbow trout with over 29.5 million individuals totaling more than 1.04 million pounds stocked. Many of these have been stocked in major reservoirs in the drainage such as Martinsdale, Bair Reservoir, Deadman's Basin, Lebo, and Yellow Water. Essentially all stocking of trout directly into the river was halted by 1980. Stream stocking accounted for many of the rainbow trout from 1928 through 1982. Most rainbow trout recently found in the river are from reservoir stockings. Westslope cutthroat trout stocked into Bair Reservoir recently were found pioneering the river below the dam. From 2009 to 2018 65,167 westslope cutthroat trout were stocked into Bair Reservoir, Castle Lake, and Martinsdale Reservoir. Other species stocked in the drainage from 2009 to 2018 include tiger muskie, largemouth bass, brook and brown trout, and kokanee salmon.

Coldwater Zone

The coldwater zone and associated tributaries support many species of fish such as brook trout, brown trout, rainbow trout, Yellowstone and westslope cutthroat, mountain whitefish, longnose dace, Rocky Mountain sculpin, longnose, shorthead redhorse, white, and mountain suckers, occasional fathead minnows, flathead chubs, common carp, stonecat, lake chub, northern redbelly dace, and northern redbelly x finescale dace hybrids. The mainstem supports a good population of brown trout (comprising about 96% of the total trout) and mountain whitefish, while the tributaries support brook trout (about 56% of the total trout), and lesser numbers of rainbow and brown trout, mountain whitefish, and both species of cutthroat trout. Brown trout are also the most common species in much of the North and South forks. Arctic grayling (native to Montana, but not the Musselshell watershed) were stocked in the upper reaches of the South Fork of the Musselshell in two separate ponds in 1961; however, records indicate neither introduction became self -reproducing.

Brown trout population estimates have been completed at the Selkirk Fishing Access Site on an irregular basis since 1984. Current management plans are to conduct population estimates at this site once every 3 years. Many of the estimates attempted between 2001-2008 were not completed, as recapture rates were low and the population consisted of a few larger adults and more abundant, but still relatively few juveniles. The poor population structure during this time was related to poor in-stream flow conditions during a drought. Brown trout population estimates ranged from a low of 17 total fish caught in an electrofishing effort to estimates of 890 brown trout per mile in 1992, which was attributed to a good spawn in 1991. Estimates were conducted in 2010, 2012, 2014, and 2017 with a range from 188 brown trout per mile in 2017 to 910 in 2012. Overall, average density for years with estimates from 1984 through 2017 was approximately 360 brown trout per mile.

Stream angling pressure in this zone is low. The FWP Angler Survey indicated the Musselshell River riverine section in 2009, 2011, 2013, and 2015 was 2,1216, 776, 2,349, and 1,342 angler days, with an additional 430 angler days in the North and South forks of the river. The major reservoirs receive moderate angling effort. During the same time period Bair reservoir pressureranged from 1,349 to 3,178 angler days, Martinsdale from 7,373 to 13,630 angler days, and Deadmans Basin from 3,766 to 6,568 angler days. Fishing pressure estimates are available in the bi-annual Angler Survey for Chief Joseph pond, North and South Forks, Big Elk Creek and other smaller waters in this section.

In 2015, the Deadmans Diversion and canal headgates were reconstructed as a result of age and damages from the 2011 flood. The new diversion has a rock ramp structure to improve fish passage at this site. The design was to improve passage for native minnows and other fish including northern redbelly dace, white sucker, and brown trout. The range of swimming velocities it was designed to meet should allow nearly all species to pass when water is moving through the ramp. At times water passing the diversion is going entirely through the sediment gate rather than over the dam.

Transition Zone

The transition zone supports at least 17 species of fish, but the abundance of sport fish is generally reported as low. Documented species include stonecat, several minnow species (carp, fathead minnow, flathead chub, lake chub, longnose dace, and western silvery minnow), several sucker species (longnose, mountain, river carpsucker, and shorthead redhorse), smallmouth bass, brown trout and mountain whitefish. Additionally, Deadmans Basin Reservoir which is geographically in this zone but reported in the coldwater zone, contains stocked populations of rainbow trout, kokanee salmon, and tiger muskie. Atlantic salmon and coho salmon have also been stocked into Deadmans Basin, however those species are no longer in the reservoir or river. It is likely some catfish and sauger (at times of high water) are in this zone near Roundup, but they have not been reported in any survey from 1979 to present. Discussions with longtime anglers indicated sauger and catfish were more common in the 1950s and 1960s as far up as Lavina. Brown trout are found in the upper transition zone along with an occasional rainbow trout however in numbers much lower than those in the coldwater zone.

Warmwater game fish densities in this zone may be attributed to irrigation diversions inhibiting movements. The warmer river sections would likely provide good habitat for channel catfish if they could migrate upstream past existing barriers. Sauger would likely be found in this zone each spring, migrating back to the warmwater zone and Missouri River by midsummer if existing dams were passable. Food is not likely limiting, as forage fish populations found in this section of river are strong enough to support higher abundances of predatory fish than are currently found.

Smallmouth bass were stocked from 1977 to 1981 from Lavina to Roundup. This population didn't expand very quickly, and many of these stocked bass were later found downstream of the transition zone in the warmwater zone, ultimately starting the smallmouth bass fishery in Fort Peck Reservoir. Nonetheless, limited recruitment was documented, and the bass that were found in the transition zone were documented as showing some of the fastest growth rates for bass in Montana. Smallmouth bass have been caught as far up as Lavina, but good populations are not found until Roundup. The Lavina Diversion appears to be a good barrier for upstream

movement. Survey work near Lavina and Roundup show the smallmouth bass fishery continues to provide opportunity and has persisted since the initial stockings.

Deadmans Basin Reservoir is included in the transition zone because return water enters in the transition zone through the Barber Canal and Careless Creek. Any fish that move out of the reservoir could reach the river, however notable populations of rainbow trout, kokanee salmon, and tiger muskie have not been documented in the transition zone. The reservoir provides habitat for white, shorthead redhorse, and longnose suckers, carp, as well as a limited number of minnow species that enter the reservoir through the Deadmans canal. The Deadmans fishery relies heavily on a stocking program for rainbows, kokanee and tiger muskie. Without stocking, this reservoir would provide a limited fishery for brown trout that come from the coldwater zone via the Deadmans canal system.

The Musselshell River in the transition zone and warmwater zone received between 2,059 to 3,965 angler days of use annually between 2009 and 2015.

As a result of flood damages in 2011 and efforts with the Musselshell Water Coalition and various landowners, government programs, and FWP programs several stream habitat improvements occurred. Below Lavina, the Egge Diversion was removed, the Anderson Diversion was flanked and abandoned at this time. The Parrot Diversion remains a passage barrier and provides a second barrier for potential pike movement from downstream. The Naderman Diversion was flanked and abandoned downstream with the primary barrier Stella Diversion still in place and functioning. Assistance to irrigators was provided by FEMA and NRCS to transition from the diversions to pump irrigation. The Stella Diversion is the first barrier in the transition zone for fish to move upstream. There are several other downstream diversions in the warmwater zone.

Catfish captured in the warm water zone were introduced into the lower reach of the coldwater zone to encourage re-colonization in the transition and upper warmwater zones in 2015. In 2016, a second wild transfer was conducted with the fish stocked several miles downstream of Ryegate. Expansion of open reaches of river in this zone in combination with improved water delivery for downstream water rights from Deadman's Basin Reservoir may provide improved conditions for catfish to persist in this reach. Future transfers may be conducted to add genetic diversity to the small number of original catfish transferred.

Warmwater Zone

Despite severe dewatering problems, high temperatures and poor water quality, the warmwater zone still contains a nearly intact native fish ecosystem. The warmwater zone has been documented to support at least 31 species of fish. This species list includes catfish (black bullhead, channel catfish, and stonecat), minnows (brassy minnow, carp, emerald shiner, fathead minnow, flathead chub, longnose dace, plains minnow, sand shiner, spottail shiner, and western silvery minnow), suckers (longnose sucker, blue sucker, mountain sucker, river carpsucker, shorthead redhorse, smallmouth buffalo, bigmouth buffalo and white sucker), walleye, sauger, black crappie, bluegill, green sunfish, smallmouth bass, burbot, freshwater drum, goldeye, and northern pike. Many of these species are not found at Roundup, but most are found below the Delphia-Melstone Diversion Dam at the town of Musselshell. Unverified reports of paddlefish being found in a field near Melstone were made as the flood waters of 2011 receded. FWP

reported angling pressure of 2,360 angler days for the lower 80 miles of river in 1963. In 2015, the pressure was estimated to be 2,0593,965 angler days. From 2011 to 2015 the angler survey reports a range of fishing pressure from 2,059 to 2,447.

HABITAT

Habitat issues in this area include habitat fragmentation from irrigation structures, meander cutoffs from railroad and road projects, with an illegal cuttoff initiated in 2017 that was required to be filled but high water in 2018 removed the loose soils activating the cuttoff, and near dewatering of the Musselshell River. Channel instability due to a railway bed and highway projects cutting off meander bends has caused loss of habitat for fish. The flood of 2011 changed many sections of river by creating cutoffs and, in some cases, breaching the abandoned railroad berm, re-establishing some bends as well as flanking and bypassing several irrigation structures which reopened fish passage. Recent down-cutting of the channel has reduced channel length in the Musselshell River by about 8% for its full length and about 21% below Flatwillow Creek. Channel widening associated with the 2011 flood will strongly influence fish habitat. Dozens of miles of abandoned channel may also play an important role in the prairie stream and riparian ecosystem. The floodwaters of 2018 also widened the channel and contributed to additional oxbow development reducing the length of the river. Montana Department of Transportation has had several large riprap projects in this area to protect highway infrastructure that may also compromise stream function.

Over the past decade, the water judge, the Musselshell Distribution Project, and efforts of the Musselshell Water Coalition, have resulted in more water being conveyed in the main channel compared to the transition and warmwater zones. Additional water rights for instream flow would further improve conditions.

Coldwater Zone

Wetted perimeter analysis above Harlowton determined that 80 cfs is necessary to sustain a consistently high-quality wild brown trout fishery in the coldwater section. Bankfull flow near Martinsdale was approximated to be 1,060 cfs at a two-year recurrence interval, which typically occurs in June. The 1.25 year recurrence flow was reported as 514 cfs. These studies recommended a flow of 1,060 cfs be allowed to occur for at least 24 hours in June, with the remainder of June at 514 cfs to maintain channel habitat for trout production. As a minimum, observations at flows of 42.8 cfs indicated many riffles were exposed, and fish habitat along the banks was dewatered, leaving fish in cover-limited pools. The Deadman's Diversion rock ramp was completed in 2015.

Coldwater streams in this reach on federal lands have limited to substantial damages from off road vehicle trails work with the Forest Service to improve aquatic conditions while maintaining access.

Transition Zone

Wetted perimeter analysis in a reach just downstream of the city of Roundup determined that a flow of 80 cfs is needed for fishery maintenance. In the 1980s, FWP found some gravel bars were exposed at 76.7 cfs but determined that this flow still provided moderate fish habitat. The 2 year and 1.25 year recurrence flows were not reported for this zone. These values are important

to determine because they represent flows that typically maintain habitat and transport and redistribute silts and other sediments. Following recent flooding events, the Egge Diversion was removed, the Anderson and Naderman Diversions are no longer in the active stream channel.

Warmwater Zone

Wetted perimeter analysis at the Mosby Bridge resulted in a recommendation of 70 cfs to be met year round for fishery maintenance. In the 1970s, bank-full discharge for 2-year flood was estimated at 4,080 cfs, and 1.25-year flood was estimated at 1,860 cfs. It was recommended that these flows be provided annually during runoff, with 4,080 cfs for 24 hours and 1,860 cfs for several weeks after the high flow to help maintain fish habitat.

Studies determined that the Davis/Korenco Dam and Delphia-Melstone Dam create barriers for fish most of the time, but catfish and bass were able to bypass these structures during some high water events. Sauger and walleye were not documented passing these diversion dams. Because of tremendous overbank flooding in 2011, it is probable sauger, walleye and other species, if present, were able to bypass these dams. One burbot and a freshwater drum were caught below the Davis Dam in 1981 by FWP and a second burbot was reported by an angler as far up as Shawmut. These fish likely migrated from the Missouri River during spring flows. Good fishing can occur in the warmwater zone, but it is impaired due to erratic discharges and dams. If the Davis and Delphia-Melstone dams became passable to fish, it is likely other upstream dams would become the limiting factors to upstream fish movements during most flows. However, those upper dams represent less of a fish passage challenge than the lower two dams. FWP studies have also determined that the channel catfish in the warmwater zone often migrate between the Musselshell and the Middle Missouri Rivers. The Newton Diversion was flanked and may be removed in the future. Efforts to secure fish passage at the lower dams remains a priority however currently lacks landowner and irrigator support. Other opportunities to improve fish passage at upstream diversions may present themselves in the coming years.

Fishing Access

Four existing FASs in this watershed are: Martinsdale Reservoir, Selkirk, Harlowton, and Deadmans Basin Reservoir, all in the Coldwater Zone. Other access can be found on Forest Service, BLM, state, county and city lands, and with permission by private landowners. Additional public access is needed throughout the basin, particularly in the warmwater zone. Recreation infrastructure on Bair Reservoir is in extremely poor condition. An agreement with Musselshell County for an FWP managed site near Roundup is expected to be completed by 2020. Discussions with MTDOT for a second site near Melstone were initiated in 2017.

Access to federal, state and local government ponds and some private ponds is available. Continue to look for additional opportunities for FAS sites and public and private ponds.

Special Management Issues

This basin has an active watershed group the Musselshell Water Coalition. This group has provided open dialog for all the issues of water management, irrigation, fish and wildlife, weeds, riparian management and other issues as they arise. It is very important FWP maintain the relationship with this group. This group has assisted with all the projects that improved fish passage such as the Deadman's Diversion rock ramp and removal of the Egge Diversion.

Substantial effort to improve flood issues in the Roundup area has lead to several projects to improve flood passage. The County has purchased properties to remove structures from the floodplain. Additionally, berms will be removed to reduce constrictions. Coal mine waste sites will be cleaned up and a Channel Migration Map was created for a section from the Naderman Diversion to the Kilby Butte Diversion below Roundup. The FAS with Musselshell County is a result of this ongoing project. This activity will re-establish a more natural floodplain improving conditions for warm water fish in this reach.

FISHERIES MANAGEMENT DIRECTION FOR MUSSELSHELL RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
North Fork Musselshell - Headwaters to Bair Reservoir	11 miles	Brook trout	Wild	General	Manage as a recreational fishery at historic levels.
Habitat needs and activities: Maintain flows of 3 cfs for habitat.					
Bair Reservoir	221 acres	Rainbow trout, Westslope cutthroat trout	Hatchery	Put, Grow and Take	Continue stocking at current rates.
		Brook trout	Wild	General	Manage as a recreational fishery with consumptive harvest.
North Fork Musselshell – Bair Reservoir to South Fork	16.5 miles	Brook trout	Wild	General	Manage as a recreational fishery at historic levels.
		Brown trout	Wild	General	Evaluate population and potential for reproduction and harvest.
		Westslope cutthroat trout	Wild	General	Hatchery fish from Bair Reservoir.
Habitat needs and activities: Maintain flows of 16 cfs for habitat.					
Checkerboard Creek	6.5 miles	Brook trout, Brown trout, Rainbow trout	Wild	General	Manage all as a recreational fishery at historic levels.
Habitat needs and activities: Maintain flows of 6 cfs for habitat.					
Spring Creek	12 miles	Brook trout	Wild	General	Manage as a recreational fishery at historic levels.
Habitat needs and activities: Maintain flows of 8 cfs for habitat.					
South Fork Musselshell River	30 miles	Brook trout, Brown trout, Rainbow trout	Wild	General	Manage all as a recreational fishery at historic levels.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Mountain whitefish (N)	Wild	General	Maintain at historic levels.
Habitat needs and activities: Maintain flows of 30 cfs for habitat.					
Alabaugh Creek	9 miles	Brook trout, Brown trout, Rainbow trout	Wild	General	Manage all as a recreational fishery at historic levels.
Habitat needs and activities: Maintain flows of 12 cfs for habitat.					
Cottonwood Creek	10.8 miles	Brook trout, Brown trout, Rainbow trout, Westslope cutthroat trout hybrids	Wild	Liberal Regulations	Manage as a recreational fishery at historic levels .
Habitat needs and activities: Maintain flows of 16 cfs for habitat. Monitor flow and entrainment associated with Gordon Butte Pump Storage Facility development.					
Martinsdale Reservoir	947 acres	Rainbow trout, Westslope cutthroat trout Brown trout	Hatchery Wild	Put, Grow and Take General	Continue stocking at current rates . Manage all as a recreational fishery with consumptive harvest.
Habitat needs and activities: Maintain connectivity work through programs to improve riparian area and stream habitat. Continue to support Musselshell River Distribution Project. Maintain flows of 80 cfs for habitat.					
Musselshell River Coldwater Zone (Confluence of North and South Forks to Barber)	53 miles	Brook trout, Rainbow trout, Brown trout, Mountain whitefish (N)	Wild	General	Maintain and enhance populations .
American Fork	34 miles	Brook trout, Brown trout	Wild	General	Manage as a recreational fishery at historic levels.
Lebo Creek	32 miles	Native minnows (N)	Wild	Conservation	

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Lebo Lake	309 acres	Tiger muskie, Rainbow trout, Brown trout	Hatchery	Put, Grow and Take	Not currently managed. Former Private Pond/Public Fishing pond. Would like to re-establish access and manage for species indicated.
Big Elk Creek	25 miles	Brook trout, Brown trout	Wild	General	Manage as a recreational fishery at historic levels.
Daisy Dean Creek	28 miles	Brook trout	Wild	General	Manage as a recreational fishery at historic levels.
Habitat needs and activities: Work with USFS for solutions to reduce/prevent impacts on riparian area from ATV traffic on Daisy Dean.					
Chief Joseph Pond	2 acres	Rainbow trout	Hatchery	Put and Take/ Family Fishing water	Continue stocking at current rates.
Forest Lake	21 acres	Cutthroat Hybrids	Wild	General	Evaluate periodically. Manage as a recreational fishery at historic levels.
Haymaker/ East Fork Haymaker	30 miles	Yellowstone cutthroat trout	Wild	General	Manage as a recreational fishery at historic levels. Test the East Fork population for genetic purity. Consider potential to use this population as a potential wild brood source with genetic mixing from other sources if found to be pure.
Deadmans Reservoir	2,120 acres	Tiger muskie Rainbow trout, Kokanee salmon	Hatchery Hatchery	Put, Grow and Take/ Quality Put, Grow and Take	Continue stocking at current rates, limit harvest to 1 over 40". Used to reduce sucker population in reservoir to improve trout and salmon growth. Evaluating Rainbow strains and stocking rates to improve body condition and size structure in fishery. Will adjust stocking rates to improve fishery.
Musselshell River Transition Zone (Barber to Roundup)	138 miles	Smallmouth bass	Wild	General	Evaluate 1970/1980's stocking to maintain fishery.

Continue next page

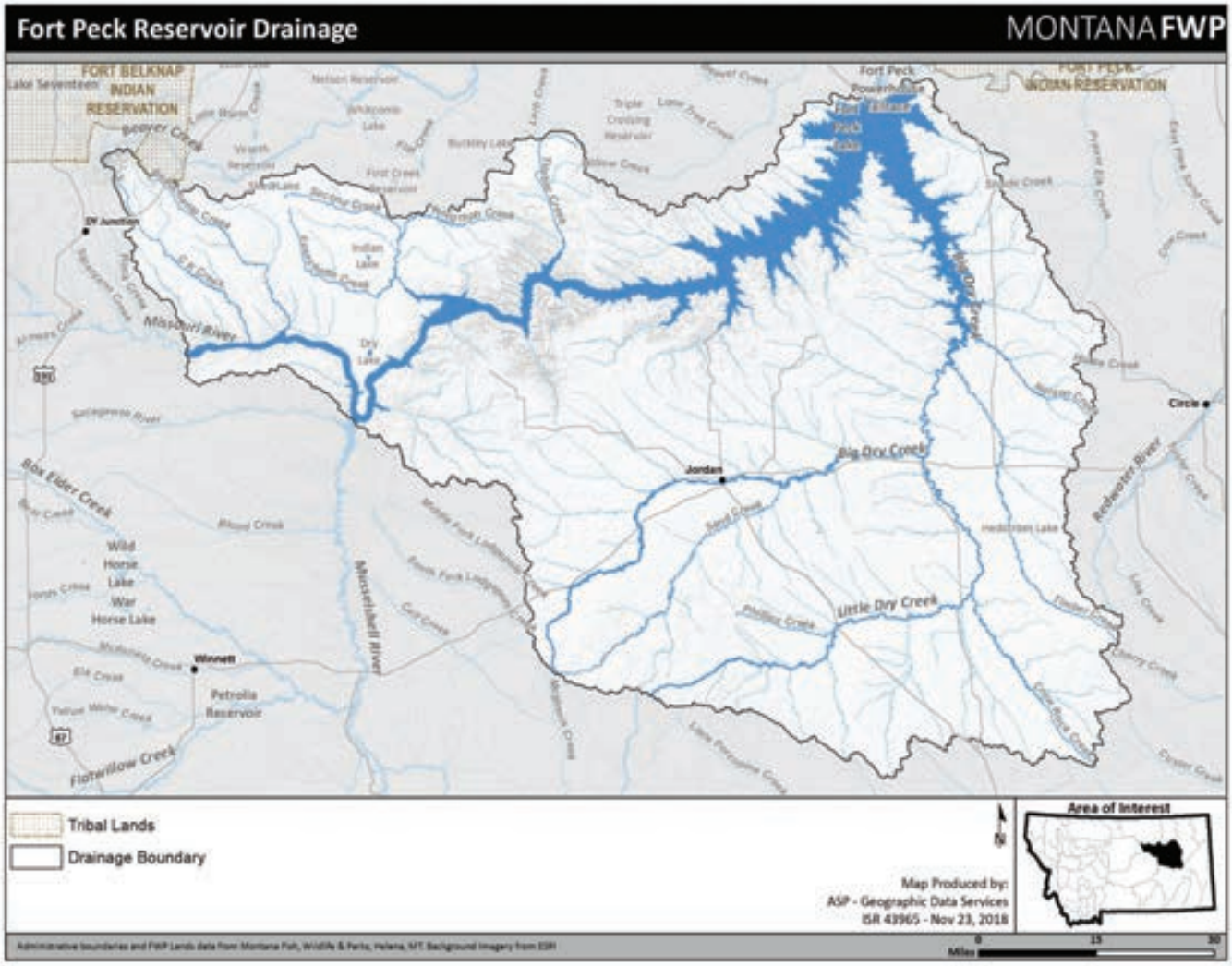
Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Channel catfish (N)	Wild	Conservation	Continue wild transfer of a limited number of wild adults from the Warmwater Zone into the Transition Zone. Limited tag returns show fish remaining in section. Once natural reproduction takes hold discontinue transfers.
		Sauger (N)	Wild	Conservation	Consider expanding population to Deadmans Diversion. Consider potential for fish transfers and stocking to accomplish.
		Native minnow assemblage (N)	Wild	General	Improve or maintain habitat and water conditions.
Habitat needs and activities: Improve habitat to support ecosystem function and production of trout, whitefish, and native minnow and sucker populations. Maintain flows of 80 cfs for habitat in the Musselshell River					
Fish Creek	86 miles	Brook trout	Wild	General	Manage as a recreational fishery at historic levels.
		Native minnow assemblage (N)	Wild	Conservation	Improve or maintain habitat and water conditions.
Careless Creek and Little Careless Creek	68 miles	Native minnow and sucker populations (N)	Wild	Conservation	Improve and maintain fish passage this tributary has one of the best native minnow populations in the area.
Big Coulee	51 miles	Native minnow and sucker species (N)	Wild	Conservation	Improve or maintain habitat and water conditions.
Painted Robe Creek	38 miles	Native minnow and sucker species (N)	Wild	Conservation	Improve or maintain habitat and water conditions.
Swimming Woman Creek	33 miles	Brook trout	Wild	General	Manage as a recreational fishery at historic levels.
		Native minnow and sucker species (N)	Wild	Conservation	Improve or maintain habitat and water conditions.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Currant Creek	60 miles	Native minnow and sucker species (N)	Wild	Conservation	Improve or maintain habitat and water conditions.
Musselshell River Warm water Zone (Roundup to Confluence with Missouri River)	151 miles	Smallmouth bass	Wild	General	Manage as a recreational fishery at historic levels.
		Channel catfish (N)	Wild	Conservation	Manage as a recreational fishery at historic levels.
		Sauger (N)	Wild	Conservation	Limited population consider stocking and wild fish transfers from other waters.
		Native minnow assemblage (N)	Wild	Conservation	Improve or maintain habitat and water conditions.
		Drum (N)	Wild	Conservation	Maintain viable population.
		Rainbow trout	Hatchery	Put, Grow and Take	Continue stocking reservoirs annually.
		Burbot (N)	Wild	Conservation	Evaluate population, improve fishery.
		Walleye	Wild	General	Evaluate population movements and influence on other fish consider increasing harvest .
Habitat needs and activities: Continue to manage connectivity to favor native fish. Maintain instream flow of 70 cfs on the Musselshell downstream of the Musselshell Diversion dam for habitat. Establish additional gage stations.					
Willow Creek	71 miles	Brook trout	Wild	General	Maintain viable population.
		Native minnow and sucker species (N)	Wild	Conservation	Improve or maintain habitat and water conditions.
Flatwillow Creek	118 miles	Brook trout, Brown trout,	Wild	General	Manage all as a recreational fishery at historic levels.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Native minnow and sucker species (N)	Wild	Conservation	Improve or maintain habitat and water conditions.
		Channel catfish (N)	Wild	Conservation	Manage as a recreational fishery at historic levels.
		Walleye	Hatchery/ Wild	General	Evaluate population source, likely escaping from Petrolia Reservoir. Evaluate population movements and influence on other fish, consider increasing harvest.
Habitat needs and activities: Maintain flows of 15 cfs for habitat. Additional access is needed upstream of highway 87.					
South Fork Flatwillow Creek	23 miles	Brook trout	Wild	General	Manage as a recreational fishery at historic levels.
North Fork Flatwillow Creek	25 miles	Brook trout	Wild	General	Manage as a recreational fishery at historic levels.
Tributaries to Flatwillow and Box Elder, Collar Gulch and Halfmoon Creek	5 miles	Westslope cutthroat trout (N)	Wild	Conservation	Enhance and protect populations. Continue to work on project to expand westslope cutthroat trout in the Judith Mountains.
Habitat needs and activities: Maintain flows of 0.6 cfs for habitat in Collar Gulch Creek.					
Petrolia Reservoir	518 acres	Walleye, Rainbow trout	Hatchery	Put, Grow and Take	Manage as a recreational fishery with consumptive harvest .
		Northern pike, Yellow perch, Bluegill	Wild	General	Manage as a recreational fishery at historic levels.
Jakes Reservoir	18 acres	Sauger (N)	Wild	General	Evaluate options for additional stocking of sauger such as via wild fish transfer.
		Yellow perch	Wild	General	Manage as a recreational fishery with consumptive harvest .

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Numerous BLM Ponds		Largemouth bass, Crappie, Rainbow trout	Hatchery	Put, Grow and Take	Maintain stocking at current rates. Identify naturally reproducing populations. Manage recreational fisheries with consumptive harvest.
Habitat needs and activities: Coordinate with BLM for water level management, dam repair and habitat concerns.					
Numerous Private Ponds allowing Public Fishing		Largemouth bass, Rainbow trout	Hatchery	Put, Grow and Take/ Family Fishing Waters	Maintain stocking at current rates.


Fort Peck Reservoir Drainage
MONTANA FWP
FORT BELKNAP INDIAN RESERVATION
FORT PECK INDIAN RESERVATION
Fort Peck Powerhouse
Fort Peck Lake
Missouri River
Big Dry Creek
Little Dry Creek
Redwater River
Box Elder Creek
Wild Horse Lake
War Horse Lake
Petrolia Reservoir
Flatwillow Creek
Musselshell River
Jordan
Circle
Winnett
DW Junction
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Miles

FORT PECK RESERVOIR DRAINAGE

PHYSICAL DESCRIPTION

Fort Peck Reservoir is formed by a large earth-filled dam located on the Missouri River in the northeastern part of Montana. Completed in 1937, it is the largest body of water in the state, with 246,000 surface acres and 1,520 miles of shoreline at full pool. The reservoir is 134 miles in length and has a maximum depth of 220 feet when full. Major tributaries to Fort Peck Reservoir include the Missouri River, the Musselshell River, and Big Dry Creek. The Musselshell and Missouri rivers are discussed in their own drainage plans. The habitat at the mouths of these streams is closely tied to Fort Peck Reservoir levels; several stream miles are inundated at normal to high pool levels. This watershed encompasses a drainage basin of 57,500 square mile basin and is located within Phillips, Valley, Fergus, Petroleum, Garfield, and McCone counties. Administration of all land and water within the executive boundary of the Charles M. Russell (CMR) National Wildlife Refuge is shared by the U.S. Fish & Wildlife Service and the U.S. Army Corps of Engineers (USACE) in accordance with a Memorandum of Agreement. The reservoir is operated by the Corp of Engineers to provide water for power, flood control, irrigation, navigation and recreation.

FISHERIES MANAGEMENT

The fishery in Fort Peck Reservoir is diverse with 47 different fish species, most of which are native to the Missouri River. Sixteen species, mostly game fish, have been introduced by FWP to develop sport-fishing opportunities. Walleyes and northern pike were both introduced in 1951 followed by lake trout in the mid 1950's. Smallmouth bass were introduced in 1981 and chinook salmon in 1983. During the 1980's spottail shiners and cisco were also introduced to supplement the existing forage base. Additionally, native game fish including burbot, channel catfish, paddlefish, and sauger are sought by anglers throughout the reservoir. Because of the diversity and world class fishery that Fort Peck Reservoir has to offer, it is ranked number one in the region in number of angler days, and within the top ten on a statewide level.

The quality multi-species fishery found in the reservoir is the result of ongoing management efforts by FWP. Key to this effort is an understanding of the variable nature of fish populations. Specifically, natural reproduction is largely influenced by reservoir water levels and environmental conditions at time of spawn. As a result, extensive stocking programs for walleye and chinook salmon are in place to reduce population variability. These introductions were carefully analyzed to determine the long-term benefits to the fishery. Evaluation of management success is done through standardized monitoring combined with angler surveys. This basic monitoring program allows estimates of catch rates, size of fish, and overall angler satisfaction.

HABITAT

Fort Peck Reservoir, much like other storage reservoirs, typically has annual varial zones where annual water level fluctuations produce a suite of impacts to the aquatic environment and associated terrestrial environment. This unstable zone is subject to loss of aquatic and terrestrial plants and associated populations of phytoplankton and benthic organisms. Lack of submerged vegetation causes a decline in the overall productivity of the entire fish population by reducing

food supply, spawning habitat, and rearing cover. Submerged vegetation also provides protective cover for forage fish and young game fish species. Additionally, varial zones provide areas for successful colonization of aquatic invasive species such as Eurasian Watermilfoil (EWM), a submerged aquatic weed discovered in 2010. EWM has the potential to outcompete native aquatic plants and under certain conditions, dominate the aquatic plant community in the reservoir.

During the late l950's and early 1960's rising water levels on Fort Peck Reservoir inundated vegetation and produced an outstanding fishery for northern pike, crappie, and yellow perch. In addition, walleye abundance improved after increases in reservoir elevation and high flows in the Big Dry Arm during the late 1970's. Higher reservoir elevations and increased flows allowed adult walleye to access suitable spawning substrate in the Big Dry Arm. Reservoir water level management and tributary flows do not appear conducive to natural reproduction of walleyes on a consistent basis and as a result, a large scale hatchery stocking program has been implemented annually to ensure that this high quality fishery is maintained. Recommendations from FWP to enhance and maintain the Fort Peck fishery are submitted annually to the USACE for inclusion into the Annual Operating Plan process. Montana requests are coordinated with other Missouri River states through the Missouri River Natural Resource Committee.

Attempts by local sportsman groups to improve spawning habitat to enhance the fishery have been undertaken in the form of spawning fences and Christmas tree reefs. However, due to the vastness of the reservoir, no measurable benefits to the fishery have been noted. Cobble or rock spawning reefs have been considered to aid natural reproduction of walleye, but cost is prohibitive and long-term effectiveness is uncertain due to siltation and water level fluctuations.

Fishing Access

Fort Peck Reservoir is surrounded by public access within the CMR National Wildlife Refuge. However, due to the size of the reservoir and poor condition of roads/trails, access opportunities are somewhat limited. A total of 13 public access sites (12 boat ramps) are located around the reservoir, which are administered by USACE. These recreation sites are managed privately or by federal government natural resource agencies. Specific recreation sites managed by FWP include Duck Creek Fishing Access Site (FAS) near Fort Peck, Rock Creek FAS on the Big Dry Arm, and Hell Creek State Park north of Jordan. This site is managed by the FWP Parks Division.

Various projects have been implemented over the years to improve access to Fort Peck Reservoir. Counties, federal and state agencies have partnered and leveraged federal funds to accomplish much of this work. Projects have been completed at Duck Creek FAS, Pines Recreation Area, Hell Creek State Park, Crooked Creek, Flat Lake/Spillway, McGuire Creek, Fourchette Bay and Nelson Creek Recreation areas.

Special Management Issues

The 2012-2022 Fort Peck Reservoir Fisheries Management Plan was completed in December of 2011. The Plan reflects the public's desire for a high quality, cost effective, multi-species fishery in Fort Peck Reservoir. Additionally, this plan represents the on-going evolution of fisheries management on Fort Peck Reservoir. Of principal importance is to efficiently develop and

implement a scientifically sound sampling program and use these data to make management decisions for the Fort Peck Reservoir fishery that ensure biological and social sustainability. The following is a synopsis of the plan.

Walleye Stocking

FWP will aim to stock a minimum of 3.0 million walleye fingerlings annually in Fort Peck Reservoir. Fingerling stocking will be augmented with fry as conditions and availability allow.

Walleye fingerling production at the hatcheries will depend on quality and quantity of eggs collected, egg hatching success and pond production. If fingerling production exceeds 3 million, biological and environmental conditions (listed below) will be reviewed to determine if stocking additional walleyes is justified. Stocking rates may be reduced if biological and environmental conditions are unfavorable to maintaining a high-quality walleye fishery. Continue to evaluate walleye fingerling and fry survival and recruitment. Walleye stocking rates will be guided by reservoir water levels, physical condition of the existing walleye population, and forage fish abundance. The goal of this plan is to maximize hatchery production of walleye to ensure that biologically based stocking rates are met.

Walleye Catch Rates

FWP will work to achieve angler catch rates of 0.4 walleye per hour during periods of the summer creel on Fort Peck Reservoir. The highest documented angler catch rate for walleye on Fort Peck Reservoir occurred in 2008, with 0.28 fish per hour. The goal of 0.4 fish per hour will likely not occur throughout the reservoir but seasonally in regions of the reservoir. For example, walleye catch rates of 0.5 fish per hour were observed in July during the 2008 Fort Peck creel survey. Walleye fisheries in surrounding states and provinces throughout the Midwest, which have limited natural reproduction, like Fort Peck, consistently have lower catch rates. Walleye catch rates exceeding 0.3 fish per hour are generally considered excellent. The goal of this plan is to maximize walleye angler catch rates while ensuring a sustainable walleye fishery.

Tournaments

Angling tournaments continue to grow in popularity on Fort Peck Reservoir. In 2001, the first year of the previous Fort Peck fisheries management plan, three walleye tournaments and one smallmouth bass tournament were permitted. In 2011, 13 tournaments were proposed consisting of eight walleye, three smallmouth bass, one northern pike, and one salmon/lake trout tournament. The increase in proposed tournaments in 2011 on Fort Peck Reservoir led to the denial of one tournament entry because management plan stipulations under the old plan stated that no more than 12 open water tournaments will be held per year. The management plan further stated that preference will be given to applicants who held previous tournaments on Fort Peck Reservoir. This structure has led to inequality for non-established tournaments because established tournaments occupy the 12 available slots.

Because of the increasing number of tournaments and scheduling conflicts with holiday weekends on Fort Peck Reservoir, the 2011 open water season had a tournament scheduled every weekend during the months of June and July minus the holiday weekends. Non-tournament anglers have expressed frustration with the lack of tournament-free weekends during peak summer months and state that impacts associated with tournament pre-fishing needs to be

addressed. The goal of the current plan is to reduce conflict between non-tournament anglers while ensuring the tradition of tournament fishing continues. The following list of criteria will be used to meet this goal.

Fort Peck Reservoir Management Plan Tournament Guidelines

1. A maximum of 16 tournaments will be permitted per calendar year.
    a. No more than 12 open water and 4 ice tournaments will be permitted per calendar year.
    b. No more than 6 tournaments will be permitted from June 1st through July 30th.
    c. No tournaments will be permitted for the weekends of Memorial Day, Father's Day, Fourth of July, or Labor Day.
    d. Only one tournament per weekend will be permitted.
    e. Established Fort Peck tournaments of 10 consecutive years or more will be given preference.
    f. Applicants will be required to list first, second and third choice tournament dates on applications.
    g. In years where more applications are received than available tournament dates, applications will be entered in a lottery.
    h. Unsuccessful applicants will receive one bonus point. Tournament applications will be entered into the lottery in subsequent years and bonus points will be applied (e.g. if an applicant has accumulated one bonus point, that application will be entered into the lottery two times).
2. Tournaments will be reviewed on an individual basis. Evaluation of proposed tournaments will include potential biological and social impacts. Proposed tournaments will undergo a 30-day public review and comment period.
3. All catch and release tournaments with weigh-in type format will be limited to cool weather periods: May-June 15, or after September 15.
4. Tournament boundaries must be clearly defined in the application. Proposed boundary size should be minimized in an effort to reduce tournament related fish mortality caused by fish being held in live-wells for extended periods of time and/or traveling long distances.

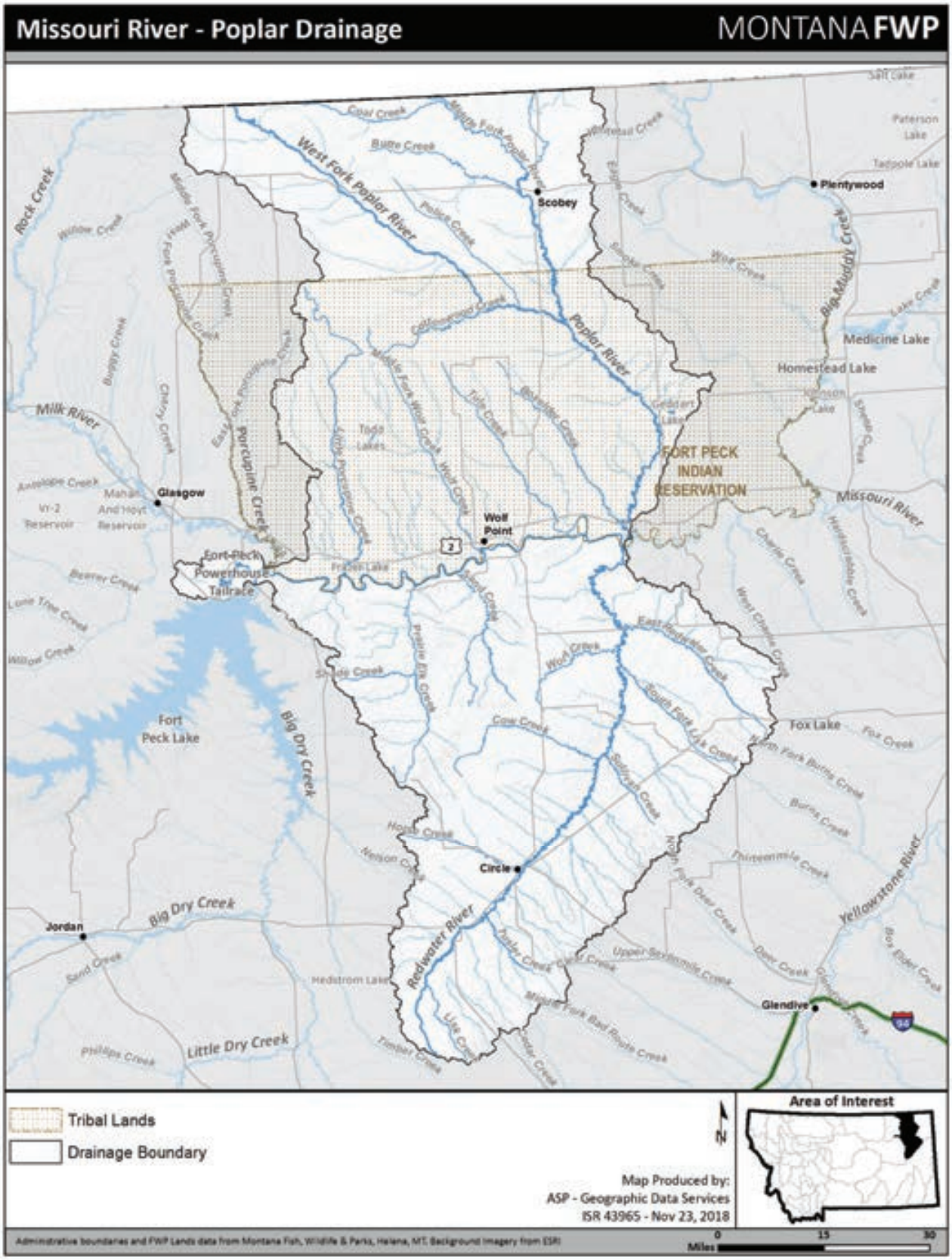
Tournament directors will be required to report post-tournament catch-rate information in a standardized format.

FISHERIES MANAGEMENT DIRECTION FOR FORT PECK RESERVOIR DISTRICT

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Fort Peck Reservoir (Headwaters Downstream to Fort Peck Dam)	246,000 acres	Walleye	Hatchery/ Wild	General	Continue to place the primary management emphasis on walleye. Adhere to stocking guidelines of the Fort Peck Reservoir Fisheries Management Plan.
		Northern pike, Smallmouth bass	Wild	General	Continue to monitor populations. Rely on variable natural reproduction and survival to determine population levels.
		Lake trout	Wild	General	Rely on variable natural reproduction and survival to determine population abundance. Evaluate stocking lake trout if conditions warrant. Monitor populations through annual surveys.
		Chinook salmon	Hatchery	Put, Grow and Take	Adhere to stocking guidelines of the Fort Peck Reservoir Fisheries Management Plan. Monitor populations through annual surveys.
		Burbot (N), Channel catfish (N)	Wild	General	Continue to monitor populations. Better understand factors for limited recruitment.
		Sauger (N)	Wild	Restrictive Regulations	Continue to monitor populations. Better understand factors for limited recruitment.
Sentinel Reservoir	14 acres	Rainbow trout	Hatchery	Put, Grow and Take	Manage for put grow and take rainbow trout fishery.
Habitat needs and activities: Look for opportunities to increase riparian habitat and aesthetic values.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Big Dry Creek Little Dry Creek	149 miles 69 miles	Channel catfish (N) Multi-species	Wild Wild	General General/Conservation	Continue to monitor populations. Manage for recreational fishing opportunity where applicable. Monitor non-game fish species for native fish assemblage and overall ecosystem health.
Trout Ponds North of Reservoir-Located Throughout Blaine, Phillips, and Valley Counties	Numerous	Rainbow trout, Brook trout	Hatchery	Put, Grow and Take	Monitor water conditions and impacts from winterkill. Stock trout based on current 6-year stocking plan.
Habitat needs and activities: Work with Bureau of Land Management and landowners to increase riparian habitats and aesthetic landscapes surrounding the ponds. Maintain windmill aeration systems on ponds with marginal depths. Continue to collect distribution data on Northern redbelly dace and chrosomid dace populations. Evaluate non-native fish stocking and commercial minnow collection to ensure dace populations are not impacted by these actions.					
Warmwater Reservoirs and Ponds North of Reservoir-Located Throughout Blaine, Phillips, and Valley Counties	Numerous	Largemouth bass, Northern pike, Walleye, Smallmouth bass, Channel catfish (N), Black crappie, Yellow perch, Bluegill	Wild/ Hatchery	General/ Put, Grow and Take	Manage as self-sustaining fisheries. Supplement populations with hatchery stocking and wild fish transfers as needed. Monitor water conditions and impacts from winterkill.
Habitat needs and activities: Work with Bureau of Land Management and landowners to increase riparian habitats and aesthetic landscapes surrounding the ponds. Maintain windmill aeration systems on ponds with marginal depths. Continue to collect distribution data on Northern redbelly dace and chrosomid dace populations. Evaluate non-native fish stocking and commercial minnow collection to ensure Dace populations are not impacted by these actions.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Cow Creek- Headwaters to Cow Creek Reservoir	8 miles	Brook Trout	Wild	General	Protect Habitat and provide fish passage when applicable.
Cow Creek- Cow Creek Reservoir tailwaters to confluence with Missouri River	46 miles	Native non-game fishes	Wild/Hatchery	General/Put, Grow, Take	Protect habitat and provide fish passage when applicable.
Habitat needs and activities: Identify habitat issues and work closely with local conservation districts, county road crews, and landowners to implement safe water crossings which emphasis fish passage and water connectivity.					
Private Ponds/Reservoirs South of Reservoir in FWP Region 7 Pond Program	Numerous	Trout	Hatchery	Put and Take	Public relations opportunity with landowners to provide local fishing opportunity for rural community. Maintain fishery through regulations and annual stocking.
		Bass, Walleye, Northern pike	Wild/ Hatchery	General/ Put, Grow and Take	Public relations opportunity with landowners to provide local fishing opportunity for rural community. Maintain fishery through regulations and stocking when necessary.
		Crappie, Yellow perch, Bluegill	Wild/ Transfer	General	Public relations opportunity with landowners to provide local fishing opportunity for rural community. Provide panfish angling opportunity, supplement population through wild fish transfers when necessary.


Missouri River - Poplar Drainage
MONTANA FWP
West Fork Poplar River
Middle Fork Poplar River
Poplar River
Scobey
Plentywood
Rock Creek
Milk River
Glasgow
Wolf Point
FORT PECK INDIAN RESERVATION
Missouri River
Fort Peck Powerhouse Tailrace
Fort Peck Lake
Big Dry Creek
Circle
Jordan
Redwater River
Yellowstone River
Glendive
Fox Lake
Medicine Lake
Homestead Lake
Little Dry Creek
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background imagery from ESRI
0
15
30
Miles

MISSOURI RIVER - POPLAR DRAINAGE

PHYSICAL DESCRIPTION

The Missouri-Poplar drainage includes the Missouri River from Fort Peck Dam downstream to its confluence with the Poplar River, Prairie Elk Creek, Wolf Creek, Redwater River and the Poplar River. The watershed encompasses approximately 4,000 square miles located in Valley, Roosevelt, Daniels and McCone counties. The watershed includes private, state and federal lands, including the majority of the Fort Peck Indian Reservation. Agriculture dominates the lands north of the Missouri River, with wheat farming being the dominant crop. Irrigated crops such as alfalfa and corn are grown within the valleys of the major rivers and streams. South of the Missouri River is a mix of rangeland dominated by native vegetation and dryland farming.

There are no natural lakes in the drainage that contain a fishery. There are, however, numerous stock ponds and many are managed as fisheries. The Fort Peck Dredge Cuts also have a fishery and are a series of lakes connected to the Missouri River, which were created by the hydrologic dredging that occurred with the construction of Fort Peck Dam. The Missouri, Redwater and Poplar rivers contain sport fisheries that include a host of native and introduced fishes.

FISHERIES MANAGEMENT

The Missouri River downstream of Fort Peck Dam holds a diverse assemblage of both native and nonnative fish species. Its proximity to the county seats of Glasgow and Wolf Point make it a popular fishery in northeastern Montana. Native fish species targeted by anglers include sauger, channel catfish, shovelnose sturgeon, burbot and paddlefish. Anglers also pursue a number of nonnative game fish species including walleye, northern pike, and rainbow trout. The Missouri River is managed as a wild fishery, with no stocking of game fish currently taking place. However, in the past, the Missouri River was stocked with a multitude of species for angling purposes. These past stocking practices in the river, along with current stocking practices in reservoirs have significantly influenced the current fish assemblage. Currently, water bodies such as Fort Peck Reservoir and smaller ponds that are at times connected to the Missouri River are stocked with nonnative species, including, walleye, Chinook salmon, northern pike, yellow perch and largemouth bass. Today, this reach of the Missouri River is home to over 50 species of fish, which consists of at least 31 native species and a minimum of 19 nonnative species.

Angling on the Missouri River occurs year-round with the spring and summer months being the most popular. Although ice fishing does occur on the Missouri River, it is limited to a few deepwater holes where good ice forms.

Since the Fort Peck Indian Reservation borders a large proportion of the north side of the Missouri River in this drainage, the Reservation and State have agreed to be consistent with harvest regulations. Anglers fishing on boundary waters (waters adjacent to the Fort Peck Reservation) are allowed one daily bag limit regardless if the angler possesses a state and tribal fishing license. Special harvest regulations are implemented for paddlefish and rainbow trout. Only one paddlefish can be harvested per year and anglers are required to have a yellow tag to fish in the Missouri River downstream of Fort Peck Dam or the Yellowstone River. An archery

season for paddlefish occurs in the Fort Peck Dredge Cuts, where anglers are allowed one fish per year and a blue tag is required.

Due to relatively low densities and limited recruitment, the daily bag limit on rainbow trout downstream of Fort Peck Dam is two fish, instead of the five that are allowed on other regional waters.

The Redwater River runs south to north through McCone and a portion of Dawson County. The Redwater River enters the Missouri River at river mile 1,682, across the river from the town of Poplar, Montana. Game fish present include channel catfish, sauger, northern pike and walleye. The Redwater River hosts 21 native and nine nonnative species. Some of the nonnative, non-game fish include western silvery minnows, plains minnows, sturgeon chubs, flathead chubs, fathead minnows, northern redbelly dace, river carpsuckers, bigmouth buffalo, smallmouth buffalo, shorthead redhorse, white sucker, goldeye and brook stickleback.

Channel catfish and northern pike are popular game fishes that anglers target in the Redwater River. During the spring and early summer, anglers fish for channel catfish and sauger in the lower portion of the Nickwall Road crossing. Nickwall crossing, which is situated approximately 1 mile upstream of the Redwater's confluence with the Missouri River precluded fish from upstream passage during most times until the spring of 2017, when FWP in combination with partners such as the Bureau of Land Management and U.S. Fish and Wildlife Service placed a fish friendly crossing at this site. Eastern District harvest regulations are in place on all portions of the Redwater River.

The Poplar River drainage is situated on the north side of the Missouri River and encompasses portions of Roosevelt, Daniels and Valley counties, as well as Saskatchewan, Canada. The East Fork meets with the Poplar River near the town of Scobey, while the West Fork enters the Poplar River just south of the Fort Peck Reservation, in Roosevelt County. A dam is located on the mainstem Poplar River just north of the Canadian border and has a great influence on the river's hydrograph. In the years before the dam, sauger and walleye were relatively abundant in the upper portions of the Poplar River. However, angler success has diminished since the construction of the Canadian dam. Current knowledge of the fishery is limited.

Several prairie ponds within the drainage are stocked with game fish to provide fishing opportunities. The deeper ponds have been stocked with game fish such as northern pike, yellow perch, white and black crappie, and largemouth bass; these are meant to be self-sustaining. Shallower ponds that have a tendency to winter kill are often stocked with hatchery-produced rainbow trout that are stocked either annually or biannually.

HABITAT

The construction of Fort Peck Dam significantly altered the habitat of the Missouri River. Fort Peck Reservoir acts as both a sediment and nutrient sink for the Missouri River, and therefore delivers sediment-free and nutrient-poor water to the Missouri River downstream of the dam. The dam prevents all fish from migrating upstream. The dam has also greatly altered the natural flow regime of the Missouri River by holding back spring freshets and discharging higher than natural flows during the winter months. Channel-forming flows have been infrequent since the dam closed off the river in 1937. Fort Peck Dam provides hydroelectric power by drawing

hypolimnetic reservoir water through its penstocks into the powerhouse. This cold water (up to 50° F colder than the Missouri River above Fort Peck Reservoir) is released throughout the spring and summer months suppressing water temperatures in the Missouri River for approximately 180 river miles. Although water temperature does rise with increasing distance from the dam, average water temperatures in the lower Missouri River near its confluence with the Yellowstone River is 2° F colder than water upstream of Fort Peck Reservoir.

The altered habitat of the Missouri River due to Fort Peck Dam is evident in the presence and absence, as well as the relative abundance, of native fishes. Several species, such as sturgeon and sicklefin chubs, western silvery minnows, channel catfish and stonecats, become more abundant with distance downstream from Fort Peck Dam. Additionally, the growth rates of fish species like sauger, channel catfish and even pallid sturgeon are slower in the Missouri River near Fort Peck Dam when compared to the lower Missouri or Yellowstone Rivers. For some species like channel catfish, water temperatures may stay too cold to even meet their minimum spawning requirements.

Large irrigation and municipal intakes are located on this section of the Missouri River, both in Valley County and on the Fort Peck Reservation. Several large water intakes are located on the Missouri River: Wolf Point, south of Wiota, Frazer and Pickthorn Bay. The effect of these on fish populations of the Missouri River is unknown. In addition, numerous floating irrigation pumps are located on the river. FWP recommends fish screens for these pumps and these are mandated through the local conservation districts.

The largest habitat alteration to the Poplar River system has been the construction of a dam for a power plant located in Saskatchewan, Canada. This dam has significantly altered the natural flow regime of the Poplar River. In addition, irrigation withdrawals greatly impact the system. There are several periods throughout the year that the Poplar has little to no water flowing at its mouth.

FISHING ACCESS

The majority of the fishing waters in the drainage are situated on private lands. In addition, a large proportion of the Missouri River's north banks are located on Fort Peck Reservation land. While the Missouri River has five fishing access sites throughout its 180 mile course, public access is very limited due to reservation boundaries and access site spacing. In general, access sites are more than 60 river miles apart, too far for day float trips.

The Redwater River winds through mostly private lands and access is difficult. The main access locations are at county bridge crossing right-of-ways. Similarly, the Poplar River runs through mainly private lands with the majority of access occurring at bridge crossings. A large part of the lower Poplar River is also situated on Fort Peck Reservation lands.

The Fort Peck Dredge Cuts are surrounded by U.S. Army Corps of Engineers land and have good access, including three boat launches. The majority of prairie ponds that FWP stocks within the area are on private land, but landowners allow public access through an agreement with FWP.

Special Management Issues

The pallid sturgeon was listed as endangered in 1990 under the federal Endangered Species Act of 1973. The wild population of pallid sturgeon in the Missouri River downstream of Fort Peck Dam has had no documented natural recruitment since Garrison Dam was closed off in the 1950's. Up until 1998 the entire population was made up of old-aged fish of large sizes. Due to the lack of natural recruitment, propagation efforts commenced in 1997, with the first stocking of pallid sturgeon into the river occurring in 1998. Since that time, thousands of hatchery-reared pallid sturgeon were stocked into the river. The stocking program has been successful in staving off the extirpation of this species in the Missouri River, although habitat alterations to promote natural recruitment have been limited.

The USACE has obligations under the ESA to aid in the recovery of endangered species affected by the operation of Missouri River dams. In the 2000 Missouri River Biological Opinion and subsequent 2003 amendment to the Biological Opinion, the USFWS listed two Reasonable and Prudent Alternatives that were directed at the operations of Fort Peck Dam relative to pallid sturgeon recovery. One was a spillway test, where warm water would be spilled over Fort Peck Dam's spillway during the spring and early summer to warm the river's water temperature. The second was to examine the potential to selectively withdrawal water out of Fort Peck Dam to increase water temperatures throughout the fish's growing season. Due to a long drought in the Missouri River basin, the reservoir elevations were too low to spill and a test was never accomplished. However, due to the record setting snowfall on the eastern Montana prairie in the winter of 2010/2011 and the subsequent wet spring, Fort Peck Reservoir filled and the USACE spilled over Fort Peck Dam in 2011. Although this spill event was not designed to elicit a response of pallid sturgeon, it did. During the spring of 2011, up to 40% of the adult pallid sturgeon population moved into the Missouri River in Montana and stayed in the river throughout the spawning season. The migration began to occur when flows were just over 20,000 cfs. During early July an aggregation of adults was found in the Missouri River just downstream of the mouth of the Milk River, which is only one mile downstream of the Spillway channel. A few days later a wild larval pallid sturgeon was collected, which is the first genetically confirmed wild produced pallid sturgeon larvae ever collected in the Missouri River drainage. These results indicate that spring discharge from the Missouri River will trigger wild pallid sturgeon to use the river for spawning and that spawning can be successful.

During 2016 a large-scale larval drift experiment was conducted in the Missouri River. The experiment consisted of stocking ~700,000 less than one day old pallid sturgeon free embryos in the Missouri River just downstream from the Milk River confluence. Crews then tracked the drift dynamics of these free-flowing embryos downstream. The most important part of this experiment was the subsequent capture of a 412 mm pallid sturgeon during August of 2017. This fish was genetically tracked back to the larval drift experiment. This event further suggests that if fish are able to spawn near Fort Peck Dam there is at least enough drift distance for a portion of the larvae.

In addition, during 2018 the Missouri River had discharges in the spring through summer months of approximately 20,000 cfs. In the early spring this was due in part to higher than normal Milk River flows. Subsequently, flows in the Milk River diminished, but the Army Corps of Engineers began using the spillway at the Fort Peck Dam Project. Flows continued around 20,000 cfs for the remainder of the summer. As was observed in 2011, several adult pallid

sturgeon migrated up the Missouri River during 2018 and many stayed in the area of the spillway for an extended time period. Three known black egged females were near the Fort Peck Spillway during late June. While at least one of these females left the system before spawning, the other two stayed in the Missouri River during the early parts of July. While there was no confirmation of spawning, subsequent larval and young-of-the-year sampling will monitor if spawning and recruitment occurred.

In total, years of studying pallid sturgeon indicate that spring flows will bring adults up to the Fort Peck Dam area. Due to the 2016 larval drift experiment, we believe that if pallid sturgeon spawn in the vicinity of the Dam, at least a portion of the drift have enough distance to drift and switch to the exogenous feeding life stage. Further tests of the magnitude and timing of flows from the Fort Peck project are needed to establish a flow program that best suites the needs of both pallid sturgeon and water users.

NATIVE SPECIES CONSERVATION

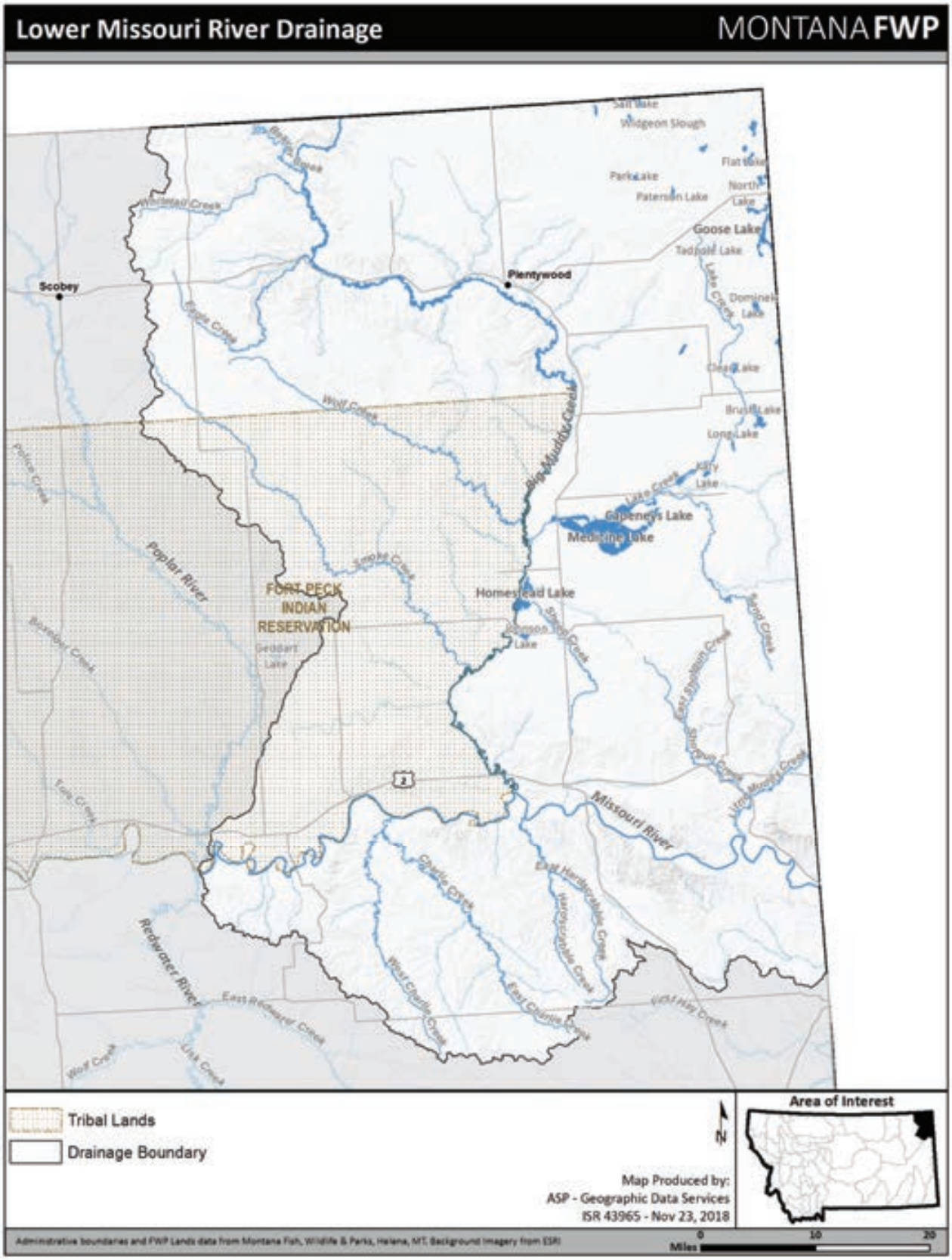
Several state Species of Special Concern exist within the Poplar Drainage. Many such as pallid sturgeon, paddlefish, sauger, sicklefin chub, sturgeon chub and blue suckers are tied to the mainstem Missouri River, others such as pearl dace and northern redbelly dace are found in tributaries. While the mainstem Missouri River has had a lot of survey data collected over the past 20 plus years, relatively few surveys and/or studies have been done on tributary streams within the basin. Repeating some of the earlier survey work on these prairie systems would give managers an idea on how well their populations are persisting. Once the species are identified, specific habitat actions may be warranted to increase the likelihood of persistence.

FISHERIES MANAGEMENT DIRECTION FOR MISSOURI RIVER - POPLAR DRAINAGE

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
Missouri River - Fort Peck Dam to the confluence with the Poplar River	92 miles	Pallid sturgeon (N)	Wild/ Hatchery	Conservation	Restore a self-sustaining population of pallid sturgeon in the Missouri River. Work towards modifying operations at Fort Peck Dam that are beneficial for spawning and growth.
		Paddlefish (N)	Wild	Restrictive Regulations	Continue to allow the unique opportunity for paddlefish snagging in the Missouri River. Monitor the fishery.
		Shovelnose sturgeon (N), Sauger (N), Channel catfish (N)	Wild	General	Monitor populations to be certain that overexploitation does not occur. Maintain habitat for all life stages. Better understand how operations of Fort Peck Dam and the Missouri River's tributaries influence production, recruitment and population structure of these native game fishes.
		Rainbow trout	Wild	Restrictive Regulations	Monitor population to make sure overexploitation does not occur. Better understand how angling pressure and harvest may be impacting this species.
		Walleye	Wild	General	Allow harvest to keep population size in check to minimize hybridization with native sauger.
		Native non-game fishes (N)	Wild	General	Monitor the native non-game fishes to better understand how operations of Fort Peck Dam and tributaries influence these populations.
Fort Peck Dredge Cuts	542 acres	Paddlefish (N)	Wild	Restrictive Regulations	Continue to allow the unique opportunity for bow fishing in the Dredge Cuts. Improve knowledge relating to the population dynamics of these fish.

Continue next page

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
		Sauger (N), Channel catfish (N), Walleye, Northern pike, Burbot (N)	Wild	General	Maintain a quality fishery (size and catch rate) for both native and non-native game fishes. Continue to monitor these populations.
Redwater River	153 miles	Channel catfish (N), sauger (N) Native non-game fishes (N)	Wild Wild	General Conservation	Maintain numbers. Protect habitat for native fishes. Provide fish passage at stream crossings.
Habitat needs and activities: Get functional fish passage for all species at the Nickwall Road crossing.					
Poplar River (Canadian border to mouth)	107 miles	Sauger (N), Channel catfish (N), Northern pike	Wild	General	Begin to understand fish assemblage, population size of game fishes, identify habitat problems.
Prairie Ponds	Various	Yellow perch, Largemouth bass, Northern pike Rainbow trout	Wild Hatchery	General Put, Grow and Take	Continue to monitor these populations and stock fish when necessary. Look for opportunities to increase the quality of habitat by increasing the depth of reservoirs, building new reservoirs, etc. Continue to stock prairie ponds with put, grow and take fisheries. Evaluate angler use and evaluate which ponds should be stocked. Look for opportunities to improve habitat where applicable.


Lower Missouri River Drainage
MONTANA FWP
Scobey
Plentywood
Goose Lake
Medicine Lake
Homestead Lake
FORT PECK INDIAN RESERVATION
Poplar River
Missouri River
Redwater River
Big Muddy Creek
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background imagery from ESRI
Miles

LOWER MISSOURI RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Missouri-Big Muddy drainage encompasses approximately 3,750 square miles of land in Roosevelt, Richland, Sheridan and Daniels Counties. The main artery of the drainage is the Missouri River from the confluence of the Poplar River to the North Dakota Border, about 94 river miles. The largest tributary to the Missouri River within the drainage is Big Muddy Creek, which flows from north to south through Sheridan and Roosevelt counties and forms the eastern boundary of the Fort Peck Reservation. Agricultural lands dominate the landscape in the northern portions of the drainage, with grain being the dominant crop. To the south of the Missouri River in its furthest downstream portions, sharp breaks in vegetation occur. Throughout the river bottomlands, irrigated agriculture occurs intermixed with intact cottonwood riparian zones.

Box Elder and Whitetail Reservoirs are the two largest and most fished flatwater fisheries in the drainage and are both located in Sheridan County. Box Elder Reservoir is situated just north of the town of Plentywood, while Whitetail Reservoir is located at the town of Whitetail near the Canada border. Various other smaller prairie ponds located mainly on private land are located within the drainage.

FISHERIES MANAGEMENT

The lower Missouri River, while significantly altered due to the influence of Fort Peck Dam upstream, holds a more naturalized fish assemblage than portions closer to the dam. Native game fishes such as channel catfish, sauger and shovelnose sturgeon are abundant, as are native non-game cyprinids including sicklefin and sturgeon chubs. The lower Missouri River is an important juvenile rearing area for several species of fish that spawn further upstream in the system. This is the only area of the Missouri River downstream of Fort Peck Dam where young-of-the-year sauger, shovelnose sturgeon and channel catfish are common.

Both wild and hatchery-produced pallid sturgeon are found in higher densities within this section of the Missouri River, when compared to upstream areas. After stocking, hatchery-reared juvenile pallid sturgeon tend to congregate in the lower sections of the Missouri River, most likely due to the higher abundance of forage fish and more natural temperature and suspended sediment loads. Growth rates of pallid sturgeon and other native fishes are likely higher in this section due to the increased summer water temperatures.

The Missouri River is managed as a wild fishery, with no stocking of game fish currently taking place. However, both past and current stocking practices (in Fort Peck Reservoir) have significantly influenced the current fish assemblage. In the past, upper portions of the Missouri River below Fort Peck Dam were stocked with a multitude of species in an effort to improve angling opportunities. Many of those fish have colonized the river, including the downstream portions. Today the Missouri River is home to over 50 species of fish, including at least 31 native species and a minimum of 19 introduced species. Due to the more naturalized habitat of

the lower Missouri River, introduced fishes are less abundant than in portions of the river closer to Fort Peck Dam.

Fishing regulations for the lower Missouri River are similar to that of the upper portions of the river below Fort Peck Dam with general Eastern District regulations in place for the majority of species. Special regulations are in place for the reach of the Missouri River from Fort Peck Dam to the mouth of the Milk River. These regulations are in place to protect the limited coldwater fishery that resides in this tailwater reach. Angling on the lower Missouri River occurs year-round with the spring and fall months being the most popular. Although ice fishing does occur it is limited to a few deep-water holes where good ice forms.

Big Muddy Creek hosts a wide variety of native and introduced fishes. Little fisheries data have been collected on Big Muddy Creek over the past few decades. Game fish including channel catfish, sauger and walleye are all found in the lower sections of the creek that are connected to the Missouri River. The upper portions of Big Muddy Creek are home to pearl dace, a Montana Species of Concern that is rare in Montana.

Box Elder Reservoir, also known as Bolster Dam hosts a walleye, northern pike, yellow perch and black bullhead fishery. A daily bag limit of 25 yellow perch has been implemented on Box Elder Reservoir in an effort to protect spawning fish and limit harvest. Anglers fish for walleye in the spring and summer months, while northern pike are currently the main target during the winter. Anglers harvest the occasional trophy northern pike through the ice and often use a spear to do so.

Whitetail Reservoir is a relatively shallow reservoir with maximum depths less than 15 feet. It is prone to winter kill when snow accumulates during prolonged winters. Large die offs were documented in the winter of 2010/2011. Today northern pike are very abundant in Whitetail Reservoir and some ice anglers do well on yellow perch.

Several prairie ponds within the drainage are stocked with game fishes to provide fishing opportunities. The deeper ponds have been stocked with game fish that are meant to be self-sustaining, such as northern pike, yellow perch, white or black crappie, and largemouth bass. Shallower ponds that have a tendency to winter kill are often stocked with hatchery-produced rainbow trout that are stocked either annually or biannually.

HABITAT

While still highly altered due to the presence and operations of Fort Peck Dam, the section of the Missouri River in this reach is much more natural in its physical and chemical properties when compared to upstream reaches. This naturalization is largely due to tributary influence, lateral bank erosion and solar radiation. As such, the lower section of the Missouri River is appreciably warmer during the summer and carries much more suspended sediment than upstream sections. A more natural fish assemblage exists and consists of several native fish that are uncommon closer to the dam.

The lower sections of the Missouri River are the most important juvenile rearing areas for several native game fish within the Missouri River. For that reason, it is important to protect these areas by providing the oil and gas industry with up-to-date information which will assist in making informed decisions of how to minimize negative impacts to the aquatic environment.

Numerous floating irrigation pumps are located along the river. Fish screens on these pumps are recommended by FWP and mandated through the local conservation districts. Recently, applications are being processed to sell water (market water) to oil companies to be used in the process known as fracking. Fracking involves injecting 1-3.5 million gallons of pressurized water into each oil well to shatter the shale and allow the oil to flow freely. Cumulative impacts of water extraction from the Missouri River will be monitored.

Several road crossings occur along the length of Big Muddy Creek. Documenting these crossings and understanding how they may affect both fish migrations and the preclusion of northern pike is of importance. Irrigation withdrawals also impact the habitat of Big Muddy Creek, and during various periods within the year the creek has limited water.

FISHING ACCESS

The north side of the Missouri River from the Milk River to the mouth of Big Muddy Creek is on the Fort Peck Reservation. Off the reservation and further downstream, limited public land exists that is adjacent to the river. FWP actively reviews possible access sites on DNRC and BLM lands. Starting in 2015 and continuing as of this writing, FWP has been actively pursuing river access at the mouth of the Redwater River south of Poplar. This property is approximately 19 river miles downstream of the Lewis and Clark Fishing Access Site and approximately 60 miles to Culbertson Bridge FAS. Additionally, FWP has approached the Fort Peck Tribes about river access at Sprole Bridge. If the Tribe was interested in developing and managing this site it would provide an access that is approximately 17.5 miles downstream of the Redwater site (42 miles to Culbertson Bridge FAS).

The majority of Big Muddy Creek flows through private land and the western banks of the lower portion are bordered by the Fort Peck Reservation. Access can be found at a few State sections and at county road crossings.

Box Elder and Whitetail Reservoirs are both readily accessible to the public. Box Elder Reservoir is owned by Sheridan County and has two concrete boat ramps. The local Walleyes Unlimited chapter placed two handicapped accessible fishing piers in the reservoir in the summer of 2012. Whitetail Reservoir is a State FAS and has a gravel boat ramp.

SPECIAL MANAGEMENT ISSUES

The pallid sturgeon was listed as endangered in 1990 under the federal Endangered Species Act of 1973. The wild population of pallid sturgeon in the Missouri River downstream of Fort Peck Dam, which includes the Missouri-Big Muddy Drainage, has had no documented natural recruitment since Garrison Dam was closed off in the 1950's. Prior to 1998 the entire population was comprised of large, old fish. Due to the lack of natural recruitment, propagation efforts began in 1997, with the first stocking of pallid sturgeon into the river occurring in 1998. Since that time, thousands of hatchery reared pallid sturgeon have been stocked into the river. The stocking program has been successful in staving off the extirpation of this species in the Missouri River, although habitat alterations to promote natural recruitment have been limited.

The lower Missouri River provides essential habitat for rearing pallid sturgeon of all life stages. Data suggests that if pallid sturgeon are going to successfully recruit to the system, the lower portions of the Missouri River are critical as nursery habitat. In addition, hatchery-reared juvenile pallid sturgeon that have been stocked into the system are found in greater abundance in this section of the river than in its upstream reaches. The greater abundance of native cyprinids also makes this an important area for juvenile and adult pallid sturgeon. With a larger food supply and higher summer water temperatures, this reach provides some of the best habitat in the USFWS designated Great Plains Management Unit.

Several native Missouri River fishes including pallid and shovelnose sturgeon, paddlefish and sauger have evolved with a strategy of drifting for several days after being hatched. This life-history strategy coupled with spawning on hard surfaces such as gravel or cobble, make the lower Missouri River the most important rearing area for these fishes. Since very little hard substrate occurs in the lower portion of the river, many native fishes migrate upstream to reaches that contain the desired hard substrates to lay their eggs on. Once their eggs hatch, their larvae drift downstream where they begin freely swimming and feeding. The lower Missouri River has been identified as having the highest densities of young-of-the-year shovelnose sturgeon and sauger. In addition, the lower river is the only place where abundant young-the-year burbot have only been found, further supporting the belief that this is a critical rearing area.

Modifications to Fort Peck Dam operations (temperature and flow) are needed for the river to come closer to reaching its natural carrying capacity. Water temperatures are warmer in the downstream sections, nevertheless they are still colder during the summer months than river temperatures above Fort Peck Dam. Warmer water temperatures would increase the productivity of the system in several ways. Warmer water would likely increase macro invertebrate production, which is a key food group for numerous species of fish. Additionally, warming up the river would likely extend the fish growing season, which would positively benefit most all of the native species present. Lastly, warmer water would likely increase the survival rates of fishes, since they would spawn earlier and their progeny would go into winter at larger sizes with better condition.

Specifically, more naturalized spring flows out of Fort Peck Dam are needed in the lower Missouri River to refresh the dynamic habitat and cue migratory fish to move to spawning locations in the upper river. Very few high-water events have occurred in the Missouri River (2011 and 2018) in recent years. This lack of hydraulic heterogeneity reduces the complexity of the river and ultimately affects native fishes. In addition to creating habitat, naturalized spring flows trigger spawning migrations and spawning response of many native fishes. During both 2011 and 2018, higher than normal spring flows in the Missouri River drew a number of wild adult pallid sturgeon and hatchery origin pallid sturgeon upstream to areas near the confluence of the Milk River. A 412 mm pallid sturgeon was collected in the Lower Missouri River in North Dakota in August of 2017 by USFWS crews. This fish was genetically verified as a product of the 2016 larval drift study conducted by USGS and FWP. The collection of this fish indicates that pallid sturgeon spawning in the Missouri River below the mouth of the Milk River provides adequate drift distance for free-embryos to survive before becoming exogenously feeding larvae (conditioned on managed flows from Fort Peck Dam).

NATIVE SPECIES CONSERVATION

Several state Species of Special Concern exist within the Lower Missouri River Drainage. Many species such as pallid sturgeon, paddlefish, sauger and blue suckers are tied to the Missouri River, others such as pearl dace are found in tributaries. While the mainstem Missouri River has had a lot of survey data collected over the past 20 plus years, relatively few surveys and/or studies have been done on tributary streams like the Big Muddy Creek system.

Pearl dace are known to occur at localized sites at relatively low densities within the Big Muddy watershed. Both Montana State University and the Montana Heritage Program conducted surveys of native fishes within the Big Muddy drainage in the early and middle 2000's. Both research entities found a negative relationship between the presence of the nonnative northern pike and native species richness. In particular, pearl dace were only found in a few localized areas above barriers from the mainstem Big Muddy.

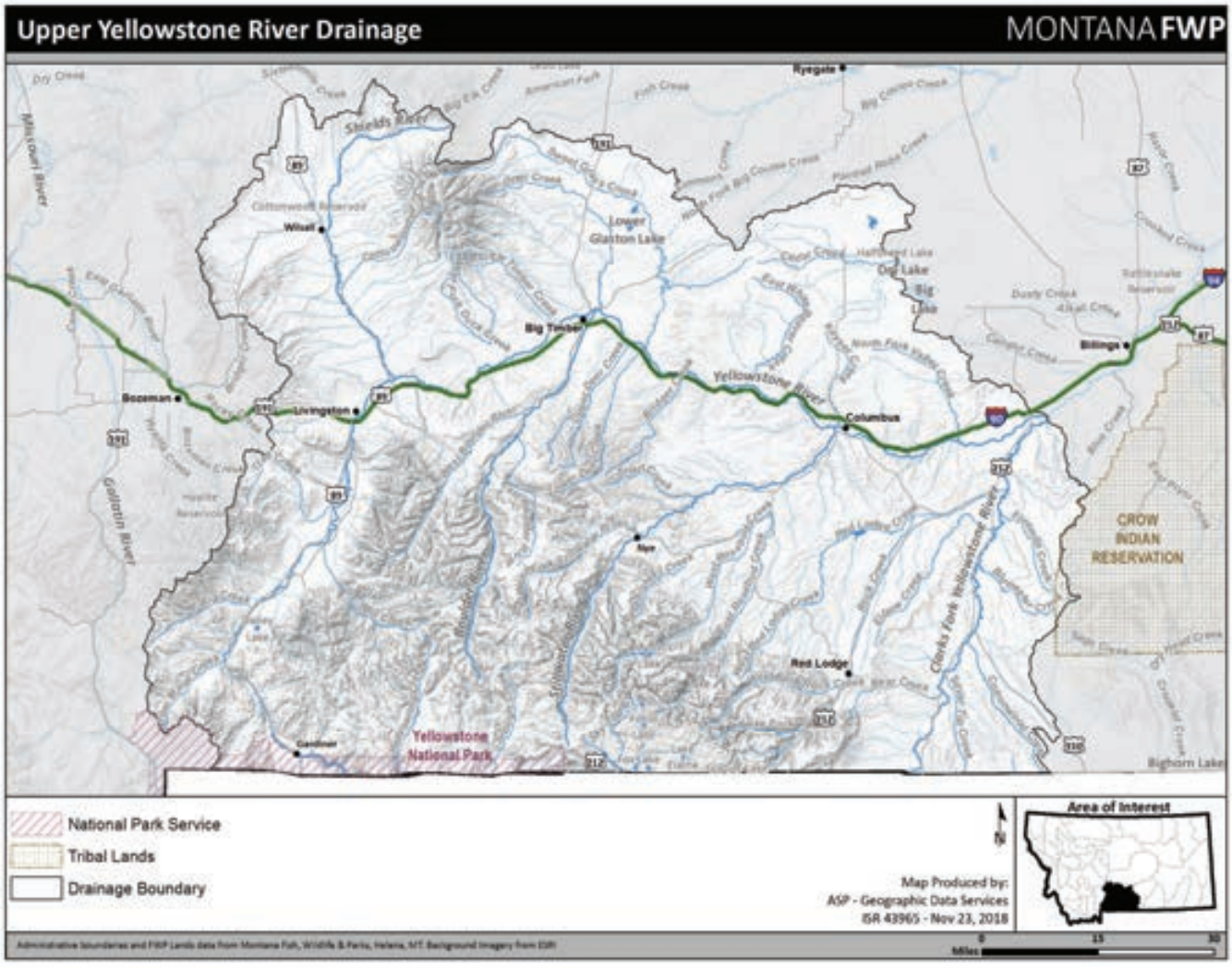
More recently, pearl dace were sampled within Plentywood Creek, in the northeast corner of Montana. Further sampling in Plentywood Creek is needed to better understand distribution and densities of this species. In conjunction with fish sampling, a broad assessment of the habitat within Plentywood Creek may lend insight the current threats on pearl dace within this system.

To conserve native fishes and especially pearl dace, more surveys need be done within the Big Muddy drainage, with particular focus on existing barriers and northern pike distribution.

FISHERIES MANAGEMENT DIRECTION FOR LOWER MISSOURI RIVER DRAINAGE

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
Missouri River - Confluence of Poplar River to North Dakota border	94 miles	Pallid sturgeon (N)	Wild/ Hatchery	Conservation	Restore a self-sustaining population of pallid sturgeon in the Missouri River. Work towards modifying operations at Fort Peck Dam that are beneficial for spawning and growth.
		Paddlefish (N)	Wild	Restrictive Regulations	Continue to allow the unique opportunity for paddlefish snagging in the Missouri River. Monitor the fishery.
		Shovelnose sturgeon (N), Sauger (N), Channel catfish (N)	Wild	General	Monitor populations to be certain that overexploitation does not occur. Maintain habitat for all life stages. Better understand how operations of Fort Peck Dam and the Missouri River's tributaries influence production, recruitment and population structure of these native game fishes.
		Walleye	Wild	General	Allow harvest to keep population size at levels which will minimize hybridization with native sauger.
		Native non-game fishes (N)	Wild	Conservation	Monitor the native non-game fishes to better understand how operations of Fort Peck Dam and tributaries influence these populations.
Big Muddy Creek (Canadian border to mouth)	194 miles	Channel catfish (N), Sauger (N)	Wild	General	Maintain numbers. Inventory habitat issues, such as fish passage barriers and unscreened diversions.
		Native non-game fishes (N)	Wild	Conservation	Protect habitat for native fishes. Provide fish passage at stream crossings.

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
Box Elder Reservoir	77 acres	Yellow perch, Walleye, Northern pike	Wild/ Transfer	General/ Restrictive Regulations	Continue to monitor these populations. Evaluate the yellow perch transfers and the discontinued walleye stocking. Limit harvest of yellow perch until the fishery rebounds.
Whitetail Reservoir	25 acres	Yellow perch, Northern pike	Wild	General	Continue to monitor populations. Stock fish after winter kills. Evaluate balance between yellow perch and northern pike.
Prairie Ponds	Various	Yellow perch, Largemouth bass, Northern pike	Wild	General	Continue to monitor these populations and stock fish when necessary. Look for opportunities to increase the quality of habitat by increasing the depth of reservoirs, building new reservoirs, etc.
		Rainbow trout	Hatchery	Put, Grow and Take	Continue to stock prairie ponds with put, grow and take fisheries. Evaluate angler use and evaluate which ponds should be stocked. Look for opportunities to improve habitat where applicable.


Upper Yellowstone River Drainage
MONTANA FWP
Ryegate
Shields River
Wilsall
Lower Glaston Lake
Big Timber
Yellowstone River
Columbus
Billings
Bozeman
Livingston
Gallatin River
Nye
Red Lodge
Clarks Fork Yellowstone River
CROW INDIAN RESERVATION
Yellowstone National Park
Gardiner
Bighorn Lake
National Park Service
Tribal Lands
Drainage Boundary
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Area of Interest
Miles
0
15
30

UPPER YELLOWSTONE RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Upper Yellowstone River flows for more than 180 miles from the Montana/Wyoming border to the confluence of the Clarks Fork of the Yellowstone, through Park, Sweet Grass, Stillwater and Yellowstone counties. This section of river, referred to here as the Upper Yellowstone Drainage, supports a quality coldwater fishery in relatively unaltered habitat. The Upper Yellowstone is free flowing, with no dams or river-wide diversion structures present. Most of the river flows through range and crop land traditionally managed for agriculture but faced with increasing pressure from residential development. Towns and cities along this reach of the Yellowstone include Gardiner, Livingston, Big Timber, Columbus, and Laurel. Significant recreational river use also comes from the population centers of Bozeman and Billings.

Several large tributaries flow into the Upper Yellowstone River, including the Shields, Boulder, Stillwater and Clarks Fork. Numerous smaller, coldwater tributaries flow into the river upstream from Livingston, while a mix of coldwater streams draining from nearby mountains (Bridgers, Bangtails, Gallatins, Crazies, Absarokas, and Beartooths), and warmer water prairie streams enter the Yellowstone between Livingston and Laurel. In total, there are approximately 3,200 miles of fish-bearing stream occurring within 433 streams within the drainage. Additionally, there are 524 lakes, totaling 10,516 surface acres.

FISHERIES MANAGEMENT

The upper Yellowstone River drainage supports a very popular, high quality trout fishery throughout its length. In addition to the fishery of the mainstem Yellowstone, many of the tributaries provide high quality trout fisheries. Above Livingston, the Upper Yellowstone provides a popular sport fishery for rainbow trout, brown trout and Yellowstone cutthroat trout. The tributaries support Yellowstone cutthroat, rainbow, brown and brook trout fisheries as well. Downstream from Livingston, the mainstem and tributaries of the Yellowstone support high quality fisheries for brown and rainbow trout, but Yellowstone cutthroat trout numbers decline moving downstream, and only the occasional cutthroat is caught below Big Timber. Other fish species in the Upper Yellowstone include mountain whitefish and several species of nongame fish, both native and nonnative.

Angling in the Upper Yellowstone River and all tributaries is open all year but is limited by cold weather and ice in winter and high stream flows and associated turbidity during runoff.

All flowing waters in this drainage that support self-sustaining trout populations are managed as wild trout fisheries, emphasizing habitat protection and natural reproduction. Tributary streams and their connectivity with the Yellowstone are critical for reproduction, as many of the tributaries contain much higher quality spawning habitat than does the Yellowstone River. This connectivity is particularly important for Yellowstone cutthroat trout because their spawning use in the main stem of the river is limited. Fishing regulations are tailored to protect trout fisheries and satisfy angler demand.

Several lowland lakes and reservoirs, and hundreds of high mountain lakes are part of the Upper Yellowstone Drainage. Two of the lowland lakes, Cooney Reservoir and Dailey Lake, are managed for balanced walleye/trout fisheries via stocking, fishing regulations and other strategies. Dailey Lake is managed for a perch fishery as well. The high mountain lakes are managed to provide maximum angler benefit while minimizing impacts to forest lands and Wilderness, promoting native Yellowstone cutthroat trout restoration, and creating opportunities to catch rare and unique fish species. Fish species in the mountain lakes include Yellowstone cutthroat, rainbow, brook and golden trout, as well as Arctic grayling. Yellowstone cutthroat trout, golden trout and Arctic grayling are stocked in selected mountain lakes on a regular basis. LeHardy strain Yellowstone cutthroat trout from Wyoming are the brood source for stocked Yellowstone cutthroat trout and Sylvan Lake is the brood source for golden trout that are stocked throughout the state. An important objective of mountain lakes management is to avoid conflicting or compromising fisheries management in streams downstream of the lakes in the same drainage.

Restoration of native Yellowstone cutthroat trout has been a priority in the Upper Yellowstone Drainage. The species has been severely diminished in population size and distribution during human development and is limited to the upper end of the Yellowstone River and tributaries (above Springdale), and the headwaters of tributaries to the Yellowstone downstream from Springdale. Strategies to protect and restore Yellowstone cutthroat trout populations include maintaining connectivity with spawning tributaries and limiting angler harvest in the upper end of the drainage, and isolating the species using passage barriers to protect it from nonnative trout in tributaries to the lower end of this reach. Several projects in recent years have included building fish passage barriers, chemically removing nonnative trout from above the barriers, and reintroducing cutthroat trout in these streams. These strategies have been successful for recovering several cutthroat trout populations. These new populations have been managed as sport fish: all cutthroat trout in tributaries to the Yellowstone downstream from Pine Creek Bridge are part of an angler's daily trout limit. This regulation strategy has helped build public support for cutthroat trout restoration projects. The long-term goal for cutthroat conservation in the Upper Yellowstone (above Springdale) is to have 20% of the historically occupied habitat restored to Yellowstone cutthroat trout. In the Shields River, upstream from Chadbourn Diversion, the long-term goal for Yellowstone cutthroat trout[1] conservation is to have 100% of the historically occupied habitat restored with secure conservation populations of Yellowstone cutthroat trout.

HABITAT

Although it is the longest undammed river in the contiguous United States and much of the river remains unaltered, significant habitat changes have impacted the Upper Yellowstone River since human settlement. Notable historic development along the Yellowstone River corridor includes the construction of a major railroad, as well as numerous roads to accommodate vehicle travel, including county roads, state highways and more recently a federal interstate highway. All of these developments have, in some way, impacted the river's ability to migrate laterally and interact with its historic floodplain. Using angular rock or concrete rip rap to protect roads, bridges, homes, and farmland or ranchland has restricted the natural expression of the river, and

[1] As described in the Yellowstone Cutthroat Trout Conservation Strategy for the Shields River Watershed above Chadbourne Diversion.

possibly the quality of fish habitat in the river. Significant development is ongoing and may accelerate along the Yellowstone, particularly in the form of residential housing, which may further impact habitat.

An adequate quantity of cool, oxygenated water is necessary for survival and growth of trout in the upper Yellowstone River. The Yellowstone, Shields, Stillwater and Boulder rivers are all considered priority waters under FWP's drought policy and face potential fishing closures during severe drought conditions that can occur in late summer. In addition to these waters, Rock Creek and the Clarks Fork of the Yellowstone are both severely dewatered from irrigation in specific areas on certain years. Trout populations in these waters can be expected to fluctuate over the years in response to water availability. Other small tributaries in the drainage can also be impacted by irrigation withdrawals.

FWP currently holds water leases on Big, Cedar, Mulherin, and Locke Creek. These water leases are used to maintain instream flow that ensures the survival of Yellowstone cutthroat trout redds and the recruitment of fry to the Yellowstone River.

The operation of irrigation diversions and ditches in the Upper Yellowstone Drainage leads to the entrainment of hundreds of thousands, if not millions of fish each year. Many of these fish are returned or are able to swim back to the stream when ditches are shut down, but many others become stranded and die. Fish screens are uncommon in the area due to their high cost and need for maintenance, troubles with functionality, and overall lack of acceptance by the ranching community. Other alternatives to fish screens are being explored.

Numerous irrigation diversions in the Clarks Fork of the Yellowstone serve as barriers to upstream passage of certain fish species, particularly burbot. Lack of fish passage and low water appear to have impacted the burbot population in the Clarks Fork.

Overall, water quality is good in the upper Yellowstone. Whirling disease has been confirmed in rainbow and Yellowstone cutthroat trout in the middle portion of the drainage, but has not been found in the lower end, despite intensive testing.

FISHING ACCESS

Almost 30 FASs are located on the Yellowstone River between Gardiner and Laurel. The majority of these sites are concentrated on the upper end of the river, where angler use is highest. There are also several additional sites available to the public that are not under FWP ownership or management. The area of the upper Yellowstone most lacking in fishing access is the reach between Columbus and Park City, approximately 20 river miles long. This reach has been a top priority for future access sites.

The Stillwater River has nine fishing access sites and supports very high recreational use, including commercial rafting operations, numerous angling and recreational floaters, bank angling, and camping. Only two FASs exist on the Boulder River, despite the river boasting a very high-quality fishery. Much of the upper Boulder River flows through Forest Service land where there are a number of developed campgrounds and good public access. Four access sites

are located on Rock Creek, but these are all grouped in a small area between Red Lodge and Roberts. Only one walk-in fishing access site exists on the Shields River.

East Rosebud Creek, West Rosebud Creek, Big Timber Creek, Sweet Grass Creek and other smaller streams have desirable fisheries, but public access is primarily limited to county road crossings and a small number of public sites. Stream access via private land is becoming more difficult and therefore it will be critical to secure public access in these areas.

SPECIAL MANAGEMENT ISSUES

Though angling use appears to be stable over the past decade or so, there has been a marked increase in the use of jet boats and rafts on the Yellowstone, and rafts on the Stillwater. In addition, angling pressure on the Yellowstone appears to be shifting downstream, with anglers from Bozeman and Livingston travelling greater distances to avoid crowds. Some concern has been raised over outfitters and guides who are not locally based beginning to operate farther downstream on the Yellowstone, Boulder, and Stillwater rivers. Though overall use in the lower end of this reach of the Yellowstone drainage is relatively low, the apparent upward trend could become a management issue in the future.

FISHERIES MANAGEMENT DIRECTION FOR THE UPPER YELLOWSTONE RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Yellowstone River (YNP to Pine Creek Bridge)	97 miles	Rainbow trout, Brown trout	Wild	Restrictive Regulations	Manage harvest to support quality and sustained angling opportunity. Maintain present numbers and sizes. Consider increasing angler harvest to reduce numbers if necessary to maintain fish growth.
		Yellowstone cutthroat trout (N)	Wild	Restrictive Regulations	Maintain catch and release fishery to maintain the current population.
		Mountain whitefish (N)	Wild	General	Maintain current populations.
Habitat needs and activities: Maintain current habitat					
Shields River and Tributaries (Upstream of Chadbourne Diversion)	54 miles in mainstem	Rainbow trout	Wild	Suppression	Remove where possible to prevent hybridization with Yellowstone cutthroat trout.
		Brown trout	Wild	General	Determine level of threat of brown trout to Yellowstone cutthroat trout. If needed reduce numbers/prevent invasion where Yellowstone cutthroat trout are potentially impacted.
		Yellowstone cutthroat trout (N)	Wild	Conservation	Maintain catch and release fishery to maintain current populations. Implement project to protect and/or expand current populations.
		Mountain whitefish (N)	Wild	General	Maintain current populations.
		Brook trout	Wild	Suppression	Remove where possible to protect Yellowstone cutthroat trout.
Habitat needs and activities: Work to improve stream flow and water temperatures. Work slated to begin during the fall of 2012 to repair the Chadbourne Diversion and ensure that it is a fish barrier. Selective fish passage options are being pursued but are dependent on negotiations with neighboring landowner.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Shields River and Tributaries (Downstream of Chadbourne Diversion)	11 miles in mainstem	Rainbow trout, Brown trout	Wild	General	Manage harvest to support quality and sustained angling opportunity. Maintain present numbers and sizes. Consider increasing angler harvest to reduce numbers if necessary to maintain fish growth.
		Yellowstone cutthroat trout (N)	Wild	Restrictive Regulations	Maintain catch and release fishery to maintain the current population.
		Mountain whitefish(N)	Wild	General	Maintain current populations.
Habitat needs and activities: Work to improve stream flow and water temperatures.					
Yellowstone River Tributaries (YNP to Pine Creek Bridge)	1,058 miles	Rainbow trout, Brown trout	Wild	General	Reduce numbers/prevent invasion where Yellowstone cutthroat trout are potentially impacted. Maintain sport fishery in other areas.
		Yellowstone cutthroat trout (N)	Wild	Restrictive Regulations	Maintain catch and release fishery to maintain the current populations.
		Mountain whitefish(N)	Wild	General	Maintain current populations.
		Brook trout	Wild	General	Reduce numbers/prevent invasion where Yellowstone cutthroat trout are potentially impacted. Maintain sport fishery in other areas.
Habitat needs and activities: Improve habitat (riparian, in-stream, and connectivity) and ensure stream flow in dewatered systems.					
Dailey Lake	206 acres	Yellowstone cutthroat trout (N) Rainbow trout	Hatchery/ Wild	Put, Grow and Take	Monitor recruitment to spring gill nets and adjust stocking as necessary to maintain size and age classes.
		Yellow perch	Wild	General	Monitor size and recruitment to spring gill nets.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Walleye	Hatchery/ Wild	Put, Grow and Take	Monitor recruitment to spring gill nets and adjust stocking as necessary to maintain size and age classes.
Habitat needs and activities: Work to maintain adequate lake elevations and balance trout and warm water fisheries through stocking plans.					
Yellowstone River (Springdale to Clarks Fork)	95 miles	Rainbow trout, Brown trout	Wild	Restrictive Regulations	Manage harvest to support quality angling opportunity.
		Yellowstone cutthroat trout (N)	Wild	Restrictive Regulations	Maintain catch and release fishery to maintain the current population.
		Mountain Whitefish(N)	Wild	General	Maintain numbers. Attempt to better monitor population abundance, trends and angler harvest.
		Burbot (N)	Wild	General	Maintain numbers. Learn more about population abundance, distribution and habitat use. Attempt to enhance population and manage for limited harvest.
Habitat needs and activities: Improve habitat to support ecosystem function and fish production.					
Boulder River and Tributaries	65 miles in mainstem and 168 miles in tributaries	Rainbow trout	Wild	Restrictive Regulations	Downstream from Hawley Creek: manage harvest to support high quality angling opportunity. Upstream from Hawley Creek: reduce numbers to benefit Yellowstone cutthroat trout.
		Brown trout	Wild	Restrictive Regulations	Manage harvest to support high quality angling opportunity.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Yellowstone cutthroat trout (N)	Wild	General	Allow harvest as part of Combined Trout limit for this drainage. Protect populations via habitat projects and removal of nonnatives where opportunities exist. Consider establishing new populations where opportunities exist. Manage for large, interconnected genetically pure population upstream of waterfall barrier near Hawley Creek.
		Mountain Whitefish(N)	Wild	General	Maintain numbers.
		Brook trout	Wild	Liberal Regulations/ Suppression	Reduce numbers/prevent invasion where Yellowstone cutthroat trout are potentially impacted. Manage for sport fishery with opportunity for high levels of harvest in other areas.
Habitat needs and activities: Reduce entrainment of trout in irrigation ditches. Protect existing trout spawning habitat.					
Stillwater River and Tributaries	70 miles in mainstem and 451 miles in tributaries	Rainbow trout, Brown trout	Wild	Restrictive Regulations	Manage harvest to support high quality angling opportunity. Reduce numbers/prevent invasion where Yellowstone cutthroat trout are potentially impacted.
		Yellowstone cutthroat trout (N)	Wild	Liberal Regulations/ Conservation	Allow harvest as part of Combined Trout limit for this drainage. Protect populations via habitat projects and removal of nonnatives where opportunities exist. Consider establishing new populations where opportunities exist.
		Mountain Whitefish (N)	Wild	General	Maintain numbers.

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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Brook trout	Wild	General/Suppression	Reduce numbers/prevent invasion where Yellowstone cutthroat trout are potentially impacted. Manage for sport fishery with opportunity for high levels of harvest in other areas.
Habitat needs and activities: Reduce entrainment of trout in irrigation ditches. Protect existing trout spawning habitat.					
Clarks Fork and Tributaries (except Rock Creek)	141 miles in mainstem and 229 miles in tributaries	Rainbow trout, Brown trout	Wild	Wild	Manage harvest to support quality angling opportunity.
		Yellowstone cutthroat trout (N)	Wild	General	Allow harvest as part of District-wide Combined trout limit. Consider establishing new populations where opportunities exist.
		Mountain Whitefish(N)	Wild	General	Maintain numbers. Attempt to better monitor population abundance, trends and angler harvest.
		Brook trout	Wild	General	Manage for sport fishery with opportunity for high level of harvest.
		Burbot(N)	Wild	General	Maintain numbers. Learn more about population abundance, distribution and habitat use.
		Arctic grayling	Wild	General	Maintain numbers. Search for evidence of self-sustaining population in upper tributary reaches.
Habitat needs and activities: Improve fish passage over irrigation diversion dams. Minimize dewatering of lower reaches during drought years. Improve burbot habitat.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Rock Creek and Tributaries	59 miles in mainstem and 274 miles in tributaries	Rainbow trout, Brown trout	Wild	Wild	Manage harvest to support high quality angling opportunity. Reduce numbers/prevent invasion where Yellowstone cutthroat trout are potentially impacted
		Yellowstone cutthroat trout (N)	Wild	Conservation	Allow harvest as part of District-wide Combined Trout limit. Protect populations via habitat projects and removal of nonnatives where opportunities exist. Indigenous populations should take top priority. Consider establishing new populations where opportunities exist.
		Brook trout	Wild	General/ Suppression	Reduce numbers where Yellowstone cutthroat trout are potentially impacted. Manage for sport fishery in other areas.
Habitat needs and activities: Reduce entrainment of trout in irrigation ditches. Protect existing trout spawning and rearing habitat. Minimize large scale human-caused stream channel alterations. Minimize dewatering of certain stream reaches during drought years.					
Cooney Reservoir	733 acres	Rainbow trout	Hatchery	Put, Grow and Take	Evaluate stocking and harvest regulations to optimize number stocked, size of fish and angler catch rate throughout the year.
		Walleye	Wild/ Hatchery	Put, Grow and Take	Continue monitoring to ensure adequate natural reproduction to support fishery. Stock if natural reproduction is inadequate. Maintain balance between walleye numbers and forage base.
		Burbot (N)	Wild	General	Consider adjusting harvest regulations to improve fishery. Manage harvest to support quality angling opportunity and maintain forage base. Continue monitoring population as it continues to become established.

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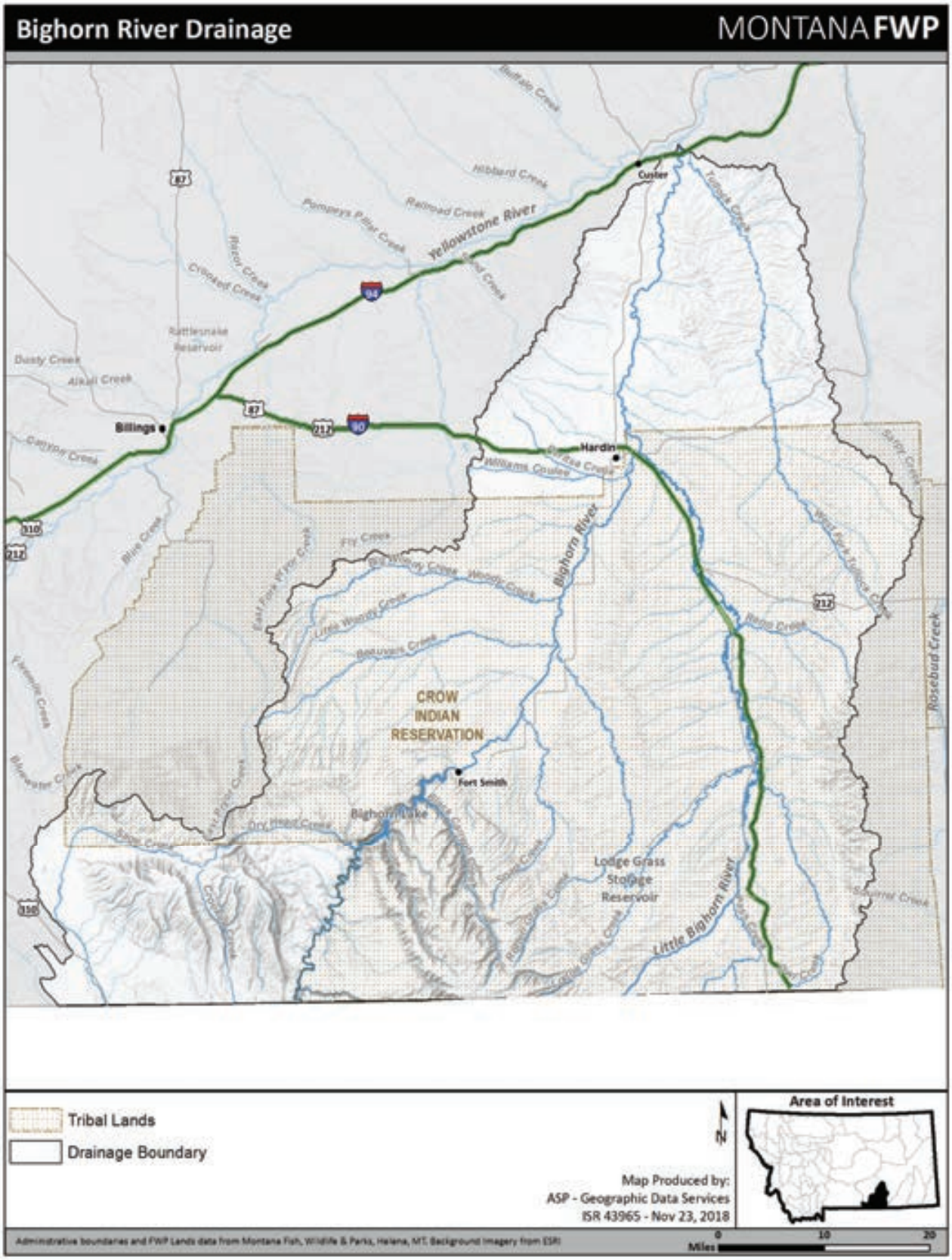
Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Brown trout	Wild	Wild/General	Maintain numbers.
		Yellow perch, Black crappie	Wild	Wild/ General	Maintain numbers. Continue monitoring. Consider habitat improvement projects if increase in numbers is deemed beneficial.
Habitat needs and activities: Explore adding shoreline/shallow water habitat structures to improve survival of forage fish, sport fish and crayfish.					
Yellowstone River Tributaries (Springdale to Clarks Fork) Except Stillwater, Boulder, Clarks Fork	540 miles	Rainbow trout, Brown trout	Wild	General	Reduce numbers/prevent invasion where Yellowstone cutthroat trout are potentially impacted. Maintain sport fishery in other areas.
		Yellowstone cutthroat trout (N)	Wild	General	Allow harvest as part of District-wide Combined Trout limit. Protect populations via habitat projects and removal of nonnatives where opportunities exist. Consider establishing new populations where opportunities exist.
		Mountain Whitefish(N)	Wild	General	Maintain numbers.
		Brook trout	Wild	General	Reduce numbers/prevent invasion where Yellowstone cutthroat trout are potentially impacted. Manage for sport fishery with opportunity for high levels of harvest in other areas.
Habitat needs and activities: Improve habitat to support ecosystem function and fish production.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Beartooth/Crazy Mountain Lakes	687 lakes and 9,318 acres	Yellowstone cutthroat trout (N)	Hatchery/ Wild	Put, Grow and Take	Maintain numbers. Monitor self-sustaining lakes to ensure population persistence. Continue stocking lakes currently stocked and managed for quality fish size quality. Adjust stocking rates as needed. Consider stocking in lakes containing rainbow and/or golden trout where genetic swamping would be consistent with Yellowstone cutthroat trout populations downstream in the drainage.
		Brook trout	Wild	General	Maintain numbers in most lakes. Reduce densities in lakes where it will benefit individual fish growth. Reduce numbers where Yellowstone cutthroat trout populations are potentially threatened.
		Rainbow trout	Wild	General	Reduce numbers and genetic contribution in drainages where Yellowstone cutthroat trout restoration is a priority.
		Golden trout	Hatchery/ Wild	Put, Grow and Take	Maintain numbers in most lakes through stocking and natural reproduction. Reduce numbers in areas where priority Yellowstone cutthroat trout populations are potentially threatened.
		Arctic grayling	Hatchery/ Wild	Put, Grow and Take	Maintain numbers. Explore opportunities to provide angling opportunities in more lakes. Consider planting in lakes that contain other fish species to provide multi-species angling opportunity.
Habitat needs and activities: Explore adding spawning gravel to lakes where natural reproduction is desired.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
All waters	3,200 miles of stream	Nongame species (native and nonnative)	Wild	Conservation	Maintain connected populations, support ecosystem function.


Bighorn River Drainage
MONTANA FWP
Yellowstone River
Billings
Hardin
Custer
Fort Smith
CROW
INDIAN
RESERVATION
Bighorn Lake
Lodge Grass
Storage
Reservoir
Bighorn River
Little Bighorn River
Rosebud Creek
Rattlesnake
Reservoir
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background imagery from ESRI
0
10
20
Miles

BIGHORN RIVER DRAINAGE

PHYSICAL DESCRIPTION

The water source for the Bighorn River (and its major tributary the Little Bighorn River) begins in Wyoming in the Wind, Shoshone, and Bighorn mountain ranges before entering Montana, where it also receives water draining from the Bighorn Mountains as well as the Pryor Mountains. The Montana portion of the drainage includes a portion of the Shoshone River drainage which drains the south face of the Pryor Mountains (primarily the Sage Creek watershed) and flows into Wyoming, but in turn enters Bighorn Lake in Wyoming. Land ownership in this drainage includes private, Custer National Forest, the Crow Tribe Reservation, BLM, and State of Montana land.

Yellowtail Dam impounds the Bighorn River to form Bighorn Lake, which is the largest body of water in the watershed. This reservoir supports a popular recreational fishery that includes a diverse assemblage of native and nonnative species. Tributaries to the Bighorn River in Montana above the dam include Dry Head, Hoodoo, Pitchfork, Spring, Black Canyon, Big Bull Elk, Little Bull Elk, Porcupine, and Crooked creeks.

The lower Bighorn River begins at Yellowtail Dam and enters the Yellowstone River 86 miles downstream. Tributary streams of the lower Bighorn River include the Little Bighorn River, Rotten Grass Creek, Soap Creek and War Man Creek. Currently, the Bighorn Canal captures the entire flow of War Man Creek within about one mile of its confluence with the river. Lime Kiln Creek is a small stream that enters the Bighorn River just below Yellowtail Dam. Grapevine Creek is an 8-mile long tributary of the Bighorn River that joins the river downstream of Yellowtail Dam.

FISHERIES MANAGEMENT

The Crow Reservation covers a large portion of this drainage. Within the Reservation boundary, the State of Montana has the authority to manage Bighorn Reservoir, Afterbay Dam, and the Bighorn River proper. The Crow Tribe is responsible for management of all other waters within the reservation boundary. Management of tribal waters is not described in this document, except to reference a Memorandum of Understanding that the Crow tribe, several federal agencies and FWP signed, agreeing to work together to restore Yellowstone cutthroat trout populations in the Bighorn and Pryor mountain ranges.

Completion of Yellowtail Dam altered the fisheries potential of the Bighorn River. Historically, this river supported a warmwater assemblage of riverine species. The hypolimnetic release of cold, clear, nutrient-rich water now supports a world-class tailwater fishery for rainbow and brown trout. The Bighorn River rainbow and brown trout fishery is found from Fort Smith to Hardin. The Bighorn River fishery downstream of Hardin transitions into smallmouth bass, walleye, sauger, burbot, and channel catfish fishing. Bighorn Reservoir, created by Yellowtail Dam, provides substantial fishing opportunity for smallmouth bass, walleye, sauger, perch, crappie, brown trout, rainbow trout, and burbot. Mountain streams in the Bighorn and Pryor mountains provide fishing opportunity for cutthroat trout, rainbow trout, brown trout and brook

trout. Smaller streams in this reach under FWP management are essentially warm water prairie streams that provide habitat for native minnow communities.

Walleye and sauger management changes are being experimentally implemented in Bighorn Reservoir because of a genetically unique population of sauger in the reservoir which is reliant on wild spawning in the Wyoming portion of the Bighorn River. In an effort to reduce potential hybridization rates between these sauger and walleye, and to demonstrate continued commitment to sauger preservation and restoration, FWP initiated stocking sterile walleye (with greater than 90% triploidy) into the reservoir in 2009. Additionally, sauger are being spawned in Wyoming and reared at Miles City State Fish Hatchery to be stocked in the lower portion of Bighorn Reservoir in an attempt to increase abundance of sauger and improve angler catch rates and satisfaction.

Crooked Creek and Piney Creek contain the last aboriginal Yellowstone cutthroat trout in areas managed by FWP in the Pryor Mountains. A few populations of cutthroat can also be found in the Pryor and Bighorn Mountains within the Crow Reservation. A memorandum of understanding is in place with the Crow Tribe, BLM, USFS, USFWS, and FWP to recover cutthroat and to assist each other when possible for restoration projects. The MOU is expiring and will need to be reviewed and signed in 2019. Sage Creek was a recent cooperative interagency project where brook trout and rainbow trout were removed and replaced with Yellowstone cutthroat trout. Currently the agencies and the Crow Tribe are in the process of confirming that this project was completed successfully. This fishery is now managed as a recreational cutthroat fishery with harvest allowed. In 2008, a brook trout removal and fish barrier project was completed in Crooked Creek. The fishery continues a natural slow downstream expansion. Habitat improvements at Piney Creek in 2010 has improved the fishery which occupies a small reach of stream.

The Bighorn River drainage falls under the Central District fishing regulations. Bighorn Reservoir regulations are developed cooperatively between FWP and the Wyoming Game and Fish Department. This cooperation helps to keep the regulations similar in both states for the same water body. Regulations differ from the Central District standards for bass, shovelnose sturgeon, sauger, walleye, catfish, and ling in Bighorn Reservoir. The Bighorn River regulations have specific sauger regulations that differ from the standard regulation. Other regulation exceptions include Crooked Creek and Piney Creek, which allow catch and release for cutthroat trout only. Cutthroat in Crooked Creek and Piney Creek are aboriginal, and efforts have been made to maintain and improve these conservation populations of cutthroat. In Sage Creek harvest of five Yellowstone cutthroat trout is allowed.

Angling pressure from 2009 through 2015 was estimated between 149,885 to 202,122 angler days for all three sections of the Bighorn River. On average the upper 13 miles accounts for 70% of the fishing pressure of which an average 78% is by out-of-state anglers. In the 2015 mail in Angler Survey section 3 the upper 13 mile section of the Bighorn River was ranked #3 most utilized waterbody in Montana and ranked #1 in FWP Region 5.

HABITAT

The Bighorn River has been the center of water management disputes between Wyoming and Montana stakeholders for nearly a decade. Criteria for water releases from the dam were

developed to support the trout fishery downstream in the Bighorn River, and recommendations for reservoir elevations were advocated by the National Park Service and the State of Wyoming. New operating criteria were developed using computer models to improve transparency of water management by the BOR and to better understand hydrologic limitations imposed by varying water supply, reservoir storage, and dam discharge. Operational rules set reservoir drawdown and refill targets based on the shape and volume of inflows, and scheduled dam discharges to balance the often conflicting requirements for fish and recreation in the reservoir and river downstream. Rule curves were designed to reduce reservoir drawdown and improve refill and optimize river flows (reduce duration of low flows and duration and magnitude of high flows) to benefit the fisheries in the Bighorn River downstream of the dam. It is not possible to prevent all extreme high or low water conditions in either the river or reservoir because of forecasting error and natural variability in annual water supply from snow melt and unpredictable rainfall events.

After several years of highwater events members of the public, the Bighorn Alliance, and FWP have requested a review of the Rule Curves to ensure they address management of above average inflow years as well as below average inflow years. Currently, the BOR is utilizing a work group to review and make recommendations for future management.

Side channel habitat in the Bighorn River has been declining since the dam was put in place in 1967 due to lack of high spring flows and sedimentation. A study by the BOR determined the river bed was not substantially degrading, and the side channels were essentially being plugged with sediment at the heads of the channels with subsequent invasive vegetation growth holding the sediment in place. Some channel heads have been identified for excavation with one completed in 2012. It is anticipated a follow up study will be conducted in 2019 to measure changes during the past eight years of above average discharge. Recommendations for other side channel restoration projects may be an outcome of this study.

The Bighorn River Alliance has developed a Research Initiative to better understand the river's biology, hydrology, water quality, and channel geomorphology and the interconnections. FWP intends to participate with implementation when prudent and possible.

Several habitat projects have been completed recently in tributary systems. A fish barrier to prevent brown trout from occupying Yellowstone cutthroat habitat and range was put in place in Crooked Creek in 2008. A small private irrigation reservoir on Piney Creek was improved by restoring volume and altering water withdrawal from an open pipe to a kettle system, which reduced fish loss to irrigation as well as improved pool habitat. Additionally, the BLM placed logs in Piney Creek to improve substrate and cover habitat. Efforts have been made to ensure culverts and other bank projects in Sage Creek are sized and placed properly to maintain fish passage in the upper watershed. An extensive culvert and road maintenance project by the Custer Forest reduced erosion and sediment transport into Crooked Creek.

FISHING ACCESS

FWP manages seven Fishing Access Sites along the Bighorn River: Manuel Lisa, General Custer, Grant Marsh, Arapooish, Two Leggins, Mallards Landing, and Bighorn. Because of the popularity of the Bighorn River, additional FASs could improve access and reduce crowding. Two areas of particular interest would be to develop an additional access between Three Mile and Bighorn FASs, and to develop an access near the St. Xavier Bridge. Grant Marsh FAS has

had significant erosion that has twice washed out the access road requiring road rebuilding and latrine relocation. Currently the site is closed to vehicles as the road was severely washed out in 2017 with additional erosion in 2018. Bighorn access boat ramps are challenging to boaters to use when flows exceed 8,000 cfs. A small area was cleared upstream of the upper ramp to provide an area of no flow to help with congestion on the ramp and a place to remove drift boats. Alternatives to improve the use of this ramp at high water need to be considered and addressed in the future.

The Bighorn Canyon National Recreation Area managed by the National Park Service manages access for the river at Three Mile (Lind Access) and Afterbay Dam. Additionally, the Park Service manages two boat ramps on Bighorn Reservoir at Ok-a-beh, and Barry's Landing in Montana as well as one boat ramp on the Afterbay Reservoir. Access is also available in Wyoming for Bighorn Reservoir at Horseshoe Bend. Several more remote access locations managed by the Forest Service and the BLM allow for access on many streams in this management area. Lodge Grass Reservoir provides opportunity for tribal and non-tribal members and is managed by the Crow Tribe.

Special Management Issues

Fishing contests occur on Bighorn Reservoir for bass, walleye, and carp. The Bighorn River supports on an annual basis, an extensive outfitting and guiding industry. The upper 13 miles on the Bighorn River is restricted to non-motorized boats to reduce conflicts between drift boaters and floaters and powered water craft. Additional FAS sites between Three Mile and Two Leggins FAS would provide additional options for anglers and floaters to choose to reduce crowding. Several streams in this management area support conservation populations of Yellowstone cutthroat trout.

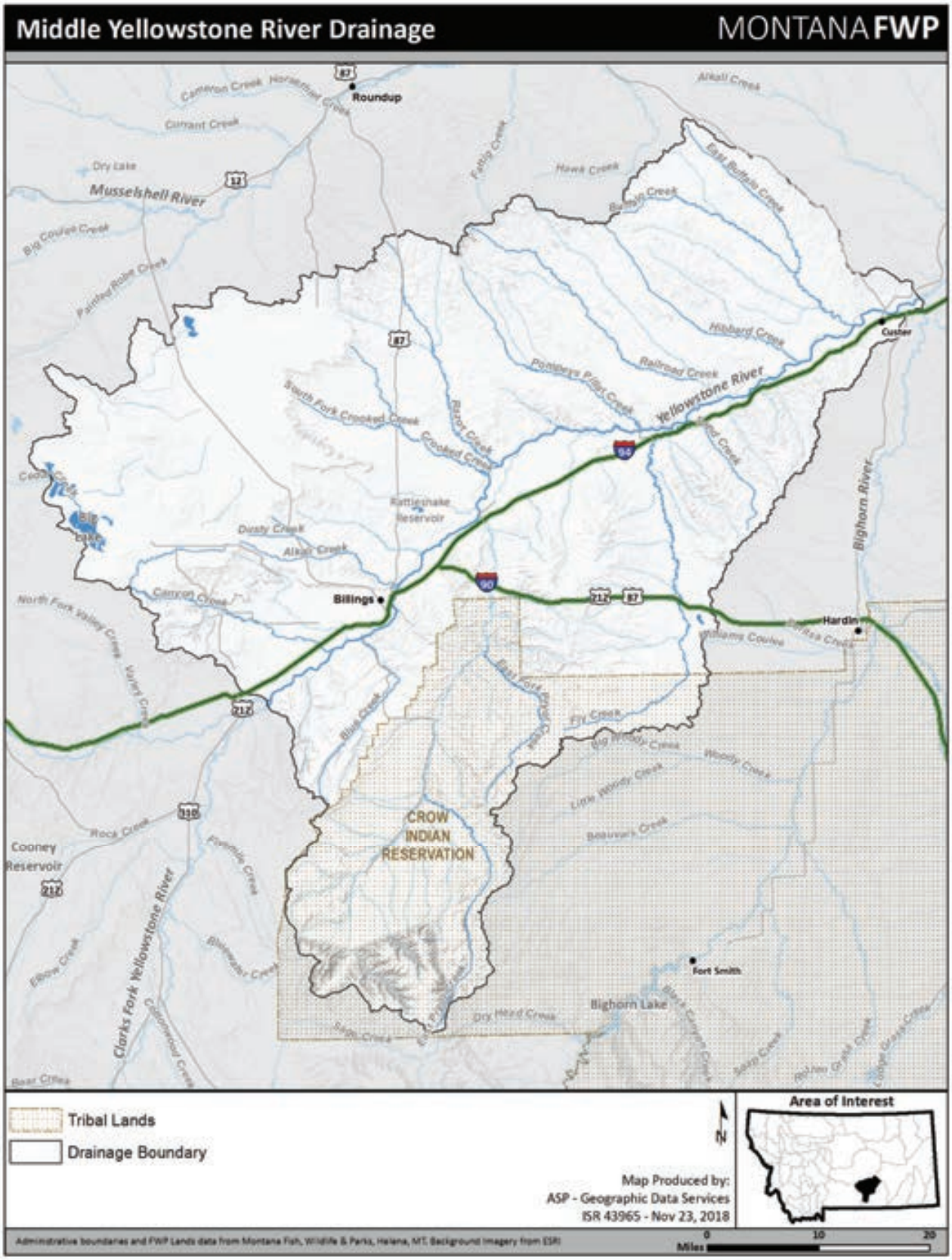
FISHERIES MANAGEMENT DIRECTION FOR THE BIGHORN PRYOR RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Bighorn Reservoir (Yellowtail Reservoir)	17,300 acres	Sauger (N)	Wild, Hatchery	Put, Grow and Take/ Conservation/General	Supplemental stocking on experimental basis 2013-2016 in lower reservoir as an effort to improve catch and harvest rates for anglers. Monitor population over time; coordinate with Wyoming Game and Fish for regulation. Support Wyoming Game and Fish habitat actions in the river to maintain and improve this fishery.
		Walleye	Wild, Hatchery	Put, Grow and Take/ Quality	Stock only 90%+ triploid fingerling in effort to reduce potential risk for hybridization with unique and pure sauger in the Upper Bighorn River. Provide opportunity to catch walleye with trophy opportunity.
		Smallmouth bass, Yellow perch, Crappie, Brown trout, Channel catfish (N), Burbot (N), Carp	Wild	General	Monitor populations over time; rely solely on natural reproduction.
		Rainbow trout	Hatchery	Put, Grow and Take	Monitor populations as necessary.
		Native suckers & minnows (N)	Wild	General	Monitor populations as necessary.
Habitat needs and activities: Make recommendations to BOR for lake elevation management, evaluate sauger and walleye stocking programs.					
Sage Creek	62 miles	Yellowstone cutthroat trout (N)	Wild	Conservation	Establish a fishable population under standard Central District fishing regulations following brook trout removal in 2010-2011.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Longnose dace, Lake chub, Fathead minnow,	Wild	Conservation	Ensure these species re-establish following brook trout removal in 2010-2011. Remove brook trout as necessary. Believed to be eradicated after 2016 NF Sage treatment supported by 2017 eDNA analysis and field survey.
		Prairie fish assemblage (N)	Wild	General	Maintain populations. If necessary, evaluate feasibility of this becoming a source of certified live bait for Bighorn Lake anglers.
Habitat needs and activities: Currently in the process of removing non-native trout and re-establishing Yellowstone cutthroat trout. Water goes sub-surface frequently once the creek reaches Bowler Flats, several in-channel dams provide refuge for minnow and sucker species, consider efforts to improve habitat. Sage Creek may need some habitat improvement for spawning areas as well as riparian fencing to reduce grazing impacts on public and private lands.					
Bighorn Reservoir tributaries (Piney Creek, Dry Head Creek Crooked Creek)	33 miles	Yellowstone cutthroat trout (N)	Wild	Conservation	Aboriginal populations, no harvest allowed.
		Brown trout (Crooked Creek below barrier)	Wild	General/ Suppression	Consider reducing or eliminating this and other trout species in the reach from the barrier to the reservoir and replacing with Yellowstone cutthroat trout. Most of the reach is in Wyoming and would require a coordinated effort.
Habitat needs and activities: Riparian protection needed as many areas in the Pryor Mountains are overgrazed; many road projects could jeopardize trout populations with perched culverts and increased erosion from road work. Barrier placed in Crooked Creek 2008 may need occasional repair, Habitat improvements in Piney Creek need to be maintained.					
Afterbay Reservoir	176 acres	Rainbow trout	Hatchery/ Wild	Put, Grow and Take	Stock in years when full drawdown is not conducted. Drawdown is done every 3 years by BOR to evaluate seeps from dam. Evaluate stocking with considerations for influence on river populations.
Habitat needs and activities: this is a re-regulation reservoir with the potential for 15 vertical feet of elevation change daily, which is a limiting factor to do any substantial fishery management.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Bighorn River - Downstream of Yellowtail Reservoir	84 miles	Sauger (N)	Wild	Conservation	Maintain reduced harvest limits, better understand genetic composition. Investigate opportunities for sauger population improvement in the lower river.
		Channel Catfish (N)	Wild	General	Manage as a recreational fishery.
		Burbot (N)	Wild	General	Evaluate population to determine status.
		Mountain whitefish (N), Rainbow trout, Brown trout, Walleye, Smallmouth bass	Wild	General	Manage as a recreational fishery with focus of cold water species in the river above the Little Bighorn and cool and warm water species below the Little Bighorn.
		Native non-game species (N)	Wild	General	Improve documentation of abundance and distribution during standard and other sampling efforts.
Habitat needs and activities: Side channel restoration to maintain habitat diversity in the Bighorn to support a variety of fish sizes and species. Flow management activities will be required to ensure the fishery is provided adequate water to maintain the fishery. Work with BOR to meet flow targets and timing which support the rainbow and trout fishery in all water years. Gas super saturation in upper river is a recurring problem, look for ways to reduce the cause work with BOR and WAPA to reduce severity if possible. Increased bank stabilization work negatively influences riverine habitats, work with Conservation District and private landowners to find sustainable ways to protect the fishery and property.					
Arapooish Pond	27 acres	Largemouth bass	Hatchery	General/ Family Fishing water	Occasional re-stocking after winterkills.
		Carp, Native suckers (N), Bullheads, Minnows	Wild	General	Fish from the Bighorn River were able to access the pond during flooding in 2011. May need to address in the future if bass are impacted.
Habitat needs and activities: Lake is supported with aeration system to reduce frequency of winterkill, but with more depth the need for air pumps could be eliminated. Partial winterkill has occurred in years with a properly functioning aeration system.					


Middle Yellowstone River Drainage
MONTANA FWP
Roundup
Billings
Hardin
Custer
Fort Smith
CROW INDIAN RESERVATION
Cooney Reservoir
Bighorn Lake
Yellowstone River
Bighorn River
Clarks Fork Yellowstone River
Musselshell River
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background imagery from ESRI
0
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20
Miles

MIDDLE YELLOWSTONE RIVER DRAINAGE

PHYSICAL DESCRIPTION

This reach of the Yellowstone River begins at the confluence of the Clarks Fork of the Yellowstone River and the Yellowstone River just upstream of Billings, the largest city in Montana. It flows west to east approximately 86 river miles to Ranchers Ditch Diversion Dam which is located about 2.5 miles downstream of the mouth of the Bighorn River. Most of this reach is located in Yellowstone County with the lower 2.5 miles in Treasure County. This entire section of river flows through a wide valley with high sandstone bluffs bordering and confining the river on one side or the other through most of the reach. The dominant bluffs are on the south side of the river upstream of Billings and then switch to the north side the rest of the way down. The channel in this section of the Yellowstone is dominated by a cobble and gravel substrate with many islands and gravel bars. Where it can, the river channel is constantly moving within its flood plain. The railroad right-of-way borders the south side of the Yellowstone River along most of this reach, and in many places the railroad line forms the south bank of the river so the riverbank is heavily armored with large rip rap. The very upper end of this reach is highly urbanized between the cities of Laurel, Billings and Lockwood. As a result, much of the river bank in this section is armored and controlled with rip rap and dikes. A high percentage of the rip rap in this section is concrete rather than rock. Downstream of Lockwood, the river flows past the small towns of Huntley, Shepherd, Pompeys Pillar and Custer.

The Clarks Fork of the Yellowstone enters the Yellowstone River at the upper end of this reach. Two larger tributaries, Canyon Creek from the north, and Pryor Creek from the south enter the Yellowstone in the Billings area. A number of smaller tributary streams enter the Yellowstone from both sides of the valley throughout this section. The only major drainage that feeds into the Yellowstone in this section is the Bighorn River that flows in from the south about 2.5 miles upstream of the lower end of this reach.

The Yellowstone valley is dominated by agriculture growing sugar beets, grains, hay and cattle. As a result, the valley is laced with a network of large irrigation projects that divert a significant volume of water out of the river. Some of these irrigation projects can entrain large numbers of fish. Many of these irrigation systems are designed to use natural tributary streams as waste channels to return excess water back to the Yellowstone River when irrigation demands are lower. This operation can seriously impact flow patterns in these natural streams, cause serious erosion along these stream channels and transport different fish species unnaturally throughout the valley.

Two major low-head diversion dams are present in this section of the Yellowstone with a third structure at the very lower end of the reach. Huntley Diversion Dam is located about 27.4 river miles downstream from the upper end of this reach or about 10 miles east of Billings. It is a concrete-capped weir with a structural height of 10.5 feet and a hydraulic height of 8 feet. This dam spans the entire main channel of the Yellowstone and during normal flow conditions, is an almost complete fish passage barrier for most species of fish found in this section of the river. A seasonal side channel that bypasses the dam to the north side may provide some fish passage especially during higher flows. This side channel merges with the main channel about 3,650 feet

downstream of the dam so fish moving upstream that are blocked by Huntley Dam are unlikely to drop far enough downstream to find this passage around the dam. A fish passage structure was added to Huntley Dam in 1999-2000 when the dam was rebuilt after damage from high water in 1997. This passage was designed to provide passage for warmwater fish species found in this section of the Yellowstone, but the structure was not built as designed, and follow-up studies found that very few fish used the bypass structure. In March of 2015, the channel was lengthened to reduce slope with anticipation this would improve fish passage. A graduate study is planned in 2019 and 2020 to evaluate the passage and make recommendations as necessary. This study will be used to inform passage requirements for other locations and will be funded by the NRD funds from the 2011 oil spill.

Waco Diversion Dam is located 62.4 river miles downstream from the upper end of this reach. It is another concrete-capped weir that spans the main river channel. It is not as high as Huntley Dam, but still causes a serious high velocity drop off the face of the dam during normal flow conditions, and is likely a fish barrier to most species in the area. Waco Dam has a more developed bypass channel around the dam to the north. This channel maintains better flows during lower water periods than the bypass around Huntley Dam and the downstream connection of the bypass channel to the main channel is closer to the dams so this channel may provide better fish passage than the Huntley bypass channel.

Ranchers Ditch Diversion is located at the downstream boundary of this reach. This diversion consists of two structures spanning both channels at the top of an island. The diversion in the smaller south channel consists of a concrete-capped rubble weir with a well-defined dam crest yielding a nearly vertical plunging flow. This structure presents major fish passage issues. The structure on the larger north channel consists of a concrete and rock cap placed over an old steel piling and brush bundle dam. Flow over this section of the diversion is more irregular with a less distinct drop and greater slope. Because flow over the north dam is more like a flow over a steep riffle this section of the dam is probably less of a fish passage barrier than the other diversions in this reach. The irrigation company is constantly working on the north dam, and recent plans to rebuild part of this diversion could increase fish passage issues.

FISHERIES MANAGEMENT

The upper end of this reach on the Yellowstone River represents the transition zone from a coldwater, trout dominated stream to a warmwater stream. Trout numbers drop off rapidly in the upper 27 miles of this reach as cool and warmwater fish numbers increase. The free-flowing nature of the Yellowstone River, the natural hydrograph and fairly natural habitat conditions allows the Yellowstone to support and maintain a wide diversity of native and introduced fish species. This reach of the Yellowstone supports approximately 40 different fish species including 28 native species. As a result, this section of the Yellowstone is managed with an emphasis on maintaining the diverse native fishery of both game and nongame species.

The entire reach is managed to provide a diverse recreational fishery for both native and introduced fish with regulations designed to help protect native populations while promoting harvest on nonnative predatory species that can impact native populations. The entire Yellowstone River is managed as a wild fishery with no routine stocking occurring on any section of the river. The upper end of this reach still supports a fairly good rainbow, brown trout and mountain whitefish fishery. As the river transitions into a warmwater fishery below Huntley

Dam emphasis shifts to native channel catfish, sauger, and burbot and nonnative smallmouth bass and walleye. Other game species that occasionally show up in this fishery include northern pike, largemouth bass and crappie. Some nongame species such as goldeye also provide popular angling opportunities.

Restrictive regulations only allowing i harvest of one sauger per day, with a possession limit of two sauger, is designed to protect the limited and genetically unique sauger population in this reach. Cartersville Dam near Forsyth, about 59 miles downstream of this reach has been shown to be a significant barrier to upstream fish movement with a noticeable reduction in sauger numbers and almost total elimination of some species like shovelnose sturgeon upstream of the dam. Channel catfish limits have been reduced statewide to provide additional protection to this long-lived native game fish. All other game species in this reach are managed under standard Central and Eastern district limits. Angling is open year-round on this section of the Yellowstone River although river ice can severely limit the winter fishery most years. Historically, bank fishermen have been the main anglers on this section of the Yellowstone River; but in recent years more and more anglers are using jet boats and kayaks, which has significantly increased angler use during the spring, summer and fall seasons.

Another important management concern in this section of the Yellowstone River is protection and enhancement of populations of smaller native fishes including numerous minnow and sucker species. These smaller fish provide the main forage base necessary to maintain the populations of larger game fish in the river and associated tributaries. In addition, these nongame species are an important part of the diverse native fish fauna that fulfill an ecological role important to the native species management aspect of the middle Yellowstone River. Complaints that the minnow populations are being removed from open water in the winter have increased and reported to be due to commercial seining and trapping.

The majority of tributary streams that feed this reach of the Yellowstone River are smaller prairie streams that provide limited or no recreational angling opportunities. Many of these streams are important to the different life history stages of the various native fish populations in this reach. The Bighorn River is the only major tributary that flows into this reach of the Yellowstone. It enters the Yellowstone approximately 2.5 miles upstream from the lower end of this reach. The Bighorn River is managed as a recreational tailwater trout fishery in the upper end below Yellowtail Dam and transitions into a warmwater fishery before it enters the Yellowstone River.

Several smaller lakes, ponds, and reservoirs including Lake Elmo, Lake Josephine, Laurel Pond, Broadview Pond, Joel's Pond, and Anita Reservoir, and private ponds with agreements to allow some public access, provide important urban fisheries in the Billings area. These waters are stocked annually with trout as put-and-take fisheries or with largemouth bass, as needed, as put-grow-and-take fisheries. Being close to the largest population center in the state, these waters receive considerable angler use. Good creel data is lacking and needed for these waters. Water levels in some of these lakes are impacted by irrigation demands so it is important to maintain a good working relationship with the associated irrigation districts.

HABITAT

The upper end of this reach represents a transition zone from a relatively clear, coldwater stream to a more turbid warmwater stream. The Clarks Fork drainage at the top of the reach adds

considerable sediment to the Yellowstone from early spring runoff until late fall. As the river flows through the city of Billings, heated water from industrial discharges warms up the water temperatures enough that a section of river downstream of town remains ice free throughout the winter except during the most extreme conditions. All of the tributaries that enter this section of the Yellowstone add turbidity to the river and this turbidity increases during the irrigation season when the different tributaries are flushed with excess water out of the various irrigation ditches. Water temperatures in the upper reach above Billings can reach the mid-70° F range during low water years, while temperatures in the lower end of the reach above the Bighorn River can get into the mid- to high 80s. Flows at the USGS gage at Billings have ranged from a low of 15,200 cfs on May 10, 1934 to a high of 82,000 cfs on June 12, 1997.

This section of the Yellowstone can be affected by the FWP Drought Fishing Closure Policy that requires priority waters be closed to angling if flow or temperature thresholds are reached. Because this section of river represents the transition from cold to warm water habitat on the Yellowstone, past drought closures have normally only extended downstream to the upper end of the warmwater section at Huntley Dam.

The channel in this reach of the Yellowstone is dominated by boulder and coble substrate with sediment and sand deposits in slower sections. Where the river isn't controlled by natural bluffs, railroad rip rap, or other man caused bank armoring, it moves fairly naturally within its normal flood plain. River channels are constantly moving and shifting by eroding and laying down new gravel and point bars. Except in the highly urbanized upper section, the riparian zone along this section of the Yellowstone is in fair condition with good cottonwood and willow bottoms. Some agricultural activities extend right to the river's edge, and both Russian olive and salt cedar (noxious weeds) invasions present serious threats to the riparian zone along this entire reach. The section through Billings has a high density of riprap and influences from industry which at times alters temperature and water chemistry.

Huntley Dam and Waco Dam within the reach, and Ranchers Ditch Diversion at the lower end of the reach, all present fish passage and boat passage issues. These diversions, along with a number of other pump and gravity feed irrigation systems can seriously impact instream flows along this section of the river, and all of them can cause fish loss due to entrainment. FWP has reserved water rights for instream flow with a 1978 priority date on the Yellowstone River. At Billings these reserved rights range from winter flows of 2,483 cfs in January to spring runoff flows of 18,716 cfs in late June. Reserved rights at Billings for the summer and fall irrigation season range between about 3,100 and 4,000 cfs. During low water years, river flows drop below these reservation rights and FWP places calls on water users with rights junior to the FWP 1978 priority date.

Pryor Creek was dammed by an irrigation ditch flume which was blown out in 2011. In place of rebuilding the flume which created the dam a siphon was built instead. This created open passage of fish. A Rocky College study funded by FWP showed rapid use of this stream by most prairie fish in addition to channel catfish and smallmouth bass. Efforts were put out to improve passage at the Siewert Diversion but cost/benefit restraints have precluded this project from being implemented.

FISHING ACCESS

FWP manages seven FASs along this reach of the Yellowstone River and another site one mile up the Bighorn River that provides boat access to the lower end of this reach. Five of these sites are day use only, while three of them offer overnight camping. A large wildlife management area and associated BLM land located on the north side of the river near the town of Pompeys Pillar provide walk-in access to over five miles of river frontage. Several other publicly owned or managed access points along this section of the Yellowstone provide river access and access for carry-in type boats. Only one of these sites, a county park near Billings, has an actual boat ramp.

Reliable motor boat access is an ongoing concern in this section of the Yellowstone River due to the natural, free flowing nature of the river. Jet boaters and floaters are an important and growing user group on this section of river. The constant movement of the river within its flood plain, and the continuing movement and shifting of gravel bars along the river, which help make the river such a unique and important fishery resource, also make it very difficult to maintain permanent motor boat access along the river. Motor boat use, especially during lower flows, is currently difficult or impossible at several of the existing access sites along this reach, and access changes after each high-water event. The highest priorities for new access along this reach would be just up- and downstream of Huntley Dam and in Billings. In the past it has been possible to boat around Waco Dam through the north bypass channel during most flow conditions. Recent changes in this bypass channel could eliminate boat passage except during high water. Without reliable jet boat passage, additional access above and below Waco Dam would become a high priority. Any potential new access in a relatively stable section of river that can provide reliable ramp access to the river should be considered a high priority.

FWP is currently working with the Yellowstone River Parks Association and the Department of Justice NRD program to develop another FAS site at South Billings Boulevard near the bridge. This will be a day use site with a concrete boat ramp. Current plans are to have this site open in 2019. FWP was awarded $400,000 of NRD funds as mitigation for the recreational loss due the 2011 Exxon oil spill. These funds will be used with partners to improve existing FAS sites and to develop new access sites in the upper portion of this management area on the Yellowstone River.

There is potential for several additional urban and exurban areas to produce or gain access to ponds that may be open for public fisheries and recreation. FWP will continue to work with partners on known and potential new projects.

SPECIAL MANAGEMENT ISSUES

There are several special management issues associated with this section of the Yellowstone River with the most prominent issue being that of native species management. Recent genetic research has shown that the sauger population in this section of the river is genetically unique from any other sauger populations in the remainder of the Yellowstone, Bighorn, or Missouri river drainages in Montana or Wyoming. Additional work is needed to learn more about this sauger population and identify steps necessary to maintain its unique characteristics. Smallmouth bass numbers have greatly increased in this section of the river in recent years. Although they provide a very popular fishery, the impacts this new predator base is having on

the native fish populations in the river is poorly understood and needs additional study. Smallmouth bass also expanded into Pryor Creek and upstream reportedly as far as Livingston. An evaluation of bass is ongoing with USGS. Smallmouth bass bag limits were increased to allow anglers to capitalize this abundant fishery; it is not believed angling will increase total annual mortality but will still be within typical natural mortality rates. Walleye numbers also appear to be increasing in this reach, and their impacts, both as an added predator and their potential hybridization with sauger could impact native fish populations.

The impacts of commercial bait seining on native minnow populations along this section of the Yellowstone River is another major concern. The Yellowstone drainage has become the main source of minnows for a majority of the commercial bait operations throughout eastern Montana. Seiners come from all over eastern Montana to seine the river and tributaries along this reach of the Yellowstone, and this pressure could continue to increase as areas in northeast Montana are closed to seining due to the presence of Eurasian watermilfoil. This seining pressure, especially when combined with increased predation from smallmouth bass and walleye, could have serious impacts on native minnow and sucker populations. Reduction in numbers of these species could seriously impact the native game species that rely on them as forage.

FISHERIES MANAGEMENT DIRECTION FOR MIDDLE YELLOWSTONE RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Yellowstone River (Confluence of Clarks Fork of the Yellowstone River to Ranchers Ditch Diversion)	86.1 miles	Rainbow trout, Brown trout, Mountain whitefish (N)	Wild	General	Manage as a recreational fishery allowing for limited harvest with standard regulations.
		Sauger (N)	Wild	Conservation	Manage sauger populations for limited consumptive harvest with harvest restrictions upstream of Cartersville Dam. Conduct studies to evaluate the importance of the unique genetic character of the sauger population in this section of the Yellowstone. Identify spawning areas and migratory patterns that have helped maintain this genetic uniqueness. Determine value and importance of improving or restricting fish passage in the lower Yellowstone to maintaining this genetically unique population.
		Burbot (N)	Wild	General	Attempt to enhance this burbot population and manage for limited harvest. Identify factors limiting the burbot population in this section of the Yellowstone.
		Channel catfish (N)	Wild	General	Manage as a recreational fishery with emphasis on maintaining a diverse population structure, while providing opportunities to catch larger catfish. Standardize catfish sampling as much as possible in Eastern Montana. Evaluate impacts of recent regulation changes on catfish populations.

Continue next page

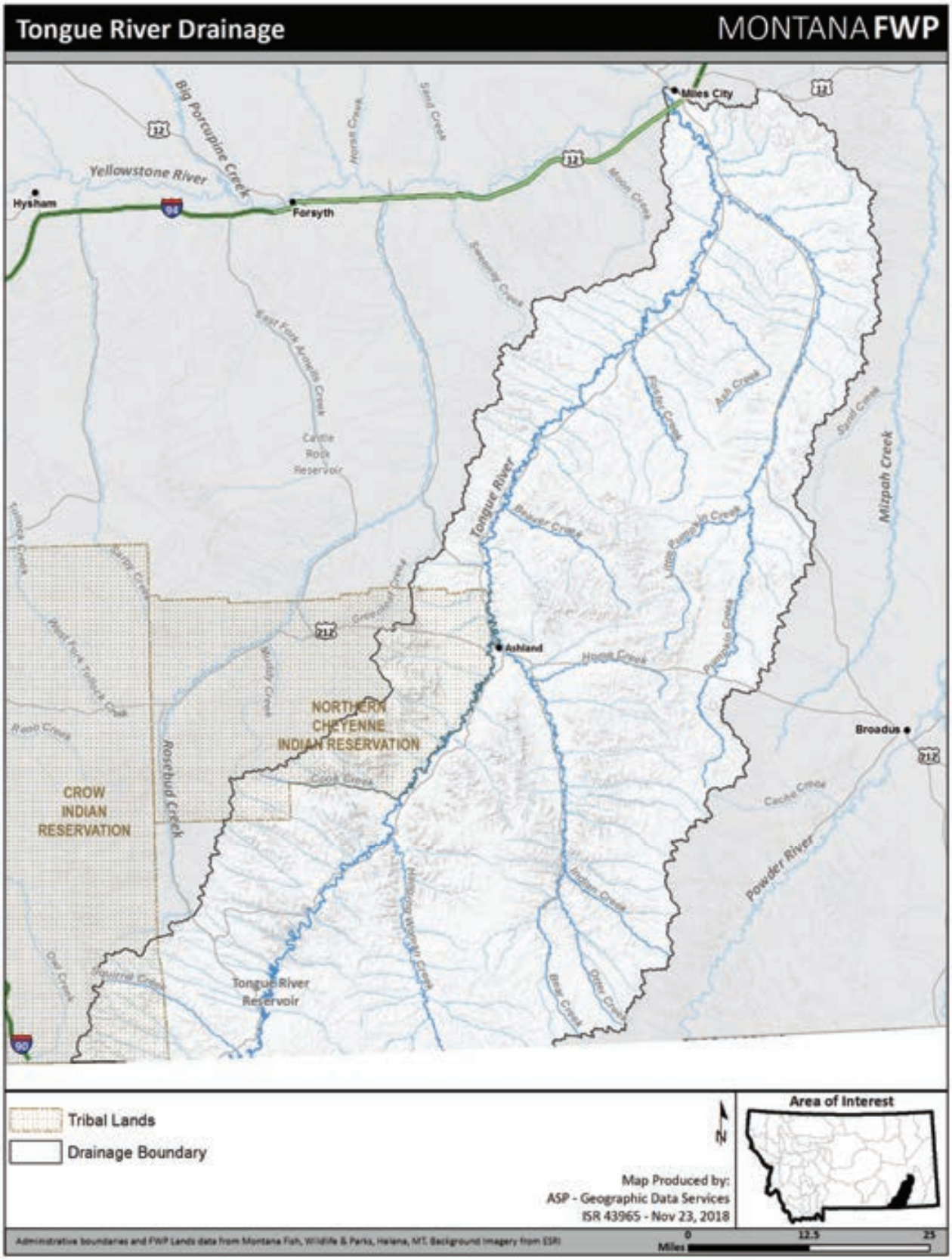
Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Smallmouth bass	Wild	General	Manage as a recreational fishery with emphasis on harvest. Conduct a study to evaluate the impacts of smallmouth bass on native fish populations in the Yellowstone River.
		Walleye	Wild	General	Manage as a recreational fishery with emphasis on harvest.
		Native nongame species(N)	Wild	Conservation	Manage commercial minnow harvest to protect native fish populations. Conduct studies to evaluate and determine habitat and flow needs for native fishes. Work with other permitting agencies to limit impacts of habitat change along the Yellowstone River.
Habitat needs and activities: Improve fish passage for warmwater species at all diversion dams from Intake Dam upstream. Reduce entrainment and loss at head gates and pumps. Maintain or improve instream flows in the river and tributaries. Manage habitat projects to maintain the natural stream functions of a wild undammed river, and evaluate habitat projects based on cumulative impacts.					
Pryor Creek (Downstream of Crow Reservation Boundary)	16.1 miles	Multiple species	Wild	General	Evaluate and improve fish passage issues upstream of the Yellowstone River. Monitor fish movement in and out of the Yellowstone River, monitor spawning success of game and nongame species, and monitor the establishment of resident fish populations in Pryor Creek. Manage Pryor Creek to provide a continuing source of young game fish and forage to the Yellowstone River.
Habitat needs and activities: Improve upstream fish passage now that Pryor Creek has been reconnected with the Yellowstone River. Improve summer stream flows and improve habitat to support ecosystem function and production of native species.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Yellowstone Tributaries (Smaller Prairies Stream)	42 streams and 290 miles	Multiple native species (N)	Wild	Conservation	Manage commercial minnow harvest to protect native fish populations.
Habitat needs and activities: Evaluate barriers in each tributary and improve fish passage and connectivity with the Yellowstone River. Improve habitat to support ecosystem function and production of native species.					
Lake Elmo	65 acres	Rainbow trout, brown trout Yellowstone cutthroat trout (N), Largemouth and Smallmouth Bass)	Hatchery	Put and Take/ Family Fishing water	Manage for maximum recreational use with emphasis on harvest. Adjust stocking rates to provide high catch rates on trout while maintaining reasonable growth rates on stocked fish. Stock with surplus brood fish to support kid's fishing events.
		Tiger muskie	Hatchery	Quality	Stock a limited number of fish on a 3 to 4 year rotation as needed and available to maintain predation pressure on the sucker population in the lake while providing anglers the opportunity to catch a trophy sized fish.
		Channel catfish(N)	Hatchery	Put, Grow and Take	Stock annually if fish are available to provide an additional opportunity for anglers fishing this popular urban fishery.
		Yellow Perch, Crappie, Pumpkinseed	Wild	General	Should consider wild fish transfers when fish are available.
Habitat needs and activities: Work with Billings Heights Water and Lake Elmo State Park on water management for the lake. Limit water level fluctuation during the weekends and ensure the lake is full before the ditch is shut off in the fall. Develop long-term lake management plan to improve fisheries habitat in the lake.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Lake Josephine	20 acres	Largemouth and smallmouth bass	Hatchery/ Wild	General/ Family Fishing water	Stock every other year to supplement natural reproduction. Promote voluntary catch-and-release on 12 to 15 inch bass. May use smallmouth bass for stocking at irregular intervals.
		Tiger muskie	Hatchery	Quality	Stock a limited number of fish on a 3-4 year rotation as needed to maintain predation pressure on the sucker population in the lake while providing anglers the opportunity to catch a trophy sized fish.
		Channel catfish (N)	Hatchery	General	Stock annually if fish are available to provide an additional opportunity for anglers fishing this popular urban fishery.
		Yellow Perch, Crappie, Bluegill, Pumpkinseed	Wild	General	Wild transfers should be considered in the future. Particularly if habitat improvements are made.
Habitat needs and Activities for Lake Josephine (Riverfront): Potential exists to improve average depth with excavation or building bars, installation of fishing piers, and other access and habitat improvements. Work with City of Billings, NRD, and others to make improvements when possible.					
Laurel Pond	18 acres	Rainbow trout, Largemouth bass, Yellowstone cutthroat trout (N)	Hatchery	Put and Take/ Family Fishing water	Manage for maximum recreational use. Adjust stocking rates to provide high catch rates on trout while maintaining reasonable growth rates on stocked fish. Stock with surplus brood fish to support kid's fishing events.
Habitat needs and activities: Maintain windmills for aeration. Would benefit pond to increase average depth. Opportunity to dredge/dig or create bars with existing bottom material may come from partnership with Lions Club, and other interested groups. Ponds has substantial goldfish population.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Anita Reservoir	30 acres	Largemouth bass	Hatchery	General/Family Fishing water	Stock as necessary to maintain a recreational fishery.
Habitat needs and activities: Should coordinate with the Huntley Irrigation District to improve long-term water management to benefit the fishery. They are not overly interested at this time.					
Broadview Pond	20 acres	Rainbow trout, Largemouth bass, Yellowstone cutthroat trout (N)	Hatchery	Put and Take/ Family Fishing water	Manage for maximum recreational use. Adjust stocking rates to provide high catch rates on trout while maintaining reasonable growth rates on stocked fish. Stock with surplus brood fish to provide occasional larger trout.
Habitat needs and activities: consider windmills for aeration.					
Joel's Pond	14 acres	Largemouth bass Green sunfish, Pumpkinseed, Common Carp, Fathead Minnow	Hatchery Wild	General/ Family Fishing water General	Stock as necessary to maintain a recreational fishery Species found during first survey. Manage as forage for bass with recreational sunfish opportunity for family fishing.
Habitat needs and activities: Coordinate with the YRPA to manage fishery and public access.					
Shiloh Ponds 1 and 2	10 acres	Rainbow trout, Largemouth bass, Yellowstone cutthroat trout (N)	Hatchery	Put and Take/ Family Fishing water	Manage for maximum recreational use. Adjust stocking rates to provide high catch rates on trout while maintaining reasonable growth rates on stocked fish. Stock with surplus brood fish to provide occasional larger trout.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Deep Mill (Audubon Pond)	2.4 acres	Largemouth bass	Hatchery	General/Family Fishing water	Stock as necessary to maintain a recreational fishery.
		Green sunfish, Pumpkinseed Black bullhead	Wild	General	Species found during first survey. Manage as forage for bass with recreational sunfish opportunity for family fishing.
Habitat needs and activities: Coordinate with the YRPA and Audubon Society to manage fishery and public access. Install solar aeration system in 2018.					
Other private and public ponds	Various	Rainbow trout, Largemouth bass, Yellowstone cutthroat trout (N)	Hatchery	Put and Take	Several other opportunities in private ponds with public access. Work with landowners to maintain fisheries and access. New opportunities may arise.
		Other species as determined	Hatchery/ wild transfer		


Tongue River Drainage
MONTANA FWP
Miles City
Hysham
Forsyth
Ashland
Broadus
Yellowstone River
Big Porcupine Creek
Tongue River
Mizpah Creek
Powder River
Rosebud Creek
Tongue River Reservoir
Cattle Rock Reservoir
NORTHERN CHEYENNE INDIAN RESERVATION
CROW INDIAN RESERVATION
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
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Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background imagery from ESRI
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12.5
25
Miles

TONGUE RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Tongue River Drainage includes the Tongue River, Hanging Woman Creek, Otter Creek, Pumpkin Creek, Tongue River Reservoir, and numerous stock ponds and prairie streams. Land ownership in the district is mostly private and agriculture is the primary land use practice in the Tongue River watershed with 67,000 acres of irrigated land supporting cattle ranching and farming operations. The Fort Union Coal Formation underlies the watershed. The Tongue River originates on the eastern side of the Big Horn Mountains in north-central Wyoming (Sheridan County) and flows north through Southeast Montana (Big Horn, Rosebud, and Custer counties) to the Yellowstone River. The Tongue River has a drainage area of 5,379 mi^2, approximately 70% occurring in Montana and 30% in Wyoming. The total length of river in Montana from the state line to its confluence with the Yellowstone River, near Miles City, is 209 miles.

At Decker, Montana, near the Wyoming/Montana border, Tongue River Dam (river mile 189) creates Tongue River Reservoir, a main stem reservoir that can store 79,071 acre-feet of water. Historically, the Tongue River in Montana has been divided into five segments by four dams. There are three irrigation diversion dams: (1) Tongue and Yellowstone (T&Y) Diversion Dam at river mile 20; (2) SH Diversion Dam, which is no longer in existence (river mile 51); and (3) Mobley Diversion Dam, which is mostly gone and does not restrict fish passage (river mile 105); and one flood control dam, Tongue River Dam (river mile 189). There is a thermally unique sixth river segment created by hypolimnetic releases out of Tongue River Reservoir. This coldwater segment is approximately ten river miles long and ends downstream of the dam near the Rosebud/Big Horn County line (river mile 179).

No natural lakes are found within the drainage. There are, however, numerous stock ponds and some are stocked with fish and managed for public access by FWP.

FISH MANAGEMENT

The Tongue River and its tributaries are home to many warmwater and a few coldwater fish species. Native fish species include; sauger, shovelnose sturgeon, channel catfish, burbot, freshwater drum, goldeye, smallmouth buffalo, bigmouth buffalo, blue sucker, river carpsucker, shorthead redhorse sucker, white sucker, longnose sucker, longnose dace, creek chub, lake chub, brassy minnow, fathead minnow, sturgeon chub, flathead chub, western silvery minnow, sand shiner, emerald shiner, and stonecat. Common carp, plains killifish, black bullhead, yellow bullhead, and green sunfish are introduced species that can be found in parts or all of the Tongue River drainage. Largemouth bass, smallmouth bass, walleye, white crappie, black crappie, northern pike, yellow perch, rock bass, pumpkinseed, and spottail shiner have been stocked or illegally introduced in Tongue River Reservoir. Brown and rainbow trout have been stocked in the tail water below Tongue River Dam.

Trend electrofishing is conducted on various reaches of the Tongue River to assess the current relative abundance, population structure, and body condition of fish populations in the Tongue River and monitor changes over time. Annual trend sampling on Tongue River Reservoir

includes gill-net, trap-net, and seining methods and is conducted to assess catch rates, condition, and length frequency of game fish in the reservoir. Stock ponds in the Regional Pond Fishing Program are sampled about every three years to evaluate the status of the fisheries and ensure a catchable stock of fish is present.

A variety of fish species are available from FWP hatcheries for stocking into ponds and Tongue River Reservoir, including walleye, rainbow trout, smallmouth bass, and largemouth bass. Catchable size trout are also stocked annually in the coldwater stretch of the Tongue River below Tongue River Reservoir. The statewide wild fish transfer policy also allows regional staff to transfer a variety of species from source ponds with good populations to receiving ponds with fisheries that have suffered due to winterkill or drought. Species stocked through wild fish transfers include northern pike, yellow perch, black crappie, white crappie, channel catfish and bluegill.

The Tongue River drainage offers many public ponds and private ponds with public access that are managed as a fishery in the Regional Pond Fishing Program. The primary justification for stocking these waters is providing a family fishing opportunity. The program is offered to landowners as a public relations opportunity to provide a fishery for the surrounding community. If the landowner allows free public access to the pond FWP will stock and manage the fishery. Anglers are required to obtain landowner permission each time they want to access the fishery. Rainbow trout, largemouth bass, yellow perch, northern pike and crappie dominate the species available in these systems. Fish populations are established or supplemented when needed through stocking from a state hatchery or by wild fish transfers from another fishery within the region.

Tongue River Reservoir ranks 24th in the state and 2nd in Region 7 for angler pressure. Due to crowding at boat ramps, the campground and on the reservoir, fishing tournaments at Tongue River Reservoir are not permitted from May 1-September 15. Overall fishing pressure is relatively low on the Tongue River due in large part to lack of public access to the river. Twelve Mile Fishing Access Site (river mile 20) is one of the few publicly accessible sites on the Tongue River and is a popular destination for local and out of state anglers. Due to crowding issues at Twelve Mile FAS there is a special regulation limiting the number of lines an individual angler can fish. Stock ponds and prairie streams in the Tongue River drainage have low angling pressure.

HABITAT

The Tongue River has a constrained riparian corridor with much of the floodplain developed for irrigated agriculture. The river upstream and downstream of Tongue River Reservoir has more rocky substrates than downstream reaches and is influenced by development of the area's coal resources, a major industry in the watershed. Numerous areas in the Tongue River watershed have been permitted or developed for coal bed methane or coal extraction. The extraction of coal bed methane involves pumping groundwater from the coal seams. Much of this water is high in salts and is discharged into the Tongue River upstream and near Tongue River Reservoir. In 2018, methane extraction is nearly absent due to suppressed market prices and low demand for gas resources. Increased extraction is expected in the future when markets become financially lucrative again.

The upstream end of Tongue River Reservoir has abundant submerged woody vegetation as a result of the dam rebuild in 1998 that raised the water level in the reservoir by six vertical feet. The upstream end of the reservoir has increased turbidity as a result of turbid river inflows. The middle and lower end of the reservoir have abundant rocky habitats and increased water clarity. Submerged aquatic vegetation is common in the bays throughout the reservoir.

Approximately ten river miles downstream of Tongue River Reservoir Dam is thermally unique due to cold water releases from Tongue River Reservoir. This stretch of river supports a stocked rainbow trout and naturally-reproducing brown trout population. The Tongue River in the Birney and Brandenburg area is characterized by a dense cottonwood riparian corridor and has deeper holes that are believed to overwinter fish. Downstream of Brandenburg, irrigation has an increasing influence on instream flows and riparian habitat. Downstream of T&Y Diversion Dam, chronic dewatering from irrigation in July and August is a major habitat concern for Tongue River.

Historically, irrigation diversion dams were barriers to upstream fish migrations and have fragmented fish populations in the Tongue River for the last 100 years. In addition, the gravity fed irrigation canals were responsible for entraining fish. Beginning in 1999, large collaborative efforts between irrigators, non-government organizations, and federal and state agencies began making the diversion dams more favorable to upstream fish migrations. The T&Y Canal head gate was rebuilt in 1999 and included fish louvers to minimize fish entrainment. The SH Diversion Dam was removed in the fall of 2009 and the Muggli Bypass channel was constructed the fall of 2008 around T&Y Diversion Dam. In 2005, water withdrawals from the Mobley Diversion Dam were transferred to pumps. The dam is no longer maintained and damage from ice scour and high flow has created some fish passage opportunity. The combination of these habitat improvement efforts provides upstream passage for an additional 165 river miles of the Tongue River for many native fish species from the Yellowstone River.

Although the drainage is predominately rural, habitat changes throughout the Tongue River drainage have impacted the basin since human settlement. The use of rock or concrete rip rap to protect city infrastructure, roads, bridges, homes, and farmland/ranchland has restricted the natural function of the rivers and streams in this drainage. The installation of culverts, fords and dams has similar impacts on the function of the waterways and upstream migration of fish. These developments have also impacted the river and streams ability to migrate laterally and interact with its historic floodplain.

The majority of private and public ponds in the drainage are limited by water depth. Most have a maximum depth of 10-11 feet which is marginal for overwintering fish during winters with sustained snow accumulations. The severity and prevalence of winterkills has been and can be reduced by installing windmill aerators. Some landowners and the BLM have installed aerators at their expense in order to reduce winterkill occurrences. FWP has refrained from installing aerators because of the time and expenses required to service and maintain the structures.

FISHING ACCESS

There is currently public access to the Tongue River through Tongue River Reservoir State Park and Twelve Mile Dam FAS. Additional but limited access is also provided at county bridges and through landowner agreements. Developing more access for ice fishing on the Tongue River

Reservoir is a high priority; of particular interest is State land under DNRC management that would provide access to the upper portion of the reservoir. Other high priority areas for access development include sites downstream of Tongue River Reservoir and Twelve Mile Dam FAS that are within a day's float from existing access points. The Birney and Brandenburg reaches, of the Tongue River, would also provide valuable angling opportunity if access was available.

SPECIAL MANAGEMENT ISSUES

Recreational and resource management in the Tongue River drainage requires involvement with many agencies, entities, and user groups. Reservoir issues include involvement with DNRC, the Decker Coal Mine, Cloud Peak Energy, and adjacent landowners. The Tongue River water users group (representatives from agencies and irrigation districts), Bighorn, Rosebud, and Custer county conservation districts, Northern Cheyenne and Crow Indian Reservations as well as ranchers and farmers are all stakeholders in resource management decisions in the Tongue River drainage.

Coal and Coal Bed Methane Extraction Activities

The Tongue River Basin is rich with coal deposits and associated extraction activities (strip mining, methane wells, pipelines, and railroads) will always challenge management of the Tongue River water and aquatic resources. Construction of a Tongue River Railroad has been proposed numerous times to facilitate increased coal extraction from current mines (Decker, Spring Creek) and proposed mines (Youngs Creek, Otter Creek). Water discharge from methane wells into the Tongue River and tributaries, although depressed at the current market, continues to have long-term impacts on irrigation operations, which have not been adequately quantified. Management of the Tongue River and fisheries requires involvement with all extraction issues as they evolve to ensure the aquatic resources are understood and evaluated by resource and political decision makers.

In-stream Flows and Water Compact

Securing more appropriate in-stream flow rights, particularly at the confluence of the Tongue and Yellowstone Rivers, has been a management concern since in-stream flows were established in the late 1970's. Despite requesting 190 cfs in September-February, 525 cfs in March – April, 600 cfs May –July 15, and 225 cfs July 16 – August, only 75 cfs was granted per month through the 1978 water adjudication process. This results in frequent de-watering of the Tongue River downstream of the T&Y Diversion Dam during the month of August. The flows requested by FWP in 1977 were intended to facilitate and maintain spawning migrations and adequate rearing conditions for numerous native fish species found in the Tongue and Yellowstone Rivers. The States of Montana and Wyoming concluded a lawsuit in 2017 regarding the use of water and interpretation of the Tongue River Water Compact between the States. Two conditions of the settlement is annual employment of water commissioners in Montana to adjudicate water usage and installation of water meters on every irrigation structure. Given this recent court dictation and potential change in water usage and operation through commissioners, FWP needs to reiterate fisheries needs into the process. As a result of the settlement Wyoming contends when Montana makes a call for water their first response will be inspection of flows at the Tongue-Yellowstone confluence. If Tongue River water is reaching the Yellowstone River they do not

have to honor the call for water. This change in perspective may have dire consequences and could dewater the twenty river miles downstream of T&Y Dam.

Operation of Muggli Bypass Channel and T&Y Canal Fish Screens

During the late 1990 – 2000's considerable efforts through partnerships between irrigators and multiple State and Federal Agencies improved fish passage at diversion dams and reduced canal entrainment through the following projects: 1) rebuilding T&Y head gate with fish screens in 1997, 2) removal of SH Diversion Dam in 2007, 3) completion of the Muggli Bypass channel at T&Y Dam in 2008, and converting flood irrigation to pumping from the Mobley Diversion Dam in 2005. These efforts have dramatically improved spawning migrations of Yellowstone River fish up the Tongue River during months of adequate flow. Six fish species (Bigmouth Buffalo, Freshwater Drum, Goldeye, Smallmouth Buffalo, Sturgeon Chub and Western Silvery Minnow), historically restricted to 20 miles of the Tongue River downstream of T&Y Dam (built in 1886) have successfully migrated upstream of T&Y Dam. Three of these species have migrated up to Tongue River Dam at river mile 168. Although these historically significant projects have been completed to benefit the fisheries, they have not been secured for the long-term. Specifically, operation of the Muggli Bypass and use of the T&Y Canal fish screens needs to be memorialized through an MOU, lease, or incorporation of an operation plan into the irrigation districts by-laws. This will ensure the long-term operation and derived fishery benefits beyond the current irrigation ditch operator and FWP staff. Establishing this "document of operation" for the bypass and fish screens will establish a need and convey the importance of the structures to water commissioners and other water users.

Tongue River Reservoir and Tongue River Upstream

A small population of Sauger exists in the reservoir and Tongue River upstream to the State Line. This small population is remnant of a large population that existed in the 1970's following an adult stocking effort in the river by Wyoming in the mid-1960's. Sauger are native to Montana and are classified as a species of concern. Given this designation and a very small population the daily and possession limit was reduced in the reservoir and Tongue River upstream in 2012 to help preserve the population while allowing some consumptive harvest. Future studies should evaluate the size of the Sauger population and dynamic movements between the river and reservoir habitats. Current river studies indicate Sauger occupy the river during the open water months and anecdotal angler harvest events suggest they retreat to the upper end of the reservoir during early winter months. This information along with additional studies will inform future management actions to sustain and potentially increase the Sauger population.

Live Bait-Fish Restrictions

The ever increasing and approaching risks of aquatic invasive species (AIS), pathogens, and illegal introductions lead to changes in the State's live bait-fish regulations in 2016. The goals were: maintaining a bait fish opportunity for anglers, improve bait species identification, increase awareness of AIS, and proactively reduce the potential risk of spreading AIS, pathogens, and illegal introductions. While working through public comments and observing current live bait usage at Tongue River Reservoir it became obvious the new regulations created additional concerns due to the source waters and associated species being utilized at TRR. Specific

challenges for anglers using live bait fish at TRR include: 1) remote location of reservoir with very limited bait rich water supplies, 2) many anglers are non-residents from Sheridan Wyoming (20 miles away) that cannot import or transport live bait fish across the State Line, and 3) the marina is frequently closed during the winter months when live bait-fish are the only practical method for game species like pike and Walleye. The most reliable bait source available under the new regulations is from the Yellowstone River near Billings. Three species (Western Silvery Minnow, Plains Minnow and Emerald Shiner) of the 10 live bait-fish species allowed in the 2016 fishing regulations, do not exist in TRR or the Tongue River upstream of the reservoir. Risk of introduction of these three species to TRR warranted a reduced list of species allowed for bait fishing in Tongue River Reservoir and the Tongue River upstream of the reservoir.

Fishing Contest Restrictions

Tongue River Reservoir Fishing Contest Stipulations:

Fishing contests are prohibited from May 1 – September 15 due to fish spawning periods, extreme warm water temperatures in August and congested public use.

Spawning induced mortality of adult crappie is common at Tongue River Reservoir due to cumulative stress associated with spawning and increasing water temperatures. Fish contests are prohibited during the crappie spawning period (May 1 – June 30) to prevent additional stress and associated crappie mortality.

Intense public use and associated social pressures occurs on the reservoir and State Park facilities from May 15-July 31. During this period the parks camping, day use area and associated facilities approach or reach capacity. Inclusion of a fishing contest would increase user conflict.

Fish contests are also prohibited in August and early September due to high water temperatures. Additional stress on fish from contest would dramatically increase the likelihood of delayed fish mortality.

Weigh-in type tournaments at a central location are also discouraged at Tongue River Reservoir during the congested public use period (May 15 – July 31). This style of tournament increases congestion at boat ramps that currently suffer from social pressures.

FISHERIES MANAGEMENT DIRECTION FOR TONGUE RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Tongue River - Wyoming State Line to Tongue River Reservoir headwaters	10 miles	Sauger (N)	Wild	Conservation	Reduced daily bag and possession limit implemented to protect remnant population.
		Channel Catfish (N)	Wild	General	Maintain fishery through regulations.
		Smallmouth Bass, Walleye	Wild	General	Maximize harvest and fishing opportunity to reduce competition with Sauger.
		Multi species	Wild	General/ Conservation	Manage for recreational fishing opportunity where applicable. Monitor non-game fish species for native fish assemblage and overall ecosystem health.
Habitat needs and activities: Dewatering is a threat to the fishery, work with water commissioners and Water Compact Ruling to deliver State's Instream Reservations at inlet of Tongue River Reservoir: 160 cfs January-February; 200 cfs March-April; 700 cfs May 1-20; 1,200 cfs May 21-31; 1,350 cfs June; 360 cfs July; 100 cfs August-September; 200 cfs October-November; and 150 cfs in December.					
Tongue River Reservoir	3,700 acres	Black Crappie, White Crappie	Wild	Liberal Regulations	Manage for recreational family fishing opportunity for crappie. Fishing tournaments are prohibited from May 1 – September 15 because of user congestion during summer.
		Sauger (N)	Wild	Conservation	Reduced daily bag and possession limit to protect remnant population.
		Walleye	Hatchery	Put, Grow and Take	Manage as recreational fishery with emphasis on harvest. Maintain population through annual stocking to provide additional fishing opportunity.

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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Smallmouth bass, Largemouth bass, Channel catfish (N), Northern pike, Yellow perch	Hatchery/ Wild	General/ Put, Grow and Take	Maintain fishery through regulations and stocking.
Habitat needs and activities: work with reservoir operators to regulate water levels with consideration for fishery benefit.					
Tongue River - Reservoir tailwater to Yellowstone River	189 miles	Sauger(N), Channel catfish (N)	Wild	General	Maintain fishery through regulations and habitat projects (passage at diversion dams, increased flow conditions).
		Rainbow trout	Hatchery	Put and Take	Put and take fishery to maximize fishing opportunity in a thermally altered stream reach.
		Brown trout	Wild	General	One-time stocking to establish self-sustaining population in order to maximize fishing opportunity in a thermally altered stream reach.
		Shovelnose sturgeon (N)	Wild	General	Monitor usage of Tongue River and potential for species to successfully use Muggli Bypass and re-establish population or seasonal usage of Tongue River upstream of T&Y Dam.
		Blue sucker (N), Sturgeon chub (N)	Wild	Conservation	Montana Species of Concern, monitor use and potential for spawning activity in Tongue River. Continue to monitor passage of Blue Sucker through the Muggli Bypass and use of river upstream of T&Y Dam.
		Walleye, Smallmouth bass, Northern pike	Wild	General	Maximize harvest and fishing opportunity to reduce competition with Sauger.

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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Multi species	Wild	Conservation/ General	Manage for recreational fishing opportunity where applicable. Monitor non-game fish species for native fish assemblage and overall ecosystem health.
Habitat needs and activities: Work with reservoir operator to manage water releases to mimic natural hydrograph and manage flow to avoid stranding fish. Work with irrigators and water commissioners to maintain State's Instream reservations at Miles City of 75 cfs each month but stress need for following flows to facilitate fish spawning migrations and larval survival: 190 cfs September-February; 525 cfs March–April; 600 cfs May-July 15; 225 cfs July 16–August. Reduce fish entrainment into irrigation intakes. Work with T&Y Canal board to secure written agreement for long-term operation of Muggli Bypass and use of canal fish screens.					
Intermittent Streams: Pumpkin Creek, Otter Creek, Hanging Women Crk Ephemeral Streams: 9 with documented fish populations	 171 miles 103 miles 48 miles Various	Multi Species	Wild	General/ Conservation	Maintain fishery through habitat protection and restoration. Maintain or increase connectivity. Opportunistic monitor to further understand system and population dynamics.
Habitat needs and activities: Improve fish passage at current restrictions (culverts, fords, dams) and ensure future structures provide for adequate water flow and fish passage.					
Small Private Ponds/Reservoirs	Various	Trout	Hatchery	Put and Take	Public relations opportunity with landowners to provide local fishing opportunity for rural community. Maintain fishery through monitoring, regulations and annual stocking.
		Bass, Walleye, Northern pike	Wild/ Hatchery	General/ Put, Grow and Take	Public relations opportunity with landowners to provide local fishing opportunity for rural community. Maintain fishery through monitoring, regulations and stocking or wild fish transfers when necessary.

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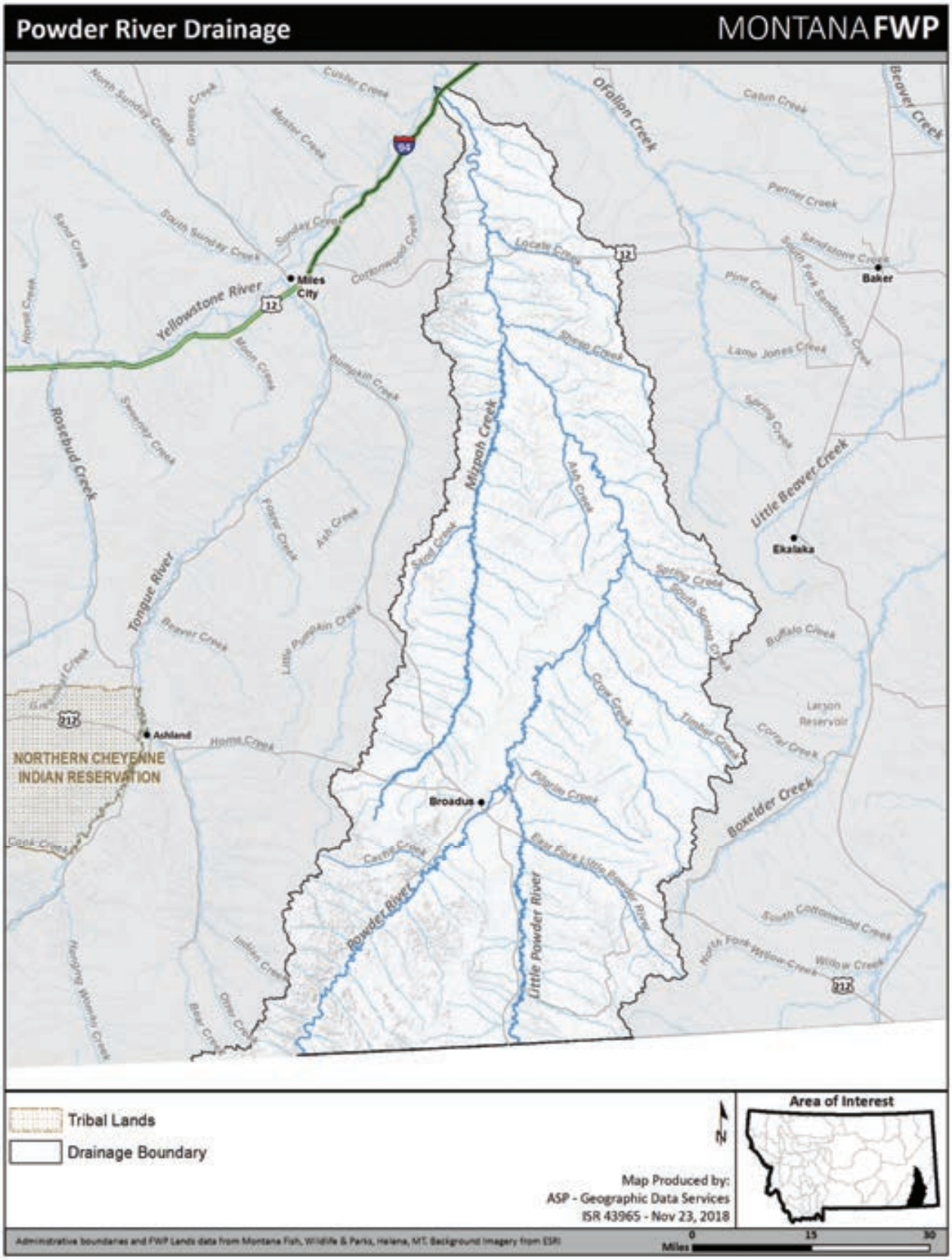
Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Crappie, Yellow Perch, Bluegill	Wild/ Transfer	General	Public relations opportunity with landowners to provide local fishing opportunity for rural community. Provide panfish angling opportunity, supplement population through wild fish transfers when necessary.
Habitat needs and activities: Water depth (ponds less than 12 feet deep) is a common limitation that leads to frequent winterkills; limitation offset by frequent sampling and stocking or wild fish transfers.					
Public Trout Ponds: Mud Turtle, Blacks Sawmill, Dean S	 2 acre 1 acres 1 acre	Trout	Hatchery	Put and Take	Annual stocking of trout for angler opportunity.
Habitat needs and activities: water depth (ponds less than 12 feet deep) is a common limitation that leads to frequent winterkills; limitation offset by annual stocking.					


Powder River Drainage
MONTANA FWP
Miles City
Baker
Ekalaka
Broadus
Ashland
NORTHERN CHEYENNE INDIAN RESERVATION
Yellowstone River
Rosebud Creek
Tongue River
Mizpah Creek
Little Beaver Creek
Boxelder Creek
Powder River
Little Powder River
Ofallon Creek
Beaver Creek
Larson Reservoir
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI
0
15
30
Miles

POWDER RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Powder River drainage includes the Little Powder River and two intermittent tributaries (Mizpah Creek and Locate Creek) and drains portions of Carter, Powder River, Custer and Prairie Counties. The headwaters of the Powder River and Little Powder River are in Wyoming. The Little Powder River flows approximately 72 miles from the Wyoming state line before converging with the Powder River. The confluence of the Powder River with the Yellowstone River is approximately 220 river miles downstream from the Wyoming border. Additionally, 550 miles of fish-bearing streams exist in 44 streams or creeks within the drainage.

The drainage is rural and includes the small community of Broadus. The landscape is dominated by plains grassland complex but includes a large area of shrub grassland. Cottonwood bottoms dominate much of the riparian area. Land ownership includes state and federal lands but is dominated by private property. Agriculture, primarily ranching and secondarily dry land farming dominate the land use. Industrial exploration and development of the following natural resources is also occurring: coal and bentonite mining, natural gas and oil drilling, and wind turbines.

No natural lakes are found in the drainage; however, stock ponds exist and some that provide public access are managed as a fishery and stocked by FWP. In addition to the creeks mentioned above, there are numerous warm water ephemeral prairie streams throughout the drainage. Some of these streams hold game fish and many host a number of native and introduced fisheries.

FISHERIES MANAGEMENT

The Powder River and tributaries are managed primarily as a general/conservation fishery. No species are being stocked in any of the rivers/creeks in the drainage. The primary management focus for the entire drainage is to improve fish passage where current restrictions exist (culverts, fords) and ensure future structures provide for adequate stream function and fish passage.

Fish sampling within the drainage has historically been limited and sporadic. Much of the past sampling has used seines and electrofishing gear to assess larger scale prairie fish distribution and abundance as well as to collect fish for specific educational activities for school programs. Recently, increased resources have been directed at monitoring of pallid sturgeon and paddlefish within the river. Specifically, adults of both species are monitored via telemetry equipment to document their spawning use and trawling gear is subsequently deployed to detect the presence of free embryos if spawning was suspected within the Powder River. Due to low fishing pressure in the drainage there are no specific management goals.

The fish assemblage in the Powder River drainage is largely dominated by 27 native species but also includes nine introduced fish species. The Powder River hosts four game fish: channel catfish, sauger, walleye and shovelnose sturgeon when discharge within the river supports their inhabitance. Paddlefish are also seasonal migrants into the Powder River in years when the Yellowstone River discharge allows for upstream fish passage around or over Intake Diversion Dam. Recent telemetry research from 2014-2018 has demonstrated that pallid sturgeon, a

federally listed endangered species, is also attracted to the Powder River in years when they can migrate upstream of Intake Dam. Channel catfish are the only game fish inhabiting the Little Powder River; 16 native fish species and four introduced fish species also reside within its waters.

Recent field studies have highlighted the significance of the Powder River to long-lived, migratory river species like paddlefish and pallid sturgeon. Paddlefish spawning was confirmed in 2014 and 2017 by capturing paddlefish larvae at river mile one in the Powder River. Paddlefish were also abundant in the lower Powder River in 2018 and a considerable number of Acipensiform larvae were collected; at time of publication genetic test results that identify the larvae to species (e.g. paddlefish, shovelnose sturgeon, or pallid sturgeon) were not completed. Also in 2014, three adult pallid sturgeon (one gravid female and two males) with radio transmitters were monitored as they migrated upstream of Intake Dam, via the side channel, and into the Powder River in June. Spawning was confirmed by recapturing and assessing the female pallid sturgeon but only after she entered the Yellowstone River. Body weight comparison confirmed eggs were deposited either in the Powder River or Yellowstone River near the confluence of the two rivers. The apex of upstream migration for the two males was Powder River mile 8 and 5 while the female migrated as far as river mile 20 of the Powder River.

In December 2016, the US Fish & Wildlife Service mandated the Bureau of Reclamation (BOR), owner of Intake Dam, translocate telemetered pallid sturgeon that reach Intake Dam. This is an interim mitigation measure until the BOR completes a fish passage project at Intake Dam. In 2017, six fish were translocated upstream of the dam by BOR staff and 4 additional fish passed upstream of Intake via the side channel. Three of these fish continued upstream to an apex at Powder River miles 97, 90, and 88. In 2018, 7 fish were translocated at Intake and 5 others passed Intake via the side channel. One fish continued upstream to Powder River mile 87. Another fish was near the Powder-Yellowstone Confluence for 14 days, but the automatic logging telemetry data could not confirm use of the Powder River. A third fish from the 2018 group also migrated upstream of the Powder-Yellowstone Confluence, to approximately Cartersville Dam, but did not use the Powder River. These observations demonstrate the importance of the Powder River to pallid sturgeon and are expected to become a relatively common occurrence if improved fish passage at Intake is achieved or while translocation continues as an interim measure.

From 2006-2015, Wyoming Fish & Game has collected multiple adult sturgeon chub in the Powder River as far upstream as Kaycee, Wyoming. Wyoming staff speculate that these fish are Yellowstone River residents that make spawning migrations into Wyoming when river flows are adequate. These findings also demonstrate the importance of the Powder River to native fish species from the Yellowstone River.

The Powder River drainage does not include any large lakes or reservoirs but does support seven private ponds and four public ponds that are managed as fisheries in the FWP Region 7 Pond Fishing Program. The primary justification for stocking these waters is providing a family fishing opportunity. The program is offered to landowners as a public relations opportunity to provide a fishery for the surrounding community. FWP will stock and manage the private fishery in exchange for the landowner granting free public access. Anglers are required to obtain landowner permission each time they want to access the fishery. Rainbow trout, largemouth bass, yellow perch, northern pike and crappie dominate the species available in these systems.

The fisheries are sampled at least once every three years to monitor population dynamics. Populations are established or supplemented when needed through stocking from a state hatchery or by wild fish transfers from a donor fishery that has tested clean for disease and Aquatic Invasive Species within the region.

HABITAT

The Powder River is undammed and exhibits a relatively natural hydrograph. Fluctuations of the hydrograph often consist of rapid but short-duration elevated flows resulting from Wyoming mountain snowpack melt or from local rain events. The basin has highly erodible soils consisting of gumbo, clay and silt. The landscape within the basin is dominated by rough breaks, badlands and buttes. The combination of highly erosive soils and steep/rough terrain often result in large amounts of suspended sediments within the water column and bed load material dominated by sand and silt. Sediment load of the Powder River has the potential to, and often does, alter water turbidity and substrate of the Yellowstone River downstream of the Powder River confluence.

Many native species in the Yellowstone River evolved with and rely upon increased turbidity as a spawning cue and some of these species concentrate downstream of the Powder/Yellowstone River confluence each spring. Sauger, channel catfish, paddlefish (during high flow years that accommodate passage at the Intake Diversion on the Yellowstone River), and shovelnose sturgeon are four native game fishes that rely upon increased turbidity and have been documented to aggregate below the Powder River confluence. Recent studies confirm the presence of paddlefish, pallid sturgeon, and sturgeon chub during spawning periods in the Powder River and suggest habitat conditions may be favorable for spawning by both pallid sturgeon and paddlefish when river flows are adequate during spawning periods. The significance of elevated turbidity and bed load of the Powder River to the native fish species of the Yellowstone River is likely substantial and may be critical to their life history. Prior to construction of Tongue River Reservoir and Yellowtail Dam, the Tongue River and Big Horn River had similar sediment regimes to that of the Powder River. The Powder River is the last large tributary to the Yellowstone River that provides a natural hydrograph with a naturally high sediment/turbidity regime, so it has become an increasingly important piece of habitat to the native species of the Yellowstone River Drainage.

The Powder River drainage is predominately rural and recent major habitat changes are limited. The use of rock or concrete rip rap to protect city infrastructure, roads, bridges, homes, and farmland/ranchland has affected the natural function of the rivers and streams in this drainage. The installation of culverts, fords and dams has similar impact on the function of the waterways and even a greater impact on the upstream migration of fish. Irrigation demands increase the frequency of dewatering the river which creates an additional habitat concern within the drainage.

Many of the private and public ponds in the drainage are limited by water depth. Most ponds have a maximum depth of 10-11 feet which is marginal for overwintering fish during winters with sustained snow accumulations. The severity and prevalence of winterkills may be reduced by installing windmill aerators. Some landowners and the BLM have installed aerators at their expense in attempt to reduce fish winterkill occurrences. The regional Fish, Wildlife and Parks

fisheries program has refrained from installing aerators for multiple reasons but mainly because of the time and expenses required to service and maintain the structures.

FISHING ACCESS

There are currently two public access sites to the Powder River and one on the Little Powder River. The Powder River Depot provides angler access with undesignated camping and a hand-launch only near the confluence with the Yellowstone River. The other access is the Broadus Bridge FAS (river mile 152) which provides day use only and no boat ramp. The single access site to the Little Powder River is near Broadus and provides day use only and no boat ramp. Considering the rural nature of the drainage and limited game species in the streams, fishing pressure is low. Access to fish is attained through private property, county road crossings and scattered public land.

SPECIAL MANAGEMENT ISSUES

Coal and Coal Bed Methane Extraction Activities

The Powder River Basin in Wyoming is rich with coal deposits and associated extraction activities (strip mining, methane wells, pipelines, and railroads) which can challenge management of the Powder River water and aquatic resources. Water discharge into the Powder River and tributaries from methane wells, although depressed at the current market, continues to have long-term impacts to irrigation practices, which have not been adequately quantified. Management of the Powder River and fisheries requires involvement with all extraction issues as they evolve to ensure the aquatic resources are understood and evaluated by resource and political decision makers.

In-stream Flows and Water Compact:

Continue to work with Wyoming and irrigators to ensure FWP's in-stream flows are provided at the confluence of the Powder and Yellowstone Rivers. Native species migrations into the Powder River for spawning are substantial; recent documentation of paddlefish and pallid sturgeon use and spawning in the Powder River, stresses the value of protecting in-stream flow in the Powder River. Wyoming also documented nearly annual use by sturgeon chub in the Powder River in Wyoming. Given the near dewatering of the Powder River during the month of August, FWP needs to educate the public and other agencies about the need to secure improved in-stream flows for fisheries benefits. The following instream reservations at the Yellowstone River confluence were granted in 1978: 31.9 cfs in January; 71.8 cfs in February; 291 cfs in March; 347 in April; 424 cfs in May; 184 cfs in June; 70 cfs in July; 14.5 cfs in August; 8.8 cfs in September; 9.4 cfs in October; and 61.6 cfs in November and December.

Fishing Contest Restrictions:

The following Fishing Contest Stipulations and Recommendations apply to the Powder River. Stipulations incorporated into Contest Rules under Authority of MCA 87-3-121:

- Contest approved only for single water body i.e. distinct reservoir, lake, or river (ARM 12.7.802).

- No tournaments allowed on Holiday Weekends (ARM 12.7.805) including Easter, Mother's Day, Memorial Day, Father's Day, 4th of July, Labor Day, Columbus Day, and Veterans Day.
- Only one tournament per weekend will be allowed. A body of water cannot have consecutive weekend tournaments (ARM 12.7.805)
- No contests for listed species, species of concern, or for wild trout (ARM 12.7.807). Walleye tournaments: Sauger are defined as any Sander (Sauger/Walleye) with multiple small, distinct black spots on the spiny (first) dorsal fin ray membrane. Fish meeting this, and only this criterion, are classified as Sauger and are not allowed for weigh in.
- Live bait and fish must be transported in clean domestic water where allowed in current fishing regulations (ARM 12.5.706).
- Vessels and equipment approaching a department inspection station must stop as directed (ARM 12.5.706).
- Vessels and equipment entering the state that don't approach a department inspection station must be inspected for aquatic invasive species prior to launching in any Montana water body (Arm 12.5.706).
- Tournament boundaries must be clearly defined in the application. Proposed boundary size should be minimized in an effort to reduce tournament related fish mortality caused by fish being held in live-wells for extended periods and/or traveling long distances.
- A shotgun-style start for boat tournaments on rivers can be extremely dangerous and must be evaluated by tournament sponsors. If boats are required to start at one location, tournament sponsors need to implement an orderly, single file, timed start for every boat or other method (use multiple boat ramps) to reduce the safety risks and liability associated with a rapid start.
- Contests are prohibited in August due to high water temperatures. Additional stress from a fishing contest dramatically increases the likelihood of delayed fish mortality.
- Participants cannot possess more than a daily limit at one time.
- Catch and release formats only. Limit two poles per person (unless regulations restrict anglers to one rod i.e. Central District streams and rivers).
- Limit two poles per person.
- No setlines, trot lines or hoop nets allowed.
- No stringers allowed.
- Live-wells and other fish holding containers such as coolers are required to have aeration running when fish are held and water exchanged at minimum on an hourly basis.
- Sponsors are encouraged to penalize anglers or teams with dead fish.

- Landowner permission required at private boat ramps or on private property of weigh-ins.

Fishing Contest Recommendations:

- Tournaments that don't transport fish to a centralized weigh-in will be given preference over centralized weigh-in tournaments. Bank fishing is discouraged unless fish measurements are recorded by anglers or roving measurement staff and fish are released on site. This prevents handling time and associated stress on fish from poor handling and hauling techniques (e.g. five gallon buckets). Hauling fish away from a water body and then releasing it back into the source water after transportation via vehicle on a county road or highway is technically illegal (see Montana Code Annotated: 87-5-701, -702 & -711).

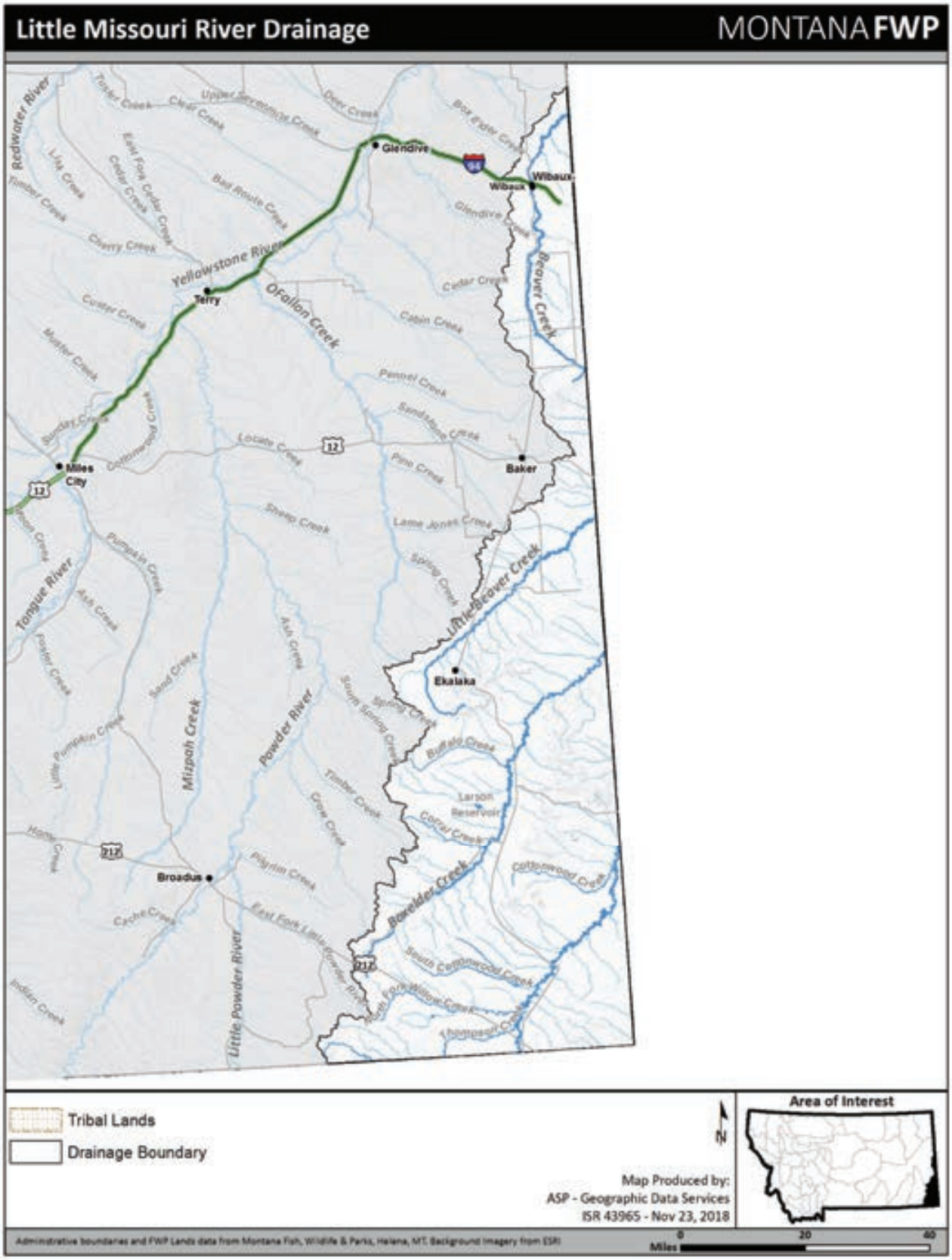
- Contest sponsor(s) are responsible for safe fish handling procedures and to ensure fish are released back to the source water. Stipulations for tournaments with large geographic boundaries may be required to separate fish taken from different locations and return them to specified locations as part of the permit requirements. This may require sponsors to have tanks large enough to hold fish (1/2 lb of fish per gallon of water is a general recommendation for holding and transporting fish), have oxygenation systems, and the ability to haul fish. Discourage contest during the critical spawning period for Channel Catfish and Walleye. Channel Catfish spawn between 75°F to 85°F which typically occurs from June 15 – July 15 on the Powder River. Walleye spawn at 50°F which typically occurs in April.

FISHERIES MANAGEMENT DIRECTION FOR POWDER RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Powder River	220 miles	Sauger (N) Channel catfish (N)	Wild	General	Maintain harvest level, relative abundance, and size structure through regulations.
		Shovelnose sturgeon (N)	Wild	General	Manage as a recreational fishery with some harvest opportunity. Monitor health of this long lived native species.
		Pallid sturgeon (N), Paddlefish (N)	Wild	Conservation	Monitor usage, degree of residency and spawning activity in this river.
		Blue sucker (N)	Wild	Conservation	Monitor population and investigate life history and movements.
		Multi species	Wild	General/ Conservation	Manage for recreational fishing opportunity where applicable. Monitor non-game fish species for native fish assemblage and overall ecosystem health.
Habitat needs and activities: Dewatering is a threat to game and non-game fish, work with Wyoming adjudication process to evaluate compact interpretation and meet the following instream reservations: 31.9 cfs in January; 71.8 cfs February;291 cfs March; 347 cfs April; 424 cfs May; 184 cfs June; 70 cfs July; 14.5 cfs August; 8 cfs September, 9.4 cfs October, and 61.6 cfs November and December. Reduce fish entrainment into irrigation intakes.					
Little Powder River	72 miles	Channel catfish (N)	Wild	General	Maintain harvest level, relative abundance, and size structure through regulations.
		Multi species	Wild	General/ Conservation	Manage for recreational fishing opportunity where applicable. Monitor non-game fish species for native fish assemblage and overall ecosystem health.
Habitat needs and activities: Improve fish passage at current restrictions (culverts, fords, dams) and ensure future structures provide for adequate creek flow and fish passage.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Intermittent Streams: Mizpah Creek, Locate Creek Ephemeral Streams: 10 with documented fish populations	 150 miles 42 miles Various	Multi species	Wild	General/ Conservation	Manage for recreational fishing opportunity where applicable. Monitor non-game fish species for native fish assemblage and overall ecosystem health.
Habitat needs and activities: Improve fish passage at current restrictions (culverts, fords, dams) and ensure future structures provide for adequate creek flow and fish passage.					
Small Private Ponds/Reservoirs	Numerous	Trout	Hatchery	Put, Grow and Take	Public relations opportunity with landowners to provide local fishing opportunity for rural community. Maintain fishery through monitoring, regulations and annual stocking.
		Bass, Walleye, Northern pike	Wild/ Hatchery	General/ Put, Grow and Take	Public relations opportunity with landowners to provide local fishing opportunity for rural community. Maintain fishery through monitoring, regulations and stocking when necessary.
		Crappie, Yellow perch, Bluegill	Wild/ Transfer	General	Public relations opportunity with landowners to provide local fishing opportunity for rural community. Provide panfish angling opportunity, supplement population through wild fish transfers when necessary.
Habitat needs and activities: Water depths. (less than 12 feet deep) is a common limitation that leads to frequent winterkills; limitation offset by frequent sampling and stocking or wild fish transfers.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Public Trout Ponds: Beardsley Rest Boulware	 2 acres 1 acre 1 acre	Trout	Hatchery	Put, Grow and Take	Annual stocking of trout for angler opportunity.
Habitat needs and activities: Water depths. (less than 12 feet deep) is a common limitation that leads to frequent winterkills; limitation offset by frequent sampling and stocking.					


Little Missouri River Drainage
MONTANA FWP
Glendive
Wibaux
Terry
Miles City
Baker
Ekalaka
Broadus
Yellowstone River
Powder River
Tongue River
Little Powder River
Little Beaver Creek
Beaver Creek
Mizpah Creek
Powderville
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background imagery from ESRI
0
20
40
Miles

LITTLE MISSOURI RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Little Missouri River drainage includes the Little Missouri River and two perennial tributaries (Box Elder Creek and Beaver Creek) and drains portions of Carter, Fallon and Wibaux counties. Only a small segment of each tributary exists in Montana and all are tributaries of the Missouri River in North Dakota. The headwater of the Little Missouri River is in Wyoming and only 104 miles exist in Montana before crossing into North Dakota. The headwaters for the other three tributaries occur in Montana and converge with the Little Missouri River in North Dakota.

The drainage is in a rural setting which includes three small communities: Ekalaka, Baker and Wibaux. The landscape is dominated by plains grassland complex but includes a large area of shrub grassland and a smaller area of plains forest called the Custer National Forest. Land ownership includes state and federal lands but is dominated by private property. Agriculture, primarily ranching and secondarily dry land farming dominate the land use. Industrial exploration and development of the following natural resources is also occurring: coal and bentonite mining, natural gas and oil drilling, and wind turbines.

No natural lakes are in the drainage; however, numerous stock ponds exist, and many are managed as fisheries with public access. In addition to the creeks mentioned above, there are numerous warm water prairie streams throughout the drainage. Some hold game fish and many host a number of native and introduced fish species.

FISHERIES MANAGEMENT

The Little Missouri River and tributaries are managed primarily as a general/conservation fishery. Walleye are stocked in Beaver Creek and is the only species currently being stocked in any of the creeks/rivers in the drainage. However, past and current stocking practices in Montana and North Dakota have influenced the fish assemblage. The primary management focus for the entire drainage is to improve fish passage at existing restrictions (culverts, fords, dams) and ensure future structures provide for adequate stream function and fish passage.

Fish sampling within the drainage has been limited to sporadic and infrequent seining activities associated with a larger-scale prairie fish sampling effort and specific educational activities for school programs. Most of the fisheries data in the drainage has been collected in the last decade. Because fishing pressure is very low, there are no specific management goals or fishing regulations for the drainage.

Like other prairie stream systems, the fish assemblage in the Little Missouri drainage is broad and dominated by native species. The Little Missouri River hosts eleven native fish species, five introduced fish species and only one game species (channel catfish). Box Elder Creek supports sixteen native fish species, five introduced fish species, and three game species (northern pike, channel catfish and sauger). Sauger are classified as a Species of Concern in Montana. Little Beaver Creek contains seven native fish species, three introduced fish species, and two game

species (northern pike and channel catfish). Beaver Creek hosts eleven native fish species, six introduced fish species, and two game species (northern pike and walleye).

The Little Missouri River drainage does not include any large lakes or reservoirs but does have eleven private ponds and thirteen public ponds that are managed as fisheries in the Regional Pond Fishing Program. The primary justification for stocking these waters is providing a family fishing opportunity. The program is offered to landowners as a public relations opportunity to provide a fishery for the surrounding community. If the landowner allows free public access to the pond FWP will stock and manage the fishery. Anglers are required to obtain landowner permission each time they want to access the fishery. Rainbow trout, largemouth bass, yellow perch, northern pike and crappie dominate the species available in these systems. The fisheries are sampled at least once every three years to examine population densities and size structures. Populations are established or supplemented when needed through stocking from a state hatchery or by wild fish transfers from another fishery within the region.

HABITAT

Although the drainage is predominately rural and major changes have not occurred, habitat changes have impacted the system since human settlement. Developments include the construction of railroads, as well as numerous roads to accommodate vehicle travel (county roads, state highways and a federal interstate highway). All these developments have impacted the ability of rivers and streams to migrate laterally and interact with their historic floodplain. The use of rock or concrete rip rap to protect infrastructure, roads, bridges, homes, and farmland/ranchland has restricted the natural function of the rivers and streams in this drainage. The installation of culverts, fords and dams impact the function of the waterways and upstream migration of fish.

The majority of private and public ponds in the drainage are limited by water depth. Most have a maximum depth of 10-11 feet which is marginal for overwintering fish during winters with sustained snow accumulations. The significance and prevalence of winterkills has been and can be reduced by installing windmill aerators. Some landowners and the BLM have installed aerators at their expense to reduce winterkill occurrences. FWP has refrained from installing aerators because of the time and expenses required to service and maintain the structures.

FISHING ACCESS

Considering the rural nature of the drainage and limited game species in the streams, fishing pressure is extremely low and demand for a fishing access site has not occurred. Consequently, development of a fishing access site is a low priority within the drainage. Access for fishing in the streams is probably met through private property access, county road crossings and public land.

SPECIAL MANAGEMENT ISSUES

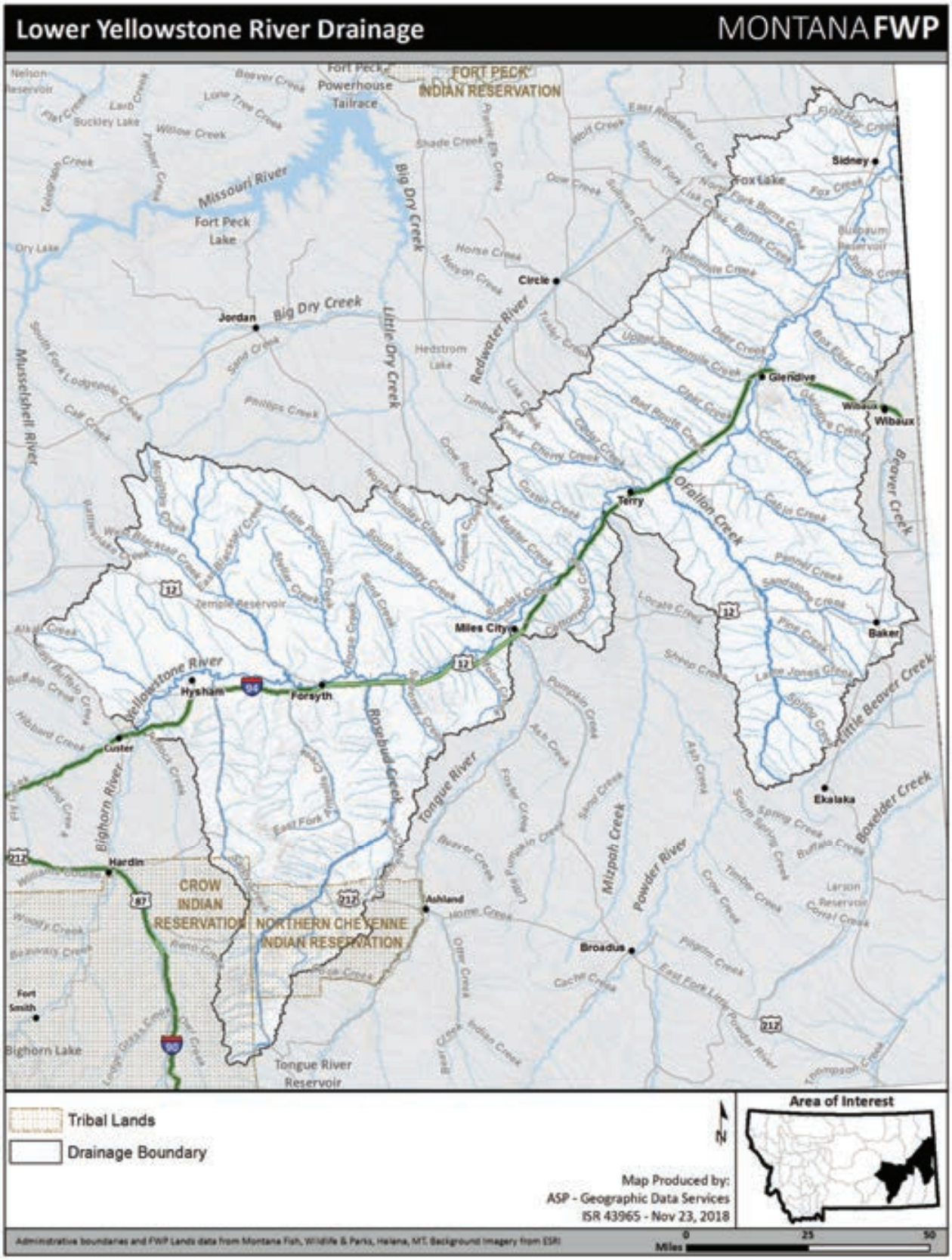
There are no special management issues in the Little Missouri River drainage considering the low fishing pressure experienced and limited game species available.

FISHERIES MANAGEMENT DIRECTION FOR LITTLE MISSOURI RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Beaver Creek	120 miles	Walleye	Hatchery	General	Annual stocking of walleye for increased angler opportunities.
		Multi species	Wild	General/ Conservation	Manage for recreational fishing opportunity where applicable. Monitor non-game fish species for native fish assemblage and overall ecosystem health.
Habitat needs and activities: improve fish passage at current restrictions (culverts, fords, dams) and ensure future structures provide for adequate creek flow and fish passage.					
Perennial Streams: Box Elder Creek Little Missouri, Intermittent Streams: Little Beaver Ephemeral Streams: 28 with documented fish populations	 151 miles 106 miles 12 miles	Multi species	Wild	General/ Conservation	Manage for recreational fishing opportunity where applicable. Monitor non-game fish species for native fish assemblage and overall ecosystem health.
Habitat needs and activities: improve fish passage at current restrictions (culverts, fords, dams) and ensure future structures provide for adequate creek flow and fish passage.					
Small Private Ponds/Reservoirs	Numerous	Trout	Hatchery	Put, Grow and Take	Public relations opportunity with landowners to provide local fishing opportunity for rural community. Maintain fishery through regulations and annual stocking.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Bass, Walleye, Northern pike,	Wild/ Hatchery	General/ Put, Grow and Take	Promote opportunity with landowners to provide local fishing opportunity for rural community. Maintain fishery through regulations and stocking when necessary.
		Crappie, Yellow perch, Bluegill	Wild/ Transfer	General	Promote opportunity with landowners to provide local fishing opportunity for rural community. Provide panfish angling opportunity, supplement population through wild fish transfers when necessary.
Habitat needs and activities: water depth (ponds less than 12 feet deep) is a common limitation that leads to frequent winterkills; limitation offset by frequent sampling and stocking or wild fish transfers.					


Lower Yellowstone River Drainage
MONTANA FWP
FORT PECK INDIAN RESERVATION
Fort Peck Powerhouse Tailrace
Missouri River
Fort Peck Lake
Big Dry Creek
Little Dry Creek
Redwater River
Musselshell River
Sidney
Fox Lake
Circle
Jordan
Glendive
Wibaux
Terry
Miles City
Baker
Ekalaka
Hysham
Forsyth
Custer
Hardin
Ashland
Broadus
Fort Smith
CROW INDIAN RESERVATION
NORTHERN CHEYENNE INDIAN RESERVATION
Bighorn Lake
Tongue River Reservoir
Yellowstone River
Bighorn River
Rosebud Creek
Tongue River
Powder River
Mizpah Creek
Beaver Creek
Little Beaver Creek
Boxelder Creek
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background imagery from ESRI
0
25
50
Miles

LOWER YELLOWSTONE RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Lower Yellowstone River Drainage includes the Yellowstone River, seven perennial streams (Burns, Rosebud, O'Fallon, Cedar, Cabin, Fox, and Thirteen Mile creeks) and numerous intermittent and ephemeral warm water prairie streams. No natural lakes are located within the drainage; however, nine public reservoirs (Castle Rock, Baker, Hollecker, South Sandstone, Gartside, Johnson's, Rattlesnake, Homestead, and Spotted Eagle) and numerous smaller public and private reservoirs and stock ponds are managed for fisheries. The drainage includes all or portions of Big Horn, Treasure, Rosebud, Custer, Prairie, Fallon, Dawson, and Richland counties.

The Yellowstone River is the largest water body within the drainage. The headwaters of the Yellowstone River is upstream of Yellowstone Lake in northwest Wyoming. The Yellowstone River flows north into Montana and continues northeast through central and eastern Montana and crosses into North Dakota approximately fifteen miles prior to its confluence with the Missouri River. The Yellowstone River in administrative Region 7 consists of 293 river miles between the Bighorn River confluence and North Dakota state line. About 90% of all uses of Yellowstone River water in the drainage is for irrigation; roughly 1.5 million acre-feet of water is used annually. Irrigation pumps, gravity-feed canals without dams, and gravity-feed canals with mainstem low-head irrigation diversion dams (Ranchers, Yellowstone River, Cartersville and Intake) are used to withdraw water for irrigation.

The Lower Yellowstone River Drainage is in a rural setting with small communities (Hysham, Forsyth, Colstrip, Rosebud, Miles City, Terry, Fallon, Glendive, Savage, Crane, Lambert and Sidney). The landscape is dominated by plains grassland complex but includes a large area of shrub grassland and a smaller area of plains forest. Land ownership includes state and federal lands but is dominated by private property. Agriculture, primarily ranching and secondarily dry land and irrigated farming, dominate the land use. Industrial activities include coal mining at Colstrip and natural gas and oil drilling in Richland, Dawson, and Fallon counties.

FISH MANAGEMENT

The relatively natural hydrograph and intact habitat of the lower Yellowstone River and its tributaries support a rich fish assemblage of 61 species (41 native 20 non-native) composed of many warmwater and coolwater species, and a few coldwater species. Native fish species include: sauger, shovelnose sturgeon, pallid sturgeon, channel catfish, burbot, paddlefish, freshwater drum, goldeye, shortnose gar, smallmouth buffalo, bigmouth buffalo, blue sucker, river carpsucker, shorthead redhorse sucker, white sucker, longnose sucker, mountain sucker, longnose dace, northern redbelly dace, creek chub, lake chub, sturgeon chub, brook stickleback, brassy minnow, fathead minnow, plains minnow, flathead chub, western silvery minnow, sand shiner, emerald shiner, golden shiner, and stonecat. Common carp, plains killifish, black bullhead, yellow bullhead, and green sunfish are introduced species that can be found in parts or all the drainage. Largemouth bass, smallmouth bass, walleye, white crappie, black crappie,

northern pike, yellow perch, bluegill, and pumpkinseed have been stocked or illegally introduced and are found in reservoirs, stock ponds; some species are also established in the Yellowstone River and tributaries. Brown trout, rainbow trout, brook trout, and mountain whitefish inhabit reaches of the Yellowstone River near and upstream of the Bighorn River confluence. Brook trout are also found in four small tributaries of the lower Yellowstone River. All four tributaries are influenced by coldwater releases from large groundwater springs.

A primary fisheries management objective for the lower Yellowstone River is monitoring and maintaining the wild and self-sustaining populations of native species. This objective includes maintaining recreational harvest, on a limited basis, for native game species. Another primary objective is monitoring, maintaining and improving the overall ecosystem health of the river. This objective includes monitoring stream bank projects to ensure habitat protection and allowing for natural stream form and function for efficient transport of both water and sediment. A secondary management objective is to maintain a recreational fishery for introduced fish species with an emphasis on harvest.

The lower Yellowstone supports a wild sauger population. Monitoring and sustaining this population for native species preservation and recreational angling is a primary management concern for FWP. Annual spring tagging of spawning sauger and subsequent recapture information from department sampling efforts and angler tag returns provides data used to estimate angler harvest and document fish movement. In the Yellowstone River upstream of Cartersville Diversion Dam there is a reduced limit on sauger because trend data suggest lower relative abundance of Sauger upstream of this structure.

One threat to maintaining the sauger population in the Yellowstone River is the expanding population of nonnative smallmouth bass. The smallmouth bass population has the potential to outcompete and displace sauger in some reaches of its historic range. In 2005, stable isotope analysis was used to investigate competition for prey between sauger and smallmouth bass in the Yellowstone River. Tissue samples for isotope analysis were collected from 10 prey species in July 2005 near Rosebud Montana. Results show that sauger and smallmouth bass (>200mm) overlap almost completely in both carbon and nitrogen, indicating that these species are at the same trophic level and are consuming prey with the same carbon isotope signature in similar proportions (i.e. they are dependent on the same prey source).

Trend sampling on the Yellowstone River has demonstrated that sauger abundances are negatively correlated with smallmouth bass abundances. Smallmouth bass progressively replaced sauger as the most abundant predator in the Forsyth and Miles City areas during the consecutive drought years experienced in the 1980's and early 1990's. Specific life history stages, like spawning and foraging, are dependent on a natural hydrograph and increased turbidity. Smallmouth bass are visual feeders well suited to low turbidity conditions. Drought or low flow years result in reduced turbidity which favors smallmouth bass, while wet or high flow periods increase turbidity and favor sauger populations. Loss of the natural hydrograph and reduced turbidity from drought and dam operations on tributaries (Yellowtail and Tongue River Reservoirs), along with continued allocation of river water for irrigation or municipal use and armoring of stream banks on the Yellowstone River, all create conditions that favor smallmouth bass over sauger.

The lower Yellowstone River provides a unique opportunity for anglers to catch and harvest a paddlefish. With technical guidance provided by the University of Idaho, Montana FWP and North Dakota Game and Fish manage the paddlefish population in the lower Yellowstone River cooperatively. Paddlefish management is guided by the10-year "*Management Plan for North Dakota and Montana Paddlefish Stocks and Fisheries*." Paddlefish from this population spend most of their lives in Lake Sakakawea. In May and June during elevated Yellowstone River discharge, paddlefish migrate up the Yellowstone and Missouri Rivers to spawn. During paddlefish season, anglers can fish for paddlefish from the Bighorn River confluence to the North Dakota state line, but most angling occurs at and downstream of Intake Diversion Dam. The paddlefish season has specific regulations and management activities designed to ensure that this long-lived, late to mature species can continue to provide a sport fishing opportunity in Montana. FWP attempts to maximize angler opportunity while ensuring sustainability with a split season, with harvest-only days and catch-and-release-only days. Data collected from tagging efforts during catch-and-release fishing allows estimation of the population size each year. Data collected from harvested fish allows evaluation of population structure. Together this information allows FWP to monitor the overall size of the population and condition of the individuals within the population through time. A statewide paddlefish phone creel is conducted annually to obtain harvest estimates that is compared to the field-measured harvest.

Research activities are conducted to understand and aid recovery of pallid sturgeon, a federally endangered species and state Species of Concern. Recent research includes monitoring adult pallid sturgeon migration pathways and reproduction within the Yellowstone River. The lack of successful natural recruitment prompted the stocking of juvenile hatchery-reared pallid sturgeon into the Yellowstone River as far upstream as Cartersville Diversion Dam. These fish are reared by state and federal hatcheries including the Miles City State Fish Hatchery. Annual monitoring of juvenile pallid sturgeon occurs in late summer/early fall to assess the survival rate of hatchery-stocked pallid sturgeon into the Yellowstone River. No harvest is allowed for pallid sturgeon because of its endangered species status.

Trend electrofishing is conducted annually on five reaches of the lower Yellowstone River to assess and monitor relative abundance, population structure, and relative condition of all fish species. Trend sections are six miles long and are located at Hysham, Forsyth, Miles City, Fallon, and Intake. Each site is sampled once in the months of August, September, and October. Data collected during this period is the baseline information for monitoring relative abundance and condition of sport fish and native species in the lower Yellowstone River. In the Yellowstone River and tributaries, the primary objective for all fish species is to monitor and sustain a wild fishery. Fish stocking will not occur in a river system unless natural spawning and recruitment are failing, or habitat is deemed to be irreparable.

The Lower Yellowstone River Drainage also has many private and public reservoirs and stock ponds that are managed as fisheries in the Regional Pond Fishing Program. The primary justification for stocking these waters is providing a family fishing opportunity. The program is used as a public relations opportunity with landowners and provides a fishing opportunity for the surrounding community. If the landowner agrees to allow free public access to the pond, FWP will stock and manage the fishery. Anglers are required to obtain landowner permission every time they access the fishery. Fish populations are established or supplemented when needed through stocking from a state hatchery or by wild fish transfers from another fishery. A variety

of fish species are available for stocking from the state's hatcheries which include: walleye, rainbow trout, smallmouth bass, largemouth bass, channel catfish and northern pike. The statewide wild fish transfer policy also allows transferring fish between waters. Northern pike, yellow perch, black crappie, white crappie, and bluegill are often available for transfer. Transfers are usually done to re-establish, or augment ponds affected by winterkill or to provide forage. Reservoirs and stock ponds are sampled by FWP at least every three years to evaluate the status of the fisheries and ensure a catchable stock of fish is present. A Regional Pond Fishing Guide is generated annually that summarizes the pond program, locations of ponds, and fish species available. The guide is available to the public at the regional office.

Overall fishing pressure is low to moderate in the drainage but increasing on the Yellowstone River due to increasing numbers of anglers owning riverboats. Stock ponds and prairie streams in the drainage have high to low angling pressure. Spotted Eagle Pond in Miles City, Hollecker Lake in Glendive, Baker Lake in Baker, South Sandstone Lake near Baker, Castle Rock Lake in Colstrip, and Gartside Reservoir near Sidney all experience high fishing pressure because of proximity to population centers. Many of the public reservoirs and private ponds in the district get moderate to low angling pressure.

HABITAT

The Yellowstone River, touted as the longest undammed river in the lower 48 states, has a relatively intact and natural hydrograph. Hydrograph fluctuations often consist of short-duration elevated flows in early spring from local snow melt and rain events, but longer, sustained, elevated flows in spring/early summer from mountain snow melt. Historically, two major tributaries that are now dammed (Bighorn and Tongue rivers) provided a major influence on the hydrograph and sediment regime of the lower Yellowstone River. Construction of Tongue River Reservoir (on the Tongue River) and Yellowtail Dam (on the Bighorn River) permanently altered the hydrograph and sediment contribution to the lower Yellowstone River.

These anthropogenic habitat alterations are noteworthy because many native species in the lower Yellowstone River evolved and relied upon increased turbidity as a spawning cue. The increased turbidity may be critical to the life history of native fish species in the lower Yellowstone River. The resulting reduced turbidity creates favorable conditions for introduced species such as smallmouth bass. Prior to construction of Tongue River Reservoir and Yellowtail Dam, the Tongue River and Bighorn River had sediment regimes like the Powder River. Sauger, channel catfish, paddlefish (during high flow years that accommodate passage at Intake) and shovelnose sturgeon are four native game fishes that have been documented to aggregate in the high-turbidity waters downstream of the Powder/Yellowstone River confluence. It is probable that similar fish aggregations historically occurred in the Yellowstone River downstream of the confluences with the Tongue and Bighorn Rivers prior to dam construction.

Four low-head diversion dams on the lower Yellowstone River (Ranchers, Yellowstone, Cartersville and Intake) create anthropogenic barriers to upstream fish migrations. The impact on migration is different at each dam. Cartersville and Intake dams are the most significant fish barriers. Native fishes exhibit extensive seasonal migrations that are critical to their life history and to maintaining populations throughout the lower Yellowstone River. Working with irrigation districts to facilitate fish passage at barriers is critical for habitat improvement and is a primary goal for the regional fisheries management program. Designs are currently underway to

improve fish passage at Intake Diversion Dam. Specifically, USACE and BOR plan to construct a bypass channel around Intake Diversion Dam accompanied by a new concrete weir (bypass channel alternative) immediately upstream of the existing rock-filled wooden crib structure (see BOR and USACE 2016 Lower Yellowstone Intake Diversion Dam Fish Passage Project, Montana, Final Environmental Impact Statement for full details of the project). During the planning process of the bypass channel project, FWP collaborated with BOR to document that status of fish passage at the original Intake structure. A telemetry approach was used to monitor the movements of five native species; pallid sturgeon, shovelnose sturgeon, sauger, blue sucker, and paddlefish. Individuals of these species were implanted with radio transmitters in both a test reach immediately downstream of Intake Diversion Dam as well as in an unimpeded control reach upstream of Glendive. The first four years of the project (2015-2018) were meant to establish a baseline passage dataset to which post-construction passage could then be compared to. Passage at the current structure was observed for all five species, but both the rate and the route of passage varied by species and by discharge. Pallid sturgeon, the species driving the large-scale construction project, encountering the dam passed upstream during times of high discharge utilizing an existing high-flow side channel (HFSC) that circumvents the dam. Conversely, shovelnose sturgeon, which are often used as a surrogate species to Pallid Sturgeon, passed upstream over top of the dam at times of low discharge. Approximately half of the sauger encountering Intake Diversion Dam were observed passing upstream both over the dam and around the dam via the HFSC. Nearly all blue sucker encountering Intake Diversion Dam passed upstream over the structure. Paddlefish exhibited a similar pattern to pallid sturgeon in that they mostly passed upstream via the HFSC when river discharge was high. Once constructed, monitoring fish passage at the bypass channel alternative to evaluate the intended goal of improving "passage of pallid sturgeon and other native fish at the Lower Yellowstone Project Intake Diversion Dam" will be a vital role to ensure the project is a success for not only pallid sturgeon but the entire fish assemblage of lower Yellowstone River.

Entrainment of fishes into unscreened canals is also a concern in the drainage. Installation of screens on unscreened structures will prevent or reduce the entrainment of fish into canals and other irrigation structures. In 2011, a new head gate with screens was completed at Intake canal. A screening structure has also been purchased and installed at the Buffalo Rapids Shirley pump site. Operation of the Shirley fish screens has been problematic, and operators continue to make modifications with the manufacturer to improve its function. Both projects have the potential to significantly reduce the annual entrainment of fish into these canals.

The lower Yellowstone River riparian corridor provides critical wildlife habitat. It varies from sparse ribbons of trees to robust cottonwood galleries. Much of the floodplain is developed for irrigated agriculture. Other developments include the construction of railroads, as well as numerous roads to accommodate vehicle travel (county roads, state highways and a federal interstate highway). All these developments have impacted the ability of the Yellowstone River to migrate laterally and interact with its historic floodplain. The use of rock or concrete rip rap to protect city infrastructure, roads, bridges, homes, and farmland/ranchland has restricted the natural function of the Yellowstone River and prairie streams in this drainage. These impacts may extend to the quality of fish habitat in the river. The installation of culverts, fords and dams has similar impacts on the function of the river, tributaries, and prairie streams and even greater impacts on upstream fish migrations.

The Lower Yellowstone River Drainage has some of the deepest ponds and reservoirs in the region, but many private and public ponds in the drainage are limited by water depth. Ponds with a maximum depth of 10-11 feet are generally marginal for overwintering fish during winters with sustained snow accumulations. The severity and prevalence of winterkills may be reduced by installing windmill aerators. Some landowners and the BLM have installed aerators at their expense in attempt to reduce winterkill occurrences. FWP has refrained from installing aerators because of the time and expenses required to service and maintain the structures.

FISHING ACCESS

In 2016 there are 21 Fishing Access Sites that provide access to the Lower Yellowstone River. There are several private or undeveloped public access points as well. The Yellowstone River upstream of Ranchers Diversion Dam can be accessed by Manuel Lisa FAS on the Bighorn River. Myers Bridge FAS provides access to the Yellowstone River between Ranchers Diversion and Yellowstone Diversion. Amelia Island and Rosebud West FAS provides access to the Yellowstone River from Yellowstone Diversion to Cartersville Diversion. Rosebud East FAS, Far West FAS, Roche Jaune FAS, Kinsey Bridge FAS, Bonfield FAS, Powder River Depot FAS, Calypso Bridge (BLM), Fallon Bridge FAS, Black Bridge FAS, Walleyes Unlimited Boat Ramp (Glendive), and Stipek FAS provide access to the Yellowstone River between Cartersville Diversion Dam and Intake Diversion Dam. Intake FAS, Elk Island FAS, Seven Sisters FAS, Sidney Bridge FAS, Richland Park (Richland County), and Diamond Willow FAS provide access to the Yellowstone River downstream of Intake Diversion Dam. There are also a few sites available at county bridge crossings and some landowner agreements that provide limited access. High priority areas to secure additional public access to the Yellowstone River include the reaches between Rosebud and Miles City, at the bridge in Terry, and between Fallon and Glendive. Recently, public access to two private sites (Fort Keogh and Botrell) upstream of Miles City have been lost due to changes in public tolerance or change in ownership. This has created an additional priority area to secure future public access to the Yellowstone River.

SPECIAL MANAGEMENT ISSUES

Resource management in the Lower Yellowstone River Drainage requires involvement with many agencies, entities, and user groups. River issues may include involvement with Department of Natural Resources and Conservation, BLM, FWS, BOR, Army Corp of Engineers, Burlington Northern Santa Fe railroad, Yellowstone River Conservation District Council, local conservation districts, and adjacent landowners. Land use, energy development, and water allocation are special management issues that affect multiple stakeholders in the drainage.

Securing appropriate in-stream flow rights is a special management concern for the lower Yellowstone River, particularly the continued development of conservation district water reservations (CDWR) in the lower basin (downstream of the Bighorn-Yellowstone river confluence). In the 1970's, when Yellowstone River Water Reservations were established, a compromise occurred, CDWR in the upper basin (upstream of the Bighorn River) were designated junior to the states in-stream reservations and senior in the lower basin. In other words, the state would not be able to make call on approximately 60% of water rights issued through CDWR in the lower basin to improve river flow conditions. For example, applicants that purchase a CDWR today from the lower basin will have a senior water right to the states 1978 in-stream flow reservation. In 2016, only 12.7% and 14.6% of CDWR have been allocated

from the upper and lower basins respectively. This reality creates a tremendous burden for future management of the Yellowstone River and large warm water fish species like Paddlefish and Pallid Sturgeon.

Over-allocation of water in the Yellowstone River drainage, particularly in July and August, is poised to be a major threat to fisheries resources and existing water rights in the future and certainly in the next drought cycle. The cumulative effect of irrigation withdrawal and withdrawal for oil and gas hydraulic fracturing is of concern.

Paddlefish management on the lower Yellowstone River includes an annual Memorandum of Understanding and permit for a commercial caviar operation conducted by the Glendive Chamber of Commerce. During the paddlefish season the Chamber has a paddlefish processing facility at the Intake FAS. In exchange for having paddlefish cleaned, anglers donate their paddlefish eggs to the caviar operation. The 1993 Legislature authorized paddlefish caviar sales by the Glendive Area Chamber of Commerce and funds generated from the caviar sales must be used for a grant program. Funds are available to non-profit entities through grant applications for projects that meet a historical, cultural, or recreational need. The project must show public benefit and funding is not allowed for projects that are for private benefit. Emphasis is on small non-profit groups in Eastern Montana.

Coal development began in the mid 1970's and continues to be a large industrial activity in the Colstrip area. In 2011, the State of Montana also sold its Otter Creek mineral rights to an out-of-state company. The impact of continued coal operations at Colstrip and development of new mines will be a management concern for many years in the drainage. Oil and natural gas extraction from the Bakken and other shale zones is another industrial activity that will have unknown impacts to the drainage. Most of the drilling is focused in the Sidney and Baker areas. Infrastructure for the oilfield, especially pipeline construction, is a secondary product of oil development that will continue to have impacts on the resources of the lower Yellowstone River. In 2016 oil development activity slowed because of lower market prices. This has reduced the demand on natural resources and local infrastructure, especially housing from a recent high observed between 2011 and 2014. Management of the local FAS and Wildlife Management Areas became more challenging due to the influx of people, and changes were made in response to ensure the use of these sites remains as intended. Although the impact to these sites has reduced along with oil field activity recently the changes made will be in place once market prices and activity increases in the future.

Interest in fishing contests on rivers continues to grow in Montana. To address biologic and social concerns related to fishing contests, the following Fishing Contest Restrictions and Recommendations have been jointly developed for the Yellowstone River between the Region 5 and 7 FWP offices:

Stipulations incorporated into Contest Rules under Authority of MCA 87-3-121:

1. Contest approved only for single water body i.e. distinct reservoir, lake, or river (ARM 12.7.802).

2. No tournaments allowed on Holiday Weekends (ARM 12.7.805) including Easter, Mother's Day, Memorial Day, Father's Day, 4th of July, Labor Day, Columbus Day, and Veterans Day.

3. Only one tournament per weekend will be allowed within each region 5 and 7. A body of water cannot have consecutive weekend tournaments (ARM 12.7.805)

4. No contests for listed species, species of concern, or for wild trout (ARM 12.7.807).

   Walleye tournaments: sauger are defined as any Sander (sauger/walleye) with multiple small, distinct black spots on the spiny (first) dorsal fin ray membrane. Fish meeting this, and only this criterion, are classified as sauger and are not allowed for weigh in.

5. Live bait and fish must be transported in clean domestic water where allowed in current fishing regulations (ARM 12.5.706).

6. Vessels and equipment approaching a department inspection station must stop as directed (ARM 12.5.706).

7. Vessels and equipment entering the state that don't approach a department inspection station must be inspected for aquatic invasive species prior to launching in any Montana water body (Arm 12.5.706).

8. No contests in the Bighorn River from the confluence of the Little Bighorn to Afterbay Dam or in the Yellowstone above Huntley Diversion Dam (smallmouth bass tournaments may be considered above Huntley Diversion Dam)

9. Tournament boundaries must be clearly defined in the application. Proposed boundary size should be minimized in an effort to reduce tournament related fish mortality caused by fish being held in live-wells for extended periods and/or traveling long distances.

10. A shotgun-style start for boat tournaments on rivers can be extremely dangerous and must be evaluated by tournament sponsors. If boats are required to start at one location, tournament sponsors need to implement an orderly, single file, timed start for every boat or other method (use multiple boat ramps) to reduce the safety risks and liability associated with a rapid start.

11. Contests are prohibited in August due to high water temperatures. Additional stress from a fishing contest dramatically increases the likelihood of delayed fish mortality.

12. Participants cannot possess more than a daily limit at one time.

13. Catch and release formats only.

14. Limit two poles per person (unless regulations restrict anglers to one rod i.e. Central District streams and rivers).

15. No setlines, trot lines or hoop nets allowed.

16. No stringers.

17. Livewells and other fish holding containers such as coolers are required to have aeration running when fish are held and water exchanged at minimum on an hourly basis.

18. Sponsors are encouraged to penalize anglers or teams with dead fish.

19. Landowner permission required at private boat ramps or on private property of weigh-ins.

Recommendations:

1. Tournaments that don't transport fish to a centralized weigh-in will be given preference over centralized weigh-in tournaments. Bank fishing is discouraged unless fish measurements are recorded by anglers or roving measurement staff and fish are released on site. This prevents handling time and associated stress on fish from poor handling and hauling techniques (e.g. five gallon buckets). Hauling fish away from a water body and then releasing it back into the source water after transportation via vehicle on a county road or highway is technically illegal (see Montana Code Annotated: 87-5-701, -702 & -711).

2. Contest sponsor(s) are responsible for safe fish handling procedures and to ensure fish are released back to the source water. Stipulations for tournaments with large geographic boundaries may be required to separate fish taken from different locations and return them to specified locations as part of the permit requirements. This may require sponsors to have tanks large enough to hold fish (1/2 lb of fish per gallon of water is a general recommendation for holding and transporting fish), have oxygenation systems, and the ability to haul fish.

3. Discourage contest on the Yellowstone River during the critical spawning period for channel catfish and walleye (same as sauger). Channel catfish spawn between 75°F to 85°F which typically occurs from June 15 – July 15 on the Yellowstone River. Walleye and sauger spawn at 50°F which typically occurs in April.

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FISHERIES MANAGEMENT DIRECTION FOR LOWER YELLOWSTONE RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Yellowstone River - Confluence of Bighorn River to Cartersville Dam	59 miles	Sauger N)	Wild	Conservation	Manage sauger population for limited consumptive harvest by reduced harvest limits.
		Paddlefish	Wild	Conservation	Monitor paddlefish usage of this section of river in years that paddlefish successfully migrate upstream of Intake Dam.
		Channel catfish (N)	Wild	General	Manage as a recreational fishery. Standardize catfish sampling methods for comparison across eastern Montana.
		Smallmouth bass	Wild	General	Recreational fishery with an emphasis on harvest. Monitor to evaluate the impacts of smallmouth bass on native fish populations in the Yellowstone River.
		Walleye	Wild	General	Recreational fishery with emphasis on harvest. Monitor to evaluate source of walleye in Yellowstone River to direct management decisions for sauger conservation.
		Multi species	Wild	General/ Conservation	Manage for recreational fishing opportunity where applicable. Monitor non-game fish species for native fish assemblage and overall ecosystem health.
Habitat needs and activities: Increase fish passage and reduce fish entrainment into canals at Ranchers, Yellowstone, and Cartersville diversion dams and other irrigation intakes. Maintain/restore river ecosystem health and function by minimizing impacts of stream bank stabilization projects thereby decreasing channel confinement.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Yellowstone River – Cartersville Dam to Powder River confluence	88 miles	Sauger (N)	Wild	Conservation	Manage sauger populations for limited consumptive harvest. Monitor threat of hybridization with walleye and direct management decisions that maximize angler opportunity while protecting genetic integrity of the sauger population. Protect critical spawning habitat from Miles City to Glendive.
		Paddlefish (N) Channel catfish (N)	Wild	Conservation	Monitor paddlefish usage of this section of river in years that paddlefish successfully migrate upstream of Intake Dam Manage as a recreational fishery. Standardize catfish sampling methods for comparison across eastern Montana.
		Smallmouth bass	Wild	General	Recreational fishery with an emphasis on harvest. Monitor to evaluate the impacts of smallmouth bass on native fish populations in the Yellowstone River.
		Walleye	Wild	General	Recreational fishery with an emphasis on harvest. Monitor to evaluate source of walleye in Yellowstone River to direct management decisions for sauger conservation.
		Shovelnose sturgeon (N)	Wild	General/Conservation	Manage as a recreational fishery with some harvest opportunity. Monitor health of this long lived native species.
		Pallid sturgeon (N)	Wild	Conservation	Endangered species, harvest prohibited. Conduct research to assist decision making for recovery of species. Increase genetic diversity

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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
					through stocking following pallid sturgeon recovery plan. Establish fish passage at Intake Diversion Dam and monitor subsequent upstream passage, habitat usage, and spawning activities.
		Blue Sucker (N)	Wild	Conservation	Monitor population and investigate life history and movements throughout Yellowstone River.
		Multi species	Wild	Conservation/ General	Manage for recreational fishing opportunity where applicable. Monitor non-game fish species for native fish assemblage and overall ecosystem health.
Habitat needs and activities: Increase fish passage at Cartersville and Intake Diversion Dams and reduce fish entrainment into irrigation intakes. Maintain/restore river ecosystem health and function by minimizing impacts of stream bank stabilization projects thereby decreasing channel confinement. Protect critical sauger spawning habitat from Miles City to Glendive					
Yellowstone River – Confluence of Powder River to North Dakota State line	134 miles	Paddlefish (N)	Wild	Restrictive Regulations	Intensively monitor population and harvest to be reflective of population trends. Management shared and coordinated through a Montana/North Dakota Management Plan. Annual Memorandum of Understanding between FWP and Glendive Chamber of Commerce for processing of paddlefish and sale of paddlefish roe for funding of a nonprofit community grant program. Increase fish passage at Intake diversion dam to provide additional upstream spawning habitat.
		Pallid sturgeon (N)	Wild/ Hatchery	Conservation	Endangered species, harvest prohibited. Conduct research to assist decision making for recovery of species. Increase genetic diversity through stocking following pallid sturgeon

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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
					recovery plan. Establish fish passage at Intake Diversion Dam and monitor subsequent upstream passage, habitat usage, and spawning activities.
		Sauger (N)	Wild	Conservation	Manage sauger populations for limited consumptive harvest. Monitor threat of hybridization with walleye and direct management decisions that maximize angler opportunity while protecting genetic integrity of the sauger population.
		Channel catfish (N)	Wild	General	Manage as a recreational fishery. Standardize catfish sampling methods for comparison across eastern Montana.
		Shovelnose sturgeon (N)	Wild	General/ Conservation	Manage as a recreational fishery with some harvest opportunity. Monitor health of this long lived native species.
		Walleye, Northern pike	Wild	General	Recreational fishery with emphasis on harvest. Monitor to evaluate source of walleye in Yellowstone River to direct management decisions for sauger conservation.
		Blue sucker (N)	Wild	Conservation	Monitor population and investigate life history and movements throughout Yellowstone River.
		Multi species	Wild	Conservation/ General	Manage for recreational fishing opportunity where applicable. Monitor non-game fish species for native fish assemblage and overall ecosystem health.

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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Habitat needs and activities: Increase fish passage at Intake Diversion Dam and reduce fish entrainment into irrigation intakes. Maintain/restore river ecosystem health and function by minimizing impacts of stream bank stabilization projects thereby decreasing channel confinement. Establish fish passage at Intake Diversion Dam and monitor subsequent upstream passage and habitat usage.					
Perennial Streams: Rosebud O'Fallon Big Porcupine Sarpy Cabin South Sunday Cedar Thirteen Mile Fox Burns Intermittent Streams: South Sunday Sandstone North Sunday Cherry Glendive Sweeney Armells Reservation Sunday	208 miles 157 miles 107 miles 103 miles 98 miles 87 miles 60 miles 50 miles 49 miles 42 miles 87 miles 72 miles 68 miles 63 miles 53 miles 33 miles 27 miles 27 miles 15 miles	Multi species	Wild	Conservation/ General	Maintain fishery through habitat protection and restoration. Maintain or increase connectivity. Opportunistic monitor to further understand system and population dynamics.

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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Ephemeral Streams: 48 with documented fish populations					
Habitat needs and activities: Improve fish passage at current restrictions (culverts, fords, dams) and ensure future structures provide for adequate creek flow and fish passage.					
Castle Rock Lake	153 acres	Largemouth bass, Walleye	Wild/ Hatchery	General/ Put, Grow and Take	Manage as a recreational fishery, supplement population through stocking if necessary.
		Northern pike	Wild/ Hatchery	General	Provide additional angling opportunity and control forage base, supplement population through stocking if necessary.
		Bluegill, Crappie	Transfer	General	Provide additional panfish angling and prey base for bass, pike, and walleye. Maintain fisheries through wild fish transfers.
Habitat needs and activities: Maintain current conditions.					
South Sandstone Reservoir	114 acres	Largemouth bass, Walleye	Wild/ Hatchery	General/ Put, Grow and Take	Manage as a recreational fishery, supplement population through stocking if necessary.
		Northern pike	Wild/ Hatchery	General	Provide additional angling opportunity and control forage base, supplement population through stocking if necessary.
		Yellow perch, Crappie	Transfer	General	Provide additional panfish angling and prey base for bass, pike, and walleye. Maintain fisheries through wild fish transfers.
Habitat needs and activities: Evaluate and modify overflow structure at dam to reduce escapement of adult fish into South Sandstone Creek.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Baker Lake	96 acres	Largemouth bass	Wild/ Hatchery	General/ Put, Grow and Take	Manage as a recreational fishery, supplement population through stocking if necessary.
		Northern pike	Wild/ Hatchery	General	Provide additional angling opportunity and control forage base, supplement population through stocking if necessary.
		Yellow perch, Crappie	Transfer	General	Provide additional panfish angling and prey base for bass and pike. Maintain fisheries through wild transfers.
Habitat needs and activities: A substantial rehabilitation of the lake has occurred and will be completed in 2019. This may increase water depths and reduce frequency of historical problem of winterkills; limitation offset by frequent sampling and stocking or wild fish transfers.					
Spotted Eagle Pond	36 acres	All Species	Wild/ Hatchery/ Transfer	Restrictive regulations	High angler pressure and limited natural fish production mandates a reduced harvest: 5 fish daily and in possession, any combination of species.
		Largemouth bass, Walleye, Northern pike	Wild/ Hatchery	Put, Grow and Take	Manage as a recreational fishery, supplement population through stocking if necessary.
		Channel catfish	Wild/ Transfer	General	Provide additional angling opportunity and control forage base, supplement population through wild fish transfers if necessary.
		Yellow perch, Crappie, Bluegill	Transfer	General	Provide additional panfish angling and prey base for bass, pike, and walleye. Maintain fisheries thorough wild fish transfers.
Habitat needs and activities: Poor natural fish production, growth, and recruitment because of competition with non-target species (migrating from Tongue River), little habitat complexity, and aquatic vegetations is limited. Offset with frequent wild fish transfers and habitat projects aimed at increasing water quality and reducing non-target fish abundance.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Gartside Reservoir	35 acres	Largemouth bass, Northern pike Bluegill, Yellow perch, Crappie	Wild/ Hatchery Transfer	General/ Put, Grow and Take General	Maintain fishery through regulations and stocking if necessary. Provide additional panfish angling and prey base for bass, pike, and walleye. Maintain fisheries through wild fish transfers.
Johnson Reservoir	21 acres	Yellow perch	Wild/ Transfer	General	Manage as a recreational fishery. Supplement population through wild fish transfers if necessary. Utilize population for transfer to other ponds.
Habitat needs and activities: Utilize yellow perch population as donor source for wild fish transfers to other ponds/reservoirs. Explore opportunities to control forage base.					
Rattlesnake Reservoir	12 acres	Crappie	Wild/ Transfer	General	Provide panfish angling opportunity, supplement population through wild fish transfers when necessary.
Habitat needs and activities: Limited water depth and severity of winter creates an annual problem of partial or total winter kill; BLM rebuilt dam in 2018; limitation offset by aerator installation and frequent sampling and wild fish transfers.					
Homestead Reservoir	12 acres	Yellow perch Northern pike	Wild/ Transfer Wild/ Hatchery	General General	Manage as a recreational fishery. Supplement population through wild fish transfers if necessary. Provide additional angling opportunity and control forage base, supplement population through stocking if necessary.
Habitat needs and activities: Water depth (less than 12 feet deep) that occasionally leads to winterkill; limitation offset by windmill aerator, frequent sampling and stocking or wild fish transfers.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Marshall Reservoir, Silvertip Reservoir	11 acres 10 acres	Largemouth bass	Wild/ Hatchery	General/ Put, Grow and Take	Manage as a recreational fishery, supplement population through stocking if necessary.
Habitat needs and activities: Water depth (less than 12 feet deep) is a limitation that leads to winterkill; limitation offset by windmill aerator, frequent sampling and stocking or wild fish transfers.					
Hollecker Pond	7 acres	Largemouth bass	Wild/ Hatchery	Restrictive regulations	Manage as a recreational fishery, supplement population through stocking if necessary.
		Bluegill	Wild/ Transfer	General	Provide additional angling opportunity and control forage base, supplement population through wild fish transfer if necessary.
		Trout	Hatchery	Put and Take	Annual stocking of catchable sized trout for kids fishing day and general angler enjoyment.
Habitat needs and activities: Frequent establishment of undesirable species via irrigation water supply or from illegal introductions. Management of undesirable species may require pond rehabilitation by mechanical draining.					
Maier Pond	6 acres	Yellow perch	Wild/ Transfer	General	Provide panfish angling opportunity; maintain fisheries through wild fish transfers when necessary.
Habitat needs and activities: Water depth (less than 12 feet deep) is a limitation that leads to winterkill; limitation offset by windmill aerator, frequent sampling and stocking or wild fish transfers.					
Public Trout ponds: Clarks, South Fork Oil Pump, Harms, Fort Keogh	 34 acres 19 acres 7 acres 5 acres 3 acres	Trout	Hatchery	Put, Grow and Take	Annual stocking of trout for angler opportunity.
Habitat needs and activities: Water depth (less than 12 feet deep) is a limitation that leads to winterkill; limitation offset by annual stocking.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Small Private Ponds/Reservoirs	Various	Trout	Hatchery	Put, Grow and Take	Public relations opportunity with landowners to provide local fishing opportunity for rural community. Maintain fishery through regulations and annual stocking.
		Bass, Walleye, Northern pike	Wild/ Hatchery	General	Public relations opportunity with landowners to provide local fishing opportunity for rural community. Maintain fishery through regulations and annual stocking when necessary.
		Crappie, Yellow perch, Bluegill	Wild/ Transfer	General	Public relations opportunity with landowners to provide local fishing opportunity for rural community. Provide panfish angling opportunity, supplement population through wild fish transfers when necessary.
Habitat needs and activities: Water depth (less than 12 feet deep) is a limitation that leads to winterkill; limitation offset by windmill aerator, frequent sampling and stocking or wild fish transfers.					

Management Direction for Individual Species or Groups of Species

Montana has some of the highest freshwater fish diversity in the western United States and it is home to an array of famed fisheries that continue to attract anglers. While many of these unique species have separate conservation plans tailored to their specific life history constraints, and while many high-use fisheries are guided by separate management plans, it is worth noting particular species and groups of species that are often generally focused on as part of the Fisheries Management Program. Each of the following species and groups of species have driving conservation issues or recreational importance that management typically must consider.

Arctic Grayling (native; Montana Species of Concern)

Arctic grayling are native to the Missouri River drainage in Montana and have been stocked in numerous lakes in the western third of the state. Native "fluvial" Arctic grayling, those that reside in rivers and streams, were historically widespread throughout the upper Missouri River drainage upstream of Great Falls. Habitat changes and the introduction of nonnative fish have significantly impacted the distribution of fluvial Arctic grayling, and the remaining populations in Montana (and the entire lower 48 states) are found in the Big Hole, Madison, Centennial, and Ruby. Though similar in appearance, "lacustrine" or lake dwelling Arctic grayling are genetically different from the fluvial form. Native populations of the lacustrine grayling persist in four lakes in Montana, including upper and lower Red Rock lakes in the Red Rock River drainage, and Minor and Musigbrod lakes in the Big Hole River drainage. Other introduced lacustrine Arctic grayling populations in Montana (about 100) are the result of stocking from sources in Montana (e.g., Big Hole and Red Rocks) or Canada as part of recent conservation efforts to "replicate" Red Rocks River Arctic grayling in Elk Lake near Lima, MT. Fluvial Arctic grayling are a Montana Species of Concern.

Arctic grayling management in Montana includes activities directed towards providing recreational angling opportunities, and conservation and recovery of native populations. Approximately 100 lakes and reservoirs in western and south-central Montana support Arctic grayling populations. These waters provide the bulk of angling opportunities for Arctic grayling in Montana and harvest is generally allowed under standard combined trout regulations. Most of these populations are self-sustaining but several are supported by periodic stocking efforts. The Rogers Lake Arctic grayling population (a mixed Upper and Lower Red Rock lakes and Big Hole River strain) near Kalispell provides a source for the recreational stocking program in several western lakes, and FWP personnel from Flathead Lake Salmon Hatchery collect and raise eggs and fry for these efforts. FWP has developed two conservation broods from aboriginal Big Hole River fluvial stock for fluvial Arctic grayling restoration purposes and occasional lake stocking in south-central Montana. Conservation broods are maintained in two lakes in the Madison and Gallatin river drainages, and are used in efforts to reestablish native fluvial Arctic grayling in portions of their historic range, most recently including the Ruby River near Alder, MT. The reestablished Ruby River Arctic grayling population, like all populations occupying streams and rivers, are protected from harvest by catch-and-release regulations.

Habitat alterations are a key factor in the decline and extirpation of fluvial Arctic grayling in most of their historic range in Montana. In an effort to conserve and recover fluvial Arctic

grayling in Montana, FWP and numerous partners have engaged private landowners in the Big Hole River Valley to aid Arctic grayling recovery through enhancement of habitat and improvement of irrigation practices. Over the past decade, implementation of a USFWS approved Candidate Conservation Agreements with Assurances (CCAA) program has helped secure Arctic grayling in the upper Big Hole River by improving streamflow, protecting and enhancing stream habitat and riparian areas, increasing fish passage, and eliminating entrainment of fish in irrigation ditches.

An Arctic Grayling Workgroup meets on an annual basis to develop Arctic grayling conservation strategies and work-plans. The technical advisory group is chaired by FWP and includes participants from state and federal resources agencies, universities, and private interest groups. To formalize commitments to Arctic grayling conservation in Montana, a 2007 *Memorandum of Understanding Concerning Montana Arctic Grayling Restoration* (MOU) was developed and signed by numerous state, federal and private stakeholders. This MOU was renewed in 2018 and commits the parties to a cooperative restoration program and provides a means to obligate financial resources as they are available.

Black Bass (nonnative)

There are two species of black bass present in Montana: largemouth bass and smallmouth bass. Both species are nonnative and widely distributed throughout the eastern half of the state and locally in northwest Montana. Smallmouth bass are found in cool, clear lakes and streams while largemouth bass are typically more restricted to slower flowing water (backwaters) and lakes. Largemouth bass fisheries are best in northwest Montana in the lower Clark Fork reservoirs (Noxon Rapids, and Cabinet Gorge) and Echo Lake near Kalispell. Smallmouth bass fisheries are best in large rivers such as the lower Flathead River and Yellowstone River, as well as large reservoirs such as Fort Peck, Tongue River and Bighorn reservoirs. They are pursued by many sport anglers (2.4% of total angler days) but are also highly sought after by many tournament anglers. Their ferocity as a fighter under angling circumstances contributes to their popularity, but their prolific and predatory nature can lead to challenges managing them in balance with their forage base. The recent expansion of smallmouth bass in the Yellowstone River, upstream of the Powder River-Yellowstone River confluence, has raised concerns about potential effects that their predation may have on native fish populations.

Fishing regulations for both species of black bass are 5 daily and in possession for all Fishing Districts, although the Western District restricts harvest during the spawning period to 1 over 22 inches. As Northwestern Montana provides conditions typically thought of as less-optimal for black bass species, with glacial relic lakes with simple bottom configurations, late weed growth and a lack of woody debris for cover, it may require 8-10 years for an individual to reach 18” or 3 pounds and 15 years to reach 5 pounds. Under slow growth, it does not take much angling harvest to confound quality black bass management. While FWP does raise largemouth bass and smallmouth bass at the Miles City State Fish Hatchery, and stocks them in numerous ponds and reservoirs in Eastern Montana, as well as Echo Lake in northwest Montana, they are not as widely spread as other cosmopolitan species..

Common challenges to bass management are adequate recruitment, lack of cover and overharvest. Recruitment is limited initially by weather. Young of the year bass need to reach about 2" by fall to survive overwinter. Late spawned fish due to cold weather may not have sufficient growth to survive. Many waters have abundant predators and a lack of suitable hiding/rearing habitat in which to escape predation.

Bull Trout (native; federal ESA threatened species; Montana Species of Concern)

Bull trout are native to rivers, streams and lakes in the Columbia River basin (Kootenai, Clark Fork, Bitterroot, Blackfoot, Flathead, and Swan drainages) and in the Saskatchewan River basin (St. Mary and Belly drainages) in Montana. Bull trout are a char and display a variety of life-histories strategies. Populations that reside entirely in small streams are classified as "resident" and rarely reach 12 inches in length. More common and well known are migratory bull trout populations that use a combination of lakes, reservoirs (adfluvial) or large rivers (fluvial) as adults, and small streams for spawning and juvenile rearing. Migratory bull trout are the largest native salmonid in Montana and adults exceeding 10 lbs. are common in these populations. The state record fish is over 25 lbs. For successful spawning, bull trout require pristine habitat conditions, particularly cold headwater streams with clean gravel bottoms.

While bull trout remain widespread in Montana, significant declines in abundance have been observed in most populations. Causes for these declines include changes in habitat that reduce spawning success, barriers that prevent movement of migratory fish, predation and competition by and with nonnative fish such as lake trout brown trout, and hybridization with nonnative brook trout. Bull trout populations in the South Fork of the Flathead River, above Hungry Horse Reservoir, remain a stronghold for the species. Recent management efforts have shown that the presence of nonnative trout does not necessarily mean that bull trout populations will decline. Variability between bull trout populations may include interactions between the nonnative trout and bull trout, as well as food web dynamics, and habitat condition or type. Bull trout are a Montana Species of Concern and were listed as threatened under ESA by the USFWS in 1998.

All major river systems in western Montana (except the Yaak River) are designated by the USFWS as Critical Habitat for bull trout. Critical Habitats are specific geographic areas that the USFWS considers essential for conservation and recovery of bull trout and may require special management and protection to meet recovery objectives. As such, habitat protection and restoration, and removal of barriers to movement are among key elements to bull trout conservation and recovery. The large-scale habitat restoration program in the Blackfoot Valley and the removal of Milltown Dam on the Clark Fork River are notable examples of these types of efforts. However, because nonnative trout occupy portions of all the drainages listed as Critical Habitat, a challenge for FWP is to continue to provide recreational fisheries for nonnative trout while protecting and establishing viable populations of bull trout. Balancing the two is particularly challenging because bull trout populations typically require open systems for migration, which makes them more susceptible to the negative impacts associated with nonnative trout.

The presence of predatory nonnative fish, particularly lake trout, northern pike and walleye, are ongoing threats to address. However, management of nonnative species using liberalized harvest limits or active suppression is not a practical approach to bull trout management in all waters designated by the USFWS as Critical Habitat. While experimental lake trout removal efforts in specific waterbodies to aid in the conservation of bull trout have been attempted, limited success in bull trout recovery have been seen in undergoing those efforts. As such, intentional angling for bull trout is prohibited everywhere except in Hungry Horse Reservoir and Lake Koocanusa, Swan Lake, and the South Fork of the Flathead River upstream from Hungry Horse Reservoir. At this time, Hungry Horse Reservoir and Lake Koocanusa are the only places in the state where a limited bull trout harvest is allowed.

Many river reaches identified as Critical Habitat currently support few if any bull trout, or are only seasonally utilized as migratory corridors. Such waters may have substantial habitat alterations that make them unsuitable for viable bull trout populations for the foreseeable future, such as the Upper Clark Fork River above Flint Creek; or a mix of habitat changes and established nonnative trout populations which limit the likelihood that nonnative species can be effectively managed to benefit bull trout, such as the lower Bitterroot River. These river reaches may also support recreationally and economically important trout fisheries that are highly valued destinations for Montanans and out-of-state visitors. FWP will continue to monitor bull trout fisheries and work with agency partners to determine which USFWS Critical Habitats may warrant suppression of nonnative fish to benefit bull trout. Changes to nonnative management to improve bull trout will be considered only if there is a high likelihood of the action improving bull trout abundance.

Relevant management documents: *Restoration Plan for Bull Trout in the Clark Fork River Basin and Kootenai River Basin in Montana* (FWP 2000); *An Integrated Stream Restoration and Native Fish Conservation Strategy for the Blackfoot River Basin* (FWP 2005); *Flathead Lake and River Co-Management Plan, 2001 – 2010* (FWP and Confederated Salish and Kootenai Tribes 2001). *Clark Fork River Native Salmonid Restoration Plan* (Avista 1998); *Columbia Headwaters Recovery Unit Implementation Plan for Bull Trout (Salvelinus confluentus)* (USFWS 2015); *Columbia Headwaters Recovery Unit Implementation Plan for Bull Trout (Salvelinus confluentus)* (USFWS 2015); *St. Mary Recovery Unit Implementation Plan for Bull Trout (Salvelinus confluentus)* (USFWS 2015); *Recovery Plan for the Coterminous United States Population of Bull Trout (Salvelinus confluentus)* (USFWS 2015).

Burbot (native)

Burbot, also known as “ling”, are native to the Kootenai, Missouri, Saskatchewan, and Yellowstone river basins in Montana, and were introduced, with apparent minimal success, to the lower Clark Fork River drainage in the 1970s and 1980s. Burbot occupy many habitat types but are generally associated with larger rivers and coldwater lakes and reservoirs. It is speculated that overall burbot abundance is currently greater in Montana than pre-European settlement times owing to the creation of cold water habitats within and below impoundments on traditionally warmer rivers (e.g., Nelson, Tiber and Fort Peck reservoirs). Though burbot populations are not closely monitored, the status of most is believed to be stable. An important exception includes

the Kootenai River population, which has declined in Montana and Idaho due to habitat and flow regime changes resulting from the construction and operation of Libby Dam. The population was petitioned for federal ESA listing in 2000 but the petition was subsequently found unwarranted.

All Montana burbot populations are self-sustaining. Other than harvest regulations, the species is not actively managed. FWP fisheries biologists have recently devoted more attention to burbot and are evaluating methodologies to monitor their abundance in rivers, lakes and reservoirs. Although burbot angling pressure is relatively minor (about 0.1% of annual angler days), they are avidly pursued by some for harvest and consumption. The species provides popular winter fisheries in reservoirs like Clark Canyon, Fort Peck and Newlan Creek. The current angler record for burbot is 17 pounds (Missouri River), though fish typically weigh less than 5 pounds.

Channel Catfish (native)

Channel catfish is a native sportfish species found primarily in lowland lakes and large rivers east of the Continental Divide. It thrives at water temperatures above 70°F and tolerates turbid water. Principally it is found in the Yellowstone River downstream of Billings, along with major tributaries such as the Bighorn, Tongue and Powder rivers. In the Missouri River, it is found downstream of the Great Falls and in major tributaries such as the Marias, Teton, Milk and Musselshell rivers. At least some of the populations in the state are migratory, with mature fish moving many miles upstream to spawn. Notable among these populations are the individuals that move out of the Missouri River and into the Musselshell River to spawn. During these movements, fish may congregate near the mouths of the tributaries, making them more vulnerable to angling.

Spawning takes place in nests built by the male in holes in undercut banks, log jams or rocks. Once hatched, and as the fish grow older, their preferred habitat includes waters with little velocity. Channel catfish achieve this in rivers by occupying backwaters, pools and sheltered habitat, and by orienting to the bottom where water is slower. It is from these lairs that the channel catfish pursues food sources, primarily at night. Channel catfish eat a variety of foods, including crayfish, insects, snails, clams, worms, and fish.

Angling is most successful through the use of setlines with live or dead bait. Most fish are sought for consumption, although there is a contingent of catch-and-release tournament anglers in Eastern Montana. Overall, angling pressure for this fish is low, although it can be seasonally high where fish congregate. This has led to a change towards more restrictive regulations in 2012 due to largely anecdotal evidence that suggested populations may be declining. The change was from 20 daily and in possession to 10 daily and 20 in possession. This species is only occasionally cultured and the wild populations fluctuate as natural conditions allow. As such, FWP will endeavor to find means to monitor this fish species to ensure harvest is at levels that do not exceed natural production.

Columbia River Redband Trout (native; Montana Species of Concern)

Columbia River Redband trout are a subspecies of rainbow trout native to the Kootenai River drainage in northwest Montana. Historically Columbia River redband trout were common in the Kootenai River and associated tributaries downstream of what is believed to have been a natural barrier near the present-day Libby Dam. Due to habitat changes and competition and hybridization with nonnative brook trout and rainbow trout, the subspecies has declined in abundance and distribution and is presently restricted to headwater streams, or streams with barriers that prevent invasion of nonnative trout. It is estimated that Columbia River redband trout with > 90% genetic purity currently occupy about 41% (306 miles) of their historic range in Montana. Due to this reduced distribution and threats to remaining populations, Columbia River redband trout have been listed as a Species of Concern in Montana.

FWP and land managers (state, federal, and private) are integral partners in the management of Columbia River redband trout. Current management efforts include assessing and monitoring remaining populations, protecting important habitats, and developing long-term conservation strategies. Strategies may include removal of nonnative trout and placement of barriers to prevent their return and reintroduction of Columbia River redband trout to streams where they have been lost. In addition, since 2002 FWP has been developing and testing a Columbia River redband trout broodstock at FWP's Libby Isolation Facility and Murray Springs State Fish Hatchery. Established from a wild Columbia River redband population, this brood is being developed to replace the stocking of hatchery rainbow trout or westslope cutthroat trout in drainages where Columbia River redband trout are native. This is expected to reduce the likelihood of additional hybridization of the species.

Current management direction for Columbia River redband trout includes maintaining the existing distribution and genetic diversity of remaining populations, and developing conservation plans and projects that ensure long-term, self-sustaining persistence of the subspecies in Montana. Though recreational angling opportunities for the Columbia River redband trout are currently limited outside of small streams, the development of a Columbia River redband trout broodstock should provide future opportunities to establish recreational fisheries in closed-basin lakes in the Kootenai River drainage. Likewise, efforts to secure and expand the distribution of existing populations and reintroduce them into streams where they have been lost will result in additional opportunities to pursue this unique native sportfish.

Crappie (nonnative)

Montana has introduced populations of both white crappie and black crappie. Both species prefer ponds, lakes, reservoirs, and slower rivers and sloughs. Popular Montana crappie fisheries include: Tongue River, Fort Peck, Nelson, and Big Horn (Yellowtail) reservoirs, although crappie have recently been showing up as illegal introductions in the natural lakes of Northwestern Montana.

These warmwater-coolwater species feed mainly on zooplankton and small fish. Like yellow perch, crappie can often overpopulate a waterbody and become stunted where they tend to have

cyclical population structures and quality fishing for larger individuals only occurs occasionally. Size structure and abundance of crappie populations can be impacted by a combination of angler harvest, predation by other fish species, and competition for limited food resources with other species like yellow perch and sunfish species.

FWP does not produce crappie in the hatchery system but does occasionally transfer wild fish from existing fisheries to ponds that have experienced winter kill, or to establish a new fishery. Crappie are very catchable, seasonally, and are highly sought after as a food fish. They account for 0.53% of the total statewide fishing days. The standard Eastern District regulations are 15 daily and 30 in possession with the exception of Tongue River Reservoir that currently has a 30 daily and 60 in possession limit. There are no bag limits for crappie in the Central and Western fishing districts where they tend to be less common. Quality fish usually start at around 9-10 inches, but that can vary depending on fish condition factor (weight at length), which depends on forage quality and availability. The state records for crappie are 3.13 lbs for black and 3.68 lbs for white crappie.

Kokanee Salmon (nonnative)

Kokanee salmon, also called bluebacks or silvers, is the landlocked form of sockeye salmon. Historically, kokanee salmon were thought to be native to the lower Kootenai River and upstream into Montana below Kootenai Falls. However, that unique stock of kokanee salmon was likely lost after nonnative stocks were introduced into the drainage in the 1950s. Today, all populations of kokanee salmon in Montana have originated from stocking. The species is now found in several natural lakes and reservoirs in the western part of the state, primarily west of the Continental Divide. Spawning takes place along lake shorelines or in streams with good clean gravels. If spawned in streams, fry will migrate quickly upon hatching to still waters where they will grow to maturity in 3 or 4 years eating zooplankton almost exclusively.

Growth of this fish can be rapid and is density-dependent. Where populations are dense, fish may mature at 10-12 inches, while populations with low densities may produce 18-20 inch fish. In most circumstances, FWP uses liberal bag limits or a predatory species such as gerrard rainbow trout or tiger muskellunge to reduce densities of kokanee salmon. Occasionally, FWP has struggled to maintain populations in some waters. Hauser and Holter Reservoirs on the Missouri River once had renown kokanee fisheries, but lost much of the kokanee fishery due to reservoir operations and flushing losses, compounded by walleye predation. The Flathead Lake population collapsed after *Mysis* shrimp both competed for food resources and helped predatory lake trout to increase dramatically.

Lake Mary Ronan has been used as the primary brood source for kokanee salmon propagation for many years. The Flathead Lake Salmon Hatchery collects wild-spawn individuals and several state hatcheries hatch and rear fish to fry or fingerling size. These fish are stocked in lakes with poor natural recruitment, including most notably the Helena Regulating Reservoir, the Thompson Lakes, and Deadmans Basin Reservoir. Bitterroot Lake has a unique population of kokanee salmon that achieves large sizes, and hatchery staff is currently attempting to culture this fish to determine if this trait is genetic or behavioral.

Kootenai River White Sturgeon (native; federal ESA endangered species; Montana Species of Concern)

The historic range of the landlocked population of Kootenai River white sturgeon includes approximately168 river miles of the river from Kootenai Falls downstream through Idaho and into Kootenay Lake in British Columbia, Canada. Corra Linn and Duncan dams in British Columbia (completed in the 1930's and 1960's), Libby Dam in Montana (1970's) and levee construction in Idaho significantly reduced the quality and availability of sturgeon spawning and rearing habitat, resulting in very limited natural recruitment and a declining population of wild fish. Current estimates indicate fewer than 1,000 wild, adult white sturgeon remain in the population, and very few occupy their historic range in Montana. The Kootenai River white sturgeon was listed as an endangered species under ESA in 1994 and is a Montana Species of Concern. Angling for Kootenai River white sturgeon has not been allowed in Montana since 1979.

Management plans and conservation efforts for Kootenai River white sturgeon are developed and implemented through a USFWS-coordinated Recovery Team composed of state, federal, tribal and Canadian appointments. Short-term recovery objectives for the species include reestablishing successful natural recruitment and preventing extinction through population supplementation. Ultimately, the Kootenai River white sturgeon population could be delisted if the population becomes naturally self-sustaining, a process that could take decades to realize because sturgeon do not become reproductively mature until about 30 years of age. The USFWS recovery plan (1999) for the Kootenai River population of white sturgeon details management activities including release of hatchery sturgeon propagated in Idaho and British Columbia, manipulation of dam discharges and water temperature, and habitat restoration to improve spawning and rearing.

Though Kootenai River white sturgeon will likely remain a federally listed and managed species for the foreseeable future, FWP will remain active participants in the development, promotion and implementation of conservation efforts that result in recovery and de-listing of the species.

Relevant management documents: *Recovery Plan for the Kootenai River Population* (USFWS, 1999); *Critical Habitat Revised Designation for the Kootenai River Population of White Sturgeon (Acipenser transmontanus): Final* (USFWS, 2008); *Biological Opinion on the Effects of the Federal Columbia River Power System on Five Endangered or Threatened Species* (USFWS, 1995); *Biological Opinion on the Effects to Listed Species from Operations of the Federal Columbia River Power System* (USFWS, 2000). *Fish and Wildlife Service Biological Opinion Regarding the Effects of Libby Dam Operations on the Kootenai River White Sturgeon, Bull Trout, and Kootenai Sturgeon Critical Habitat* (USFWS, 2006). *Clarification of the 2006 Fish and Wildlife Service Biological Opinion Regarding the Effects of Libby Dam Operations on the Kootenai River White Sturgeon, Bull Trout, and Kootenai Sturgeon Critical Habitat* (USFWS, 2008).

Lake Whitefish (native to St. Mary River drainage, nonnative otherwise)

Lake whitefish are members of the salmonid family, and although uncommon in Montana, they are a popular sportfish for a small, but dedicated group of anglers. Lake whitefish generally prefer deep, cold lakes but can also be found in relatively warm lakes and reservoirs. During spawning migrations lake whitefish will congregate in rivers and in Montana, the species is believed to be native to the Saint Mary River drainage, including Saint Mary Lake and Upper Waterton Lake in Glacier National Park. Other populations, including Echo (near Big Fork), Flathead and Whitefish lakes, and Fresno and Fort Peck reservoirs, have been established through stocking and subsequent dispersal.

Though lake whitefish are a high quality sportfish (typically 18 – 22 inches; state record: 10 lbs), their limited distribution and often poor catchability result in only about 0.1% of the total fishing days in Montana spent pursuing the species. Flathead Lake provides the bulk of angling pressure for lake whitefish in Montana, although catch rates for this summer fishery can vary substantially year-to-year. Anglers also target lake whitefish through the ice on Echo and Whitefish lakes, during fall spawning migrations on the Flathead River near Kalispell, and spring through autumn in the Milk River tailwater below Fresno Reservoir.

Mountain Whitefish (native)

Mountain whitefish is a common native species distributed widely in the western half of Montana, including the Columbia, Missouri, Saskatchewan and Yellowstone river basins. The species typically inhabits relatively cold streams, rivers, lakes, and reservoirs and are abundant in many larger rivers where they are commonly captured by anglers who are targeting trout (less than 1% of total angler days are spent directly pursuing the species). Typical adult mountain whitefish are 12 –16 inches in length and the state angling record is 5 lbs (Hauser Reservoir).

Although mountain whitefish remain present throughout their historic range in Montana, there are concerns of potential reductions in abundance in some locations (e.g., Madison River). Owing to their typically high abundances and active movement, mountain whitefish populations have not been historically monitored in rivers and population trends are generally not well documented. Cause of possible declines in some locations are currently only speculative, but may include disease, drought, or other habitat changes. In August 2016, a large-scale die-off of mountain whitefish in the Yellowstone River was attributed to proliferative kidney disease (PKD). Additional testing found the parasite that causes PKD is present in waterbodies throughout western Montana; however, fish populations in those water bodies were not symptomatic of the disease. It is thought that low flows and high water temperatures, in combination with the presence of the PKD parasite, were responsible for the Yellowstone River outbreak. FWP is developing monitoring protocols that will help to better understand current mountain whitefish status and future trends in abundance. Likewise, research efforts are underway to better understand the ecology of the species, including its habitat needs, movements, and possible cause(s) of apparent declines in some waters. Despite some concerns, mountain whitefish remain one of the most widespread and abundant sportfish in Montana. The

bag limit was reduced to 20 daily and 40 in possession (down from 100 daily and in possession) in 2008 as a result of concerns over their diminishing abundance.

Nongame Fish (native)

Montana waters are home to 59 native species, of which 41 are considered "nongame" fish. Many of these species are small-bodied minnow (cyprinid) species that occupy a wide diversity of habitats throughout the state and include such common fish as longnose dace and fathead minnow. The nongame group includes several sucker and sculpin species that are common and well-known to most anglers, as well as several Montana Species of Concern that can be quite rare including the blue sucker, northern redbelly dace, northern pearl dace, shortnose gar, sicklefin chub, spoonhead sculpin, sturgeon chub, torrent sculpin and the trout-perch. Native nongame fish range in size from the two-inch sand shiner to the bigmouth buffalo that can reach three feet in length. Although many anglers would classify native nongame fish as "bait fish," the group also includes predators like northern pikeminnow and shortnose gar.

FWP is giving greater management attention to several nongame Species of Concern, and recent studies have evaluated the status of several sculpin species, as well as presence/absence of prairie-stream fish species including pearl dace and northern redbelly dace. Many prairie streams in the Eastern District have fish assemblages largely comprised of nongame/native fish which are adapted to intermittent and ephemeral stream conditions. Oil and gas development in the Bakken and Powder River areas come with water demands, and FWP is devoting more attention to monitoring the viability of these fish populations.

Nonnative Trout: Brook Trout, Brown Trout, Lake Trout, Rainbow Trout, Golden Trout (nonnative)

Since their introduction to Montana starting in the late 1800s, rainbow trout, brown trout, brook trout, golden trout and lake trout have become the most common and widely dispersed fish species in the state. Also referred to as "nonnative trout," the origins of these species span much of North America and as far away as Europe (brown trout). They have proven to be highly successful in Montana and they thrive in typical coldwater trout habitats in the western half of the state and in the tailraces of constructed reservoirs.

Almost three quarters of all anglers in Montana identify trout as their target fish species. Much of this fishing is for rainbow trout, which exist throughout many coldwater habitats in Montana. Brown trout often occupy similar habitat as rainbow trout, although brown trout are typically more tolerant of warmer water but less tolerant of large reservoirs. Brook trout thrive in smaller rivers, streams, spring creeks, and mountain lakes and lake trout are more typically found in deep lakes and reservoirs. It is important to note that there are two lakes with native lake trout in southwest Montana (i.e., Elk Lake and Twin Lake), and two lakes in Glacier National Park (i.e., Waterton Lake and St. Mary Lake) where populations of the species exist as apparent relicts from the last glacial age. Finally, several dozen mountain lakes, primarily in southwest Montana,

support unique golden trout fisheries that are self-sustaining or periodically supplemented with hatchery produced fish.

Management of nonnative trout varies greatly by species, body of water, and management objectives. Since the 1970s, “wild trout” management has been a priority in Montana rivers and streams. The fundamental elements of wild trout management are to maintain populations through natural reproduction and through the protection or restoration of high quality habitat. This management philosophy has been extremely successful and several rivers in Montana are among the most popular trout fisheries in the nation.

Harvest regulations for introduced trout in streams and rivers are based on both biological and social issues. More stringent regulations such as “catch-and-release only” are used to maintain satisfactory trout densities in heavily fished reaches of some rivers. Regulations that limit the harvest of larger fish are also commonly used to help maintain trophy fisheries and sufficient number of reproducing adults. More liberalized harvest regulations are generally applied towards brook trout, which are very common in many smaller streams, and lake trout where their potential impacts on native species is a concern (e.g., Flathead River drainage).

Lake and reservoir trout fisheries are also managed on an individual basis for a variety of objectives (e.g., put-grow-take, trophy, self-sustaining). In most cases, flat-water harvest is generally less restricted with more liberal opportunities to harvest fish compared to streams and rivers. Hatchery stocked rainbow trout provide the bulk of introduced trout fishing opportunities on many lakes and reservoirs. Other introduced trout fisheries are generally self-sustaining through natural reproduction. Like regulations for streams and rivers, liberal harvest limits for brook trout are standard in mountain lakes to reduce issues of stunted populations with small fish size. Angler harvest of lake trout is encouraged in Flathead and Whitefish lakes to aid conservation of native bull trout and westslope cutthroat trout. Lake trout are uncommon in the Central and Eastern fishing districts, primarily Tiber and Fort Peck reservoirs, and limits are relatively restrictive. Georgetown Lake provides a unique trophy brook trout fishery and is an exception to typical liberal limits for the species. Finally, brown trout are generally managed under the combined trout limits for lakes and reservoirs, and are often a part of mixed fisheries with rainbow trout. The predatory nature of brown trout allows them to reach a relatively large size (5 – 10 lbs.) in many waters, and though not commonly caught, these large fish occasionally provide anglers targeting other species with an unexpected trophy catch.

Northern Pike (native to the St. Mary drainage, nonnative elsewhere)

Northern pike is the second largest member of the family Esocidae (behind only the muskellunge) and has one of the broadest distributions of any freshwater fish species. Its native range extends around the globe in the northern hemisphere in North America, the United Kingdom, Europe and Asia. Throughout its native range the northern pike has tremendous commercial, recreational and cultural importance.

Northern pike reach sexual maturity as early as age 1 for males and 2 for females, though most spawning aged fish are usually between 3 and 4. Spawning occurs in spring as water temperature exceeds 42º-50º F, which may occur as early as March and even under the ice in some areas. Adhesive eggs are laid on emergent plants, and hatching may occur rapidly (as early as a few days). After hatching, young northern pike feed on small invertebrates and their cohorts. When their body length is 2-4 inches they start feeding on small fish almost exclusively. Northern pike are typically ambush predators; they lie in wait for prey for long periods and then rapidly swim forward to strike prey. However, in the winter and late-summer, they will feed in the open-water (pelagic) zone of lakes.

Northern pike are primarily piscivorous (fish-eaters) though they have been known to take rodents and even ducklings. The popularity of northern pike as a sportfish stems from their ability to attain large sizes, the relative ease in catching them, and they are considered good table fare. The Montana state record is 37.5 lbs from the Tongue River Reservoir. Popular northern pike fisheries are primarily in lakes, reservoirs, and large rivers in the western, north central, and eastern part of the state, including the Lower Clark Fork, Clearwater, and Flathead river systems, and Fort Peck, Tongue River, Tiber, Pishkun and Nelson reservoirs. Northern pike normally live 5 to 15 years, but can be as old as 30.

Because of its popularity as a sportfish and as a food fish, the northern pike has been introduced in many waters outside its native range and its range continues to expand through introductions (both illegal and authorized) to this day. In Montana, northern pike are only native to the St. Mary River in the upper Saskatchewan River drainage in extreme north-central Montana. The first northern pike scientifically documented in Montana was collected in 1874 from the St. Mary River.

In the Columbia River drainage (to which the Clark Fork is a primary tributary) northern pike are not native and share no evolutionary history with fish fauna. As a result, prey species (sucker, minnows, and salmonids) are naïve to this predator. Within their native range, fish have evolved behavioral, chemical, and physical defenses, including sharp and stiff fin rays. When given a choice, northern pike will consume soft-rayed fishes. Northern pike are thus able to quickly exploit these prey and have few natural predators in these systems.

In general, outside of trout waters, northern pike are managed as a sportfish. Within trout waters (both east and west of the continental divide) the management goal is suppression, to limit increase in distribution, limit new populations, and even eradication in certain instances. Even outside of trout waters, recent concern over competition with sauger and their effects on native fishes in prairie streams has led to more monitoring.

In the Western Fishing District (west of the continental divide) regulations are generally structured to allow for liberal harvest to suppress northern pike populations. In the Clark Fork and Blackfoot drainages, regulations allow unlimited harvest and opportunities for spearing, while in the Flathead and Lower Clark Fork drainages, management reverts to district wide standards (15 fish daily and in possession) with some extended seasons to allow harvest during the winter in waters otherwise closed to winter fishing. In the Central and Eastern fishing districts, standard regulations allow for 10 northern pike daily and in possession. However, in the

upper Missouri, Madison, Gallatin and Jefferson drainages, concern over the potential deleterious effects of feral, illegally-introduced northern pike on salmonids in particular, has led to more liberal harvest (no limits) and extended seasons. Aggressive management actions are currently in place for northern pike from Holter Dam to the headwaters of the Missouri River.

Paddlefish (native; Montana Species of Concern)

Paddlefish are an ancient, cartilaginous (not bony) fish and one of only two paddlefish species worldwide. They are Montana's largest native fish with the state record being 77 inches in length and weighing 143 pounds. A more typical size for a harvested fish is between 20 and 100 pounds. This species was quite uncommon prior to the completion of Fort Peck Dam in Montana and Garrison Dam in North Dakota. Its abundance has increased markedly in the past 50 years due to the fact that the fry survive much better in the still water of reservoirs compared to the swift water of rivers. This is probably because the primary food for this species (zooplankton) is more abundant in reservoirs than rivers. The species is long lived, with older fish commonly reaching 50-60 years old. Current distribution of the fish in Montana is the Missouri, Milk, Marias and Yellowstone rivers. In the Missouri River they are found downstream of the Great Falls. Yellowstone River distribution is typically downstream of the Intake Diversion near Glendive; in high water years fish may use a side channel around the diversion and ascend the river as far as the Cartersville Diversion near Forsyth.

The fish are managed as two naturally-reproducing stocks: the Yellowstone River and Missouri below Fort Peck Dam, and the Missouri River above Fort Peck Dam. The Yellowstone River-lower Missouri River stock is managed cooperatively through a joint management plan with the State of North Dakota to monitor the population and demographics of each stock and to annually evaluate the sustainability of harvest. Harvest of this recreational fishery is accomplished by snagging, and targets for each stock are set on an annual basis. Since 2010 the target has been 1,000 fish for the Yellowstone River-lower Missouri River and 500 fish for the Missouri River upstream of Fort Peck Reservoir. The harvest is closely monitored by biologists and creel clerks and can be closed immediately or with 24 hours notice, depending on the location. One unique aspect of the Yellowstone River-lower Missouri River fishery is the presence of a caviar operation, which is run by the Glendive Chamber of Commerce on the Yellowstone River. Proceeds from this operation are divided between the City of Glendive and FWP, with the State's share going to help fund research and management activities for the species.

Relevant management documents: *Management Plan for Montana and North Dakota Paddlefish Stocks and Fisheries* (FWP 2008).

Pallid Sturgeon (native; federal ESA endangered species; Montana Species of Concern)

The historic distribution of pallid sturgeon in Montana includes the Missouri River downstream of Fort Benton, the lower reaches of the Marias River, the lower reaches of the Milk River, the Yellowstone River downstream of Forsyth, the mouth of the Tongue River, and significant

stretches of the Powder River. Pallid sturgeon are long-lived (50+ years), highly migratory, and require large, turbid, relatively warm, and free-flowing rivers to successfully reproduce. The construction of dams and corresponding impoundments on the upper Missouri River beginning in the early 1900s, (e.g., Canyon Ferry and Fort Peck reservoirs, and North Dakota's Lake Sakakawea), Yellowstone River (e.g., Intake Diversion Dam), and associated dammed tributaries (e.g., Yellowtail, Tongue and Tiber reservoirs on the Bighorn, Tongue and Marias rivers) have impeded successful spawning and recruitment of pallid sturgeon in Montana. Dams and impoundments block migration routes, alter natural spawning cues such as discharge, temperature and turbidity, fragment populations (i.e., above Fort Peck Reservoir), and alter habitats necessary for survival of fry. It is currently estimated that fewer than 100 wild adult pallid sturgeon persist in the upper Missouri and Yellowstone rivers above Lake Sakakawea, though several abundant year-classes of hatchery-reared pallid sturgeon are present in the system (Jaeger et al. 2009; Rotella 2017). The pallid sturgeon was listed as a federal endangered species in 1990 and is a Montana Species of Concern. Angling for pallid sturgeon is not allowed in Montana.

Management plans and conservation efforts for pallid sturgeon have been developed and implemented through a USFWS-coordinated Recovery Team that includes state- and federally-appointed staff. Additionally, FWP is in the process of developing its own Pallid Sturgeon conservation and management plan to complement federal efforts while specifically addressing priorities and objectives within Montana. Short-term management objectives for the species include preventing local extirpation through population supplementation with hatchery-propagated fish, providing adult upstream passage at Intake Diversion Dam on the Yellowstone River, and developing strategies to address impacts to spawning and recruitment related to Fort Peck and Sakakawea reservoirs. Long-term and natural persistence of pallid sturgeon will require changes to reservoir operations that result in re-establishment of spawning cues and habitats necessary for fry survival.

Though pallid sturgeon will likely remain a federally listed and managed species for the foreseeable future, FWP will remain active participants in the development, promotion and implementation of conservation efforts that result in recovery and de-listing of the species.

Relevant management documents: *Revised Recovery Plan for the Pallid Sturgeon (Scaphirhynchus albus)* (USFWS, 2014); *Biological Opinion on the Operation of the Missouri River Mainstem Reservoir System, the Operation and Maintenance of the Bank Stabilization and Navigation Project, the Operation of the Kansas River Reservoir System, and the Implementation of the Missouri River Recovery Management Plan* (USFWS, 2018)*; Pallid Sturgeon Range-wide Stocking and Augmentation Plan* (UFWS, 2006); *Memorandum of Understanding for Upper Basin Pallid Sturgeon Recovery Implementation* (Upper Basin Pallid Sturgeon Workgroup, 2008, 2018); *Pallid Sturgeon Conservation and Management Plan for Montana* (FWP, in prep); *Upper Basin Pallid Sturgeon Survival Estimation Project* (Rotella and Hadley, 2009; Rotella, 2010, 2012, 2015, 2017).

Sauger (native; Montana Species of Concern)

Sauger is a member of the perch family and a native game species in the Missouri and Yellowstone river basins of Montana. Their historic distribution includes the Missouri River and its major tributaries downstream of Great Falls, and the Yellowstone River and its major tributaries downstream of the Clark's Fork River near Billings. Sauger prefer turbid and unimpeded rivers, which permit spawning migrations of up to several hundred miles. Sauger also occupy reservoirs with suitable habitat, and several in Montana support sizable populations (e.g., Yellowtail and Fort Peck reservoirs). Sauger have become rare or absent in a number of larger rivers in Montana (e.g., Judith, Poplar, Big Horn and Tongue rivers), due in part to dams, diversions and impoundments that have altered temperature, flow regime and favored river habitats, and obstruct migrations. Additional management concerns include entrainment in irrigation canals, streambank alterations, and competition or hybridization with nonnative species (e.g., smallmouth bass and walleye). Though widely distributed in the Missouri and Yellowstone rivers, and is common in some locations, the sauger is listed as a Montana Species of Concern owing to an estimated 50% reduction in distribution and widespread threats.

Sauger have received considerable management attention since reductions in abundance were first noted in the drought years in the 1980s. Several studies have since been completed to better understand the species overall status, habitat needs, movement patterns and threats. These assessments have provided important information on the impact of habitat alteration on sauger and other prairie river species (e.g., blue sucker, pallid sturgeon and paddlefish), and recent restoration efforts have been directed towards reducing entrainment in irrigation canals, and promoting movement in the Tongue River through construction of a bypass channel around an irrigation dam. Modifying dam operations to promote more natural hydrographs and temperatures on mainstem rivers and tributarys will continue to be important but difficult issue to address. Hybridization between sauger and nonnative walleye is also a concern, and the issue is being preemptively addressed in the Bighorn River system through stocking of sterile walleye in Yellowtail Reservoir.

On larger rivers, spring and fall aggregations of sauger provide for popular fisheries, though overall, less than 0.2% of statewide angling pressure is targeted towards the species. Standard angling limits for sauger are 5 daily and 10 in possession, though to protect some populations from the potential stress of over-harvest, in many locations limits are reduced to 1 daily and 2 in possession. A draft version of a sauger conservation agreement was produced by FWP in 2004 (*Memorandum of Understanding and Conservation Agreement for Sauger (Sander canadensis) in Montana)* with the goal of enlisting the support and assistance from other agency partners to conserve this species.

Shovelnose Sturgeon (native)

The shovelnose sturgeon is native to Montana with a current distribution that includes the Missouri River below Morony Dam near Great Falls, the Marias River below Tiber Dam, the Yellowstone River downstream of Cartersville Diversion Dam at Forsyth, and the lower reaches of the Milk, Powder, Tongue and Teton rivers. Shovelnose sturgeon are also present in Bighorn,

Fort Peck and Tiber reservoirs. Shovelnose sturgeon and pallid sturgeon coexist in portions of the Missouri and Yellowstone rivers; but unlike their endangered cousin, shovelnose sturgeon are less impacted by dams and impoundments and remain common to abundant in many locations. Like many prairie river fish species however, impediments to movement, entrainment in irrigation canals, and altered flow and temperature regimes have resulted in reduced distribution and abundance of shovelnose sturgeon in portions of their range, particularly tributaries to the major rivers. On-going efforts to address these issues will benefit shovelnose sturgeon as well as many other game and nongame species. Furthermore, the Pallid Sturgeon Recovery Team has supplemented the adult pallid sturgeon population with hatchery-propagated fish from 2000-2012. As such, densities of juvenile pallid sturgeon are reaching levels that shovelnose sturgeon anglers are beginning to catch hatchery-reared pallid sturgeon. The "Similarity of Appearance" provision needs to be watched closely by FWP since juvenile pallid sturgeon are the same size and similar in appearance to shovelnose sturgeon. Educational efforts to aid anglers with sturgeon identification, to eliminate accidental harvest, needs to be an increased component for FWP and the pallid sturgeon program.

Though they remain common in many portions of their range, shovelnose sturgeon are treated as a federally *threatened* species under "Similarity of Appearance" provision of the Endangered Species Act (ESA). This provision has been applied to shovelnose to protect endangered pallid sturgeon from inadvertent commercial "take" in areas where the species' range overlap. The ESA-listing of shovelnose sturgeon only applies to commercial activities, and while both species occupy the Missouri and Yellowstone rivers in Montana, recreational fishing is not impacted by the rule. Accidental angler harvest of pallid sturgeon is a concern in Montana, and to address the issue, fishing regulations require release of all sturgeon greater than 40 inches. The basis of this regulation is that pallid sturgeon adults are typically greater than 40 inches, while shovelnose sturgeon rarely reach that length. Furthermore, the Pallid Sturgeon Recovery Team has supplemented the adult pallid sturgeon population with hatchery-propagated fish from 2000-2012.

Even though shovelnose sturgeon can reach more than 3 feet of length and 5 – 10 pounds, and are considered high quality table-fare, few Montana anglers specifically target the species and they account for only about 0.03% of the annual angler days in the state. An exception is the lower Marias River where a popular late spring fishery exists for adult shovelnose sturgeon migrating from the Missouri River. Shovelnose sturgeon are also occasionally captured by anglers targeting other species, particularly catfish. Central and Eastern district harvest limits for shovelnose sturgeon are 5 daily and in possession, with an exception being Bighorn Lake where the harvest limit is two daily and in possession. As previously noted, all sturgeon greater than 40 inches in length must be released.

Shovelnose sturgeon may be vulnerable to over exploitation as a result of their low recruitment. Surveys on the Middle Missouri River from 2007 – 2011 indicated a moderate harvest of shovelnose sturgeon with similar catch rates in 2007 and 2011, but the proportion of shovelnose sturgeon that were caught and harvested was relatively high at 62% in 2007 and 65% in 2011. Total harvest could easily surpass 2,000 adult fish per year when total fishing pressure is factored in. Further study is needed to determine what harvest level will keep this high quality population at its present level.

Westslope Cutthroat Trout and Yellowstone Cutthroat Trout (native; Montana Species of Concern)

Two subspecies of cutthroat trout are native to Montana: westslope cutthroat trout and Yellowstone cutthroat trout. Together they share the distinction as "Montana's State Fish." Westslope cutthroat trout are native to the Clark Fork, Kootenai, Missouri (above and including the Judith) and St. Mary drainages. Yellowstone cutthroat trout are native to the Yellowstone River and associated tributaries upstream of the confluence with the Big Horn River.

Historically westslope cutthroat trout and Yellowstone cutthroat trout occupied all accessible, coldwater streams and lakes in their respective drainages, with resident (stream occupant), fluvial (migratory river fish) and adfluvial (migratory lake fish) forms were present. While westslope cutthroat trout remain common in many waters west of the continental divide, and both subspecies have been stocked in numerous lakes and reservoirs, their distribution and abundance has declined in many portions of their historic range. Major factors contributing to the decline include competition with nonnative species of trout, hybridization with rainbow and Yellowstone or westslope cutthroat trout that were stocked outside their historic range, habitat changes, and migratory barriers. In Montana it is currently estimated that genetically pure westslope cutthroat trout occupy about 20% (5,950 miles) of their historic range and genetically pure Yellowstone cutthroat trout occupy about 16% (705 miles) of their historic range. If slightly hybridized populations with <10% level of hybridization were combined with the genetically pure populations, the current distribution of westslope cutthroat trout and Yellowstone cutthroat trout increases to 30% (8,830 miles) and 28% (1,210 miles) of their respective historic ranges.

The status of westslope cutthroat trout throughout its distribution in Montana is variable. Non-hybridized westslope cutthroat trout populations on the west side of the continental divide are more widely distributed and represent the majority of the occupation percentage listed above. Non-hybridized westslope cutthroat trout populations in the Upper Missouri River Basin presently only occupy 4% of their historic distribution and are commonly limited to small headwater streams. Similarly, Yellowstone cutthroat trout status and distribution varies spatially. Some areas exist where Yellowstone cutthroat trout have been isolated from nonnative fishes, but many of the existing populations overlap with nonnative species and are not secure. Non-hybridized Yellowstone cutthroat trout populations in the Upper Yellowstone River Basin presently occupy 26% of their historic distribution. Owing to significant declines in westslope cutthroat trout and Yellowstone cutthroat trout, each is listed as a Montana Species of Concern. Both were petitioned for listing under the federal Endangered Species Act but these petitions were found "not warranted."

As a Species of Concern and sportfish, both subspecies receive considerable management attention and resources from FWP, federal land management agencies, and private organizations. Though exceptions exist, cutthroat-occupied lakes and reservoirs are generally managed as recreational fisheries where harvest is allowed, and may periodically be stocked with progeny from FWP's cutthroat broods maintained at Washoe Park Trout Hatchery and the Yellowstone River Trout Hatchery. In most cases populations residing in rivers and streams have been identified as "conservation populations," which indicates the need to manage the population for natural, self-sustaining persistence. Streams and rivers are not stocked with hatchery fish, with

the exception being restoration efforts where cutthroat brood or wild eggs are introduced in smaller streams to reestablish populations. Stream and river creel regulations vary based on strength of populations, with "catch and release" or limited harvest with size limits the most common types of regulation.

Management concerns for westslope cutthroat trout and Yellowstone cutthroat trout vary by drainage and region of the state. Efforts to address threats are often developed specific to an individual body of water. In some waters, angler harvest limits and habitat protection are suitable management measures to ensure robust populations remain. Habitat conservation is important for species conservation, and addressing concerns related to riparian condition, passage concerns at road crossings, entrainment in irrigation systems, and in-stream flow are important for conserving cutthroat populations. In some drainages, nonnative trout species are removed to reduce threats to "at-risk" populations, or to develop areas for cutthroat restoration. Barriers to upstream fish passage may be constructed at the lower end of recovery areas to prevent re-invasion of nonnative species. Projects to reestablish populations for conservation purposes are common in the upper Missouri and Yellowstone drainages, and these efforts often include transferring eggs or live fish from existing threatened populations to preserve their genetic legacy.

Management of Montana's two cutthroat subspecies is directed by regional and statewide management plans. The *Memorandum and Conservation Agreement for Westslope Cutthroat Trout and Yellowstone Cutthroat Trout in Montana* (FWP 2007) is the principal document that sets objectives and goals for overall cutthroat conservation in Montana, and has been signed by numerous state, federal, tribal, and private stakeholders.

Relevant management documents: *Memorandum and Conservation Agreement for Westslope Cutthroat Trout and Yellowstone Cutthroat Trout in Montana* (FWP 2007);

Conservation Goals for Westslope Cutthroat Trout

The conservation goal for westslope cutthroat trout west of the Continental Divide is to maintain viable populations throughout their existing distribution in all drainages, primarily through angling regulations and habitat protection and restoration. Identified "conservation" populations include those that are non-hybridized or slightly hybridized, isolated resident populations, and populations that include a mainstem river migratory life-form that promotes connectivity between populations and provide angling opportunity for larger fish. If migratory bull trout are not present, isolation by placement of barriers of some tributary westslope cutthroat trout populations may be considered if hybridization or competition from nonnative trout threatens the population's persistence. On a limited basis some opportunities to expand the distribution of the subspecies into historically occupied habitat may be explored, such as upper reaches of the North Fork of the Blackfoot River. Where necessary and feasible, nonnative trout may also be removed from isolated drainages to protect existing westslope cutthroat trout populations from competition or hybridization, such as the South Fork of the Flathead Westslope Cutthroat Conservation/Restoration Project.

The restoration goal for westslope cutthroat trout east of the Continental Divide (Upper Missouri River Basin upstream from and including the Judith River) is to restore secure conservation

populations of westslope cutthroat trout to 20% of the historic distribution. This is a long-term goal and not expected to be reached within the timeframe of this document. Populations of westslope cutthroat trout are considered secure by FWP when they are isolated from nonnative fishes, typically by a physical fish passage barrier, have a population size of at least 2,500 fish, and occupy sufficient (5 to 6 miles) habitat to assure long-term persistence. The effect of nonnative rainbow and brook trout on westslope cutthroat trout populations is well known and less well known for others, such as brown trout; thus, management actions will focus on known threats, including habitat concerns, and rely on future research to determine threats of other nonnative fish species. Ongoing projects in the upper Missouri River basin are expected to secure or create new westslope cutthroat trout conservation populations; however, the total amount of habitat secured will likely be less than an additional 4% of historic distribution.

In the upper Missouri River Basin, all remaining populations with less than 10% nonnative trout hybridization are considered "conservation" populations. Estimates of the historic distribution of westslope cutthroat trout within the Upper Missouri River Basin are approximately 19,000 stream miles. Therefore, having 3,800 miles of secure conservation populations within the basin would satisfy this 20% goal. Conservation populations of westslope cutthroat trout currently occupy approximately 8% of the historic distribution in the basin. In satisfying the 20% conservation goal, existing conservation populations would be protected, and populations would be expanded or introduced into approximately 12% more of the historic habitat within the basin. Implementation of the 20% historic range goal for westslope cutthroat trout would assure persistence of subspecies in the Upper Missouri River Basin for the foreseeable future, provide numerous fishing opportunities for Montana's State Fish, and leave unchanged the vast majority of fisheries that have developed for nonnative trout. All conservation projects to expand westslope cutthroat trout distribution would be vetted to the public through the MEPA process, and because of feasibility issues, are generally limited to small to medium sized tributary streams.

Logistically, the westslope cutthroat trout conservation goal would be proportionally applied to all major drainages within the Upper Missouri River Basin. Having conservation populations spread out geographically within the basin is a prudent approach that prevents stochastic events, like floods, fire, drought or disease, in a portion of the drainage from having an impact on all conservation populations. In some situations, a drainage may exceed the "20% of historic goal" due to opportunities, whereas other drainages may fall short due to logistic realities. As a general rule, the 20% goal would be applied in each drainage, unless the regional fisheries manager makes an exception based on logistics or opportunities.

Conservation goals for Yellowstone Cutthroat Trout

The estimated historic distribution of Yellowstone cutthroat trout in the Upper Yellowstone River (upstream and including the Stillwater River near the town of Absarokee, MT and excluding areas within Yellowstone National Park) is 2,336 stream miles. The estimated current distribution of YCT conservation populations with less than 10% hybridization is approximately 48% of their historic distribution. Many of these populations of Yellowstone cutthroat trout coexist with nonnative rainbow trout, brook trout and brown trout and therefore are not considered secure, as defined above for westslope cutthroat trout in the Upper Missouri River Basin.

FWP is implementing management actions to secure Yellowstone cutthroat trout populations in the Shields River upstream from Chadbourne Diversion. Management actions that have been completed to secure these populations include an effort to determine the distribution of brook trout, rainbow trout and hybridized YCT upstream from the diversion and a rebuild of Chadbourne Diversion to prevent upstream fish passage and ensure the structural integrity of the diversion. A second barrier was completed in partnership with the Custer Gallatin National Forest at the Crandall Creek Campground to prevent upstream passage of brook trout into the Shields River headwaters. Future actions to secure the Yellowstone cutthroat trout population in the Shields drainage will include continued removal and management of nonnative fishes (brook trout, rainbow trout, and hybridized cutthroat trout) primarily through mechanical removal. This work is being completed under an EA that was approved for 10 years (2014-2024). FWP will continue to research the long-term impacts of brown trout on Yellowstone cutthroat trout populations.

In recent years, FWP has also implemented management actions to remove nonnative fish in the Upper Boulder River drainage (upstream from the Hawley Falls) and Upper Soda Butte Creek (upstream of Ice Box Canyon). Efforts in the Upper Boulder have yielded Yellowstone cutthroat trout populations in multiple lakes and streams and other lakes shifting to Yellowstone cutthroat trout dominated populations via the efforts. Monitoring efforts are ongoing to document the Yellowstone cutthroat trout populations changes resulting from the management actions in the Upper Boulder. Brook trout residing in Upper Soda Butte Creek threatened to expand downstream and invade Yellowstone cutthroat trout populations in Yellowstone National Park (YNP). In collaboration with all respective agencies (YNP, Wyoming Game & Fish, Custer Gallatin NF and Shoshone NF) brook trout were removed from Soda Butte Creek upstream of Ice Box Canyon Barrier in 2015 and 2016. No brook trout have been found in Upper Soda Butte Creek since the treatment of 2016.

If successful, conservation actions in the Shields river would result in approximately 20% of the historic distribution of Yellowstone cutthroat trout in the Upper Yellowstone River Drainage having secure populations. Further, these actions would result in monumental steps for the range-wide status of the species. FWP will continue to look for conservation opportunities within the Yellowstone River Drainage to secure Yellowstone cutthroat trout populations and increase the percentage of the historic distribution where secure populations exist. This is especially important in a spatial perspective, where stochastic events, like drought, disease, or forest fire, are less likely to impact localized strongholds such as the Shields or Boulder drainages. Conservation populations existing in open systems (coexisting with nonnative trout) will be managed to conserve Yellowstone cutthroat trout and their migratory life histories, while accepting some levels of competition and hybridization with nonnative species. Examples may include securing spawning tributaries and allowing selective passage of Yellowstone cutthroat trout during spawning runs.

Walleye (nonnative)

Walleye is a nonnative species found widely in lakes, reservoirs and large rivers in Montana east of the Continental Divide. It is also found west of the Continental Divide in Noxon Rapids Reservoir, apparently a result of an unauthorized introduction. The range and abundance of walleye has increased in recent years in the Missouri River between Holter Dam and Great Falls, as well as in the Yellowstone River downstream of the Ranchers Diversion near Bighorn.

Walleye have achieved an avid following among anglers in Montana. According to the 2015 Statewide Angler Survey, over 9% of angler days in Montana were spent in pursuit of this species. Walleye are considered by many anglers to be a handsome fish with excellent flavor, and they also achieve impressive size when forage is abundant. The current state record is 17.75 pounds from Tiber Reservoir.

Walleye require rock, rubble or gravel substrates for successful spawning, therefore, natural reproduction is better at some lakes such as Canyon Ferry and Tiber reservoirs, while worse at others such as Fort Peck, Hauser and Nelson reservoirs where fine sediments will smother eggs and reduce the successful hatch. In reservoirs, dam operations can be detrimental if water levels drop during spawning and incubation. Recruitment is highly influenced by weather conditions in the spring, probably more so than by the number of spawning fish present or the number of eggs laid. Walleye forage is also influenced greatly by reservoir levels. Water levels rising during the time of forage spawning in the spring, combined with the availability of vegetation for spawning and cover, will greatly influence forage success.

FWP stocks walleye as fry or fingerlings in reservoirs where habitat or dam operations limit natural production. Most of the hatchery capacity and staff at Fort Peck and Miles City hatcheries are devoted to collecting walleye spawn, hatching the eggs, and growing fish to a stockable size. Between 2000 and 2010, FWP stocked approximately 329 million fry and 27 million fingerlings into Montana reservoirs, with the bulk of them going to Fort Peck Reservoir. FWP Policy prohibits the stocking of walleye west of the Continental Divide

Walleye sometimes hybridize with sauger, a native Species of Concern. A recent FWP study of sauger populations from 21 sites in the Missouri and Yellowstone drainages found low levels of hybridization (2%), with the greatest incidence (44%) of the hybrids detected in samples from the lower Yellowstone River near the mouth of the Powder River. Genetically, the hybrids were of three types: first generation crosses between pure sauger and walleye, second generation crosses between hybrids, or backcrosses between hybrids and pure sauger. In sum, most of the hybrids (ten of eighteen) were post second-generation, indicating that sauger/walleye hybrids are to some extent capable of reproducing. Even with these low levels of introgression, another concern is for the wasted reproductive effort that can occur through mating that results in highly unfit offspring. To avoid impacts of hybridization, FWP has begun to stock triploid (sterile) walleye into some systems. Bighorn Lake has stocked triploids for nearly a decade and other reservoirs may be considered in the future.

Yellow Perch (nonnative)

Yellow perch are among the most widespread and popular sportfish in Montana. They thrive in ponds, lakes and reservoirs, and are also common in sloughs and slower rivers. Yellow perch were initially introduced to Montana waters more than a century ago, and through stocking efforts, natural dispersal and illegal introductions, are now present in most major drainages of the state. Yellow perch are not propagated in Montana hatcheries for stocking efforts but are occasionally transferred between ponds in eastern Montana to reestablish fisheries after periodic winter kills. Yellow perch are an important forage species for predatory sportfish like black bass, walleye, sauger, northern pike, and burbot, and their presence is a key factor in the quality and stability of many fisheries. High reproductive rates also allow yellow perch to overpopulate some waters, particularly ponds, resulting in poor quality fisheries of small fish and possible impacts to other game species. Unfortunately, yellow perch have also been illegally introduced to numerous waters, resulting in significant biological changes to some fisheries.

Yellow perch are a highly valued sportfish in Montana, and based on angling days, only trail trout and walleye in statewide popularity. Yellow perch are targeted by anglers in all seasons, and favored fisheries are those where quality fish are produced. Yellow perch populations can generally support high levels of angler harvest, and on most waterbodies, there are no daily or possession limits. On Canyon Ferry, Hauser, and Holter reservoirs, restrictive regulations are in place due to high angler pressure and walleye predation.

Yellow perch management is a challenge. They are highly sought after for table fare but anglers are generally not interested in perch smaller than 8-inches, which is the common adult size in most waters. Yellow perch can provide forage for other species but generally are not useful for prey past the yearling stage except for large predators like older walleyes and northern pike. Yellow perch are also aggressive and can out-compete other sportfish for food and space. The common problem with yellow perch is overabundance. Methods to decrease yellow perch densities are limited, manpower intensive and costly. Importantly, yellow perch are relatively slow growing in Montana, commonly requiring 4 years to reach 8 inches and 8 years to reach 10 inches. The key to quality yellow perch management is to limit recruitment and/or maintain strong harvest/predation pressure on perch less than 8” while severely restricting harvest of perch longer than 8”.

GLOSSARY

Term or Phrase	Definition
Adfluvial	Life history strategy in which adult fish spawn and juveniles subsequently rear in streams but migrate to lakes or reservoirs to feed and mature.
Adipose fin	A small fleshy fin (with no fin rays or muscles) on the back of salmonids, Ictalurids (catfishes), and other fish between the dorsal fin and the caudal fin. When removed, it does not grow back.
Algae	A simple organism (either single cellular or multi cellular) that lacks the structural components of plants, but generally still conduct photosynthesis.
Algal bloom	A rapid increase in the amount of algae in a water body.
Amphipods	Aquatic crustaceans with compressed bodies (also known as freshwater shrimp or scuds).
Angler day	A term used to describe fishing pressure, or angling use. An angler day is one day of fishing for one angler, regardless of actual length.
Anthropogenic	Describes the effects of humans on the environment.
Appropriation	In fisheries management this term refers to the water law (irrigation) in western states known as the Appropriation Doctrine. This doctrine is essentially a rule of capture, and awards a water right to a person actually using the water. It has two fundamental principles: First in time of use is first in right. Application of the water to a beneficial use is the basis and measure of the right.
Assemblage	A group or collection of species making up a community of organisms at a given place in a given time.
Assessment of Biological Integrity	A classification tool to assess water pollution problems. This classification associates anthropogenic influences on a water body with biological activity in the waterbody.
Avista	Avista corporation (utility).
Barbel	Thread-like projections near the mouths of some fish species (e.g., catfish, carp sturgeon, etc.).
Benthic macro invertebrate	Aquatic animals (without backbones, including crustaceans, insects and others) that live on or within the bottom of a waterbody and are visible without the aid of magnification.
Blue ribbon	A designation used to define a trout stream with high recreational value.
Boulder	Stream substrate particle size greater than 256 mm (10 inches).
Caudal fin	Tail fin on a fish.
Char or charr	Species of fish belonging to the genus *Salvelinus*, including bull, lake and brook trout in Montana, but also includes Dolly Varden and arctic charr elsewhere in the US and Canada.
Cladocera	Micro crustaceans or water fleas (a type of zooplankton).
Cobble	Stream substrate particles between 64 and 128 mm (2.5- 5 inches)in diameter.
Cold water fish	This is a general term that broadly refers to fish that prefer cold water 4-15 C (40-60F), like trout, char and grayling.
Community	An assemblage of plants and animals, or two or more populations of organisms, occupying a specific area within a specific time.
Confined channel	A stream channel that is well defined and stable (Does not exhibit lateral or vertical movement).
Confluence	Meeting of two or more water bodies, usually refers to the junction of a river and a stream.

Term or Phrase	Definition
Consumptive fishery	Population or group of fish population managed for the purpose of harvest or consumption.
Cool water fish	This is a general term that broadly refers to fish that prefer cool water 10-21 C (50-70), like northern pike or smallmouth bass.
Critical habitat	This term defines an official designation of the Endangered Species Act and refers to a physical area essential to the conservation of a listed species.
Culvert	A metal, plastic or concrete pipe (most often corrugated) placed under a road or railway to transport water.
Dam	A barrier that obstructs the flow of water either naturally (e.g., a beaver dam or landslide) or manmade (anthropogenically) that increases the water's surface elevation on the upstream side of the barrier.
Delta	The flat area at the mouth or confluence of a stream where alluvial deposits accumulate.
Discharge	Rate at which a volume of water flows past a specific point over time. Dam or stream discharge, usually expressed as cubic feet per second (CFS).
DJ Act	Dingell-Johnson Act or Wallop-Breaux Act provides Federal aid to states for management and restoration of fish. In addition, the act funds states for aquatic education, wetlands restoration, boat safety and clean vessel sanitation devices. Funds are derived from a tax on sport fishing tackle, gear and equipment, and motor boat fuel.
DJ reports	A document summarizing how federal Aid or Dingle Johnson Act funds were spent on a particular project. These reports are produced by Montana Fish, Wildlife and Parks' biologists at least every two years.
Dorsal	Referring to the back or top of a fish.
Ecosystem	Refers to a discrete community of living organisms and non-living components (like air, water and substrate) that interact to form a cohesive assemblage or system.
Effective population size	A term used in population genetics that refers to an hypothetical population where the number of breeding individuals in a population that exhibit genetic characteristics (including genetic drift, mutation, allelic frequencies and inbreeding) as a natural population.
Electrofish	A common, effective and non-invasive technique to capture fish using an electrical field. Electro fishing is conducted using a variety of gear ranging from backpack mounted battery powered units to generator powered jet boat mounted units. All gears rely on two electrodes- a positive anode and a negative cathode.
Endangered Species	The Endangered Species Act (ESA) provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The lead federal agencies for implementing ESA are the U.S. Fish and Wildlife Service (FWS) and the U.S. National Oceanic and Atmospheric Administration (NOAA) Fisheries Service. The FWS maintains a worldwide list of endangered species. Species include birds, insects, fish, reptiles, mammals, crustaceans, flowers, grasses, and trees.
Endemic species	An "endemic" species is one that has a very limited geographic area or region. Physical, climatic and biological factors can contribute to endemism. Endemism can arise in two ways, either from a shrinking range, called paleoendimism, or more commonly as a result of reproductive isolation that leads to speciation or the creation of a new species. Because of their inherent limited geographic distribution, endemics can easily become threatened, endangered or extinct.
Epilimnion	Uppermost layer of water in a lake or reservoir, defined by uniform temperature.

Term or Phrase	Definition
Eutrophication	A condition when too many nutrients are present in a water body. This can be a natural process, but it is often a result of human activities including the addition of fertilizers or sewage into waterways. Primarily refers to the additions of phosphates and nitrates into waters.
Exotic species	"Exotic" or "non-native" refers to a species that is originally from outside a particular area. This does not imply it is "invasive". It can represent anything from a fish native to elsewhere in the US (e.g., eastern brook trout), or one native to Asia (e.g., Common carp).
Extant	A species or even a population that is currently in existence. The opposite of “extant” is extinct.
Extirpate	To remove, destroy or eliminate completely
Eye to fork length	A common method of measuring paddlefish, from the anterior (front) of the eye to the fork in the tail.
Fecundity	Refers to an animal’s fertility and usually refers to potential egg production capacity.
Fertile	Able to produce viable offspring.
Fidelity	Refers to being faithful or loyal and in fisheries parlance it refers to a fish being loyal to its place of origin, by returning to that place to spawn.
Fin ray	The supporting structure of fish’s fin, made of cartilage or bone that provides rigidity but still allows the fins to be moved.
Fingerlings	Young fish general term describing fish between fry or larvae and adult. Most commonly used in reference to hatchery fish.
Fish mark	A modification made to a fish for identification (e.g., a fin clip).
Fish tag	A metal, plastic, or rubber object that is applied to a fish- either internally or externally - that allows for the fish’s identification (either as part of a group or as an individual).
Fishery	A population or a group of populations of fish that receive use (either consumptive- harvest or non-consumptive, like a recreational fishery).
Fluvial	Relating to a river, and in particular usually refers to a life history strategy where a fish uses a river for part of it s life cycle. Typically a fish will hatch in a stream, and migrate to a river to grow and mature, and return to the stream of its origin (natal stream) to spawn.
Fork length	A measure of fish length from the tip of the nose to the fork in the tail.
Fry	Newly hatched fish, commonly salmonids, and fish that don’t go through a larval stage.
Fyke net	A hooped net that guides fish into a capture area using one or more wings and leads.
Game fish	Species of fish that are pursued for recreation or sport by recreational anglers.
Gas Bubble Trauma	Gas bubble trauma (GBT), also known as gas bubble disease, is a physiological condition that occurs among fish residing in water that is supersaturated with atmospheric gasses. In Montana it happens mostly below dams.
Gas super saturation	Occurs when water and atmospheric gasses must be forced together under pressure, or the capacity of water to hold gasses in solution must be reduced. Water and gasses are often mixed under pressure in deep plunge pools below dam spillways or waterfalls when gasses forced into solution by falling water.
Genera	Plural of genus- a taxonomic rank, a form of biological classification, above species, and below family.
Genetic assignment	This tool is used to identify an organism and relate it to its population source. Assignment results often contain a probability or a likelihood of appropriately matching an individual to the population.
Genotype	The genetic makeup of an organism.

Term or Phrase	Definition
Gill net	A commonly used sampling gear for the capture of fish in fisheries management and research. A gill net is made up of horizontal or vertical panels of netting and fish are captured by entanglement, often by their gills (hence the name). Although typically used in lakes and reservoirs gill nets can be used in slow moving rivers and even drifted in rivers.
Gravel	A substrate whose particle size is between 2 and 64 mm (0.1 an 2.5”) in diameter.
Gravid	Containing eggs.
Habitat	The physical, biological and chemical features of a specific place that an organism lives. The term habitat is species-specific, though it often refers to a population or a community of organisms.
Head gate	A device that controls or regulates water flow through an irrigation structure.
Heavy metal	A broad classification of elements that have the potential to cause toxicity to aquatic life. In general the heavy metals commonly referred to in Montana are copper, cadmium, lead, zinc, mercury, but also could refer to many more elements.
Herbivorous	Feeds mostly or entirely on plants.
Hybrid	A cross between two or more genera or species, may or may not be fertile.
Hypolimnion	Bottom thermal layer of water in a lake or reservoir that is typically cold, poorly oxygenated, poorly illuminated and is removed from surface influences.
Incised channel	A deep stream channel, usually formed as the result of stream down-cutting vertically into substrate. This type of channel does not move laterally, but moves or cuts downward.
Indigenous	A fish native to a particular waterbody.
Interstitial spaces	Openings in or between substrate that allow for water to flow through and provides habitat for benthic invertebrates.
Introduced species	Animals or plants that have been moved, transported, transplanted or stocked outside their native range, also known as “non-native” or “exotic”.
Introgression	Movement of genes from one species to another from repeated backcrossing. This implies more than simple hybridization, and suggests multiple and repeated reproduction events with fertile offspring.
Invasive species	Plants or animals which are usually non-native, become a nuisance, displace of native species, and spread and become established quickly.
Lateral line	A row of pores along the side of fish that create a sensory organ for detecting movements of water and presence of fish and other animals.
Lentic	Associated with still water (e.g., a lake, reservoir or pond).
Life history strategy	This describes an animal’s anatomical, physiological and behavioral adaptations that reflect how an individual invests in reproduction and self-maintenance in response to their environmental conditions. Typically this term refers to the behaviors associated with migration strategies and habitat use at different stages in an animal’s life to take advantage of the environment to maximize survival and potential for offspring.
Lotic	Associated with flowing water (like a river or stream).
Mesic	Wet areas.
Metalimnion	Thin layer or stratum of water between the hypo- and epilimnion also known as a thermocline.
Migration	An extended movement of an animal (often for feeding or reproduction), usually followed by a return to its former location.
Mysis	Any species of the genus “Mysis”, a small shrimp-like crustacean.

Term or Phrase	Definition
Natal	Refers to the place of birth or hatching and for fish, it usually refers to a stream or section of stream to which fish will show fidelity for spawning.
Natal stream	Stream of origin for a fish.
Native species	Typically defined as a animal that was here prior to European establishment, and was not transported here or introduced by humans.
Nodal habitat	This term refers to migratory corridors, overwintering areas, or other critical life history requirements. This is a term that is typically used in reference to bull trout, and does not refer to spawning habitat.
Non-native fish	"Exotic" or "non-native" refers to a species that is originally from outside a particular area. This does not imply it is "invasive", and can represent anything from a fish native to somewhere else in the US, or one native to Asia.
Non-game fish	Refers to the fact that the species have not been classified in Montana statute as "sport" fish.
Pelagic	Lives in open water.
Phenotype	The physical makeup of an organism, or the organism's observable properties or form (like color, and morphology).
Photosynthesis	The process by which plants make oxygen.
Phytoplankton	Microscopic, free-floating plants.
Piscivorous	Fish-eating.
Piscicide	A natural or synthetic compound that kills fish.
PIT tag	Passive Integrated Responder. A small internally applied electronic tag that is activated by an externally powered device to identify an individual animal through a alpha numeric code.
Plankton	Refers to all free-floating plants (phyto-plankton) and animals (zoo-plankton), usually microscopic.
Pool	A stream or river habitat type characterized by a low gradient (<1%) that is deeper and wider than adjacent habitat units.
Population	Individuals of the same species in a discrete geographic area and a specific time. This can also refer to a group of related species (e.g., trout).
Prairie Pothole	Ponds, pools and wetlands found in depressions that were formed by glacial activity.
Recreational fishery	Population or group of fish population managed without the purpose of harvest or consumption. This is typically categorized as a "catch and release" fishery.
Redd	A spawning nest or bed constructed by trout or salmon. The redd is a depression made in gravel (usually in a stream but not always) and is composed of a pit (where material for the "nest" is excavated) and a tail spill where the excavated material is piled to cover and protect the eggs.
Redd survey	A common monitoring technique where trout or salmon nests (redds) are counted by observers.
Reservoir	Artificial lake or impoundment where a dam is used to store water.
Resident	A life history strategy that does not involve migration.
Retention time	Length of time that water is stored in a waterbody (usually describes a reservoir).
Riffle	Shallow reaches of streams where substrate causes breaks in the surface water causing waves, or ripples.
Rip rap	Typically angular rock, but can also refer to rubble, broken concrete and other things used to armor a stream bank to prevent erosion.
Riparian area	Relating to the margin of a river, stream, lake or other waterbody. Usually refers to vegetation types and habitats along water bodies.
Rotenone	A commonly used piscicide derived from a South American vine.

Term or Phrase	Definition
Salmonid	Any member of the family Salmonidae including trout, salmon, charr, whitefish and grayling.
Sand	Substrate size that ranges from 0.062 and 2 mm (0.00003- 0.01") in diameter
Scuds	Amphipods or commonly called freshwater shrimp.
Scutes	An external or bony plate, like those found on sturgeon.
Silt	Very fine substrate with particle sizes ranging from 0.004 to 0.062 mm (0.00002-0.0003) in diameter.
Sinuosity	A measure of the curvature of a stream or river and describes the general pattern.
Spawn	To produce or deposit eggs, typically refers to fish, but can also refer to any aquatic animal (like mussels) or semi aquatic animals (like toads).
Species	The most basic unit of biological classification. In its most clear definition, a species is one that can produce viable (fertile) offspring. However, many fish of different species can produce viable offspring (hybrids).
Species of Concern	Is a protective designation by Montana Fish, Wildlife and Parks to wildlife species that are at risk.
Sport fish	Refers to any fish that has a recreational value (including harvest) and has management or regulation tied to it. Often this is synonymous with "game fish", which are species of fish that are pursued for sport by recreational anglers.
Standard length	The most accurate measure of fish length, because it relies on skeletal length from the tip of the nose to the last vertebrae. Typically only used in the lab.
Sterile	An organism that is unable to reproduce sexually.
Stratification	Arrangement of water into distinct horizontal layers that are associated with temperature, dissolved oxygen and suspended particles.
Stream order	A hierarchical classification of stream based on the number of branches (or tributaries). For example, a first order stream has no tributaries, a second order stream has two first order streams flowing into it, and a third order stream is the result of two second order streams combining.
Substrate	Materials that form the base of a waterway, either organic or minerals. Substrates are usually classified into categories based on their diameter.
Summerkill	A fish killing condition that typically affects lakes in the summer as a result of high water temperatures and low dissolved oxygen. Often the low dissolved oxygen is a result of plants taking up a lot of oxygen at night causing very low amount of oxygen during the dawn hours (also known as a dissolved oxygen or DO "sag"), before plants can produce oxygen.
Telemetry	Measurement and transmission of information via radio or ultrasonic signal to a receiving unit. A technique used to locate and/or track tagged fish.
Thalweg	Path of a stream of river that follows the deepest part of the channel and usually contains the greatest amount of energy.
Thermocline	Thin layer or stratum of water between the hypo- and epilimnion also known as a metalimnion.
Threatened Species	A category of protection under the ESA (e.g., bull trout).
Total length	The most common measure of fish length- the maximum length of the fish form the tip of the nose to the tip of the tail (when the lobes of the tail are compressed).
Triploid	A fish having three sets of chromosomes, and, as a result, is not capable of reproduction, it is sterile.
Vermiculatons	Worm like markings on the skin as commonly found on brook trout dorsal fins.

Term or Phrase	Definition
Wallop-Breaux Act	Dingell-Johnson Act or Wallop-Breaux Act provides Federal aid to states for management and restoration of fish. In addition, the act funds states for aquatic education, wetlands restoration, boat safety and clean vessel sanitation devices. Funds are derived from a tax on sport fishing tackle, related fishing gear and equipment, and motor boat fuel.
Warm water fish	This is a general term that broadly refers to fish that prefer warm (between 15-17 C or 60-80 F) water temperatures.
Weir trap	A barrier than spans a stream to divert fish into a holding pen.
Whirling disease	A disease caused by a myxosporean parasite (Myxobolus cerebralis), in trout and other fish.
Wild fish	A fish that is reproducing and sustaining a population without the help of humans. A wild fish can be native or non-native species.
Winterkill	A specific event when fish or other aquatic organisms are killed usually after a prolonged period of snow or ice cover and usually related to depletions in available oxygen as a result of the lack of photosynthesis.
Xeric	Locations that lack water.
Zooplankton	Small, often microscopic animals, typically rotifers, copepods and cladocerans. Very important for food, especially in ponds, lakes and reservoirs.

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Montana Fish, Wildlife & Parks, through its employees and citizen commission, provides for the stewardship of the fish, wildlife, parks and recreational resources of Montana, while contributing to the quality of life for present and future generations.