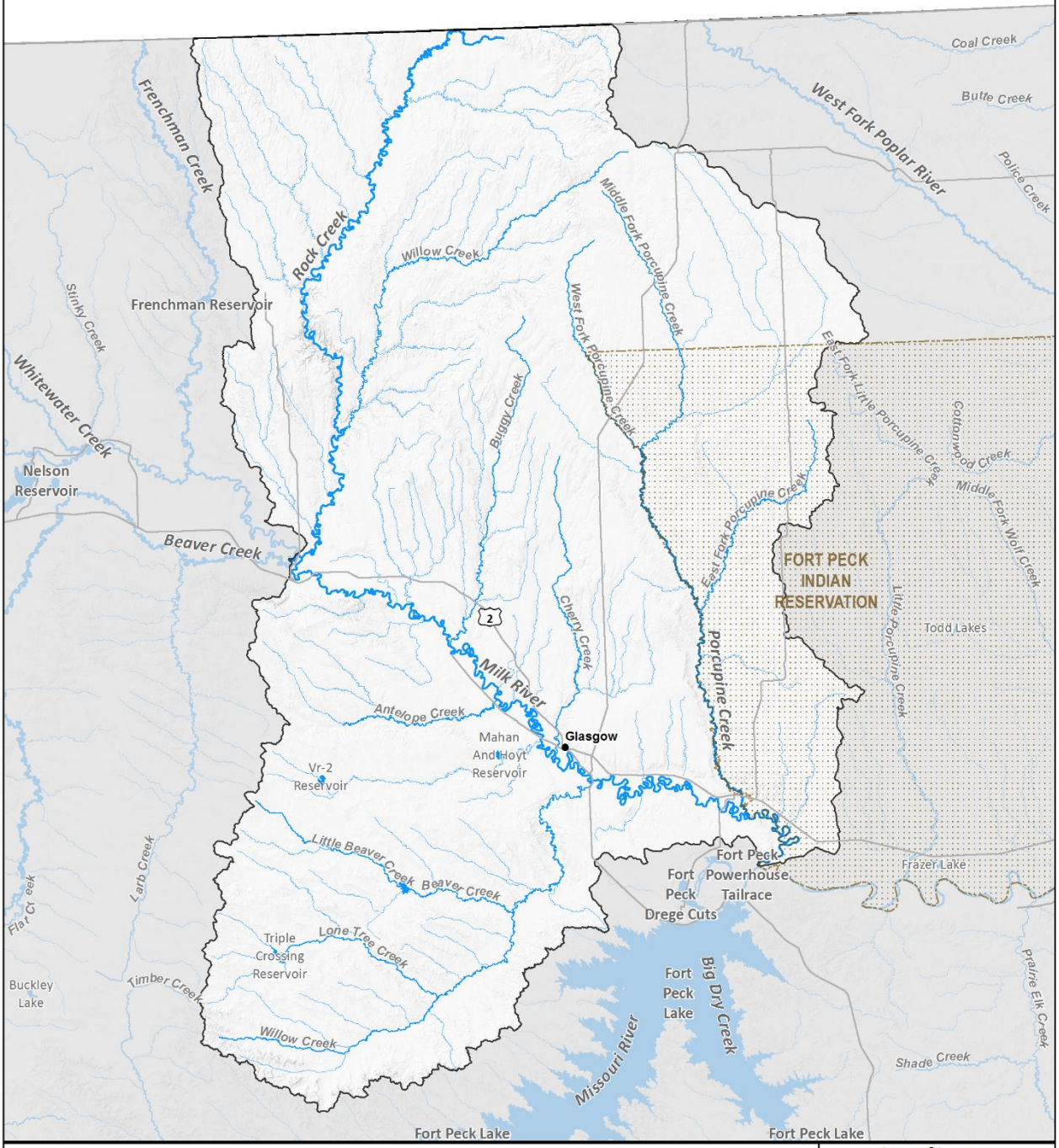
Lower Milk River Drainage

MONTANA **FWP**



Tribal Lands

Drainage Boundary

N

Area of Interest

Map Produced by:
ASP - Geographic Data Services
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Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI

0 10 20
Miles

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. Most of the drainage is situated within Valley County, except for 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 Bureau of Land Management (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 created by Vandalia Dam. The richness of native fish is greatly reduced when compared to sections downstream of Vandalia. Native channel catfish and non-native walleye and northern pike dominate the fishery in this section. Other introduced game fish 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 non-native 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. Nongame fish include pallid sturgeon, bigmouth buffalo, smallmouth buffalo, river carpsucker, blue sucker, white sucker, 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 sucker 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 sucker do not enter the river. Additionally, 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. The influence of the Milk River to the Missouri is demonstrated by recent high-water events (2010, 2011, 2013, and 2018) and the migratory response by a variety of fish, including pallid sturgeon, in the Missouri and into the lower Milk River.

Long-term monitoring of native and sport fish above and below Vandalia Dam is expected to continue. Spring electrofishing surveys will be conducted with the intention of collecting primarily sauger and walleye. Channel catfish will continue to be surveyed during summer months using a combination of hoop nets, setlines, and electrofishing. Further, juvenile, and small bodied fish will continue to be sampled during the summer months via seining surveys. Movement of native and sport fish between the Milk and Missouri rivers, and throughout the Milk River, are proposed to be investigated using radio telemetry or passive integrated transponder (PIT) tag data.

Generally, fishing regulations in the lower Milk River are similar to the rest of the Eastern District, except for paddlefish. Although paddlefish use the lower Milk in the spring and early summer, no fishing is allowed as the impact of harvest to this portion of the population is not well understood. Additionally, there is limited public access which limits fishing opportunity and makes law enforcement difficult.

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

Increased monitoring of Rock Creek and other prairie streams within the lower Milk drainage is anticipated to continue via seining and electrofishing. Specific focus will be placed on native species distribution, fish passage impediments, and extent of non-native northern pike within these prairie streams. Opportunities for restoring fish passage (in coordination with BLM) will continue to be evaluated.

Home Run Pond is the only urban pond within this drainage. It is a <1 acre community pond managed as a put-grow-take fishery and stocked multiple times per year with hatchery-reared rainbow trout. Illegal introductions of non-native and undesirable species, such as common carp and black bullhead, have had detrimental impacts to water quality and overall persistence of stocked rainbow trout. Because of this, removal of these undesirable species is warranted. A non-piscicide removal is anticipated in winter 2023 to 2024, where the pond will be drawn down to a level at which ice/snow cover will reduce dissolved oxygen levels low enough all species will be removed. Following this drawdown water levels will be restored, and the pond will be stocked with rainbow trout.

Several additional prairie ponds within the drainage are stocked with game fish to provide fishing opportunities. Deeper ponds have been stocked with game fish that are meant to be self-sustaining, such as yellow perch, largemouth bass, and bluegill. Shallower ponds that tend to winterkill are often stocked with hatchery-produced rainbow trout. Many of the prairie ponds within the lower Milk drainage are not currently viable fisheries, as drought conditions have reduced water levels and increased water temperatures. Anticipated actions from current water conditions include dissolved oxygen monitoring as well as altering stocking plans as needed.

Several of the prairie ponds within the lower Milk drainage are located on BLM property. FWP intends to continue to work with BLM staff to enhance or rehabilitate waters located on BLM land. This may include the continued utilization of windmill aeration systems, exclusion of reservoirs from range cattle, dredging of ponds that have suffered from siltation, or the construction of new reservoirs entirely.

Habitat

The upper section of the drainage 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 riverbanks. Throughout most of the year the riverbed is laden with silt substrate, but when 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 fields, with several areas witnessing severe erosion. Conversely, soils with 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. During years of drought when irrigation demands are high, the lower Milk River is often stagnant, with flows approaching zero. Past research indicates the relationship between spring and early summer flows and production of several species of native fish, including sauger and paddlefish. During wet years when the Milk River flows for extended periods, several species benefit by running upstream from the Missouri River and spawning. The duration of flow is critical. Once a fish has laid its eggs, flows are needed to keep the eggs oxygenated until they hatch. If flows cease when eggs are incubating, suspended 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. Although paddlefish show a predilection for high flows in the Milk River, shovelnose sturgeon demonstrate different behavior. FWP has never captured a larval sturgeon in the Milk River, indicating that nearly all shovelnose sturgeon reproduce in the Missouri River. Even though shovelnose sturgeon do not migrate up the Milk, the turbidity introduced into the Missouri River from the Milk is critical for successful spawning.

Special Management Issues

Pallid Sturgeon Recovery

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 River 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 low volumes of cold, clear water 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 were in the Milk River. The 2011 migration included a prolonged 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 contributed to a large year-class of shovelnose sturgeon produced in the Missouri River. This is further evidence that the Milk River can greatly increase production of native fish spawning in the Missouri River. Although there is currently 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 recovery of pallid sturgeon in the Missouri River.

Vandalia Dam Fish Passage

Stark differences in fish assemblages above and below Vandalia Dam warrant evaluation of fish passage. Providing fish passage at Vandalia Dam would open an additional 157 river miles to numerous species that are present below the dam but absent above. In total, 274 river miles would be available from the Missouri River confluence to Dotson Dam. Impacts of Vandalia dam are seen in reduced native species richness above the dam. Construction of fish passage would be extensive and require collaboration between U.S. Fish & Wildlife Service (USFWS), Bureau of Reclamation (BOR), irrigation districts and a host of Milk River coordination entities.

Native Species Conservation

Several native species that are listed as Species of Special Concern are found within the lower Milk River drainage. Many species such as sauger, paddlefish, pallid sturgeon, and blue sucker 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. Montana State University surveyed many of the small tributaries in the early 2000s, 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.

Increased monitoring of Milk River tributaries and other prairie streams within the lower Milk drainage is anticipated to continue via seining. Specific focus will be placed on native species distribution, fish passage impediments, and extent of non-native northern pike within these prairie streams. Opportunities for restoring fish passage will continue to be investigated using aerial surveys.

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 recreational angling. Continue to better understand channel catfish population dynamics.
		Native nongame fish (N)	Wild	Conservation	Monitor populations to detect changes in species composition and abundance.
Habitat needs and activities: Work to limit anthropogenic impacts to riverbanks and riparian zones. Explore potential for fish passage at Vandalia Dam.					
Milk River (Vandalia Dam to Missouri River)	117 miles	Pallid sturgeon (N)	Wild/ Hatchery	Conservation	Continue pallid sturgeon monitoring to better understand the importance and influence of the Milk River.
		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 and use of Milk River.
		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.
		Native nongame fish (N)	Wild	Conservation	Monitor populations to detect changes in species composition and abundance. Better

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
					understand relative contribution of Milk River fish to the Missouri River.
Habitat needs and activities: Work to limit anthropogenic impacts to riverbanks and riparian zones. Strive to maintain adequate flows during spawning periods that suspend sediment and expose gravel for egg deposition and development.					
Rock Creek	93 miles	Channel catfish (N), Sauger (N)	Wild	General	Maintain numbers. Inventory current game fish assemblage.
		Native nongame fish (N)	Wild	Conservation	Evaluate use of native nongame fish as bait by anglers. Continue to educate public of proper fish identification to limit use of illegal species. Explore potential passage at Rock Creek Dam.
Prairie streams	Various	Native nongame fish (N)	Wild	General	Protect habitat for native fish. Provide fish passage at impediments where able.
		Northern pike	Invasive	Suppression	Determine current distribution. Remove or isolate from native species as able.
Habitat needs and activities: Inventory habitat issues, such as fish passage barriers and unscreened diversions. Protect habitat for native fish. Provide fish passage at stream crossings.					
Home Run Pond	1 acre	Rainbow trout, Yellow perch, Common carp, Black bullhead	Hatchery/ Invasive/ Transfer	Put-Grow-and-Take	Remove undesirable species, restock with rainbow trout. Evaluate additional species as warranted.
Prairie ponds	Various	Yellow perch, Largemouth bass, Northern pike, Black crappie, Bluegill	Wild/Transfer/ Hatchery	General	Continue to monitor these populations and stock/transfer fish when necessary. Evaluate age structure of yellow perch throughout drainage.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Rainbow trout	Hatchery	Put-Grow-and-Take	Continue to stock prairie ponds as put-grow-and-take fisheries. Evaluate angler use and which ponds should be stocked.
		Native nongame fish (N)	Wild	Conservation	Evaluate use of native nongame fish as bait by anglers. Continue to educate public of proper fish identification to limit use of illegal species.
Habitat needs and activities: Look for opportunities to increase quality of habitat by increasing depth of reservoirs, building new reservoirs, or other habitat improvements. Explore applicability of windmill aerator systems at prairie ponds with winterkill concerns. Utilize artificial habitat structures in ponds where rearing habitat is limited. Collaborate with BLM staff on rehabilitation and restoration activities as able.					