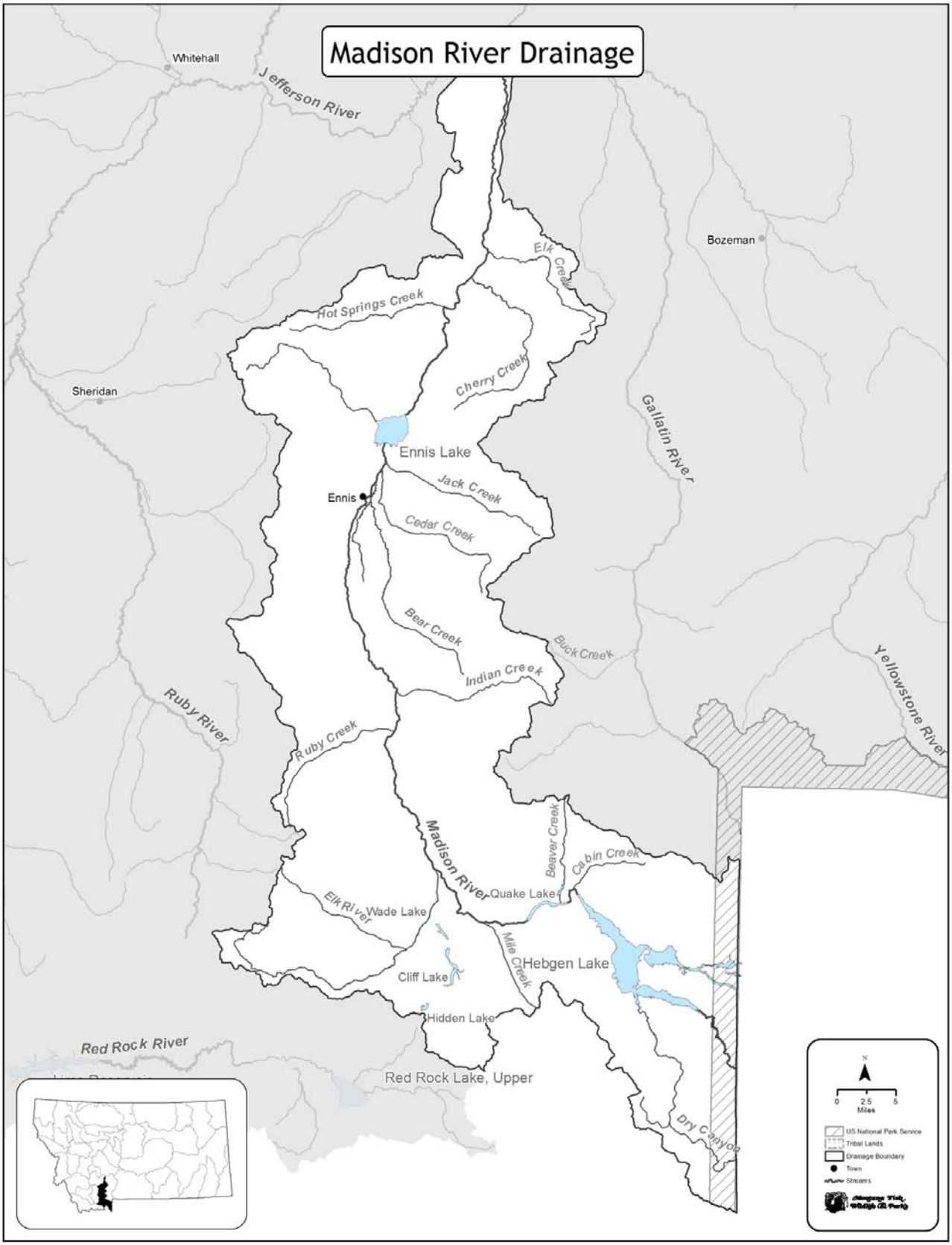
Madison River Drainage
Whitehall
Jefferson River
Bozeman
Elk Creek
Hot Springs Creek
Cherry Creek
Sheridan
Gallatin River
Ennis Lake
Jack Creek
Ennis
Cedar Creek
Bear Creek
Buck Creek
Indian Creek
Yellowstone River
Ruby River
Ruby Creek
Madison River
Beaver Creek
Cabin Creek
Quake Lake
Elk River
Wade Lake
Mile Creek
Hebgen Lake
Cliff Lake
Hidden Lake
Red Rock River
Red Rock Lake, Upper
Dry Canyon
N
0 2.5 5
Miles
US National Park Service
Tribal Lands
Drainage Boundary
Town
Streams

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 MFWP.

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, 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 1950's. 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 15,844 angler days in 2009.

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. The plan is due to be completed in January of 2013.

The lower Madison River below Ennis Dam suffers from chronic high water temperatures in summer. Fish kills have been documented at water temperatures above 82.5^{o}F. PPL Montana, 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, PPL will temporarily raise discharges from Ennis Dam (called pulsing), which holds water temperatures below 80°F 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. Management for non-native trout (brown and rainbow trout) will continue to be emphasized in the mainstem river while opportunities for cutthroat conservation will be pursued in some tributary streams. The goal of cutthroat conservation work is to secure populations in habitat that is free from the threats of non-native species and much of this work will be done upstream of natural and man-made fish barriers. A cutthroat trout population is considered secure when it has a minimum population size of 2,500 fish, occupies at least 5-6 miles of stream and is free from the threats of competition and hybridization from non-native species. The long-term goal of cutthroat conservation in the Madison is to have 20% of the historically occupied habitat restored to cutthroat trout.

FISHERIES MANAGEMENT DIRECTION FOR MADISON RIVER DRAINAGE

Water	Miles/acres	Species	Origin	Management Type	Management Direction
Madison River and Tributaries - Yellowstone National Park to Elk Creek	97.1 miles mainstem	Rainbow trout, Brown trout	Wild	Special Regulations	Initiate regulation-change process to simplify regulations and allow for harvest opportunities while maintaining fish numbers and sizes.
		Mountain whitefish	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/ Put-Grow-Take	Continue to manage stocking and harvest to maintain fish numbers and sizes. Research has been initiated to understand the hatchery contribution to harvest
		Brown Trout, Mountain whitefish	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	Wild	General	Continue to manage fish density through angler harvest to maintain fish numbers and sizes
		Arctic grayling	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	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.

Continued on next page.

Water	Miles/acres	Species	Origin	Management Type	Management Direction
Madison River Tributaries	708.2 miles	Westslope cutthroat trout	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	Wild/ Hatchery	Put-Grow-Take/ General	Continue to manage stocking and harvest to maintain fish numbers and sizes.