PART III

FISHERIES MANAGEMENT FRAMEWORK

Overview

The species composition of the upper Missouri River Reservoir system is typical of large river and reservoir fisheries in the intermountain region (Table 3). Fisheries of the Missouri River downstream from Toston Dam to Holter Dam and associated tributaries are managed as an ecological system. Many fish species in the system do not complete their entire life cycle within any single component of the system. Management considerations for any portion of the system (river, reservoir, or tributaries) must be considered in the context of the entire system.

Fisheries management of the upper Missouri River reservoir system changed dramatically following expansion of the walleye population in Canyon Ferry (McMahon 1992; FWP 2016). Walleye have impacted fisheries through predation and by increased abundance from flushing into downstream waters. As a prolific predator that relies on natural reproduction (Thomas 1992) in the system, active walleye management is necessary to maintain walleye abundance at appropriate levels to maintain quality multi-species fisheries in the reservoir system. Yellow perch, brown trout, and burbot fisheries are sustained by natural reproduction, while rainbow trout fisheries have natural reproduction in the rivers/tributaries and the reservoirs are sustained through stocking.

Species Abundance Goals

Population abundance goals for each species in each waterbody section have been established using standardized relative abundance or catch per unit effort (CPUE) surveys. Species-specific goal ranges have been developed for each reservoir and CPUE goals have been developed for applicable species within each river section to determine if annual trend values are meeting species-specific goals.

In order to manage a fish community that includes multiple game fish species, it is important to recognize that the goal for each species is affected by the management strategies for other species in the system. Many factors within the system will impact the attainability of each goal. The UMRRFMP emphasizes management for trout and walleye while recognizing the importance of yellow perch as a game fish and a forage species.

Species-specific population trends can be found in Appendix A.

Responsiveness

A major challenge for fishery managers in dynamic, multi-species fisheries is to be responsive to change without over-reacting to fluctuating data trends. Averaging population trend data based on standardized surveys, accompanied by annual data updates to the public, were tools used by managers in previous plans to balance responsive and cautious approaches.

This UMRRFMP will continue to use standardized survey results to evaluate and identify whether management plan goals are being met. Management decisions will typically be based on multiple years (2 to 3 years) of survey results to accurately evaluate population trends. Management changes (such as regulation changes) often take time to measure population level impacts, so continued monitoring will be needed to determine how management changes effect fish populations. FWP will report measurable change annually to the Citizens Advisory Committee, at public meetings, and provide annual reports.

Table 3. Fish species of Canyon Ferry, Hauser, and Holter Reservoirs including native status, first stocking date, population trend, and relative abundance. *

		Canyon Ferry				**Hauser**				**Holter**			
Species	Native	Present	Stock Date	Trend	Abundance	Present	Stock Date	Trend	Abundance	Present	Stock Date	Trend	Abundance
Game Fish Species													
Rainbow trout	No	x	1928	S	A	x	1934	S	A	x	1941	S	A
Mountain whitefish	Yes	x	N/A	D	C	x	1931	D	C	x	N/A	D	C
Walleye	No	x	N/A	S	A	x	1951	I	A	x	N/A	S	A
Brown trout	No	x	1931	D	C	x	1931	S	C	x	1931	S	C
Burbot	Yes	x	N/A	S	C	x	N/A	S	C	x	N/A	I	C
Brook trout	No	x	1934	U	R	x	U	U	R	x	N/A	U	R
Black crappie	No	x	N/A	U	R								
Cutthroat trout	Yes	x	N/A	U	R	x	U	U	R	x	N/A	U	R
Northern pike	No	x	N/A	I	C	x	U	I	C	x	N/A	I	R
Smallmouth bass	No	x	N/A	I	C	x	U	I	R	x	N/A	I	R
Largemouth bass	No	x	N/A	U	R	x	1926	U	R	x	N/A	U	R
Kokanee	No	x	1960's	N/A	R	x	1950	D	C	x	1950	D	C
Yellow perch	No	x	1938	S	A	x	1938	I	A	x	N/A	S	A
Nongame Fish Species													
Common carp	No	x	U	S	A	x	U	S	A	x	N/A	S	A
Longnose dace	Yes	x	N/A	U	A	x	N/A	U	R	x	N/A	U	R
Longnose sucker	Yes	x	N/A	D	A	x	N/A	D	A	x	N/A	S	A
White sucker	Yes	x	N/A	D	A	x	N/A	D	A	x	N/A	S	A
Mottled sculpin	Yes	x	N/A	U	A	x	N/A	U	A	x	N/A	U	C
Fathead minnow	Yes	x	N/A	U	C	x	N/A	U	C	x	N/A	U	R
Stonecat	Yes	x	N/A	U	C	x	N/A	U	R	x	N/A	U	R
Bluegill	No	X	N/A	I	C								
Utah chub	No	x	N/A	U	R	x	N/A	U	R	x	N/A	U	R
Flathead chub	Yes	x	N/A	U	R	x	N/A	U	R	x	N/A	U	R
Mountain sucker	Yes	x	N/A	U	R								
Smallmouth buffalo	Yes					x	N/A	U	R	x	N/A	U	R

***S - Stable, D - Decreasing, I - Increasing, U - Unknown, N/A - Not Applicable, A - Abundant, C - Common, R - Rare**

Proportional Stock Density (PSD)

PSD is a fisheries evaluation technique used to quantify the relationship between population abundance and fish size distribution. This fisheries management tool is commonly used to indicate sport fish population size structure balance (Gablehouse 1984), for walleye in this case, by establishing a PSD value for each population survey. The value for walleye is determined from a population survey by dividing the total number of fish surveyed 15-inches or greater by the total number of fish surveyed 10-inches or greater, multiplied by 100. Generally, a value from 0-30 indicates a population comprised primarily of small fish, 30-60 indicates a balanced population comprised of fish of all sizes, and 60-100 indicates a population comprised primarily of large fish.

For this UMRRFMP, a PSD goal range of 30 to 60 has been established for walleye populations in reservoirs throughout the plan area to evaluate size structure balance.