Fisheries Division
Federal Aid Job Progress Report

Montana Statewide Fisheries Management

Federal Aid Project Number: F-113-R-6
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Project Title: Montana Statewide Fisheries Management

Job Title: Havre Area Coldwater Fisheries Management

Abstract:

The coldwater fisheries in Hill, Blaine, and Phillips Counties continue to exhibit excellent growth of hatchery stocked rainbow and brook trout following the historic spring run-off in 2011 that re-filled many ponds and reservoirs that were previously chronically dewatered. Excellent water conditions have remained throughout the area and many water bodies have remained full and stable.

Rainbow trout growth and survival in Beaver Creek Reservoir has been above average the past few years. Rainbow and brook trout fisheries in Bearpaw Lake have responded favorably to control efforts of white suckers, and fishing pressure has increased in response to the increased size of trout within Bearpaw Lake. Growth and condition of rainbow trout in Choteau, Faber, Grasshopper, H.C. Kuhr, and Rotator Cup remains good. Ponds in Hill, Blaine, and Phillips Counties as well as Beaver Creek (Sections 01-03) were monitored in 2015 and results and management recommendations for all these waters are presented.

## OBJECTIVES AND DEGREE OF ATTAINMENT

*Survey and Inventory:* Objective is to survey and monitor the characteristics and trends of fish populations, angler harvest and preference, and to assess habitat conditions in selected waters. Objective accomplished, data presented.

*Fish Population Management:* Objective is to implement fish stocking programs and/or fish eradication actions to maintain fish populations at levels consistent with habitat conditions and other limiting factors. Objective accomplished, data presented.

*Technical Guidance:* To review projects by federal, state and local government agencies and private parties that has the potential to affect fisheries resources, and to provide technical advice or decisions to mitigate impacts on these resources. Provide landowners and other private parties with technical advice and information to sustain and enhance fisheries resources. Objective accomplished: (9) 310 and (23) 124 projects were reviewed along with one water pipeline review with local agencies; attended six walleye unlimited meetings and helped with four school programs and fishing events related to the "Hooked on Fishing" program.

## METHODS

Sampling conducted in Beaver Creek were 500ft/run within sections 1 through 3 using a backpack mounted electrofishing unit (Smith-Root LR 24). The electrofishing unit was set to a standard pulse waveform, with output voltage of 300 to 325 volts, and a cycle frequency of 30 Hz.

Floating and sinking multi-filament experimental gill nets 125 feet in length and 6 feet deep consisting of 25-foot panels of ¾", 1", 1 ¼", 1 ½", and 2" mesh were fished to acquire information on adult fish populations in ponds and reservoirs. Whenever possible, fish were measured for total length (TL: inches (in.)) and weighed to the nearest 0.01 pound (lb).

## RESULTS AND DISCUSSION

### Beaver Creek (Hill County)

Beaver Creek flows 43.1 miles from its headwaters on the Rocky Boy Indian Reservation to its confluence with the Milk River west of Havre. Beaver Creek has three impoundments, East Fork Reservoir on the Rocky Boy Indian Reservation, Bear Paw Lake, and Beaver Creek Reservoir.

Beaver Creek is divided up into four sections based on impoundment divisions and land ownership. Section 01 of Beaver Creek flows 21.8 miles from Beaver Creek Reservoir to the confluence with the Milk River. Section 02 flows 7.8 miles from Bear Paw Lake to Beaver Creek Reservoir. Section 03 flows 7.8 miles from the Rocky Boy Indian Reservation to Bear Paw Lake. Section 04 is a 3.6-mile section on the Rocky Boy Indian Reservation. The fishery in Beaver Creek was established in 1928 with the stocking of cutthroat trout in Section 02. Since that time, rainbow trout, brook trout, brown trout, and smallmouth bass have been introduced in Sections 01, 02 and 04. Section 01 and 02 are currently maintained through natural reproduction, entrained trout from Bear Paw Lake and Beaver Creek Reservoir, and annual stocks of 2,000 2-4 inch brown trout. Section 03 is not stocked, however contains a natural reproducing population of brook trout.

*Section 01- Beaver Creek Reservoir to confluence with Milk River*

Section 01 of Beaver Creek is a lower gradient stream (approximately 2,952 feet to 2,296 feet elevation) consisting of lower trout abundance levels than upper sections. As the creek progresses to the confluence with the Milk River, water temperatures increase as a result of distance from Beaver Creek Reservoir and the fauna becomes dominated by native non-game species. This section,

especially immediately below Beaver Creek Reservoir, receives a high amount of angling pressure. In 2013/2014, this section ranked 12th in the region for angling pressure receiving 3,243 (± 1,321) angler days (MTFWP Fisheries Bureau 2014).

Within this section one site was sampled for fish species composition and relative abundance, (see methods section above). The site was located approximately 1.15 river miles downstream of Beaver Creek Reservoir.

A total of six species were collected (rainbow trout, brown trout, longnose dace, longnose sucker, mottled sculpin, and white sucker). Fourteen rainbow trout were collected, ranging in length from 11.7 to 15.7 in. ($\bar{x}$ =13.69 in.). Four brown trout ranging from 7.9 to 16.6 in. ($\bar{x}$ =13.15 in.) were also collected, along with two longnose dace, three longnose sucker ($\bar{x}$ length=13.83 in.), three mottled sculpin, and 36 white sucker ($\bar{x}$ length=13.64 in.).

*Section 02: Bearpaw Lake Dam to Beaver Creek Reservoir*

Section 02 is a higher gradient stream (4,002 feet to 2,952 feet elevation change) consisting of populations of native non-game species and non-native rainbow and brown trout fisheries. The Bearpaw Dam regulates water conditions within this section and efforts are to mimic the natural hydrograph by allowing water to flow over the spillway. This section receives a high amount of angling pressure, in 2013/2014, this section ranked 9th in the region for angling pressure receiving 4,757 (± 1,660) angler days (MTFWP Fisheries Bureau 2014)..

Within this section three sites were sampled for fish species composition and relative abundance, (see methods section above). The first site was located approximately 7 river miles downstream of Bear Paw Dam, the second site (Eagle Rock) was located approximately 3.4 river miles downstream of Bear Paw Dam, and the third site (Rotary Falls) was located approximately 0.3 miles downstream of Bearpaw Dam. At site one a total of five species were collected. One rainbow trout (8.4 in.) and three brown trout ($\bar{x}$ =11.13 in.) were collected at this site. Other species collected included one longnose dace, three longnose sucker ($\bar{x}$ =12.87 in.), and 10 white sucker ($\bar{x}$ =10.13 in.) At site two a total of six species were collected. A total of 16 white sucker ($\bar{x}$ =10.73 in.), 13 longnose dace, eight longnose sucker ($\bar{x}$ =7.1 in.), six rainbow trout, six brown trout, and one mottled sculpin were collected. Rainbow trout ranged from 9.5 to 11.3 in. ($\bar{x}$ =10.42 in.) and brown trout ranged from 7.0 to 13.4 in. ($\bar{x}$ =10.98 in.). Site three was located at a higher elevation and only three species were collected. One brook trout (8.0 in.), five mountain sucker, and 24 rainbow trout ranging from 4.2 to 15.1 in. ($\bar{x}$ =9.3 in.) were collected from this site.

Section 03: Rocky Boy Indian Reservation Boundary to Bear Paw Lake

Section 03 is a higher gradient stream (4,593 feet to 4,002 feet elevation change) with lower flows than the other sections. This section has been highly impacted by major rain and runoff events since the last sampling effort occurred in 2007 and altered by human activities in attempt to re-establish the existing stream function prior to the historic water events. This section receives a high amount of angling pressure due to numerous campsite locations along the creek and abundant brook trout. In 2013/2014, this section ranked 15th in the region for angling pressure receiving 2,620 (± 1,242) angler days (MTFWP Fisheries Bureau 2014).

Within this section five sites were sampled for fish species composition and relative abundance, (see methods section above). Site one was located at the Rocky Boy Indian Reservation Boundary located approximately 8.65 river miles upstream of Bearpaw Lake, site two (Lions Camp) was located approximately 6.4 miles upstream of Bearpaw Lake, site three (JC Camp) was located approximately 4 miles upstream of Bearpaw Lake, site four (downstream of Rotary Pond) is located approximately 3.6 miles upstream of Bearpaw Lake, and site five (Boy Scout Camp) is located approximately 0.5 miles upstream Bearpaw Lake.

At site one crews collected 30 brook trout and seven mottled sculpin. Brook trout collected ranged in length from 3.2 to 9.5 in. ($\bar{x}$ =6.76 in.). The size of fish in the upper reaches of this section is most likely limited by available habitat. At site two 25 brook trout and nine mottled sculpin were collected. Brook trout ranged in length from 3.5 to 10.1 in. ($\bar{x}$ =6.34 in.). At site three 23 brook trout, 14 mottled sculpin, five rainbow trout, and three white sucker ($\bar{x}$ length=13.3 in.) were collected. Brook trout ranged in length from 4.2 to 10.9 in. ($\bar{x}$ =7.23 in.) and rainbow trout from 3.6 to 11.0 in. ($\bar{x}$ =8.0 in.). At site four 30 brook trout, 23 white sucker ($\bar{x}$ length=12.36 in.), 10 rainbow trout, and four mottled sculpin were collected. Brook trout ranged from 3.9 to 11.4 in. ($\bar{x}$ =7.26 in.) and rainbow trout from 4.2 to 11.3 in. ($\bar{x}$ =9.68 in.). At site five 37 white sucker ($\bar{x}$ length=11.61 in.), 20 brook trout, 13 rainbow trout, seven mountain sucker, and 5 mottled sculpin were collected. Brook trout ranged from 4.8 to 10.8 in. ($\bar{x}$ =7.68 in.) and rainbow trout from 4.6 to 11.7 in. ($\bar{x}$ =8.29 in.).

## Beaver Creek Reservoir

Beaver Creek Reservoir, located south of Havre, is a 185-acre reservoir with a maximum depth of 90 feet. Its proximity to the city of Havre makes this reservoir a valuable local resource and it has been managed intensively for a variety of species. The statewide fishing pressure survey for 2013/2014 indicated it received 4,772 (± 1,309) angler days (MTFWP Fisheries Bureau 2014). The significant increase in pressure is likely due to stable weather conditions, no major flooding events, and re-established fish populations.

This reservoir was initially managed as a rainbow trout fishery in the 1970's. However, the illegal introductions of northern pike (1980s) and yellow perch (1980s) created a variable rainbow trout fishery. As a result, the fisheries management plan was expanded to include other warm water species, which were legally introduced to control undesirable species and enhance the fishing opportunity within the reservoir. Currently this reservoir receives annual plants of 30,000 catchable size Eagle Lake, Erwin and Arlee rainbow trout, as well as 10,000 fingerling and 5,000 advanced fingerling walleye.

In an effort to maintain the balance between the rainbow trout fishery and the warm water fishery, the use of live minnows for bait has been allowed since March of 2000. The regulation was intended to increase harvest of northern pike, and perhaps open up a winter fishery for walleye. Though fishermen use live minnows regularly, a winter fishery for walleye has not developed as expected.

### Population Status of Adult Fishes

Water levels in September were down approximately 15 feet during our sampling effort due to problems with the dam's outlet infrastructure. These conditions created an intense algal bloom due to warmer than average air and water temperatures, and upstream nutrient sources (on-stream grazing plan). Gill netting was conducted overnight with three sinking and three floating experimental gill nets. Prior to 1986, adult fish populations were monitored, however sampling was neither uniform, nor consistent enough to develop useful trend data on sport fish population size or composition. As a result this data was excluded from analysis and is only included within the tables for reference to the illegal introduction of northern pike and yellow perch.

#### *Rainbow Trout*

In 2003 and 2004, 84,443 and 61,459 Arlee and Eagle Lake rainbow trout were stocked and the relative abundance of rainbow trout rose above 12 trout/net, respectively (Table 1 and Table 2). Rainbow trout relative abundance fell below 6 trout/net in 2005 and 2006, however they increased to 9 fish/net in 2007 (Table 1). In 2005, 41,416 rainbow trout were stocked which may account for the decreased relative abundance (relative abundance=5.5 fish/net; Table 2). Decreased stocking levels in

2005 due to PCB cleanup at Big Springs Fish hatchery, combined with increased competition and predation were likely causes for the decreased abundance of rainbow trout in 2005/2006.

In 2006, stocking rates of rainbow trout reflected historical densities (70,000 RBT / year) and relative abundance increased to target levels (10 trout/net) in 2007 and 2008 (Table 1 and Table 2). Rainbow trout relative abundance fell below target levels again in 2009, 2010, 2011 and 2013 (Table 1). In 2014, rainbow trout relative abundance increased to its highest level in 11 years (14 fish/net). Relative abundance dropped slightly in 2015 to 11.83 fish/net ($\bar{x}$ length=12.78) and remains above objective (Table 1). There are a number of variables influencing rainbow trout densities in Beaver Creek Reservoir: high spring flow increases entrainment, variability in stocking rates, and predation by walleye and northern pike.

Table 1. Summary of relative abundance (catch per unit effort (CPUE)), average total length, and relative weights of fishes collected in fall gillnetting surveys in Beaver Creek Reservoir, 1974-2015.

| | | | Rainbow Trout | | | Yellow Perch | | | Northern Pike | | | Smallmouth bass | | | Walleye | | | Longnose sucker | | White sucker | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | | Nets | CPUE (fish/net) | Ave TL (in.) | Rel Wt | CPUE (fish/net) | Ave TL (in.) | Rel Wt | CPUE (fish/net) | Ave TL (in.) | Rel Wt | CPUE (fish/net) | Ave TL (in.) | Rel Wt | CPUE (fish/net) | Ave TL (in.) | Rel Wt | CPUE (fish/net) | Ave TL (in.) | CPUE (fish/net) | Ave TL (in.) |
| Sep-74 | 1974 | 3 | 24.00 | 10.91 | 111.26 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 7.33 | 10.49 | 82.33 | 10.23 |
| Nov-77 | 1977 | 3 | 35.00 | 10.05 | 86.31 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2.33 | 9.66 | 113.00 | 9.75 |
| Sep-80 | 1980 | 3 | 23.33 | 10.12 | 81.04 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.33 | 6.33 | 156.00 | 8.86 |
| Sep-81 | 1981 | 3 | 7.33 | 10.88 | 82.77 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 6.67 | 8.78 | 165.33 | 8.70 |
| Oct-82 | 1982 | 3 | 8.33 | 11.78 | 99.67 | -- | -- | -- | 2.33 | 15.79 | 109.67 | -- | -- | -- | -- | -- | -- | 3.33 | 9.66 | 109.67 | 9.69 |
| Oct-83 | 1983 | 3 | 3.33 | 11.79 | 94.66 | -- | -- | -- | 3.67 | 25.10 | 117.07 | -- | -- | -- | -- | -- | -- | 1.33 | -- | 98.33 | -- |
| Sep-84 | 1984 | 3 | 3.00 | 11.26 | 95.43 | -- | -- | -- | 3.67 | 26.64 | 111.21 | -- | -- | -- | -- | -- | -- | 0.67 | 11.00 | 58.33 | 10.50 |
| Sep-86 | 1986 | 6 | 15.00 | 11.50 | 98.90 | -- | -- | -- | 4.17 | 16.68 | 109.86 | -- | -- | -- | -- | -- | -- | 0.00 | -- | 42.00 | -- |
| Sep-87 | 1987 | 6 | 11.33 | 13.61 | 92.06 | 0.33 | 6.30 | -- | 5.17 | 22.43 | 91.71 | -- | -- | -- | 0.00 | -- | -- | 0.00 | -- | 18.00 | -- |
| Sep-88 | 1988 | 6 | 9.67 | 14.74 | 90.40 | 8.17 | 5.93 | 105.50 | 3.00 | 27.55 | 123.61 | -- | -- | -- | 0.67 | 10.58 | 86.48 | 4.00 | -- | 14.00 | -- |
| Sep-89 | 1989 | 6 | 10.67 | 13.15 | 93.45 | 9.17 | 7.59 | 96.04 | 1.17 | 30.31 | 94.56 | -- | -- | -- | 0.00 | -- | -- | 2.50 | -- | 14.33 | 4.13 |
| Sep-90 | 1990 | 6 | 18.50 | 11.96 | 88.66 | 4.00 | 8.51 | 95.13 | 0.67 | 20.95 | 100.49 | -- | -- | -- | 2.67 | 13.69 | 81.72 | 9.17 | 8.04 | 9.67 | 14.12 |
| Sep-91 | 1991 | 6 | 15.50 | 12.78 | 93.26 | 12.00 | 7.39 | 103.98 | 2.33 | 16.57 | 95.37 | -- | -- | -- | 5.67 | 13.98 | 90.24 | 2.83 | -- | 8.17 | -- |
| Sep-92 | 1992 | 6 | 13.67 | 13.74 | 93.42 | 6.00 | 6.37 | 91.54 | 3.33 | 25.64 | 113.39 | -- | -- | -- | 2.33 | 17.84 | 94.80 | 1.33 | -- | 7.67 | -- |
| Sep-93 | 1993 | 6 | 3.17 | 16.43 | 94.48 | 12.33 | 7.20 | 109.06 | 2.00 | 27.49 | 100.01 | -- | -- | -- | 3.33 | 16.75 | 95.36 | 0.00 | -- | 8.67 | -- |
| Sep-94 | 1994 | 6 | 27.67 | 11.73 | 99.87 | 23.83 | 7.65 | 101.80 | 2.83 | 25.52 | 114.54 | -- | -- | -- | 1.67 | 17.39 | 103.33 | 0.00 | -- | 6.00 | -- |
| Sep-95 | 1995 | 6 | 20.17 | 13.42 | 96.73 | 20.00 | 7.71 | 102.97 | 3.50 | 21.66 | 96.62 | -- | -- | -- | 2.50 | 17.96 | 90.90 | 0.00 | -- | 12.83 | -- |
| Sep-96 | 1996 | 6 | 7.83 | 12.56 | 96.59 | 38.00 | 7.58 | 105.79 | 2.83 | 24.86 | 103.02 | 0.17 | 10.10 | 119.26 | 3.33 | 16.68 | 96.53 | 0.00 | -- | 11.00 | 3.75 |
| Sep-97 | 1997 | 6 | 6.83 | 13.00 | 91.31 | 39.50 | 7.22 | 94.54 | 4.17 | 21.70 | 99.11 | 0.00 | -- | -- | 2.17 | 17.65 | 96.90 | 0.00 | -- | 6.17 | -- |
| Sep-98 | 1998 | 6 | 4.50 | 15.53 | 86.75 | 47.17 | 7.55 | 93.84 | 4.83 | 24.43 | 94.79 | 0.33 | 11.65 | 114.91 | 4.33 | 18.04 | 96.05 | 0.00 | -- | 10.17 | 13.74 |
| Sep-99 | 1999 | 5 | 4.20 | 12.26 | 104.04 | 40.60 | 8.39 | 93.18 | 2.20 | 24.17 | 105.00 | 0.80 | 8.95 | 119.90 | 4.40 | 15.24 | 95.74 | 0.20 | 17.30 | 4.60 | 13.39 |
| Sep-00 | 2000 | 6 | 1.00 | 15.07 | 93.40 | 25.00 | 7.52 | 96.67 | 2.50 | 25.33 | 99.20 | 0.50 | 7.80 | 104.56 | 4.67 | 16.66 | 96.31 | 0.00 | -- | 4.17 | 0.00 |
| Sep-01 | 2001 | 6 | 14.50 | 12.09 | 92.76 | 30.67 | 7.39 | 100.86 | 1.00 | 27.73 | 96.81 | 0.17 | 10.40 | 108.60 | 4.50 | 13.93 | 93.62 | 0.17 | 17.10 | 8.67 | 14.72 |
| Sep-02 | 2002 | 6 | 3.33 | 11.98 | 96.85 | 21.67 | 7.98 | 100.11 | 1.17 | 25.76 | 96.31 | 0.50 | 9.43 | 99.04 | 7.67 | 14.90 | 89.57 | 0.17 | -- | 5.33 | -- |
| Sep-03 | 2003 | 5 | 15.80 | 11.46 | 102.26 | 12.20 | 7.94 | 125.10 | 2.00 | 13.90 | 108.18 | 0.20 | 10.40 | 96.53 | 3.60 | 14.74 | 101.16 | 0.00 | -- | 2.60 | -- |
| Sep-04 | 2004 | 6 | 12.83 | 11.62 | 93.09 | 16.17 | 8.34 | 99.43 | 0.67 | 23.90 | 103.89 | 0.33 | 8.20 | 103.42 | 2.50 | 15.32 | 68.68 | 0.17 | 19.20 | 5.17 | 15.99 |
| Sep-05 | 2005 | 6 | 5.50 | 13.63 | 97.00 | 12.33 | 8.35 | 102.88 | 0.50 | 29.23 | 104.05 | 0.00 | -- | -- | 3.33 | 15.29 | 96.82 | 0.00 | -- | 6.00 | 16.57 |
| Sep-06 | 2006 | 6 | 3.00 | 13.38 | 143.90 | 23.00 | 7.71 | 101.30 | 1.50 | 26.94 | 97.10 | 0.00 | -- | -- | 3.00 | 15.08 | 98.10 | 0.00 | -- | 3.00 | 16.89 |
| Sep-07 | 2007 | 6 | 9.00 | 11.80 | 95.70 | 29.33 | 7.90 | 107.00 | 1.67 | 27.50 | 101.50 | 0.17 | 9.20 | 107.20 | 5.17 | 12.80 | 103.80 | 0.00 | -- | 17.00 | 17.20 |
| Sep-08 | 2008 | 6 | 10.00 | 12.05 | 104.30 | 26.50 | 8.01 | 102.48 | 1.00 | 28.10 | 97.53 | 0.17 | 14.00 | 113.20 | 2.67 | 19.80 | 94.20 | 0.00 | -- | 1.83 | 16.89 |
| Sep-09 | 2009 | 6 | 4.00 | 11.80 | 100.90 | 20.00 | 8.20 | 100.40 | 2.33 | 26.40 | 95.16 | 0.17 | 15.70 | 124.59 | 3.67 | 18.26 | 104.72 | 0.00 | -- | 0.83 | 16.90 |
| Sep-10 | 2010 | 6 | 3.67 | 12.12 | 110.10 | 19.20 | 7.35 | 106.30 | 0.83 | 24.32 | 92.23 | 0.17 | 10.20 | 113.73 | 1.33 | 14.48 | 87.10 | 0.00 | -- | 1.17 | 16.59 |
| Aug-11 | 2011 | 4 | 3.75 | 12.93 | 98.08 | 26.50 | 7.76 | 92.06 | 1.75 | 18.10 | 83.31 | 0.25 | 8.20 | 76.40 | 0.75 | 13.63 | 81.05 | 0.00 | -- | 6.00 | 16.07 |
| Sep-12 | 2012 | 6 | 12.33 | 11.75 | 105.68 | 36.33 | 8.53 | 157.05 | 1.00 | 24.07 | 106.95 | 0.33 | 9.40 | 111.89 | 3.83 | 11.76 | 99.32 | 0.00 | -- | 3.20 | 15.14 |
| Sep-13 | 2013 | 6 | 5.33 | 11.56 | 104.79 | 26.00 | 8.81 | 104.64 | 0.33 | 22.05 | 92.04 | -- | -- | -- -- | 2.50 | 10.18 | 87.06 | 0.00 | -- | 5.33 | 16.28 |
| Sep-14 | 2014 | 6 | 14.00 | 12.22 | 98.22 | 8.50 | 8.34 | 92.12 | 1.50 | 25.46 | 100.97 | 0.33 | 13.50 | 104.83 -- | 1.83 | 15.25 | 83.76 | 0.00 | -- | 2.66 | 16.31 |
| Sep-15 | 2015 | 6 | 11.83 | 12.78 | 96.40 | 12.33 | 8.79 | 95.82 | 2.00 | 24.95 | 101.28 | 0.66 | 11.75 | 108.10 | 4.66 | 12.72 | 94.03 | 0.00 | -- | 1.83 | 16.84 |

Table 2. Rainbow trout historic stocking rates as it relates to densities stocked, strain, length and month on Beaver Creek Reservoir, 1997-2015. Strains include A-Arlee I- Eagle Lake T- Erwin N- Arlee x Eagle Lake R- Arlee x Erwin.

| Year | # Stocked | Strain | Length (Inches) | Month Stocked |
|---|---|---|---|---|
| 1997 | 19,990 | T | 6.7-7.3 | April |
| 1997 | 52,722 | A | 3.6 | May |
| 1997 | 19,219 | I | 5.9 | June |
| 1998 | 11,358 | T | 6.8 | April |
| 1998 | 5,200 | T | 7.3 | May |
| 1998 | 40,086 | A | 4.0 | June |
| 1998 | 19,992 | I | 5.6 | June |
| 1999 | 17,010 | T | 7.0 | April |
| 1999 | 10,413 | A | 6.8 | April |
| 1999 | 4,858 | T | 8.7 | June |
| 1999 | 18,691 | A | 5.8 | July |
| 1999 | 6,975 | I | 3.0 | August |
| 2000 | 10,557 | A | 6.0 | April |
| 2000 | 25,010 | T | 6.7 | April |
| 2000 | 18,955 | I | 4.2 | July |
| 2000 | 36,758 | A | 6.8 | September |
| 2001 | 21,151 | T | 6.2 | April |
| 2001 | 6,012 | N | 4.2 | June |
| 2001 | 52,578 | A | 6.5 | September |
| 2001 | 15,433 | I | 4.6 | September |
| 2002 | 20,010 | T | 6.5 | April |
| 2002 | 4,992 | A | 3.2 | April |
| 2002 | 47,721 | A | 6.7-7.3 | September |
| 2002 | 2,992 | T | 9.0 | September |
| 2003 | 20,705 | T | 6.2 | April |
| 2003 | 48,563 | A | 5.6-7.2 | September |
| 2003 | 15,175 | N | 6.4 | September |
| 2004 | 20,040 | T | 5.9 | April |
| 2004 | 7,000 | I | 4.1 | August |
| 2004 | 17,149 | I | 4.4 | September |
| 2004 | 45,663 | A | 6.3-7.0 | September |
| 2004 | 9,998 | I | 3.8 | October |
| 2005 | 10,440 | T | 6.6 | April |
| 2005 | 30,976 | A | 7.7 | September |
| 2006 | 20,045 | T | 6.7 | April |
| 2006 | 19,125 | A | 3.2 | May |
| 2006 | 54,854 | A | 6.7-7.9 | September |
| 2007 | 19,121 | I | 8.0 | April |
| 2007 | 52,058 | A | 6.5-7.6 | September |
| 2007 | 24,823 | I | 4.3 | September |
| 2008 | 20,168 | R | 6.9 | April |
| 2008 | 50,222 | A | 6.1-7.5 | September |
| 2009 | 10,005 | R | 7.2 | April |
| 2009 | 8,364 | I | 8.6 | May |
| 2009 | 49,210 | A | 7.8-8.4 | September |
| 2010 | 19,995 | R | 6.9 | April |
| 2011 | 10,120 | R | 6.6 | April |
| 2011 | 24,486 | A | 7.7 | August |
| 2012 | 30,124 | A | 8.6 | September |
| 2013 | 20,120 | AxI | 7.2 | April |
| 2013 | 30,000 | A | 6.2 | September |
| 2014 | 50,362 | A, R | 5.9 | April/September |
| 2015 | 36,160 | A, R | 7-8.2 | April/September |

**Bearpaw Lake**

Bearpaw Lake is a very popular 45 surface-acre reservoir located on Beaver Creek in the Bearpaw Mountains and received 6,449 (± 1,481) angler days in 2013 (MTFWP Fisheries Bureau 2014). Bearpaw Lake has been managed as a trout fishery since 1960 and is currently maintained with annual plants of 20,000 catchable size Arlee rainbow trout. Stocking of cutthroats was discontinued in 2010 due to poor growth rates and overall condition of these fish in Bearpaw Lake. Wild brook trout moving out of Beaver Creek are also found in the lake.

Bearpaw Lake and Beaver Creek also sustain a very healthy population of white suckers, which negatively impacts the rainbow trout fishery. In an effort to limit white sucker abundance FWP introduced smallmouth bass within the reservoir and they have been naturally reproducing within the reservoir since 1998. Walleye were illegally introduced in the 1990s and were then utilized as a control measure for white suckers with periodic stockings from 1992 to 1997. Since 2006, a supplemental plant of 5,000 advanced fingerlings has been planted to replenish the aging walleye population. Following a chemical rehabilitation of Bearpaw Lake conducted in 1983, a manual sucker control program was initiated in 1989 in an effort to reduce food competition between trout and white suckers and thus improve growth and survival of rainbow trout.

## Population Status of Adult Fishes

Adult fish populations were monitored at three fixed experimental gillnetting stations, established in 1984. Gill netting was conducted over night utilizing two sinking experimental gill nets and one floating experimental gill net (3 net-days). The sinking and floating experimental gill nets were 125 feet in length and 6 feet deep consisting of 25-foot panels of ¾", 1", 1 ¼", 1 ½", and 2" mesh. Fish were measured for total length (TL: inches) and weighted to the nearest 0.01 pound (lb).

Since 1989, manual control of white suckers has been attempted annually. Control efforts involve setting five or more trap nets for one to two weeks during their peak spawning period (April/May). Traps are checked daily and white suckers are killed and returned to the lake or dumped at a landfill.

### *Rainbow Trout*

Rainbow trout have been stocked in Bearpaw Lake since the 1960s and are currently stocked at a rate of 20,000 catchables annually (Table 4).

The relative abundance of rainbow trout has fluctuated greatly since their introduction (Table 3). The primary reasons for these fluctuations are stocking densities, fishing pressure, stream flows (entrainment) over spillway, and changes in survivability as a result of multiple factors including competition with white suckers. In 2015, relative abundance of rainbow trout increased to their highest level since chemical rehabilitation occurred in 1983 (55.7 fish/net), this was the second consecutive year record rainbow trout relative abundance was documented (Table 3). Rainbow trout averaged 10.36 inches (TL) with below average relative weights ($\bar{x}$ Wr=91.26), suggesting inter and intraspecific competition may be occurring.

Rainbow and brook trout have had relatively poor growth rates due to competition with white suckers for food. However, since the initiation of manual control effort of white suckers and the introductions of smallmouth bass (1992) and walleye (legally in 1995; Table 5), the average length of trout has increased from lengths recorded in the late 1990s (Figure 1; Table 3).

### *White Sucker*

The white sucker population has been significantly reduced since control efforts were initiated in 1984 (Figure 1; Table 3). Chemical rehabilitation was attempted in 1983 however white suckers quickly re-populated the lake from upstream sources in Beaver Creek. In 1989, a manual removal program was initiated. In 1992 and 1995 smallmouth bass and walleye were introduced to help control YOY and adult white sucker populations. From 1989 to 2015, 149,694 white suckers have been removed using trap and

gill nets (Table 5). Overall the average size of white suckers has remained high ($\bar{x}$ TL=11.3 inches; Table 3), indicating that control efforts have reduced spawning adult abundance, and walleye and smallmouth bass have been helping control YOY populations. In 2015, spring trap netting and fall gill netting removed a total of 1,491 pounds of white suckers (Table 5).

***Smallmouth Bass***

Smallmouth bass were introduced legally in 1992 to assist with the control of YOY white suckers. Since 1998, smallmouth bass have been successfully reproducing and recruiting into the population. In addition to providing control of white suckers, smallmouth bass have become an important addition to the fishery. In 2015, fall gillnetting surveys yielded 0.33 smallmouth bass/net (Table 3). Anglers did report catching many smallmouth bass throughout the reservoir during the summer months.

***Walleye***

Walleye were illegally introduced into Bearpaw Lake in the early 1990s. They were first documented in the lake in 1992. From 1992 to 1997, walleye fry and fingerlings were stocked to help control adult white sucker populations. Walleye were last stocked in 2006 with 5,000 advanced fingerlings to replenish the aging walleye population. Since their legal introduction, walleye have exhibited slow growth and their densities continue to decline (no walleye captured during last two fall surveys; Table 3).

Figure 1. - Comparison of white sucker relative abundance during fall gill netting surveys and average length of rainbow trout in Bearpaw Lake (1984-2015).

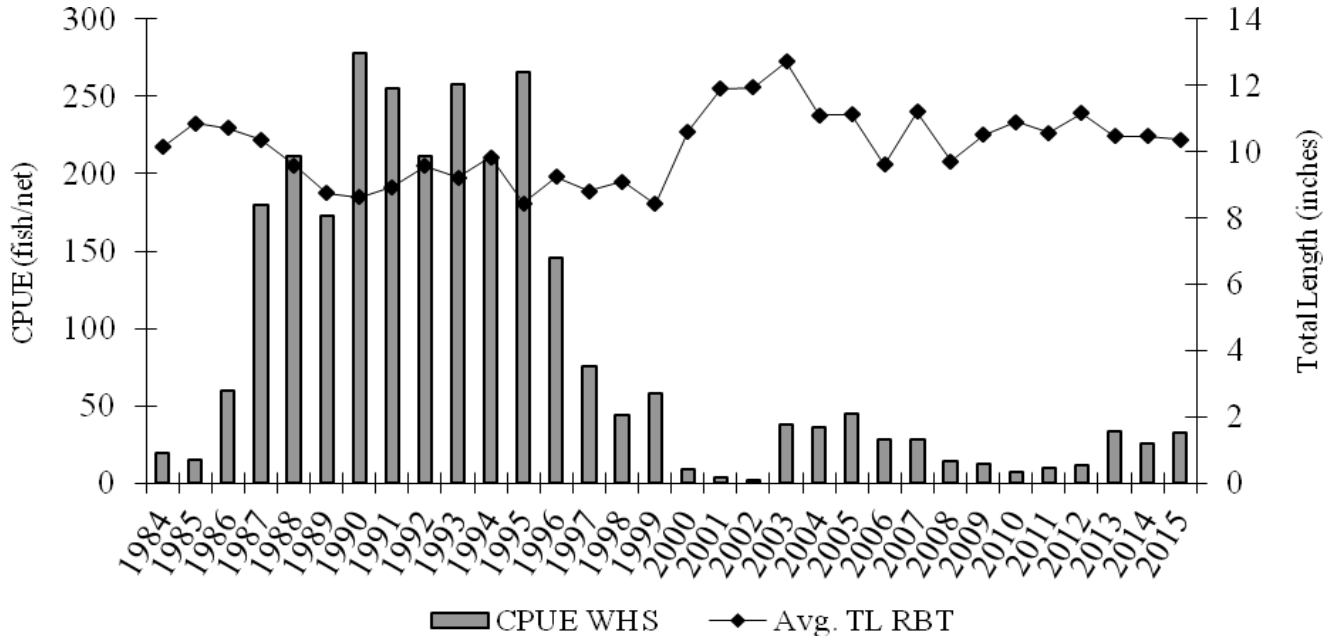


Table 3.- Summary of relative abundance (catch per unit effort (CPUE)), total length (TL), and relative weights of fishes collected in fall gillnetting surveys in Bear Paw Lake since chemical rehabilitation in 1983.

| | | | Rainbow Trout | | | Brook Trout | | | Yellowstone Cutthoat Trout | | | White Sucker | | | Smallmouth Bass | | | Walleye | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | | Nets | CPUE (fish/net) | Ave TL (in.) | Rel Wt | CPUE (fish/net) | Ave TL (in.) | Rel Wt | CPUE (fish/net) | Ave TL (in.) | Rel Wt | CPUE (fish/net) | Ave TL (in.) | Rel Wt | CPUE (fish/net) | Ave TL (in.) | Rel Wt | CPUE (fish/net) | Ave TL (in.) | Rel Wt |
| Sep-84 | 1984 | 2 | 0.00 | -- | -- | 0.00 | -- | -- | 15.50 | 10.13 | 86.34 | 13.50 | 8.00 | -- | -- | -- | -- | -- | -- | -- |
| Sep-85 | 1985 | 3 | 1.33 | 12.03 | 97.49 | 1.00 | 9.05 | 109.72 | 27.33 | 11.50 | 86.83 | 6.33 | -- | -- | -- | -- | -- | -- | -- | -- |
| Sep-86 | 1986 | 3 | 0.00 | -- | -- | 3.33 | 10.41 | 106.78 | 16.67 | 11.01 | 86.45 | 94.33 | 6.40 | -- | -- | -- | -- | -- | -- | -- |
| Sep-87 | 1987 | 3 | 17.00 | 11.27 | 93.31 | 3.00 | 10.31 | 103.48 | 25.67 | 9.52 | 86.21 | 192.67 | 7.00 | -- | -- | -- | -- | -- | -- | -- |
| Aug-88 | 1988 | 3 | 9.33 | 10.66 | 83.05 | 1.33 | 10.48 | 100.24 | 9.00 | 7.60 | 90.08 | 210.33 | 11.67 | 93.74 | -- | -- | -- | -- | -- | -- |
| Sep-89 | 1989 | 3 | 15.33 | 8.64 | 88.09 | 0.67 | 9.50 | 106.91 | 19.33 | 8.08 | 85.50 | 173.67 | 8.00 | -- | -- | -- | -- | -- | -- | -- |
| Aug-90 | 1990 | 3 | 9.00 | 9.95 | 81.94 | 0.33 | 7.20 | 86.56 | 22.33 | 8.71 | 77.85 | 277.67 | 8.00 | -- | -- | -- | -- | -- | -- | -- |
| Aug-91 | 1991 | 3 | 4.00 | 10.23 | 88.55 | 0.67 | 7.45 | 104.75 | 15.00 | 9.12 | 85.36 | 255.33 | 8.00 | -- | -- | -- | -- | -- | -- | -- |
| Sep-92 | 1992 | 3 | 17.00 | 9.83 | 90.97 | 0.33 | 10.10 | 90.14 | 58.67 | 8.79 | 77.22 | 212.00 | 8.00 | -- | -- | -- | -- | 0.33 | 13.90 | 97.61 |
| Sep-93 | 1993 | 3 | 0.00 | -- | -- | 0.33 | 9.30 | 105.94 | 6.00 | 9.15 | 81.65 | 258.33 | 8.00 | -- | 0.00 | -- | -- | 0.00 | -- | -- |
| Sep-94 | 1994 | 3 | 6.33 | 10.59 | 101.87 | 0.00 | -- | -- | 13.67 | 9.09 | 79.87 | 208.67 | 8.00 | -- | 0.00 | -- | -- | 0.00 | -- | -- |
| Sep-95 | 1995 | 2 | 21.50 | 9.07 | 92.20 | 0.00 | -- | -- | 89.50 | 7.82 | 81.30 | 399.00 | 8.00 | -- | 1.00 | 5.80 | 111.70 | 0.00 | -- | -- |
| Sep-96 | 1996 | 3 | 1.67 | 10.36 | 102.97 | 0.33 | 8.40 | 90.25 | 60.67 | 8.94 | 85.64 | 146.00 | 8.80 | -- | 0.67 | 6.80 | 96.44 | 1.33 | 8.73 | 81.46 |
| Sep-97 | 1997 | 3 | 24.67 | 9.16 | 93.58 | 0.00 | -- | -- | 26.00 | 8.47 | 80.26 | 76.00 | 10.00 | -- | 0.67 | 9.90 | 103.82 | 1.00 | 7.73 | 72.03 |
| Sep-98 | 1998 | 3 | 10.00 | 9.34 | 86.71 | 0.00 | -- | -- | 3.67 | 8.84 | 72.68 | 44.33 | 12.02 | 84.89 | 0.33 | 6.00 | 90.19 | 1.33 | 8.43 | 80.59 |
| Sep-99 | 1999 | 3 | 43.33 | 8.31 | 97.60 | 0.00 | -- | -- | 19.33 | 8.54 | 79.14 | 57.33 | 12.00 | -- | 0.00 | -- | -- | 1.33 | 10.43 | 83.95 |
| Sep-00 | 2000 | 2 | 46.00 | 11.36 | 97.54 | 1.50 | 9.67 | 98.77 | 20.00 | 10.81 | 80.53 | 14.00 | 12.00 | -- | 6.00 | 9.76 | 103.09 | 3.50 | 11.30 | 88.39 |
| Sep-01 | 2001 | 2 | 11.00 | 13.39 | 98.99 | 6.50 | 11.36 | 101.16 | 15.00 | 10.91 | 81.14 | 6.00 | 8.00 | -- | 2.00 | 10.83 | 102.66 | 0.00 | -- | -- |
| Sep-02 | 2002 | 2 | 19.50 | 12.58 | 98.57 | 0.00 | -- | -- | 6.50 | 11.31 | 83.45 | 3.00 | 13.52 | 99.67 | 0.00 | -- | -- | 2.00 | 19.50 | 82.57 |
| Sep-03 | 2003 | 3 | 16.33 | 12.72 | 94.32 | 0.00 | -- | -- | 0.00 | -- | -- | 37.67 | 8.00 | -- | 5.67 | 12.21 | 112.80 | 1.00 | 19.60 | 101.96 |
| Sep-04 | 2004 | 3 | 13.33 | 11.11 | -- | 0.00 | -- | -- | 0.00 | -- | -- | 36.67 | 12.60 | -- | 0.33 | 14.50 | -- | 0.67 | 20.45 | -- |
| Sep-05 | 2005 | 3 | 24.67 | 11.12 | 92.19 | 0.00 | -- | -- | 0.33 | -- | -- | 44.67 | 13.14 | 99.05 | 5.67 | 9.07 | 112.75 | 1.33 | 20.53 | 101.17 |
| Sep-06 | 2006 | 3 | 32.00 | 10.62 | 98.00 | 0.00 | -- | -- | 0.67 | 9.35 | 96.10 | 28.00 | 15.31 | 108.20 | 9.00 | 9.84 | 109.80 | 0.33 | 15.40 | 104.20 |
| Sep-07 | 2007 | 3 | 13.33 | 11.20 | 96.30 | 0.00 | -- | -- | 2.33 | 9.20 | 80.90 | 28.00 | 13.40 | 102.30 | 9.00 | 9.00 | 115.70 | 4.33 | 7.60 | 96.10 |
| Sep-08 | 2008 | 3 | 30.33 | 9.73 | 94.58 | 0.00 | -- | -- | 7.67 | 9.03 | 84.95 | 14.00 | 14.12 | 108.86 | 5.67 | 10.94 | 147.97 | 5.00 | 8.07 | 97.96 |
| Sep-09 | 2009 | 3 | 9.66 | 10.50 | 73.45 | 0.33 | 10.00 | 100.88 | 9.00 | 9.33 | 62.37 | 12.33 | 14.58 | 95.00 | 7.66 | 11.31 | 104.73 | 2.66 | 10.25 | 80.07 |
| Sep-10 | 2010 | 3 | 14.33 | 10.90 | 104.35 | 0.33 | 10.00 | 111.49 | 0.00 | -- | -- | 7.67 | 13.80 | 104.10 | 1.67 | 8.94 | 117.20 | 6.00 | 10.62 | 98.00 |
| Aug-11 | 2011 | 3 | 26.33 | 10.56 | 98.91 | 0.33 | 10.60 | 106.02 | 0.00 | -- | -- | 10.00 | 14.28 | 102.92 | 0.00 | -- | -- | 0.67 | 12.40 | 103.88 |
| Sep-12 | 2012 | 3 | 34.67 | 11.15 | 99.37 | 1.33 | 9.73 | 99.80 | 0.00 | -- | -- | 12.00 | 12.26 | 103.03 | 0.66 | 10.80 | 106.63 | 1.66 | 14.90 | 102.83 |
| Sep-13 | 2013 | 3 | 24.00 | 10.47 | 146.81 | 0.66 | 8.55 | 98.05 | 0.00 | -- | -- | 33.33 | 12.79 | 106.65 | 1.66 | 12.20 | 104.72 | 0.33 | 17.10 | 109.51 |
| Sep-14 | 2014 | 3 | 52.30 | 10.46 | 97.25 | 4.00 | 10.05 | 90.72 | 0.00 | -- | -- | 25.70 | 13.01 | 98.94 | 0.33 | 12.90 | 106.22 | 0.00 | -- | -- |
| Sep-15 | 2015 | 3 | 55.67 | 10.36 | 91.26 | 0.00 | -- | -- | 0.00 | -- | -- | 33.00 | 12.18 | 94.10 | 0.33 | 12.90 | 107.95 | 0.00 | -- | -- |

Table 4. Stocking summary of rainbow trout, Yellowstone cutthroat trout, smallmouth bass, and walleye in Bearpaw Lake, 1984-2015. Strains include A-Arlee I- Eagle Lake D- Lake DeSmet M- McBride Lake G- Goose Lake.

| | Rainbow Trout | | | Yellowstone Cutthoat Trout | | | Smallmouth Bass | | Walleye | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date | # Stocked | Strain | Month | # Stocked | Strain | Month | # Stocked | Month | # Stocked | Month |
| 1984 | -- | -- | -- | 21,234 | M | April/Sept. | -- | -- | -- | -- |
| 1985 | -- | -- | -- | 8,120 | M | May/Aug. | -- | -- | -- | -- |
| 1986 | -- | -- | -- | 12,727 | M | June/Sept. | -- | -- | -- | -- |
| 1987 | 13,008 | D and I | April/Sept. | 19,248 | M | April/Sept. | -- | -- | -- | -- |
| 1988 | 8,018 | I | Sept. | 28,904 | M | April/Sept. | -- | -- | -- | -- |
| 1989 | 500 | | May | 6,000 | M | May | -- | -- | -- | -- |
| 1990 | -- | -- | -- | 5,025 | M | May | -- | -- | -- | -- |
| 1991 | 9,965 | A | Sept. | 7,574 | M | May | -- | -- | -- | -- |
| 1992 | 6,879 | A | Sept. | 8,023 | M | May | 25,000 | Aug. | -- | -- |
| 1993 | 11,040 | A | Sept. | 5,058 | M | May | 41,250 | July/Aug. | -- | -- |
| 1994 | 9,394 | A | Sept. | 5,040 | M | May | 23,995 | July/Aug. | -- | -- |
| 1995 | -- | -- | -- | 10,064 | M | May | -- | -- | 5,000 | June |
| 1996 | 11,398 | A | Sept. | 9,997 | M | May | 20,000 | July | 4,000 | June |
| 1997 | 13,448 | A | Sept. | 8,924 | M | May | 5,000 | Aug. | 6,000 | June |
| 1998 | 13,904 | A | Sept. | 5,047 | M | May | 5,000 | July | -- | -- |
| 1999 | 17,160 | A | June | 4,048 | M | May | -- | -- | -- | -- |
| 2000 | 4,995 | A | Sept. | 3,973 | M | May | -- | -- | -- | -- |
| 2001 | 10,000 | A | Sept. | 3,991 | M | May | -- | -- | -- | -- |
| 2002 | 10,700 | A | Sept. | 4,320 | M | May | -- | -- | -- | -- |
| 2003 | 15,215 | A | Sept. | 4,200 | M | May | -- | -- | -- | -- |
| 2004 | 12,549 | A | Sept. | 4,384 | M | May | -- | -- | -- | -- |
| 2005 | 14,520 | A | Sept. | 5,600 | M | May | -- | -- | -- | -- |
| 2006 | 12,628 | A | Sept. | 6,214 | M | April/May | -- | -- | 5,112 | Sept. |
| 2007 | 20,000 | A and I | Sept. | 8,127 | M | May | -- | -- | -- | -- |
| 2008 | 15,000 | A | Sept. | 7,293 | G | May | -- | -- | -- | -- |
| 2009 | 15,000 | A | Sept. | 5,024 | G | May | -- | -- | -- | -- |
| 2010 | 5,000 | I | June | -- | -- | -- | -- | -- | -- | -- |
| 2011 | 5,104 | I | June | -- | -- | -- | -- | -- | -- | -- |
| 2012 | 15,828 | A | Sept./Nov. | -- | -- | -- | -- | -- | -- | -- |
| 2013 | 20,000 | A | Sept./Nov. | -- | -- | -- | -- | -- | -- | -- |
| 2014 | 20,536 | A | June/Sept. | -- | -- | -- | -- | -- | -- | -- |
| 2015 | 20,328 | A and I | May/Sept. | -- | -- | -- | -- | -- | -- | -- |

Table 5. - Numbers of white suckers removed from Bearpaw Lake by trap netting and fall gill netting, 1989-2015.

| Year | Number Trap Netting | Number Gill netting | Total Number | Total Pounds |
|---|---|---|---|---|
| 1989 | 12,545 | 521 | 13,066 | 9,359.19 |
| 1990 | 44,622 | 833 | 45,455 | 10,396.52 |
| 1991 | 18,140 | 766 | 18,906 | 4,932.86 |
| 1992 | 4,133 | 636 | 4,769 | 955.42 |
| 1993 | 5,239 | 775 | 6,014 | 1,205.33 |
| 1994 | 6,995 | 626 | 7,621 | 882.49 |
| 1995 | 5,653 | 798 | 6,451 | 2,396.44 |
| 1996 | 1,991 | 438 | 2,429 | 817.39 |
| 1997 | 13,485 | 228 | 13,713 | 8,227.80 |
| 1998 | 6,708 | 133 | 6,841 | 5,309.22 |
| 1999 | 8,239 | 172 | 8,411 | 7,614.72 |
| 2000 | 2,225 | 28 | 2,253 | 2,591.20 |
| 2001 | 331 | 12 | 343 | 562.69 |
| 2002 | 17 | 6 | 23 | 21.65 |
| 2003 | 1,564 | 113 | 1,677 | 2,362.17 |
| 2004 | 222 | 110 | 332 | 418.32 |
| 2005 | 1,895 | 134 | 2,029 | 2,311.74 |
| 2006 | 1,893 | 84 | 1,977 | 2,491.02 |
| 2007 | 1,705 | 84 | 1,789 | 2,111.02 |
| 2008 | 560 | 42 | 602 | 818.72 |
| 2009 | 175 | 37 | 212 | 290.44 |
| 2010 | 104 | 23 | 127 | 173.99 |
| 2011 | 310 | 30 | 340 | 418.20 |
| 2012 | 409 | 36 | 445 | 547.35 |
| 2013 | 641 | 100 | 741 | 911.43 |
| 2014 | 1,560 | 77 | 1,637 | 2,013.51 |
| 2015 | 1,392 | 99 | 1,491 | 1,491.00 |
| Totals | 142,753 | 6,941 | 149,694 | 71,631 |

## Blaine County Ponds

Ponds throughout Blaine County were sampled using gill and trap nets to assess species composition, relative abundance, and size distribution of fish or the voluntary creel boxes were maintained.

### *Choteau Reservoir*

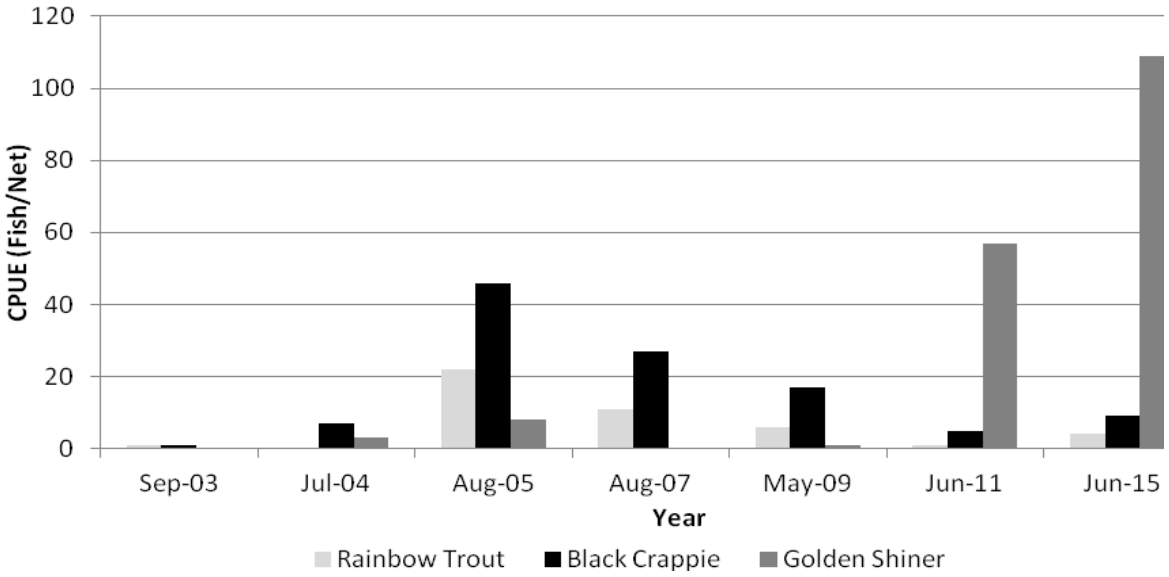
Choteau Reservoir is located in north central Blaine County and contains a rainbow trout and black crappie fishery. Black crappies were introduced in 2002. The reservoir is currently maintained with biennial plants of 1,500 fingerling rainbow trout. Choteau also has a windmill aerator system to assist with over winter survival of fish.

In 2005, a voluntary creel box was erected to determine fishing pressure, angler success, and angler satisfaction, the creel box was maintained in 2015. Choteau Reservoir experienced a partial winterkill in 2011 as water levels were very low (max depth 7ft.) and aquatic vegetation was abundant.

In 2011, two trap nets and one gill net were set overnight to indicate the severity of winterkill, effects of flushing due to high spring runoff, and to disease test black crappie for trap and transfer purposes. The trap and gill nets contained black crappie, rainbow trout, fathead minnows, and golden

shiners (Figure 2). In 2015, one gill net contained four rainbow trout ($\bar{x}$ TL=17.85), nine black crappie ($\bar{x}$ TL=6.92), and 109 golden shiners (Figure 2). One trap net contained three black crappie, 285 golden shiner, and 1180 fathead minnows.

Figure 2. - Relative abundance of rainbow trout, black crappie, and golden shiner in Choteau Reservoir based on gill netting surveys from 2003 to 2015.



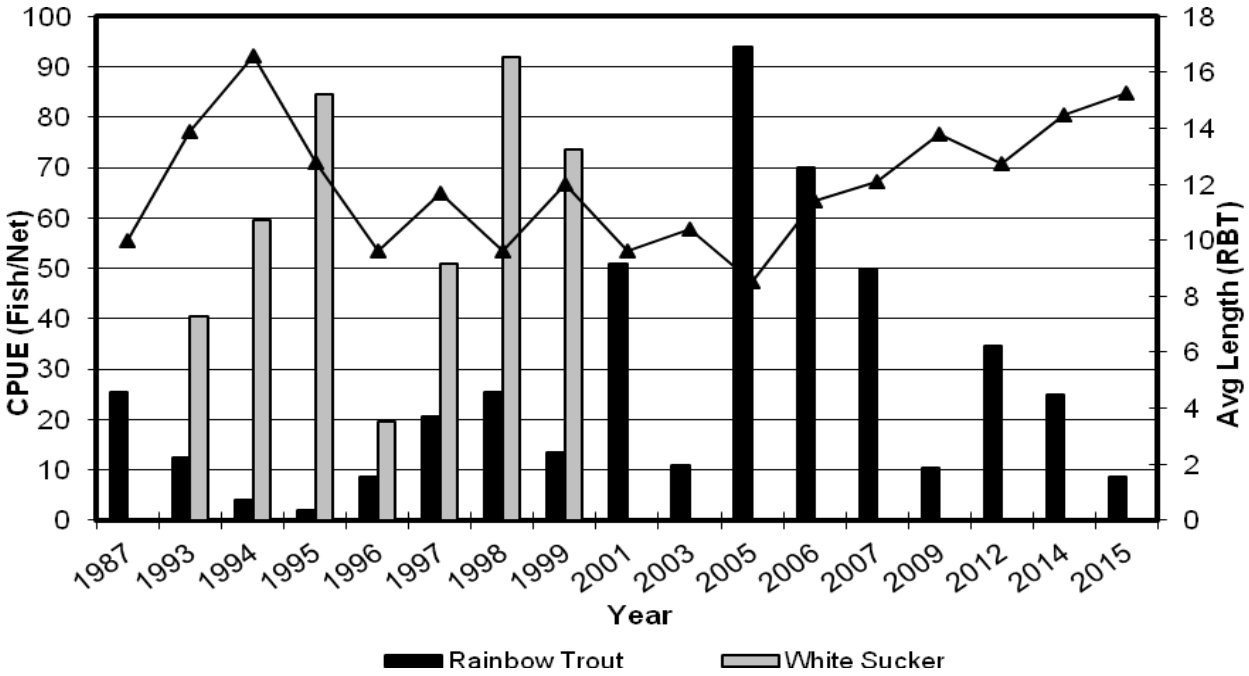

***Faber Reservoir***

Faber Reservoir, a 25 surface-acre reservoir located 30 miles south of Chinook near Cleveland is a very popular fishing access site in north central Montana. This reservoir became a fishing access site in 1986 and the contract was renewed in 2006 for another 20 years. Faber reservoir ranked 20$^{th}$ in the region for fishing pressure in 2013/2014, with a total of 1,422 (± 621) angler days. Faber has been a consistent producer of quality rainbow trout for three decades.

This reservoir was successfully rehabilitated in 2000 due to the illegal introduction of largemouth bass and white suckers. Fingerling Arlee rainbow trout were re-stocked in the spring of 2001 and approximately 10,000 fingerling trout are stocked annually. In 2004, Faber received an additional 10,000 fingerling rainbow trout. In 2007 a partial summer kill of rainbow trout was reported.

Since the rehabilitation in 2000, rainbow trout densities have been very good (Figure 3). Surveys conducted in 2015 suggest rainbow trout densities decreased significantly from 2014. Rainbow trout relative abundance was 8.5 fish/net, the lowest since 1996 (Figure 3). The lower trout densities translated into the highest average length ($\bar{x}$ TL=15.24) observed since 1994 (Figure 3).

Figure 3. - Relative abundance of rainbow trout and white sucker, and average length of rainbow trout in Faber Reservoir based on gill netting surveys from 1987 to 2015.




***Grasshopper Reservoir***

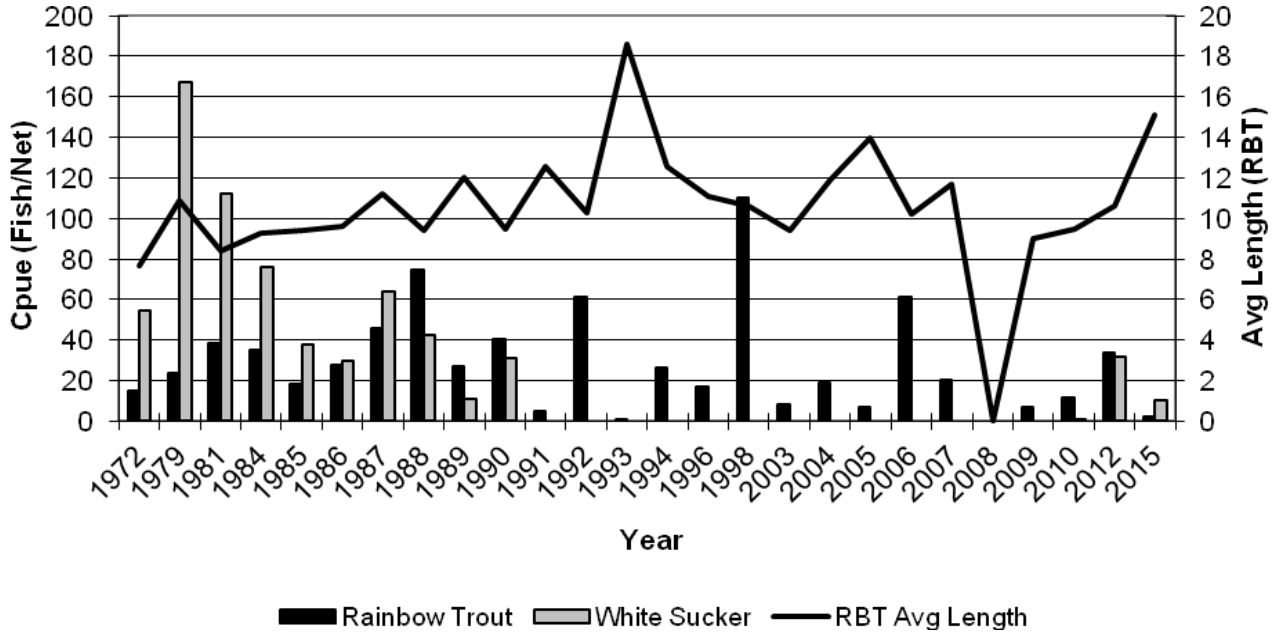
Grasshopper Reservoir is a privately owned 19 surface-acre reservoir located approximately 12 miles south of Chinook. Grasshopper Reservoir was first stocked with rainbow trout in 1947 and trout have exhibited good growth and survival rates in this reservoir. Grasshopper is currently maintained with annual plants of 2,500 fingerling Arlee rainbow trout and biennial plants of 3,000 advanced fingerling Eagle Lake rainbow trout. In 2011, FWP and S Bar B Ranch entered into a 5-year agreement through the Private Lands Public Fishing program to ensure public access to the reservoir remains. In return FWP provided $7,800 to upgrade the access road across the dam.

Grasshopper experienced a winterkill in 2007/2008. Anglers who filled out creel cards reported catching no fish during late ice (n=2) and one reported seeing over 100 dead trout along the east bank. In the spring of 2008 heavy rains raised water levels and the reservoir received a supplemental stocking of 2,500 Arlee rainbow trout.

White suckers were chemically removed in 1991 and were undetected in netting surveys until 2010 when one white sucker (TL=7.4; WT=0.16lbs.) was captured. White suckers have since established themselves within the reservoir and are successfully reproducing (Figure 4). Tiger muskie were stocked in 2013 as a biological control on the white sucker population, their impact is undetermined at this time and no tiger muskie were observed during our surveys in 2015.

In 2012 rainbow trout relative abundance climbed to 33.5 fish/net with an average length of 10.6 inches (Figure 4). Rainbow trout relative abundance dropped to 2 fish/net in 2015 with an average length of 15.13 inches (Figure 4).

Figure 4. - Relative abundance of rainbow trout and white suckers and average total length of rainbow trout in Grasshopper reservoir based on gill netting surveys from 1972 to 2015.




***HC Kuhr Reservoir***

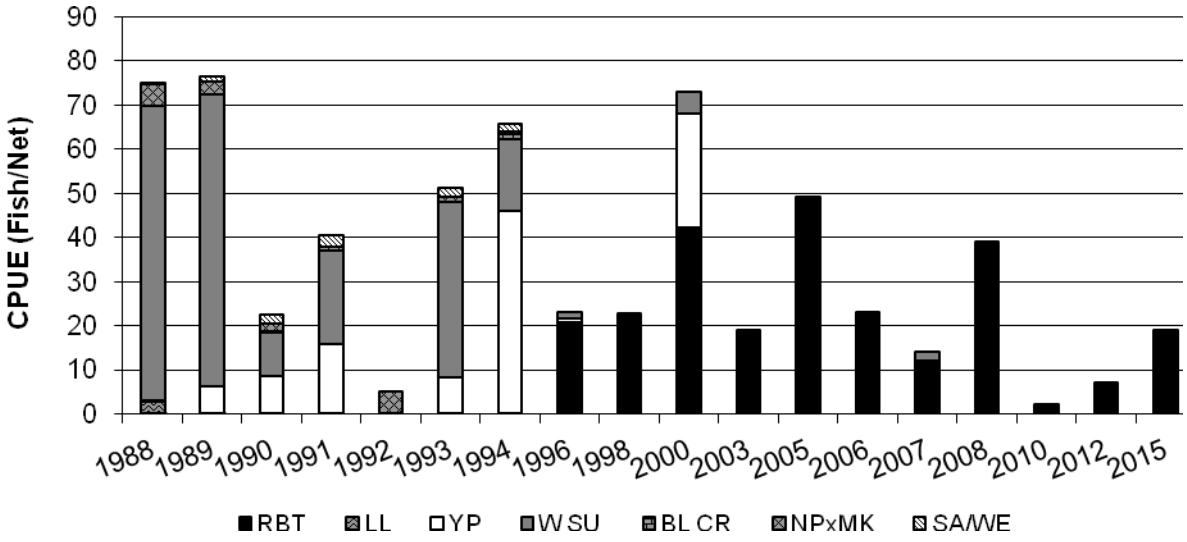
H.C. Kuhr reservoir is a 25 surface-acre reservoir located on private land south of Chinook. H.C. Kuhr has been open to public fishing since the 1960s and was entered into a 10-year contract under the Private Lands Fishing Access program in 2005. H.C. Kuhr is currently managed as a rainbow trout fishery with annual stocks of 3,000 4-inch trout (Arlee). In 2012, Gordon Cattle Co. received $25,000 through the Community Pond Program to reconstruct the earthen spillway at H.C. Kuhr Reservoir and line it with geo-textile fabric and small rip rap.

Prior to 1996, the reservoir was managed as a warm water fishery with varying densities of black crappie, yellow perch, tiger muskie, walleye, sauger, and white suckers (Figure 5). In 1996 as a result of decreased white sucker populations, rainbow trout abundance began to increase. In 2003, drought all but dewatered H.C. Kuhr and the opportunity to kill off a remnant yellow perch, tiger muskie, and white sucker population presented itself. The reservoir was restocked in 2003 and closed to fishing until 2004. When the fishery reopened in 2004, there were reports of 3 to 4 pound rainbow trout being caught in the reservoir.

Since the restoration in 2003, the fishery has been monitored using summer gill netting surveys. In addition, a voluntary creel box was erected in 2005 to assess fishing pressure and angler success rates.

Netting surveys conducted in 2015 suggests the rainbow trout population is stable to slightly increasing. One gill net captured 19 rainbow trout averaging 12.1 inches and 1.0 lbs. (Figure 4). One trap net captured 64 brassy minnows, 6 creek chubs, 230 fathead minnows, 10 brook stickleback, and one white sucker.

Figure 5.- Relative abundance of rainbow trout (RBT), brown trout (LL), white sucker (W SU), black crappie (BL CR), tiger muskie (NPxMK), and sauger/walleye (SA/WE) in H.C. Kuhr based on gillnetting data from 1988 to 2015. Rehabilitation of this reservoir and restocking of rainbow trout occurred in 2003.




***Ross Reservoir***

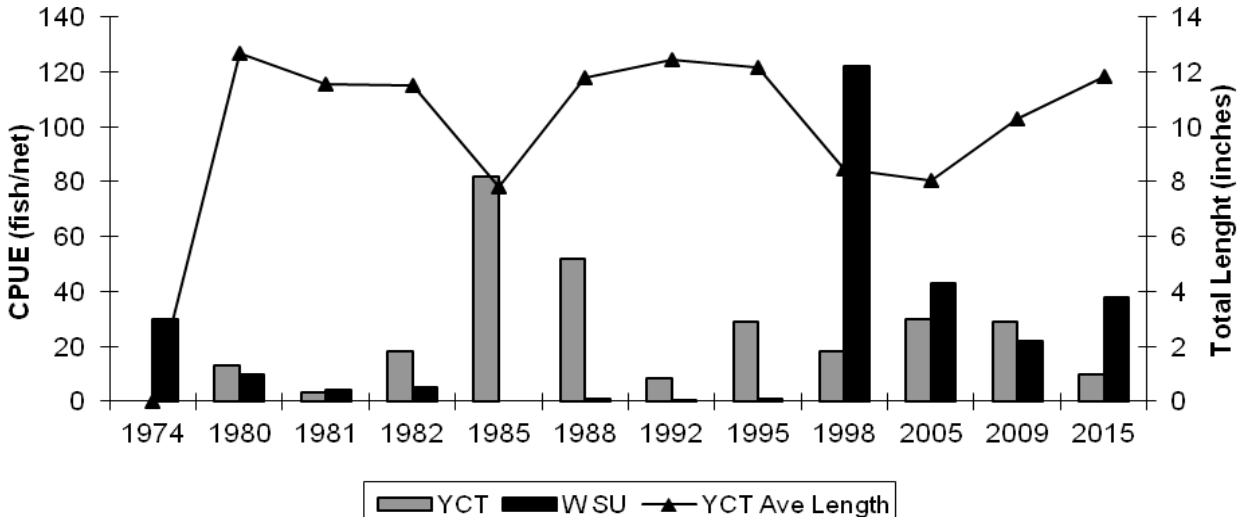
Ross Reservoir is located in the Bearpaw Mountains on Wind Creek. This is a privately owned reservoir, which was managed as a rainbow trout fishery from 1953 to 1974 at which point it was switched to a Yellowstone cutthroat trout fishery.

The fishery is currently maintained with biennial stocks of 2,000 catchable size cutthroat trout. This beautiful mountain cutthroat fishery and Wind Creek were rehabilitated in 2000 to rid it of white suckers. It was closed in 2001 to allow fish to grow to acceptable size. Fishermen were not disappointed when the pond was opened in May of 2002. Good catches of 13-15-inch cutthroat were made. However, this pond is again plagued with a white sucker problem (Figure 6), most likely as a result of the use of illegal live bait or inefficient rehabilitation efforts. The abundance of white suckers has a negative impact on the growth of Yellowstone cutthroat trout (Figure 4) and will have to be dealt with.

In 2006, trap nets were set to remove white suckers and assess the size and distribution of white suckers in the reservoir. Four traps (3' x 4' with ¼" mesh) were set for two nights and a total of 581 white suckers were removed. This effort was applied again in 2015 over the course of two weeks in October and a total of 6,980 white suckers were removed from the reservoir. In an attempt to control white sucker population levels within the reservoir tiger musky (n=6, $\bar{x}$ TL=6.0 in.) were introduced in 2007. However none of these tiger muskie have been observed during our netting efforts and/or have been reported as caught by anglers or the landowner.

In 2015, one gill net and one trap net were set overnight. The gill net captured 10 cutthroat ($\bar{x}$ TL=11.84 in.) and 38 white sucker ($\bar{x}$ TL=11.3 in.) whereas the trap net contained 15 cutthroat ($\bar{x}$ TL=10.81 in.) and 149 white suckers ranging from 3 to 15 inches. The white sucker population in Ross Reservoir is established, reproducing, and at high densities. However, their impacts on the current cutthroat trout population aren't easily distinguished. The reduction in cutthroat stocking frequency may have alleviated some of the interspecific competition between these two species and reduced the intraspecific competition among the cutthroat population.

Figure 6. - Comparisons of gill net catch rates (CPUE) of Yellowstone cutthroat trout (YCT), white suckers (W SU) and average length of Yellowstone cutthroat trout (YCT), (1974 to 2015).




**Phillips County Ponds**

Ponds throughout Phillips County were sampled using gill and trap nets to assess species composition, relative abundance, and size distribution of fish or the voluntary creel boxes were maintained.

***Rebate Reservoir***

Rebate is BLM reservoir located in a deep coulee off of Rock Creek and is surrounded by pine trees. This reservoir has been managed as a rainbow trout fishery since 1996. The fishery was maintained from 1996 to 2001 with annual plants of 1,000 fingerling rainbow trout. In 2002, one stocking of brown trout occurred and the plants of rainbow trout were reduced to occur every three years. In 2004, an additional 1,000 rainbow trout were stocked in the fall.

In the summer 2010, water levels were excellent and the reservoir was full. Gill netting surveys indicated good survival and growth of stocked rainbow trout (relative abundance 6 fish/net; $\bar{x}$ TL=16.2 in.; $\bar{x}$ WT=1.65 lbs.). The trap net contained one rainbow trout (TL=5.1; WT=.06). Water conditions have remained good and netting surveys conducted in 2015 collected 18 rainbow trout ( $\bar{x}$ TL=11.8 in.; $\bar{x}$ WT=0.58 lbs.).

***Rotator Cup Reservoir***

Rotator Cup is a BLM pond that has been managed as a rainbow trout fishery since 1996, maintained with biennial plants of 1,000 fingerling rainbow trout and stocking records ondicate it was last stocked in 2006. Water levels have been maintained by summer rains and have remained good. In 2010, rainbow trout relative abundance was 9 fish/gill net ( $\bar{x}$ TL=16.3 in.; $\bar{x}$ WT=1.70) and the trap net contained one rainbow trout (TL=15.3; WT=1.74). In 2015 no fish were collected during our netting surveys.

***Shallow Reservoir***

Shallow reservoir is located on BLM land and has been managed as a rainbow trout fishery since 1994. The fishery is currently maintained with biennial plants of 1,000 fingerling rainbow trout. Survival of rainbow trout has been fair and may be due to fluctuations in water levels. In 2005, the relative abundance of rainbow trout was 3 fish/net ($\bar{x}$ TL=10.3 inches). In 2009 relative abundance increased to 17 fish/net ($\bar{x}$ TL=8.9 inches). One trap net set overnight captured four rainbow trout ($\bar{x}$ TL=10.2 inches) and 270 fathead minnows. In 2015 rainbow trout relative abundance decreased to 11 fish/net ($\bar{x}$ TL=13.7 inches) and one trap net contained one rainbow trout $\bar{x}$ TL=4.3 inches) and 450 fathead minnows.

***Wrangler Reservoir***

Wrangler reservoir is located on BLM land and has been managed as a rainbow trout fishery since 1980 and for channel catfish since 2001. The fishery is currently maintained with annual plants of 1,500 fingerling rainbow trout. Water levels have been good in recent years and a windmill aeration system was installed in 2000 in an effort to increase over winter survival. In 2005, a voluntary creel box was erected and by 2006, the box was destroyed by cattle and not replaced.

In 2015, one gill net sampled 34 rainbow trout ($\bar{x}$ TL=7.7 in.; $\bar{x}$ WT=0.25 lbs.) and no channel catfish. One trap net was also set and captured 1 rainbow trout (TL=6.5 in.; WT=0.12 lbs.).

## RECOMMENDATIONS

***Beaver Creek Reservoir:*** Continue annual stocking of up to 50,000 catchable size Arlee rainbow trout. Continue to monitor fishery annually with the use of seining and gill netting at fixed sites. Continue to monitor the impacts to the fishery during extreme water years and impacts of entrainment over the spillway.

***Bearpaw Lake:*** Continue annual stocking of 15,000 catchable size Arlee and 5,000 Eagle Lake rainbow trout. Add additional walleye stockings to supplement the population to assist with the control of a high-density white sucker population. Continue manual removal of adult suckers by trapping and/or electrofishing in the spring, and gill netting in the fall. Continue to monitor fishery annually with the use of fall gill netting at fixed stations.

***Blaine County Ponds:*** Monitor ponds every two to three years to assess survival and growth of stocked fish. Attempt to establish riparian fencing at Salmo Reservoir to prevent over grazing of shoreline vegetation to improve the fisheries and water quality. Also, continue public education program alerting the public to the problems associated with the use of live bait (where illegal) and illegal dumping of fish into Montana waters. Continue to look for other ponds with suitable habitats to create new fisheries, work with area wardens and landowners to help identify potential ponds.

***Phillips County Ponds:*** Monitor ponds every two to three years to assess survival and growth of stocked fish. Attempt to establish riparian fencing at Karsten Coulee Reservoir to prevent over grazing of shoreline vegetation to improve the fisheries and water quality. Continue to look for other ponds with suitable habitats to create new fisheries, work with area wardens and landowners to help identify potential ponds.

**Waters Codes:**

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|---|---|
| 150280 | Beaver Creek Section 01 |
| 150320 | Beaver Creek Section 02 |
| 150340 | Beaver Creek Section 03 |
| 154770 | Beaver Creek Reservoir |
| 154560 | Bearpaw Lake |
| 154745 | Choteau Reservoir |
| 155140 | Faber Reservoir |
| 155380 | Grasshopper Reservoir |
| 155880 | H.C. Kuhr Reservoir |
| 167750 | Rebate Reservoir |
| 159160 | Ross Reservoir |
| 167979 | Rotator Cup Reservoir |
| 168255 | Shallow Reservoir |
| 168990 | Wrangler Reservoir |

**Key Words or Fish Species:**

Arlee; Eagle Lake; Erwin; rainbow trout, Yellowstone cutthroat trout; brown trout; brook trout; mottled sculpin; longnose dace; mountain sucker; fathead minnow; lake chub; white sucker; white sucker control; smallmouth bass; walleye; northern pike; largemouth bass; yellow perch;

**Literature Cited**

MTFWP Fisheries Bureau. 2014. 2013/2014 Statewide Angling Pressure Use Report. Montana Fish, Wildlife, & Parks,
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