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Northcentral Montana Coldwater Lake Ecosystems

2003 Annual Report

by

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ABSTRACT

Eight waters were sampled in the Lewistown Area. Drought resulted in very low water in several reservoirs. In Ackley Lake, rainbow trout catch in gill nets was excellent. Rainbow trout (*Oncorhynchus mykiss)* and combined white suckers (*Catostomus commersoni*) and longnose suckers (*Catostomus catostomus*) were captured at record high levels. At Bair Reservoir, white sucker catch in gill nets was the highest seen since 1996. Rainbow trout catch was at the lowest level recorded for over 15 years, but catch rates were still 15 rainbow trout per net. Rainbow trout in Bair Reservoir continue to have low relative weights. Martinsdale Reservoir was netted for the first time since 1999. Catch rates of rainbow trout were the highest seen since 1994 and white sucker numbers were the lowest since 1995. The white sucker removal completed in 2001 at Big Casino Reservoir continues to benefit the rainbow trout fishery but the illegally introduced yellow perch are becoming more abundant. There appears to be a large 2003 year class of yellow perch. By fall 2003, rainbow trout relative weight had declined to pre-removal levels and mean rainbow trout length had declined by about 2 inches. The Upper Frog Pond, a Lewistown City Park, was dredged and stocked with catchable rainbow trout.

In the Great Falls Area, monofilament experimental gill nets were fished overnight on Hidden and Grace Lakes in Meagher County in 2003. Eighteen rainbow trout were sampled in Hidden Lake (average length 11.4 inches), and 8 Yellowstone cutthroat trout *(Oncorhynchus clarki bouvieri)* were sampled in Grace Lake (average length 14.3 inches). In addition to gill net surveys, angler sampling was conducted on each lake. In three angler hours, two rainbow trout were caught in Hidden Lake. Nine Yellowstone cutthroat trout were caught in 7.1 hours of fishing (three anglers) in Grace Lake. Kolar ponds near Geyser were surveyed in 1996 and 2003. White sucker was the most common species captured in all ponds. Rainbow trout and Yellowstone cutthroat trout were also captured. One northern pike *(Esox lucius),* illegally stocked, was captured in 1996 in Kolar #2, but pike were not found in 2003 sampling. Two (one floating and one sinking) multifilament experimental gill nets were fished overnight in Newlan Creek Reservoir and Smith River Reservoir on 1 October 2003. The gill nets sampled five species of fish in Newlan Creek Reservoir, longnose sucker being the most abundant. Rainbow trout catch rates were similar to the long-term average, and catch rates for Yellowstone cutthroat trout, burbot *(Lota lota),* and longnose suckers were below the long-term average. Five species of fish were sampled in Smith River Reservoir, and longnose sucker was the most abundant species. The catch rate of rainbow trout was approximately one third of the long-term average, but the average length of rainbow trout was 1.6 inches longer than the long-term average. The longnose sucker catch rate was below the long-term average, white sucker catch rates were similar to the long-term average, and burbot catch rates were higher than the long-term average.

Annual survey netting was completed on six waters in the Choteau area during 2003. Aeration was again used on Bean Lake to promote survival of stocked rainbow trout, but spring sampling indicated a further decline in this fishery. Kamloops-strain rainbow trout stocked in Bean Lake during 2003 exhibited excellent survival and growth. White suckers accounted for 98% of trap net catches in Diversion Lake, averaging 175.3 per trap net night. Eureka Reservoir was not sampled in 2003 because of low water conditions. Electrofishing and trap net surveys of Arctic grayling *(Thymallus arcticus)* in Gibson Reservoir and the South Fork of the Sun River indicated a decline in this introduced population. Catch per unit effort of rainbow trout in Nilan and Willow Creek reservoirs averaged 34.0 and 17.5 per net, respectively. Net catches in both reservoirs consisted of multiple year classes of stocked rainbow trout. Body condition of rainbow trout sampled in Nilan Reservoir was relatively poor and exhibited a declining trend since peaking in 2001. Expanding white sucker populations in Nilan and Willow Creek reservoirs may be limiting growth and condition of their respective rainbow trout fisheries. Catch per unit effort of all species was low in survey nets in Pishkun Reservoir.

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OBJECTIVES

The purpose of this project is to implement the Fisheries Program on coldwater lake ecosystems in the Missouri River drainage in northcentral Montana. Major watersheds include the Missouri, Sun, Teton, Smith, Marias, Judith and Musselshell drainages.

The mission of the Fisheries Division of Montana Fish, Wildlife and Parks (MFWP) is to preserve and enhance aquatic species and their ecosystems to meet public demand for recreational opportunities while assuring stewardship of aquatic life. The Fisheries Program is divided into four major elements, with objectives and outcomes as follows:

The **Fisheries Management** element of the fisheries program has 21 objectives and the following desired outcomes:

1. A healthy aquatic resource, including native-species fisheries and sport fisheries.
2. Public satisfaction with available angling opportunities.
3. Public support for ongoing efforts to restore, maintain, and protect the state's aquatic resources.

The **Habitat** element of the fisheries program has 15 objectives and the following desired outcomes:

1. Diverse, high-quality aquatic ecosystems that support healthy fish populations and provide fishing opportunities.
2. Public participation in efforts (of MFWP as well as other state and federal agencies) to conserve and improve fish habitat through formation of watershed protection groups and partnerships for the protection and restoration of habitat.

The **Fishing Access** element of the fisheries program has 16 objectives and the following desired outcomes:

1. Provide a diversity of fishing opportunities throughout the state that might otherwise be unavailable.
2. Provide the public with a variety of incidental, non-angling recreational activities by maintaining access to Montana's waters through the fishing access site program.

The **Aquatic Education** element of the fisheries program has 11 objectives and the following desired outcomes:

1. Opportunities for the public, youth and adults, to learn about the state's aquatic ecosystems and their importance.
2. Fishing and water safety skills for program participants.
3. Enhanced public understanding of Montana's natural and cultural resources.
4. An educated public able to make informed decisions about using and preserving Montana's aquatic resources.

PROCEDURES

Fish populations were sampled using standard 125 x 6 ft experimental multifilament or monofilament nylon gill nets with 25 ft sections of 0.75, 1.0, 1.25, 1.5 and 2.0 inch square mesh. Only multifilament gill nets were used in the Lewistown and Choteau management areas. On Hidden and Grace lakes in the upper Smith River Basin, monofilament sinking gill nets were used and set with a float tube. Sampling by angling was also conducted at Hidden and Grace lakes using lures and flies. Frame trap nets (4- x 6 foot frame with 1.00 inch square mesh) were used to sample Big Casino Reservoir, Bean Lake, Gibson Reservoir, and Diversion Lake during spring. Electrofishing was completed on the North and South Forks of the Sun River and within Gibson Reservoir using an aluminum boat with fixed bow-mounted booms and stainless steel droppers. Shoreline seining was completed with a 50 x 4 ft 1/8 inch mesh beach seine and a 100 x 10 ft ¼ inch mesh beach seine. Gill nets were fished either sinking or floating. Sampled fish were identified and measured to the nearest 0.1 inch and weighed to 0.01 pound, or counted. Rainbow trout strains were marked with fin clips or tetracycline. Year classes were based on size structure, spine or scale analysis. Relative weight (Wr) of most species was calculated using the standard weight equations of Anderson and Neuman (1996), Blackwell et al. (2000) and Bister et al. (2000). Relative weight can vary based on size and season, however high and low values at any time can indicate problems or opportunities for the fishery (Anderson and Neuman 1996). According to Flickinger and Bulow (1993), fish with Wr close to 100 are in balance with their food supply, while values below 85 may indicate poor food availability and Wr above 105 may indicate an opportunity to stock more fish. Water levels in area reservoirs were determined from Montana Department of Natural Resources and Conservation (DNRC) reservoir contents reports at http://www.dnrc.state.mt.us/wrd/home.htm.

Anal and dorsal spines from yellow perch (*Perca flavescens*) and dorsal walleye (*Sander vitreum*) spines were collected from Big Casino Creek from 2001 - 2003. All spines were frozen until prepared. During preparation, spines were scraped clean of all membranes with a scalpel and ½" of the proximal end was snapped off and glued to a 1"x1/8"x1/16" strip of balsa wood. The end of wood opposite the spine was secured in the clamp of an Isomet Low Speed Saw and two cross sections, each .025" in thickness, were cut at a speed level of 4. Cross sections were placed flat on a Petri-dish and covered with a drop of mineral oil. They were viewed under a dissecting microscope at a total magnification of 15X.

RESULTS AND DISCUSSION

Lewistown Management Area

Eight coldwater reservoirs were sampled in the Lewistown area in 2003. Drought continued to impact fish populations in several reservoirs, and for many waters, 2003 was the fourth consecutive drought year. However, most ponds were stocked in 2003. Due to very low water, Yellowwater Reservoir was only stocked with a small catchable plant. In 2003, Eagle Lake strain rainbow trout were stocked in September/October in several waters including Ackley Lake, Bair Reservoir, Buffalo Wallow Reservoir and Peterson Pond, which was several months later than normal to insure that the stocked fish were disease free.

Ackley Lake – Over 50 rainbow trout (*Oncorhynchus mykiss)* were captured per gill net, which is similar to the 2002 catch-rate (Table 1, Figure 1). Average Wr for Ackley Lake rainbow trout decreased from 91 in 2002 (Tews et al. 2004) to 89 in 2003. Age structure for Ackley Lake is based on length frequency.

Trout less than 11 inches long in September are typically reported as stocked that year. In 2003, Eagle Lake rainbow trout with an average length of 4.2 inches were stocked 2 days before the reservoir was netted. A 4.2-inch trout is too small to be captured in our experimental gill nets. The one, 9.2-inch fish reported here as a 2003 stocked Eagle Lake was likely either a stunted fish from 2002, an exceptionally large stocked fish, or a wild trout from the Judith River. Relative weight was near 100 for rainbow trout stocked in 2003 but was much lower for the larger trout (Table 1), a trend found at Ackley Lake for several years. One mountain whitefish (*Prosopium williamsoni*) and one brown trout *(Salmo trutta)* were captured. White sucker (*Catostomus commersoni*) numbers were higher than seen for over a decade (Figure 1). White suckers averaged 0.84 pounds and had a mean Wr of 102 (Table 1). Longnose sucker (*Catostomus catostomus*) numbers also increased over the past three years. DNRC reservoir contents reports indicate that Ackley Lake filled in 2003, but generally had less than normal water levels. Ackley Lake was at about 20% capacity during the autumn months.

Bair Reservoir – Gill net catch rates for both rainbow trout and Yellowstone cutthroat trout (YCT), *Oncorhynchus clarki bouvieri,* declined in 2003 (Figure 2). Rainbow trout catch was slightly lower than had been seen for over 15 years. The low catch rate was likely due to late rainbow trout stocking in 2003. The rainbow trout were not stocked until the day our gill nets were pulled. The 4.3-inch mean stocking size was too small to capture in our experimental gill nets. The smallest trout captured was 10.5 inches long and we typically capture several rainbow trout less than 10 inches long. For example in 2002, 13 rainbow trout less than 10 inches long were captured per net (Tews et al. 2004). In 2003, the largest trout captured was 1.28 pounds and 14.4 inches long and mean weight was only 0.61 pounds (Table 1). Trout Wr has remained low for several years in Bair Reservoir (Tews et a1. 2001, Tews et. al 2002). In 2003, YCT had the highest Wr at 87 and rainbow trout Wr was only 77; White sucker catch rate was the highest seen since 1996 and was more than twice that found in 2002. White sucker removals and/or introduction of a predator fish such as tiger muskie (*Esox lucius x E. masquinongy*) will be considered as possibilities to benefit the trout fishery. DNRC reservoir contents reports indicate that Bair Reservoir filled to about 65% in 2003 but during late summer and fall water levels were below those found in 2002.

Martinsdale Reservoir –Martinsdale briefly reached about 40% capacity but was generally 12 – 13% full in 2003. This is much higher than in 2001 – 2002 when the reservoir was filled to less than 6% capacity. In 2003, Martinsdale was netted for the first time in several years. At 32.5 rainbow trout per net, catch rates were the highest sampled since 1994. White sucker numbers were lower than seen since 1995 (Figure 3). Five brown trout with an average weight of 2.47 pounds were captured (Table 1). Brown trout are not stocked in Martinsdale and these fish likely originate from the Musselshell River. Only one YCT was captured. Martinsdale Reservoir consistently has a higher Wr for rainbow trout than for either YCT or white suckers (Figure 4).

Yellowwater Reservoir has been at about 5% capacity or less for the past several years. Consequently stocking of all but the catchable plant has been cancelled and the reservoir was not sampled in 2003.

Table 1. Statistics from fish captured by overnight gill netting (multifilament nets) in the Lewistown Management Area, 2003.

Reservoir (Date) # of Nets	Species	Year Stocked Strain[1]	N	Length (Inches) Min	Max	Mean	Weight (lbs.) Min	Max	Mean	Wr Mean
Ackley Lake (9/17/03) 1 Sinker 1 Floater	Rainbow trout	2003 – I	1	9.2	9.2	9.2	0.35	0.35	0.35	104
	Rainbow trout	2002 – I	33	11.7	13.9	13.2	0.55	1.08	0.87	87
	Rainbow trout	2001+-I	20	14.0	16.2	14.8	0.95	1.46	1.16	83
	Rainbow trout	2003 – A/wild	16	6.5	9.5	8.7	0.12	0.38	0.28	98
	Rainbow trout	2002 – A/wild	20	12.0	13.8	13.2	0.61	1.10	0.88	88
	Rainbow trout	2001+A/ wild	13	14.0	15.6	14.9	0.94	1.40	1.21	84
	Rainbow trout	Total	103	6.5	16.2	13.0	0.12	1.46	0.87	89
	Brown trout		1			16.4			1.90	112
	Longnose sucker		19	8.0	13.2	11.0	0.22	1.06	0.63	
	Mountain whitefish		1			15.5			1.64	
	White sucker		137	6.5	18.0	11.7	0.07	2.81	0.84	102
Bair Reservoir (9/15/2003) 1 Sinker 1 Floater	Rainbow trout	Total	30	10.5	14.4	12.2	0.40	1.28	0.61	77
	White sucker		239	5.4	15.2	10.9	0.05	1.40	0.59	83
	Yellowstone cutthroat trout		6	11.8	13.2	12.5	0.58	0.80	0.71	87
Big Casino Reservoir (5/6/03) 1 Sinker 1 Floater	Rainbow trout	Total	14	13.5	16.9	14.4	1.08	2.0	1.32	102
	Walleye		2	13.3	13.8	13.6	0.84	1.00	0.92	101
	White sucker		22	9.9	17.2	11.3	0.46	2.26	0.78	112
	Yellow perch		55	7.3	9.0	8.2	0.20	0.38	0.29	102
(9/08/03) 1 Sinker 1 Floater	Rainbow trout	2003-T	11	8.9	11.6	10.3	0.24	0.68	0.42	84
	Rainbow trout	2002+T	7	14.0	18.7	15.7	1.15	2.45	1.48	86
	Rainbow trout	2003 - I	14	10.5	12.4	11.4	0.39	0.58	0.48	74
	Rainbow trout	2002+ I	3	15.1	15.8	15.6	1.18	1.50	1.39	85
	Rainbow trout	Total	35	8.9	18.7	12.3	0.24	2.45	0.74	80
	Walleye		28	9.4	22.0	13.8	0.2	5.00	1.18	95
	White sucker		60	9.4	17.6	13.5	0.35	2.08	1.12	99
	Yellow perch		41	6.5	10.3	9.1	0.10	0.52	.37	91
Buffalo Wallow Reservoir (5/14/03) 1 Sinker	Rainbow trout		11	8.6	19.8	12.7	0.31	3.40	1.00	91

1: T = Irwin strain, I = Eagle Lake strain, A = Arlee strain

Table 1 continued. Statistics from fish captured by overnight gill netting (multifilament nets) in the Lewistown Management Area, 2003.

Reservoir (Date) # of Nets	Species	Year Stocked	N	Length (Inches) Min	Max	Mean	Weight (lbs.) Min	Max	Mean	Wr Mean
Lower Carter Pond (4/21/03) 1 Sinker 1 Floater	Rainbow trout		33	9.9	14.8	12.5	0.45	1.54	0.90	104
Martinsdale Reservoir (9/15/03) 1 sinker 1 floater	Brown trout	Wild	5	12.6	19.0	17.2	0.87	3.10	2.47	120
	Rainbow trout	2003 -A	36	9.0	11.4	10.4	0.35	0.69	0.52	106
	Rainbow trout	2002+-A	29	14.2	18.4	15.8	1.30	2.45	1.70	100
	Rainbow trout	Total	65	9.0	18.4	12.8	.34	2.45	1.05	104
	Yellowstone Cutthroat trout		1			15.7			1.54	
	Longnose sucker		3	15.2	16.4	15.7	1.50	1.62	1.56	
	White sucker		86	6.5	17.6	12.9	0.14	2.5	1.13	99
Peterson (4/22/03) 1 sinker	No fish									
Upper Carter Pond (4/21/03) 1 Sinker	Rainbow trout		52	9.8	16.1	12.5	0.41	1.60	0.82	97

1: T = Irwin strain, I = Eagle Lake strain, A = Arlee strain

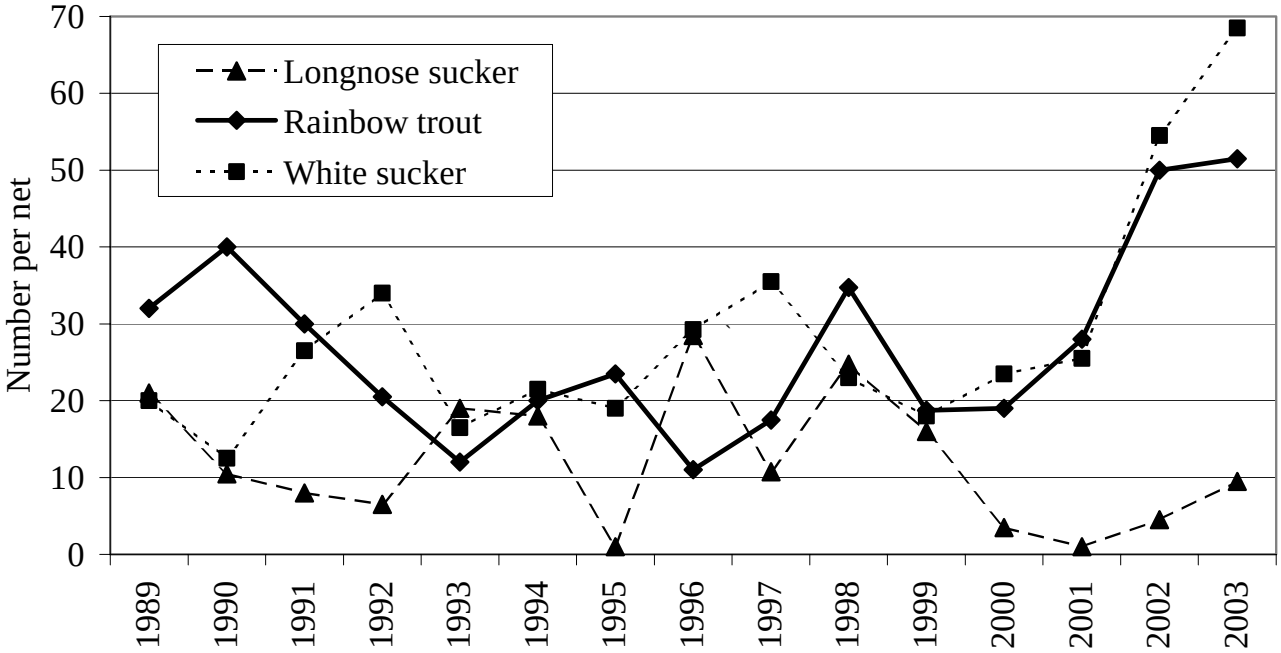

Figure 1. Catch rates of common species during overnight fall gill netting in Ackley Lake, 1989 – 2003.

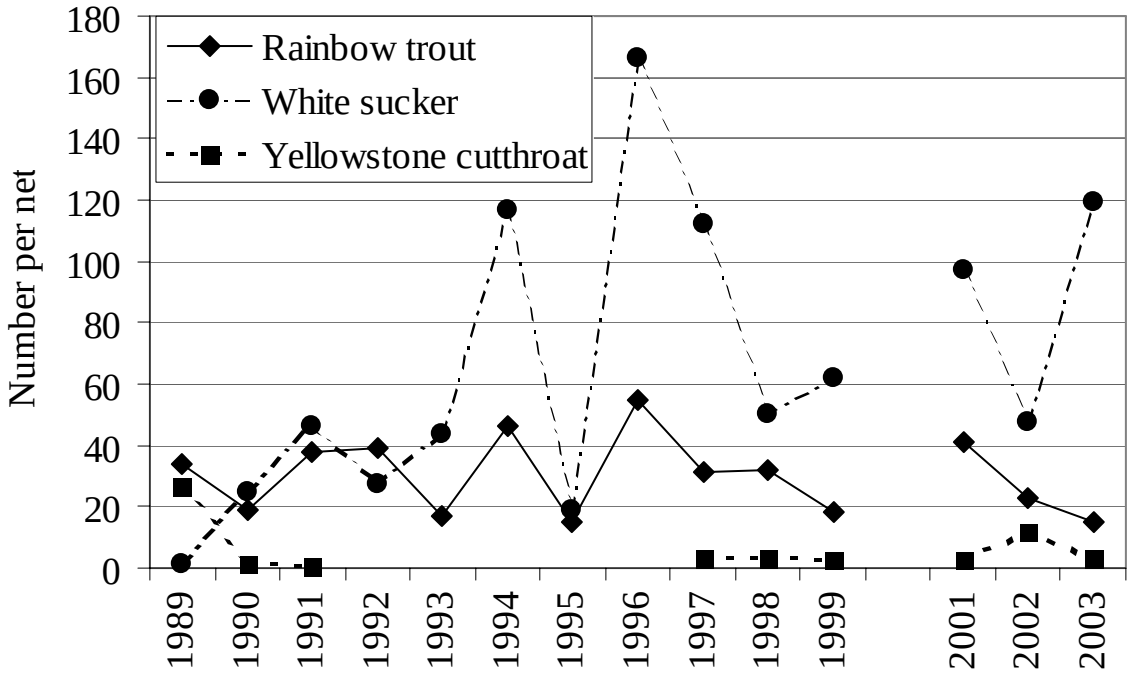

Figure 2. Catch rates of common species during overnight fall gill netting in Bair Reservoir 1989 – 2003.

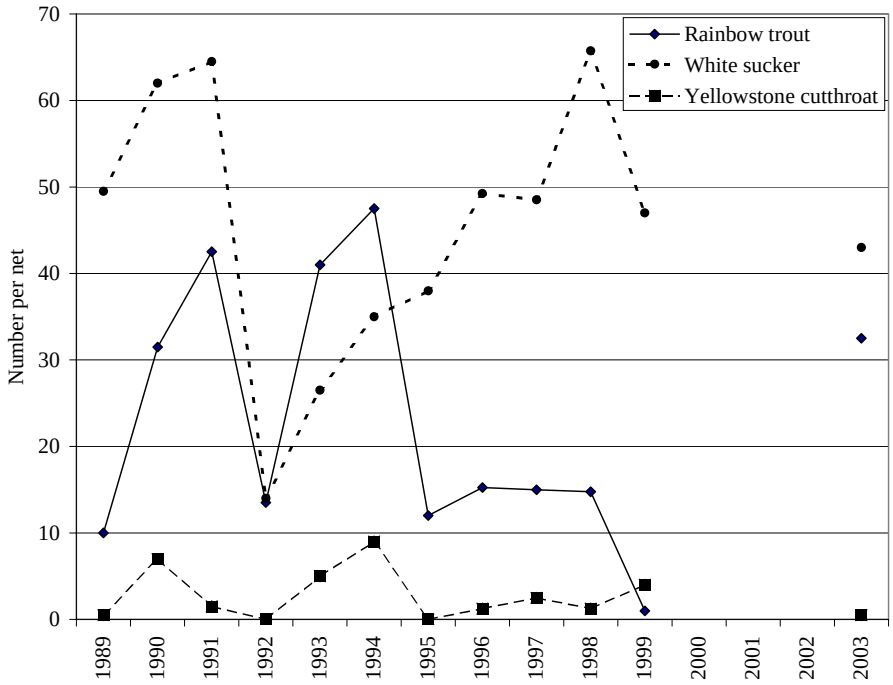

Figure 3. Catch rates of common species during overnight fall gillnetting in Martinsdale Reservoir 1989 – 2003.

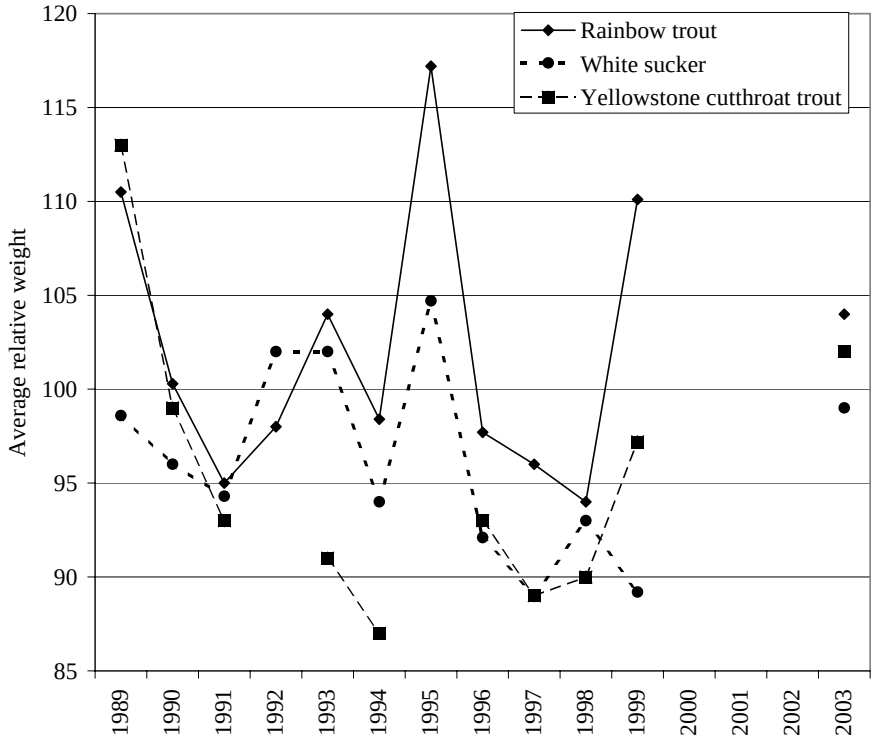

Figure 4. Relative weight of common species captured during fall gillnetting in Martinsdale Reservoir.

Small Lewistown Area Reservoirs

Big Casino Reservoir – About 350 pounds of white suckers were removed in 2003. There was an average of 18 white suckers captured per trap night (Table 2). This is nearly twice the capture rate found in 2002 but about 10 times less than in 2001 when over 2 tons of white suckers were removed (Figure 5). White sucker counts in traps and nets (Figure 6) remain lower than prior to the 2001 removals. Mean white sucker length increased substantially in 2003 (Figure 7) and Wr declined to 99 (Table 1, Figure 8). Based on trap, gillnetting and creel data, the rainbow trout fishery appears to have been excellent in spring 2003 but size and condition declined in gill nets by fall 2003. During spring trapping, rainbow trout up to 22.1 inches were captured (Table 2) and had a mode total length exceeding 16 inches, which was longer than previously found (Figure 9). Gillnetted rainbow trout had record mean total lengths in spring 2003 (Figure 7). During a limited creel, conducted primarily in early 2003, the mean size of rainbow trout harvested exceeded 1.5 pounds (Appendix Table 1). By September 2003, mean total length in gill nets had dropped substantially and Wr in rainbow trout dropped to pre white sucker removal levels (Figures 7 and 8). Rainbow trout strains were evaluated during fall gill netting. Both strains had similar mean lengths and Wr for fish stocked before 2003, however the Eagle Lake trout stocked in 2003 were skinnier and longer than the Erwin stocked that year (Table 1). Walleye appear to be doing well. Relative weight was well above 90 for walleye during all sampling and mean total lengths were similar to 2002. A 5-pound 22-inch walleye was captured during autumn gill netting. About 2000, 1.2-inch walleye have been stocked annually in Big Casino since 1997. An additional 500, 3-inch walleye were stocked in 1997 (Montana Fish Plants 2003). In general walleye grew faster in 2003 than in 2001 (Table 4). For example an age 4 walleye had a mean length of 11.9 inches in 2001 and 13.7 inches in 2003. The yellow perch population is increasing in Big Casino. Gill netting (Figure 5), trapping (Figure 6) and seining all captured record numbers of yellow perch in 2003. During fall gill netting mean yellow perch weight was 0.37 lbs. Seining captured over 500 yellow perch with a mean total length of 3.1 inches (Table 3). In 2002 only 5 yellow perch were captured during seining, but 108 were caught in 2001 (Tews et. al 2004, Tews et. al 2002). The 7-inch plus yellow perch appear to be from the 2001-year class and had a mean total length of 8.1 inches at age 2 (Table 4). In Jakes Reservoir, yellow perch averaged 6.4 inches at age 2 and did not reach 8.1 inches until age 5. In East Fork Reservoir, yellow perch were 5.4 inches long at age 2 (Yerk et al. in preparation). In 2003, fishing pressure exceeded 3400 angler days at Big Casino. This was almost 10 times the pressure reported in 2001 and 3 times the pressure in 1999 (Montana Angling Pressure Estimates 2002, 2000). MFWP planned to stock walleye every other year, but to try to reduce the yellow perch population annual stocking will continue.

Buffalo Wallow Reservoir has developed a large hole on the downstream side along the trickle tube pipe. Unless the BLM repairs the structure, dam failure appears to be likely in the near future. In 2003 Buffalo Wallow had fish exceeding 3 pounds and rainbow trout catch in gill nets was good (Table 1).

Carter ponds – The largest rainbow trout captured in spring gill nets slightly exceeded 1.5 pounds in both reservoirs. Gill net catch rates were excellent in both ponds. Catch rates of the two anglers interviewed at Upper Carter pond were excellent at 2.4 trout/hour (Appendix Table 1).

Frog Ponds –The city of Lewistown dredged Upper Frog Pond in later summer 2003 and was stocked in October with catchable rainbow trout. The city plans to dredge Lower Frog Pond in 2004.

Table 2. Size structure of fish captured during overnight trap sets in Big Casino Reservoir 2003.

Date Surveyed (# of trap nights)	Species	Total N	N per trap night	Total length (inches)			Weight (pounds)			Wr
				Min	Max	Mean	Min	Max	Mean	Mean
3/31/03-	Rainbow trout	114	7.6	11.4	22.1	15.9	0.62	3.75	1.60	89
4/3/03	Walleye	33	2.2	8.6	18.6	12.0	0.14	2.36	0.73	99
(15	White sucker	270	18	7.0	18.4	13.6	0.17	2.55	1.32	108
nights)	Yellow perch	144	9.6	6.4	8.9	7.9	0.12	0.49	0.30	117

Table 3. Size structure of fish captured during seine hauls in Big Casino Reservoir, 2003.

Date	# of seine hauls	Species	Total N	Length (inches) Min	Max	Mean
8/13/03	4	Rainbow trout	13	9.4	15.9	11.5
		Fathead minnow	1			1.2
		Yellow perch[1]	502	2.3	9.0	3.1

1 a sub-sample was measured (n=103), only 1 yellow perch > than 4 inches was captured.

Table 4. Total length at age from walleye and yellow perch spines collected at Big Casino Reservoir 2001- 2003.

Species		N	Length (inches) Min	Max	Mean
Walleye			Age 2		
	2001	7	8.5	9.4	8.9
	2002	2	10.2	10.8	10.5
	2003	19	8.6	10.8	9.8
			Age 3		
	2001	18	9.6	10.6	10.0
	2002	5	12.0	12.7	12.4
	2003	21	11.4	13.4	12.6
			Age 4		
	2001	38	10.7	14.9	11.9
	2002	5	13.0	13.8	13.3
	2003	7	13.4	13.9	13.7
			Age 5+		
	2001	2	17.1	21.1	19.1
	2002	5	13.8	14.9	14.4
	2003	14	14.8	22.0	16.9
Yellow Perch			Age 1		
	2003	39	6.7	8.6	8.1

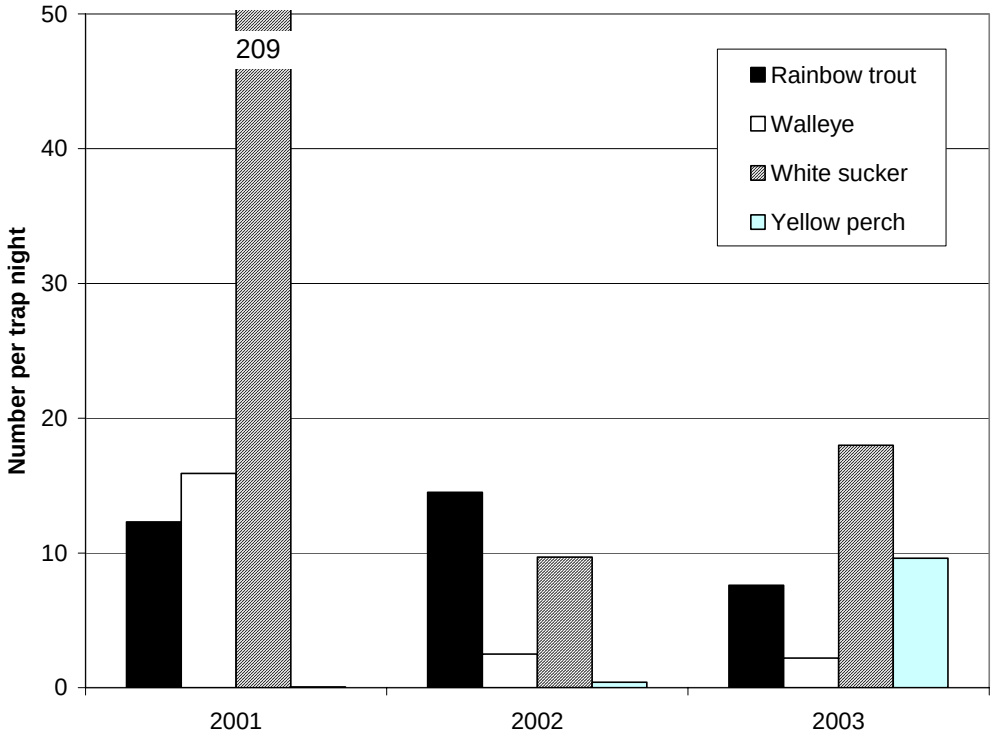

Figure 5. Catch rates per trap night during spring trapping in Big Casino Reservoir, 2001 – 2003.

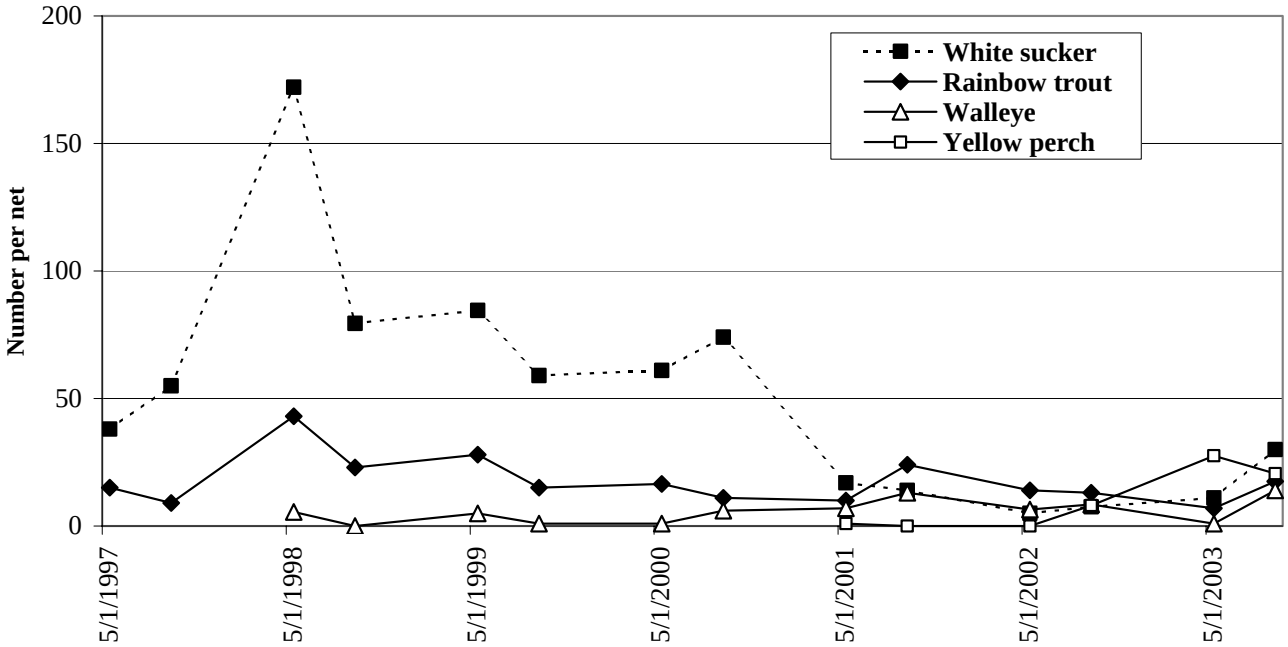

Figure 6. Catch rates of common species during spring and fall gill netting in Big Casino Reservoir 1997-2003.

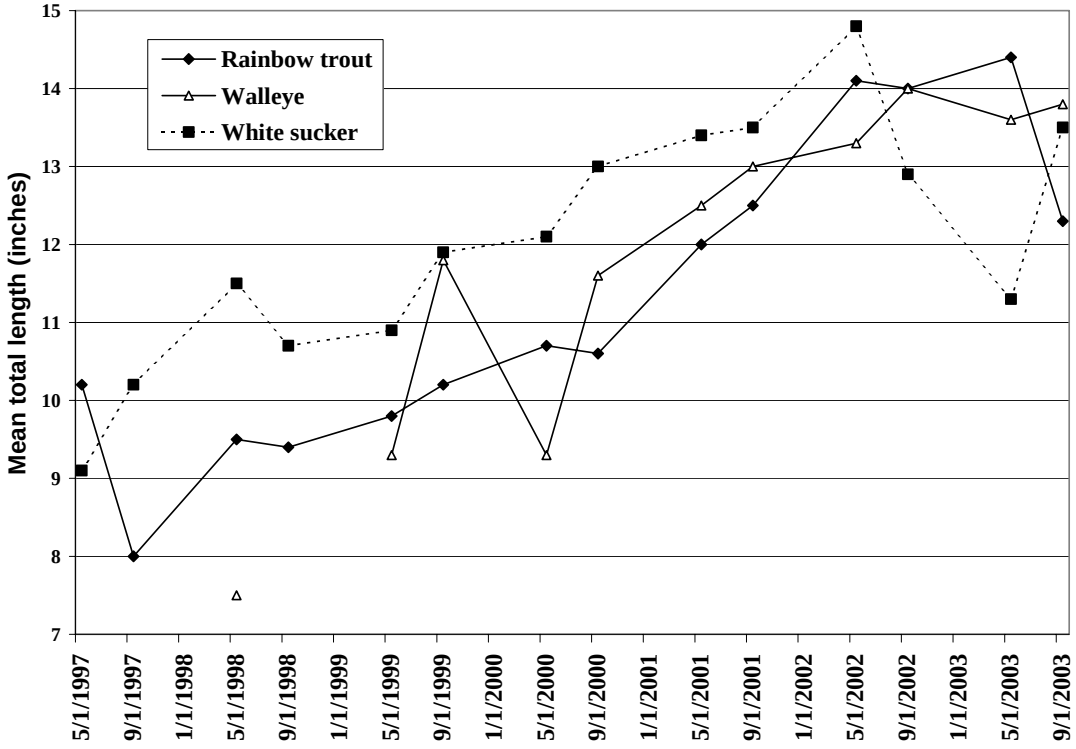

Figure 7. Mean total length of common species captured by gill netting in Big Casino Reservoir 1997 – 2003.

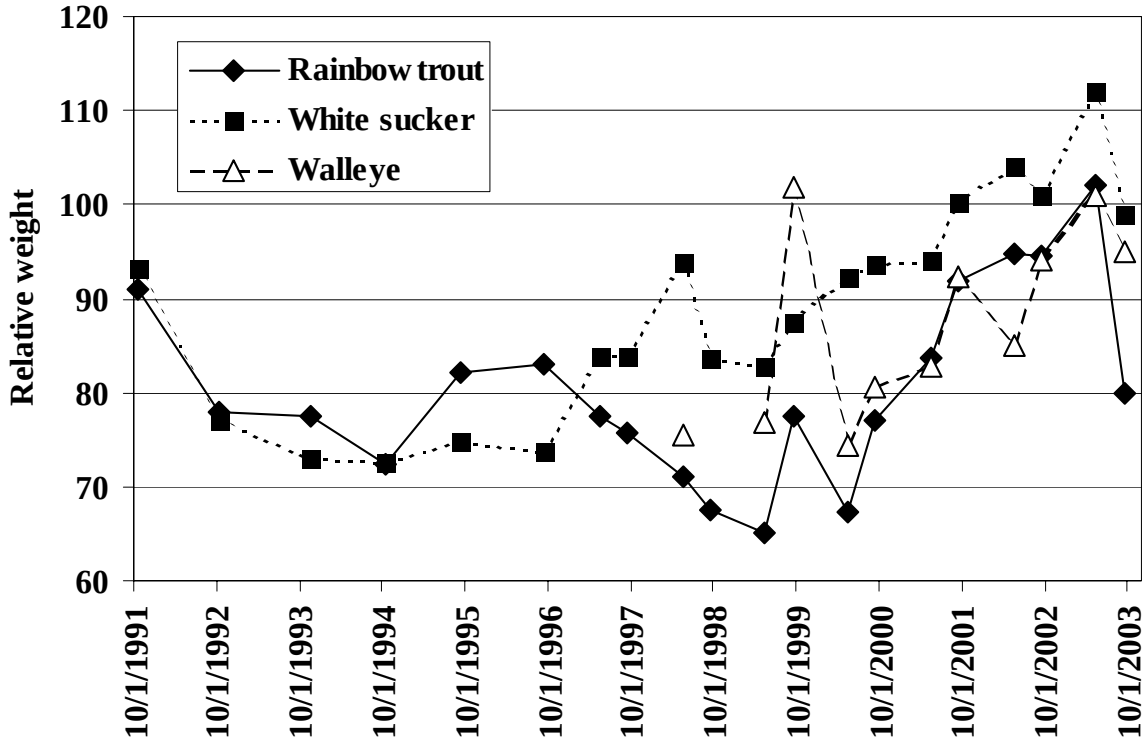

Figure 8. Relative weight of fish captured by gill netting in Big Casino Reservoir 1991 – 2003.

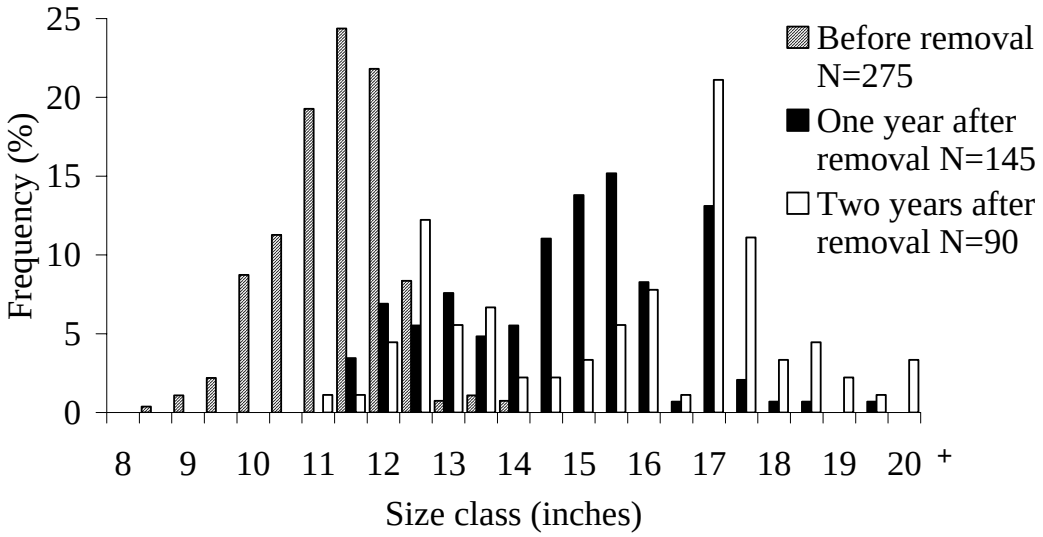

Figure 9. Rainbow trout size structure in Big Casino Reservoir before, one and two years after initial (2001) white sucker removal in Big Casino Reservoir.

Creel Survey

A total of 53 interviews were conducted in the Lewistown area in 2003. Interviews were completed when time and weather permitted. Ackley Lake and Big Casino Reservoir had the majority of interviews but anglers were also interviewed at East Fork, Hansen and Upper Carter (Table 5). East Fork is a warmwater reservoir so fisheries survey data is contained in a companion report (Yerk et al. in preparation). All but three of the interviews were ice fishermen and were completed early in 2003. Average time fished ranged from 2.1-2.4 hours for all reservoirs except Upper Carter pond (N=2), which showed an average of 1.3 hours. The small sample size at most reservoirs precludes drawing conclusions but the trends are still worth discussion. Fergus County residents were the only anglers found at Big Casino, East Fork and Upper Carter. Hansen Reservoir had 44% Fergus County residents and Ackley Lake 18% Fergus County residents. Anglers at Ackley Lake were primarily Judith Basin County residents (41%) and Cascade County residents (32 %). Catch rates of rainbow trout were 0.52 fish/hour in Big Casino and 0.65 fish/hour in Ackley Lake, while Hansen had rainbow catch rates of 0.84 fish/hour. Upper Carter exhibited the highest catch rate of 2.4 fish/hour. Low average catch rates for northern pike in East Fork and walleye in Big Casino were reported at 0.06 and 0.03 fish/hour, respectively. In general anglers were somewhat satisfied with their fishing experience and were most satisfied at Upper Carter and Big Casino (Table 6). Yellow perch catch rates at East Fork were 17.2 fish/hour with only 3.9 being kept/hour, probably due to the small average size of the fish. Big Casino perch catch rates were 2.8 fish/hour with 2.2 fish kept/hour (Appendix Table 1). In general, with the exception of Big Casino, anglers did not support lowering limits or implementing size restrictions even if the fish got larger (Appendix 2). Surprisingly more anglers said they supported catch and release fishing than size or limit restrictions, indicating the questions were poorly formulated.

Table 5. Summary of creel survey information from the Lewistown area, 2003.

	Reservoir				
	Ackley Lake	Big Casino	East Fork	Hansen	Upper Carter
# of interviews	22	14	8	7	2
Mean hrs fished	2.2	2.2	2.1	2.4	1.3
Bait type					
Lures	0%	0%	0%	0%	0%
Flies	0%	0%	0%	0%	0%
Bait	86%	43%	25%	100%	100%
Combo	14%	57%	75%	0%	0%
County					
Fergus	18%	100%	100%	44%	100%
Yellowstone	9%	0%	0%	0%	0%
Cascade	32%	0%	0%	28%	0%
Judith Basin	41%	0%	0%	0%	0%
Non-Resident	0%	0%	0%	28%	0%
Angler type					
Ice	100%	93%	100%	72%	100%
Shore	0%	7%	0%	28%	0%
Boat	0%	0%	0%	0%	0%

Table 6. Mean angler satisfaction ratings for five reservoirs in the Lewistown area, 2003, based on a 1=poor-5=excellent.

	Ackley	Big Casino	East Fork	Hansen	Upper Carter
# of Interviews	13	9	6	7	2
Fishing	2.7	2.8	2.5	2.4	3.5
Size of fish	2.1	2.8	1.8	1.7	4.5
Number of fish	2.1	2.8	2.7	2.1	3.0

Great Falls Area

Hidden Lake – Eighteen rainbow trout were sampled by gill netting in Hidden Lake (Table 7). The average length sampled rainbow trout was 11.4 inches (varying from 8.2 to 13.6 inches long). The mean Wr for rainbow trout sampled in gill nets was 83.8. Hidden Lake was gill netted in 1971 and 1973. In 1971, 28 rainbow trout were sampled during the overnight net set. The average length of sampled rainbow trout was 10.3 inches (varying from 7.0 to 13.5 inches long). In 1973, 11 rainbow trout were sampled varying in length from 8.0 to 14.0 inches long. In 2003, the average angling catch rate for rainbow trout in Hidden Lake was 0.67 fish per hour (three anglers fishing for one hour each). The average length (11.5 inches) of rainbow trout sampled by angling was similar to the gill net sample. Angler catch rates reported in the past were higher than those observed in 2003. For example, on 28 September 1966, two anglers fished Hidden Lake for a total of 3 hours and caught 7 (2.33 fish per hour) rainbow trout varying from 9.2- to 13.1-inches long (average length was 11.1 inches).

Grace Lake – On 9 September 1968, an experimental gill net fished overnight on Grace Lake caught no fish (Holton 1970). Based on the initial 1968 survey of Grace Lake, Holton (1970) recommended stocking the lake with YCT. From 1969 to 1999, approximately 1,000 YCT were stocked every two to four years. Beginning in 2003, YCT stocking was discontinued and 1,000 Westslope cutthroat trout (WCT), *Oncorhynchus clarki lewisi*, were stocked. One thousand WCT will continue to be stocked every two years in Grace Lake. In 2003, eight YCT were sampled by gill netting on Grace Lake (Table 7). The average length of sampled YCT was 14.3 inches (varying from 13.4 to 14.8 inches long). Similar to Hidden Lake, Grace Lake was sampled in 1971 and 1973 using gill nets. In 1971, only three YCT were sampled in gill nets. The average length of sampled YCT in 1971 was 11.5 inches (varying from 10.5 to 12.7 inches long). In 1973, the overnight (14 h) gillnet set caught no fish, but some fish were observed feeding in the lake. In 2003, three anglers fished for a total 7.1 hours on Grace Lake and caught 9 YCT (1.3 fish/h). The average length of YCT sampled by angling was identical to those sampled by gill nets (14.3; Table 7); however, the lengths of YCT sampled by angling varied from 13.4 to 16.1 inches long. Angling was also attempted in 1973, but no fish were caught. Although no WCT were sampled in 2003, several dead WCT (2-3 inches long) were observed on the bottom of the lake.

Kolar Pond # 1 – Results from two sinking experimental gill nets set overnight on 18 June 1996 and one sinking experimental gill net fished overnight on 22 May 2003 are presented in Table 8. White sucker was the only species captured in 2003 with a catch per unit effort (CPUE) of 32.0 and a mean length of 15.1 inches. In 1996, 214 white suckers were sampled (CPUE of 107 suckers per net) averaging 11.8 inches long. Mean Wr declined from 99.5 in 1996 to 95.9 in 2003 (Table 8). Two rainbow trout averaging 16.8-inches long with a mean Wr of 122.5 were captured in 1996. Rainbow trout were not stocked in Kolar Pond # 1 in 2001 or 2002 due to low water levels. A total of 1,500 Erwin strain rainbow trout were stocked post netting on 3 June 2003. Walleye fingerlings were stocked in 1998, 1999 and 2000 to evaluate their potential to reduce the abundant white sucker population and provide a secondary fishery.

Kolar Pond # 2 - Survey results from one sinking experimental gill net set on 22 May 2003 and two (one sinking and one floating) experimental gill nets set on 18 June 1996 are presented in Table 8. Two species of fish were sampled in 2003 while three species were sampled in 1996. One northern pike measuring 24.3 inches was netted in 1996. This was the first pike sampled during periodic surveys dating back to 1961. Yellow perch were also sampled for the first time in 1993; however, neither of these two species was sampled in 2003. White suckers dominated the catch in 1996 and 2003 with similar catch rates of 50.0 and 45.0, respectively. Mean length, mean weight and mean Wr for suckers all declined in 2003 (Table 8). Twenty-five YCT were sampled in 1996 for a CPUE of 12.5 compared to only two cutthroat

trout (CPUE=2.0) sampled in 2003. In both years, mean Wr values (113) for YCT were high (Table 8). Kolar Pond # 2 was not stocked with YCT or largemouth bass in 2001 or 2002 due to low water levels.

Kolar Pond # 8 – One sinking experimental gill net was fished for 4 hours during the day along with two 25-foot seine hauls, and two hours of angling on 20 June 1996. No fish were sampled although one largemouth bass was observed near shore. Kolar Pond #8 was stocked with 1,000 rainbow trout in 1997 and the last stocking of largemouth bass was in 1998. Due to low water levels and irrigation use, this pond is limited in producing a largemouth bass fishery. We recommend stocking of larger size rainbow trout during normal water years.

Newlan Creek Reservoir—Longnose suckers were the most abundant of the five species of fish sampled in Newlan Creek Reservoir in 2003 (Table 7). The average catch rate for rainbow trout was 9 fish per net night, and was similar to the long-term average (Figure 10). In addition, the average length for rainbow trout sampled in 2003 was 11.8 inches, which was similar to the long-term average (11.2 inches). Catch rates for YCT, burbot (*Lota lota*), and longnose suckers were below the long-term average catch rates (Figure 10). In 2003, 15,000 brown trout were stocked into Newlan Creek Reservoir. The average catch rate for brown trout in 2003 was 3.5 fish per net night (Table 7).

Smith River Reservoir—Similar to Newlan Creek Reservoir, longnose sucker was most abundant of the five fish species sampled (Table 7). The average catch rate for rainbow trout was 4.5 fish per net night, which was approximately 1/3 of the long-term average (Figure 11), but the average length of rainbow trout in 2003 was 14.3 inches compared to the long-term average of 12.7 inches. The catch rate for longnose suckers was below the long-term average, the white sucker catch rate was similar to the long-term average, and the burbot catch rate was higher than the long-term average (Figure 11). Longnose suckers were longer on average than white suckers (17.4 inches compared to 12.6, respectively). In addition, the 2003 average length of longnose suckers was 2.3 inches longer than the long-term average. The average length of sampled burbot was shorter than the long-term average (14.2 compared to 17.4 inches, respectively).

Table 7. Number sampled (n), mean, minimum (min), and maximum (max) length, weight, and Wr by species, sampling gear, and location during 2003 from waters in the Great Falls management area.

					Length			Weight			Relative Weight		
Water	Gear	Effort	Species	n	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
Grace Lake													
	Gill net[1]	18 h/overnight set	Yellowstone cutthroat	8	14.3	13.4	14.8	0.90	0.80	1.10	83.8	75.0	99.9
	Angling	3 anglers, 7.1 h total	Yellowstone cutthroat	9	14.3	13.4	16.1						
Hidden Lake		20 h/overnight set	Rainbow trout	18	11.4	8.2	13.6	0.50	0.20	13.6	78.3	63.5	95.3
		3 anglers, 3 h total	Rainbow trout	2	11.5	11.0	12.0						
Newlan Creek Reservoir													
	Gill net[2]	19.8h/overnight set	Rainbow trout	11	12.2	7.8	15.4	0.63	0.20	1.06	78.0	67.4	97.2
			Yellowstone cutthroat	4	11.5	9.9	13.0	0.49	0.30	0.65	82.9	77.5	87.6
			Brown trout	2	6.6	6.3	6.9	0.10	0.10	0.10	.	.	.
			Longnose sucker	3	12.3	9.6	15.7	0.76	0.35	1.33	.	.	.
	Gill net[3]	19.4h/overnight set	Rainbow trout	7	11.1	7.5	18.7	0.86	0.20	2.36	80.9	72.6	97.2
			Yellowstone cutthroat	1	13.0	.	.	0.68	.	.	81.1	.	.
			Brown trout	5	6.6	6.0	7.4	0.13	0.12	0.16	.	.	.
			Longnose sucker	60	13.4	6.8	17.1	1.04	0.15	1.89	.	.	.
			Burbot	1	15.9	.	.	0.82	.	.	76.9	.	.
Smith River Reservoir													
	Gill net[2]	16.3h/overnight set	Rainbow trout	6	15.3	14.4	16.1	1.30	1.16	1.46	84.6	80.7	90.1
			White sucker	2	12.6	8.0	17.1	1.31	0.24	2.37	104.6	10.17	107.6
			Longnose sucker	14	17.4	14.6	19.3	2.17	1.18	3.19	.	.	.
	Gill net[3]	16.4h/overnight set	Rainbow trout	3	12.3	9.7	16.8	0.80	0.37	1.63	85.9	73.9	103.8
			Mountain whitefish	6	14.0	10.4	17.4	1.24	0.40	2.15	113.15	98.3	130.3
			White sucker	22	13.0	6.5	19.5	1.26	0.11	2.83	98.4	85.6	109.7
			Longnose sucker	18	17.2	14.3	19.3	2.00	1.03	2.79	.	.	.
			Burbot	11	14.2	9.2	18.0	0.64	0.15	1.20	73.3	54.0	88.5

[1] 125-foot experimental monofilament sinking gill net; [2] 125-foot experimental multifilament floating gill net ; [3] 125-foot experimental multifilament sinking gill net

Table 8. Reservoir, sampling date, number and type of net, mean hours per net set, species, number of fish (n), and minimum (min), maximum (max) and mean values for length, weight and Wr of fish sampled in Kolar Ponds near Great Falls during 1996 and 2001.

Reservoir (Date) # and type of nets	**Mean hr/ net**	**Species**	**n**	**Length (Inches)**			**Weight (lbs.)**			Wr		
				Mean	**Min**	**Max**	**Mean**	**Min**	**Max**	**Mean**	**Min**	**Max**
Kolar Pond #1	18.3	Rainbow trout	2	16.8	16.4	17.2	2.50	2.36	2.64	122.5	120.6	124.3
(6/18/96)		White sucker	214	11.8	5.9	18.5	0.98	0.09	2.80	99.5	74.5	138.9
2 Sinkers												
(5/22/03)	18.7	White sucker	32	15.1	7.4	17.3	1.52	0.17	2.30	95.9	82.8	108.8
1 Sinker												
Kolar Pond #2	18.5	White sucker	100	13.7	6.3	18.3	1.43	0.11	3.00	101.7	65.3	133.6
(6/18/96)		Northern pike	1	24.3			3.73			106.4		
1 Floater		Yellowstone	25	12.3	8.1	17.2	1.05	0.21	2.46	112.5	92.1	126.3
1 Sinker		cutthroat										
(5/22/03)	18.6	White sucker	45	13.1	11.2	18.5	0.86	0.41	2.76	77.1	61.3	106.2
1 Sinker		Yellowstone	2	19.1	17.7	20.5	3.03	2.56	3.70	113.0	108.2	117.8
		cutthroat										
Kolar Pond #8	4.0	No Fish										
(6/20/96)												
1 Sinker												

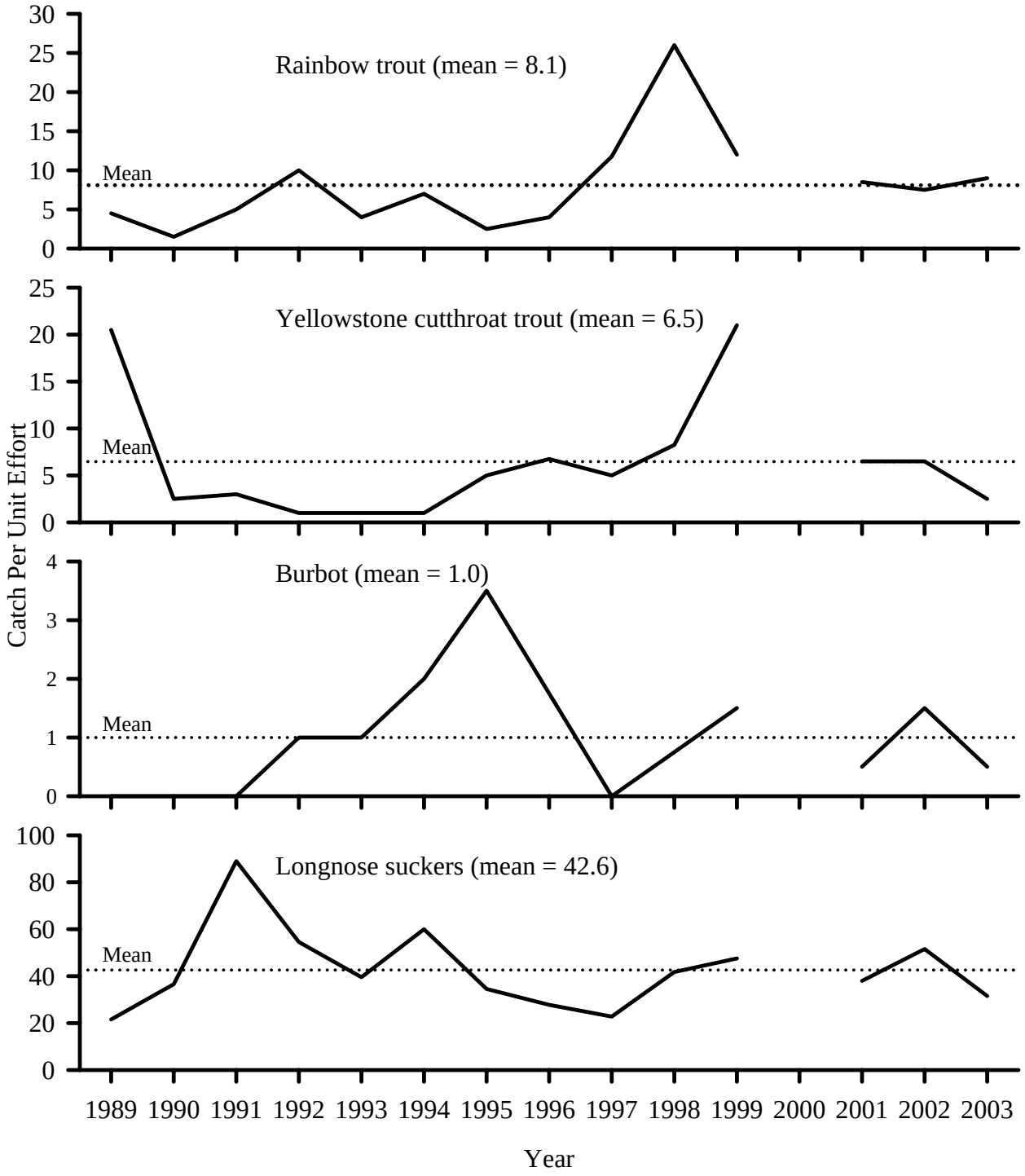

Figure 10. Mean (floating and sinking nets were averaged together) catch per unit effort for gill nets catches on Newlan Creek Reservoir by species. The dotted line represents the long-term average catch.

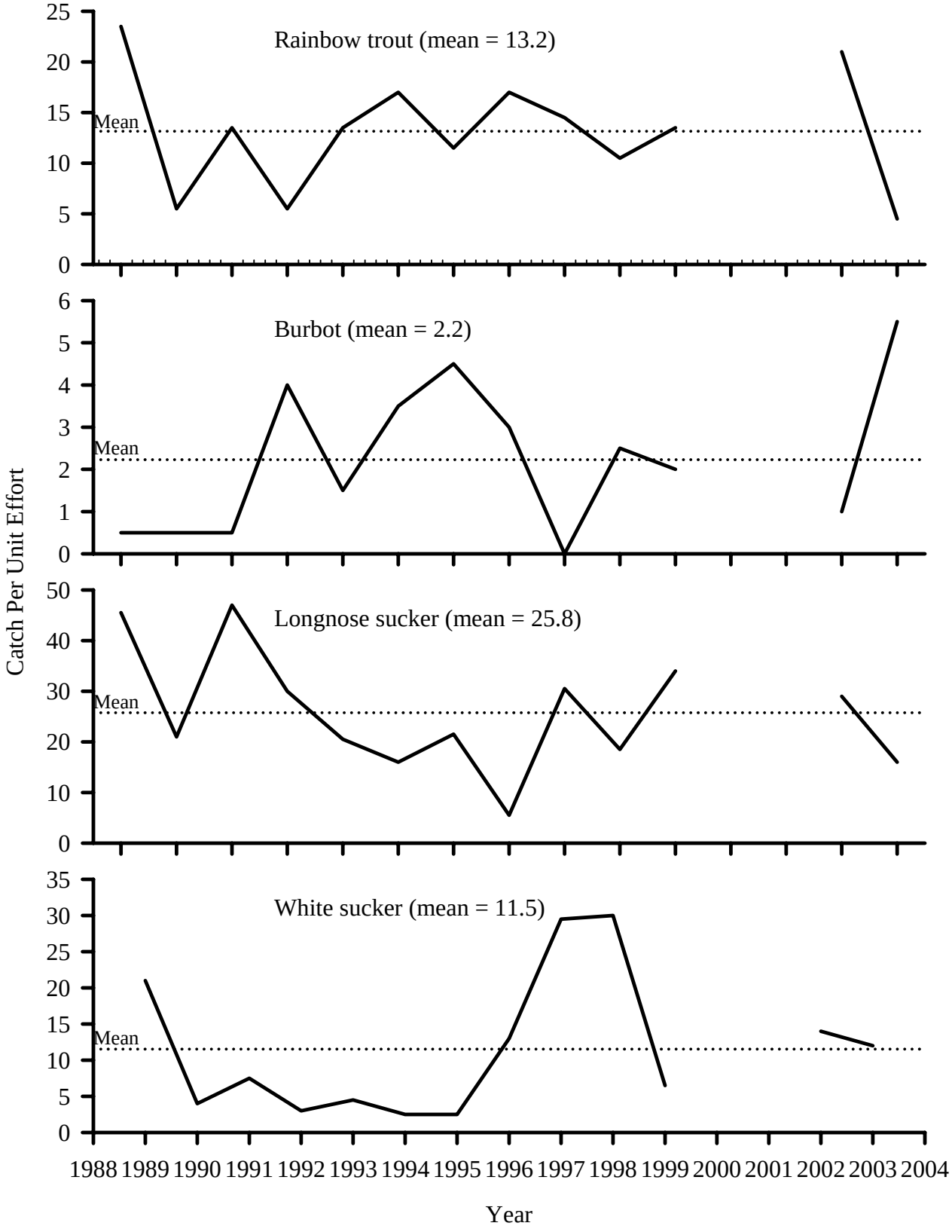

Figure 11. Mean (floating and sinking nets were averaged together) catch per unit effort for gill nets catches on Smith River Reservoir by species. The dotted line represents the long-term average catch.

Choteau Management Area

Bean Lake – Two windmills and an electric compressor were again used to provide aeration during the winter 2002/2003 to promote survival of stocked rainbow trout. Four trap nets were fished overnight on 6 May in locations similar to previous years sampling to assess overwinter survival of rainbow trout. Just six rainbow trout were captured, resulting in a mean catch of 1.5 rainbow trout per trap net night (Table 9). This reduction in CPUE indicated a further decline in the Bean Lake rainbow trout fishery relative to the 141.0 and 23.7 trap net CPUE rates observed in 2001 and 2002, respectively, and substantiated the poor catch in last fall's netting survey (Tews et al. 2004). All rainbow trout sampled were large adult fish (greater than 18.4 inches TL), which further evidenced the apparent poor survival and lack of recruitment of recent rainbow trout plants in Bean Lake. Physical deformities (e.g., blind eyes, deformed jaws and/or fins, open lesions) attributable to the highly alkaline water in Bean Lake were evident on all rainbow trout handled. One adult (snout to tail length of 10.2 inches) male tiger salamander *Ambystoma tigrinum* larva (axolotl) was also captured in a trap net. Net catches of rainbow trout in fall survey nets averaged 11.5 rainbow trout per floating gill net and 9.5 rainbow trout per sinking gill net (Table 9). Gill net catches were dominated by rainbow trout stocked in 2003; none of the 23 rainbow trout sampled in floating nets were from earlier plants (Figure 12). About 3,100 yearling Kamloops-strain rainbow trout were stocked into Bean Lake during June. Initial survival of these fish was excellent; stocked Kamloops accounted for 81% of the rainbow trout sampled in fall nets, but just 24% of the 13,100 rainbows stocked during 2003. Stocked AXE (Arlee and Eagle Lake strains cross) rainbow trout accounted for 76% of the total 2003 plant but just 19% of the catch in the fall gill nets, indicating poorer survival than the Kamloops strain.

Kamloops-strain yearling rainbow trout exhibited excellent initial growth in Bean Lake. These fish averaged 7.8 inches mean TL when stocked in June, but increased in size to 15.2 inches TL when sampled 14 weeks later in fall survey nets. Age-0 AXE rainbow trout averaged 8.7 inches TL in the fall sampling period. Relative body condition of rainbow trout sampled in fall nets was excellent; mean Wr of the 42 rainbow trout handled was 110.6. Wr trends demonstrate that condition of Bean Lake rainbow trout remained high relative to the other rainbow trout fisheries in the Choteau Management Area (Figure 13), but this may be attributable to the relatively low densities of fish in this productive lake.

Diversion Lake – Three trap nets were fished overnight on 18 June concurrent with sampling on Gibson Reservoir. White suckers accounted for 98% of the total catch, resulting in a CPUE of 175.3 per trap net night. Four rainbow trout and three brook trout were the only other fish sampled. Mean TL of all species sampled was larger in Diversion Lake than Gibson Reservoir (Table 9). Mean Wr of white suckers exceeded 100 in Diversion Lake, but mean Wr of rainbow trout was similar to the relatively low value observed in Gibson Reservoir.

Eureka Reservoir – No sampling was completed in Eureka Reservoir during 2003 due to low water conditions.

Table 9. Trap net and gill net results for coldwater reservoirs and lakes sampled in Choteau area during 2003. 'NA' denotes data not available.

Water body (date)	Net type (*n* of sets)	Water temp (°F)	Species	Catch Statistics *n*	Catch Statistics *n/net*	Fish Statistics Total length (in.) mean	Total length (in.) (range)	Weight (lbs.) mean	Weight (lbs.) (range)	Wr mean	Wr (range)
Bean Lake (6 May)	Trap net (4)	45-46	Rainbow trout	6	1.5	20.7	(18.5-22.9)	NA		NA	
Bean lake (19 Sept.)	Floating gill (2)	51	Rainbow trout	23	11.5	13.7	(7.9-17.0)	1.37	(0.25-2.34)	111.3	(97.1-124.8)
	Sinking gill (2)	51	Rainbow trout	19	9.5	15.4	(9.1-20.8)	1.80	(0.38-3-82)	109.8	(79.5-129.7)
Diversion Lake (18 June)	Trap net (3)	48-56	Rainbow trout	5	1.7	11.8	(11.0-14.0)	0.54	(0.40-0.86)	73.5	(68.8-86.8)
			Brook trout	4	1.3	9.9	(8.5-11.9)	0.39	(0.20-0.67)	NA	
			White sucker [a]	526	175.3	11.2	(6.6-18.1)	0.83	(0.12-2.90)	101.8	(72.2-181.3)
Gibson Res. (17,18 June)	Trap net (5)	56-61	Rainbow trout [b]	58	11.6	10.3	(7.3-13.0)	0.36	(0.10-0.67)	72.9	(35.1-106.6)
			Brook trout	3	0.6	8.9	(8.2-10.2)	0.26	(0.22-0.35)	NA	
			White sucker [a]	1,460	292.0	11.3	(7.9-17.5)	0.66	(0.20-2.10)	90.0	(66.7-120.8)
			Grayling	17	3.4	10.8	(9.4-11.7)	0.34	(0.16-0.44)	NA	

[a] Fish statistics are subsample of total catch.
[b] Rainbow trout, cutthroat trout, and hybrids grouped together.

Table 9. Continued.

Water body (date)	Net type (*n* of sets)	Water temp (°F)	Species	Catch Statistics *n*	Catch Statistics *n/net*	Fish Statistics Total length (in.) mean	Fish Statistics Total length (in.) (range)	Fish Statistics Weight (lbs.) mean	Fish Statistics Weight (lbs.) (range)	Fish Statistics Wr mean	Fish Statistics Wr (range)
Nilan Res. (19 Sept.)	Floating gill (2)	54	Rainbow trout	68	34.0	9.9	(6.2-14.8)	0.43	(0.07-1.04)	81.6	(58.3-102.4)
	Sinking gill (2)	54	Rainbow trout	39	19.5	11.5	(6.4-18.9)	0.66	(0.12-2.64)	90.6	(72.9-112.0)
			White sucker [a]	253	126.5	8.5	(6.1-17.8)	0.38	(0.08-2.85)	87.2	(62.7-125.3)
Pishkun Res. (26 Sept.)	Floating gill (4)	55	Kokanee salmon	5	1.3	16.3	(11.2-21.7)	1.75	(0.47-3.26)	NA	
			Rainbow trout	1	0.3	17.6		2.11		90.0	
	Sinking gill (4)		Kokanee salmon	3	0.8	16.4	(15.5-17.3)	1.55	(1.38-1.70)	NA	
			Yellow perch	10	2.5	7.9	(5.6-10.9)	0.29	(0.07-0.80)	101.4	(65.2-135.1)
			Northern pike	14	3.5	16.6	(10.3-21.3)	1.33	(0.22-2.73)	102.1	(89.3-126.0)
			White sucker	10	2.5	16.9	(11.1-19.1)	2.51	(0.73-3.66)	112.4	(102.4-133.9)
Willow Cr. Res. (2 Oct.)	Floating gill (4)	54	Rainbow trout	70	17.5	12.8	(8.4-20.0)	0.91	(0.25-2.82)	92.6	(76.1-125.4)
			White sucker	6	1.5	10.9	(8.4-13.3)	0.66	(0.26-1.11)	103.6	(89.4-128.2)
	Sinking gill (2)	54	Rainbow trout	8	4.0	16.5	(8.6-21.6)	2.03	(0.24-3.82)	89.5	(79.5-97.5)
			White sucker	151	75.5	9.9	(6.2-18.1)	0.52	(0.10-2.78)	89.9	(59.1-108.6)

[a] Fish statistics are subsample of total catch.
[b] Rainbow trout, cutthroat trout, and hybrids grouped together.

Gibson Reservoir – An electrofishing survey was completed on 16 June in a short reach of the South Fork of the Sun River immediately above Gibson Reservoir. This sampling was completed to monitor and evaluate the fluvial Arctic grayling (*Thymallus arcticus)* that immigrated into Gibson Reservoir from plants made in the north and south forks of the Sun River from 1999 through 2001. A total of 68 trout (combined numbers of rainbow trout, cutthroat trout, rainbow x cutthroat hybrids), one brook trout, and nine grayling were sampled in about 2,400 seconds shocking time. Fewer grayling were sampled in the South Fork of the Sun River relative to 2001 and 2002 (Tews et al. 2004), and accounted for just 12% of the fish captured. Trout (rainbow trout, cutthroat trout and hybrids) sampled in the river averaged 10.9 inches TL (range: 5.1- to 13.7 inches); grayling averaged 11.1 inches TL (range: 10.3- to 12.3 inches). Most grayling sampled were sexually mature and in spawning condition, including two gravid females that had not yet spawned. The North Fork of the Sun River was not surveyed via electrofishing in 2003. An electrofishing survey was also completed on the north shore of Gibson Reservoir near Scattering Springs during the daytime on 17 June. Six rainbow trout and one brook trout were sampled in about 1,020 seconds shocking time; no grayling were sampled or observed.

Four trap nets were fished overnight in Gibson Reservoir on 17 June and a single set was fished on 18 June. Forebay elevation at time of sampling was 4,723 feet. White suckers dominated the trap net catches accounting for 95% of fish captured (Table 9). Trap net catches of Arctic grayling were much reduced from 2002 although sampling effort was increased. A total of 17 grayling were sampled resulting in a CPUE of 3.4 grayling per trap net night. Grayling accounted for just 1% of the total trap net catch in 2003 compared to 27% in 2002 (Tews et al. 2004). CPUE of rainbow trout was also much reduced in 2003 relative to 2002.

There are several possible explanations for the decline in grayling catches in Gibson Reservoir. Grayling originating from the initial stocking in 1999 were five years of age in 2003 and may be senescing from the population. Additionally, numerous spawning grayling were observed in Lange and Big George creeks (tributaries to Gibson Reservoir) during this sampling period and may partly explain the reduced trap net catches in 2003. Approximately one-mile reaches of each stream were occupied by grayling. About 200 spawning grayling were observed in Lange Creek, while approximately 30 were observed in Big George Creek. Several dead grayling were observed in or near Big George Creek, likely a result of avian predation. Lastly, entrainment losses may be contributing to grayling population declines in Gibson. This was evidenced by a single grayling captured while electrofishing in the Sun River below Gibson Dam in 2002 (Tews et al. 2004).

Descriptive statistics of white suckers, rainbow trout, and grayling sampled in Gibson Reservoir during 2003 were similar to 2002 data (Table 9; Tews et al. 2004). Average TL of grayling increased 0.4 inches to 10.8 inches from 2002 to 2003, but mean size of adults in this population is much smaller than other fluvial populations in Montana (Jim Magee, MT Fish, Wildlife & Parks, personal communication). Similar to previous years, rainbow trout sampled in Gibson were small in size and exhibited low Wr (Table 9), indicating slow growth and poor body condition. These data further evidence the apparent lack of productivity in Gibson Reservoir, resulting from the reservoir's extreme annual drawdown and absence of littoral areas.

Nilan Reservoir - Two floating and two sinking gill nets were fished overnight on 19 September. Only rainbow trout were captured in the floating nets; CPUE averaged 34.0 per net, which was the highest rainbow trout gill net catch rate observed in the Choteau Management Area during 2003 (Figure 12). The net catch was dominated by rainbow trout stocked during 2003, although there was excellent carryover

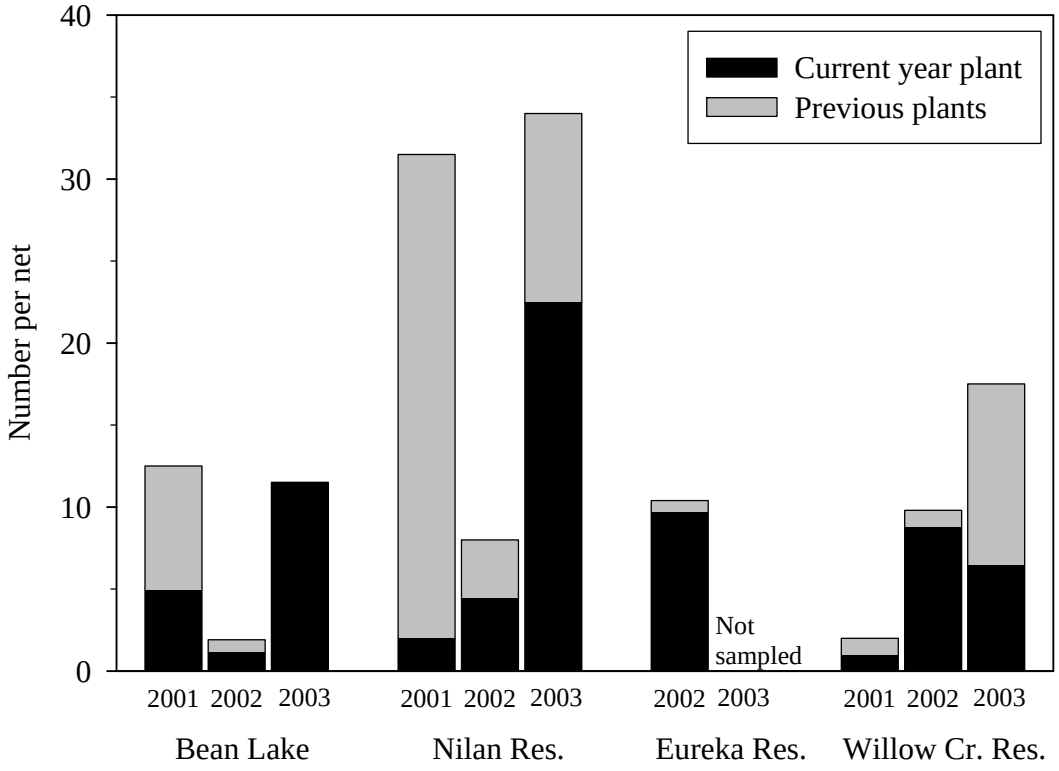

Figure 12. Relative contribution of current and previous years' plants of rainbow trout sampled in Choteau area waters during 2001 - 2003. Catch rates were determined from floating gill nets, except sinking gill net data was used in Bean Lake in 2001 and 2002.

(33.8% of catch) of fish stocked during 2002 (Figure 12). No rainbows from plants prior to 2002 were sampled, thus the largest rainbow trout sampled in the floating nets was 14.8 inches TL. Body condition of rainbow trout sampled in Nilan Reservoir was poor relative to other waters in the Choteau Management Area and exhibited a declining trend since peaking in 2001 (Figure 13). Mean Wr of rainbow trout sampled in floating nets was 81.6. Rainbow trout sampled in sinking nets were larger and had better body condition than those sampled in floating nets (Table 9).

White suckers dominated the sinking net catches, averaging 126.5 per net (Table 9). This was a greater than two-fold increase in CPUE relative to 2002 netting, but there was a corresponding 3.2–inch decline in average size. Additionally, mean Wr of white suckers decreased from 100.6 in 2002 to 87.2 in 2003 (Table 9). These statistics indicate Nilan's sucker population may be abundant enough that body condition is decreasing and the population is stunting. This contradicts data collected during 2002, which indicated Nilan's white sucker population was healthy and not stunted (Tews et al. 2004).

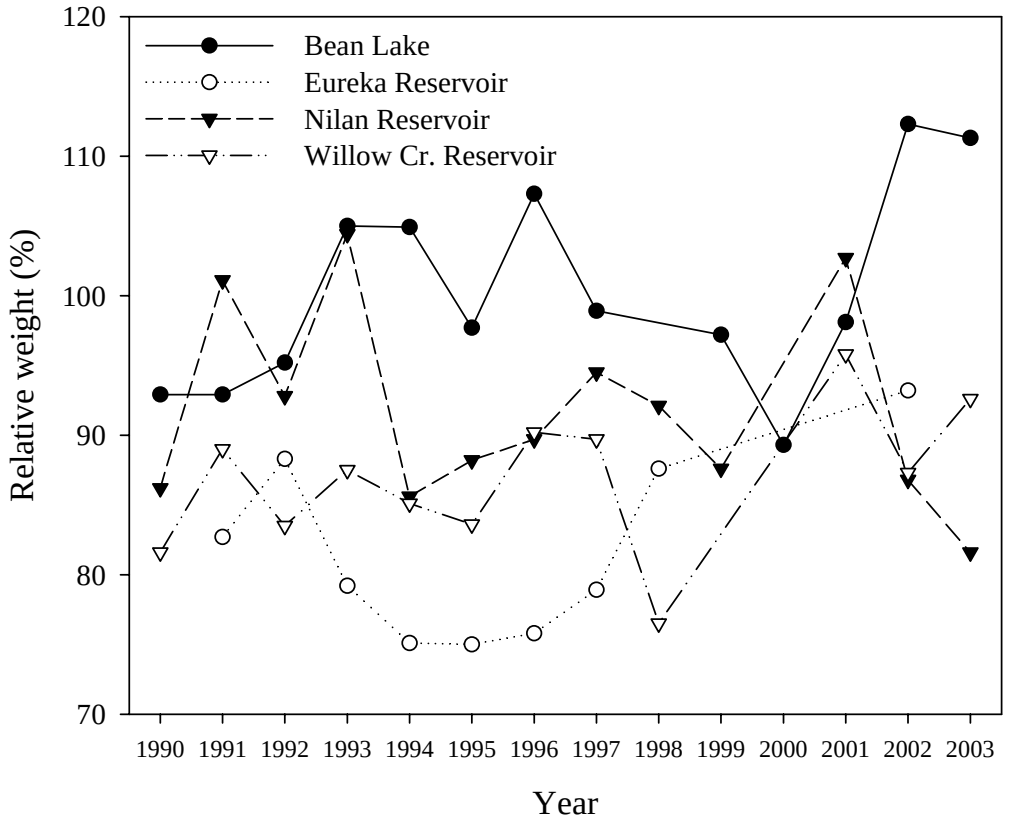

Figure 13. Mean relative weight trends of rainbow trout sampled in Choteau area waters during autumn, 1990 through 2003.

Pishkun Reservoir – Four floating and four sinking gill nets were fished overnight on 26 September. Five kokanee salmon (*Oncorhynchus nerka*) were the only fish sampled in the floating nets, ranging in size from 11.2- to 21.7 inches TL. Stocking of kokanee salmon was discontinued in Pishkun Reservoir in 2003 because of poor survival and lack of recruitment into the creel. Similar to previous years, rainbow trout, kokanee salmon, yellow perch, northern pike, and white suckers were sampled in sinking nets, but at very low abundances (Table 9). Relative body condition of all species was excellent; mean Wr of yellow perch, northern pike, and white suckers exceeded 100 (Table 9).

Over 500 northern pike were removed from Pishkun Reservoir during spring 2003 (Yerk et al., in preparation). It is hoped that reducing predation pressure in the reservoir will lead to better perch fishing, improve pike growth rates, and possibly provide an opportunity to establish a rainbow trout fishery in Pishkun. These management strategies are detailed in the *Montana Warmwater Fisheries Management Plan 1997 – 2006* (1997). Because ongoing drought resulted in increased availability of surplus hatchery fish, over 150,000 rainbow trout were stocked into Pishkun during 2003 (Montana Fish Plants 2003).

Willow Creek Reservoir – Four floating and two sinking gill nets were fished overnight on 2 October. Rainbow trout dominated the floating net catches with a CPUE of 17.5 rainbow trout per net. There was

excellent representation of older rainbow trout in the floating net catches; rainbows stocked previous to 2003 accounted for 63% of the total net catch (Figure 12). Rainbow trout captured in floating nets averaged 12.8 inches TL and had a mean Wr of 92.6 (Table 9). White suckers dominated the sinking net catches, averaging 75.5 per net (Table 9). This was a marked increase in white sucker CPUE relative to 2002 data, but there was an associated decline (nearly 3 inches) in average size and body condition (Tews et al. 2004).

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Principal Fish Species Involved:

Arctic grayling	*Thymallus arcticus*
Brook trout	*Salvelinus fontinalis*
Brown trout	*Salmo trutta*
Burbot	*Lota lota*
Kokanee salmon	*Oncorhynchus nerka*
Longnose sucker	*Catostomus catostomus*
Mountain whitefish	*Prosopium williamsoni*
Northern pike	*Esox lucius*
Rainbow trout	*Oncorhynchus mykiss*
Walleye	*Sander vitreum*
Westslope cutthroat trout	*Oncorhynchus clarki lewisi*
White sucker	*Catostomus commersoni*
Yellowstone cutthroat trout	*Oncorhynchus clarki bouvieri*
Yellow perch	*Perca flavescens*

Code Numbers of Waters Referred to in this Report:

		17-9105	Hidden Lake
14-7320	Eureka Reservoir	17-9330	Newlan Creek Reservoir
16-4300	Ackley Lake	17-9616	Smith River Reservoir
16-4260	Upper Carter Pond	18-7750	Bair Reservoir
16-4261	Lower Carter Pond	18-8380	Martinsdale Reservoir
16-4628	Big Casino Reservoir	18-9500	Yellow Water Lake
16-4950	East Fork Spring Creek Reservoir	20-0600	Big George Creek
16-5535	Hanson Creek Reservoir	20-3200	Lange Creek
16-6340	Kolar Pond # 1	20-5600	South Fork of Sun River
16-6360	Kolar Pond # 2	20-6100	Sun River
16-6385	Kolar Pond # 8	20-7150	Diversion Lake
16-6705	Frog Pond, Lower	20-7350	Gibson Reservoir
16-8657	Frog Pond, Upper	20-7900	Nilan Reservoir
17-8720	Bean Lake	20-7950	Piskun Reservoir
17-8985	Grace Lake	20-8500	Willow Creek Reservoir

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Appendix 1. Catch rate and size of fish captured by anglers interviewed at five reservoirs during Lewistown area creel survey, 2003.

Reservoir	Species	Kept/ hr	Catch/ hr	N	Length (Inches)			Weight (lbs.)			Wr
					Min	Max	Mean	Min	Max	Mean	Mean
Ackley Lake	Rainbow trout	0.36	0.65	16	9.7	18.2	12.7	0.35	2.10	0.82	87
Big Casino	Rainbow trout	0.36	0.52	9	12.9	19.0	16.3	0.72	2.90	1.71	86
	Yellow perch	2.21	2.82	40	7.8	8.8	8.3	0.22	0.36	0.30	104
East Fork	Northern pike	0.06	0.06	2	20.2	22.0	21.1	2.00	2.75	2.38	104
	Yellow perch	3.9	17.2	19	5.4	10.2	7.3	0.08	0.64	0.24	86
Hansen	Rainbow trout	0.60	0.84	8	10.0	13.4	11.7	0.32	0.78	0.54	86
Upper Carter	Rainbow trout	2.4	2.4	6	7.8	13.8	11.4	0.50	0.94	0.71	97

Appendix Table 2. Angler responses to the questions "Would you support lowering the daily limit, size restrictions or catch and release regulations if it improved your chances to catch larger (or more) trout?"

Reservoir	Ackley		Big Casino		East Fork		Hansen		Upper Carter	
Support	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Lower limit	28%	72%	67%	33%	17%	83%	40%	60%	0%	100%
Size restriction	33%	67%	67%	33%	17%	83%	60%	40%	0%	100%
Catch and Release only	50%	50%	78%	22%	33%	67%	60%	40%	0%	100%
Number of Interviews	13		9		6		7		2	