MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS
FISHERIES DIVISION
JOB PROGRESS REPORT

STATE: MONTANA PROJECT TITLE: STATEWIDE FISHERIES INVESTIGATION

PROJECT NO.: F-113-R-6 STUDY TITLE: SURVEY AND INVENTORY OF COLDWATER AND WARMWATER ECOSYSTEMS

JOB NO.: V-e JOB TITLE: NORTHEAST MONTANA WARMWATER ECOSYSTEMS INVESTIGATIONS

JOB PERIOD: JULY 1, 2005 THROUGH JUNE 30, 2006

ABSTRACT

Paddlefish netting and tagging was conducted on the Fort Peck Reservoir/Missouri River paddlefish population, and tagging and harvest records were maintained. Overall harvest on this population remains low has increased in recent years, the average size of adult fish continues to decrease, and recruitment has been poor. Standardized gill netting and beach seining surveys were conducted at Fresno, Nelson, and Beaver Creek Reservoirs. All ponds were sampled through Hill, Blaine and Phillips Counties to assess fish population levels, survival and recruitment. Self-creel boxes were also installed at select ponds in Hill, Blaine, and Phillips Counties to assess fish pressure. The fishery in Bailey Reservoir was supplemented with the stocking of rainbow trout and yellow perch, water levels are improving. Walleye, yellow perch and tiger muskies are exhibiting good growth and survival in Little Warm Reservoir. Results of all other sampling are presented. Gill netting was conducted in the Fort Peck tailwater and dredge cut areas of the Missouri River.

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 and/or fish eradication actions to maintain fish populations at levels consistent with habitat conditions and other limiting factors. Objective accomplished. Assisted hatcheries in fish stocking, provided stocking requests and maintained planting records.

Technical Guidance - To review projects by federal, state and local government agencies and private parties that have the potential to affect fisheries resources, and to provide technical advice or decisions to mitigate impacts on these resources. To provide landowners and other private parties with technical advice and information to sustain and enhance fisheries resources. The objective was met by reviewing and commenting on seven 310 projects and three 124 projects with state and local agencies; advised Rocky Boy Reservation on habitat enhancement projects at Bonneau Reservoir, Box Elder Creek, East Fork Reservoir, and the east fork of Beaver Creek; supplied comments to Bureau of Land Management (BLM) relative to development of new fishing reservoirs.

Angler Education- To enhance the public's understanding, awareness and support of the state's fishery and aquatic resources and to assist young people to develop angling skills and to appreciate the aquatic

environment. Objective accomplished through staff participation in the "Hooked on Fishing" programs with local grade school children, planning and conducting of fall and ice fishing trips with area grade school and junior high children. Public presentations were also given on area fisheries in Havre and Malta. Staff also attended Walleye Unlimited and Rotary Club meetings in Havre and Malta to provide information.

PROCEDURES, RESULTS, & DISCUSSION

Fort Peck Reservoir and Upper Missouri River Paddlefish Stock

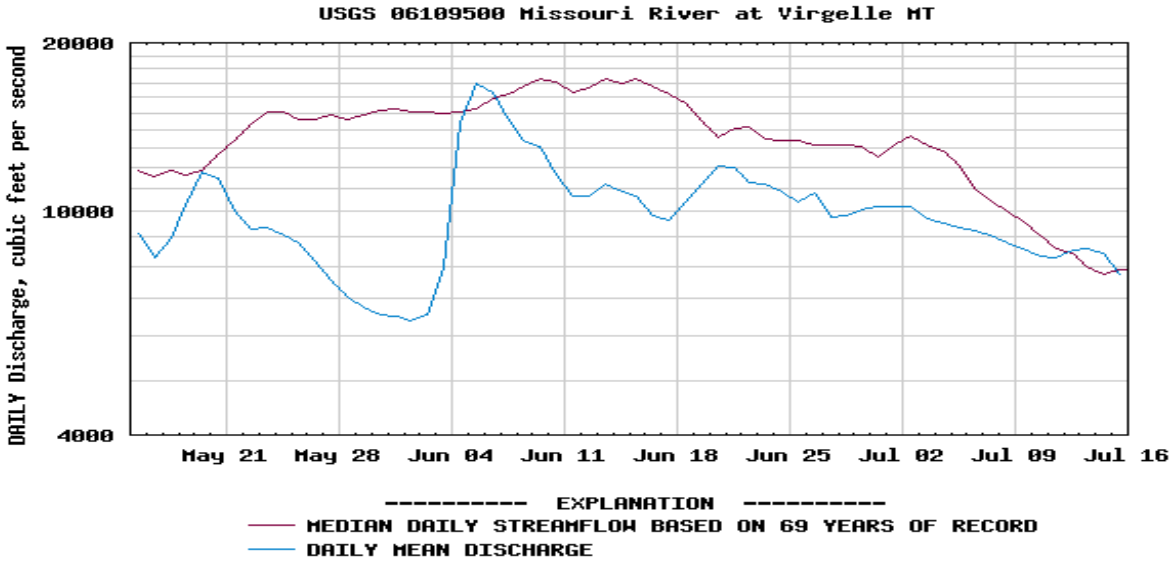
In 2005, adult paddlefish populations were monitored above Fort Peck Reservoir, surveys were conducted in Fort Peck Reservoir to determine spawning success of paddlefish in 2005, a native species creel survey was conducted from April 1 through June 12, 2005, and a paddlefish phone creel survey was conducted.

Adult Paddlefish Monitoring and Tagging

Monitoring of the paddlefish population in Fort Peck Reservoir and the upper Missouri River was initiated in the early 1970s. Adult fish are sampled by floating six and eight feet deep by 100 to 150 feet long 4-inch bar mesh trammel nets from river mile 1888 to 1936. Paddlefish are weighted, measured (eye-fork length), and unmarked fish are tagged using individually numbered plastic jaw tags. Since 1993, a project was initiated to tag up to 500 paddlefish each year. Since 1993, 4,554 paddlefish have been tagged, 323 of them in 2005. Paddlefish snaggers are encouraged to report data from tagged paddlefish that they harvest and periodic creel surveys including a native species creel survey in 2005 increase the reporting of the tagging data. A total of 90 tagged paddlefish were harvested in 2005, 9 tagged paddlefish were released. Eleven of the harvested tagged paddlefish were tagged in 2005 and two of the released paddlefish were tagged in 2005.

For the past two years no spawned out females were captured and only one female, running eggs, was captured. Trigger flows, for spawning adult paddlefish, of 14,000 cubic feet per second (cfs) at the Virgelle gauging station are necessary for successful migration to spawning sites (Berg 1981). In 2005, trigger flows were reached on June 5th (Figure 1). However, the flows did not last long enough to allow for successful migration and spawning.

Figure 1. - Missouri River hydrograph at Virgelle during the 2005 paddlefish spawning season (May 15-July 15).



Young-of-Year Paddlefish Monitoring

The Paddlefish Management Plan requires that accurate annual indices of age-0 paddlefish abundance be obtained in upper Fort Peck Reservoir, Montana. As a result, a protocol for conducting annual visual counts on juvenile paddlefish in Fort Peck Reservoir was established (Bowersox 2004; Miller & Scarnecchia 2006). In addition to visual counts, abiotic factors are measured, and zooplankton densities are determined.

In 2005, 6 transect stations (River Mile 1838 to 1853) were sampled twice in mid August. Only one age-0 paddlefish and one adult paddlefish was observed during these transects. One additional age-0 paddlefish was seen at the mouth of Timber Creek bay during a random search on August 10 (Miller & Scarnecchia 2006). No attempt was made to net paddlefish because of the low observed densities. Thirty-six zooplankton samples were collected. Zooplankton identification has been completed by the University of Idaho, however specific results are pending analysis (Miller & Scarnecchia 2006).

Native Species Creel Survey- preliminary results

The first year of a two-year roving creel survey was conducted from April 1 to June 10, 2005 from the Fred Robinson Bridge to Peggy's Bottom. This study will be continued from April through June 2006. The same study plan will be followed. Upon completion of the second field season, analysis and reports will be completed and delivered to the funding agencies.

Schedule

During the month of April, fishing pressure is lower and one creel clerk was employed. During this time we used a stratified random selection design to select survey dates from two strata, weekends and weekdays. All weekends were surveyed due to the high fishing pressure and two randomly selected weekdays were surveyed. From April 30 to June 12, two creel clerks were employed and all days were surveyed. During high-pressure times, Memorial Day weekend, two extra creel clerks were employed and two teams surveyed anglers.

Effort

Instantaneous pressure counts were performed once a day due to travel distance and time. Starting times were randomly chosen from the fishing day and counts were performed from ten pre-determined vantage points and access areas. Counts were performed at all sites except when road conditions prevented travel to some of the sites.

Harvest and Catch

Angler interviews were conducted at all boat ramps and fishing access/camping sites on the north side of the Missouri River between Fred Robinson Bridge and Peggy's Bottom. Interviews were conducted at each site, during each sampling day except when road conditions prevented travel to certain sites. The creel clerks attempted to interview every fisherman on the river each sampling day. When the creel clerk encountered too many anglers at a location to interview them all, the clerk systematically sub sampled every *k*th fisherman (*k* = interval demanded by the number of fishermen present) to ensure that all locations were sampled. Boat fishermen who launched within the area were interviewed even if they fished out of the study reach. Survey cards were distributed or deposited on windshields of vehicles when boat anglers where not available for interviews.

During interviews, one randomly selected, actively fishing person per party, was interviewed. This individual was asked a series of questions relating to residence, number in party, length of stay, time spent fishing, whether a boat was used, type of gear used, and primary species being sought. Fishermen were asked how many of each species were caught, released and/or kept and if any of these fish had tags and if so the type, color, and number on the tag. When tagged paddlefish were caught, the fisherman was provided with the original tagging location, date, and weight of the fish. In addition, if fishermen released a paddlefish they were asked the reason for the release to determine if size-selective harvest was occurring.

When possible, harvested fish were measured to the nearest 0.1-inch and 0.01-pound. Eye-fork (body) length measurements were taken for paddlefish and fork-length measurements for sturgeon. Age samples consisting of jaws, spines, scales, or otoliths were collected from all harvested fish. These samples were then sent to the University of Idaho for aging.

The creel clerks also carried Passive Integrated Transponder (PIT) tag readers to identify any previously tagged pallid sturgeon and were prepared to PIT tag any new fish they encountered. Pamphlets and brochures developed for sturgeon, sauger, and paddlefish were distributed freely to fishermen.

Preliminary Data Analysis

Fishing effort (angler hours and total effort), catch rates, and harvest estimates were calculated using methods outlined in Pollock et al. (1994). To reduce error, the creel survey time was broken down into three periods (April, May, and June) and then divided out by weekend and weekday effort. Effort was not broken down by fishing method or by species because anglers were usually fishing for more than one species during a day. Upon completion of this study effort, catch and harvest estimates will be refined by gear type to increase the precision of these estimates.

Preliminary results and discussion

A total of 861 parties from 13 states and 45 of the 56 Montana counties were interviewed from April 1 to June 12, 2005. The average party contained 3.9 anglers (range = 1 to 20 anglers), 82.3% of which were males. The average length of stay was 3.9 day/trip (range = 1 to 16 days).

The most commonly used fishing methods were rods, snagging, and setlines. Snagging was the most popular method of fishing and was used by 57.29% of the anglers interviewed. Rod fishing was the second most popular method with 31.97% of anglers using this method. Setlines were the least popular method (10.74%) and were almost always used in combination with another method.

Sixty two percent of the parties interviewed were fishing in May, which coincides with the peak of the paddlefish spawning migration. This corresponds with the primary target species, with paddlefish being the mostly commonly sought fish (77%), followed by channel catfish (7.2%), walleye (6.2%), sauger (4.4%), shovelnose sturgeon (0.6%), and northern pike (0.1%). The majority of anglers contacted were fishing from bank at access points (67.25%). And an almost equal number of anglers were fishing only from their boats (13.4%) or fishing from their boat and from shore (14.75%).

Species caught and released

Preliminary effort, catch and harvest rate estimates were completed and are presented in Tables 1 through 5. Effort estimates are for all fish combined; the hours spent fishing for a specific species was not factored out for these estimates. The data on counts of fish reported to the creel clerks is also presented. A total of 1056 harvested fish representing 16 species were reported to the creel clerks, which equates to an estimated 17,975.63 fish harvested from April to June (Table 4). Shovelnose sturgeon, stonecats, channel catfish, goldeye, paddlefish, walleye, and sauger were the most common species caught by anglers (Table 2). Shovelnose sturgeon, channel catfish, paddlefish, walleye, and sauger were the most common species harvested (Table 4). Average length, weight, and condition of harvested fish measured by the creel clerks were summarized (Table 6).

Paddlefish

A total of 416 paddlefish were caught and reported to the creel clerks during 2005. Overall, there was an estimated catch of 3,069.93 paddlefish (Table 2) and the catch rate was 0.506 paddlefish/hour (Table 3). The highest catch rate and overall catch occurred in May and June (Table 2). Twenty-six percent of the paddlefish were caught and released, with an overall estimated harvest of 2,284.78 paddlefish (Table 4). Six percent of the paddlefish snaggers released paddlefish because they were too big, 21.8% released paddlefish because they were too small, 15.6% released paddlefish because they were catch and release fishing only, and 56.2% released paddlefish for other reasons which were primarily because snaggers did not want to keep paddlefish until the end of their trip.

Harvested paddlefish ranged in length from 33.25 to 71.00 inches (eye-fork length) and ranged in weight from 12.0 to 90.0 pounds (Table 6). Sixty-one percent of the harvested paddlefish were males. And 85 (26%) of the harvested paddlefish and nine (9.7%) of the released paddlefish had jaw tags.

Jaw sections were collected and aged from 202 harvested paddlefish (Table 7). The ages of these fish ranged from 10 to 59 year with 52.5% of the harvested fish being 20 to 27 years old. Twenty percent of the harvested fish were less than 16 years old.

Channel Catfish and Stonecats

A total of 439 channel catfish were caught and reported to creel clerks. Overall there was an estimated catch of 4,773.06 channel catfish (Table 2) and the catch rate was 0.726 channel catfish/hour (Table 3). The highest catch occurred in May with almost equal numbers of channel catfish being caught in April and June (Table 2). Seventy six percent of the channel catfish caught were harvested (Table 4). Fifty-eight percent of anglers released channel catfish because they were too small, 2.9% released them because they were caught snagging for paddlefish, and 29.4% released them for other unspecified reasons.

Harvested channel catfish ranged in length from 10.5 to 35.0 inches and in weight from 0.3 to 26.0 pounds (Table 6). Harvested channel catfish ranged in age from 4 to 17 years old with 83.4% being 11 to 15 years old (Weight range = 5 to 15 pounds; Table 8). And 71.8% of the harvested channel catfish were male.

A total of 139 stonecats were caught and reported to the creel clerks. Overall there was an estimated catch of 5,839.07 stonecats (Table 2) and the catch rate was 0.889 stonecats/hour (Table 3), with the highest catch occurring in May (Table 2). Only 2.5% of the stonecats caught were harvested (Table 4). Forty-one percent of anglers released the stonecats because they were too small, 8.3% released them citing compliance with regulations, and the remaining anglers released their stonecats for other reasons; primarily they did not want the fish. Stonecats that were harvested ranged in length from 5.5 to 7.4 inches and ranged in aged from 3 to 8 years old (n=15; TL range = 5.33 to 7.40 in.; Table 9).

Sauger and Walleye

A total of 331 sauger were caught and reported to the creel clerks. Overall there was an estimated catch of 2,287.66 sauger (Table2), a catch rate of 0.534 sauger/hour (Table 3), with the majority of sauger being caught in April and May. Sixty-two percent of the sauger caught were harvested by anglers (Table 4). The primary reason for release was compliance with regulations, 34% of anglers released sauger because they were too small, 10% of anglers released fish because they were catch and release fishing only, 2% released fish because they were too big, and 10% released fish for other reasons, primarily because they had floy tags. A total of five sauger were reported that had floy tags.

Harvested sauger ranged in length from 11.25 to 24.80 inches and in weight from 0.32 to 3.5 pounds (Table 6). Fifty-four percent of the harvested sauger were males. Harvested sauger ranged in age from 3 to 14, with 87.3% being 5 to 9 years old (TL=13.4-19.2 inches; Table 10).

A total of 114 walleye were caught and reported to the creel clerks. Overall there was an estimated catch of 2,743.16 walleye (Table 2), a catch rate of 0.397 walleye/hour (Table 3), with the majority of the walleye being caught in April and May (Table 2). Fifty-six percent of the walleye that were caught were harvested by anglers (Table 4). The primary reason for anglers to release walleye was because they were too small. Harvested walleye ranged in length from 11.45 to 29.13 inches and in weight from 0.25 to 9.50 pounds (Table 6). Harvested walleye ranged in age from 4 to 15, with 84.5% being 5 to 9 years old (TL=13.3-16.6 inches; Table 10). In general, harvested sauger had greater length and weight than harvested walleye until approximately age 10.

Pallid and Shovelnose Sturgeon

A total of 25 pallid sturgeon were caught and reported to the creel clerks. Overall there was an estimated catch of 664.11 pallid sturgeon (Table 2). One pallid sturgeon was measured and scanned for a PIT tag by the creel clerks. This pallid was 26 inches in length and weight 0.91 pounds and had PIT tag (number 4527066BOF) and a radio transmitter.

A total of 59 shovelnose sturgeon were caught and reported to the creel clerks. Overall there was an estimated 7,831.18 shovelnose sturgeon caught (Table 2). Catch and harvest estimates are high because effort was not broken out by gear type. Upon completion of the 2006 field season, estimates of effort and catch will be refined by gear type.

Based on catch and harvest estimates, 85% of the shovelnose sturgeon caught were harvested. Based on the reported numbers without extrapolation, 52% of the shovelnose sturgeons were harvested. The primary reason for release was compliance with fishing regulations (50%), 11% released fish because they were too small, and 39% released fish for other unspecified reasons. Harvested shovelnose sturgeon ranged in length from 26.5 to 37.25 inches and in weight from 2.90 to 8.25 pounds (Table 6). One age sample was collected

from a shovelnose sturgeon, which was 35 years old (34.5 in., 6.5 lbs.; Table 11). In addition two floy tagged shovelnose sturgeon were reported.

Other Native Species

Other native species caught included burbot, goldeye, freshwater drum, fathead chub, largescale sucker, bigmouth buffalo, smallmouth buffalo, and shorthead redhorse. Goldeye, freshwater drum, and fathead chub were the most common species caught. The majority of these species were released with the exception of burbot (100% harvested), freshwater drum (61.8% harvested), and goldeye (28.6% harvested; Table 4). Specific length, weight, and structural indices for these species are reported in Table 6.

One age sample was collected from a harvested burbot, which was 10 years old (Table 12). Harvested freshwater drum ranged in age from 12 to 15 years (Table 13). Harvested goldeye ranged in age from 5 to 9 years old (TL=11.0-13.2 in; Table 15).

Other Non-native Species

Other non-native species caught included rainbow trout, northern pike, and common carp (Table 2). The harvested rainbow trout was aged as 10 years old (Table 12) and was 21.9 inches long and weighed 2.7 pounds (Table 6). Harvested northern pike ranged in length from 27.0 to 34.5 inches (Table 6). The majority of the common carp which were caught were released (Table 4). The carp that were harvested ranged in length from 18.4 to 26.5 inches (Table 6).

Table 1. - Estimated fishing effort (angler hours) and standard error (SE) by month and time of week for the Missouri River (RM 1899 to 1921), April-June 2005.

	Weekday (angler-hours)	SE	Weekend (angler-hours)	SE	Overall (angler-hours)	SE
April	2650.20	806.09	3103.71	960.99	5753.91	1254.31
May	7833.55	1807.99	9782.00	1889.00	17615.55	2614.80
June	3322.40	816.20	3737.00	1573.34	7059.40	1772.45
Overall	13806.15	2141.21	16622.71	2639.55	30428.87	3398.83

Table 2. - Estimated monthly catch rate (fish/time period) of fish species in the Missouri River (RM 1899 to 1921), April-June 2005.

	April			May			June			Overall		
	Weekday	Weekend	Overall	Weekday	Weekend	Overall	Weekday	Weekend	Overall	Weekday	Weekend	Overall
Rainbow Trout	0.00	61.29	61.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.29	61.29
Northern Pike	18.26	24.75	43.01	46.91	0.00	46.91	0.00	0.00	0.00	65.18	24.75	89.93
Channel Catfish	312.53	317.07	629.59	1253.29	2432.75	3686.05	221.35	236.07	457.42	1787.17	2985.89	4773.06
Burbot	10.71	9.63	20.34	0.00	116.77	116.77	0.00	0.00	0.00	10.71	126.39	137.11
Paddlefish	0.73	116.56	117.28	1034.38	790.38	1824.76	526.53	601.35	1127.88	1561.64	1508.28	3069.93
Common Carp	0.00	83.98	83.98	844.60	611.92	1456.53	527.74	111.04	638.79	1372.35	806.95	2179.29
Goldeye	593.14	612.44	1205.58	985.75	1381.97	2367.72	0.00	0.00	0.00	1578.89	1994.41	3573.30
Freshwater Drum	19.36	94.77	114.14	70.83	295.40	366.23	217.14	0.00	217.14	307.34	390.17	697.51
Fathead Chub	49.17	148.38	197.54	543.35	1950.96	2494.31	0.00	4.41	4.41	592.52	2103.75	2696.27
Largescale sucker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bigmouth buffalo	0.00	0.00	0.00	47.59	25.61	73.20	0.00	2.41	2.41	47.59	28.02	75.61
Smallmouth buffalo	0.00	0.00	0.00	0.00	85.35	85.35	0.00	0.00	0.00	0.00	85.35	85.35
Shorthead redhorse	25.26	65.15	90.42	79.35	225.10	304.45	0.00	0.00	0.00	104.62	290.26	394.87
Stonecat	0.00	0.00	0.00	2247.29	2584.19	4831.48	821.11	186.48	1007.59	3068.41	2770.67	5839.07
Sauger	361.07	530.05	891.12	319.78	1007.73	1327.51	64.86	4.17	69.03	745.71	1541.95	2287.66
Walleye	117.22	1108.85	1226.08	592.49	601.29	1193.78	323.30	0.00	323.30	1033.01	1710.14	2743.16
Pallid Sturgeon	0.00	347.22	347.22	28.14	201.20	229.34	58.26	29.30	87.55	86.39	577.71	664.11
Shovelnose Sturgeon	38.28	9.63	47.91	381.28	6929.38	7310.65	396.09	76.53	472.62	815.65	7015.53	7831.18
All Fish	1545.74	3527.00	5072.74	8475.04	19239.99	27715.03	3156.39	1251.76	4408.15	13177.16	24018.76	37195.92

Table 3. - Estimated hourly catch rate (fish/angler hour) of species in the Missouri River (RM 1899 to 1921), April-June 2005.

	April			May			June			Overall		
	Weekday	Weekend	Overall	Weekday	Weekend	Overall	Weekday	Weekend	Overall	Weekday	Weekend	Overall
Rainbow Trout	0.000	0.016	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.016	0.016
Northern Pike	0.010	0.009	0.019	0.005	0.000	0.005	0.000	0.000	0.000	0.015	0.009	0.023
Channel Catfish	0.052	0.121	0.173	0.164	0.269	0.433	0.067	0.053	0.120	0.283	0.443	0.726
Burbot	0.006	0.001	0.007	0.000	0.012	0.012	0.000	0.000	0.000	0.006	0.013	0.019
Paddlefish	0.001	0.035	0.036	0.118	0.072	0.190	0.144	0.136	0.280	0.263	0.243	0.506
Common Carp	0.000	0.071	0.071	0.066	0.066	0.131	0.112	0.028	0.140	0.178	0.164	0.342
Goldeye	0.287	0.360	0.647	0.136	0.152	0.288	0.000	0.000	0.000	0.423	0.512	0.935
Freshwater Drum	0.007	0.055	0.061	0.011	0.021	0.032	0.046	0.000	0.046	0.064	0.075	0.139
Fathead Chub	0.047	0.027	0.074	0.025	0.267	0.292	0.000	0.034	0.034	0.072	0.329	0.401
Largescale sucker	0.000	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.003
Bigmouth buffalo	0.000	0.000	0.000	0.003	0.002	0.005	0.000	0.019	0.019	0.003	0.021	0.024
Smallmouth buffalo	0.000	0.000	0.000	0.000	0.006	0.006	0.000	0.000	0.000	0.000	0.006	0.006
Shorthead redhorse	0.005	0.007	0.012	0.010	0.025	0.035	0.000	0.000	0.000	0.014	0.032	0.047
Stonecat	0.000	0.000	0.000	0.336	0.303	0.638	0.208	0.042	0.250	0.544	0.345	0.889
Sauger	0.188	0.155	0.343	0.037	0.108	0.145	0.012	0.033	0.045	0.238	0.296	0.534
Walleye	0.038	0.163	0.201	0.057	0.071	0.128	0.069	0.000	0.069	0.163	0.234	0.397
Pallid Sturgeon	0.001	0.091	0.092	0.004	0.011	0.015	0.011	0.036	0.047	0.016	0.138	0.154
Shovelnose Sturgeon	0.009	0.011	0.020	0.024	0.332	0.356	0.101	0.073	0.174	0.134	0.416	0.550
All Fish	0.583	1.136	1.720	1.082	1.967	3.049	0.950	0.335	1.285	2.615	3.438	6.053

Table 4. - Estimated monthly harvest rate (fish/time period) of fish species in the Missouri River (RM 1899 to 1921), April-June 2005.

	April			May			June			Overall		
	Weekday	Weekend	Overall	Weekday	Weekend	Overall	Weekday	Weekend	Overall	Weekday	Weekend	Overall
Rainbow Trout	0.00	61.29	61.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.29	61.29
Northern Pike	18.26	24.75	43.01	46.91	0.00	46.91	0.00	0.00	0.00	65.18	24.75	89.93
Channel Catfish	102.90	244.66	347.56	1121.45	1815.55	2937.00	177.24	161.05	338.29	1401.59	2221.26	3622.85
Burbot	10.71	9.63	20.34	0.00	116.77	116.77	0.00	0.00	0.00	10.71	126.39	137.11
Paddlefish	0.73	73.83	74.55	519.38	657.07	1176.45	435.82	597.96	1033.78	955.93	1328.86	2284.78
Common Carp	0.00	0.00	0.00	102.70	61.28	163.98	0.00	75.45	75.45	102.70	136.73	239.42
Goldeye	29.26	201.28	230.54	474.84	309.96	784.80	0.00	0.00	0.00	504.10	511.24	1015.35
Freshwater Drum	0.00	31.16	31.16	70.83	104.63	175.46	217.14	0.00	217.14	287.97	135.80	423.77
Fathead Chub	0.00	18.20	18.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.20	18.20
Largescale sucker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bigmouth buffalo	0.00	0.00	0.00	0.00	25.61	25.61	0.00	2.41	2.41	0.00	28.02	28.02
Smallmouth buffalo	0.00	0.00	0.00	0.00	85.35	85.35	0.00	0.00	0.00	0.00	85.35	85.35
Shorthead redhorse	0.00	0.00	0.00	45.52	0.00	45.52	0.00	0.00	0.00	45.52	0.00	45.52
Stonecat	0.00	0.00	0.00	0.00	117.91	117.91	0.00	35.58	35.58	0.00	153.49	153.49
Sauger	131.53	84.31	215.83	284.14	895.83	1179.97	64.86	0.00	64.86	480.52	980.14	1460.66
Walleye	110.87	160.95	271.82	478.05	587.13	1065.17	223.04	0.00	223.04	811.95	748.08	1560.03
Pallid Sturgeon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Shovelnose Sturgeon	0.00	9.63	9.63	59.31	6626.82	6686.13	3.25	53.62	56.86	62.56	6690.06	6752.62
All Fish	404.25	916.93	1321.18	3203.13	11403.91	14607.04	1121.35	926.06	2047.42	4728.73	13246.90	17975.63

Table 5. - Estimated hourly harvest rate (fish/angler hour) of species in the Missouri River (RM 1899 to 1921), April-June 2005.

	April			May			June			Overall		
	Weekday	Weekend	Overall	Weekday	Weekend	Overall	Weekday	Weekend	Overall	Weekday	Weekend	Overall
Rainbow Trout	0.000	0.016	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.016	0.016
Northern Pike	0.010	0.009	0.019	0.005	0.000	0.005	0.000	0.000	0.000	0.015	0.009	0.023
Channel Catfish	0.014	0.098	0.112	0.152	0.187	0.339	0.057	0.042	0.099	0.223	0.327	0.550
Burbot	0.006	0.001	0.007	0.000	0.012	0.012	0.000	0.000	0.000	0.006	0.013	0.019
Paddlefish	0.001	0.012	0.014	0.063	0.061	0.124	0.118	0.135	0.253	0.182	0.209	0.391
Common Carp	0.000	0.000	0.000	0.007	0.004	0.012	0.000	0.019	0.019	0.007	0.023	0.030
Goldeye	0.029	0.082	0.111	0.040	0.031	0.071	0.000	0.000	0.000	0.068	0.113	0.181
Freshwater Drum	0.000	0.008	0.008	0.011	0.008	0.019	0.046	0.000	0.046	0.057	0.016	0.073
Fathead Chub	0.000	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.013	0.013
Largescale sucker	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Bigmouth buffalo	0.000	0.000	0.000	0.000	0.002	0.002	0.000	0.019	0.019	0.000	0.021	0.021
Smallmouth buffalo	0.000	0.000	0.000	0.000	0.006	0.006	0.000	0.000	0.000	0.000	0.006	0.006
Shorthead redhorse	0.000	0.000	0.000	0.004	0.000	0.004	0.000	0.000	0.000	0.004	0.000	0.004
Stonecat	0.000	0.000	0.000	0.000	0.010	0.010	0.000	0.005	0.005	0.000	0.015	0.015
Sauger	0.082	0.027	0.109	0.035	0.096	0.131	0.012	0.000	0.012	0.129	0.123	0.253
Walleye	0.036	0.045	0.081	0.046	0.070	0.116	0.043	0.000	0.043	0.125	0.114	0.240
Pallid Sturgeon	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Shovelnose Sturgeon	0.000	0.011	0.011	0.002	0.317	0.319	0.003	0.067	0.070	0.005	0.395	0.400
All Fish	0.153	0.295	0.448	0.409	1.166	1.575	0.338	0.248	0.585	0.899	1.709	2.608

Table 6. – Length, weight, and structural indices of harvested rainbow trout (RBT), northern pike (NP), channel catfish (C CAT), burbot (LING), paddlefish (PF), common carp (CARP), goldeye, fathead chub (FH CH), bigmouth buffalo (BM BUF), smallmouth buffalo (SM BUF), shorthead redhorse (SH RH), stonecat (S CAT), sauger (SGR), walleye (WE), and shovelnose sturgeon (S STURG) from anglers creeled in the middle Missouri River native species creel, 2005.

Species	Sample Size	Length Range (in.)	Length Avg	Length SD	Weight Avg	Weight SD	Condition Factor Avg	Condition Factor SD	Relative Wt Avg	Relative Wt SD
RBT	1	21.90	21.90	0.00	2.70	0.00	25.71	0.00	64.54	0.00
NP	5	27.00-34.50	30.95	0.00	7.28	0.00	21.95	0.00	87.50	0.00
C CAT	259	10.50-35.00	26.91	1.04	9.47	20.50	47.07	537.88	124.60	1641.84
LING	3	18.75-28.50	24.35	0.00	2.70	0.00	20.00	0.00	78.20	0.00
PF	241	33.25-71.00	41.74	1.16	40.30	47.55	53.08	44.57	82.50	68.66
CARP	6	18.40-26.50	22.63	0.00	5.96	0.00	48.80	0.00	97.80	0.00
GOLDEYE	24	11.49-13.07	12.01	0.40	0.55	0.11	31.48	4.62	0.00	0.00
DRUM	5	12.50-19.50	14.42	0.34	0.78	0.12	33.87	4.98	75.30	11.17
FH CH	2	4.75-8.60	6.68	0.00	0.22	0.00	34.59	0.00	0.00	0.00
BM BUF	1	36.50	36.50	0.00	32.00	0.00	65.81	0.00	95.50	0.00
SM BUF	1	17.00	17.00	0.00	1.90	0.00	38.67	0.00	60.20	0.00
SH RH	1	17.40	17.40	0.00	0.98	0.00	18.60	0.00	45.10	0.00
S CAT	15	5.50-7.40	5.83	0.34	0.00	0.00	0.00	0.00	0.00	0.00
SGR	92	11.25-24.80	16.70	0.84	1.44	0.98	28.56	13.49	79.20	36.72
WE	67	11.45-29.13	16.13	0.93	1.84	3.58	33.56	89.72	89.70	241.50
S STURG	9	26.50-37.25	32.37	0.50	4.77	1.43	13.74	2.57	80.90	14.41

Table 7. - Age, sample size, average size, sex, condition factor, and relative weight of paddlefish from which jaw samples were collected during the middle Missouri River native species creel survey, 2005.

Age Class	Size Range	Nbr Sampled	Sex (% Male)	Length Avg	Length SD	Weight Avg	Weight SD	Condition Factor	Condition Factor SD	Relative Wt Avg	Relative Wt SD
10	38	1	100.0	38.00	0.00	29.00	0.00	52.85	0.00	82.7	0.00
11	33.5	1	100.0	33.50	0.00	28.00	0.00	74.48	0.00	118.0	0.00
12	35.0 - 38.5	2	100.0	36.75	2.47	25.00	5.66	49.90	1.30	78.4	1.56
13	35.5 - 36.5	5	100.0	35.85	0.42	21.80	1.10	47.36	3.17	74.5	5.04
14	33.0 - 40.0	10	100.0	36.00	1.83	24.90	2.51	53.58	5.59	84.3	9.04
15	34.0 - 38.0	11	100.0	36.30	1.40	25.20	3.45	52.65	6.42	82.8	10.15
16	34.0 - 44.3	11	90.9	37.70	11.87	28.00	6.30	51.46	4.92	80.6	7.38
17	35.0 - 49.0	5	60.0	39.60	5.46	31.60	11.01	50.29	6.69	78.6	11.17
18	36.0 - 37.5	2	100.0	36.75	1.06	23.00	2.83	46.21	1.70	72.6	2.47
19	37.5	2	100.0	37.50	26.52	27.00	0.00	53.10	0.00	83.2	0.00
20	36.0 - 42.0	11	90.9	38.11	1.94	28.82	6.05	52.08	9.97	81.5	15.75
21	35.3 - 46.0	15	80.0	38.93	3.46	31.40	14.24	50.47	10.12	78.8	15.39
22	40.0 - 45.0	9	77.8	40.59	13.77	37.00	13.29	53.66	8.73	83.5	13.21
23	39.25 - 48.0	22	40.9	42.76	9.47	45.50	12.32	57.51	9.25	89.1	14.22
24	35.8 - 49.5	17	64.7	41.90	4.62	40.27	15.28	49.60	5.91	76.8	8.85
25	36.0 - 48.0	10	70.0	41.70	3.71	39.69	17.69	52.00	10.25	80.7	15.45
26	36.0 - 49.5	10	60.0	41.53	13.73	40.60	13.35	55.84	7.56	86.7	11.04
27	37.0 - 48.3	12	33.3	42.98	13.05	48.79	5.80	57.57	9.46	89.1	14.52
28	39.5 - 47.5	5	20.0	44.40	3.36	51.40	13.03	57.54	3.31	88.8	4.70
29	39.0 - 48.5	4	25.0	45.13	4.37	56.50	17.71	60.34	12.43	93.0	19.12
30	39.0 - 51.0	7	42.9	45.89	4.17	57.00	12.18	59.12	10.24	91.1	16.14
32	36.5 - 50.0	6	66.7	42.58	5.72	43.33	23.48	51.76	7.51	80.2	11.00
33	40.0 - 49.5	2	50.0	44.75	6.72	47.00	25.46	49.45	5.85	76.2	7.98
35	39.0 - 49.5	3	33.3	45.50	5.68	51.00	29.70	54.97	6.21	84.9	8.28
36	50	1	0.0	50.00	0.00	83.00	0.00	66.40	0.00	101.4	0.00
37	39	1	100.0	39.00	0.00	32.00	0.00	53.95	0.00	84.3	0.00
38	39.0 - 44.0	2	50.0	41.50	3.54	41.50	4.95	58.44	7.94	90.8	13.05
39	48.3 - 50.0	2	0.0	49.13	1.24	72.50	3.54	61.16	1.64	93.5	2.72
40	45.5	1	0.0	45.50	0.00	63.00	0.00	66.88	0.00	103.0	0.00
41	41	1	100.0	41.00	0.00	27.00	0.00	39.18	0.00	60.9	0.00
42	40.0 - 50.0	2	50.0	45.00	7.07	45.00	21.21	47.44	0.80	73.2	0.16
43	49	1	0.0	49.00	0.00	62.00	0.00	52.70	0.00	80.6	0.00
44	44.0 - 52.0	4	0.0	47.88	3.42	68.33	9.02	57.73	8.23	88.3	12.83
48	48.3	1	0.0	48.25	0.00	90.00	0.00	80.12	0.00	122.7	0.00
50	41.5	1	0.0	41.50	0.00	40.00	0.00	55.96	0.00	86.9	0.00
52	49	1	0.0	49.00	0.00	73.00	0.00	62.05	0.00	94.9	0.00
59	39.8	1	100.0	39.75	0.00	42.00	0.00	66.87	0.00	104.3	0.00
	Totals:	202	56.9	41.03	4.68	39.47	17.37	54.01	8.71	84.0	13.26

Table 8. - Age, sample size, average size, and condition factor of channel catfish from which pectoral spines were collected during the middle Missouri River creel survey, 2005.

Age Class	Size Range (inches)	Number Sampled	Length Avg	Length SD	Weight Avg	Weight SD	Condition Factor	Condition Factor SD
4	11.5-11.8	2	11.63	0.18	1.25	1.06	81.16	71.19
5	11.8-14.5	8	12.98	1.03	0.69	0.16	30.25	2.15
6	10.5-13.3	2	11.90	1.98	0.55	0.35	29.96	5.72
7	15.5-19.6	3	18.23	2.37	2.70	0.00	35.86	0.00
8	14.0-18.0	3	16.67	2.31	1.53	0.55	32.08	1.06
9	16.0-19.0	4	17.13	1.44	1.45	0.49	23.38	4.04
10	19.0-34.0	5	23.90	5.96	5.64	5.06	34.06	4.45
11	19.5-34.0	23	28.02	4.19	9.04	4.18	37.97	4.15
12	18.5-35.0	47	27.96	4.33	10.26	5.48	41.44	8.16
13	22.0-34.3	56	28.53	3.49	10.60	4.32	42.87	7.24
14	19.0-34.0	30	27.42	3.73	10.41	6.43	59.22	92.16
15	14.4-33.0	11	27.69	5.45	12.67	7.62	132.03	300.59
16	30.5-34.5	4	32.31	1.80	13.20	2.64	38.92	4.27
17	28	1	28.00	0.00	9.00	0.00	41.00	0.00
	Totals	199	26.55	5.77	9.41	5.74	48.71	82.39

Table 9. - Age, sample size, average size, and condition factor of stonecats from which pectoral spines were collected during the middle Missouri River creel survey, 2005.

Age Class	Size Range (inches)	Nbr Sampled	Length Avg	Length SD	Weight Avg	Weight SD
3	5.5	1	5.50	0.00	0.00	0.00
4	5.6 - 6.2	3	5.80	0.35	0.00	0.00
5	5.0 - 5.5	4	5.33	0.24	0.00	0.00
6	5.5 - 6.0	4	5.75	0.24	0.00	0.00
7	6.3 - 6.6	2	6.45	0.21	0.00	0.00
8	7.4	1	7.40	0.00	0.00	0.00
	Totals:	15	5.83	0.60	0.00	0.00

Table 10. - Age, sample size, average size, sex, condition factor, and relative weight of sauger from which otoliths were collected during the middle Missouri River creel survey, 2005.

Age Class	Size Range (inches)	Nbr Sampled	Length Avg	Length SD	Weight Avg	Weight SD	Condition Factor	Condition Factor SD	Relative Wt Avg	Relative Wt SD
3	11.3	1	11.25	0.00	0.32	0.00	22.47	0.00	67.0	0.00
4	13.5 - 15.0	2	14.25	1.06	0.81	0.12	27.82	2.05	79.4	6.94
5	12.0 - 15.0	7	13.44	1.29	0.68	0.26	26.58	3.44	76.6	8.99
6	13.7 - 19.1	12	16.33	1.87	1.18	0.42	27.38	3.76	76.5	10.89
7	13.0 - 21.0	16	16.09	1.97	1.13	0.39	27.93	2.74	78.2	7.46
8	14.1 - 19.8	16	17.35	1.83	1.62	0.58	29.79	2.92	82.0	7.47
9	15.3 - 20.5	6	18.47	2.07	2.08	0.68	31.98	3.93	87.0	10.54
10	17.3 - 19.8	5	19.20	1.09	2.09	0.35	29.35	2.69	79.2	7.58
11	20.9 - 22.1	2	21.50	0.85	3.10	0.14	31.25	2.27	82.6	6.61
12	15.5 - 24.8	3	21.33	5.08	3.50	0.00	22.95	0.00	59.0	0.00
14	18.3	1	18.25	0.00	1.40	0.00	23.03	0.00	62.7	0.00
	Totals:	71	16.86	2.75	1.45	0.73	28.49	3.52	79.0	9.21

Table 11. - Age, sample size, average size, sex, condition factor, and relative weight of walleye from which otoliths were collected during the middle Missouri River creel survey, 2005.

Age Class	Size Range (inches)	Nbr Sampled	Length Avg	Length SD	Weight Avg	Weight SD	Condition Factor	Condition Factor SD	Relative Wt Avg	Relative Wt SD
4	13.8	1	13.75	0.00	0.92	0.00	35.39	0.00	96.8	0.00
5	11.0 - 18.0	14	13.33	2.03	0.72	0.31	29.49	4.08	81.4	12.43
6	12.0 - 16.4	13	13.78	1.32	0.74	0.28	27.33	5.72	74.8	15.52
7	13.1 - 17.6	13	15.40	1.65	1.10	0.35	29.24	2.48	78.5	6.70
8	12.8 - 14.9	2	13.85	1.48	0.85	0.35	30.93	3.28	84.5	7.34
9	14.3 - 20.3	7	16.66	2.32	1.38	0.71	28.64	6.94	75.9	18.72
10	23.8	1	23.75	0.00	5.40	0.00	40.31	0.00	100.0	0.00
11	23.7	1	23.70	0.00	4.49	0.00	33.73	0.00	83.7	0.00
12	22.0 - 29.4	5	25.48	3.45	5.44	2.38	31.87	5.50	78.2	13.65
15	28.5 in	1	28.50	0.00	8.50	0.00	36.72	0.00	88.1	0.00
	Totals:	58	15.99	4.39	1.59	1.87	29.59	5.00	79.2	13.01

Table 12. - Age, sample size, average size, and condition factor of burbot, shovelnose sturgeon, and rainbow trout from which otoliths, pectoral spines, and otoliths were collected, respectively, during the middle Missouri River creel survey, 2005.

Species	Age	Size Range (inches)	Nbr Sampled	Length Avg	Length SD	Weight Avg	Weight SD	Condition Factor	Condition Factor SD	Relative Wt Avg	Relative Wt SD
Burbot	10	25.8	1	2.2	0	2.2	0	--	--	--	--
Shovelnose Sturgeon	35	34.5	1	34.5	0	6.5	0	15.83	0	90.8	0
Rainbow Trout	10	21.9	1	31.9	0	2.7	0	25.71	--	--	--

Table 13. - Age, sample size, average size, and condition factor of freshwater drum from which otoliths were collected during the middle Missouri River creel survey, 2005.

Age Class	Size Range (inches)	Nbr Sampled	Length Avg	Length SD	Weight Avg	Weight SD	Condition Factor	Condition Factor SD	Relative Wt Avg	Relative Wt SD
12	12.5	1	12.50	0.00	0.60	0.00	30.72	0.00	69.0	0.00
13	13.8	1	13.75	0.00	0.90	0.00	34.62	0.00	76.2	0.00
15	13.1	1	13.10	0.00	0.90	0.00	40.03	0.00	89.0	0.00
	Totals:	3	13.12	0.63	0.80	0.17	35.12	4.68	78.1	10.15

Table 14. - Age, sample size, average size, and condition factor of goldeye from which scales were collected during the middle Missouri River creel survey, 2005.

Age Class	Size Range (inches)	Nbr Sampled	Length Avg	Length SD	Weight Avg	Weight SD	Condition Factor	Condition Factor SD
5	11.8	1	11.80	0.00	0.50	0.00	30.43	0.00
6	11.0 - 13.0	8	11.88	0.62	0.51	0.07	30.46	3.62
7	11.3 - 13.0	6	12.01	0.62	0.54	0.08	30.83	3.10
8	11.9 - 13.2	4	12.63	0.54	0.68	0.05	33.60	2.21
9	11.5 - 12.4	2	11.95	0.64	0.55	0.07	32.17	0.99
	Totals:	21	12.06	0.61	0.55	0.09	31.32	3.05

Paddlefish Phone Creel (2003-2005)

Vic Riggs with the MTFWP and Larry Brooks with the University of North Dakota (Riggs 2005) have conducted the paddlefish phone creel survey annually since 2003. This survey was conducted (1) to determine the harvest of paddlefish at sites other than the Intake Fishing Access Site, (2) as a check on the accuracy of the Intake creel survey, (3) as a possible replacement for the Intake creel survey, which would free up technician time for other data collection needs, and (4) to obtain harvest statistics for the Fort Peck population. For methods and specific data analysis information please see Riggs, 2005.

From 2003 to 2005, harvest statistics were obtained for the Fort Peck population (Table 15). In 2005, two questions were added to determine why anglers were releasing paddlefish, and to determine the support for reducing the snagging limit to one paddlefish and the possible removal of catch and release fishing.

On average approximately 2,486 anglers fish for paddlefish above Fort Peck representing approximately 7,767 fishing days. On average approximately 1,351 paddlefish are caught annually above Fort Peck Reservoir (Table 15). Approximately 69% of the paddlefish caught were harvested (Table 15). Since 2003, the number of paddlefish being released had decreased from 715 in 2003 (45% released) to 229 in 2005 (16% released). In 2005, 1,370 paddlefish were caught and 1,141 of those fish were harvested. Reasons listed for releasing fish included, fish escaped when landing (33%), snagger had enough fish in their party (33%), snagger wanted to keep fishing (33%). When

snaggers were asked if they supported or opposed the reduction of the two fish limit to one fish per angler, 54.78% supported reducing the limit to one fish, 22.11% did not support or oppose the change, and 21.1% opposed the reduction. When asked if they supported or opposed the removal of the snaggers ability to immediately release a snagged paddlefish, 39.7% supported the removal of catch and release, 29.4% did not support or oppose the change, and 30.91% opposed the changed.

Table 15. - Summarized estimates for the Fort Peck paddlefish population from the Montana paddlefish telephone creel survey (2003-2005).

Missour River Above Fort Peck Reservoir

	2003	2004	2005	Average
Number of Anglers	1,902	2,853	2,705	2,486.67
Total Days Fished*	5,757	9,159	8,385	7,767.00
Total Hours Fished*	27,433	14,217	42,279	27,976.33
Number Caught	1,583	1,102	1,370	1,351.67
Number Harvested	868	785	1,141	931.33
Harvest Rate (fish/day)	0.151	0.086	0.136	0.124
Harvest Rate (fish/hour)	0.032	0.055	0.027	0.033
Percent Released	45.17%	28.77%	16.72%	30.22%

* Includes hours spent catch and release fishing

Discussion

The paddlefish population above Fort Peck Reservoir has experienced declines in recruitment, growth, and overall size of adults. Flows in the Missouri River have not been high enough to produce large year classes of paddlefish for the past 10 to 15 years (Leslie 2005). As a result the population consists primarily of 20 to 60 year old fish. In addition, the average size of adults has significantly decreased over the last 30 years (Bowersox 2004). These declines, especially in growth, are believed to be the result of decreased productivity due to the aging of Fort Peck Reservoir (nursery grounds for paddlefish). Paddlefish are not experiencing as high of growth rates while residing in Fort Peck Reservoir and as a result sexually mature fish are of a smaller size than they were when Fort Peck Reservoir was initially formed. In addition, natural mortality and fishing mortality are resulting in the decreased proportion of large fish, specifically females. Fishing pressure has nearly doubled from 1977 to 2000, and high grading allows fishermen to increase their chances of catching a fish of a desirable size. The decreased weight of adult females is of concern because it is directly related to fecundity.

The combination of a low number of successful spawning years (based on observed trigger flow occurrence and duration) and decreased size of adults is of concern. The results of reduced recruitment of young-of-year (YOY) paddlefish will not be evident in the spawning population for a few years, however it would be prudent to consider the effects of reduced recruitment and reduced fecundity of the adult population. Since 1992, snaggers have been allowed to harvest two paddlefish per year from the upper Missouri River fishery. Snaggers are also allowed to immediately release a snagged paddlefish if they desire. Based on analysis of the fishery and public support, the fishing limit should be reduced from two paddlefish to one paddlefish annually. The ability to catch and release fish should not be removed. There is no evidence that high grading is a common occurrence, the most common reason for release is that anglers are catch and release fishing until the end of their trip.

Fresno Reservoir

Fresno Reservoir, located 12 miles northwest of Havre, was built in 1939 for irrigation purposes along the Milk River. Fresno is a highly fluctuating mainstem reservoir of 5,757 surface acres with a mean depth of 27 feet, and a maximum depth of 48 feet. Fresno was initially developed as a rainbow trout fishery in the 1940's and 50's, however an illegal introduction of northern pike in the 1940's resulted in a severe decline in the rainbow trout fishery. As a result, Fresno was developed as a warm-water fishery and walleye, yellow perch, crappie, largemouth bass, smallmouth bass, Lake Superior whitefish, emerald shiner, and spottail shiners were introduced. Over the years, kokanee salmon, brown trout, and rainbow trout have been introduced to supplement the fishery when walleye and northern pike populations were low.

The fishery in Fresno has fluctuated throughout the years due to high fluctuations in water levels. On average, water levels in Fresno fluctuate 21.1 feet per year. The timing of this fluctuation greatly impacts the reproduction and survival of forage and sport fish. The fishery in Fresno was severely decreased in 2001 and 2002 when severe drought reduced the reservoir to 8% and 4% of storage capacity, respectively. Forage fish populations were drastically reduced and condition of key sport fish was at an all time low. As a result, 170,000 pre-spawn adult yellow perch were introduced to increase population levels so that when water levels increased, forage fish populations could rebound. In addition, 100,000 walleye fingerlings were stocked in 2003 and 2004, and 101,500 were stocked in 2005. In 2004, water levels increased and flooded shoreline vegetation, allowing the successful spawning and recruitment of forage fishes. Water levels were good in 2005, and sport fish populations are rebounding. The continued recovery of the fishery is dependent of maintaining water levels that will allow the successful spawning and recruitment of forage and sport fishes.

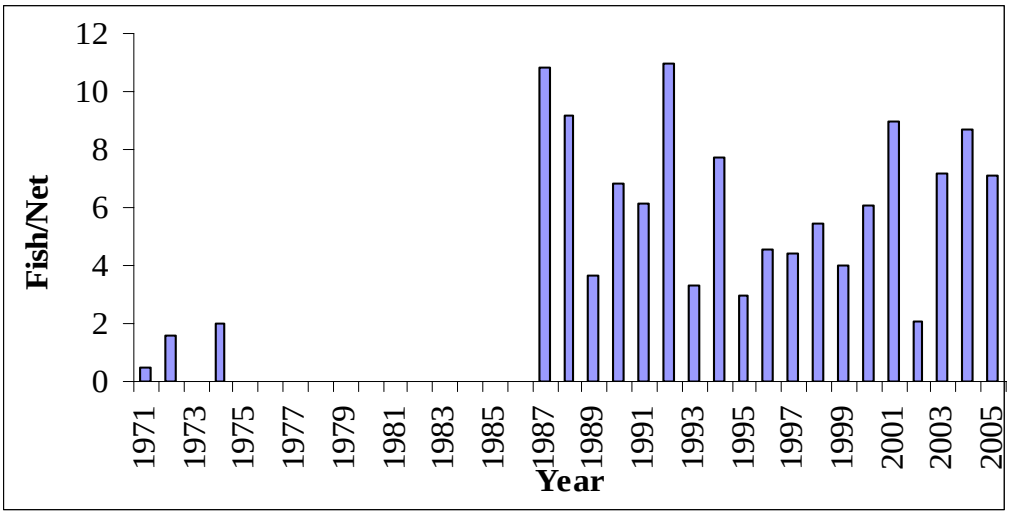
Population Status of Adult Fishes

Adult fish populations were monitored from 1965 to 1974, using systematic gill netting, at predetermined stations. Sampling at 12 predetermined stations was resumed in 1987 to determine changes in sport fish abundance and species composition. Samples were collected over two days utilizing six sinking multi-filament experimental gill nets each day (12 net-days). The sinking gill nets were 125 feet in length and 6 feet deep consisting of 25-foot panels of 3/4 -, 1-, 1 1/4-, 1 1/2-, and 2-inch mesh. Fish were measured for total length (TL: inches) and weighted to the nearest 0.01 pound. Prior to 2005, scales were collected for aging from all walleye and sauger. In 2005, otoliths were collected from walleye for aging and oxytetracycline (OTC) analysis.

Lake Superior Whitefish

Lake Superior whitefish (whitefish) continue to comprise a significant portion of the gill net catch (Figure 2), but are rarely utilized by anglers. Whitefish exhibit high growth rates in the reservoir, and thereby escape predation from all but the largest walleye and northern pike. Whitefish appear to reproduce successfully in years of stable over-winter storage. Over 90% of the 2003 catch was YOY fish (< 7 inches), no YOY whitefish were present in the gillnetting catch in 2004, and a small proportion of the catch in 2005 consisted to YOY. In 2005, the majority of the catch consisted of whitefish in the 11-13 inch size class, with the average length being 13.33 inches.

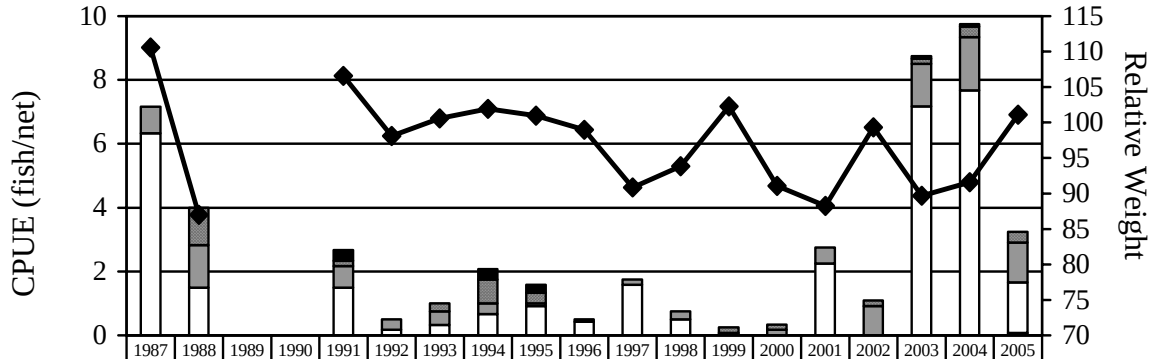
Figure 2. - Fall gillnetting catches of Lake Superior whitefish in Fresno Reservoir, 1971- 2005. No netting was conducted from 1975-1986.



Yellow Perch

The yellow perch fishery in Fresno has been negatively impacted by drought over the last seven years. As a result of extreme drawdowns in 2001 and 2002, yellow perch were not able to successfully spawn (Table 16) and population levels were drastically reduced (Figure 3). As a result, 170,000 pre-spawn adult yellow perch were introduced from 2002 to 2004 to increase population levels so that when water levels increased, forage fish populations could rebound. In 2003 and 2004, water levels increased and flooded shoreline vegetation, allowing the successful spawning and recruitment of forage fishes and stocking of pre-spawn perch was discontinued in 2005. In 2005, water levels were higher than in past years and remained steady during the critical spawning and rearing stages allowing for the continued survival and recruitment of perch into the population (Figure 3). The continued recovery of the fishery is dependent of maintaining water levels that will allow the successful spawning and recruitment of forage and sport fishes.

Figure 3. - Relative abundance, size structure, and relative weight of yellow perch collected with sinking experimental gill nets in Fresno Reservoir, 1987-2005.

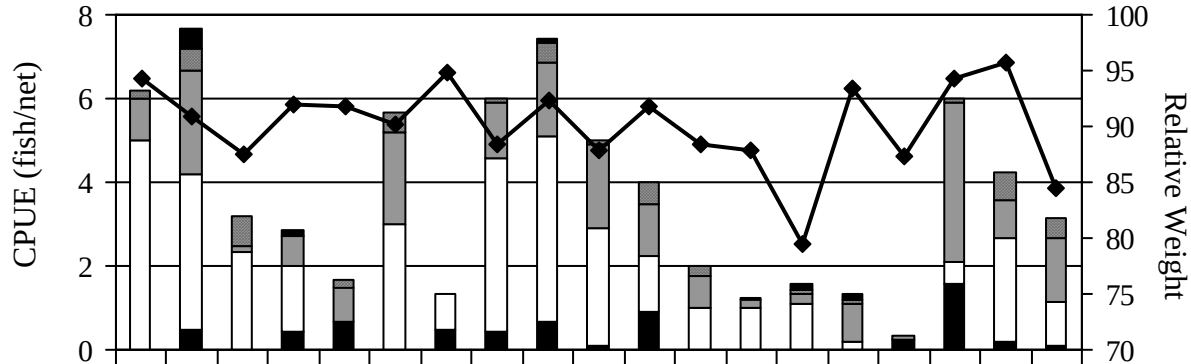


	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Memorable (>12 in.)	0	0	0	0	0.33	0	0	0.33	0.25	0	0	0	0	0	0	0	0.08	0.08	0
Preferred (10-11.9 in.)	0	1.17	0	0	0.17	0	0.25	0.75	0.33	0	0	0	0.17	0.17	0	0.17	0.17	0.33	0.33
Quality (8-9.9 in.)	0.83	1.33	0	0	0.67	0.33	0.42	0.33	0.08	0.08	0.17	0.25	0.08	0.17	0.5	0.92	1.33	1.67	1.25
Stock (5-7.9 in.)	6.33	1.5	0	0	1.5	0.17	0.33	0.67	0.92	0.42	1.58	0.5	0	0	2.25	0	7.17	7.67	1.58
Sub Stock (<5 in.)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.08
Relative weight	110.6	86.99			106.6	98.12	100.6	101.9	101	98.99	90.84	93.84	102.3	91.07	88.25	99.3	89.66	91.6	101.1

Northern pike

Since the illegal introduction of northern pike in Fresno Reservoir in the 1940s, their populations have fluctuated over the years (Figure 4). Extreme drought in 2000 to 20002 reduced population levels of northern pike and greatly reduced recruitment. The population rebounded in 2003 with increased water levels and an abundance of flooded shoreline vegetation. Since 2003, reproduction has been steady but lower than pre-drought levels. The population is maturing and consists of a nice mix of quality (21-27.99 in.) and preferred (28-33.99 in.) size groups of fish.

Figure 4. - Relative abundance, size structure, and relative weight of northern pike collected with sinking experimental gill nets in Fresno Reservoir, 1987-2005.



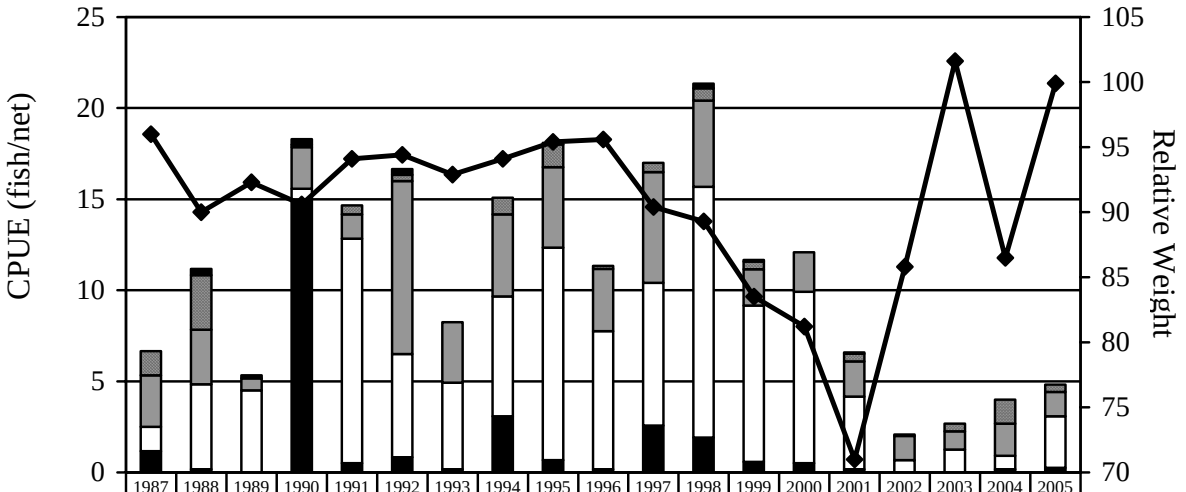
	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Memorable (>34 in.)	0.00	0.50	0.00	0.14	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.17	0.17	0.00	0.00	0.00	0.00
Preferred (28-33.9 in.)	0.17	0.50	0.67	0.00	0.17	0.50	0.00	0.08	0.50	0.08	0.50	0.25	0.08	0.08	0.08	0.00	0.08	0.67	0.50
Quality (21-27.9 in.)	1	2.5	0.17	0.71	0.83	2.17	0	1.33	1.75	2	1.25	0.75	0.17	0.25	0.92	0.08	3.83	0.92	1.5
Stock (14-20.9 in.)	5.00	3.67	2.33	1.57	0.00	3.00	0.83	4.17	4.42	2.83	1.33	1.00	1.00	1.08	0.17	0.00	0.50	2.50	1.08
Sub Stock (<14 in.)	0.00	0.50	0.00	0.43	0.67	0.00	0.50	0.42	0.67	0.08	0.92	0.00	0.00	0.00	0.00	0.25	1.58	0.17	0.08
Relative weight	94.29	90.89	87.52	91.88	91.77	90.15	94.79	88.41	92.34	87.88	91.78	88.37	87.90	79.51	93.43	87.41	94.29	95.72	84.43

Walleye

The relative abundance of walleye continues to increase after the drastic decrease in abundance from 2000 to 2002 as a result of drought (Figure 5). In addition, walleye continue to exhibit high condition indices, which is attributable to a forage base that is adequate for the existing population levels of predators (Figure 5). Walleye sampled in 2005 ranged in length from 6.3 to 24.5 in. and weighed 0.1 to 5.7 pounds, with the average being 13.9 inches in length and weighing 1.23 pounds. Fifty-eight percent of the walleye were stock size (10-14.9 in.), with 36% being in the quality (15-19.9 in.) and preferred (20-24.9 in.) size groups. Walleye ranged in age from 0 to 5 years old, with the majority of walleye sampled being from the 200 to 2004 age classes (Table 16).

Since 2002, all walleye fingerlings stocked into Fresno Reservoir have been marked with 750 ppm OTC to allow the calculation of survival of stocked fish and to distinguish stocked fish from naturally reproduced fish. In 2005, 53 otoliths were aged and examined for the OTC mark, 36 otoliths were ultimately used for OTC analysis based on the ages of the fish. All three-age classes were present with an average of 41% of all fish examined showing the OTC mark, without any corrections for tag lost (Table 16). The percent of each marked year class shows 2003 and 2004 as having the strongest showing of fish marked in the population with 80% of each year class having the mark. However the 2005 age class is underrepresented in the samples because of the selectivity of the gear, so the percentage marked is an inaccurate representation. If water levels remain steady and favorable for successful spawning of walleye, the percentage of naturally reproduced walleye should continue to increase and account for a significant proportion of the population.

Figure 5. - Relative abundance, size structure, and relative weight of walleye in Fresno Reservoir for the years 1987-2005.



	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Memorable (>25 in.)	0	0.33	0.17	0.29	0	0.33	0	0	0.08	0	0	0.25	0.08	0	0.08	0	0	0	0
Preferred (20-24.9 in.)	1.33	3	0	0.14	0.5	0.33	0	0.92	1.25	0.17	0.5	0.67	0.42	0	0.42	0.08	0.42	1.33	0.42
Quality (15-19.9 in.)	2.83	3	0.67	2.29	1.33	9.5	3.33	4.5	4.42	3.42	6.08	4.75	2	2.17	1.92	1.33	1	1.75	1.33
Stock (10-14.9 in.)	1.33	4.67	4.5	0.57	12.33	5.67	4.75	6.58	11.67	7.58	7.83	13.75	8.58	9.42	4	0.67	1.25	0.75	2.83
Sub-stock (<10 in.)	1.17	0.17	0	15	0.5	0.83	0.17	3.08	0.67	0.17	2.58	1.92	0.58	0.5	0.17	0	0	0.17	0.25
Relative weight	96	90	92.3	90.6	94.1	94.4	92.9	94.1	95.4	95.6	90.4	89.3	83.5	81.2	71	85.8	101.6	86.5	99.9

Table 16. - Age and oxytetracycline (OTC) summary statistics of walleye from Fresno Reservoir, aged by otoliths, 2005.

Age Class	Size Range (in.)	Nbr Sampled	Length Avg (in.)	Length SD	Weight Avg (lbs.)	Weight SD	Relative Wt Avg	Relative Wt SD	% OTC Positive
0	6.3 - 7.2 in	3	6.83	0.47	0.13	0.04	124.7	15.99	0.00%
1	10.0 - 12.2 in	27	11.09	0.56	0.50	0.08	103.8	7.23	80.00%
2	13.3 - 15.4 in	6	14.38	0.68	1.05	0.15	94.9	2.23	80.00%
3	14.0 - 19.2 in	7	15.76	1.71	1.39	0.55	91.1	3.89	--
4	17.0 - 20.2 in	6	18.58	1.12	2.03	0.46	82.0	15.99	--
5	19.3 - 24.1 in	3	22.07	2.48	4.09	1.29	93.5	1.92	--
	Totals:	52	13.35	3.84	1.05	1.00	99.2	12.72	

Sauger

Sauger populations have been relatively low in Fresno Reservoir since the construction of the Fresno Dam. Sauger have been captured periodically primarily in the upper reservoir where the Milk River enters Fresno Reservoir. Sauger populations increased in 2001 and 2002 when drought and extreme drawdowns resulted in an increase in riverine habitat (Table 16).

Salmonids

Prior to 2002, salmonids had not been planted in Fresno Reservoir since the 1970's. A combination of low numbers of walleye and northern pike present in the Reservoir and the large number of unallocated trout available from hatcheries due to the statewide drought provided a window of opportunity to develop an interim trout fishery while the walleye and northern pike population recovers. A total of 185,000 rainbow trout and 93,000 kokanee salmon were planted in the Reservoir in 2002. An additional plant of 100,000 4-inch rainbow trout was made in the spring of 2003. Fall netting in 2002 captured three trout 11-12 inches long and a 6.7-inch kokanee. However, no trout have been collected since and few trout have been reported caught by anglers.

Population Status of Young-of-Year Fishes

The abundance and reproductive success of sport and forage fishes were monitored at 12 fixed sites, which were established in 1968. Beach seining was conducted in late summer using a 100- x 9-foot x ¼ inch square mesh beach seine. The first 50 fish of each species was measured (TL: inches) and weight to the nearest 0.01 pound. All additional fish of each species were counted.

Historically, the abundance of young-of-year (YOY) fishes has been dictated by the annual fluctuations in water levels within Fresno Reservoir. On average, water levels in Fresno fluctuate 21.1 feet per year. The timing of this fluctuation greatly impacts the reproduction and survival of forage and sport fish. The extreme draw down of Fresno in 2001 and 2002 greatly reduced the population levels of most fishes in Fresno except for sauger, which took advantage of the increased riverine habitat (Table 17).

Since the extreme drawdowns, YOY forage and sport fish populations have been increasing and will continue to recover. While the reservoir levels were reduced, vegetation regenerated along the shoreline. In 2003, water levels increased and sport and forage fishes were able to take advantage of the abundance of shoreline vegetation. In 2004, crappie, emerald shiner, and spottail shiner numbers were significantly lower than in 2003. Emerald shiner and spottail shiner counts were most likely inaccurate as a result of passage of shiners through the ¼ inch mesh. Spawning may have been delayed as a result of the delayed rise in water levels thus resulting in reduced size of shiners at the time of seining. In 2005, water levels were higher than normal during seining surveys and the abundance of shoreline vegetation reduced the effectiveness of the gear.

Table 17. – A summary of forage fish and young-of-year forage and sport fish collected using a 100- x 9-foot x ¼ inch square mesh beach seine in Fresno Reservoir, 1968-2005.

Year	Seine Hauls	*Sanders*	Walleye	Sauger	Northern Pike	Yellow Perch	Emerald Shiner	Crappie Sp.	Spottail Shiner	Sucker sp.[1]	Minnow sp.[2]	Other[3]
1968	12	16	--	--	6	2,909	147	552	0	0	161	0
1969	12	4	--	--	6	1,140	385	67	0	2	380	0
1970	12	27	--	--	45	10,151	521	883	0	1	122	0
1972	12	102	--	--	22	1,005	205	379	0	0	72	0
1974	12	13	--	--	59	1,583	29	1,355	0	0	25	0
1975	11	10	--	--	32	4,154	155	59	0	0	0	0
1978	12	22	--	--	42	10,684	12	3	0	0	0	0
1979	12	29	--	--	45	8,516	340	127	0	1	0	1
1982	12	102	--	--	70	8,993	121	166	0	0	0	3
1983	12	23	--	--	0	2,254	448	9	0	1	7	0
1984	12	247	--	--	0	197	375	0	2	40	55	0
1985	12	64	--	--	0	379	684	3	2	0	9	0
1986	12	0	--	--	23	6,077	142	2	20	1	5	1
1987[+]	12	80	--	--	113	6,233	1,979	7	3	0	3	0
1988	12	53	--	--	4	3,122	182	0	20	0	1	0
1989[+]	12	56	--	--	32	24,706	22	0	16	2	0	0
1990	12	8	--	--	57	2,033	7	465	44	1	2	0
1991[+]	12	8	--	--	36	3,425	0	42	53	0	0	0
1992[+]	12	45	--	--	2	6,550	28	0	48	0	1	0
1993[+]	12	24	--	--	9	5,595	12	2	162	0	0	0
1994[+]	12	19	--	--	19	2,960	3	287	1,421	1	0	0
1995	12	5	--	--	2	1,080	0	2	129	0	1	0
1996[+]	12	52	--	--	21	3,576	0	1	1,484	42	0	0
1997[+]	12	46	--	--	15	3,006	2	1	887	2	0	0
1998[+]	12	44	--	--	1	1,413	9	0	1,041	1	3	0
1999	12	50	--	--	7	4,271	176	12	182	13	0	0
2000	6	29	--	--	0	1,396	2	2	30	2	0	1
2001	6	86*	--	--	0	39	3	0	3	3	1	0
2002	12	28*	--	--	2	86	128	400	154	4	29	0
2003[+]	12	4	--	--	46	1,871	5,539	90	207	0	0	1
2004[+]	12	--	12	2	10	2,898	69	48	56	0	2	1
2005[+]	12	--	26	2	19	934	39	15	39	0	0	0

[1]Consists of white and longnose sucker

[2]Consists of silvery minnows, lake chubs, flathead chubs, and fathead minnows

[3]Consists of burbot, smallmouth bass, pumpkinseed sunfish, and brook sticklebacks

[+] Years in which walleye fry or fingerling were stocked

* Primarily Sauger

Nelson Reservoir

Nelson Reservoir, located 19 miles east of Malta, is an off-channel storage reservoir constructed off of the Milk River in 1915 for irrigation purposes. At full storage capacity, Nelson covers approximately 4,320 surface acres, has a mean depth of 14.2 feet, and a maximum depth of 50 feet. Nelson is a relatively stable reservoir, which is not affected by drought as drastically as some reservoirs in the region with an average annual fluctuation of 8.36 feet.

Nelson was established as a fishery in the 1930s & 40s with the introduction of largemouth bass, crappie, bullheads, and rainbow trout. Commercial fishing for carp, buffalo, and goldeye was conducted in the 1920s, 30s and in the mid 60s. Nelson currently has approximately 26 fish species and is managed primarily as a walleye fishery. Walleye reproduce naturally in Nelson; however

walleye fry are occasionally stocked to augment natural reproduction. Spawning shoals were constructed in 1993 at three locations within the reservoir to improve spawning conditions for walleye.

Since 1997, drought has reduced the active conservation pool of Nelson and may be the limiting factor in the successful recruitment of walleye. Angling pressure has remained relatively stable throughout the drought and was at 12,558 angler days in 2003. Walleye abundance is currently at half the pre-drought levels at 8.8 fish/net, however measures have been taken by the irrigation district and the Bureau of Reclamation (BOR) to improve water retention with the reservoir and this should improve recruitment of forage and sport fish within the reservoir.

Population Status of Adult and Young-of-Year Fishes

Adult fish populations were monitored at 10 fixed experimental gillnetting stations, which were established in 1991 and 1993. Gillnetting was conducted over a two-day period utilizing five sinking experimental gill nets each day (10 net-days). The sinking experimental gill nets were 125 feet in length and 6 feet deep consisting of 25-foot panels of 3/4 -, 1-, 1 1/4-, 1 1/2-, and 2-inch mesh. Fish were measured for total length (TL: inches) and weighted to the nearest 0.01 pound (lb). Otoliths were collected from walleye for aging and oxytetracycline (OTC) analysis.

Prior to 1991, adult fish populations were monitored, however sampling was neither uniform, nor consistent enough to develop useful trend data on game fish population size, or composition. As a result this data was excluded from all analysis.

The abundance and reproductive success of sport and forage fishes were monitored at 9 predetermined stations. Beach seining was conducted in late July using a 100- x 9-foot x ¼ inch square mesh beach seine. The first 50 fish of each species was measured (TL: inches) and weight to the nearest 0.01 pound. All additional fish of each species were counted.

Yellow Perch

The yellow perch fishery in Nelson Reservoir has been cyclic over the last 14 years due to drought and water fluctuations. In the early 1990s and in 2000 and 2002, the relative abundance of yellow perch was significantly reduced. However, since 2003 spring and summer rains and water retention improvements by the BOR have allowed water levels to flood shoreline vegetation and remain stable during crucial spawning periods.

The abundance of flooded vegetation created ideal spawning conditions for yellow perch, resulting in a five-fold increase in YOY yellow perch in 2004 (Table 18). In 2005, water levels were higher than normal during seining surveys and the abundance of shoreline vegetation reduced the effectiveness of the gear. This resulted in reduced captures of YOY yellow perch and the accuracy of our counts were reduced.

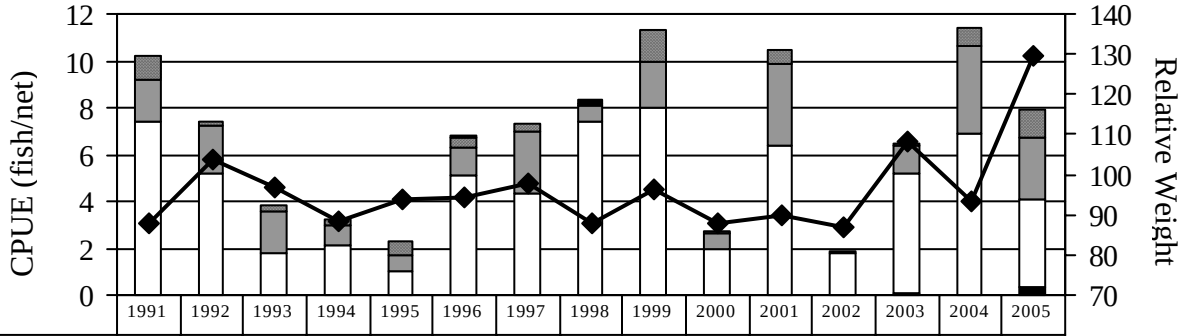
The relative abundance of adult yellow perch doubled in 2004 and remains high in 2005 (Figure 6). Adult yellow perch exhibit high condition factors and the size structure of yellow perch is well balance with 46.8% of the adults being in the quality and preferred size groups (8 to 12 inches TL; Figure 6).

Table 18. - A summary of forage fish and young-of-year forage and sport fish collected using a 100- x 9-foot x ¼ inch square mesh beach seine in Nelson Reservoir, 1982-2005.

	Shorline Seined (ft)	Walleye	Yellow Perch	Northern Pike	Spottail Shiner	White Sucker	Black Crappie	Goldeye	Bigmouth Buffalo	Smallmouth Bass
1982	660	0	4,553	3	0	202	245	0	0	0
1983	1,420	4	138	18	0	543	238	0	0	0
1984	1,530	0	133	0	0	0	0	0	0	0
1985	510	3	2,272	16	1	16	67	1	0	0
1986*	700	0	3	7	0	10	232	0	0	0
1987*	495	5	1,987	0	4	45	10	7	0	0
1988*	520	0	783	0	1	0	35	0	0	0
1989*	910	10	736	4	43	1503	135	0	0	0
1990	1,320	7	2,631	1	56	181	21	0	0	0
1991*	660	8	77	1	54	33	26	0	0	0
1992	635	21	140	6	387	175	18	0	4	0
1993*	520	3	8,287	1	520	2688	62	0	0	0
1994*	830	6	1,802	10	621	697	49	0	0	0
1995*	760	36	232	0	3780	180	163	0	0	0
1996*	870	25	4,521	13	21	101	0	0	0	0
1997*	890	53	2,205	0	159	534	1	0	0	0
1998*	340	0	126	0	33	235	4	0	0	0
1999	750	11	1,489	2	222	497	1	0	0	0
2000*	440	4	449	2	189	258	5	6	0	0
2001	430	2	72	1	27	800	88	0	0	0
2002*	415	2	19	4	8	38	482	21	62	0
2003	530	3	361	33	49	235	6597	0	0	3
2004*	443	10	1781	0	19	195	5	1	0	10
2005*	754	5	423	2	34	155	278	23	5	1

*Years in which walleye fry or fingerlings were stocked

Figure 6. - Relative abundance, size structure, and relative weight of yellow perch collected with sinking experimental gill nets in Nelson Reservoir, 1991-2005.



	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Memorable (>12 in.)	0	0	0	0	0	0.1	0	0.1	0	0	0	0	0	0	0
Preferred (10-11.9 in.)	1	0.2	0.2	0.2	0.6	0.4	0.3	0.1	1.3	0.1	0.6	0	0.1	0.8	1.2
Quality (8-9.9 in.)	1.8	2	1.8	0.9	0.7	1.2	2.7	0.7	2	0.6	3.5	0.1	1.2	3.7	2.6
Stock (5-7.9 in.)	7.4	5.2	1.8	2.1	1	5.1	4.3	7.4	8	2	6.4	1.8	5.1	6.9	3.8
Sub Stock (<5 in.)	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0.3
Relative weight	87.696	103.58	96.832	88.454	93.768	94.555	97.87	87.936	96.132	87.965	89.948	86.764	108.25	93.104	129.76

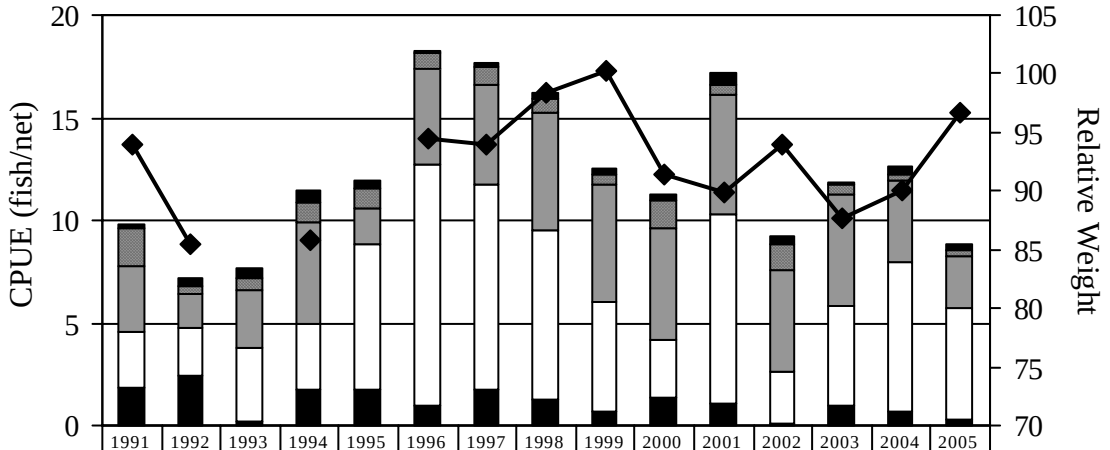
Walleye

Walleye fingerlings have been periodically stocked into Nelson Reservoir to augment natural reproduction (Table 18). Since 2002, all walleye fingerlings stocked into Nelson Reservoir have been marked with 750 ppm OTC to allow the calculation of survival of stocked fish and to distinguish stocked fish from naturally reproduced fish. In 2002, 20,000 marked fingerling were stocked, 100,250 marked fingerlings in 2004, and 100,000 marked fingerlings in 2005. Even with the addition of these fish, catch of young-of-year walleye remained low when compared to pre-drought levels (Table 18). However in 2005, water levels were higher into late summer and the abundance of aquatic vegetation reduced the effectiveness of the sampling gear.

In 2005, 84 otoliths were aged and examined for the OTC mark, 68 otoliths were ultimately used for OTC analysis based on the ages of the fish. Overall, 11% of the otoliths examined were positive for the OTC mark. If water levels remain steady and favorable for successful spawning of walleye, the percentage of naturally reproduced walleye should continue to comprise a significant proportion of the population.

The relative abundance of adult walleye has remained relatively stable over the last five years with a minor decrease in catch rates in 2005 (8.8 fish/net; Figure 8). The condition of walleye in Nelson Reservoir continues to increase after low water levels in 2002 (Figure 8). These high condition indices are attributable to a forage base that is adequate for the existing population levels of predators (Figure 8). Walleye sampled in 2005 ranged in length from 9.6 to 27.9 in. and weighed 0.3 to 7.6 pounds, with the average being 14.8 inches in length and weighing 1.22 pounds. Sixty-one percent of the walleye were stock size (10-14.9 in.), with 29.5% being in the quality size group (15-19.9 in.), 2.27 being in the preferred size group (20-24.9 in.), and 3.4% being memorable (>25 in.). Walleye ranged in age from 1 to 10 years old, with the majority of walleye sampled being from the 2003 to 2004 age classes (Table 19).

Figure 8. - Relative abundance, size structure, and relative weight of walleye collected with sinking experimental gill nets in Nelson Reservoir, 1991-2005.



	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Memorable (>25 in.)	0.2	0.4	0.5	0.6	0.3	0.1	0.2	0.3	0.3	0.3	0.6	0.4	0.1	0.4	0.3
Preferred (20-24.9 in.)	1.8	0.4	0.6	1	1	0.8	0.9	0.7	0.5	1.4	0.5	1.2	0.4	0.3	0.2
Quality (15-19.9 in.)	3.2	1.6	2.8	4.9	1.8	4.7	4.9	5.7	5.7	5.4	5.8	5	5.5	3.9	2.6
Stock (10-14.9 in.)	2.8	2.4	3.6	3.3	7.1	11.7	10	8.2	5.3	2.8	9.2	2.5	4.8	7.3	5.4
Sub-stock (<10 in.)	1.8	2.4	0.2	1.7	1.7	1	1.7	1.3	0.7	1.4	1.1	0.1	1	0.7	0.3
Relative weight	94.03	85.5		85.8		94.5	93.9	98.33	100.2	91.43	89.83	93.93	87.71	89.98	96.65

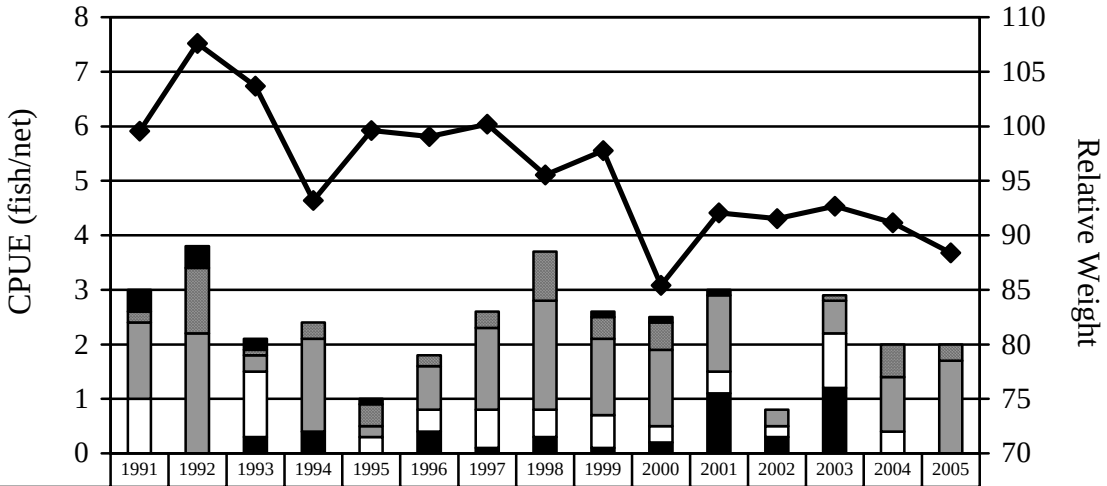
Table 19. - Age summary statistics of walleye from Nelson Reservoir, aged by otoliths, 2005.

Age Class	Size Range	Nbr Sampled	Length Avg	Length SD	Weight Avg	Weight SD	Relative Wt Avg	Relative Wt SD
1	9.3 - 14.0 in	5	10.72	1.91	0.41	0.27	87.6	9.01
2	10.0 - 16.6 in	28	13.35	1.60	0.80	0.31	89.1	9.51
3	11.8 - 16.8 in	31	14.06	1.28	0.89	0.25	85.5	6.72
4	13.9 - 17.7 in	8	16.04	1.38	1.36	0.36	85.9	5.66
5	17.8 - 19.4 in	4	18.35	0.72	1.83	0.70	75.5	24.70
6	18.8 - 19.1 in	2	18.95	0.21	2.32	0.18	87.8	3.58
7	20.5 in	1	20.50	0.00	2.73	0.00	80.7	0.00
8	18.6 - 25.2 in	3	20.90	3.73	3.75	2.73	92.2	13.06
9	25.7 in	1	25.70	0.00	5.50	0.00	79.2	0.00
10	27.9 in	1	27.90	0.00	7.60	0.00	84.3	0.00
	Totals:	84	14.76	3.23	1.21	1.19	86.5	9.47

Northern pike

Historically, the abundance of adult northern pike has remained relatively low and stable consisting of a high proportion of quality, preferred, and memorable size fish (Figure 9). Northern pike populations increased in 2003 due to a successful spawning season. However since 2003, very few YOY pike have been observed (Table 18) and the population now consists of older fish in the quality and preferred size groups (21-34 in. TL).

Figure 9. - Relative abundance, size structure, and relative weight of northern pike collected with sinking experimental gill nets in Nelson Reservoir, 1991-2005.



	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Memorable (>34 in.)	0.4	0.4	0.2	0	0.1	0	0	0	0.1	0.1	0.1	0	0	0	0
Preferred (28-33.9 in.)	0.2	1.2	0.1	0.3	0.4	0.2	0.3	0.9	0.4	0.5	0	0	0.1	0.6	0.3
Quality (21-27.9 in.)	1.4	2.2	0.3	1.7	0.2	0.8	1.5	2	1.4	1.4	1.4	0.3	0.6	1	1.7
Stock (14-20.9 in.)	1	0	1.2	0	0.3	0.4	0.7	0.5	0.6	0.3	0.4	0.2	1	0.4	0
Sub Stock (<14 in.)	0	0	0.3	0.4	0	0.4	0.1	0.3	0.1	0.2	1.1	0.3	1.2	0	0
Relative weight	99.55	107.59	103.68	93.181	99.593	99.043	100.2	95.521	97.764	85.415	92.054	91.52	92.651	91.133	88.384

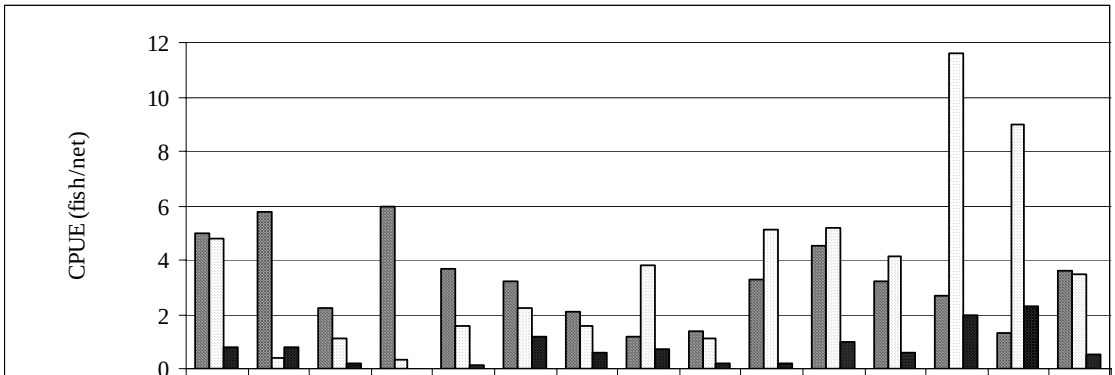
Other Fishes

Lake Superior whitefish (whitefish) and goldeye continue to comprise a significant portion of the gill net catch (Figure 10), but are rarely utilized by anglers. Whitefish populations remain stable with catch rates of 3.6 fish/net and ranged in length from 5.3 to 23.52 in ($\bar{x}$=16.65 in.). Goldeye populations increased significantly in 2003 and 2004 and were slightly decreased in 2005 at 3.5

fish/net (Figure 10). Goldeye ranged in length from 5.76 to 17.70 inches, with an average length of 10.73 inches.

Black crappie populations increased in 2003 and 2004 as a result of increased spawning success and recruitment of YOY fish (Table 18). Young-of-year production was good in 2005, catch rates of adults was decreased (Figure 10) however the average length of crappie collected was 13.39 in. (TL=11.35 to 115.15 in.).

Figure 10. - Relative abundance of Lake Superior whitefish, goldeye, and black crappie collected with sinking experimental gillnets in Nelson Reservoir, 1991-2005.



	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Lake Whitefish	5	5.8	2.2	6	3.7	3.2	2.1	1.2	1.4	3.3	4.5	3.2	2.7	1.3	3.6
Goldeye	4.8	0.4	1.1	0.3	1.6	2.2	1.6	3.8	1.1	5.1	5.2	4.1	11.6	9	3.5
Black Crappie	0.8	0.8	0.2	0	0.1	1.2	0.6	0.7	0.2	0.2	1	0.6	2	2.3	0.5

Beaver Creek Reservoir

Beaver Creek Reservoir, located south of Havre, is a 200-acre reservoir, which has 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 in recent years for a variety of species. The statewide fishing pressure survey for 2003 indicated it was the fifth most fished reservoir in Region Six.

This reservoir was established as a rainbow trout fishery in 1975. However, the illegal introduction of northern pike (1980s) and yellow perch (1980s) has resulted in the rainbow trout fishery having varying success. As a result, the fisheries management plan was expanded to include other warm water species, which were introduced to control undesirable species and enhance the fishing opportunity within the reservoir.

Population Status of Adult and Young-of-Year Fishes

Adult fish populations were monitored at six fixed experimental gillnetting stations, which were established in 1986. Gillnetting was conducted over night utilizing three sinking experimental gill nets and three floating experimental gill nets (6 net-days). The sinking and floating experimental gill nets were 125 feet in length and 6 feet deep consisting of 25-foot panels of 3/4 -, 1-, 1 1/4-, 1 1/2-, and 2-inch mesh. Fish were measured for total length (TL: inches) and weighted to the nearest 0.01 pound (lb). Prior to 1986, adult fish populations were monitored, however sampling was neither uniform, nor consistent enough to develop useful trend data on game 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.

The abundance and reproductive success of sport and forage fishes were monitored at six predetermined stations. Beach seining was conducted in early August using a 100- x 9-foot x ¼ inch

square mesh beach seine. The first 50 fish of each species was measured (TL: inches) and weight to the nearest 0.01 pound. All additional fish of each species were counted.

Northern pike

Since their illegal introduction in the 1980s, northern pike have severely reduced rainbow trout and sucker populations within Beaver Creek Reservoir (Table 20). Adult northern pike populations have fluctuated due to varying reproductive success (Table 20 & 21) and this has caused a fluctuation in the population levels of other fishes within the reservoir. The relative abundance of adult northern pike is currently very low (0.50 fish/net) and the population primarily consists for larger adults (Table 6; TL=25.8 to 31.6 in.). However, in 2003, northern pike reproduction was excellent and a strong year class may have been established. And in 2005, northern pike reproduction was higher than any other year on record (Table 21) and these YOY fishes will most likely recruit into the population causing a significant increase in the relative abundance of adult northern pike.

Yellow perch

Yellow perch were first documented in Beaver Creek Reservoir in 1987, as a result of an illegal introduction. Since their introduction, yellow perch have thrived within the reservoir (Table 20). As a result Beaver Creek is a popular ice fishing destination and is a source population for a kids fishing pond, Home Run Pond, in Glasgow. Ice conditions have prevented most of the ice fishing in 2004 and 2005, however 1,755 adult perch were transferred to Home Run Pond in 2005.

Yellow perch population peaked in the early 1990's and while the relative abundance is good, it is currently at half the 1990 levels due to drought and reduced spawning success (Table 20 & 21). However, the population still consists of numerous quality and preferred size fish (TL > 8 in.; Table 20). Yellow perch experienced higher spawning success in 2004 as a result of increased water levels and flooded vegetation, however very few YOY perch were collected in 2005 (Table 21). Yellow perch, spottail shiners (stocked in 1988), and white suckers provide the bulk of the forage base for northern pike, walleye, rainbow trout, and smallmouth bass.

Walleye

Walleye were initially stocked in 1987 to provide further fishing opportunities within the reservoir. The walleye management plan included three consecutive years of stocking, followed by two non-stocking years to evaluate natural reproduction. Fry plants appeared to be quite successful in establishing a fishable population, and natural reproduction was first documented in 1997. Natural reproduction is very limited within the reservoir and as a result, approximately 10,000 1.4-inch and 5,000 3-inch walleye fingerlings are stocked annually.

Since their initial introduction, high quality walleye have thrived within Beaver Creek Reservoir. In 2005, 63% of the walleye sampled (trap and gill nets combined) were greater than quality size (TL > 15). Overall 22.7% were quality size (TL=15-19 in.), 12.1 % were preferred size (20-25 in.), and 28.8% of the walleye sampled were memorable (TL >25 in.). Walleye within Beaver Creek have high growth rates and relative weights (Table 18) due to abundant forage. And as a result these walleye can be hard to catch and elude all but the best walleye fishermen.

Smallmouth bass

Smallmouth bass were first introduced in 1997 and were stocked annually until 2000. As a result of these efforts there is now a self-sustaining population of smallmouth bass in Beaver Creek Reservoir. While smallmouth bass have a relative low relative abundance during gill netting surveys (Table 20), catches of 8 to 10 inch bass are common.

Table 20.- 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, 1974-2005.

		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	3	24.00	10.91	111.26	--	--	--	--	--	--	--	--	--	--	--	--	7.33	10.49	82.33	10.23
Nov-77	3	35.00	10.05	86.31	--	--	--	--	--	--	--	--	--	--	--	--	2.33	9.66	113.00	9.75
Sep-80	3	23.33	10.12	81.04	--	--	--	--	--	--	--	--	--	--	--	--	1.33	6.33	156.00	8.86
Sep-81	3	7.33	10.88	82.77	--	--	--	--	--	--	--	--	--	--	--	--	6.67	8.78	165.33	8.70
Oct-82	3	8.33	11.78	99.67	--	--	--	2.33	15.79	109.67	--	--	--	--	--	--	3.33	9.66	109.67	9.69
Oct-83	3	3.33	11.79	94.66	--	--	--	3.67	25.10	117.07	--	--	--	--	--	--	1.33	--	98.33	--
Sep-84	3	3.00	11.26	95.43	--	--	--	3.67	26.64	111.21	--	--	--	--	--	--	0.67	11.00	58.33	10.50
Sep-86	6	15.00	11.50	98.90	--	--	--	4.17	16.68	109.86	--	--	--	--	--	--	0.00	--	42.00	--
Sep-87	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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

Table 21. – Summary of young of year yellow perch (YP), white sucker (W SU), spottail shiner (SP SH), Iowa Darter (IOWA), fathead minnow (FH MN), largemouth bass (LMB), northern pike (NP), walleye (WE), and other fishes captured by beach seining in Beaver Creek Reservoir, 1980-2005.

Date	Sites	YP	W SU	SP SH	IOWA	FH MN	LMB	SMB	NP	WE	Other Sp.[1]
Jul-80	5	--	650	--	0	42	--	--	--	--	46
Jul-81	5	--	1671	--	0	75	12	--	--	--	38
Jul-82	5	--	7	--	0	0	54	--	0	--	0
Jun-83	5	--	46	--	0	0	5	--	5	--	0
Aug-84	7	--	189	--	10	0	4	--	0	--	0
Sep-85	5	--	2648	--	11	0	33	--	3	--	7
May-86	4	--	1749	0	2	0	0	--	1	--	24
Jun-86	6	--	3132	0	2	0	0	--	1	--	1
Aug-86	6	--	134	0	8	0	2	--	9	--	0
Sep-86	6	--	1111	0	34	29	184	--	6	--	11
Jul-87	6	1968	2276	1	24	3	0	--	20	11	3
Aug-87	6	2315	973	0	59	1	16	--	19	19	5
Jun-88	6	20	17	0	6	0	0	--	1	3	0
Aug-88	6	4973	62	1	4	0	0	--	1	2	0
Aug-89	6	50	48	603	0	0	0	--	2	4	5
Aug-90	6	42	1	93	2	0	0	--	2	0	1
Aug-91	6	8642	348	835	0	0	0	--	17	0	4
Aug-92	6	1888	492	156	4	0	0	--	4	0	0
Aug-93	6	42	0	355	11	0	0	--	27	0	0
Aug-94	6	707	49	181	0	0	0	--	11	0	0
Aug-95	6	7210	6	1438	0	0	0	--	13	0	0
Aug-96	6	51	261	248	7	0	0	0	5	7	0
Aug-97	6	17	31	193	6	0	0	8	13	2	0
Aug-98	6	872	0	141	0	0	0	41	6	1	0
Aug-99	6	592	4	87	0	0	0	16	7	2	0
Aug-00	6	402	1	190	0	1	0	12	3	23	0
Aug-01	6	357	10	216	0	0	0	8	0	3	0
Aug-02	6	333	0	592	0	0	0	7	0	93	0
Aug-03	6	557	19	2355	2	0	0	9	15	1	0
Aug-04	6	1545	0	0	1	0	0	5	2	2	0
Jul-05	6	185	3	1	0	0	0	0	36	12	0

[1] Consists of emerald shiners, northern redbelly dace, lake chub, western silvery/plains minnow, brassy minnow, and longnose dace

Bailey Reservoir

Bailey Reservoir is a privately owned reservoir that was constructed in the mid-1960s. At full pool, Bailey Reservoir covers approximately 70 surface acres and has a maximum depth of 28 feet. Bailey was initially managed as a rainbow trout fishery, and rainbow trout thrived within the reservoir until 1980 when northern pike were illegally introduced. In 1984, the remainder of rainbow trout winterkilled due to severe drought. Chemical rehabilitation was considered, but at the request of the landowner a cool/warm water fishery was started. And as a result, yellow perch and black crappie

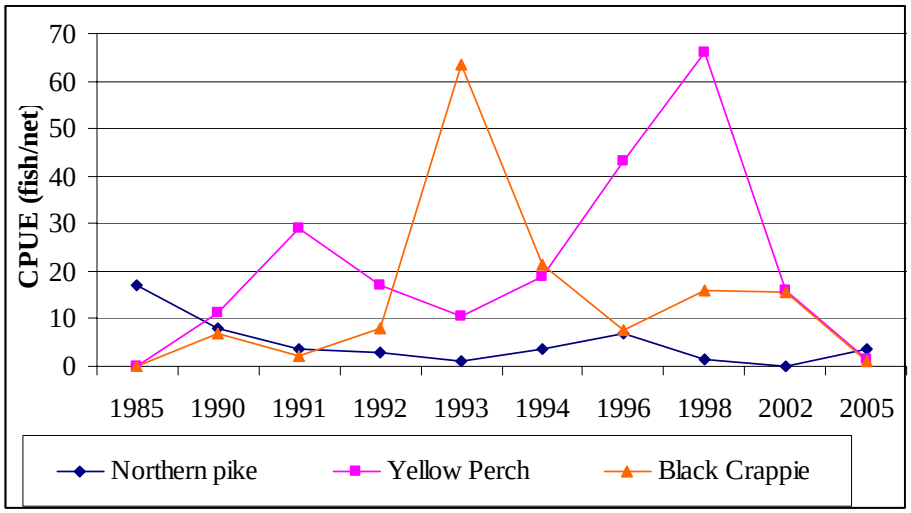
were introduced in 1987, largemouth bass in 1988, and walleye in 1989. Rainbow trout are stocked periodically to supplement the fishery.

Adult sport fish populations have been monitored since 1990 with two experimental gill net sets (Figure 11). In addition, trap netting and gill netting occurs periodically. In 2005, 6 traps nets were set in the spring to capture adult black crappie for transporting to Home Run Pond. Two overnight gillnet sets were also used to monitor adult fish populations. In addition a voluntary creel box was erected in the summer of 2005 to determine angler use, catch, and satisfaction.

This fishery historically has provided great angling opportunities for black crappie, northern pike, perch, and walleye. However, fish population levels have declined significantly since 2000 due to drought. Water levels have improved, however the reservoir is still not at full pool. During spring trap netting, only 13 adult black crappie, 18 yellow perch, 8 northern pike, and 161 fathead minnows were captured. As a result no fish were transferred to Home Run Pond. Late summer gill netting also revealed very low abundances of sport fish (Figure 11). Fisherman catch and satisfaction was very poor during the spring and summer, picking up in the winter during ice fishing.

To supplement the fishery, 10,000 four-inch rainbow trout were stocked in late fall 2005. In addition 261 yellow perch were transplanted from the Havre Water District settling ponds. Additional perch will be transplanted from these settling ponds in the spring of 2006. There is an abundance of forage within Bailey and growth and survival of rainbow trout and yellow perch should be good.

Figure 11. - Gill net catch of northern pike, yellow perch, and black crappie in Bailey Reservoir (1985 to 2005).



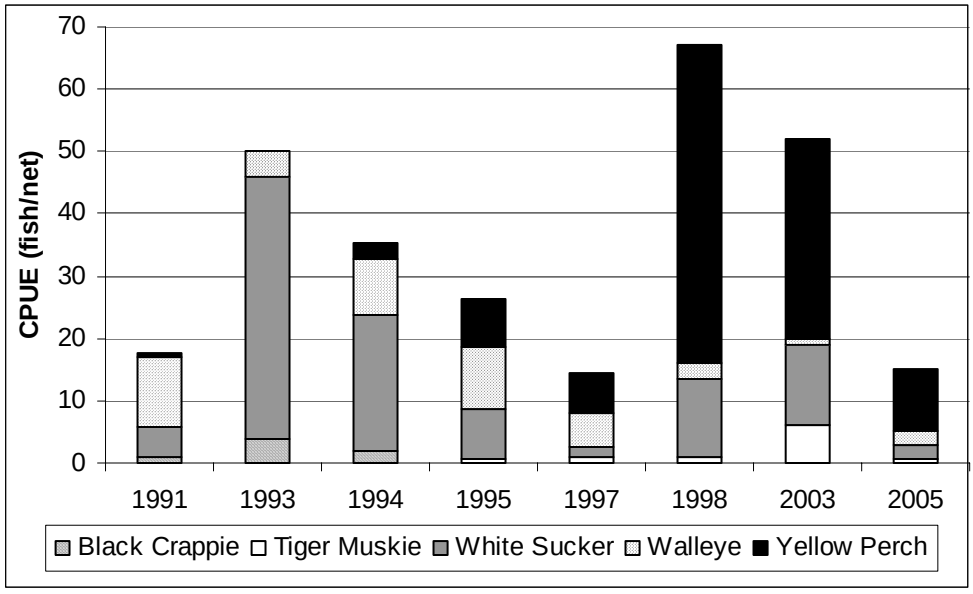
Little Warm Reservoir

Little Warm Reservoir is a privately owned 25-acre reservoir located in Phillips County. Montana, Fish, Wildlife, & Parks has managed this pond as a warm water fishery since 1989. Since 1989, black crappie, yellow perch, tiger muskie, and walleye have been introduced. The current warm water management plan includes annual stocking of walleye fingerlings and alternate year tiger musky fingerlings, to maintain fishable populations and control white sucker populations. Other species present within the reservoir include brook stickleback, Iowa darter, white sucker, golden shiner, black bullhead, and fathead minnow.

Like many reservoir, water levels have been low in Little Warm Reservoir. Spring and summer rains in 2004 and 2005 have increased water levels and forage fish abundance has increased. This reservoir is still low and would benefit from better water levels.

In 2005, two over-night sinking gill nets were set in late July. There was a significant amount of aquatic vegetation, which prevented gill nets from sinking, and as a result a representative sample was not obtained. In general forage and sport fish populations have been increasing since 1997 (Figure 12). Walleye growth and survival has been increasing, and their relative stock density of preferred size walleye (RSD-P) was 75 in 2005. Tiger muskie growth and survival has also been good. The average size of tiger muskie captured in 2003 was 26.1 inches and 5.4 pounds. Black crappie populations remain low and no adults have been captured since 1994.

Figure 12. – Relative abundance of black crappie, tiger muskie, white sucker, walleye, and yellow perch in Little Warm Reservoir (1991-2005).



Blaine County Ponds

Ponds throughout Blaine County were sampled to determine fish abundance using 125-foot experimental multifilament sinking gillnets. All nets were set perpendicular to the dam and were fished overnight. Voluntary creel boxes were also erected at many of the ponds to determine fishing pressure, catch rates, and satisfaction.

BR 028/Billmeyer

No Fish were found in 2005. Water levels were low and may have been lower in previous years. This pond was stocked with rainbow trout in 1989. During surveys in 1994, northern pike, black crappie, and yellow perch were found. At present, water levels are not suitable for re-establishing a fishery.

Butch Reservoir

Butch reservoir is located in south Blaine County and contains a fishery for rainbow trout, largemouth bass, and bluegill. Butch also has a windmill aerator system, which assists in over winter survival of fish. In the summer of 2005, a voluntary creel box was erected at Butch reservoir to determine fishing pressure, angler success, and angler satisfaction.

Butch was stocked with two and four inch rainbow trout in 2003, 2004, and 2005. Largemouth bass and bluegill naturally reproduce within the reservoir. During gill netting surveys in 2005, 24 rainbow trout ($\bar{x}$ TL = 10.81 in.; $\bar{x}$ wt = 0.42 lbs), 11 largemouth bass ($\bar{x}$ TL = 8.57 in; $\bar{x}$ wt = 0.3 lbs), and 7 bluegill ($\bar{x}$ TL = 5.53 in; $\bar{x}$ wt = 0.15 lbs) were collected.

Choteau Reservoir

Choteau Reservoir is located in north central Blaine County and contains a rainbow trout and black crappie fishery. Black crappie were originally introduced in 2002 and 1500 4 inch rainbow trout were stocked in 2003, and 6000 4 inch rainbow trout were stocked in 2004. No fish were stocked in 2005. Choteau also has a windmill aerator system to assist with over winter survival of fish. And in 2005, a voluntary creel box was erected to determine fishing pressure, angler success, and angler satisfaction.

Since their introduction in 2002, black crappie size and catch rate has been steadily increasing. In addition rainbow trout exhibit good growth and survival (Table 22). However, angler catch rates and satisfaction remain very low. Only five creel cards were filled out in 2005 and no fish were caught.

Table 22. – Catch rate and average size of rainbow trout, black crappie and golden shiners in Choteau Reservoir, MT.

Date	Rainbow Trout		Black Crappie		Golden Shiner
	CPUE	Ave. Length	CPUE	Ave. Length	CPUE
May 2001	0	--	0	--	0
Sept. 2003	1	9.00	1	3.00	0
July 2004	0	--	7	4.60	3
Aug. 2005	22	11.78	46	5.96	8

Cow Creek Reservoir

Cow Creek Reservoir is a privately owned 65-acre pond located in the Bears Paw Mountains. Cow Creek Reservoir has been managed as a warm water fishery by the MFWP since 1994. Since 1994, walleye, channel catfish, black crappie, and tiger muskie have been stocked and yellow perch have been illegally introduced in 2001. The primary food source for these sport fish are white suckers.

In 2005, two experimental gill nets were set overnight and a voluntary creel box was erected. Catch rates and relative weights of walleye during gill netting survey's are down (Table 23). In addition, trap-netting results from 2003 (Table 24) indicate a possible decrease in forage fish abundance and species richness. Anglers also reported catching 1.96 walleye per hour and 0.06 tiger muskie and 0.05 channel catfish per hour (summer and fall catches).

Gill netting survey's in 2003 and 2005 were not conducted in the fall as has been the case in the past so catch rates may not be an accurate representation of abundance. However, relative abundances have been decreasing and this combined with the high catch rates may indicate an overabundance of predators and reduced forage fish abundance. Stocking densities and frequencies or walleye, tiger muskie, and channel catfish have increased in recent years and may need to be reconsidered if prey densities do not increase. Timing of stocking of predator species may need to be staggered rather than introducing all three predators in the same year.

Table 23. – Catch rate (CPUE (fish/net)) and average length of yellow perch, channel catfish, white sucker, walleye, and tiger muskie using gill nets in Cow Creek Reservoir (1994-2005).

		Yellow Perch		Channel Catfish		White Sucker			Walleye			Tiger Muskie	
Date	Nets	CPUE	Ave. Length	CPUE	Ave. Length	Rel. Weight	CPUE	Ave. Length	CPUE	Ave. Length	Rel. Weight	CPUE	Ave. Length
Aug-94	2.0		--	0.0	--		2.0	--	23.5	7.2		0.0	--
Sep-95	1.0	0.0	--	0.0	--		2.0	--	15.0	10.0	82.5	0.0	--
Sep-96	2.0	0.0	--	5.0	9.1	116.1	1.0	--	48.0	11.1	82.3	0.0	--
Sep-97	2.0	0.0	--	9.5	10.5	118.1	1.0	--	30.5	11.9	86.9	0.0	--
Sep-98	3.0	0.0	--	6.3	13.9	107.7	7.0	14.6	11.3	13.2	87.1	0.0	--
Sep-01	2.0	0.5	5.6	4.5	17.0	103.7	0.5	--	12.5	13.3	94.7	0.5	15.7
May-03	2.0	0.0	--	11.0	19.5	115.7	8.0	15.9	1.0	13.0	97.0	1.5	19.4
Jul-05	2.0	1.0	9.8	9.0	21.3	104.3	6.0	17.6	8.0	14.7	85.5	0.0	--

Table 24. – Catch rates of fish captured in trap nets in Cow Creek Reservoir (1993-2003).

Date	# Traps	Black crappie	Fathead minnow	Golden shinter	Lake chub	Longnose dace	Tiger muskie	White sucker	Walleye	Western silvery / Plains minnow	Yellow perch
Oct-93	3	0	125	0	30	10	0	223.33	0	40	0
Apr-01	4	2.25	0	0.75	0	0	0.75	15.75	1.25	0	2
May-03	1	1	0	0	0	0	1	31	0	0	0

Cronk Reservoir

Cronk reservoir was originally stocked with largemouth bass in 1990. In 1997, an electrofishing survey was conducted however no bass were collected. No fish were found in gill netting surveys in 2005. Additionally, the access road to this reservoir was plowed up in 2005. Cronk is located on BLM land, however it is surrounded on all sides by private land. Water levels are not high enough to warrant pursuing access at this time.

Dry Fork Reservoir

Dry Fork Reservoir is a 300 surface acre pond located seven miles north of Chinook. This reservoir has historically been a popular yellow perch and northern pike fishery. In 2001, drought and dam operations resulted in a severe decrease in water levels. As a result the fishery was destroyed and black crappie and northern pike were reintroduced in 2002 when the reservoir re-filled. Rainbow trout have been stocked since 2002 to supplement the fishery and walleye were re-introduced in 2004.

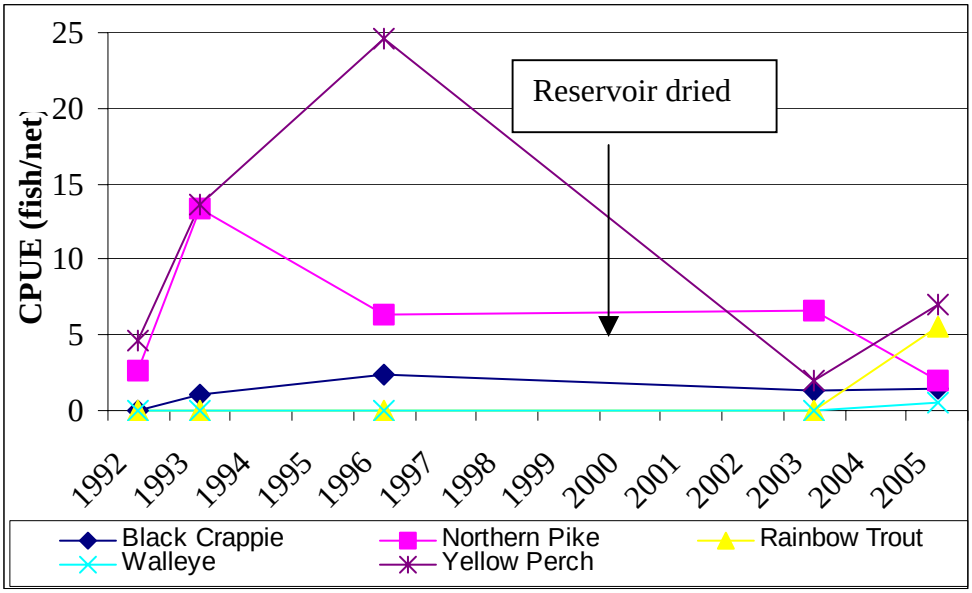
In 2005, two experimental gill nets were set within Dry Fork Reservoir. A voluntary creel box was also erected in the summer of 2005. Results of netting in 2005 indicate good growth and/or recruitment of rainbow trout, northern pike, black crappie, and walleye (Figure 13).

Approximately 12,000 four-inch rainbow trout have been stocked annually since 2002. In 2005, the average size of rainbow trout captured in gill nets was 18.9 inches. Northern pike were reintroduced with one small stocking in 2002. Since that time northern pike have successfully reproduced and recruited within the reservoir. The average length of northern pike captured in 2005 was 22.2 inches. Black crappie were originally reintroduced in 2002 with a plant of 1,000 three-inch fish and in 2003 1,800 adult crappie were planted. The average size of black crappie captured in 2005 was 4.73 inches indicating that black crappie are successfully reproducing and recruiting within the reservoir. In 2004 and 2005, 5,000 walleye fingerlings were planted. While their relative abundance remains low, walleye have exhibited excellent growth since their reintroduction in 2004. In 2005, walleye averaged 18.7 inches TL in the fall gill netting surveys.

Anglers report relatively high catch rates for northern pike during the summer months (0.85 fish/hour). Anglers also report high satisfaction with the size of the northern pike caught. Rainbow trout and yellow perch catch rates are relatively low, 0.07 and 0.05 fish per hour respectively. However, of the anglers that catch rainbow trout, they report high satisfaction with the size of fish caught.

The fishery within Dry Fork Reservoir is recovering from the extreme draw down in 2000. This fishery should continue to recover and provide excellent fishing opportunities in the future.

Figure 13. – Catch rates of black crappie, walleye, northern pike, yellow perch, and rainbow trout using gill nets in Dry Fork Reservoir from 1992-2005.



Gazob Reservoir

Gazob Reservoir is a 10-acre pond located on BLM land in south Blaine County. Largemouth bass, bluegill, and fathead minnows were introduced in 1986 and 1987. Golden shiners are also present within the reservoir, however their introduction was not recorded.

Seining was conducted in 1988 and 1990, and electrofishing was conducted in 1994. In 2005, one experimental gill net was set perpendicular to the dam. In 2005, the average size of largemouth bass captured was 10.4 inches and bluegills were 4.4 inches. Catch rates were relatively low using gill nets, however this gear type is not the most effective gear for capturing largemouth bass and bluegill sunfish. Overall, the fishery in Gazob is doing well and the fishery is self-sustaining.

Lyons Reservoir

Lyons reservoir is a privately owned reservoir, which has been managed by MFWP since 1969. Sampling was conducted in 2005, however this reservoir was closed in 2005 to public fishing due to disrespect of the land and the landowner by the public

Petrie Pond

Petrie pond is a privately owned spring fed half-acre pond north of Turner, which has been managed as a rainbow trout fishery by MFWP since 1996. In 2003, white suckers were illegally introduced, most likely as a result of illegal bait fishing. Since that time, white suckers have over populated the reservoir and chocked out the rainbow trout fishery. In 2004, bluegill and largemouth bass fishery was established in an attempt to control the white sucker population.

In 2003, 500 pounds of suckers were removed. In 2005, two traps were set over night and 1403 white suckers (687 pounds) were removed and the average size of white suckers was 6.9 inches TL. Manual removal is not an effective tool for removing suckers from Petrie pond, and it is unlikely that largemouth bass will effectively control the population. This pond could be easily drawn down and chemically treated. If chemical treatment is not conducted, a small number of top-level predators such as tiger muskie should be introduced to control the white sucker population. The landowner has expressed an interest in having a rainbow trout fishery in this pond rather than a warm-water fishery so chemical treatment may be the best option.

Ridge Reservoir

Ridge reservoir was historically a decent largemouth bass fishery. However, due to drought water levels are very low and no fish were found during surveys in 2005.

Salmo Reservoir

Salmo reservoir is a four-acre pond with a windmill aerator located on BLM land north of Chinook. This pond has been managed primarily as a rainbow trout fishery since 1978. Salmo currently has a rainbow trout, channel catfish, largemouth bass, and bluegill fishery. In addition, 272 tiger muskie were stocked in 1999. The rainbow trout fishery is maintained with annual plants of approximately 3,000 three-inch fingerlings. In 2004, 4,000 seven-inch and 3,000 three-inch rainbow trout were stocked due to needed repairs at the Giant Springs Fish Hatchery in Lewistown. Four hundred four-inch channel catfish were stocked in 2003.

In 2005, one experimental gill net was set and a voluntary creel box was installed. Rainbow trout catch rates were 20 fish/net and the average size of fish caught was 8.9 inches. In addition on channel catfish and one bluegill was captured. Anglers have reported catching three-pound rainbow trout during the spring of 2005, however the few anglers that filled out creel cards in the summer of 2005 did not catch any fish.

South Casady (Casady) / Br019

South Casady is a three-acre pond located on BLM land northwest of Chinook. South Casady is managed primarily as a black bullhead fishery. Other species historically found within the reservoir include yellow perch, fathead minnow, golden shiner and northern pike. A winterkill was suspected in 1994. Restocking of this reservoir may have occurred however records were not kept.

Fish abundance remains low in South Casady. In 2004, two trap nets were set and one black bullhead, one golden shiner and a few fat head minnows were collected. In 2005, no fish were collected in gill netting surveys, however aquatic weeds were thick and may have reduced the effectiveness of sampling. Water levels were low in 2005. If the reservoir levels increase restocking of black bullheads should be considered.

Sundance

Sundance reservoir is small reservoir located on BLM land in south Blaine County. This reservoir was created in the mid-1980s. Stocking records do not exist and in 2005 four nine-inch largemouth bass were collected. This reservoir may also have bluegill, however the reservoir was very weedy and our sampling did not detect the presence of bluegill.

Phillips County Ponds

Barrett Reservoir

Barrett reservoir is a 6.3-acre pond located on private land. This reservoir was last stocked in 1993 with largemouth bass. In 2005 this reservoir was 15 feet below the spillway and no net was set.

Bell Ridge Reservoir

Bell Ridge is a BLM pond, which was last stocked in 1999 with channel catfish. In 2005, the deepest point within the reservoir was 6 feet and it was approximately 10 feet below the spillway. Water levels used to be supplemented with well water, however that practice was terminated. Due to low water levels, Bell Ridge is no longer suitable as a fishery.

Bison Bone Reservoir

Bison Bone Reservoir is a 26-acre pond located on BLM land in south Phillips County. Bison Bone was established as a fishery in 1984 with the introduction of yellow perch. This reservoir was initially stocked with yellow perch in 1984 and was stocked with tiger muskie in 2002 and 2004 to control the white sucker population. A gill netting survey in 2005 indicated that tiger muskie have successfully controlled the white sucker population with no suckers being collected. Also yellow perch abundance (2.63 fish/hour) and size were good. The average size of perch collected was 7.68 inches (6.5 to 11.4 in. TL) and 0.22 pounds (0.13 to 0.74 lbs). Water levels were good in 2005 and should remain good with fall and spring rains.

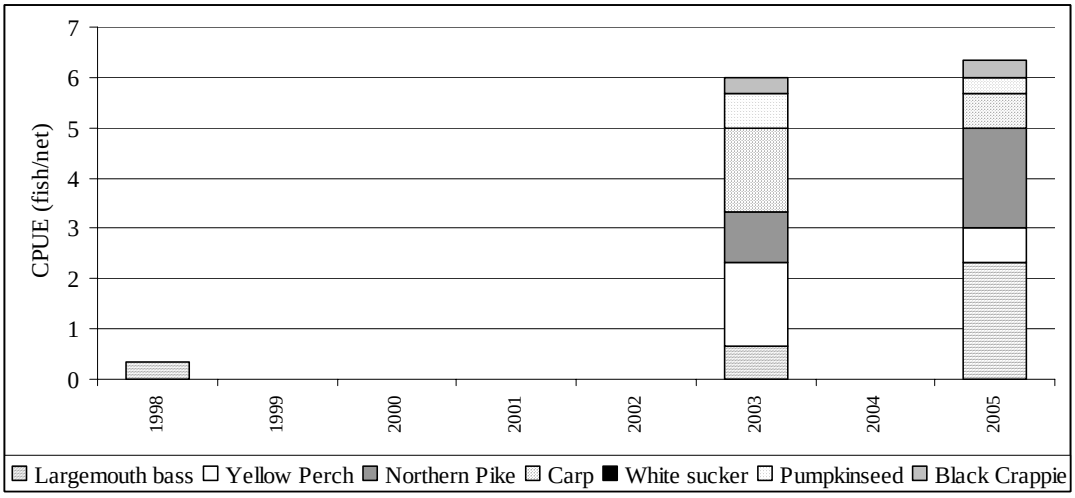
Bresaylor Reservoir

Bresaylor reservoir is a BLM pond which as never been stocked. This reservoir is downstream of Lark Reservoir and there has been some speculation that bass may be present within the reservoir. A sinking gillnet was fished for 16 hours and no fish were collected.

Cole Ponds

The Cole Ponds are a state fishing access site and consists of three ponds that are approximately 9 acres each. These ponds are old gravel pits and are very deep clear ponds. These ponds containing self-sustaining populations of largemouth bass, yellow perch, northern pike, pumpkinseed sunfish, and black crappie. This is a very popular fishery and in 2005, the catch consisted of numerous 8 to 12 in. largemouth bass, 6 in. yellow perch, 20 to 24 in. northern pike, 4 in. pumpkinseed, and 9 in. black crappie (Figure 14).

Figure 14. - Catch rates of fishes in the Cole Ponds from summer gill netting surveys (periodic sampling 1988 to 2005).



Compton Reservoir

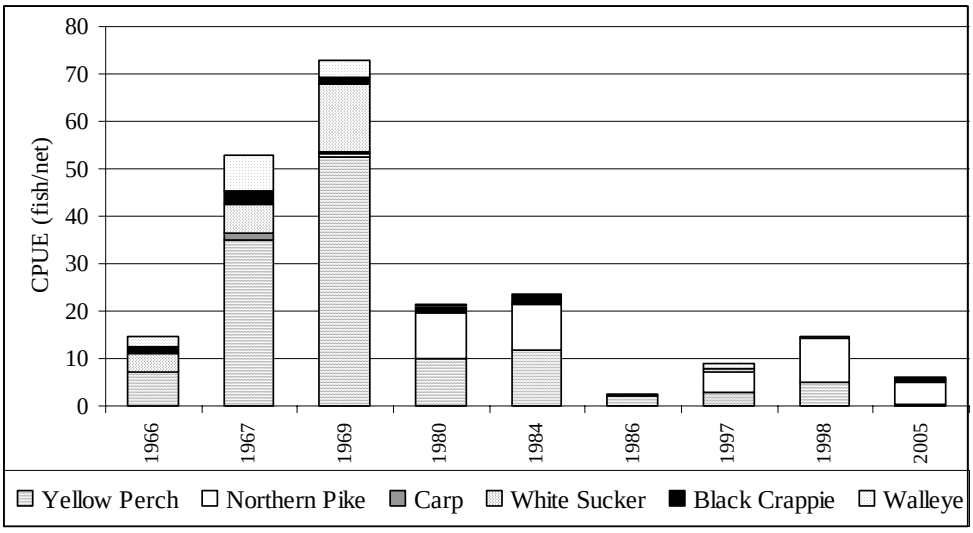
Compton is a 11-acre pond located on BLM and private land in northern Phillips County. This reservoir was established as a rainbow trout fishery in 1963 and was stocked with rainbow trout until

1990. In 1988, yellow perch were introduced and at some point northern pike were also introduced as well. Gill netting surveys in 2005 resulted in the catch of three tiger salamanders but no fish. Water levels have been low and in 2005 where approximately 2.5 feet below the spillway. The status of the fishery is at present unknown and will need to be investigated further to determine if fish need to be reintroduced.

Ester Lake

Ester lake is a 139-acre pond located on state land and has been managed as a fishery since the 1950s. In the1960's Ester was a productive fishery with high numbers of yellow perch, black crappie, and walleye (Figure 15). Since the 1980s the fishery has been in decline. In 2005, the catch consisted primarily of northern pike and water levels were poor. Walleye fry were stocked in 2000 and fingerlings were stocked in 2002, 2004, and 2005 however no walleye were present in gill netting surveys in 2005. Fishermen report catching walleye however due to poor water levels, survival of stocked walleye is minimal.

Figure 15. - Relative abundance of yellow perch, northern pike, carp, white sucker, black crappie, and walleye in Ester Lake (periodic sampling 1966 to 2005).



Frenchman Reservoir

Frenchman reservoir is a main channel reservoir on the Milk River northwest of Saco. This reservoir is approximately 806 surface acres and is surrounded by private land with public access occurring primarily around the dam. This reservoir is fairly shallow and partial winterkills are not uncommon. This reservoir is not stocked and all the fish present within the reservoir come from the Milk River. This reservoir receives a minimal amount of fishing pressure even though the fish have high growth rates and condition factors. In 2003, four trap nets were set and carp, yellow perch, white sucker, northern pike, walleye, black bullhead, and fathead minnows were collected. In 2005, two experimental mesh gill nets were set and there was a high abundance of quality size walleye (CPUE=0.63 fish/net; $\bar{x}$ TL = 17.73 in; TL range=16.53 to 19.25 in.; $\bar{x}$ wt = 2.01 lbs; wt. range=1.65 to 2.5 lbs.) and northern pike (CPUE=1.03 fish/net; $\bar{x}$ TL = 20.15 in; TL range=14.2 to 26.3 in.; $\bar{x}$ wt = 2.16 lbs.; wt. range=0.7 to 4.53 lbs.), along with carp (CPUE=0.05 fish/net) and shorthead redhorse (CPUE=0.32 fish/net).

Gull wing Reservoir

Gull wing is a 17-acre BLM pond located in south Phillips County. This reservoir has a windmill aeration system and good water levels. Black crappie (1,200 8-in.) were introduced into this reservoir in 2003, however this stocking was apparently not successful because no fish were collected in 2005. Numerous fathead minnow were observed in the shallows. The re-introduction of black crappie or largemouth bass will be re-attempted in 2006, or the windmill aeration system will be removed.

Karsten Coulee

Karsten Coulee reservoir is located on BLM land is south Phillips County. Like many ponds on BLM land in south Phillips County, livestock grazing has reduced water quality and eliminated shoreline vegetation. In 2000 an aerator was installed on Karsten Coulee and largemouth bass were stocked in 1999 and 2004. Prior to restocking in the spring of 2004, a winterkill was reported. Low water levels and poor water quality were most likely responsible. In 2005, a voluntary creel box was installed and the pond was surveyed. Largemouth bass ranging in size from 5.2 to 7.8 inches in length were collected (CPUE = 0.85 fish/hour). This reservoir would benefit from fencing of at least a portion of the shoreline to allow the pond to recover from a chronic overgrazing problem.

Lark Reservoir

Lark Reservoir is a 6-acre pond located on BLM land in south Phillips County. Lark was primarily a rainbow trout fishery from 1970 to 1994. Since the mid-1990s this reservoir has been managed primarily as a largemouth bass fishery. In 2005, a voluntary creel box was erected and a fish survey was conducted. No fish were collected during the gill netting survey. Water levels were 5 feet below the spillway in the spring of 2005 but the reservoir is currently near full due to summer rains. There have been no reports of a winterkill at Lark however the status of the fishery needs to be investigated further.

McChesney Reservoir

McChesney Reservoir is a privately owned reservoir in south Phillips County. This reservoir has been managed as a northern pike and yellow perch fishery since the 1960s. Walleye have been stocked periodically however these stocks were not successful. In 2005, we erected a voluntary creel box to assess fishing pressure and we used a gill net to sample fish. Anglers reported catching black crappie, bluegill sunfish, and northern pike. Our gill netting survey yielded a low catch of bluegill (3 to 6 in.), northern pike (22 to 23 in.), and yellow perch (8 to 9 in.).

Paleface

Paleface is a 4.7-acre BLM pond that contains black crappie, golden shiners, and white suckers. A windmill aeration system was installed in 2000 and a voluntary creel box was erected in 2005. Paleface, like many of other reservoirs, is negatively impacted by over grazing. Cattle have destroyed all most all of the shoreline vegetation and are most likely having a negative impact on the water quality of the reservoir. Gill netting surveys in 2001 yielded eight black crappie with an average length of 8.5 inches. In 2005, gill netting captured black crappie ranging in length from 6.6 to 7.4 inches (CPUE=0.47 fish/hour), golden shiners (CPUE=0.14 fish/hour), and white suckers (0.05 fish/hour).

PR 018

PR 018 is a 6-acre pond located on BLM land in south Phillips County. PR 018 has a windmill aeration system and was historically a warm water fishery consisting primarily of largemouth bass. In 2004, a winterkill occurred and surplus rainbow trout were stocked in the spring of 2004. Gill netting surveys indicate excellent growth and survival of rainbow trout with a catch rate of 4.63 fish/hour (74

fish/net). Rainbow trout ranged in size from 7.7 to 12.2 inches TL ($\bar{x}$ TL=9.92 in.) and 0.07 to 0.63 lbs. ($\bar{x}$ wt=0.35 in.). Re-introduction of largemouth bass is being considered.

PR 020

PR 020 is a 7-acre pond located on BLM land in south Phillips County which is managed as a largemouth bass fishery. PR 020 was spilling over in 2004 and the reservoir is currently full. Largemouth bass were last stocked in 1993 and are successfully recruiting within this reservoir. In 2005, gill netting surveys resulted in a good catch (CPUE=0.5 fish/net) of 6 to 12 inch largemouth bass ($\bar{x}$ TL=7.21).

PR 022

PR 022 is a BLM pond located in south Phillips County. This pond experienced low water levels in 2001 and low water combined with poor water quality due to over grazing resulted in a die off of largemouth bass. Largemouth bass were re-introduced in 2003 however this stocking was not successful. In 2005, gill netting surveys found no fish present within the reservoir. This reservoir would most likely benefit from fencing off part of the shoreline to allow vegetation to re-grow and to improve water quality. Re-stocking of largemouth bass will be considered, however the effectiveness of this may be marginal if something is not done to improve the fisheries habitat.

PR 054

PR 054 is a 7.6-acre BLM pond located 3-miles from the Canadian border. This pond is managed as a largemouth bass fishery and was last stocked with largemouth bass in 2003. Water levels have been marginal at this reservoir and a windmill aerator was installed in 2001. In 2005 water levels were five feet below the spillway and the pond received heavy grazing pressure. In 2005, a voluntary creel box was erected and a gillnetting survey was conducted. Two creel cards were returned and one angler reported catching 3 largemouth bass in 15 minutes of fishing. The gill netting catch (CPUE=1 fish/hr) included multiple 9 to 12 inch largemouth bass ($\bar{x}$ TL=10.39). Largemouth bass are doing very will in PR 054 and it receives a very minimal amount of fishing pressure. This reservoir might benefit from decreased grazing pressure, however the steep banks of this reservoir prevent cattle from having a large impact on the fishery. The surrounding prairie would benefit from decreased grazing pressure.

Sagebrush

Sagebrush reservoir is a 5.2-acre BLM pond located in south Phillips County. Sagebrush was historically managed as a rainbow trout fishery until largemouth bass were introduced in 1989, followed by bluegill in 2001 and channel catfish in 2001. Rainbow trout are stocked periodically, which the last stocking occurring in 2002. A windmill aerator system was installed in 2000 or 2001 and this reservoir is currently full. In 2005, a voluntary creel box was erected and a gill netting survey was conducted. Gill netting surveys in 2001 yielded a catch of 10 rainbow trout ranging in length from 10 to 12 inches. In 2005, bluegill (CPUE=0.5; TL=6 to 8 in.), largemouth bass (CPUE=0.14; TL=8 in.), and rainbow trout (CPUE=0.14; TL=14 to 18 in.) were collected. Bluegill and largemouth bass populations are self-sustaining within the reservoir and rainbow trout have exhibited excellent growth and survival within this reservoir.

Taint Reservoir

Taint reservoir is a 5.7-acre reservoir located on BLM land in south Phillips County. This reservoir is a popular bluegill fishery with high catch rates and good lengths of fish. Taint reservoir has had good water levels and was full in 2005. In 2005, a voluntary creel box was erected and gill

netting and trap netting was conducted. Bluegills ranging in length from 4 to 6 inches were collected during the gill netting survey (CPUE=0.18 fish/hour). Bluegills ranging in length from 4.7 to 7.15 inches were collected during trap netting surveys (CPUE=0.34 fish/hour). One creel card was collected and the angler reported a catch of bluegill (11.97 fish/hour) and largemouth bass (11.97 fish/hour). The status of channel catfish that were stocked in 2001 is unknown.

Wapiti

Wapiti is located on BLM land is managed primarily as a largemouth bass fishery. A windmill aerator system was installed in 2001 and was out of commission during the winter of 2004/2005. A few dead largemouth bass were reported along the shoreline however this was only a partial winterkill. Water levels were nine feet below the spillway during the spring of 2005 and this combined with heavy cattle use were probably the cause of the partial winterkill. In 2005, several largemouth bass were collected (CPUE=0.32 fish/hour), ranging in size from 5.3 to 14.6 inches. The windmill aerator was also repaired in 2005.

Whiteface

Whiteface is located on BLM land is managed as a largemouth bass fishery, however stocking records do not indicate when largemouth bass were introduced to this reservoir. Whiteface reservoir has had good water levels and was full in 2005. Gill netting surveys resulted in good catches rates (CPUE=0.91 fish/hour) and size distribution (TL=6.6 to 10.1 in.) of largemouth bass.

Fort Peck Dredge Cuts and Tailwater

Fort Peck Dredge Cuts and tailwater complex fish population sampling continued in June and September 2004. For both months, ten 125- x 6-foot multifilament experimental gill nets and four 100- x 8-foot 1/2-inch bar mesh monofilament gill nets, were set overnight. Nets were set for an average of 19.2 hours each. This sampling effort, initiated in 1979, was to obtain information on the overall fish population due to potential impacts associated with proposed construction of re-regulation dam below Fort Peck Dam. Another objective is to evaluate the abundance of game fish in relation to cisco and rainbow smelt.

The walleye/sauger combined catch was the highest in the area in 1980 (94 were netted). This is believed to have been associated with the migration of large numbers of rainbow smelt from Lake Sakakawea, ND. However, the combined walleye/sauger catch in 1998 was also 94, and was not accompanied by a large number of rainbow smelt being present (only 7 captured). In 2004, there were 89 walleye/sauger netted (Tables 11 and 12), with only 3 rainbow smelt taken (Table 11).

The combined cisco net catch in 2004 was 129 (Table 11; Table 12). Cisco first appeared in this sampling in 1985, one year after they were introduced into Fort Peck Reservoir. Since then, they have become a significant forage fish in the area immediately below Fort Peck Dam.

A combined total of 118 shovelnose sturgeon were captured in standard experimental gill nets in 2004 (Table 11), up from 77 in 2003. Standard fork length and standard length measurements were taken and numbered spaghetti tags were inserted through the base of the dorsal fin on all shovelnose. This was done to augment on-going shovelnose and pallid sturgeon research in the lower Missouri and Yellowstone Rivers.

Table 9. Summary of 2004 June and September combined standard experimental gill netting with 383.1 hours and 20 nets in the Fort Peck Dredge Cuts.

Species[1]	Average Length (ins)	Average Weight (lbs)	Number	CPUE Per Hr.	CPUE Per Net
SNS	24.8	2.20	118	0.31	5.9
GE	11.8	.52	134	0.35	6.7
LW	18.3	2.18	8	0.02	0.4
CI	10.2	0.35	124	0.32	6.2
GAR	27.7	2.86	1	*	<0.1
NP	24.6	4.16	17	0.04	0.9
CP	19.4	2.31	2	0.01	0.1
RC	16.8	2.35	35	0.09	1.8
BSU	27.4	6.46	4	0.01	0.2
SMB	19.5	4.63	5	0.01	0.3
SHR	13.0	1.15	6	0.02	0.3
WS	14.4	1.42	25	0.07	1.3
CC	16.6	1.41	82	0.21	4.1
YP	6.1	0.10	2	0.01	0.1
SG	14.3	0.88	57	0.15	2.9
LNS	17.8	2.86	1	*	<0.1
WE	15.4	1.3	32	0.08	1.6
TOTAL			653	1.70	32.7

[1]SNS-Shovelnose Sturgeon
GE-Goldeye
LW-Lake Whitefish
CI-Cisco
GAR-Shortnose Gar
NP-Northern pike
CP-Carp
RC-River Carpsucker
SMB-Smallmouth Buffalo
SHR-Shorthead Redhorse
LNS-Longnose Sucker
WS-White Sucker
CC-Channel catfish
YP-Yellow Perch
SG-Sauger
WE-Walleye
HYB-Hybognathus spp
[2]Fork Length

Table 10. Summary of 2004 June and September combined standard Smelt netting with 168 hrs and 8 nets in the Fort Peck dredge pools.

Species[1]	Average Length (mm)	Average Weight (g)	Number	CPUE per hour	CPUE per net
GE	11.4	0.44	5	0.03	0.6
WS	11.0	1.47	3	0.02	0.4
CI	7.5	0.32	5	0.03	0.6
RBS	5.6	-	3	0.02	0.4
RBT	4.3	0.04	1	0.01	0.1
YP	4.0	-	2	0.01	0.3
Total			19	0.12	2.4

RECOMMENDATIONS

Paddlefish: Fort Peck Stock

The two paddlefish annual harvest limit, utilizing angler's tags, should be reconsidered due to decreased size and growth of paddlefish and poor to marginal spawning conditions over the last decade. Reducing the annual limit to one paddlefish per angler could significantly reduce fishing mortality on this population. The ability to immediately release a paddlefish should be retained until further data is gathered to determine the length distribution of paddlefish harvested by anglers and the proportion of anglers who utilize the immediate release option.

Annual collections of paddlefish jaws should continue to assist in determining the age structure of the Fort Peck Reservoir paddlefish stock. A mail/phone survey should be conducted periodically, using database of anglers who purchased tags. Attempts should be made to tag 300+ paddlefish each year. On-site creel census should be conducted at least every other year. This information is invaluable in determining harvest rates and total harvest and pressure. Enforcement activities should be logged so a record of monitoring can be established.

Fresno and Nelson Reservoir

Standardized late-summer seining should continue to assess sport fish reproduction and forage fish abundance in Fresno and Nelson Reservoirs. Standardized sampling of adult sport fishes should be continued utilizing fall gill netting to gather recruitment information relating to walleye and other key sport and forage fish year-class strength and winter reservoir water levels. Walleye reproduction is still considered to be below optimum at Fresno and Nelson Reservoirs. Walleye fingerling should be stocked in Fresno and Nelson in 2006 to establish a strong year-class. Stocked fingerling should be marked with Oxytetracycline **(**OTC) so that recruitment of stocked walleye and natural reproduction can be determined.

Beaver Creek Reservoir

Standardized late-summer seining should continue to assess sport fish reproduction and forage fish abundance at Beaver Creek Reservoir. Standardized sampling of adult sport fishes should be continued utilizing fall gill netting to gather recruitment information relating to sport and forage fish year-class strength and to monitor growth and survival of stocked walleye, rainbow trout, and forage availability. Spring and fall plants of walleye fingerlings and advanced fingerlings should continue.

Hill, Blaine & Phillips Co. Ponds

Sampling of adult sport fish populations should continue annually at Bailey Reservoir, Dry Fork Reservoir, Littlewarm Reservoir and Cow Creek Reservoir. Fish population levels should be assessed at Ester Reservoir and additional fish should be stocked depending on water levels. Stocking of walleye fingerlings should be discontinued in Ester Lake until water levels improve. Seining should be conducted in the summer of 2006 to assess the forage fish levels in Cow Creek Reservoir and stocking levels should be adjusted accordingly. All other ponds should be sampled every other year to assess adult fish populations, growth, and recruitment. In addition self-creel survey boxes should be installed at ponds to assess the fishing pressure at these ponds. This information will allow us to tailor our management and stocking efforts to meet the needs of the public.

Fort Peck Dredge Cuts

Netting surveys in the Fort Peck Dredge Cuts should continue to maintain data on the overall fish populations.

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Waters referred to:

16-5140	Fort Peck Reservoir	15-4731	South Casady /BR019
16-2500	Missouri River Sec. 05	16-8445	Sundance Reservoir
16-2520	Missouri River Sec. 06	15-4550	Barrett Reservoir
15-5240	Fresno Reservoir	16-8616	Bell Ridge Reservoir
15-6480	Nelson Reservoir	16-4466	Bison Bone Reservoir
15-4570	Beaver Creek Reservoir	16-4535	Bresaylor Reservoir
15-4535	Bailey Reservoir	15-4761	Cole Pond
15-6105	Little Warm Reservoir	15-4762	Cole Pond
15-4725	BR028 / Billmeyer	15-4765	Cole Pond
16-4575	Butch Reservoir	15-4766	Cole Pond
15-0920	Choteau Reservoir	15-4760	Cole Pond
16-4789	Cow Creek Reservoir	15-4772	Compton Reservoir
15-4851	Cronk Reservoir	15-5120	Ester Lake
15-5083	Dry Fork Reservoir	15-5200	Frenchman Dam
16-5219	Gazob Reservoir	16-5385	Gull Wing Reservoir
15-6095	Lyons Reservoir	16-6155	Karsten Coulee Reservoir
15-6605	Petrie Pond	16-6495	Lark Reservoir
16-7930	Ridge Reservoir	16-6921	McChesney Reservoir
15-9175	Salmo Reservoir	16-7399	Paleface Reservoir

15-7040	PR 018 Reservoir	16-8475	Taint Reservoir
15-6618	PR 022 Reservoir	16-8706	Wapiti Reservoir
15-7600	PR 054 Reservoir	16-8815	Whiteface Reservoir
16-8047	Sagebrush Reservoir		

Key words:

Paddlefish, harvest, walleye, Lake Superior whitefish, northern pike, black crappie, yellow perch, goldeye, channel catfish, sauger, shovelnose sturgeon, pallid sturgeon, burbot, smallmouth buffalo, largemouth buffalo, age, water levels, creel census, population estimates, recruitment, tiger musky, stocking, cisco, smelt

Prepared by: Laura Leslie
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