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

STATE: MONTANA PROJECT TITLE: STATEWIDE FISHERIES INVESTIGATION

PROJECT NO.: F-113-R-4 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, 2004 THROUGH JUNE 30, 2005

## 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 (1.7%) but average size is decreasing and recruitment has been poor. Gill netting and beach seining were conducted at Fresno, Nelson, and Beaver Creek Reservoirs. The fishery in Bailey Reservoir is maintaining despite low water levels. Walleye, yellow perch and tiger muskies are doing well in Little Warm Reservoir. 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. Objective accomplished: twenty 310 projects were reviewed and thirty 124 projects were reviewed with state and local agencies; advised Rocky Boy Reservation on habitat enhancement projects at Bonneau Reservoir and Box Elder Creek; supplied comments to Bureau of Land Management (BLM) relative to development of new fishing Reservoirs; twelve meetings were attended with schools related to the “Hooked on Fishing” program.

## PROCEDURES

Floating and sinking standard experimental gill nets 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 were fished to acquire information on adult fish populations. Six- and eight-feet deep by 100-feet long gill nets of 4-inch bar mesh were drifted to capture paddlefish in the Missouri River. Beach seining, to determine abundance and reproductive success of sport and forage fishes, was conducted in late summer utilizing a 100- X 10-foot seine of 1/4-inch square mesh. Whenever possible, fish were measured for total length (TL: inches) and weighed to the nearest 0.01 pound. Scales were taken from walleye and sauger for aging purposes. Samples were taken from catchable fish in Nelson Reservoir for mercury sampling.

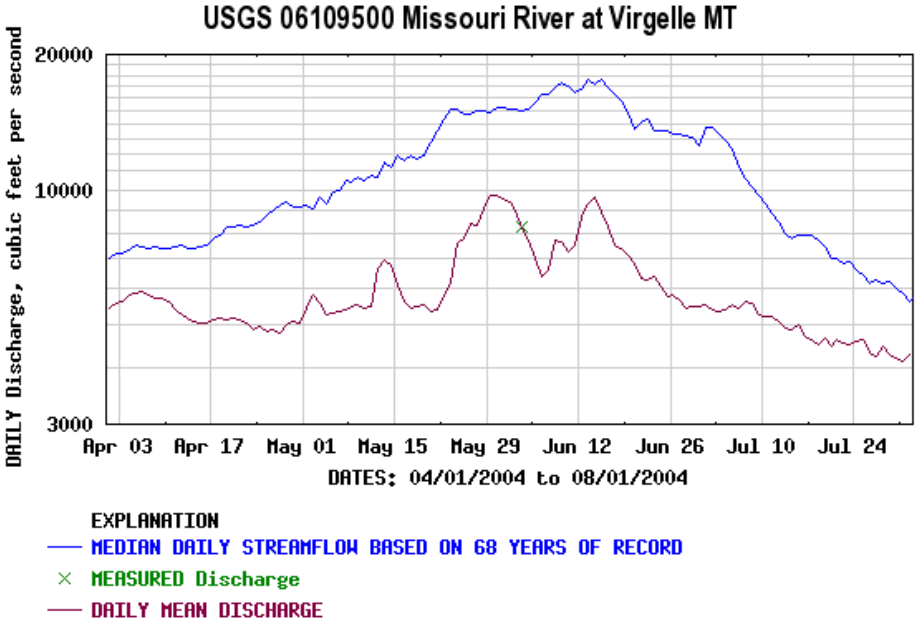
## RESULTS AND DISCUSSION

### Fort Peck Reservoir and Upper Missouri River Paddlefish Stock

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 for 30 minutes each from river mile 1888 to 1936. Paddlefish are weighted, measured (eye-fork length), and unmarked fish are tagged using jaw tags. Since 1993, a project was initiated to tag up to 500 paddlefish each year. Since 1993, 4,154 paddlefish have been tagged, 301 of them in 2004. Paddlefish snaggers are encouraged to report data from tagged paddlefish that they harvest. Twenty-three tagged paddlefish were reported harvested by snaggers in 2004. Six of the tags were from fish tagged in 2004.

In 2004, no spawned out females were captured and one female, running eggs, was taken on June 1 at Fred Robinson Bridge. 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 2004, trigger flows were not reached (**Figure 1**).

**Figure 1**. Missouri River hydrograph at Virgelle during the paddlefish spawning season (May 15-July 15) 2004.



To determine historical spawning success, we rated the probable success of annual spawning migrations based on the fish's ability to ascend the river and reach spawning sites above Fred Robinson Bridge, (**Table 1**). Ratings of good, marginal or poor were assigned to each of the last 25 spawning seasons. Good years were determined to be those in which trigger flows occurred, and the duration of those flows exceeded 30 days during the mid-May to mid-July spawning period. A marginal rating was assigned to those years in which trigger flows occurred, but the duration during the spawning seasoning was less than 30 days. A poor rating was assigned to those years in which trigger flows were not reached and successful spawning was unlikely or severely limited.

From 1974 to 1983, seven good years, two marginal years, and one poor year were experienced. In contrast, seven of the next ten years were rated marginal or poor (**Table 1**). Low recruitment is anticipated from those years. It is possible that no year-classes were developed within the 6-year span from 1985 to 1990 and that very limited year-classes developed since 1997.

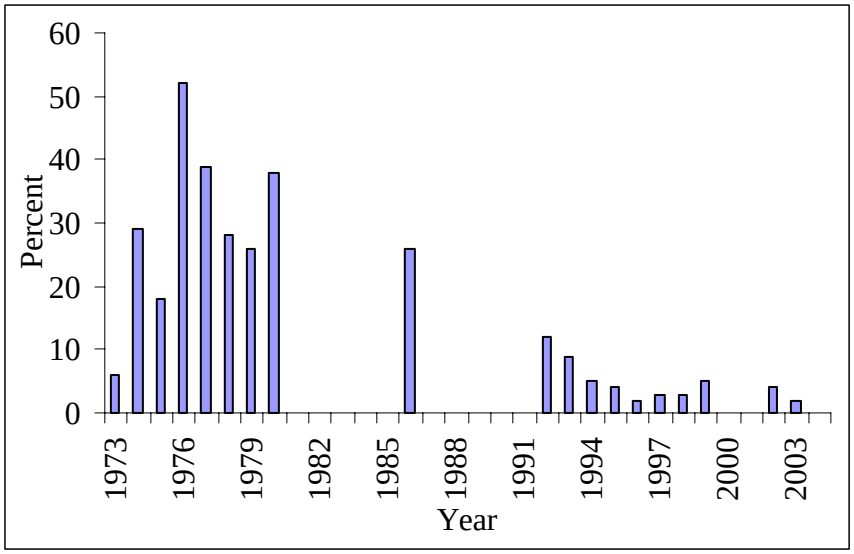
**Table 1.** Paddlefish spawning success ratings for the years 1974-2004 using trigger flow[1] (TF) incidence and duration as the sole criteria.

| | **Paddlefish Spawning Rating** | | |
|---|---|---|---|
| Year | Good | Marginal (#days> TF) | Poor |
| 1974 | X | | |
| 1975 | X | | |
| 1976 | X | | |
| 1977 | | | X |
| 1978 | X | | |
| 1979 | | X(20) | |
| 1980 | X | | |
| 1981 | X | | |
| 1982 | X | | |
| 1983 | | X(29) | |
| 1984 | X | | |
| 1985 | | | X |
| 1986 | | X(19) | |
| 1987 | | | X |
| 1988 | | | X |
| 1989 | | X(05) | |
| 1990 | | X(03) | |
| 1991 | X | | |
| 1992 | | | X |
| 1993 | X | | |
| 1994 | | X(06) | |
| 1995 | X | | |
| 1996 | X | | |
| 1997 | X | | |
| 1998 | | X(25) | |
| 1999 | | X(13) | |
| 2000 | | | X |
| 2001 | | | X |
| 2002 | | X(16) | |
| 2003 | | X(05) | |
| 2004 | | | X |

[1]Flows measured at the Virgelle Measuring Station

In addition, the mean weight of female paddlefish has been steadily decreasing since the 1980s (**Figure 2**). This decrease was thought to be an indicator of over-harvest. An assumption was made that if the average size of females decreased significantly, it would indicate an over-harvest of older, egg bearing fish on which the future of the stock depended. However, information gathered from tagged fish, at large as long as 25 years, does not strongly support this assumption. The majority of paddlefish growth occurs in the juvenile or early adult stages (Bowersox 2004). After reaching maturity, paddlefish growth is often insignificant. The decreased weight of adult females is of concern because it is directly related to fecundity. The combination of the reduced size of female paddlefish and poor spawning conditions is of concern.

**Figure 2.** Percent of female paddlefish greater than 90 pounds captured in spring gill net sets from Fort Peck stock, 1973-2004.




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. No post-release snagging mortality has been observed on the Missouri River when fish are immediately released. Long-term observations and discussions with veteran snaggers indicate there is a significant voluntary effort to return large females to the river, which would otherwise be harvested under a no release restriction. However, high grading is a common practice and could help explain the decreased proportion of large females in the population.

In 2004, the average annual harvest of tagged cohorts (1977 to 2004) was 1.7% (0.0 to 2.6%). Tag return data indicates a low rate of harvest for this paddlefish population as summarized in **Table 2**. While the rate of harvest of tagged fish is low, the size of paddlefish harvested still needs to be compared with the available sizes of adult paddlefish within the population to determine if snaggers are selectively removing the larger adults from the population.

**Table 2.** Summary of paddlefish tagging and harvest data from the Fort Peck Stock, 1977-2004.

| Year | No. Tagged | Returns in 2004 | Total Tag Return | Harvest* (%) | Average Annual Harvest (%) |
|---|---|---|---|---|---|
| 1977 | 60 | 0 | 8 | 13.3 | 0.5 |
| 1978 | 224 | 1 | 43 | 19.2 | 0.7 |
| 1979 | 10 | 0 | 4 | 40.0 | 1.6 |
| 1980 | 33 | 0 | 13 | 39.4 | 1.6 |
| 1983 | 2 | 0 | 1 | 50.0 | 2.4 |
| 1986 | 13 | 0 | 5 | 38.5 | 2.1 |
| 1992 | 29 | 0 | 5 | 17.2 | 1.4 |
| 1993 | 434 | 2 | 68 | 15.7 | 1.4 |
| 1994 | 499 | 0 | 79 | 15.8 | 1.6 |
| 1995 | 456 | 0 | 31 | 6.8 | 0.8 |
| 1996 | 281 | 3 | 44 | 15.7 | 2.0 |
| 1997 | 483 | 2 | 43 | 8.9 | 1.3 |
| 1998 | 368 | 3 | 35 | 9.5 | 1.6 |
| 1999 | 380 | 1 | 31 | 8.2 | 1.6 |
| 2000 | 88 | 1 | 9 | 10.2 | 2.6 |
| 2001 | 13 | 1 | 1 | 7.7 | 2.6 |
| 2002 | 221 | 3 | 10 | 4.5 | 2.3 |
| 2003 | 259 | 0 | 5 | 1.9 | 1.9 |
| 2004 | 301 | 6 | 6 | 2.0 | 2.0 |
| **Totals** | **4154** | **23** | **441** | **17.1** | **1.7** |

* Percent of harvest was derived by adjusting for previous harvest of tagged fish.

Bowersox (2004) compared weight and body length distributions within the paddlefish population of Fort Peck from successive decades (1970, 1990, and 2000) to determine if the frequency of large individuals had decreased. Bowersox (2004) also compared mean weight and body length of two age classes of male (<15 and 16-20) and female (16-20 and 21-25) paddlefish from the three decades to determine if any changes in growth rate had occurred. Through this analysis, Bowersox (2004) found that both the maximum size and early growth of paddlefish has declined over the past 30 years. 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. Creel surveys (Gilge and Perszyk 2002) have indicated that a portion of paddlefish fisherman understand the importance of keeping large paddlefish in the breeding population and have indicated that they release larger paddlefish, keeping smaller adults instead. However, the decreased proportion of large females indicates that not all fishermen hold this view.

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 paddlefish will not be evident in the spawning population for a few years, however it would be prudent to strongly consider the effects of reduced recruitment and reduced fecundity of the adult population. Reducing fishing pressure on adult paddlefish may be necessary to allow the survival of paddlefish in the Fort Peck-Upper Missouri River population.

**Fresno Reservoir**

Fresno Reservoir, located 12 miles northwest of Havre, was built in 1939 for irrigation purposes along the Milk River. Fresno Reservoir is a highly fluctuating reservoir of 5,757 surface acres with a maximum depth of 48 feet. Fresno Reservoir 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 Reservoir 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, brown trout, and rainbow trout have been introduced to supplement the fishery when walleye and northern pike population were low. Like many reservoirs in the region, Fresno Reservoir has been negatively impacted by drought. In 2001 and 2002, severe drought reduced the storage volume to 8% and 4% of capacity, respectively. However, spring and summer rains have increased the conservation pool to 44% going into the winter of 2004/2005.

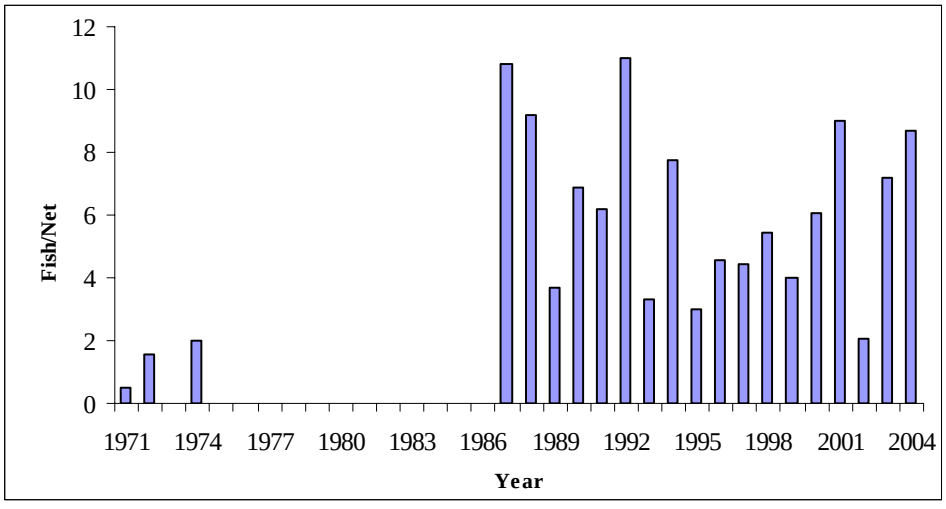
## Population Status of Adult Fishes

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 experimental gill nets each day (12 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. Scales were collected for aging from all walleye and sauger.

**Lake Superior Whitefish:**

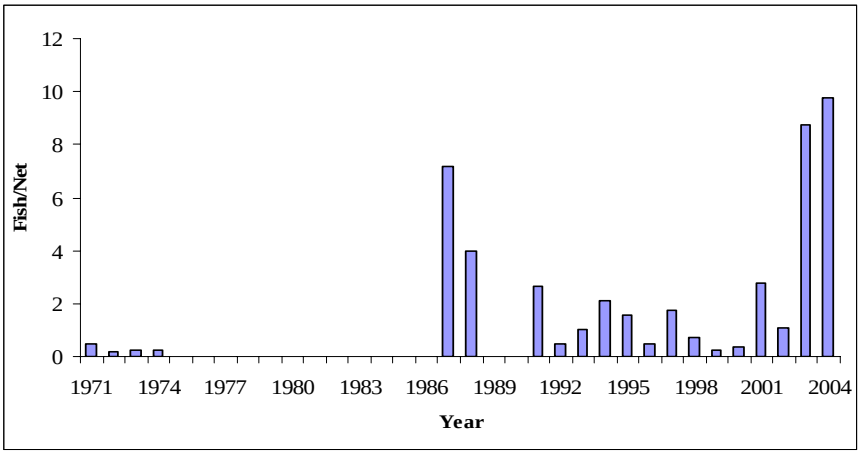
Lake Superior whitefish (whitefish) continue to comprise a significant portion of the gill net catch (**Figure 3**), but are rarely caught by anglers. Whitefish exhibit high growth rates in the Reservoir, and thereby escape predation from all but the largest walleye and northern pike. Whitefish appear to reproduce successfully in years of stable over-winter storage. Over 90% of the 2003 catch was YOY fish (< 7 inches), however no YOY whitefish were present in the gill-netting catch in 2004. The 2004 catch consisted of two adult age-classes

**Figure 3**. Fall gill-netting catches of Lake Superior whitefish in Fresno Reservoir, 1971- 2004. No netting was conducted from 1975-1986.



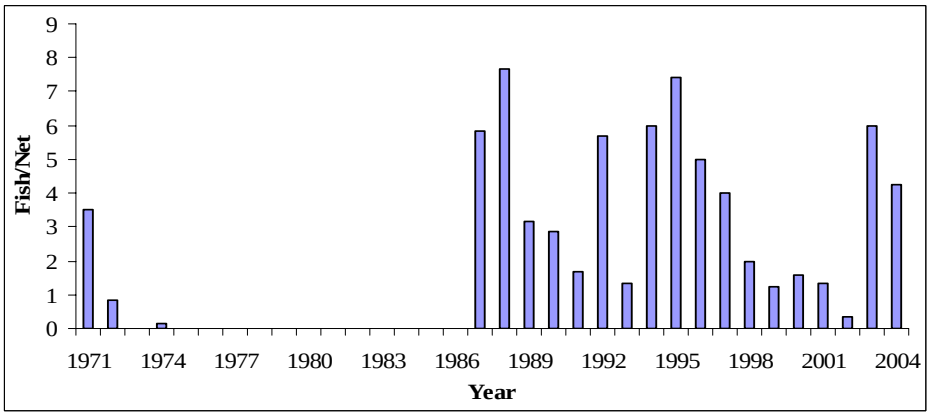
**Yellow Perch:**
Since their introduction in 1968, the catch rate of adult yellow perch has been below that of other north central walleye/perch fisheries. The low catch-per-unit-effort (CPUE) is of concern, and may have been due to consistent heavy predation. As a result 37,500 adult pre-spawn perch were transplanted into Fresno Reservoir in 2001, 18,500 were transplanted in 2002, 37,000 in 2003, and 77,734 in 2004. Reservoir elevations were consistently low in 2001 and 2002, allowing spawning vegetation to develop on dewatered shorelines. Reservoir levels were ideal for spawning in 2003 and a fair year-class was established. Increased numbers of spawning adult perch and reduced predation, allowed for excellent survival and recruitment of perch in 2003 and 2004 (**Figure 4**).

**Figure 4**. Fall gill-netting catch of yellow perch from gill nets in Fresno Reservoir, 1971-2004. No netting was conducted from 1975-1986.



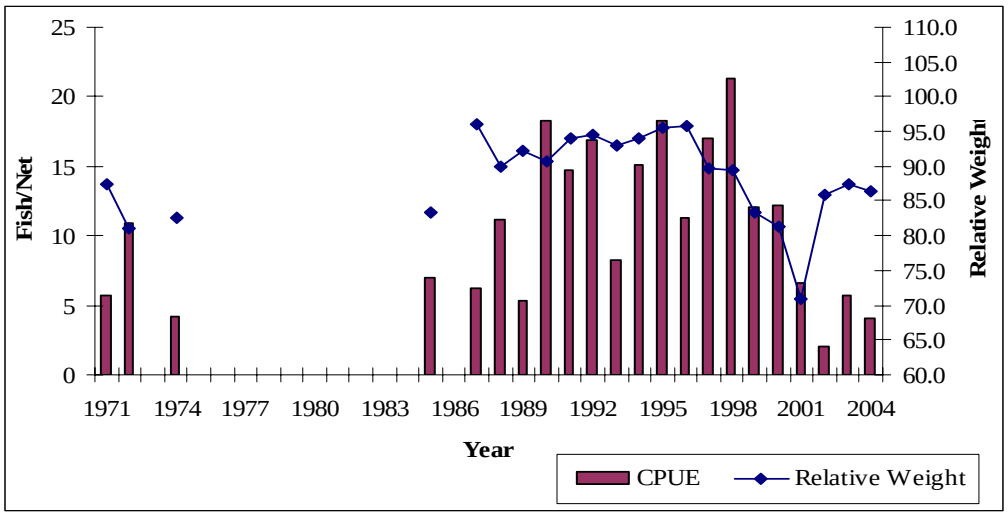

**Northern pike:**
Since the illegal introduction of northern pike in Fresno Reservoir, their populations have fluctuated over the years (**Figure 5)**. The population peaked in 1988, 1995, and 2003 (**Figure 5)** and 2004 data indicates a decline in adult and young of year numbers **(Table 4)**. Walleye anglers continually express displeasure with the presence of northern pike within Fresno, however removal of northern pike is not a feasible option and northern pike offers an additional fishing opportunity. Ice fisherman consistently take several fish over 20 pounds each winter.

**Figure 5**. Gill net catches of northern pike in Fresno Reservoir, 1971-2004. No netting was conducted between 1975 and 1986.



**Walleye:**
The relative abundance of adult walleye remained low in 2004 due to poor recruitment (**Figure 6**). However, the abundance of walleye continues to increase after the record low abundance of walleye in 2002. In addition, walleye continue to exhibit high condition indices. The high condition of walleye is attributable to a forage base adequate for the existing population of predators rather than an over abundance of forage. The majority of the walleye sampled were four to seven years old, being from the 1998-2000 year classes. A limited amount of recruitment has occurred over the last four years, most likely due to drought.

**Figure 6**. Gill net catches of walleye and relative weight for the years 1971-2004. No sampling occurred from 1975-1984.




**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 were captured in 2003 or 2004. Few trout have been reported caught by anglers.

**Status of Young-of-Year Fishes**

In 2004, the abundance and reproductive success of sport and forage fishes were monitored at 12 predetermined stations, which were established in 1968 (**Table 3**). 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.

As a result of low natural reproduction of walleye, 100,000 walleye fry were stocked into Fresno Reservoir in 2004. Reproduction of northern pike was also significantly lower in 2004. Yellow perch reproduction increased significantly from 2003, most likely due to increased water levels in the spring and summer, which flooded spawning substrate. Black crappie, emerald shiner, and spottail shiner

numbers are significantly lower than in 2003. Emerald shiner and spottail shiner counts are 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.

**Table 3**. A summary of forage fish and young-of-year game and sport fish collected in Fresno Reservoir, 1968-2004.

| Year | Seine Hauls | *Stizostedion* | 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 | 15 | 10 | 2,898 | 69 | 48 | 56 | 0 | 2 | 1 |

[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

* Almost entirely sauger

**Nelson Reservoir**

Nelson Reservoir, located 19 miles east of Malta, is an off-stream storage reservoir constructed in 1915 for irrigation purposes. At full storage capacity, Nelson Reservoir covers approximately 4,500 surface acres and is 50 feet deep. Nelson Reservoir 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 Reservoir currently has approximately 26 fish species and is managed primarily as a walleye fishery. Walleye reproduce naturally in Nelson Reservoir; 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. Drought has reduced the active conservation pool of Nelson Reservoir over the last eight years and this may be the limiting factor in successful recruitment of walleye.

## Population Status of Young-of-Year and Adult Fishes

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.

Adult fish populations were monitored at 10 fixed experimental gill-netting stations, which were established in 1991 and 1993. Gill-netting 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). Scales were collected for aging from all walleye. In addition, catchable size walleye, northern pike, whitefish, yellow perch, and black crappie were collected for levels of mercury concentrations. 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.

**Yellow Perch:**

Spring and summer rains allowed water levels to rise and flood shoreline vegetation, which had grown up as a result of continued drought. The abundance of flooded vegetation created ideal spawning conditions for yellow perch, resulting in a five-fold increase in YOY yellow perch (**Table 4**). In addition, the relative abundance of adult yellow perch doubled in 2004 (**Table 5 and Figure 7**). Adult yellow perch started to rebound in 2003 after their numbers were greatly reduced in 2001 and 2002 from drought. The abundance of adult and YOY yellow perch should continue to increase in 2005, increasing the prey-base within Nelson Reservoir.

**Walleye:**

In 2004, 100,000 walleye fingerlings were stocked in Nelson Reservoir to supplement natural reproduction. Even with the addition of these fish, catch of young-of-year walleye remained low when compared to pre-drought levels (**Table 4**).

The relative abundance of adult walleye in Nelson Reservoir remained stable in 2004 at 12.6 walleye/net (**Table 5**). The relative abundance of walleye continues to increase after the drastic decrease in abundance in 2002 as a result of drought. The adult population consists primarily of age 4 to age 6 fish (range age 2 to 13). The average length and relative weight of walleye sampled was 14.5

inches (TL) and 87.3, respectively. Walleye sampled ranged in length from 7 to 31 inches and weighed 0.1 to 8.85 pounds.

**Northern pike:**
Historically, the abundance of adult northern pike has remained relatively low and stable (**Table 5** and **Figure 7**). The abundance of northern pike had been projected to explode over the next few years as a result of the numbers of YOY in 2003. However, based on the survey results from 2004, a population explosion may not occur. No YOY were observed in 2004 beach seining surveys (**Table 4**) and the abundance of adult northern pike remains low. The adult population consists primarily of large adults ( $\bar{x}$ =28-in.: 18 to 31in.) with high condition factors ( $\bar{x}$ =90).

**Table 4**. A summary of walleye, yellow perch, and northern pike young-or-year captured by beach seining in Nelson Reservoir, 1974-2004.

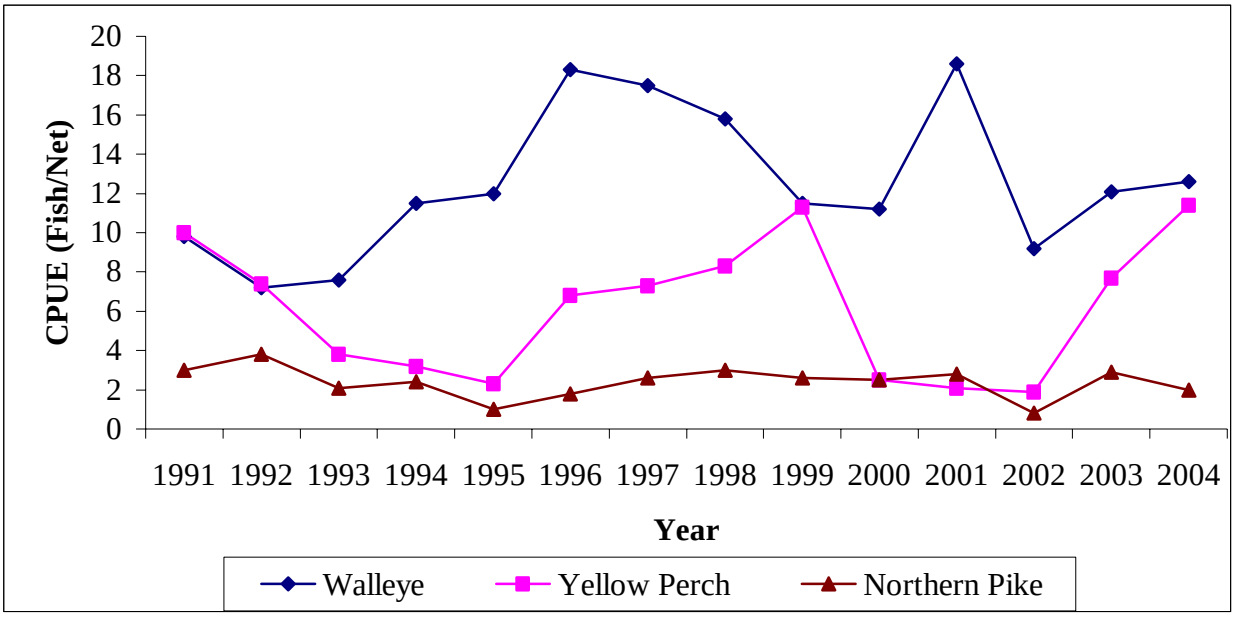
| | | Walleye | | Yellow Perch | | No. Pike | |
|---|---|---|---|---|---|---|---|
| Year | Shoreline Seined (ft) | No. | No./ 1,000 ft | No. | No./ 1,000 ft | No. | No./ 1,000 ft |
| 1974 | 1,590 | 36 | 0.036 | 1,365 | 1.365 | 0 | 0 |
| 1975 | 1,845 | 112 | 0.112 | 3,008 | 3.008 | 0 | 0 |
| 1976 | 1,590 | 119 | 0.119 | 74 | 0.074 | 1 | 0.001 |
| 1977 | 1,740 | 1 | 0.001 | 2,939 | 2.939 | 0 | 0 |
| 1978 | 870 | 428 | 0.428 | 6,568 | 6.568 | 0 | 0 |
| 1979 | 1,530 | 23 | 0.023 | 1,832 | 1.832 | 2 | 0.002 |
| 1980 | No Seining Coducted | | | | | | |
| 1981 | 651 | 31 | 0.031 | 8859 | 8.859 | 1 | 0.001 |
| 1982 | 660 | 0 | 0 | 4,553 | 4.553 | 3 | 0.003 |
| 1983 | 1,420 | 4 | 0.004 | 138 | 0.138 | 18 | 0.018 |
| 1984 | 1,530 | 0 | 0 | 133 | 0.133 | 0 | 0 |
| 1985 | 510 | 3 | 0.003 | 2,272 | 2.272 | 16 | 0.016 |
| 1986* | 700 | 0 | 0 | 3 | 0.003 | 7 | 0.007 |
| 1987* | 495 | 5 | 0.005 | 1,987 | 1.987 | 0 | 0 |
| 1988* | 520 | 0 | 0 | 783 | 0.783 | 0 | 0 |
| 1989* | 910 | 10 | 0.01 | 736 | 0.736 | 4 | 0.004 |
| 1990 | 1,320 | 7 | 0.007 | 2,631 | 2.631 | 1 | 0.001 |
| 1991* | 660 | 8 | 0.008 | 77 | 0.077 | 1 | 0.001 |
| 1992 | 635 | 21 | 0.021 | 140 | 0.14 | 6 | 0.006 |
| 1993* | 520 | 3 | 0.003 | 8,287 | 8.287 | 1 | 0.001 |
| 1994* | 830 | 6 | 0.006 | 1,802 | 1.802 | 10 | 0.01 |
| 1995* | 760 | 36 | 0.036 | 232 | 0.232 | 0 | 0 |
| 1996* | 870 | 25 | 0.025 | 4,521 | 4.521 | 13 | 0.013 |
| 1997* | 890 | 53 | 0.053 | 2,205 | 2.205 | 0 | 0 |
| 1998* | 340 | 0 | 0 | 126 | 0.126 | 0 | 0 |
| 1999 | 750 | 11 | 0.011 | 1,489 | 1.489 | 2 | 0.002 |
| 2000* | 440 | 4 | 0.004 | 449 | 0.449 | 2 | 0.002 |
| 2001 | 430 | 2 | 0.002 | 72 | 0.072 | 1 | 0.001 |
| 2002* | 415 | 2 | 0.002 | 19 | 0.019 | 4 | 0.004 |
| 2003 | 530 | 3 | 0.003 | 361 | 0.361 | 33 | 0.033 |
| 2004* | 443 | 10 | 0.01 | 1781 | 1.781 | 0 | 0 |

*Years in which walleye fry or fingerlings were stocked

**Table 5**. Relative catches of walleye, yellow perch, northern pike, lake whitefish, white sucker, and goldeye from Nelson Reservoir with experimental sinking gill nets, fall 1991-2004.

| | | Walleye | | Yellow Perch | | Northern Pike | | Lake Whitefish | | White Sucker | | Goldeye | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Nets | N | CPUE | N | CPUE | N | CPUE | N | CPUE | N | CPUE | N | CPUE |
| 1991 | 5 | 49 | 9.8 | 51 | 10 | 15 | 3 | 25 | 5 | 18 | 3.6 | 24 | 4.8 |
| 1992 | 5 | 36 | 7.2 | 37 | 7.4 | 19 | 3.8 | 29 | 5.8 | 26 | 5.2 | 2 | 0.4 |
| 1993 | 10 | 76 | 7.6 | 38 | 3.8 | 21 | 2.1 | 22 | 2.2 | 182 | 18.2 | 11 | 1.1 |
| 1994 | 10 | 115 | 11.5 | 32 | 3.2 | 24 | 2.4 | 60 | 6 | 82 | 8.2 | 3 | 0.3 |
| 1995 | 10 | 120 | 12 | 23 | 2.3 | 10 | 1 | 37 | 3.7 | 113 | 11.3 | 16 | 1.6 |
| 1996 | 10 | 183 | 18.3 | 68 | 6.8 | 18 | 1.8 | 32 | 3.2 | 135 | 13.5 | 22 | 2.2 |
| 1997 | 10 | 175 | 17.5 | 73 | 7.3 | 26 | 2.6 | 21 | 2.1 | 91 | 9.1 | 16 | 1.6 |
| 1998 | 10 | 158 | 15.8 | 83 | 8.3 | 30 | 3 | 12 | 1.2 | 86 | 8.6 | 38 | 3.8 |
| 1999 | 10 | 115 | 11.5 | 113 | 11.3 | 26 | 2.6 | 14 | 1.4 | 95 | 9.5 | 11 | 1.1 |
| 2000 | 10 | 112 | 11.2 | 25 | 2.5 | 25 | 2.5 | 33 | 3.3 | 116 | 11.6 | 51 | 5.1 |
| 2001 | 10 | 186 | 18.6 | 21 | 2.1 | 28 | 2.8 | 45 | 4.5 | 175 | 17.5 | 52 | 5.2 |
| 2002 | 10 | 92 | 9.2 | 19 | 1.9 | 8 | 0.8 | 32 | 3.2 | 65 | 6.5 | 41 | 4.1 |
| 2003 | 10 | 121 | 12.1 | 77 | 7.7 | 29 | 2.9 | 27 | 2.7 | 97 | 9.7 | 116 | 11.6 |
| 2004 | 10 | 126 | 12.6 | 114 | 11.4 | 20 | 2 | 13 | 1.3 | 94 | 9.4 | 90 | 9 |

**Figure 7.** Population trends of key sport fishes, (walleye, yellow perch, and northern pike), in Nelson Reservoir from 1991-2004.



**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.

In the early 1980's, largemouth bass were introduced to help curb excessive white sucker numbers and provide an additional sport fishing opportunity. Although largemouth bass reproduction was documented, no recruitment occurred and largemouth bass are no longer found in the reservoir. In 2000, smallmouth bass were introduced, and natural reproduction was documented in 2004 although only five YOY were collected.

Soon after the introduction of largemouth, northern pike were illegally introduced. The northern pike population increased steadily and peaked in the early 1990's. Northern pike have severely reduced rainbow trout numbers despite increased number and size of trout stocked. Reproductive success of northern pike has been spotty allowing for several years of good trout survival. Northern pike reproduction in 2003 was excellent and a strong year-class was produced; however a limited number of YOY were collected in 2004. In 2004, the relative abundance on northern pike was low, consisting of numerous large adult fish (**Table 6**; TL=16 to 34 in.).

Yellow perch were first documented in the reservoir in 1986, as a result of an illegal introduction. Beach seining indicated good initial reproduction in 1987 (**Table 7**). Like the northern pike, yellow perch numbers peaked in the early 1990's and are maintaining a population at rather high levels. 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. However, the only YOY forage fish collected in 2004 were yellow perch, which experienced high spawning success as a result of increased water levels and flooded vegetation (**Table 7**). The relative abundance of adult yellow perch is relatively low compared to large systems in the region. However, the majority of adult yellow perch are of quality size (> 8 in.; **Table 6**).

Walleye were 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 15,000 walleye fingerlings are stocked annually. Poor survival of naturally produced and hatchery walleye has been evident since 2001 (**Table 7**). The relative abundance of adult walleye remains consistent with previous years (**Table 6**; CPUE= 2.5 fish/net; TL=9 to 25 in.).

**Table 7**. A summary of young-of-year fishes captured by beach seining in Beaver Creek Reservoir, 1985-2004.

| Year | Sites | Sucker sp.[1] | YP | LK CH | WS/PL MN | FH MN | IOWA | EM SH | SP SH | NP | WE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1985 | 5 | 2,535 | 0 | 7 | 0 | 0 | 11 | 0 | 0 | 0 | - |
| 1986 | 4 | 3,110 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 9 | - |
| 1987 | 6 | 969 | 2,281 | 1 | 0 | 0 | 72 | 0 | 0 | 10 | - |
| 1989 | 6 | 54 | 4,401 | 0 | 0 | 0 | 4 | 0 | 1 | 0 | - |
| 1990 | 6 | 1 | 42 | 0 | 0 | 0 | 2 | 1 | 93 | 2 | 0 |
| 1991 | 6 | 348 | 8,615 | 0 | 0 | 2 | 0 | 2 | 835 | 12 | 0 |
| 1992 | 6 | 492 | 1,938 | 0 | 0 | 0 | 4 | 0 | 156 | 0 | 0 |
| 1993 | 6 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 455 | 27 | 0 |
| 1994 | 6 | 49 | 707 | 0 | 0 | 0 | 0 | 0 | 181 | 11 | 0 |
| 1995 | 6 | 6 | 7,210 | 0 | 0 | 0 | 0 | 0 | 1,438 | 13 | 0 |
| 1996 | 6 | 261 | 5 | 0 | 0 | 0 | 7 | 0 | 247 | 5 | 7 |
| 1997 | 6 | 31 | 17 | 0 | 0 | 0 | 6 | 0 | 193 | 13 | 1 |
| 1998 | 6 | 0 | 870 | 0 | 0 | 0 | 0 | 0 | 141 | 6 | 1 |
| 1999 | 6 | 0 | 592 | 0 | 0 | 0 | 0 | 0 | 86 | 7 | 2 |
| 2000 | 6 | 1 | 402 | 0 | 1 | 0 | 0 | 0 | 190 | 3 | 23 |
| 2001 | 6 | 10 | 357 | 0 | 0 | 0 | 0 | 0 | 216 | 0 | 3 |
| 2002 | 6 | 0 | 331 | 0 | 0 | 0 | 0 | 0 | 592 | 0 | 95 |
| 2003 | 6 | 19 | 506 | 0 | 0 | 0 | 2 | 0 | 2,355 | 15 | 1 |
| 2004 | 6 | 0 | 1,545 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 2 |

[1]Consists of white and longnose sucker

**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 have been occasionally stocked to supplement the fishery. Monitoring of adult sport fish populations was initiated in 1990 and has occurred off and on over the years (**Table 8**). Two sinking experimental gill-nets are set overnight to monitor the populations. In addition periodic electrofishing and trap netting has occurred.

**Northern Pike:**

During the winter of 1989-90, as many as 32 spearing houses were on Bailey Reservoir on any given day. Dozens of large northern pike (>10 pounds) were reportedly harvested that same winter. The catch of adult northern pike since that winter has declined noticeably. The gill-net catch (**Table 8**) and poor angler success is suggestive of a low northern pike population. In 1993, a plant of 5,000 northern pike fingerlings was made to supplement expected natural reproduction. Though high water levels in 1993 were conducive to spawning, no sign of naturally produced fish or hatchery fish were found by late summer. A transplant of 710 18-inch northern pike was made in August of 1994. These were fish that were "hook and lined" from nearby Fresno Reservoir. An additional 140 22-inch northern pike were transplanted from Fresno Reservoir in October of 1995. Some YOY northern pike were observed

in 1996, indicating at least some natural production occurred. Though no netting was conducted in 1995, anglers reported good catches of northern pike throughout the winter of 1995-96.

**Yellow Perch:**
Following their initial introduction in 1987, yellow perch numbers grew and anglers reported catches of numerous yellow perch exceeding 0.5 lbs. One party of three anglers remarked that they had taken home 93 pounds of perch fillets in a single weekend of ice fishing. Yellow perch numbers appear to have peaked in 1998 and then dropped off remarkably due to the drought. In 2002, the CPUE of yellow perch was 16 fish/net, down from 66 fish/net in 1998 (**Table 9**). In 2004, 50 adult perch were collected in trap nets and relocated to Home Run Pond in Glasgow, MT.

**Black Crappie:**
As with the yellow perch, black crappie have experienced high growth and reproductive success since their introduction in 1987. Their population peaked in 1996 (CPUE=63.5 fish/net) and then steadily decreased (**Table 8**). In 2004, 120 adults were removed from the reservoir and relocated to Home Run Pond in Glasgow.

**Walleye:**
Walleye were introduced into the reservoir in 1989. Since 1999, alternate year walleye fry stocking has been initiated to provide an additional sport fish and to utilize the abundant yellow perch population. Anglers have reported catches of walleye in excess of eight pounds and this was confirmed in 2002 when two walleye (4 and 9 lbs.) were collected during gill-netting surveys. These fish were survivors or offspring of the walleye stocked in 1989. Anglers continue to catch quality walleye within Bailey Reservoir.

**Largemouth bass:**
Largemouth bass have established a self-sustaining population within the reservoir. Anglers report frequent catches of yearling bass and occasionally catches a three-pound bass. During electrofishing surveys in 2000, a 5.5-pound largemouth bass was collected.

**Table 8**. Total catch, average length (TL, in.), and average weight (lb.) of northern pike, yellow perch, and black crappie in Bailey Reservoir, 1990-2004.

| | | Northern pike | | | Yellow Perch | | | Black Crappie | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | Nets | No. | Len Avg | Wt Avg | No. | Len Avg | Wt Avg | No. | Len Avg | Wt Avg |
| 1990 | 2 | 24 | 18.1 | 1.23 | 34 | 7.7 | 0.26 | 21 | 5.7 | 0.1 |
| 1991 | 2 | 7 | 24.7 | 3.21 | 58 | 10.1 | 0.56 | 4 | 8.5 | 0.35 |
| 1992 | 2 | 6 | 26.8 | 4.29 | 34 | 8.1 | 0.29 | 16 | 4.7 | 0.08 |
| 1993 | 2 | 2 | 31.8 | 7.55 | 21 | 6.6 | 0.15 | 127 | 6.7 | 0.12 |
| 1994 | 2 | 7 | 20.1 | 2.59 | 38 | 6 | 0.1 | 43 | 6.3 | 0.14 |
| 1995 | | | | | No Netting Conducted | | | | | |
| 1996 | 2 | 14 | 23.8 | 3.54 | 86 | 7.2 | 0.19 | 15 | 6.8 | 0.21 |
| 1997 | | | | | No Netting Conducted | | | | | |
| 1998 | 2 | 3 | 22.2 | 2.43 | 132 | 8 | 0.26 | 32 | 9 | 0.44 |
| 1999 | | | | | No Netting Conducted | | | | | |
| 2000 | | | | | No Netting Conducted | | | | | |
| 2001 | | | | | No Netting Conducted | | | | | |
| 2002 | 2 | 0 | 0 | 0 | 32 | 9.9 | 0.49 | 31 | 11.2 | 0.82 |
| 2003 | | | | | No Netting Conducted | | | | | |
| 2004 | | | | | No Netting Conducted | | | | | |

**Little Warm Reservoir**

Little Warm Reservoir provided good fishing for northern pike and yellow perch until floods washed out the dam in 1986. The reservoir was subsequently drained for repair and refilled in 1988. The reservoir is privately owned and utilized for stock water and irrigation. The department manages the fishery, which is open to the public. The reservoir was initially stocked with walleye fry for several years and is now managed with annual plants of fingerlings. Sixty-eight ripe adult crappie were introduced in 1989. Some reproduction was observed but few adult crappie have been captured since.

Other species found in the reservoir include brook stickleback, Iowa darter, white sucker, golden shiner, yellow perch, black bullhead, and fathead minnow. Most of these fish are common to the drainage and probably were introduced from upstream sanctuaries. Because of a large increase in white sucker numbers, an additional piscivore was considered for introduction. The tiger musky was chosen and 429 7-inch fingerlings were introduced in the fall of 1993. Another 2,500 2-inch fingerlings were planted in 1997. Two tiger muskies were netted in 1997, weighing 4.80 and 4.58 pounds. Reports of larger muskies are common.

In 2003, two over-night sinking gill nets were fished in mid May. They captured 1 walleye (6.2 pounds) and 32 yellow perch. Six tiger muskies averaging 5.5 pounds were also netted. White suckers were plentiful but no crappie were captured. No netting was conducted in 2004.

Water levels have been extremely low throughout the last few years. The reservoir would benefit greatly from better water levels. A metal boat ramp was installed while water levels were low. Management plans include annual stocking of walleye fingerlings and alternate year tiger musky fingerlings, to maintain fishable populations.

**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

The 2-paddlefish annual 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 reducing 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 be made 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.

Standardized late-summer seining to assess sport fish reproduction and forage fish abundance should be continued at Fresno and Nelson Reservoirs. Sampling of adult sport fishes should be continued utilizing fall gill netting to gather recruitment information relating to walleye year-class strength and winter Reservoir water levels. Walleye reproduction is still considered to be below optimum at Fresno and Nelson Reservoirs. Alternate years of walleye fingerling stocking should be continued. If water level projections are good, 100,000 fingerling walleye should be planted in 2005 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.

Beach seining and gill netting should be continued at Beaver Creek Reservoir to monitor growth and survival of stocked walleye, rainbow trout, and forage availability. Spring and fall fingerling walleye plants should be made.

Sampling of adult sport fish at Bailey Reservoir and Little Warm Reservoir should continue to establish trend data and monitor growth and recruitment. Occasional supplemental stocking of walleye and northern pike in Bailey Reservoir should continue if water levels improve. Alternate year stocking of walleye and tiger musky in Little Warm Reservoir.

Gill-netting and/or trap netting should be conducted at ponds throughout Hill, Blaine, and Phillips county to provide information on the health of the fishery. 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.

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
16-2500 Missouri River Sec. 05
16-2520 Missouri River Sec. 06
15-5240 Fresno Reservoir
15-6480 Nelson Reservoir
15-4570 Beaver Creek Reservoir
15-4535 Bailey Reservoir
15-6105 Little Warm Reservoir


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