

# MONTANA DEPARTMENT OF FISH AND GAME FISHERIES DIVISION

JOB PROGRESS REPORT

| State of     | Montana   |         |   |
|--------------|-----------|---------|---|
| Project No   | F-11-R-25 | Name    | Northeast Montana Fisheries Investigation             |
| Job No       | I-a       | Title_  | Inventory and Survey of Waters<br>of the Project Area |
| Period Cover | ed April  | 1. 1977 | through March 31, 1978                                |

### ABSTRACT

Beach seining was conducted at Nelson Reservoir to evaluate production of young-of-the-year and forage fishes. The catch for young-of-the-year walleye was extremely poor. Yellow perch young-of-the-year were relatively abundant in contrast to poor catches in 1976. The poor production of young walleye may have been due to low reservoir levels. Only once (1961) during the past 28 years has Nelson Reservoir reached the low levels that occurred in 1977. The surface area of Nelson Reservoir was reduced approximately 50 percent by draw-down. Beach seining conducted at Medicine Lake failed to capture any young walleye or northern pike. Spring trapping conducted at Medicine Lake by refuge personnel captured fair numbers of walleye and northern pike. Walleye taken ranged in size from 2.3 to 4.6 pounds. The largest northern taken was 23.0 pounds. Two gill nets fished overnight in Drabbels Reservoir captured 52 walleye and 2 northern pike. These walleye averaged 1.91 pounds in weight. Beaver Creek Reservoir south of Havre was sampled to determine rainbow trout abundance and growth rates. The average weight of trout taken had declined considerably in comparison to 1974 samples, presumedly due to an increase in suckers. Results of investigations at Bear Track, Johnson (James), Seven-up, Dogtown, Empire, PR 20, Whiteface, Gullwing, Thundercloud, Paul, and Whitetail Reservoirs is presented. Sampling results are presented for two locations on the Milk River. Larval fish sampling data are presented for several streams in response to the proposed Circle West project.

#### RECOMMENDATIONS

Recommendations for each phase of this job are made as the findings for individual waters are discussed.

#### OBJECTIVES

The purpose of this project is to determine the physical, chemical, and biological characteristics of the waters of immediate or potential importance to the recreational fishery of the project area, and to recommend measures for improving the fishery. Job objectives were:

- (1) Determine year-class strength of walleye, yellow perch, and forage fishes in Nelson Reservoir to determine the effect of water level fluctuations.
- (2) Determine abundance of adult and young-of-the-year walleye, northern pike, and forage fishes in Fresno Reservoir to evaluate severe drawdown; and determine success of recent smallmouth bass introductions.
- (3) Determine reproductive success of Medicine Lake sport fishes to evaluate effects of alkaline water, and attempt to artificially fertilize walleye and northern pike eggs to determine viability of sex products.
- (4) Survey numerous small and intermediate size reservoirs (2-100 surface acres) to evaluate existing fish population to determine need and suitability for stocking.
- (5) Determine fish populations in streams to ascertain game fish populations, introductions of brook trout and smallmouth bass, and importance as spawning and nursery areas.

These objectives were attained except no sampling was conducted at Fresno Reservoir due to extreme draw-down for irrigation.

#### TECHNIQUES USED

The techniques are presented as the findings for individual waters are discussed.

## FINDINGS

#### Nelson Reservoir

Nelson Reservoir, located in the Milk River drainage, is utilized for off-stream storage of irrigation water. A ditch which diverts water from the Milk River is the primary source of water. The reservoir which has a surface area of approximately 4,000 acres fluctuates several feet annually depending on Milk River flows and demands for irrigation water.

An excellent self-sustaining fishery for walleye and large yellow perch provide outstanding fishing. Although the average size of walleye in the catch is approximately one pound, several trophy-sized fish are taken annually by anglers. Currently, the largest on record is 14 pounds. Northern pike are present in moderate numbers. Northerns are uncommon to this reservoir, but large numbers entered the reservoir in 1973 via downstream migrations from Fresno Reservoir during severe draw-down. Spawning habitat is generally lacking for northern pike and their population is expected to decline; however, large northerns in the 10- to 20-pound class are anticipated in the fishery due to forage abundance. Sampling objectives were designed to obtain information on reproductive success of walleye, yellow perch, and associated forage species. During recent years various seining techniques have been utilized to secure more reliable seining results. However, in 1977 low water levels did not allow utilization of previous sampling areas and methods and comparisons with previous data are of limited value.

In 1977, beach seining was conducted with a 100-foot x 9-foot x  $\frac{1}{4}$ -inch square mesh seine. Two duplicate samples were obtained from four sites comprising a total of 290 yards of shoreline each (Table 1).

The catch for young-of-the-year walleye was extremely poor. It is not known whether this was due to low spring water levels which hampered spawning or poor survival of fry. One encouraging feature of the catch was an abundance of yellow perch young-of-the-year. The yellow perch catch was extremely poor in 1976 (Needham, 1977) which generated considerable concern. The poor perch production in 1976 was also reflected in the low numbers of yellow perch yearlings taken in 1977 sampling. In general, the catch for most species was below normal. The catch for young-of-the-year crappie sp. remained stable, but this species is generally taken in relatively small numbers.

Discussion and Recommendations: Due to the importance of the sport fishery at Nelson Reservoir, continued sampling is recommended to determine changes in the fish population and factors necessary to maintain the fishery.

A review of 1977 mid-summer reservoir levels revealed a draw-down in excess of 12 feet occurred in comparison to average mid-summer water levels during the past 16 years. Only once (1961) during the past 28 years have reservoir levels approached the low levels of 1977. The surface area of Nelson Reservoir was reduced by approximately 50 percent in comparison to the previous 16 years. Fortunately, a natural basin which maintains a maximum reservoir depth of nearly 25 feet exists below the irrigation outlet structure.

The full impact of this draw-down will become more evident in the coming seasons. A sizeable portion of the upper reservoir containing a shallow pool has been isolated from the main reservoir body and will be highly susceptible to winterkill. Dissolved oxygen measurements will be maintained on this site in 1977-78. Some sportsmen have requested the reservoir be closed to winter fishing in 1977-78 and periodic winter creel census will be conducted to evaluate harvest.

Natural reproduction of walleye has maintained this population; however, supplemental stocking will be considered for the spring of 1978.

## Fresno Reservoir

Fresno Reservoir is a highly fluctuating reservoir of 5,757 surface acres (spillway elevation) located on the Milk River 12 miles northwest of Havre. The sport fishery consists of walleye and northern pike.

| Species                           | Site 1     | Site 2    | Site 3      | Site 4        | Total |
|-----------------------------------|------------|-----------|-------------|---------------|-------|
| Yellow perch<br>(y-of-y)          | (68) (203) | (21) (86) | (242) (129) | (769) (1,421) | 2,939 |
| Yellow perch<br>(yearling)        |            |           | ,           | (8)           | 8     |
| Yellow perch<br>(adult)           |            |           | (1)         | (5)           | 6     |
| Crappie sp.<br>(y-of-y)           | (24) (7)   | (1) (4)   | (28)        | (2) (14)      | 80    |
| Walleye<br>(y-of-y)               |            |           |             | (1)           | 1     |
| Walleye<br>(yearling)             | (1)        |           | '           | (4)           | 5     |
| Buffalo<br>(y-of-y)               | (6) (4)    | (5)       | (1) (1)     |               | 17    |
| Goldeye<br>(y-of-y)               |            |           |             | (1)           | 1     |
| Emerald shiner                    |            | (2) (4)   | (2)         | (2) (29)      | 39    |
| Fathead minnow                    | (1)        |           | (1)         | (2)           | 4     |
| Carp<br>(y-of-y)                  | (72) (46)  | (2) (1)   |             | (1)           | 122   |
| Longnose sucker<br>(y-of-y)       | (2)        |           |             |               | 2     |
| Shorthead<br>redhorse<br>(y-of-y) |            |           |             | (1)           | 1     |
| White sucker<br>(y-of-y)          | (57) (72)  | (5) (7)   | (20) (8)    | (8) (14)      | 191   |
| White sucker<br>(yearling)        | (2) (1)    | (1)       |             |               | 4     |

| Table 1. | A summary of shoreline seining at Nelson Reservoir, 1977. The cat | ch |
|----------|---|----|
|          | for each of two duplicate samples is presented in parenthesis.    |    |
|          |   |    |

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No sampling was conducted in 1977 due to severe draw-down for irrigation. At the end of July when fish population sampling is conducted, the reservoir level was 34 feet below full pool at spillway elevation. This represents a reduction in surface acres from 5,757 to 1,623 or 72 percent. Likewise, the reservoir storage capacity was reduced from 127,200 to 11,720 acre-feet which amounted to a 91 percent reduction. Due to low spring run-off, the maximum reservoir elevation attained was 10 feet below full pool. This lack of filling contributed to draw-down extent.

# Medicine Lake

Medicine Lake, located on the Medicine Lake National Wildlife Refuge, contains approximately 8,700 surface acres. The lake supports a dense population of carp and suckers. Northern pike, walleye, and yellow perch have been introduced to establish a sport fishery.

Beach seining was conducted in early August, 1977 to evaluate reproductive success of walleye and northern pike but none were taken. Sampling was done with a 100-foot x 9-foot x  $\frac{1}{4}$ -inch square mesh seine. A total of 1,437 feet of shoreline sampled produced a catch of 3,544 fathead minnows, 1 brook stickleback, 7 Iowa darter, 2 white sucker (yearling), 13 lake chub, 1 yellow perch (young-of-the-year), 670 carp (young-of-the-year), 2 carp (yearling), and 24 carp (adult).

Artificial fertilization of walleye and northern pike eggs was planned to determine viability of their sex products. This work was not conducted. Instead to gain experience in egg-taking procedures, a trip was made to Garrison Reservoir to observe the walleye spawning operation conducted by North Dakota Game and Fish Department personnel.

Discussion and Recommendations: Sampling for young-of-the-year fishes should be continued to evaluate natural reproduction. Adequate numbers of brood fish appear to be present. Spring sampling conducted by refuge personnel in 1977 utilizing 4-foot x 6-foot frame traps with 1-inch square mesh for 9 trap-days captured 63 northern pike (0.4 to 23.0 pounds) and 48 walleye (2.3 to 4.6 pounds). Efforts should be made in 1978 to artifically fertilize both northern pike and walleye eggs to determine viability in this saline habitat.

### Drabbels Reservoir

Historically, this reservoir has been managed with both largemouth bass and rainbow trout. In recent years trout stocking has failed to generate satisfactory fishing and reproduction of largemouth bass has been poor. Sport fishing use recently has been extremely low and numerous inquiries and complaints were received about the apparent lack of fish.

In the spring of 1977, two 125-foot experimental gill nets were fished overnight to appraise the fish population. During high run-off walleye had been reportedly found stranded in pools below the reservoir. The catch consisted of 52 walleye and 2 northern pike. Walleye taken had an average total length of 16.5 inches (range 7.1 - 23.3 inches) and averaged 1.91 pounds (range 0.10 - 4.63 pounds). Nineteen (37 percent) of the walleye netted were 2.0 pounds or larger.

Discussion and Recommendations: Immediately following gill net sampling, fishermen began utilizing the reservoir extensively and enjoyed good success for several weeks. However, this reservoir has only approximately 8 surface acres and fishing success declined rapidly.

Local rumors indicate these introductions of walleye and northern pike were made by individuals in the area. Collection probably occurred in conjunction with bait minnow operations. Natural reproduction of walleye is not anticipated and 5,000 fingerlings were subsequently stocked. Northern pike are anticipated to spawn naturally, possibly to the detriment of other species. Introductions of yellow perch may be beneficial to maintain a forage supply which now consists primarily of fathead minnows.

## Beaver Creek Reservoir

This impoundment was constructed on Beaver Creek south of Havre in 1973 and filling occurred in 1974. This reservoir was authorized for flood control, irrigation, and fish and wildlife under Public Law 566. The fish and wildlife pool consists of 117 surface acres while the floodwater pool contains 204 surface acres.

Initial stocking with rainbow trout occurred in 1974. A fair selfsustaining rainbow trout population exists in Beaver Creek upstream from the reservoir and downstream movement was expected to contribute to the reservoir population.

During 1975 and 1976, a high stocking rate of 60,000 (4- to 6-inch rainbow) was utilized during new reservoir fertility. Excellent fishing has been reported; however, by fall of 1976 fishermen reported that trout size and growth rates had declined.

Population sampling was conducted with three experimental gill nets in the fall of 1977 (Table 2). This sampling was conducted to duplicate sampling in 1974. The catch of trout increased to 105 in 1977 from 72 in 1974, and the number of suckers increased to 347 in 1977 from 269 in 1974. The average length of trout taken in 1977 was 10.1 inches which was slightly less than 1974 (10.7 inches). However, average weight values had declined to 0.39 pounds in 1977 from 0.60 in 1974. The decline in size is more substantial than illustrated by these figures since weights were not obtained on 62 rainbows in the 8.5- to 9.5-inch size range in 1977. In addition, reports from anglers indicate trout taken in 1975 were considerably larger than in 1974.

| Year | Rainbow Trout | White Sucker | Longnose Sucker |
|------|---------------|--------------|-----------------|
| 1974 | 72            | 247          | 22              |
| 1977 | 105           | 340          | 7               |
|      |               |              |                 |

# Table 2. A summary of fish taken by three experimental gill nets in Beaver Creek Reservoir, 1974 and 1977.

Discussion and Recommendations: Visual observations on body condition and sampling data indicate stocked trout are not growing at optimal rates. Additionally, among 105 trout taken, only 7 were 12.0 inches or larger. Competition from suckers is believed to be responsible for existing growth conditions. A similar problem exists upstream at Bear Paw Lake. No practical means of reducing suckers is known. Trout stocking rates will be decreased in an effort to improve growth.

#### Bear Track Reservoir

This fertile reservoir has been in existence for many years; however, no information is present regarding previous attempts to establish fishing. Rainbow trout were initially stocked in the spring of 1976. Fall gill netting in 1976 revealed excellent growth of stocked trout.

Dissolved oxygen measurements made through the 1976-77 winter indicated possible winterkill had occurred. However, no dead fish were observed on the shoreline in spring of 1977. Consequently, gill nets were again utilized to determine trout survival. No fish were taken from the 1976 plant, although 100 (3- to 5-inch) rainbows from the 1977 spring plant were netted.

Discussion and Recommendations: Dissolved oxygen tests again made during the winter of 1977-78 left little doubt that winterkill had occurred. No further stocking of trout is recommended. Species more resistant to winterkill such as catfish or northern pike may be able to survive. This reservoir is located on private land and future species introductions will be somewhat dictated by the owner's preference.

#### Johnson Reservoir (James)

Located in Sheridan County, this reservoir was initially stocked with 2,000 1-inch largemouth bass and 200 1-inch black crappie in 1975. Although this reservoir is relatively shallow, previous winter dissolved oxygen measurements indicated adequate habitat.

Beach seining was conducted in the summer of 1977 to determine the success of these introductions. Dense aquatic vegetation hampered seining efforts, but eight bass and two black crappie were taken in addition to numerous fathead minnows. Bass collected ranged in size from 9.9 to 11.5 inches and had an average weight of 0.88 pounds. Crappie were 7.0 and 7.1 inches in total length.

Discussion and Recommendations: Bass and crappie should maintain a self-sustaining fishery in this reservoir. However, shallow conditions may limit long term success. No further management is needed at present.

#### Bass Reservoirs

Numerous largemouth bass reservoirs were sampled during the summer of 1977 in Phillips and Valley Counties to evaluate stocking and determine populations in response to inquiries by sport fishermen. Sampling was conducted with 100-foot x 10-foot and 25-foot x 4-foot beach seines of  $\frac{1}{4}$ -inch square mesh. The results of this sampling are summarized below in Table 3.

Table 3. A summary of survey results on several largemouth bass reservoirs in Phillips and Valley Counties, 1977.

| Water            | Year & No.<br>Stocked                      | Number<br>Bass<br>Taken | Size<br>Range<br>(inches) | Avg.<br>Wt.<br>(1bs.) | Max.<br>Wt.<br>(1bs.) |
|------------------|--|-------------------------|---------------------------|-----------------------|-----------------------|
| Phillips County: |  |                         |                           |                       |                       |
| Seven-Up         | 1970 - 100<br>1971 500                     | None                    |                           |                       |                       |
| Dogtown          | 1970 - 150<br>1971 - 400                   | 3                       | 13.9-15.8                 | 1.79                  | 1.98                  |
| Empire           | 1971 - 600                                 | 4                       | 6.9-16.3                  | 1.68                  | 3.04                  |
| PR 20            | NA   | 9                       | 10.4-13.7                 | 0.88                  | 1.42                  |
| Whiteface        | 1970 - 90                                  | 30                      | 2.0- 3.0                  |                       |                       |
| Gullwing         | 1970 - 300<br>1971 - 2,000<br>1976 - 1,000 | 1                       | 4.3                       |                       | 0.04                  |
| Thundercloud     | 1975 - 2,000                               | None                    |                           |                       |                       |
| Valley County:   |  |                         |                           |                       |                       |
| Pau1             | 1970 - 60<br>1971 - 1,000<br>1976 - 2,500  | 9                       | 4.0-NA                    | NA                    | 3.0                   |
| Whitetail        | 1963 - 1,000                               | None                    |                           |                       |                       |

Discussion and Recommendations: In most instances, sampling efficiency was extremely low due to aquatic vegetation. Objectives were primarily to determine the general status of these bass populations. With the exception of PR 20, bass introductions are fairly recent and should provide fishable populations. Bass have been present in PR 20 for at least 20 years. Sevenup Reservoir is designed for retention rather than significant permanent Thus, it experiences a high spring flushing which may be removing storage. significant portions of the bass population. Information on winter dissolved oxygen is not available for Seven-up or Thundercloud Reservoirs which would indicate if this is a limiting factor. Although no bass were taken in Whitetail Reservoir (Valley County), fish stocked in 1973 survived until the winter of 1976-77 and grew well and additional stocking was conducted in the spring of 1977. Data gathered by this survey will be incorporated into informational maps maintained on fishing reservoirs for each county. These direct fishermen to ponds with satisfactory populations.

#### Milk River

Efforts were initiated in 1977 to obtain information on fish populations and distribution in the Milk River. Although fair to good fishing success is reported from anglers using the Milk River at many locations, virtually no sampling of fishes has been conducted.

Baited hoopnets designed to capture channel catfish were utilized approximately 5 miles upstream from Hinsdale (vicinity mouth of Beaver Creek) and midway between Nashua and the confluence with the Missouri River. At the Hinsdale site, 9 trap-days caught 2 channel catfish, 1 walleye, 1 northern pike, 1 carp, 4 smallmouth buffalo, and 2 river carpsucker. Nets fished 12 trap-days below Nashua caught 9 river carpsucker, 6 shorthead redhorse, 2 bigmouth buffalo, 4 goldeye, and 1 carp.

Additional sampling was conducted at the Nashua site in an effort to locate game fish species. One 125-foot x 6-foot experimental gill net fished overnight caught 1 channel catfish, 6 shorthead redhorse, 3 river carpsucker, 2 sauger, 2 drum, 2 carp, and 114 goldeye. Boat-rigged electrofishing with D.C. pulsed current was also used at the site where hoopnets and gill nets were fished. Electrofishing captured 1 sauger, 18 river carpsucker, 1 carp, 1 bigmouth buffalo, 2 shorthead redhorse, and 29 goldeye. Numerous goldeye and carp were observed but no capture effort was made. Shoreline seining (Table 4) was conducted at this site to determine forage species present and young-of-the-year abundance of sport fishes.

| Species            | Size (inches) | Number |
|--------------------|---------------|--------|
| Flathead chub      | 2-6           | 60     |
| Fathead minnow     | 2             | 49     |
| Bigmouth buffalo   | 2             | 26     |
| River carpsucker   | 2             | 24     |
| Longnose dace      | 2             | 1      |
| Stonecat           | 3             | 1      |
| Shorthead redhorse | 3<br>10       | 1<br>1 |
| Emerald shiner     | 2-4           | 10     |
| Carp               | 2<br>12       | 3      |
| Yellow perch       | 2             | 1      |
| Sauger             | 11            | 1      |
| Goldeye            | 11            | 1      |
| Freshwater drum    | 1             | 28     |

Table 4. Summary of the catch from seven hauls with a 4-foot x 25-foot seine of  $\frac{1}{4}$ -inch mesh in the Milk River below Nashua, 1977.

# Tributary Study

Larval fish sampling was conducted in the spring of 1977 as one segment of "base line" studies relating to the Circle West Project located approximately 20 miles northwest of Circle. Project features included manufacture of ammonia, methanal-methyl fuel, and synthetic diesel fuel oil. Projected water requirements totaled 67,000 acre-feet per year.

Sampling was conducted in several streams which potentially could be affected by this development. One-half meter plankton nets with #00 mesh (approximately 752 microns) were used to sample larval fishes as summarized in Table 5. Only larval fishes of the families Cyprinidae and Catostomidae were taken.

|                                       |       |                   |       | 1/      |          |          |       |                   |        | 1/   |         |
|---------------------------------------|-------|-------------------|-------|---------|----------|----------|-------|-------------------|--------|------|---------|
|                                       |       | Temp.             | Larva | al Fish | Unident. |          |       | Temp.             | Larval | Fish | Unident |
| Station                               | Date  | ( <sup>0</sup> F) | Сур   | Cat.    | Eggs     | Station  | Date  | ( <sup>0</sup> F) | Сур. С | lat. | Eggs    |
|                                       |       |                   |       |         |          |          |       |                   |        |      |         |
| Lower                                 | 4-18  | 49                |       |         |          | Prairie  | 4-13  | 64                |        |      | 91      |
| Redwater                              | 4-22  | 53                |       |         |          | Elk Cr.  | 4-22  | 52                |        |      |         |
| River                                 | 4-29  | 60                |       |         | 74       |          | 4-29  | 58                | 25     |      | 74      |
|                                       | 5-01  | 64                |       | 25      | 25       |          | 5-02  | 54                |        |      | 86      |
|                                       | 5-05  | 59                |       |         |          |          | 5-05  | 63                | 174    |      | 1,914   |
|                                       | 5-09  | 73                | 27    | 213     |          |          | 5-09  | 74                | 145    |      | 869     |
|                                       | 5-13  | 70                |       | 594     |          |          | 5-13  | 74                | 192    |      | 38      |
|                                       | 5-16  | 63                | 55    |         |          |          | 5-16  | 62                | 36     | 36   | 71      |
|                                       | 5-20  |                   |       | 90      |          |          | 5-20  |                   | 94     | 31   | 377     |
|                                       | 5-27  |                   |       |         |          |          | 5-27  |                   | 137    | 20   | 588     |
| Middle                                | 4-18  | 54                |       |         | 18       | Little   | 4-14  | 58                |        |      | 80      |
| Redwater                              | 4-22  | 56                |       |         | 10       | Dry Cr.  | 4-21  | 51                |        |      | 00      |
| River                                 | 4-29  | 54                |       |         | 60       | 51) 01.  | 4-27  | 62                |        |      |         |
| (201  Rd)                             | 5-02  | 54                |       |         | 20       |          | 5-02  | 60                |        |      |         |
| (201 Mai)                             | 5-05  | 57                |       |         | 20       |          | 5-05  | 53                |        |      |         |
|                                       | 5-09  | 75                |       |         | 19       |          | 5-09  | 76                |        |      | 238     |
|                                       | 5-13  | 73                |       |         | 10       |          | 5-13  | 68                |        |      |         |
|                                       | 5-16  | 63                | 43    |         |          |          | 5-16  | 65                |        | 50   |         |
|                                       | 5-20  | 00                |       |         |          |          | 5-19  |                   |        |      |         |
|                                       | 5-27  |                   |       |         |          |          | 5-27  |                   |        |      |         |
| • • • • • • • • • • • • • • • • • • • | 4 10  |                   |       |         |          |          | 4 17  | (0)               |        |      |         |
| Upper                                 | 4-18  | 53                |       |         |          | Sand     | 4-13  | 69<br>5(          |        |      |         |
| Redwater                              | 4-22  | 61                |       |         |          | Стеек    | 4-22  | 50                |        |      | 175     |
| River                                 | 4-29  | 68                |       |         |          |          | 4-29  | 01                | 1      | 56   | 1/5     |
|                                       | 5-02  | 59                |       | 170     |          |          | 5-20  |                   | 1      | 50   |         |
|                                       | 5-05  | 56                |       | 170     | 270      | Die Dave | 4 1 4 | 67                |        |      | 140     |
|                                       | 5-09  | /1                |       |         | 238      | Big Dry  | 4-14  | 03                |        |      | 149     |
|                                       | 5-15  | /0                |       |         |          | Стеек    | 4-21  | 04                |        |      | 357     |
|                                       | 5-16  | 68                |       |         |          |          | 4-27  | 64                |        |      |         |
| m:                                    | 4 1 4 | 50                |       |         | 1 020    |          | 5-02  | 04                | No. E1 |      |         |
| Timber                                | 4-14  | 58                |       |         | 1,929    |          | 5-09  |                   | NO F1  | Ow   |         |
| Стеек                                 | 4-21  | 55                | Ne    | F1      |          |          | 5-27  |                   | 00     |      |         |
|                                       | 4-2/  |                   | NO    | FIOW    |          | Homao    | 1 10  | FO                |        |      |         |
| Nolcon                                | 1 11  | 50                |       |         | 608      | Creek    | 4-10  | 63                |        |      |         |
| Crook                                 | 4-14  | 59                |       |         | 090      | LICEK    | 4-22  | 64                |        |      |         |
| Creek                                 | 4-21  | 33                |       |         |          |          | 4-29  | 04                |        |      |         |
| McGuire                               |       |                   | No    | Flow    |          |          |       |                   |        |      |         |
| Creek                                 |       |                   |       |         |          |          |       |                   |        |      |         |
|                                       |       |                   |       |         |          |          |       |                   |        |      |         |

Table 5. A summary of larval fish sampling (expressed as the number per 1,000 m<sup>3</sup>) in tributaries of the Missouri River and Fort Peck Reservoir, 1977.

 $\ensuremath{\texttt{l}}\xspace$  Cyp. represents Cyprinidae sp. and Cat. represents Catostomidae sp.

Discussion and Recommendations: Objectives of this sampling included an assessment of the importance these tributaries have for sport fishes. However, extremely low flows occurred throughout the spring of 1977 which undoubtedly impaired spawning use by most migratory species from the Missouri River and Fort Peck Reservoir.

#### POND SURVEYS

A total of 43 additional reservoirs were surveyed with varying intensity to determine their suitability for fish. Gill netting or trapping was conducted on three reservoirs. General inspections were conducted on 18 reservoirs to determine overall quality and water levels in view of drought conditions throughout the area. Winter dissolved oxygen tests were conducted at least once on 22 reservoirs to evaluate winterkill problems.

Data collected on all waters was transferred to the Region files for permanent reference. An abbreviated list of background data is maintained on waters of questionable value for long term management. When it becomes apparent that a given water has sufficient value, a permanent file is developed. It is recommended that survey work and data recording procedures on waters of this type be continued.

Waters Referred to:

| 15-6480-05 | Nelson Reservoir          |
|------------|---------------------------|
| 15-5240-05 | Fresno Reservoir          |
| 16-6975-08 | Medicine Lake             |
| 15-5753-30 | Drabbels Reservoir        |
| 15-4570-03 | Beaver Creek Reservoir    |
| 15-4565-07 | Bear Track Reservoir      |
| 16-8270-30 | Johnson Reservoir (James) |
| 16-8242-08 | Seven-up Reservoir        |
| 16-4910-08 | Dogtown Reservoir         |
| 15-6615-30 | Empire Reservoir          |
| 16-7698-08 | PR 20 Reservoir           |
| 16-8815-07 | Whiteface Reservoir       |
| 16-5385-08 | Gullwing Reservoir        |
| 15-6615-30 | Thundercloud Reservoir    |

 16-7470-08
 Paul Reservoir

 15-9740-08
 Whitetail Reservoir

 15-2680-02
 Milk River Sec. 1

 15-2720-02
 Milk River Sec. 2

 16-2940-02
 Redwater River

 16-3790-02
 Timber Creek

 16-2650-02
 Nelson Creek

 16-2880-02
 Prairie Elk Creek

 16-3230-02
 Sand Creek

 16-0245-10
 Big Dry Creek

 16-1765-02
 Horse Creek

Prepared by: Robert G. Needham Date: March 23, 1978