

**MONTANA FISH, WILDLIFE AND PARKS
FISHERIES DIVISION**

JOB PROGRESS REPORT

State: MONTANA Project Title: STATEWIDE FISHERIES
INVESTIGATIONS

Project No: F-46-R-7 Study Title: SURVEY AND INVENTORY
OF COLDWATER STREAMS

Job. No: I-h Job Title: UPPER BIGHORN RIVER
INVESTIGATIONS

Project Period: April 1, 1993 - March 31, 1994

OBJECTIVES AND DEGREE OF ATTAINMENT

1. To maintain a year-round minimum flow in the upper Bighorn River of at least 2,000 cfs in eight out of 10 years and at least 2,500 cfs in five out of 10 years.

Flows on the upper Bighorn River remained at or above 2,000 cfs throughout the year with flows exceeding 2,500 cfs from early May through the spring of 1994. Flows peaked at between 6,500 and 7,500 cfs for three weeks in late June and early July, declined slowly during the summer, then came back up to approximately 5,000 cfs in the fall when water levels in the reservoir again reached the flood pool. Spawning and rearing conditions should have been good for both brown trout and rainbow trout during this period.

2. To eliminate gas bubble trauma as a significant cause of trout mortality.

Continued to work with the Bureau of Reclamation on this problem. Monitored for the presence of gas bubble trauma (GBT) during normal shocking on the river. Plans to electrofish the upper 3 miles of the Bighorn in the spring to look for GBT were abandoned due to the large number of anglers on the river, which made it extremely difficult to shock without causing major disruptions.

3. To maintain average population densities of 5,000 to 7,000 age one and older brown trout and at least 500 18-inch and longer brown trout per mile in the Bighorn River upstream of Bighorn Fishing Access Site (FAS), and to maintain 1,500 to 2,500 age one and older brown trout per mile between Bighorn FAS and Two Leggins FAS.

Brown trout populations in both sections of river continued to show the impacts of low flow conditions experienced in 1988 and 1989. Population densities in the upper river declined to approximately 3,600 age one and older brown trout per mile, which was the lowest brown trout population density observed since the early 1980's. On the positive side was an increase in the percentage of age two and older brown trout in the population, which was an indication that the brown trout population was beginning to rebuild and stabilize. The increase in older fish was reflected in an increase in the number of 18-inch and longer brown trout from 266 to 289 per mile. More fish would have been in this size group if sampling had been conducted during the historic sampling time in the fall. Since sampling on the upper river has been shifted to late spring, before the summer growth period, it will be much harder to achieve our goal of 500 18-inch and longer brown trout per mile.

Brown trout population levels on the lower Bighorn River still remained below the target level of 1,500 fish per mile. Low recapture rates on larger brown trout made it impossible to estimate numbers of brown trout larger than 12-inch. A population of 595 7 to 12-inch brown trout was estimated for this section of river.

4. To maintain average population densities of at least 1,000 age one and older rainbow trout and 150 18-inch and longer rainbow trout per mile in the Bighorn River upstream of Bighorn FAS, and to maintain at least 500 age one and older rainbow trout per mile between Bighorn FAS and Two Leggins FAS.

The rainbow trout population in the upper Bighorn River exceeds our target level of 1,000 age one and older rainbows per mile in 1993, despite the fact we were unable to estimate the number of age one fish. A population of 1014 12-inch and longer rainbow trout was estimated for the upper river. The average size of these rainbow was very large with an estimated population of 788 18-inch and longer rainbows per mile. Again, this sampling was conducted before the summer growth period.

The rainbow population in the lower section of the Bighorn increased significantly over the record low levels observed in 1992, but was probably still below the management objective of 500 age one and older rainbows per mile. Much of the

mark/recapture data collected for rainbow trout in the lower section during fall of 1993 was not usable because growth rates were so good that many of the smaller rainbow grew from one length group to the next during the 12 days between the marking and recapture runs. Although many 7 to 13-inch rainbow were captured, it was not possible to estimate the number of rainbows less than 15 inches long in the population. A population of 113 15-inch and longer rainbows per mile was estimated in 1993. This compared to an estimate for all rainbow of 178 per mile in 1992.

5. To redistribute angler use to achieve use levels of no more than 3,000 angler-days per month above Bighorn FAS and at least 10,000 angler-days annually between Bighorn and Two Leggings FAS (state funded).

No good pressure estimates were obtained for the Bighorn River in 1993. Angler use appeared to exceed 3,000 angler-days per month during late summer based on comparisons to historic car counter data. Developed a proposal for funding to start calibrating two new car counters at Bighorn and Lind accesses in 1994. These counters would provide a better estimate of angler use downstream of Bighorn Access.

6. To make at least 750 creel census contacts per year to assess angler success and opinions (state funded).

No formal creel census was conducted on the Bighorn River in 1993. The river ranger position was discontinued so all angler contacts were incidental to other work. Major efforts in 1993 centered around summary and analysis of data from the angler mail-back survey conducted in 1992 and early 1993. Cleaned up data, conducted preliminary analyses, and developed a contract with a consultant to complete final analysis.

SUMMARY

Progress was achieved on all objectives during FY94.

FINAL BUDGET STATUS

<u>Amount Budgeted</u>	<u>Amount Spent</u>	<u>Balance of Funds</u>
50,011.00	50,846.47	-835.47

