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# TROUT FISHERY IN THE HOLTER LAKE-MISSOURI RIVER COMPLEX

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Complaints of poor trout fishing, a decrease in the size of trout caught and overharvest of trout in the Holter Lake - Missouri River complex is not new. A search of Region Four fishery files and reports reveal a scattering of these complaints since 1967. Continuous concern on over-harvest of large trout from the Missouri River below Hauser Dam have stimulated considerable data research and thought to frame a basis for future management in the area.

A brief review of fisheries management in Holter Lake is in order because the few miles of river fishery below Hauser Dam is almost entirely dependent on the Holter Lake ecosystem. Without stocking, Holter Lake would provide poor trout fishing. Other than the two miles of free flowing Missouri River below Hauser Dam, spawning facilities are limited to three small tributary streams. Spawning rainbow trout from Holter Lake have been observed in the lower reaches of these tributaries and undoubtedly some natural recruitment occurs. It is not known if a segment of these spawners represent a wild population removed genetically from the hatchery stock. Nearly all brown trout spawning occurs in the Missouri River below Hauser Dam.

Access was greatly improved to Holter Lake in 1971 when the Department purchased the Beartooth Ranch. Parking, camping areas and boat launching facilities were developed for the thousands seaking to recreate in this scenic area. In order to keep pace with increasing fishing pressure, more than 300,000 four to six-inch rainbow trout are now planted yearly. Latest estimates we have indicate 80 - 100,000 angler days are expended yearly on Holter Lake.

A review of Fisherman Log data over the past several years would be a fair measure of success and size of fish caught. Catch data is recorded by anglers themselves and submitted to the Department for analysis. Data from 1965 through 1980 for Holter Lake is summarized in Table 1. For the six year period prior to 1971 (prior to Department purchasing the Beartooth Ranch), the average length of rainbow trout caught was 15.2 inches and from 1971 to 1980, the average length was 14.2 inches. If data from 1975 and 1976 is eliminated, the average size reported since 1971 is 14.7 inches. Flood flow through Holter Lake in 1975 and again in 1976 caused a high loss of previous year stocked rainbow trout over the dam. This created a situation where more of the current year stocked trout were represented in the creel, thus reducing the size of creeled fish. This abundance of smaller trout in the creel is reflected in the size of trout reported in the 1975 and 1976 summer season, and 1976 and 1977 winter season.

Even though we are stocking more trout and fishing pressure has increased tremendously since 1971, there appears to be little change in the size of rainbow trout caught from Holter Lake since 1965. It appears that the volume of water flow through Holter Lake during runoff greatly influences the number and size of rainbow trout available to anglers the remainder of the year. Very little water spilled over Holter Dam from 1977 through 1979 and log holders in 1979 reported catching several rainbow 18-22 inches in length that weighed 2.5 - 4.0 pounds.

Brown trout contribute an insignificant fishery to anglers on Holter Lake. Most anglers do not present lures or bait properly to harvest these fish. Holter Lake is a deep reservoir which provides sanctuary for these bottom

Table 1. Catch statistics reported in fisherman logs on Holter Lake, 1965-1980

| | December through April | | | | | May through November | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | Number of Angler Days | Rainbow Trout Number | Rainbow Trout Length | Brown Trout Number | Brown Trout Length | Number of Angler Days | Rainbow Trout Number | Rainbow Trout Length | Brown Trout Number | Brown Trou Leng |
| 1980 | 50 | 229 | 13.3 | 1 | 21.0 | 51 | 270 | 14.3 | 3 | 20. |
| 1979 | 53 | 415 | 12.6 | 1 | 12.0 | 64 | 149 | 15.3 | 2 | 20. |
| 1978 | 114 | 787 | 13.9 | 1 | 22.0 | 77 | 296 | 14.4 | 1 | 18. |
| 1977 | 77 | 670 | 12.0 | 4 | 13.9 | 65 | 337 | 14.0 | 3 | 20. |
| 1976 | 49 | 260 | 11.8 | 5 | 18.1 | 44 | 184 | 12.3 | 0 | -- |
| 1975 | 35 | 153 | 14.0 | 1 | 12.5 | 78 | 379 | 12.5 | 0 | -- |
| 1974 | 48 | 150 | 15.6 | 2 | 17.0 | 103 | 222 | 14.5 | 0 | -- |
| 1973 | 31 | 103 | 12.1 | 1 | 19.0 | 99 | 221 | 15.1 | 2 | 17. |
| 1972 | 27 | 49 | 13.6 | 0 | -- | 98 | 232 | 15.3 | 4 | 17. |
| 1971 | 21 | 24 | 12.8 | 1 | 24.0 | 108 | 261 | 14.6 | 4 | 17. |
| 1970 | 23 | 75 | 15.3 | 1 | 25.0 | 113 | 249 | 14.9 | 10 | 12. |
| 1969 | 17 | 47 | 15.3 | 5 | 19.0 | 59 | 152 | 16.7 | 2 | 19. |
| 1968 | 15 | 25 | 15.3 | 0 | -- | 80 | 248 | 14.7 | 8 | 17. |
| 1967 | 9 | 12 | 15.4 | 0 | -- | 59 | 170 | 15.5 | 7 | 16. |
| 1966 | 28 | 28 | 15.1 | 2 | 12.5 | 27 | 21 | 14.8 | 0 | -- |
| 1965 | 20 | 76 | 14.4 | 0 | -- | 110 | 162 | 14.3 | 8 | 15. |

dwelling fish. Too few brown trout are represented in fisherman log data to reveal trends in numbers or size of fish caught (Table 1). To further demonstrate the ineptness of anglers to catch brown trout, results of a creel census conducted on Holter Lake during the summer of 1970 revealed a total of 19 brown trout caught by 1,537 anglers and in 1971, 20 browns were creeled by 1,893 anglers.

Fisherman log data from 1965 through 1980 from the management section 10 on the Missouri River is presented in Table 2. Section 10 includes that portion

Table 2. Catch statistics reported in fisherman logs from the Missouri River (Management section 10) 1965-1980

| Year | December through April | | | | | May through November | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number of Angler Days | Rainbow Trout Number | Rainbow Trout Length | Brown Trout Number | Brown Trout Length | Number of Angler Days | Rainbow Trout Number | Rainbow Trout Length | Brown Trout Number | Brown Trout Leng |
| 1980 | 11 | 14 | 16.8 | 2 | 16.0 | 60 | 132 | 13.7 | 27 | 20. |
| 1979 | 18 | 41 | 12.3 | 1 | 17.0 | 62 | 122 | 13.3 | 27 | 16. |
| 1978 | 10 | 4 | 13.0 | 3 | 18.0 | 46 | 167 | 13.5 | 47 | 15. |
| 1977 | 33 | 100 | 16.5 | 7 | 13.9 | 60 | 139 | 15.2 | 33 | 16. |
| 1976 | 35 | 82 | 11.9 | 11 | 15.0 | 79 | 198 | 11.8 | 19 | 14. |
| 1975 | 30 | 72 | 14.4 | 10 | 21.0 | 103 | 222 | 13.3 | 29 | 16. |
| 1974 | 21 | 21 | 13.5 | 2 | 18.0 | 65 | 166 | 13.6 | 14 | 16. |
| 1973 | 29 | 33 | 16.4 | 4 | 19.0 | 142 | 280 | 15.1 | 23 | 17. |
| 1972 | 37 | 60 | 13.9 | 21 | 18.0 | 70 | 387 | 11.9 | 9 | 15. |
| 1971 | 13 | 16 | 12.4 | 7 | 15.9 | 60 | 373 | 12.7 | 32 | 15. |
| 1970 | 13 | 35 | 17.1 | 12 | 13.5 | 67 | 264 | 13.4 | 16 | 14. |
| 1969 | 14 | 36 | 15.1 | 23 | 20.0 | 19 | 72 | 12.5 | 19 | 16. |
| 1968 | 2 | 3 | 14.7 | 0 | -- | 28 | 101 | 12.6 | 44 | 16. |
| 1967 | 1 | 0 | -- | 0 | -- | 27 | 63 | 14.4 | 31 | 17. |
| 1966 | 12 | 22 | 17.0 | 2 | 14.5 | 22 | 45 | 13.5 | 12 | 14 |
| 1965 | 6 | 12 | 14.5 | 0 | -- | 46 | 108 | 14.4 | 69 | 17 |
| 1975-1980 | 137 | 313 | 14.1 | 34 | 16.9 | 410 | 848 | 13.4 | 182 | 16 |
| 1965-1974 | 148 | 235 | 15.3 | 71 | 17.6 | 546 | 1858 | 13.4 | 269 | 16 |

of the free flowing Missouri above Holter Lake and also that below Canyon Ferry Dam. Therefore, the data in Table 2 does not entirely apply to the stretch of river above Holter Lake. The size of rainbow trout caught during the May through November period generally average less than those caught from Holter Lake. This is probably due to the smaller size of the rainbow caught in the river below

Canyon Ferry Dam. Through the years, it has been noted that rainbow trout planted in upper Hauser Lake do not grow as rapidly as Holter trout because of the cold flow releases from Canyon Ferry.

Acquisition of the French property by the U.S. Forest Service in 1974 greatly increased accessibility to the Missouri River below Hauser Dam in the Beaver Creek area. This acquisition greatly increased accessibility and if increased pressure and harvest occurred, the size of fish and catch rate should decrease. Data is evaluated only for brown trout because the rainbow trout population is maintained primarily by stocking in the reservoirs. For the years 1965-1974, anglers reported expending 2.0 days to catch a brown trout and from 1975-1980, they reported 2.5 days to catch a brown. The average size of these fish for the two time periods is 16.8 inches in length. One angler reported catching 3 brown trout weighing 4 to 8 pounds during the fall of 1979.

Some brown trout inhabit the river area year around as evidenced from catches reported by winter anglers (December through April). Although the sample size is much smaller, the length of brown trout caught in the winter-spring period average slightly larger than those caught during the summer - fall period. The number of winter anglers are too few to evaluate any trends from the data.

It is difficult to determine from the log data if brown trout angling is deteriorating in the Missouri River. We catch too few brown trout in gill netting surveys on Holter Lake to draw any conclusions on the status of the population. The brown trout fishery in the Missouri River above Holter Lake is unlike most other river situations in Montana. For the most part, these brown trout are reservoir fish that enter the river to spawn and are vulnerable to angling only at this time. In long free flowing reaches of rivers,

such as the Big Hole, Madison and Missouri below Holter Dam, browns are vulnerable to angling throughout the year. Studies done on the Madison and Big Hole Rivers show heavy year around fishing pressure can reduce the number of large trout in a population.

Considering the length of the segments of the Missouri River below Hauser Dam and Canyon Ferry Dam, fishing pressure is heavy. The 1975-76 mail survey fishing pressure estimates done by the Department indicate 24,134 and 16,496 resident angler days per year respectively. Nonresident data is not available for 1976-77, so it is not included for 1975-76 for comparative purposes. The combined length of the river sections below Canyon Ferry and Hauser Dams is about 3 miles, so angling pressure per mile was about 8,044 in 1975-76 and 5,498 in 1976-77. This is probably the heaviest resident fishing pressure on any river segment in the state.

Conclusions:

Evaluation of fisherman log data does not confirm that size of trout caught from segments of the Missouri River below Canyon Ferry and Hauser Dams ~~has~~ have decreased to any degree since 1965. This speaks well of the river-reservoir systems ability to grow and produce trout in face of ever-increasing fishing pressure. Both Holter and Hauser Reservoirs are planted heavily to maintain good fishing. This trend will continue until anticipated heavier fishing pressure may require a reduction in the creel limits to maintain the size and quality of the existing fishery.

Of special concern is the maintenance of the trophy brown trout fishery now enjoyed in the river segment below Hauser Dam. The existing daily creel and possession limit of 10 fish or 10 pounds and one fish allows anglers to

daily take only 2 or 3 of the large brown trout that spawn in the area in the fall. Judging from fisherman log data, the average daily catch is less than one brown trout per angler. There is no reason to suspect this area is any different than other waters where 10 percent of the anglers catch most of the fish. Restricting creel limits further would only affect 10 percent or less of the anglers.

If angling is indeed reducing the number of large spawning brown trout, there would no longer be fish in the 5 to 10 pound range because the maximum sustained yield would be achieved. Preliminary work in the river in the fall of 1981 revealed a good number of brown trout in the 5 to 9 pound range. If present regulations are allowing over harvest of brown trout, then I believe a limit of one brown trout per day with a minimum size of 16 inches in length would be needed. Smaller trout would need to be protected to insure adequate recruitment into the spawning population. One fish per day would allow anglers participating for sport only to keep the one larger fish that may become injured from hooking or handling. It would be senseless to throw back a dead or dying fish.

On the other hand, there is little reason to stockpile a large population of spawners if reservoir operations change and adversely affect spawning areas. Without suitable reproduction, the population would rapidly decline in a few years, even if totally protected from angling.

At the present time, studies are underway in the river below Hauser Dam to delineate spawning areas and to evaluate the flows necessary for maintenance of these areas. An estimate of the size of the spawning brown trout population will also be attempted in the river below Hauser Dam over the next few years. Also, a concerted creel census will be conducted on the river in the fall of 1982. Results from the findings of these studies will frame the basis for future management of the trout fishery in this area.