

MONTANA DEPARTMENT OF FISH, WILDLIFE, AND PARKS

In Cooperation with
Montana Department of Natural Resources and Conservation
Contract No. ED-MDFWP-167

FISHERIES DIVISION

JOB PROGRESS REPORT

January 1, 1980 - December 31, 1980

KOOTENAI FALLS AQUATIC ENVIRONMENT STUDY

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PURPOSE

Montana Department of Fish, Wildlife, and Parks entered into an agreement with Montana Department of Natural Resources and Conservation to perform long-term sampling within and below the impoundment area of the proposed Kootenai Falls hydroelectric project. This hydroelectric project has been proposed by Northern Lights, Inc., and is in the immediate vicinity of Kootenai Falls, Kootenai River, Lincoln County, Montana. Sampling done in 1980 was limited to a SCUBA search for sturgeon below Kootenai Falls and fish population sampling in the river above Kootenai Falls between the falls and China Rapids.

WORK METHODS

Graham (1979) proposed that fish population estimates be obtained from the Kootenai Falls-China Rapids section of Kootenai River in late August and early September of each year. This time schedule could not be met in 1979, but was accomplished in 1980. Fish capturing equipment used included jet-boat mounted electrofishing gear similar to that used by Graham (1979) and methods advocated by Vincent (1971) were followed on fish marking and recapture operations.

Corps of Engineers provided a stabilized flow of 5,000 cfs as measured at the Libby Dam powerhouse throughout the three days required for both the fish marking and recapture operations. Fish caught each night were measured, marked or tagged, and released the next day. Scale samples for age-growth determinations were taken from all rainbow trout captured as were scales from a number of mountain whitefish.

Department personnel examined the Kootenai River in early August, 1981 using SCUBA gear looking for sturgeon in the canyon area below Kootenai Falls. Six dives, using two divers, were made for a total of 123 minutes. Visibility was 10-20 feet at 80-90 feet of water depth. The upstream-most dive was 100 yards above the proposed power house outlet structure. The furthest dive downstream was about 0.5 miles upstream from the mouth of the Kootenai Falls canyon. Location of sturgeon observed and approximate length of each fish was recorded.

Table 1. Average catch-per-boat-night of rainbow trout and mountain whitefish, Kootenai Falls-China Rapids section of Kootenai River in 1978 and 1980.

Sampling Effort	Average Catch-per-boat-night	
	Rainbow Trout	Whitefish
Six nights in 1978	77	201
Six nights in 1980	69	102

Population estimate for rainbow trout in September, 1978 was calculated to be 228 fish greater than 9.0 inches total length per 1,000 feet of river (Graham, 1979). The almost identical catch-per-boat-night in 1978 and 1980 would indicate that population size had not materially changed from 1978 to 1980. The 1978 estimate was only for rainbow trout 9 inches total length or longer and catch-per-boat-night of rainbow trout larger than 9 inches in 1978 was 62 fish while in 1980 was only 37 fish. These data would indicate declining numbers of 9 inch or longer rainbow trout from 1978 to 1980. The catch-per-boat-night of 15 small rainbow in 1978 and 32 in 1980 would indicate an increase in rainbow trout less than 9 inches total length from 1978 to 1980.

Age structure of the rainbow trout catch in 1978 and 1980 as presented in Table 2 indicates a shift from age 2 fish in 1978 to age 1 in 1980. This shift from a larger older fish to a smaller younger fish is suggested by the catch-per-boat-night data presented above.

Table 2. Age distribution of rainbow trout caught by electrofishing, Kootenai Falls-China Rapids section, Kootenai River, 1978 and 1980.

Age-Class	1978 Catch		1980 Catch	
	Number	Percent	Number	Percent
1	210	45.7	210	57.4
2	217	47.3	125	34.1
3	26	5.7	22	6.0
4	4	0.9	9	2.5
5	2	0.4	0	--

ing the Kootenai Falls-China Rapids section of Kootenai River. Age structure and growth rates of the rainbow trout indicates a shift to more one-year old fish in 1980 than 1978 and that all fish are growing slower in 1980 than in 1978.

Catch-per-boat-night of mountain whitefish declined from 201 fish in 1978 to 102 in 1980. These data would indicate lower numbers of mountain whitefish in the Kootenai Falls-China Rapids section. May et al. (1980) reported a decline of whitefish in the Flower-Pipe section of the Kootenai River from 1978 to 1980, of from 711 per 1,000 feet of stream to 546 per 1,000 feet in 1980. It is believed that numbers of whitefish in the Kootenai River have declined significantly since 1978.

Scales for age and growth determination were not collected from mountain whitefish in 1978. Growth data from scales collected in 1980 are presented in Table 4 below.

Table 4. Growth of mountain whitefish collected from the Kootenai Falls-China Rapids section of the Kootenai River, 1980.

Year-Class	Length in Inches at Annulus				
	I	II	III	IV	V
1979	4.3(22)*				
1978	4.2(6)	9.6(6)			
1977	4.6(24)	9.7(24)	12.1(24)		
1976	4.5(13)	9.9(13)	12.6(13)	14.0(13)	
ALL	4.4(65)	9.8(43)	12.3(37)	14.0(13)	

* Number in parentheses is size of sample

The number of whitefish scales collected was too small to make valid age and growth comparisons between the Kootenai Falls-China Rapids section and other sections of the Kootenai River. The small amount of growth data listed in Table 4 indicates no growth differences between these fish and similar year-classes collected from the Flower-Pipe section. May and Huston (1979) reported whitefish from the Flower-Pipe section were growing to about ten inches total length at annulus II and 12 inches at annulus III.

Table 5. Area of angler catch and recapture of rainbow trout tagged in Kootenai Falls-China Rapids section by year of recapture

Year Tagged and Number Tagged	Recapture Method	Year Recaptured								
		1978			1979			1980		
		Abv*	Win	Bel	Abv	Win	Bel	Abv	Win	Bel
1978	Anglers	0	1	0	0	10	8	0	0	2
360 fish over 9"	FW&P**	Not Applicable			0	5	0	0	1	0
1979	Anglers				0	0	0	2	1	0
62 fish over 9"	FW&P				Not Applicable			0	0	0
1980	Anglers							0	3	0
274 fish over 9"	FW&P							Not Applicable		
116 fish 9" or less										

* Above (Abv) is above the Kootenai Falls-China Rapids section, Within (Win) is within immediate vicinity of the section, and Below (Bel) is below Kootenai Falls

** These fish were recaptured by Department personnel on subsequent years electrofishing

It is the Department's feeling that attempting to make mark and recovery population estimates should be eliminated as a job objective but replaced with monitoring population trends and determining over-Kootenai Falls drift of whitefish and rainbow trout. The Kootenai Falls-China Rapids section is the most difficult and dangerous area the Department samples on a regular schedule. The lowermost part of the section lies immediately above the Kootenai Falls and any accident such as a motor failure or man overboard could easily result in loss of life or equipment. Success of the sampling is dependent upon having stable flows throughout the entire sampling period delivered from Libby Dam by the Corps of Engineers. These flows are not easily negotiated with the Corps of Engineers for periods of more than two or three consecutive days.

The Department would suggest that future contract objectives include:

1. Determination of population trends using the upper 2/3 of the present Kootenai Falls-China Rapids sampling section. Trends would be obtained by comparison of catch-per-boat-night of effort. Data collected in 1978, 1979, and 1980 would not be lost since records for those years were kept by subsections. Data collected would include fish lengths, weights, and scale collections compatible with previous year's work.
2. Tagging or marking of as many fish as possible during the trend sampling to determine movements of these marked fish.
3. Determination of drift of rainbow trout and whitefish over Kootenai Falls.
4. Survey of sturgeon in Kootenai River in the canyon area below Kootenai Falls. These surveys should not be limited to any one type of gear or any one time of year. For the immediate future they should be correlated with the work being done on the lower Kootenai River by Idaho Fish and Game Department.