Ref ID: 71161

last page missing

MONTANA DEPARTMENT OF FISH AND GAME
FISHERIES DIVISION

JOB PROGRESS REPORT
RESEARCH PROJECT SEGMENT

State Montana Title Reservoir Investigations

Project No. F-34-R-6 Title Kootenai River Study

Job No. IV-a

Period Covered July 1, 1971 through June 30, 1972

ABSTRACT

Upstream fish traps were fished in three tributaries of the Kootenai River below Libby Dam during October and November 1971. Small numbers of spawning mountain whitefish (Prosopium williamsoni) entered Yaak River, Callahan and Pipe Creeks. A few kokanee (Oncorhynchus nerka) entered Yaak River and Callahan Creek for spawning. These kokanee are thought to be from Kootenay Lake, British Columbia.

Spot creel census checks were taken of anglers fishing the Kootenai River between Libby Dam and the city of Libby, Montana, during January and February, 1972. A total of 288 anglers contacted had caught 1,753 mountain whitefish and 18 trout. Average catch per man hour of effort was 2.6 fish.

Sections of the Kootenai River near Libby Dam and Troy, Montana, were sampled using boat-mounted electrofishing equipment. A standing crop estimate was computed for the Jennings section 3 miles below Libby Dam while only species composition and catch per unit effort was collected from the Troy sections. Population estimate for the Jennings section was 503 suckers (Catostomus spp.) 201 mountain whitefish and 2 trout (Salmo spp. and Salvelinus spp.) per surface acre.

BACKGROUND

Kootenai River is one of Montana's largest rivers with average peak flows of about 65,000 cfs and average lows of about 3,000 cfs. It has provided a good sport fishery for mountain whitefish, rainbow trout (Salmo gairdneri), cutthroat trout (Salmo clarki), Dolly Varden (Salvelinus malma), burbot (Lota lota) and white sturgeon (Acipenser transmontanus). Other species of fish found in the river include largescale suckers (Catostomus macrocheilus), longnose sucker (C. catostomus), sculpins (Cottus spp.), redside shiner (Richardsonius balteatus), northern squawfish (Ptychocheilus oregonensis), peamouth (Mylocheilus caurinus), brook trout (Salvelinus fontinalis), and longnose dace (Rhinichthys cataractae).

Libby Dam when completed by the Corps of Engineers will form Lake Koocanusa inundating 90 miles of the Kootenai River above the dam. Forty-eight miles of this lake is in Montana, the remainder in British Columbia. The dam and reservoir operation will change the Kootenai River below the dam through water release patterns, temperatures and water chemistry and altered fish migrations. These expected changes require collection of pre-impoundment fishery information so that changes in the fish population structure can be delineated after impoundment. Mitigation of damages to the fishery resource, if they occur, will be dependent upon reliable pre- and post-impoundment information.

OBJECTIVES

The objectives of this job were: (1) collect basic data on fish populations at selected stations above and below Libby Dam, (2) collect, mark and release mature whitefish above the dam to determine downstream spawning movement into Fisher River, (3) determine presence or absence of fall spawning fish running from Kootenai River into Yaak River, Callahan and Pipe Creeks and (4) collect angler harvest information from the Kootenai River between the dam site and Libby, Montana, during the 1972 winter fishery.

PROCEDURES

A fish population estimate was obtained from the Jennings section of the Kootenai River using a mark and recapture method described by Vincent 1/. The upper terminus of the Jennings section is about two miles below Libby Dam and extends downstream about 13,500 feet ending above the Jennings rapids. Surface area within the section was calculated to be 190 acres representing the normal high water channel. Average width was calculated to be 610 feet. The population estimate was done in mid-August 1971 when the channel covered by water was much less than during high water. Fish standing crop estimates expressed as pounds per surface acre will be based upon normal high water channel measurements. Normal high water channel measurements were used since sampling this year and future years will probably be done at different flows and channel widths.

Catch per unit effort (boat hour) and species composition information were collected from four sections of the Kootenai River near Troy, Montana, below Kootenai Falls.

All sampling in the Kootenai River was done at night using an outboard jet powered johnboat mounting electrofishing gear. Fish caught were held in live boxes and data collected the following morning. Data recorded included species, total length and weight. Scale samples were taken from some individuals of the abundant species. All trout were tagged with numbered jaw tags. Mountain whitefish were marked by removing a fin. Stomachs from about 150 whitefish taken in the Jennings section were preserved for future food analysis studies.

Creel census information was collected from anglers fishing the Kootenai River downstream from Libby Dam to Libby, Montana, a distance of about 18 miles. Census was taken during the months of January and February, 1972, when the

---

1/ Vincent, Dick. 1971. River electrofishing and fish population estimates. Prog. Fish. Cult., Vol. 38, #3.

shoreline and slack water areas were ice-covered. This census was a spot check with data collected only during periods of heaviest angler use, weekends and holidays. Angler data were collected from both completed and uncompleted trips. Data included hours of effort, catch by species, presence of marks or tags on whitefish and trout and some total length measurements were taken on trout and whitefish.

Upstream fish traps were installed near the mouths of Yaak River, Pipe and Callahan Creeks in late September and fished until early November. The traps were checked twice daily for cleaning and removal of fish. Fish caught were identified by species, measured (total length), weighed, scale samples were taken and then released upstream.

Considerable difficulties were had maintaining the traps and trap leads since each of these streams carry large amounts of deciduous tree leaves in the fall. Catch of fish has to be considered a minimal figure since the leads were knocked down frequently.

Two streams trapped, Yaak River and Callahan Creek, are below the Kootenai River falls. These falls lie about 12 miles west of Libby and about 5 miles east of Troy, Montana. The falls are considered a barrier to upstream movement of fish. Instead of being a single-drop falls, the river cascades over several vertical drops and has high water velocities.

FINDINGS

Tributary Traps

The Pipe Creek trap was installed several hundred feet above the creek's mouth on September 23, 1971, and operated through November 11, 1971. Total catch during this period was 40 rainbow trout, 4 brook trout and 35 mountain whitefish. The rainbow trout averaged 8.6 inches total length and ranged from 6.4 to 11.0 inches. The brook trout averaged 7.9 inches total length and ranged from 6.1 to 9.4 inches. The catch of these two trout species may have been from localized movement within the creek or between Kootenai River and the creek.

All mountain whitefish were caught between October 8 and November 2, 1971. Twenty-nine were males averaging 8.8 inches total length and ranging from 7.0 to 13.1 inches. Thirteen of the males were 8.0 inches long or longer and mature, ripe fish. Six ripe females averaging 11.7 inches and ranging from 10.5 to 12.7 inches were caught. It is believed that almost all the whitefish caught were from the Kootenai River and represent a spawning run from the river into Pipe Creek. The size of the run is not represented by the number of fish caught since the trap leads were inoperable much of the time due to heavy flow of debris in the creek.

The Callahan Creek trap was installed September 23 and fished through November 9, 1971. The catch included 6 rainbow trout, 2 brook trout and 1 Dolly Varden all small size and thought to represent localized movement. Eight ripe male whitefish ranging in size from 8.8 inches to 12.1 inches and one ripe female 14.4 inches total length were caught. These fish are thought to be

spawners from the Kootenai River. Three male kokanee and 1 female were also caught in the trap.

Considerable difficultites were had maintaining the Callahan Creek trap. This creek contains large amounts of debris in the fall. The trap site was under a railroad bridge located near a "hobo jungle". It is known that some people closely examined the trap possibly affecting the catch.

The trap in Yaak River was installed September 29 and fished through November 11, 1971, and caught 5 ripe males and 6 ripe female kokanee. The males averaged 13.4 inches total length and ranged from 11.3 to 16.2 inches while the females averaged 11.2 inches and ranged from 9.1 to 15.1 inches. All kokanee were caught between September 29 and October 10. A few dead kokanee were found washed against the trap leads immediately after trap installation. It would appear that the trap was installed too late to sample the main part of the kokanee spawning run.

The origin of the spawning kokanee entering Yaak River and Callahan Creek is not known at this time. It is suspected that these fish moved out of Kootenay Lake, British Columbia, up the Kootenai River through Idaho into the two Montana streams. If such is the case these fish swam upstream about 150 miles to reach their spawning grounds. Another possibility may be that these fish were from Kootenai River proper downstream in Idaho or British Columbia. This latter source is unlikely since kokanee are generally a lake species.

Two rainbow and one each cutthroat, brook trout and Dolly Varden were caught in the Yaak trap. Catch of mountain whitefish totaled 53 fish of which 32 were ripe males and 21 ripe females. The males averaged 11.0 inches total length and ranged from 8.1 to 15.4 inches while the females averaged 12.7 inches and ranged from 8.4 to 15.5 inches. All the whitefish were caught between October 5 and October 26. These fish were spawners entering the Yaak River from the Kootenai River.

Creel Census

Angler harvest statistics were collected from fishermen fishing 18 miles of the Kootenai River between Libby Dam and the city of Libby, Montana, during January and February, 1972. This spot check census was limited to weekends and holidays during the two-month period. Census clerks would drive up and down the river twice each day, once at about 10 a.m. and again about 4 p.m. censusing anglers as they were observed.

During the 16 days censused, 288 anglers caught 1,753 mountain whitefish, 6 cutthroat, 9 rainbow and 3 Dolly Varden trout. The average catch per man hour was 2.6 fish and the average catch per angler was 6.1 fish. This represents both complete and incomplete fishing trip information.

Rainbow trout averaged 13.4 inches, cutthroat trout 10.8 inches and Dolly Varden 12.8 inches total length. Mountain whitefish averaged 11.9 inches total length and ranged from 6.4 to 19.0 inches. Whitefish measurements were based upon a sample size of 1,124 fish.

Most all the fishing was done from the dam downstream about 5 miles. Access into the river is best in this area. The lower 7 miles of the river is below the outfall of a mine-mill operation contributing sediment waste to the river. This lower section has a local reputation of very poor fishing.

A total of 51 fin clipped whitefish were noted by the census clerks. One of these fish had been marked in late-August 1971 in the Kootenai River about 12 miles upstream from Libby Dam. Twenty-five fish caught had been marked as they entered the Fisher River for spawning in 1970 and 1971. Twenty-six whitefish had been marked in population estimation work done in the Jennings section of the Kootenai River in mid-August 1971.

River Sampling, Warland and Elkhorn Sections

The Warland section of the Kootenai River lies about 12 miles upstream from Libby Dam. Purpose of the sampling was to catch, mark and release mature whitefish to determine whether any of these fish moved downstream through the incomplete dam into Fisher River for spawning. Four nights in late-August, 1971 were spent capturing fish and a total number of 411 mature whitefish were marked and released. Two whitefish were recaptured in the Fisher River traps under Corps of Engineers funded fishery project.

Total catch for all species was 550 mountain whitefish, 11 cutthroat and 9 rainbow trout, 1 Dolly Varden trout, 2 longnose suckers and 129 largescale suckers.

The night of September 1, 1971, was spent at the Elkhorn section of the Kootenai River catching, marking and releasing mature whitefish. The Elkhorn section is about 10 miles below Libby Dam and 7 miles below the Fisher River. A total of 230 whitefish (181 mature fish marked and released), 4 cutthroat trout, 1 longnose sucker and 64 largescale suckers were captured. None of the marked whitefish were recovered from the Fisher River trap.

River Sampling, Below Kootenai River Falls

Four areas of the Kootenai River below Kootenai Falls were sampled. One night was spent in each area between Spetember 29 and October 7, 1971. No previous sampling had ever been done in this section of the Kootenai River so the primary purpose was familarization with the area, determination of species present and relative abundance. The four sample sections, each about two miles long, were immediately below the lower Kootenai Falls, 5 miles below the falls, 8 miles below the falls and immediately below the mouth of Yaak River about 11 miles below the falls.

All fish caught were identified by species, measured and weighed or counted, some scale samples taken, and then released. The catch per boat hour of effort by species is listed in Table 1.

The limited amount of data as present in Table 1 seem to indicate a river population comprised mostly of non-gamefish species. Largescale suckers were the most abundant fish caught. Whitefish were the most abundant game fish caught while cutthroat and rainbow trout were the least abundant of any species.

Table 1. Catch per boat hour effort for 4 sections below Kootenai Falls, September 29-October 7, 1971.

Section	Boat Hours	Catch per Boat Hour						
		CSu*	LNSu	CRC	NSq	MWf	Rb	Ct
0 miles	3	69.3	-	31.0	7.3	9.3	0.3	0.3
5 miles	2	23.5	1.0	16.0	3.5	8.5	2.5	-
8 miles	2	46.0	1.0	12.0	1.5	2.5	-	-
11 miles	3	51.0	-	15.7	3.3	7.3	1.7	-

* Abbreviations are: CSu - largescale sucker, LNSu - Longnose sucker, CRC - peamouth, NSq - northern squawfish, MWf - mountain whitefish, Rb - rainbow trout and Ct - cutthroat trout.

Size of largescale suckers ranged from 4.3 to 20.9 inches total length, while squawfish ranged from 6.4 to 15.7 inches total length. Too few trout or longnose suckers were caught to give a reliable size range. The large size ranges of whitefish, squawfish and largescale suckers may indicate a resident population living and reproducing in the section of river sampled.

Size range of the peamouth caught was very narrow being 7.8 inches to 11.8 inches total length. Eighty-eight percent of the peamouth fell within the 8.3 to 10.3 size class. The narrow size range of peamouth caught may indicate gear selectivity but more likely that the peamouth caught were uniform in age and represent movement into this stretch of the Kootenai River. The largest number of peamouth were taken at the uppermost sampling section.

Peamouth have never been caught in the Kootenai River above Kootenai Falls. It would appear that the falls are a barrier preventing further upstream movement by this fish species. Northern squawfish are very rarely found in the Kootenai River above the falls and those caught are thought to be downstream migrants from lakes in the Fisher River system. Likely the falls also prevents upstream movement of squawfish and kokanee.

River Sampling, Jennings Section

A standing crop estimate of the fish 6 inches or longer in the Jennings section was made in mid-August 1971. The Jennings section is 13,500 feet long averaging 610 feet wide and contains 190 surface acres at normal high water. The upper end of the section is about two miles downstream from Libby Dam. The section is made up of three long riffles and three large pools. The riffle areas are generally less than six feet deep and the pools are much deeper. Successful night-time electrofishing is limited to depths of water less than six feet.