

UPPER BULKLEY RIVER SURVEY, 1956

During 1954 the Canadian National Railway Company advised the Department of Fisheries through their Division Engineer in Prince Rupert that they were anxious to carry out a rock drilling and blasting program on the Bulkley Falls. The purpose of this would be to remove the crest of the falls, thus lowering the river level above and lessening the danger of flooding their right-of-way during high water in the spring. Since salmon utilize the river below the falls and on some occasions many have been reported above, it was decided to conduct a survey of the watershed above the falls to determine whether the addition of fish passing devices at the falls would be justified. This survey was carried out in August, 1955, when a survey party inspected the river above the falls to Bulkley Lake and sections of Maxam Creek and its main tributary, Foxy Creek. Information on water velocities, temperatures, and amount of suitable spawning gravel available and the numbers of spawning salmon observed above the falls was collected and recorded.

The Bulkley River flows out of Bulkley Lake in a north-westerly direction for some 40 miles before it joins the Morice River, six miles west of Houston. Bulkley Lake, which is some three miles long receives its main supply of water from Maxam Creek, which in turn drains Maxam Lake, a lake four miles south of Bulkley Lake. The falls on the Bulkley River is located about $3\frac{1}{2}$ miles east of Topley and $4\frac{1}{2}$ miles west of Forestdale as calculated from mileage posts on the railway track. Forestdale is located three miles west of the outlet of Bulkley Lake via the railway track which follows the river very closely for its entire length from the lake to its junction with the Morice River.

Fish Culture Branch Engineer J.B. Dyson describes the falls as follows:-

"This falls is the result of a narrow rock ridge which crosses the main river at right angles. The erosion of the river channel above and below the outcrop has been greater than the rock, consequently the river above the falls is very deep and slow-moving."

Findings of the Survey.

1. Bulkley River from the Lake to Forestdale.

From Bulkley Lake to Forestdale, the river flows at a slow to moderate rate for approximately three miles. At the time of inspection, water levels were a little low, however scattered pairs of spring salmon were observed spawning on some of the many stretches of gravel encountered in this section of the river. Nearly all the spawning ground in the river between the lake and the falls is concentrated in the area between Forestdale and Bulkley Lake. The 130 spawning spring salmon observed in this section of the river were utilizing only a small portion of the estimated 25,000 square yards of suitable spawning area. Water velocities in the areas where the spring salmon were spawning were all very close to 2.0 ft. per second, in the remainder of the river where further suitable sections of spawning gravel were located, the water velocities were also very close to 2.0 ft. per second. The velocity of the water varied from 0.5 ft. per second in the deep pools to about 2.5 ft. per second in the shallow riffles.

2. Bulkley River from Forestdale to the Falls.

At Forestdale the river changes radically, the water is deeper and quite slow-moving (average velocity: 9.75 ft./sec.),

the stream bed is composed of mud and sand and many log jams are present, some of which appear quite dense. Approximately one mile above the falls there are a few short sections of suitable spawning gravel, the only gravel encountered in this portion of the river.

3. Maxam Creek.

Maxam Creek flows out of Maxam Lake in a northerly direction for some 8 miles before it enters Bulkley Lake. One major tributary, Foxy Creek, which flows in a northeasterly direction out of a long valley enters Maxam Creek approximately $\frac{1}{2}$ a mile below the outlet of Maxam Lake. At the time of the survey several pairs of spring salmon were observed between the lake outlet and the confluence of the creek with Foxy Creek. In this section, the river is quite narrow, the water moderate to slow moving and the stream bed mostly small rounded boulders with patches of gravel interspersed between the boulders. From Foxy Creek to the mouth of Maxam Creek, there is a gradual change from the rocks and boulders at the upper end to mud and sand at the mouth. Like the upper Bulkley, only a few spring salmon were utilizing a small area of the estimated 5,000 square yards of spawning gravel available in this creek.

4. Foxy Creek.

Conditions encountered on Foxy Creek were slightly different to those on the Bulkley River and Maxam Creek, the water was slightly swifter, clearer and colder, while the stream bed was almost entirely gravel with some areas of small rocks and sand. No salmon were observed in this creek, possibly because the temperature of the water (41°F) was considerably cooler than the water where salmon were spawning in the Bulkley River and Maxam Creek (56°F.). There are approximately 3,000 square yards of suitable spawning area in Foxy Creek, making a total of 8,000 square yards

for Maxam Creek and its tributary stream. The main stream entering Maxam Lake drains an area south of the lake, however, it was not inspected because of the lack of suitable transportation from the lake outlet to the head of the lake.

Discussion.

In examining the past history of the upper Bulkley River, it was demonstrated that prior to 1948 there were records of Sockeye, coho, spring and steelhead spawning in the watershed. The numbers of spawners ranged from "very low" to "heavy" with an average of "medium" for coho and spring salmon, "low" for sockeye and "heavy" for steelhead. Since 1948, there have been no records of sockeye in the watershed, the coho and spring runs have been "light" to "medium", but never "heavy" as they had been on many occasions in the past. On the other hand, since the completion of the fishways at Moricetown in 1951, small numbers of pink salmon have been observed in the lower Bulkley River in 1952 and 1953. There appears to be a definite relationship between the water level of the river and the degree of success of spawning, the lower the water level, the less successful the spawning, particularly with the larger species of fish. Low water conditions are considered the main reason for the lack of the full utilization of the spawning grounds during the years with heavy runs. This lack of utilization can probably be attributed to the fact that the Bulkley Falls near Topley is almost completely impassable to salmon during low water. On several instances salmon have been observed in the river in a battered condition, which could have been the result of many attempts to pass over the falls at a time when the water levels were low. On years when water levels have been considered normal, salmon have been reported as being present in Maxam Creek. It would therefore appear that Bulkley falls plays an important role

in the distribution of the salmon on the spawning grounds of the Bulkley River system.

In view of the quantity of suitable spawning ground available above the falls, and the fact that salmon have been observed spawning in these areas when water levels at the falls have been favourable, it is recommended that Bulkley Falls be made passable to salmon at all water levels. Since the Canadian National Railway Company has expressed a desire to carry out some improvement work on this falls, it is possible that the project could be carried out jointly to the mutual satisfaction of both parties.

Bulkley Falls.

Main channel is visible,
right bank channel joins
main channel where man is
standing in the water.



**Bulkley river near
Forestdale.**

Spring salmon digging a
redd in Bulkley river
above Forestdale.

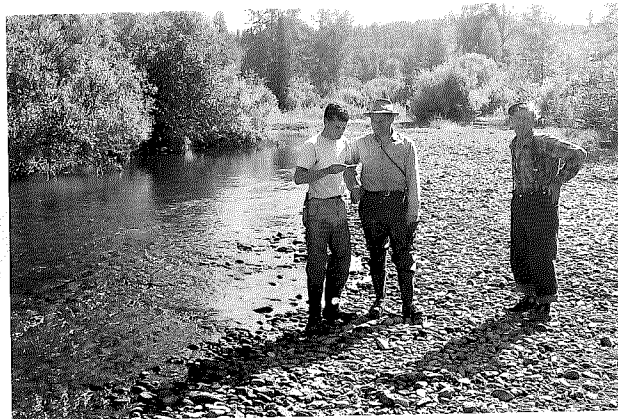


Spring salmon resting
over a redd in river
above Forestdale.

BULKLEY RIVER SURVEY, 1955.



Bulkley river 2 miles below Bulkley Lake.



Maxon Creek $1\frac{1}{2}$ miles from Bulkley Lake.



Typical section of Foxy Creek.