LAKES OF THE SKEENA RIVER DRAINAGE

VI. THE LAKES OF THE UPPER SUSTUT RIVER*

Location and General Description

On the headwaters of the Sustut river (figure 1), in the area enclosed by latitudes 56° 30′ and 56° 40′ N. and longitudes 126° 00′ and 126° 30′ W. at an altitude of 4,250 to 5,000 feet, lies a group of lakes which are annually visited by numbers of salmon. These bodies of water are adjacent to high snow-covered and glaciated peaks whose lower slopes are clothed by open coniferous forests. The valley floors vary from marshy grassland through willow and alder swamps to close stands of tall trees. Caribou, wolves and grizzly bears constitute the bulk of the larger members of the fauna; marmots, squirrels and lemmings dominate the smaller forms. Though the Ingenika trail which passes through this region has fallen into disuse, the recent discovery of gold in the area promises a renewal of local traffic.

Sustut lake (figure 2), the most westerly of the group, is the best known insofar as the production of salmon is concerned. At an altitude of 4,250 feet, 3½ miles long by ½ mile wide, it is drained by the Sustut river which flows north from the lake before turning to follow a narrow valley southwesterly through the mountains to the Bear river. The lake is characterized by depths up to 30 feet in the southern portion, an area of deeper water in the central part with a maximum depth of 61 feet, and extensive shallows with some extruding rocks at the northern end.

The tributary streams are small. Only upper Sustut river and Transparent creek, are of sufficient size to be considered in connection with salmon spawning. The others enter the lake either broken up into very small streamlets or as seepage. This seepage appears to create suitable conditions for "beach" spawning in the lake.

Asitka lake (figure 1) at the head of Asitka river is located 2 miles east of the southern end of Sustut lake at almost the same altitude. Approximately ½ mile wide by 3/5 mile long, it has a maximum depth of 26 feet. The shore line is irregular, being broken by several bays, none of which is over 18 inches in depth.

All its tributaries are small and none offers any suitable areas for salmon spawning. In Ova bay is a considerable seepage area which provides the main spawning locality for sockeye.

Johanson lake (figure 2), about 10 miles east of Sustut lake and situated at an altitude of 4,730 feet, is narrow, 3 miles long with a maximum width of ½ mile. It is characterized by a lack of shallows, the shore in most areas dropping off rapidly to moderately deep water. There is a small portion over 150 feet in depth, the maximum sounding made being 162 feet. There are several small islands.

Only two tributaries occur, the main one being Darb creek on which is situated Darb lake.

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* The sixth in a series presenting general information on the lakes of the Skeena river drainage particularly insofar as it affects salmon production.

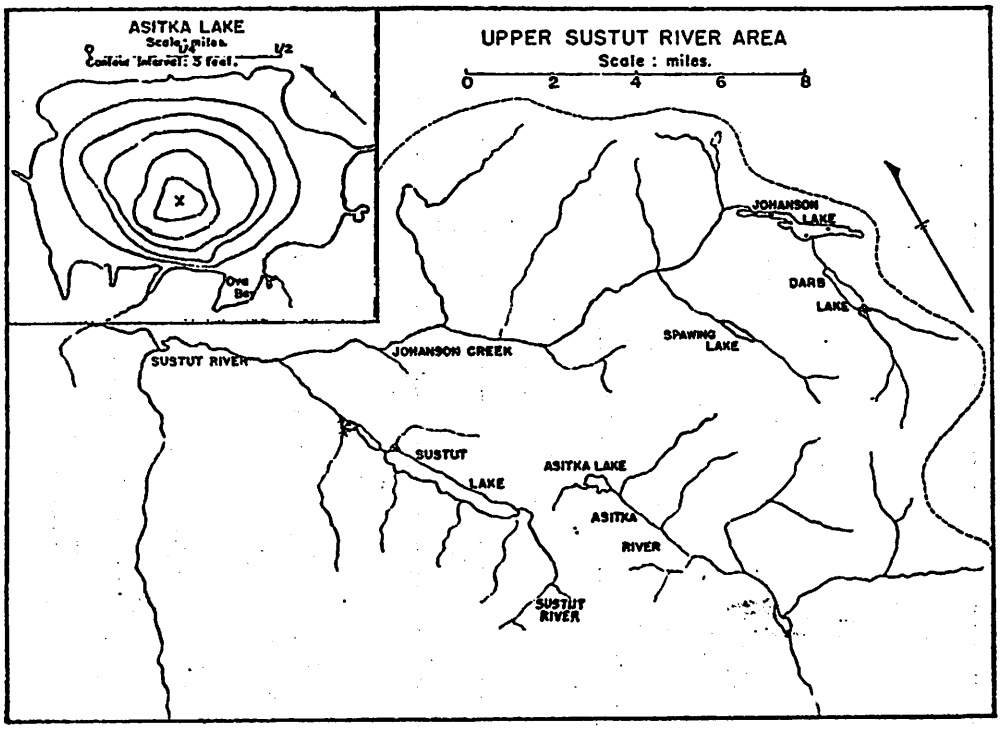

Figure 1

Darb lake, ½ mile south of Johanson lake and approximately 30 feet higher, is about 1½ miles long by 1/3 mile wide and the water is very silty. No soundings were made on this lake but the slope of the beaches seems to indicate that it is generally shallow.

Spawning lake, at the same altitude or slightly higher than Johanson lake, is located 3 miles southwest of it on an unnamed creek tributary to Johanson creek. It is somewhat smaller than Darb lake, but is also silted.

Limnological Conditions

Sustut lake temperature records taken on August 22, 1945, and September 9, 1946, show close correspondence, the surface temperatures being respectively 58.1°F. and 58.6°F. with a fairly uniform upper layer or epilimnion to 30 feet and a rapid decrease below that to minima of 49.1°F and 48.7°F. at the bottom.

Secchi's disc could be seen to a depth of 30 feet, indicating moderate transparency. Plankton was relatively scarce.

Asitka lake had a surface temperature of 57.3°F. which decreased to 53.8°F. at the bottom on September 10, 1946.

Secchi's disc was visible to a depth of 18 feet in this lake. The greater relative abundance of plankton in Asitka lake appears to account for much of the decrease in visibility as compared with Sustut lake. In this respect it more nearly resembles Bear lake (Progress Reports No. 70).

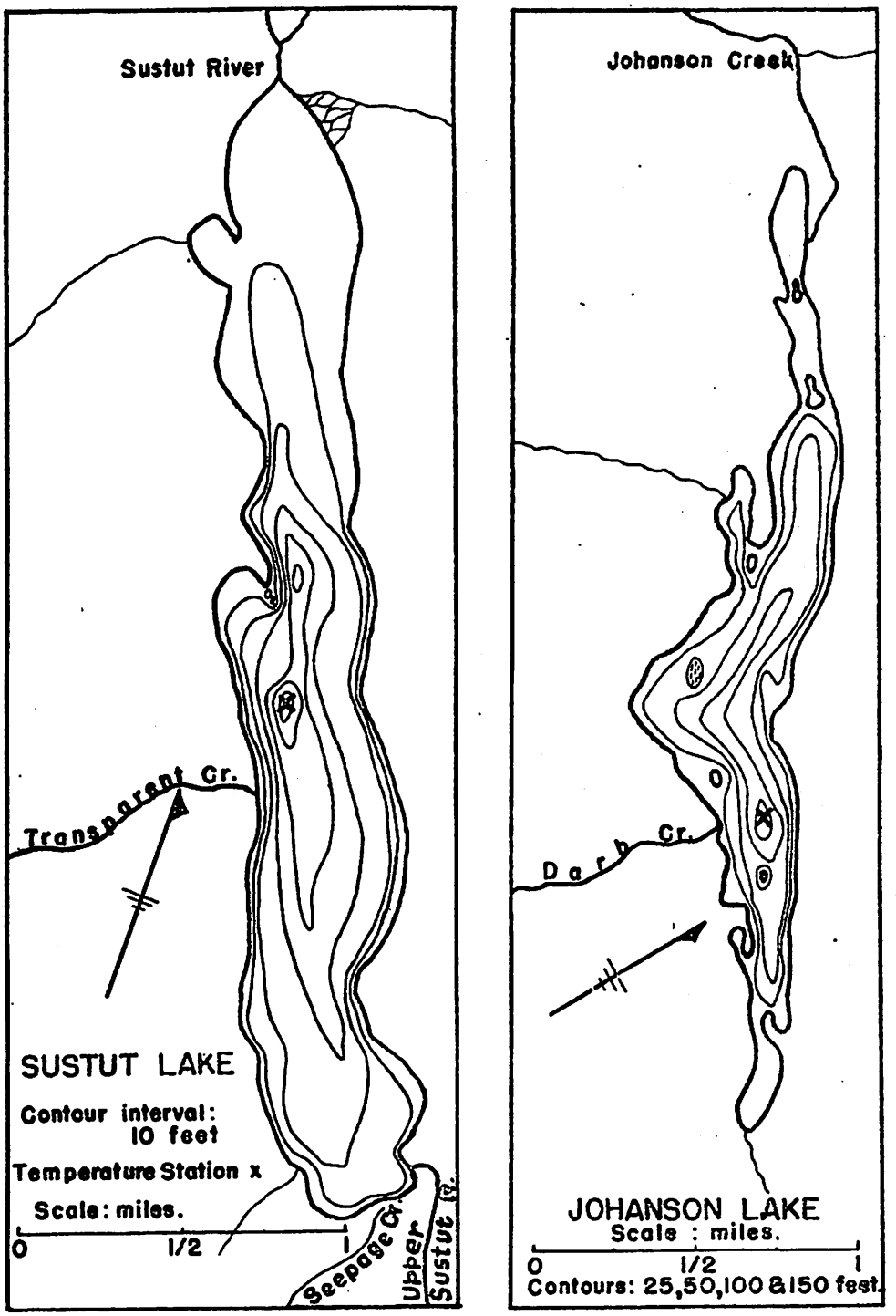
Sustut River
Transparent Cr.
SUSTUT LAKE
Contour interval:
10 feet
Temperature Station x
Scale: miles.
0
1/2
1
Seepage Cr.
Upper Sustut R.
Johanson Creek
Darb Cr.
JOHANSON LAKE
Scale : miles.
0
1/2
1
Contours: 25,50,100 & 150 feet.

Figure 2

Johanson lake on September 16, 1946, had a surface temperature of 41.7°F. This body of water was the only one in the area in which a well defined thermocline was present though the bottom 20 feet in Sustut lake had a temperature gradient of thermocline proportions in both years. In Johanson lake the thermocline consisted of a change of 8 degrees (F.) in 10 feet between the depths of 35 and 45 feet.

Secchi's disc was visible, as in Sustut lake, to a depth of 30 feet. Plankton was of the same relative scarcity as in that lake.

Darb and Spawning lakes were not investigated for their limnological conditions, but it is known that bodies of very silty water at this altitude are generally cold and relatively unproductive.

Fish Populations

Sustut lake fish were sampled by means of gill nets, beach seining and trolling. The following predator species have been identified: dolly varden char, *Salvelinus malma;* burbot or ling, *Lota maculosa;* steelhead trout, *Salmo gairdnerii,* and young coho salmon, *Oncorhynchus kisutch.* The char weighed up to 6 pounds and steelhead were from 7 to 8 pounds, though one seen in Johanson creek was probably three times this size. Forage fish include Rocky mountain whitefish, *Prosopium williamsoni;* the shiner, *Richardsonius balteatus,* and the chub minnow, *Couesius greeni.* In addition to the coho, sockeye salmon, *O. nerka,* are present in the lake and the fact that there are two distinct size ranges in fry of this type suggests that there is a population of the kokanee, *O. nerka kennerlyi.*

Johanson lake was fished by gill nets only, so it is likely that there are species present other than those sampled. The following were recorded: dolly varden char, Rocky mountain whitefish, sockeye and coho salmon. Steelhead trout were seen in the lake but none was caught. Of extreme interest was the fact that while all the char between 6 and 8 inches in length were apparently ready to spawn, none of the larger specimens showed any indications of ripening gonads.

Darb, Spawning and Asitka lakes were not fished. However, sockeye and coho salmon were seen in the last-mentioned. No fish were seen in Darb lake. A prospector reported that there were many dead salmon on the shores of Spawning lake in early September, 1946. As sockeye are the only salmon known to spawn in the lakes in this region, it is probable that these were sockeye.

Salmon Spawning

The only salmon known to spawn in the area are the sockeye and coho. The sockeye spawn only in the lakes and, it is believed, only where seepage occurs. Coho, however, apparently do not spawn in the lakes.

At *Sustut lake,* a thorough check of both Upper Sustut river and Transparent creeks was made. No sockeye were seen in these creeks or in Sustut river below the lake. A similar check of Johanson and Darb creeks revealed no sockeye. The recognized sockeye spawning area in this lake is confined to the upper (southern) third. Here shallow water spawning occurs along the eastern edge and at the southern end where Seepage creek enters the lake through the gravel. Spawning has also been observed in the waters below 15 feet in this region. Coho are said to spawn in late September and early October in the main and upper Sustut river.

In *Asitka lake* the main sockeye spawning area is Ova bay (figure 1). A few sockeye were also seen just above Asitka river. According to the Indians, beaver dams sometimes obstruct the passage of salmon. Large numbers of salmon are reported to spawn 10 miles below the lake but no reliable information has been received as to the species involved. From a prospector's report that "The pools were black with salmon," it is assumed that the majority were coho.

In the *Johanson lake* area no sockeye redds were located, but the condition of the salmon caught in the gill net and reports from Indians acquainted with the district indicate that spawning takes place in the lake. A careful check of all the shallows indicated that spawning must take place below the normal limit of visibility.

Dark lake is said by the Indians to receive no salmon, but they state that steelhead spawn in Darb creek and also enter the lake in February and March. As was mentioned before, reports indicate a sockeye population in Spawning lake. Though the water is very silty it is probable that spawning would occur only where clear seepage enters the lake.

Indian Fishing

Indian fishing in this district is at present confined to coho and steelhead in the creek just below Johanson lake. Here a family of ten takes chiefly steelhead and coho with both spears and gill nets. Formerly sockeye were fished with spears in Asitka lake and steelhead with nets in the winter in Sustut river just below Sustut lake. Shifting traplines and a decrease in the sockeye runs to Asitka lake largely account for the abandonment of fishing in this area.

Acknowledgments

The writer wishes to take this opportunity to thank Mr. Carl Hanawald of Bear lake for his many courtesies and information in connection with trips to the area, also Messrs. Bert Goodrich and Len Belleveau for information and kindnesses during the stay at Johanson lake. Thanks are due to Captains Russ Baker and Pat Carey of Central B. C. Airways for services rendered, often under adverse circumstances. To my friend and co-worker, Mr. Peter Abear, special thanks are extended for his helpful service and companionship. Dr. A. L. Pritchard, in charge of the Skeena river salmon investigation, again assumed the responsibility of assuring the delivery of supplies and equipment.

Pacific Biological Station D. R. Foskett