

THE FOOD OF YOUNG SPRING SALMON IN SHUSWAP LAKE, B.C.

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DURING early July in each of the years 1931 and 1932, large numbers of young Spring Salmon, *Oncorhynchus tshawytscha*, were observed in the shoreward waters of Shuswap Lake, near Sorrento, British Columbia. In the late afternoon and evening, these fish were everywhere breaking water and evidently feeding upon winged insects which were flying over the surface. By means of a seine, considerable numbers of the salmon were obtained at various times of the day and on several days of each year. A random sample has been measured, weighed, scales examined and stomach contents studied.

The standard lengths of 44 fish ranged from 5.2 to 8.3 cm. The weights varied from 2.7 to 8.4 g.

Examination of the scales showed that the fish were in the first year and counts of the scale circuli of 20 individuals gave a range of from 4 to 11 with an average of 7.

The fish appeared to be in excellent condition and reports from the outlet of the lake indicated that numbers were commencing the seaward migration.

The food of 64 individuals was examined and found to consist largely of terrestrial insects, small Crustacea and midge (*Chironomidae*) larvæ, pupæ and adults. Among the

terrestrial insects were species of *Diptera*, small *Hymenoptera*, a few *Aphidæ* and *Corixidæ* and other *Homoptera* and *Heteroptera*, add an occasional *Coleopteran*. *Daphnia* was by far the most abundant of the small *Crustacea* but there were considerable numbers of *Bosmina* and *Eurycercus* and a few smaller *Cladocera* and *Copepoda*. Only a single small *Gammarus* occurred. The *Epheméridæ* were represented by nymphs only and chiefly *Ephemera* with a few representatives of the *Heptageninæ* and *Bætinæ*. *Trichoptera* larvæ occurred in two stomachs and an adult in a third.

The results may be summarized as follows: terrestrial insects in 47 stomachs: *Crustacea* in 43; *Chironomidae* in 15; *Corixidæ* in 4; *Trichoptera* in 3; miscellaneous; *Hydracarina*, *Arachnida*, *Aphidæ*, *Corethra* larvæ and *Formicidæ*.

Examination of the stomachs of Squawfish, *Ptychocheilus oregonensis*, taken during the same periods as the salmon, showed that the Squawfish were feeding to a large extent upon the salmon (Clemens and Munro, *Bio. Bd. Can., Prog. Rept. Pac.* no. 19, 1934).

The present information concerning the Spring Salmon is placed on record as a small contribution to the knowledge of the life-history of this important species.

NOTES AND OBSERVATIONS

UNUSUAL ROOSTING OF TREE SPARROW.—It is well known that grouse and some field-loving birds, such as Snow Bunting and Horned Lark nestle amid the snow to spend the night. But one would hardly expect a small bird usually inhabiting sheltered thickets to resort to such a means of roosting.

On December 26th (1933) at Toronto we were visited by a snow-storm, borne on a cold north wind that lasted most of the day. Towards evening I went for a walk out into the open country near my home, more with the idea of enjoying the storm than hoping for any bird observations. As I paused near a solitary

thorn bush well out on the field, I saw a small bird come flying across the field and settle in the bush a few feet from me. I was surprised to find it to be a Tree Sparrow. This species is by no means rare at this time of year, but to find one lone individual on a barren snowy field in the fading light aroused my curiosity. As I watched him he flew to the weed tops in several places, back to my bush, to the reeds, then far away across the field to a discarded tin half-buried in the snow, and finally returned to my bush. At each place I noticed he flew down and nestled low in the snow, and at the bush he crept into the small bowl-like hollow caused by the



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