THE COHO SALMON POPULATION OF NILE CREEK

During the course of the chum salmon investigation at Nile Creek on the south-east coast of Vancouver Island, information has been gathered on the coho salmon (*Oncorhynchus kisutch*) from 1945 to 1951, with the exception of the 1950-51 season.

From October to December, adult fish are counted into the stream and from April to June, migrants are counted out. Adult counts have varied between 170 and 450 and smolt counts between 3400 and 6200.

The sex ratio for the first three years strongly favoured the males because the appearance of the jaws was used as the criterion for sexing. Both sexes grow bulbous jaw tips as they mature. Latterly, the fish were tested to see if milt or eggs could be extruded and this procedure has shown that light pressure will extrude the female genital papilla so that it can be clearly seen beyond the lips of the cloaca and give a clear indication of sex. As the sexes tend to come through the fence in equal numbers, the female counts for the first three years have been estimated as one-half the total runs, in Table I. Potential egg deposition is estimated on the basis of counts of eggs in 3 to 8 females.

The number of precocious males ("jacks") has been eight or less since 1948 and these are not considered in Table I.

TABLE I.—Summary of Nile Creek coho salmon population data.

Year range	Spawning run			Egg count	No. of eggs	Yearlings	Yearling production		Returning adults	
	Male	Female	Total				Per egg	Per female	Per yearling	Per female spawner
							%		%	
1945-47-48		(185)	391	2394	443,000	3388	0.76	18.3	4.9	0.84
1946-48-49		(172)	345	2222	382,000	5626	1.47	32.9	3.2	1.05
1947-49-50		(224)	448	2174	487,000	6227	1.28	27.8	—	—
1948-50-51	84	81	165	2100	170,000	3577	2.10	44.2	9.9	4.36
1949-51-52	75	106	181	2662	262,000					
1950-52-53	—	—	—							
1951-53-54	181	192	353							

The eggs hatch in the gravel in February and the fry emerge in April to spread through the stream. Varying numbers of fry arrive at the fence and are counted into the intertidal zone, where, on the basis of a few tests, the majority probably die. The fry that remain in the stream survive in numbers that vary with the size of the stream during the first year that they spend in fresh water. A year after the fish have emerged, the smolts (yearlings) are counted out to sea through the fence.

The importance of discharge during the fry to yearling stage in determining the size of the populations returning to the Cowichan River on Vancouver Island was shown by F. Neave in Bulletin 84 of this Fisheries Research Board. If Nile Creek fish were travelling together, the capture or escape of a single school of fish in the commercial catch could easily cause the great variation in returning adults shown in Table I. The relation found for the Cowichan River is not present at Nile Creek. However, Table II shows that the minimum monthly rainfall at Parksville (20 miles to the south-east), and the number of yearlings counted the next spring, varied in the same manner. (Stream discharge is closely related to rainfall.)

TABLE II.—Minimum monthly rainfall at Parksville compared with output of coho yearlings at Nile Creek.

Year	Minimum monthly rainfall	Yearlings counted next spring
1946	0.30	3388
1947	0.78	5626
1948	1.36	6227
1949	0.35	3577

At present it appears that the numbers of sea-going coho smolts produced from 170,000 or more eggs is governed by stream conditions during the year the fish spend in fresh water.

Pacific Biological Station W. Percy Wickett

Doctor's Degree for Ferris Neave

A Ph.D. degree has recently been awarded by the University of British Columbia to Dr. Ferris Neave of the Pacific Biological Station Staff. As part of the requirements for the degree, Dr. Neave submitted the thesis on "Principles affecting the size of pink and chum salmon runs in British Columbia."