

# **A Three-Year-Old Pink Salmon from Lake Superior**

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MICHIGAN DEPARTMENT OF NATURAL RESOURCES  
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FROM LAKE SUPERIOR<sup>1</sup>

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Introduction

In North America, nearly all pink salmon (Oncorhynchus gorbuscha) mature in their second year of life (Anas 1959; Bilton and Ricker 1965). In the literature I could find only two instances where the life cycle of North American pink salmon was not 2 years. Anas (1959) reported a 3-year-old female collected from the Skeena River, British Columbia. Turner and Bilton (1968) reported an immature male in its second year caught by salmon longlines in the Gulf of Alaska on 7 December 1966. Although this fish was not yet 3 years old, they presumed that it would mature in its third year or later. Pink salmon were introduced into Lake Superior in 1956 and all were believed to have a 2-year life cycle and spawn only in odd-numbered years (Collins 1975; Wagner and Stauffer 1975). In the present report, I describe the occurrence of a 3-year-old pink salmon in Lake Superior.

On 29 October 1976, an angler caught an unidentified salmonid from the Chocolay River, a Michigan tributary of central Lake Superior. James Peck, Paul Hannuksela, and I tentatively identified it as a pink salmon. The identification was subsequently verified by Paul Hannuksela from keys given by Carl et al. (1967). The primary identifying characteristics were the large oval spots on the back and caudal fin and the small scales (187 and 192 in first row above lateral line). The pink salmon was a spent female, 496 mm long (TL) and weighed 970 g. This fish was unique because pink salmon in the Great Lakes usually spawn only during odd years in September (Wagner and Stauffer 1975).

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<sup>1</sup> Contribution from Dingell-Johnson Projects F-31-R and F-35-R, Michigan.

### Age assessment

Scale examination indicated that the Chocoday River salmon was 3 years old. It was also larger than 2-year-old fish. Six scales from the Chocoday River salmon were examined for number of annuli, circuli counts, and distance from focus to annuli and edge of scale. These parameters were compared with similar parameters from two to four scales from each of six of the larger (393-439 mm) 2-year-old (odd-year spawners) females collected from Lake Superior tributaries in early September. The scales of both groups were taken from an area between the insertion of the dorsal fin and the lateral line. Four scales from the Chocoday River salmon had a second annulus on a small portion of the anterior edge (Fig. 1). Considerable absorption of the scale edges had occurred which likely accounted for the incomplete annuli on these scales and for its absence on the remaining scales. Scales from the 2-year-old pink salmon also showed considerable absorption (Fig. 2).

Circuli counts and distance to the first annulus were similar between the 3-year-old salmon and the 2-year-old salmon, indicating that total length at the end of the first growing season was similar (Table 1). No comparison could be made of total length at the end of the second growing season because of scale absorption. The relatively large size of the Chocoday River salmon also suggested that it had spent a third growing season in the lake. I measured 111 2-year-old female salmon from Lake Superior, collected from spawning runs in 1973, 1975, and 1977; the largest was 470 mm, the average was 401 mm with a standard deviation of 20 mm. Length of the Chocoday River salmon was 496 mm, which is nearly 5 standard deviations greater than the mean length of 2-year-old salmon.

### Discussion

Although the Chocoday River salmon was the first 3-year-old pink salmon reported from the Great Lakes, others must have occurred. First, to establish the even-year spawning runs of 2-year-old pink salmon in upper



Figure 1. --A scale of a 3-year-old pink salmon caught in a Lake Superior tributary on 29 October 1976, showing two annuli and areas of absorption. The salmon was a spent female, 496 mm in length.



Figure 2.--A scale of a 2-year-old pink salmon caught in a Lake Superior tributary on 10 September 1975, showing one annulus and areas of absorption. The salmon was a female, 438 mm in length.

Table 1. --Scale characteristics of 2-year-old salmon and the Chocolay River salmon.

Measurement, and salmon	Number of scales	Number of circuli		Distance (mm) <sup>a</sup>	
		Mean	Range	Mean	Range
<u>Focus to first annulus</u>					
2-year-old salmon	18	23	18-27	0.87	0.71-1.02
Chocolay R. salmon	6	22	19-23	0.87	0.80-0.89
<u>First annulus to edge or second annulus</u>					
2-year-old salmon	18	6	3-11	0.23	0.13-0.31
Chocolay R. salmon	6	14	12-15	0.40	0.30-0.46
<u>Second annulus to edge</u>					
Chocolay R. salmon	4	4	1-6	0.11	0.08-0.16

<sup>a</sup> Measurement made to nearest millimeter on scale projector with 105.5 magnification, then actual distance calculated.

Lake Huron as reported by Kwain (personal communication), an introduction of even-year spawning salmon would be necessary or some salmon would have to spawn in their third year of life rather than the second. No introductions of even-year salmon have been reported. Thus, the even-year spawning runs of 2-year-old pink salmon in upper Lake Huron must have been the descendants of 3-year-old fish. Second, the 3-year-old salmon I examined was a spent female which raises the question of whether or not males were present when the eggs were shed. If present, such males would have been even-year salmon, 2 or 3 years old. On the other hand, the female could have shed her eggs without attending males, as sockeye salmon (Oncorhynchus nerka) have done (Foerster 1968).

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