# Informational Leaflet 1

## AN EXTERNAL CHARACTERISTIC TO DIFFERENTIATE BETWEEN KING AND SILVER SALMON JUVENILES IN ALASKA

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# An External Characteristic to Differentiate Between King and Silver Salmon Juveniles in Alaska

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During recent investigations on the Taku River in Southeastern Alaska, we have been faced with the problem of differentiating between downstream - migrant king and silver salmon. The presently available keys to juvenile salmon utilize the shape of the anal fin to a high degree. In these keys, the tips of the first rays of the anal fin of the coho (silver) juvenile when depressed will extend to the base of the last ray (fig. I) whereas in the king juvenile the tips of the first rays when depresed will extend only to the base of the 3rd or 4th most posterior ray (fig. II).

Fig. I

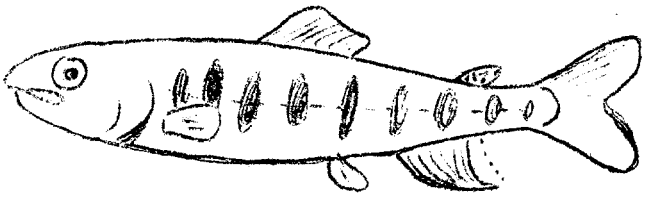
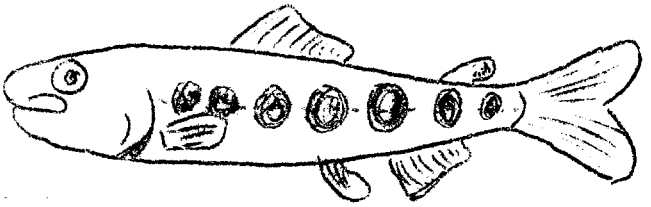


Fig. II



Another major external characteristic which has been used for identification of these two species is the pattern of the parr marks. On the king, the parr marks should be for the most part wider than the spaces between them (fig. III) whereas on the coho the interspaces should be for the most part wider than

the parr marks (fig. IV).

Fig. III

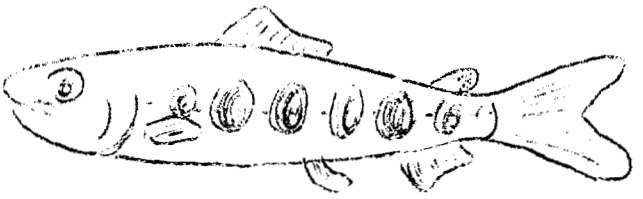
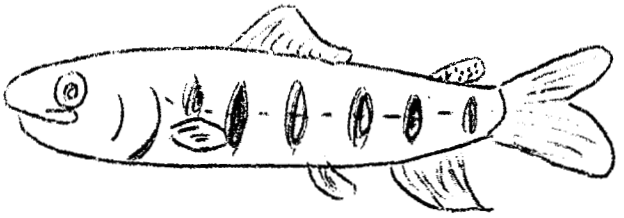


Fig. IV



We have found so much variation in these characteristics that we have not been able to use them in our work.

The sure-fire means of separating these two species is of course to count the pyloric caecae. The coho has by far less caecae than the king. Generally accepted counts are less than 80 pyloric caecae in the coho and more than 90 (usually in the neighborhood of 140 or more) in the king. Obviously the use of this characteristic does not lend itself to any studies involving more than a few smolts or where killing the fish is impossible. The latter condition will be the most prevalent in our management programs where downstream - migrant sampling will be used to measure freshwater survival and total out-migration of smolts.

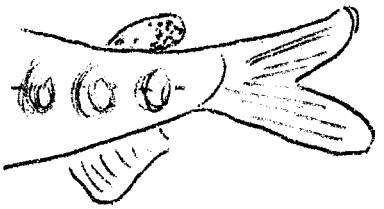
We believe that we have found a suitable external characteristic to separate these 2 species. The characteristic lies in the pigmentation of the adipose fin. We have checked this

characteristic against pyloric caeca counts in fish from several Alaskan rivers. So far the characteristic has held true without exception and may be described as follows:

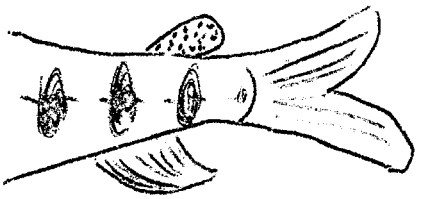
(1) king salmon - adipose fin not completely mottled, but with a clear area, generally at the anterior base of the fin (fig. V).

(2) coho - adipose fin completely mottled (fig. VI).

(Fig. V)



(Fig. VI)



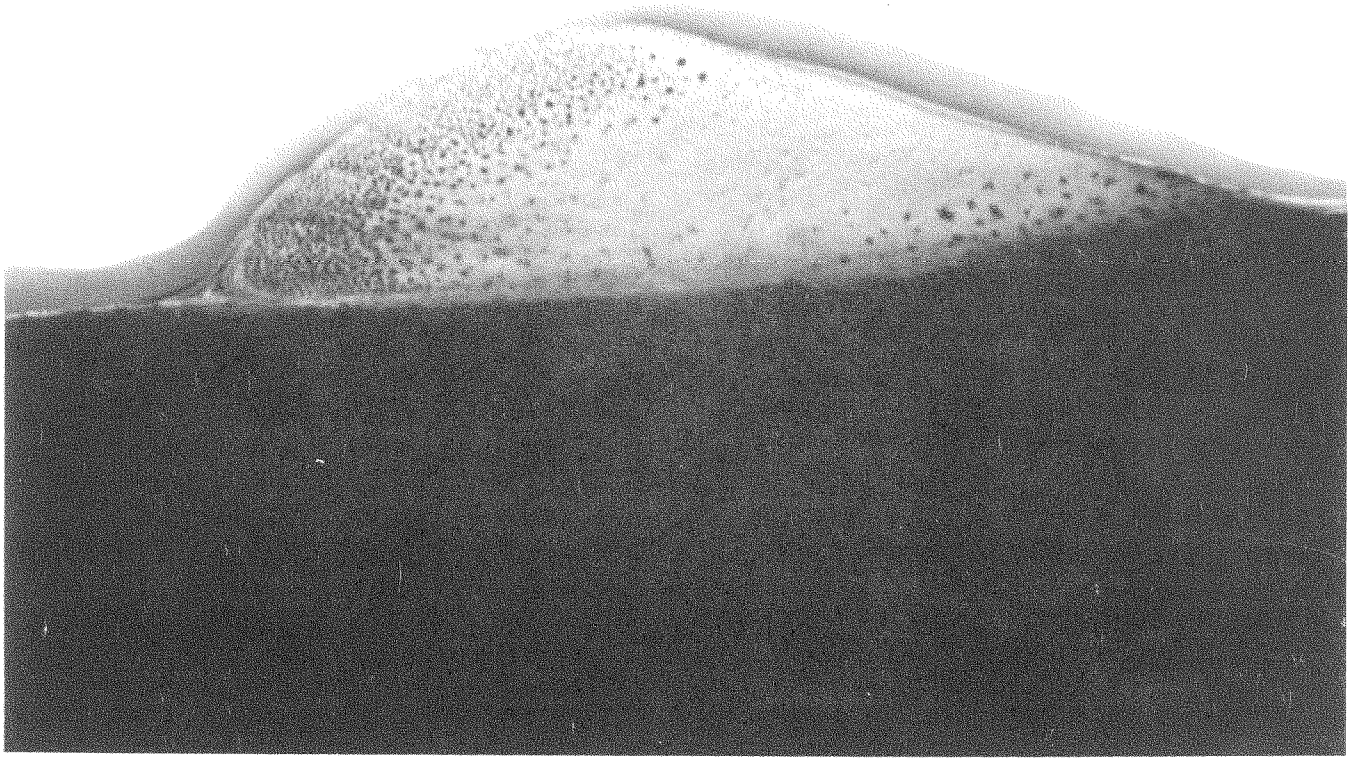
Included in this paper are some photographs showing the characteristics described. Fig. VII shows the adipose fin of a king fingerling. Fig. VIII shows the adipose fin of a coho fingerling. Note the obvious clear area in the adipose of the king.

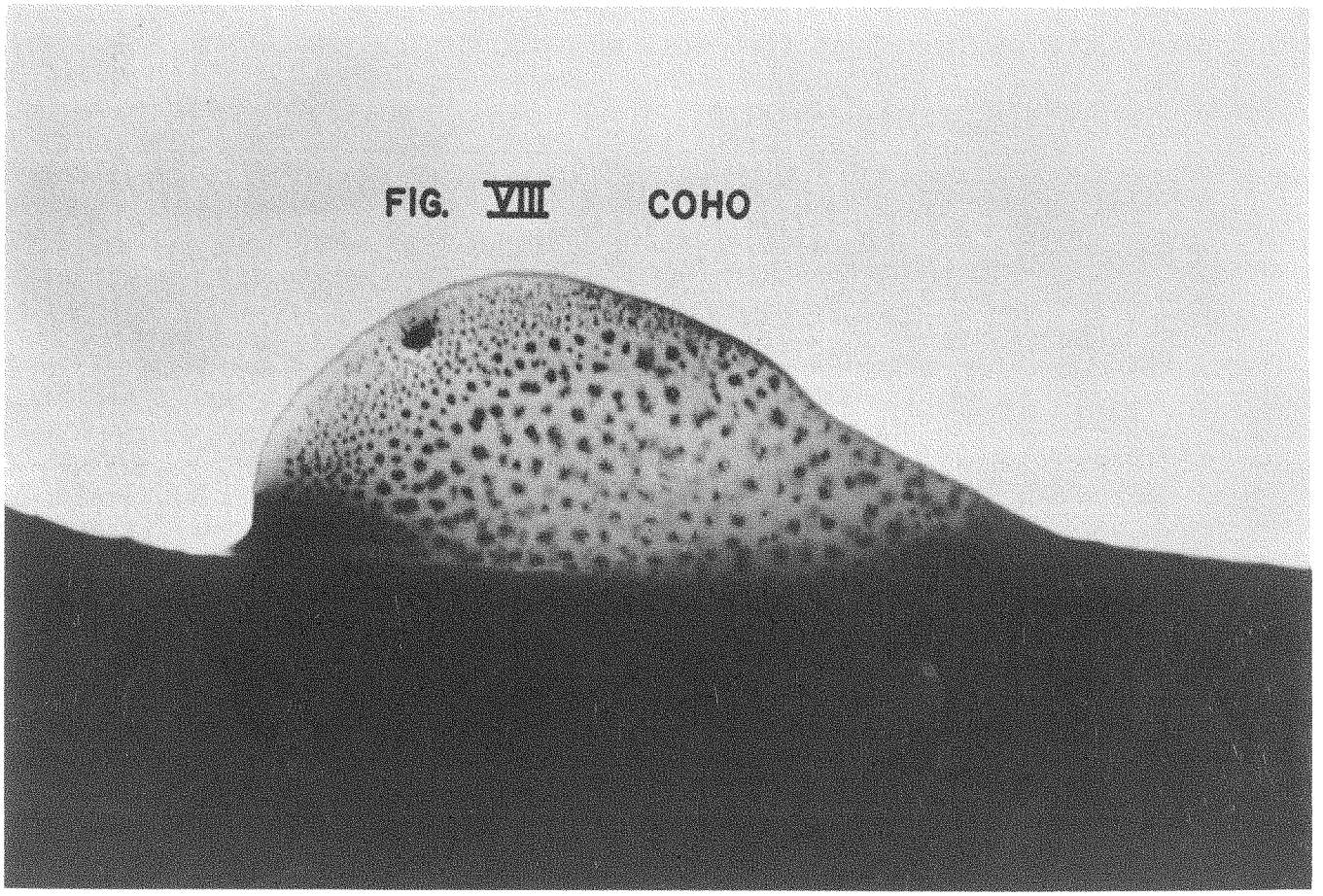
The anal fins pictured in Figs. IX and X from king salmon; those in Figs. XI and XII from cohoes. Note the variation in the shape of the fin in each species and why it is not a very good means of positive identification.

Another characteristic which we have found to be good in most instances (but not invariably) is the pigmentation of the first (most anterior) ray of the anal fin. In most king smolts this ray is clear, while in most cohoes it has a white pigmentation.

The purpose of this paper is two-fold. First of all, we hope that it will aid our field personnel in making identifications where both kings and silvers occur in the same waters, and secondly we hope that it will stimulate field personnel to examine the characteristics described whenever the opportunity to do so arises. We would appreciate any reports which show that these characteristics do not hold true and would like samples of juveniles to accompany them, so that we may revise our thinking along these lines if it is necessary to do so. Thank you.

FIG. VII KING





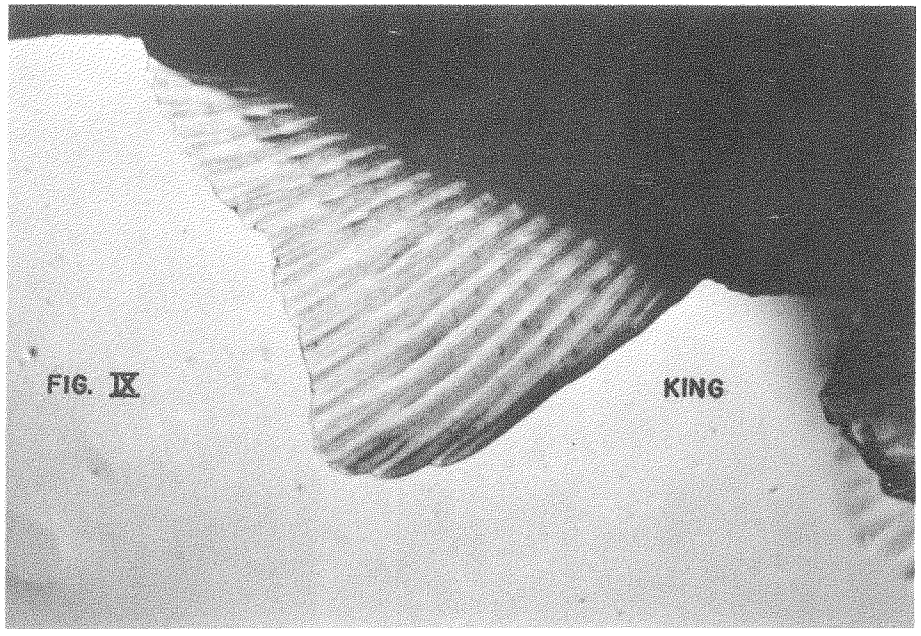


FIG. IX
KING

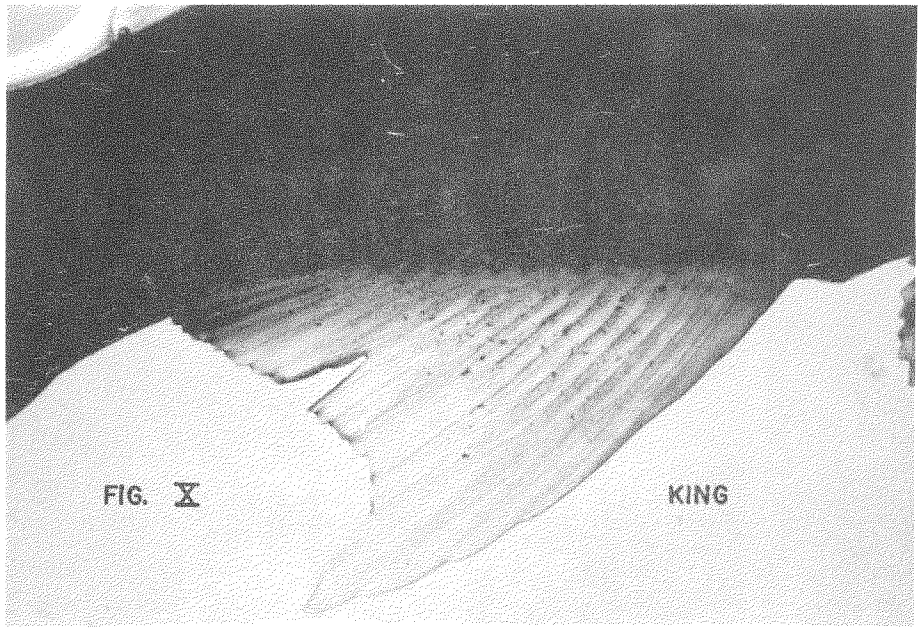


FIG. X
KING

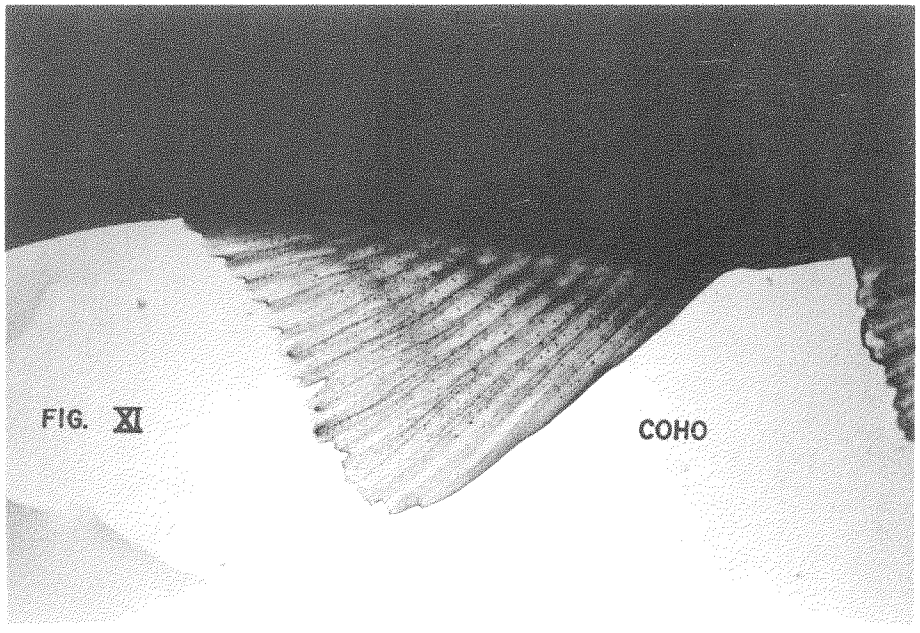


FIG. XI
COHO

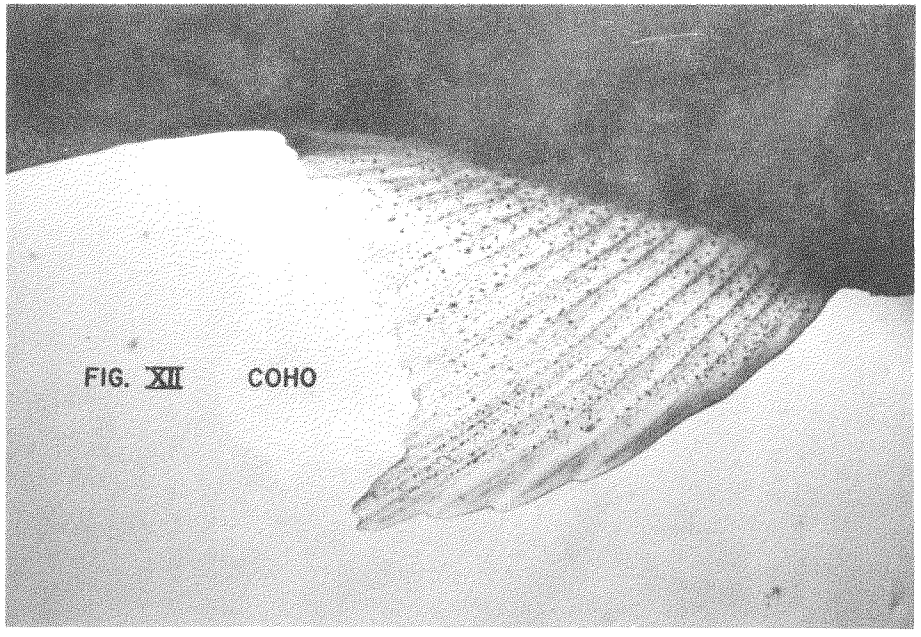


FIG. XII
COHO

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