

**SOME PRELIMINARY STUDIES ON RACIATION IN THE LONG
FINNED HERRING, *OPISTHOPTERUS TARDOORE*
(CUVIER) ALONG THE KANARA COAST**

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All important fisheries of the world are based on one or more often, several stocks. In the Pacific pilchard the entire population constitutes only one stock. In the Pacific halibut and salmon, on the other hand, it is composed of more than one stock. The present investigations on the long finned herring, *Opisthopterus tardoore*, were primarily aimed to determine whether the population of this species along the Kanara coast is composed of one homogeneous stock or whether it constitutes more than one stock. The results of these studies are reported here.

Four centres for the collection of samples were selected from the Kanara coast, viz., Karwar, Murdeshwar, Bhatkal and Mangalore, and measurements on several morphometric characters were taken on 695 fishes. Significance of differences between samples were tested by an analysis of covariance of thirteen different characters given in Table I. This method has been widely used in racial studies by several earlier authors (Godsil 1948, Roedal 1952, Sarojini 1957 and 1958, Schaefer 1955, Pillay 1959, Jayaram 1960).

Table I gives a summary of the results of the analysis of covariance in respect of regression of morphometric measurements on standard length. At first the samples of all the four localities were dealt together. Then, on the basis of the degree of significance, comparisons were made between the samples of different localities. It can be seen from the Table that when all the four localities are considered together, ten regressions on standard length showed highly significant differences (1% level). If as many as ten regressions out of thirteen show highly significant differences there is little doubt that the samples are heterogenous in nature. A further comparison of the regressions of three centres, Bhatkal, Murdeshwar and Mangalore, showed that the regressions of five characters are highly significant (Table I). This indicates that the samples from these places belong to different stocks. When the data from Bhatkal and Murdeshwar were compared, only the regression of two characters, namely, the head length and maximum body depth along the anal fin on standard length, showed highly significant difference but the regression of the remaining characters showed non-significant results. This indicates that the stocks from these two places have striking similarities and that these are more or less identical in nature. A further comparison of the data of Karwar and Bhatkal showed significant differences of nine characters on standard length and those of Karwar and Mangalore showed highly significant differences of seven characters

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on standard length (Table I). These results provide sufficient evidence that the fishery of this species is based on more than one homogeneous population. A further study on the raiation of this species with samples collected from many centres of the east and west coasts is clearly needed.

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TABLE I

Summary of the results of the analysis of covariance in respect of regressions of morphometric measurements on standard length between places

	Y ₁	Y ₂	Y ₃	Y ₄	Y ₅	Y ₆	Y ₇	Y ₈	Y ₉	Y ₁₀	Y ₁₁	Y ₁₂	Y ₁₃
All the four places combined	XX	XX	NS	XX	XX	XX	XX	XX	XX	NS	XX	XX	NS
Bhatkal, Murdeshwar, Mangalore	NS	XX	NS	XX	XX	XX	NS	NS	XX	NS	NS	NS	NS
Bhatkal, Murdeshwar	NS	XX	NS	NS	X	XX	X	NS	NS	NS	NS	NS	NS
Karwar, Bhatkal	XX	XX	NS	XX	NS	XX	X	X	XX	NS	XX	XX	NS
Karwar, Mangalore	XX	NS	NS	XX	NS	XX	XX	XX	NS	NS	X	XX	NS

NS = Not significant ; XX = Significant at 1% level; X = Significant at 5% level.

Y₁ = Total length ; Y₂ = Head length ; Y₃ = Length up to anus ; Y₄ = Body length ; Y₅ = Maximum body depth along the pectoral fin ; Y₆ = Maximum body depth along the anal fin ; Y₇ = Depth of caudal peduncle ; Y₈ = Interorbital space ; Y₉ = Eye diameter ; Y₁₀ = Length of maxillary ; Y₁₁ = Length of pectoral ; Y₁₂ = Upper jaw to the dorsal fin ; Y₁₃ = Height of head.

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