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ON THE IDENTITY OF THE EGGS AND LARVAE ASSIGNED TO THE SARDINE, *SARDINELLA SIRM* (WALBAUM)

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ABSTRACT

The note draws attention to the confusion that has been existing on the specific identity of the eggs and larvae which Delsman (1926) has assigned to *Sardinella (Amblygaster) leiogaster*, although a few workers like Chan (1965) and Whitehead (1973) have cogently documented all the three species under the subgenus. In the light of the present note, it is hoped that further statements that Delsman (1926) has assigned eggs and larvae to *S. sirm* shall not be repeated.

A perusal of literature, especially of the papers of John (1951), Nair (1960, 1973), Bensam (1971) and Lazarus (1987) shows that there has been some confusion existing in the identification of the eggs and early larvae of the two species of the sardine, *Sardinella (Amblygaster) sirm* (Walbaum) and *S. (A.) leiogaster* Valenciennes. In fact, even with regard to the identity of the adults themselves of these two species such a confusion has existed; and, in the words of Chan (1965), "many systematists have erroneously treated *Sardinella leiogaster* as a synonym of *S. sirm*". However, with the publication of the papers by Chan (1965), Whitehead (1973) and Fischer and Bianchi (1984), the confusion with regard to the identity of the adults has been cleared up. But, a perusal of the publications on the early developmental stages of these two species shows that the confusion with regard to the identity of their early developmental stages still persists; and hence the present note.

Among the three species of the subgenus *Sardinella (Amblygaster)*, Day (1878, 1889) has come across only one species and has name it as *Clupea (= Sardinella) leiogaster* Cuvier and Valenciennes (actually only Valenciennes, vide Jones, 1957). From the description of *Leiogaster* by Day (1878, 1889), especially from the presence of a longitudinal row of blue spots on the body, it is evident that the species documented by him is not *S. leiogaster* Valenciennes but is only *S. sirm* (Walbaum). The presence of the above spots is diagnostic of the latter species only, as these are not present either in the former species or in the third species of the subgenus, viz., *S. (A) clupeoides* (Bleeker), vide Chan (1965) Whitehead (1973) and Fischer and Bianchi (1984). Weber and Beaufort (1913) have documented all the three species for the first time. And, in the synonyms of *leiogaster* and *sirm*, they have pointed out that *Clupea leiogaster* of Gunther is not a single species but a combination of *leiogaster* Valenciennes and *sirm* Ruppell. Hence, the species *sirm* referred to by Misra (1953) appears to be not *leiogaster* Valenciennes but actually *sirm* (Walbaum). From the paper on the eggs and larvae of *S. sirm* by John (1951), it appears that due attention to the taxonomic position of the above species has not been given by him, as he calls the species as *sirm* (Ruppell). However, from the footnote on page 43 (John, 1951), it can be

seen that he was meaning only *sirm* (Walbaum) (=*leiogaster* of Day, 1889) and not *leiogaster* Valenciennes.

Delsman (1926) has assigned the egg type *'d '* which he has come across in Java as belonging to *Clupea* (=*Sardinella*) *leiogaster*. He has further stated that another three types of eggs, viz., *a*, *b* and *c* may belong to the three species *fimbriata*, *kanagurta* and *brachysoma* respectively of the same genus *Clupea*. It may also be seen from the paper of Delsman (1926) that the identity of the egg types *e* and *f* which he has collected in Java is not determined by him as he states in page 233 that these two types may belong to one or the other of ".... *Clupea clupeoides*, *Clupea sirm* and *Clupea longiceps*, perhaps still others. Further investigations, however, will have to decide the exact origin".

In the background of these facts, the statement of Lazarus (1987) in the sections of Introduction and Discussion that Delsman (1926) has described the eggs and larvae of *S. sirm* is not correct, as also similar contentions earlier by John (1951), Nair (1960, 1973) and Bensam (1971). As pointed out earlier, Delsman (1926) has assigned the egg type *"d"* only to *leiogaster;* and has only doubtfully stated that one or the other of the egg types *"e"* and *"f"* may belong to three or more species of *Clupea* occurring in Java, including *sirm*. Lazarus (1987) treats the eggs and larvae assigned by Delsman (1926) to *leiogaster* as those of *sirm* and lists out the similarities between the material assigned by him to *sirm* and by Delsman (1926) to *leiogaster*. From these similarities it appears as though the two materials dealt with by both Delsman (1926) and Lazarus (1987) may belong to one and the same species. Lazarus (1987) has drawn attention to the similarities between the ripe ova of *sirm* and the planktonic eggs which he has assigned to this species. It may be pointed out here that among the species of *Sardinella*, there are instances in which the ripe ovarian ova of two or more species may have the same range of characteristic features, as is known in *S. fimbriata* and *S. longiceps*. Besides, it may be stated here that the diameter of the eggs assigned by John (1951) to *S. sirm* is higher (2.12mm) than that of the eggs assigned by Delsman (1926) to *C. leiogaster* and by Lazarus (1987) to *S. sirm* (1.42 - 1.63 mm). It is hoped that with the present clarification, further statements that Delsman (1926) has assigned certian eggs and larvae to *S. sirm* will not be repeated. From these considerations it appears that a tangible stand on the identity of the eggs and larvae of *S. leiogaster* and *S. sirm* is possible only after the characteristic features of the ripe ovarian ova of *S. leiogaster* is also known. Thus, the foregoing aspects indicate that for a firmer separation of the eggs and early larvae of clupeiform fishes in tropical waters, such as in India, a thorough review and reappraisal of the taxonomic status of the species is an essential prerequisite.

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