

## ON THE SPECIFIC IDENTITY OF THE MALABAR SOLE

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### INTRODUCTION

ICHTHYOLOGISTS and fishery biologists are unaware of the inconsistency in the present-day scientific name applied to the Malabar Sole. The purpose of this paper is to point out the causes of the confusion in the nomenclature and to indicate the correct specific identity of the fish.

The Malabar Sole, which constitutes an important fishery along the West Coast of India, is often confused with *Cynoglossus semifasciatus* Day. Day (1877) in his *Fishes of India* described *Cynoglossus semifasciatus* from the Madras Coast and characterised it as a fish with 'two lateral lines on the coloured side, separated at their highest distance by 12 or 13 rows of scales'. Following Day, Alcock (1889) and Jenkins (1910) recorded the species from the Bay of Bengal. Norman (1928) in his revision of the flat-fishes of India re-described *C. semifasciatus* based on six specimens obtained from the east-coast of India and noted that in *C. semifasciatus* the lateral lines on the ocular side are separated by 12-14 series of scales and not 12 or 13 as Day observed.

Norman (*loc. cit.*, p. 204) considered *Cynoglossus hamiltonii* Günther described by Day (*loc. cit.*, p. 436) as distinct from *C. hamiltonii* Günther (1862). He described it as a new species under *Cynoglossus macrostomus*, basing his description on two specimens obtained from 'Calcutta and Orissa' and characterised it as having two lateral lines on the coloured side, divided by 15 or 16 rows of scales. Norman further observed that 'this species differs from *C. hamiltonii* Günther from Pinang in the larger head and the greater number of scales between the lateral lines' and cited 'Portuguese India? Orissa and Calcutta' as the range of distribution of his new species.

In 1947, Chabanaud described another species, *Cynoglossus luctuosus* basing on nine specimens sent to him by Dr. D. W. Devanesan from Tanur on the Malabar Coast and characterised it as having (14) 15 rows of scales between the lateral lines on the ocular side.

### SYSTEMATIC STATUS

The confusion in the correct identity of the so-called Malabar Sole *vis-a-vis* that of *C. semifasciatus* has been due to several causes. While Day, Alcock, Jenkins and Norman did not mention the West Coast of India in the habitat of *C. semifasciatus*, Chidambaram and Venkataraman (1946), Devanesan and Chidambaram (1948) and Seshappa and Bhimachar (1955) considered the West Coast species generally known as the Malabar Sole as conspecific with *C. semifasciatus* Day. For such a conclusion Seshappa and Bhimachar (*op. cit.*) relied on the study of their

material by Dr. K. S. Misra who after comparison of the type specimen of *C. semifasciatus* in the collection of the Zoological Survey of India concluded that 'in the Malabar specimens there are 17 series of scales between the two lateral lines on the ocular side, while in the Day's type specimen of *C. semifasciatus* there are 15-16 scales between the two lateral lines'. Since Norman (*loc. cit.*, p. 194) in the key to the species of *Cynoglossus* has placed *C. semifasciatus* in the group showing a range of 12-15 scales between the lateral lines Dr. Misra had assumed a wider range for *C. semifasciatus* in the number of transverse scales than given by Norman 'especially since the Malabar examples agree with the type specimen in all other characters'. Evidently he counted the inter-linear scale rows in the type specimen of *C. semifasciatus* quite differently from Day and Norman. Neither of these workers noted such a high inter-linear scale rows of 15-16 for *C. semifasciatus*. I have re-examined the type of *C. semifasciatus* and found only 14 rows of scales between the lateral lines.

Recently in connection with my revisional studies on *Cynoglossus* I have had the opportunity of examining extensive collections of *Cynoglossus* from the Malabar Coast trawled by the 'Anton Bruun' and preserved in the Smithsonian Oceanographic Sorting Centre, Washington D.C. I have also examined the types of *Cynoglossus macrostomus* Norman, and *C. semifasciatus* Day in Zoological Survey of India and *C. luctuosus* Chabanaud in the British Museum, London. As a result of these investigations I have been able to come to the conclusion that the species generally considered as the Malabar Sole should bear the name *Cynoglossus macrostomus* Norman, this name having priority over *C. luctuosus* Chabanaud, and *C. semifasciatus* Day is the common species of the East Coast of India. In order to facilitate the identification of the Malabar Sole a detailed description of *Cynoglossus macrostomus* Norman is given below:

#### DESCRIPTION

##### *Cynoglossus macrostomus* Norman

*Cynoglossus hamiltonii* (nec. Günther), Day, 1877, *Fish. India*, p. 436, pl. 95, fig. 3.

*Cynoglossus macrostomus* Norman, 1928, *Rec. Indian Mus.*, 30, 204, fig. 20.

*Cynoglossus luctuosus* Chabanaud, 1947, *Ann. Mag. Nat. Hist.* (11) 14, 813.

*Cynoglossus semifasciatus* (nec. Day), Seshappa and Bhimachar, 1955, *Ind. J. Fisheries*, 2, 183. Saramma, 1963. *Bull. Mar. Biol. Ocean. Univ. Kerala*, 1, 77.

*Specimens examined*: 1, 121.0 mm. from Calcutta, ZSI 1460 (Holotype of *C. macrostomus*), Coll. F. Day. 1, 122.5 mm. from Orissa, B.M. 1889.2.1.4074 (Paratype of *C. macrostomus*) Coll. F. Day. 2, 60.0-101.0 mm. from Marmagoa Bay, Portuguese India, ZSI 143, Coll. S.W. Kemp, 1928. 4 (Juvenile), from Marmagoa Bay, Portuguese India, ZSI 173-6, Coll. S.W. Kemp, 1928. 2 (Juvenile), from Marmagoa Bay, Portuguese India, ZSI 181-2, Coll. S.W. Kemp, 1928. 1 (Juvenile) from Marmagoa Bay, Portuguese India, B.M. 1928-3.20.132, Coll. S.W. Kemp, 1928. 1, 133.0 mm., from Tanur, B.M. 1932.2.6.8. (Holotype of *C. luctuosus*) Coll. D. W. Devanesan. 8, 106.0-138.0 mm., from Tanur, B.M. 1932.2.6.1-7, 9 (Paratype of *C. luctuosus*) Coll. D. W. Devanesan. 23, 90.0-136.0 mm., from Neendakarai, Lat. Ca. 08° 56'N, Long. Ca. 76° 30'E, SOSC, Coll. 'Anton Bruun',

8-10-66. 1, 96.0 mm. from Cochin-Ernakulam area, Lat. 10° 00'N, Long. Ca. 76° 12'E. SOSC, Coll. 'Anton Bruun' 7-10-66. 17, 101-138 mm. from Cochin, Kerala, Lat. Ca. 10° 00'N, Long. Ca. 76° 08'E, 10 fms. SOSC, Coll. 'Anton Bruun'. 1, 96.0 mm. from Calicut, ANSP 74855, Coll. Madras Fisheries, 1927. 4, 112.0-129.0 mm. from Calicut, ZSI, Coll. Central Marine Fisheries Institute, Mandapam Camp. 1, 98.0 mm. from Karwar, ZSI, Coll. K. K. Tiwari. 6, 113.0-129.5 mm. from Betul, Goa, ZSI Coll. K. S. Pradhan.

Description based on forty specimens, 90-138 mm. S.L., including the holotypes and paratypes of *C. macrostomus* Norman and *C. luctuosus* Chabanaud.

Depth of the body 23.11-28.33 (M=25.89) per cent of standard length, length of head 23.97-30.83 (M=26.39) per cent.

Eyes moderately big, erectile and somewhat pedunculate when erected, placed near to each other but not contiguous, the inter-orbital space scaly, diameter of eye 5.56-10.43 (M=7.59) per cent of head, inter-orbital 1.39-4.11 (M=2.94) per cent. Migratory eye in advance of fixed eye by a third of the diameter of the latter. Anterior nostril of the eyed side tubular, on the upper lip in front of vertical through the anterior border of the migratory eye and far in front of the fixed eye. The posterior nostril of eyed side is a simple opening whose anterior border is placed perpendicular to that of the anterior border of the migratory eye and posterior border somewhat in front of the middle of the inter-orbital space. Two nostrils on the blind side, the anterior tubular one on the anterior half of the upper lip, the posterior opening at a level higher and above posterior half of upper lip, the inter-nostril space about 2 times in the distance between the posterior nostril and angle of mouth. Snout prominent, obtusely rounded 30.85-36.84 (M=33.32), rostral hook short, and extending to about vertical through the front of the anterior tubular nostril.

Angle of mouth extends far back posterior margin of fixed eye, the distance between the corner of mouth and the posterior border of fixed eye is more than the diameter of the latter, angle of mouth nearer to snout than to branchial opening; snout to angle of mouth 35.29-47.50 (M=40.94) per cent of head, angle of mouth to branchial opening 43.55-62.07 (M=57.48) per cent.

*Scales*: Ctenoid on both sides. Two lateral lines on eyed side, dorso-lateral line curves on to dorsal fin at about a short distance from the caudal base, mid-lateral line<sup>1</sup> with 80-92 (M=83), 14-16 (M=15) series between upper and middle lateral line. No lateral line on blind side.

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|--------------------|----|----|----|
| Interlinear Scales | 14 | 15 | 16 |
| Frequencies        | 13 | 17 | 10 |

Abbreviations used are: ZSI, Zoological Survey of India. B.M., British Museum (N.H.). SOSC, Smithsonian Oceanographic Sorting Centre. ANSP, Academy of Natural Science, Philadelphia.

The localities mentioned are as indicated on the labels and the measurements are in standard length of the fish.

<sup>1</sup> Mid-lateral line scale count here given refers to the number of oblique rows from the upper angle of the opercle to the caudal base counted along the mid-lateral line.

*Fins*: Dorsal with 100-106 (M=103) rays, anal with 78-84 (M=80), caudal 10.

*Vertebrae*: 47-51. Comprising 9 abdominal and 38-42 caudal elements in 23 specimens (radiographs).

*Colour*: In alcohol, the eyed surface light brownish with dark brown mottling on it giving the appearance of several irregular narrow transverse bands. Fins blackish on both faces of body.

*Size*: The largest specimen examined, from Cochin, Lat. Ca. 10° 00'N, Long Ca. 76° 08'E, trawled by 'Anton Bruun' on 7th Oct. 66, is 154.0 (138+16) mm. long. It is known to grow to a maximum size of about 175.0 mm. (*vide* Seshappa and Bhimachar, *op. cit.*).

*Distribution*: Seas and estuaries of India.

*Affinities and diagnosis*: *C. macrostomus* is closely related to *C. semifasciatus*, particularly with regard to the extension of the maxillary beyond the posterior border of fixed eye, the moderately big eyes, the nature of the lateral line system and the vertebral and the fin-ray counts. *C. macrostomus* is, however, easily distinguished by its larger number of interlinear 14-16 (M=15) *ef.* 11-14 (M=12) and mid-lateral line 80-92 (M=83) *ef.* 70-78 (M=75) scale row counts, the more elongated nature of the body, longer head and colouration (*vide* Plate I, figs. 1 to 4).

#### ACKNOWLEDGEMENTS

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#### V. SUMMARY

Day described *Cynoglossus semifasciatus* from the sea at Madras and Alcock, Norman and Jenkins recorded the species from the Bay of Bengal. None of them indicated West-Coast of India in the habitat of this species. Fishery biologists, however, considered the so-called Malabar Sole conspecific with *C. semifasciatus* overlooking the descriptions of *C. macrostomus* Norman and *C. luctuosus* Chabanaud, the former from the Gangetic estuaries and the latter from Tanur on the Malabar Coast. Examination of huge collections of the Malabar Sole recently trawled by 'Anton Bruun' and the types of *C. semifasciatus*, *C. macrostomus* and *C. luctuosus* has revealed that the species commonly known as the Malabar Sole is the same as *C. macrostomus* Norman. A detailed description of *C. macrostomus* is given.

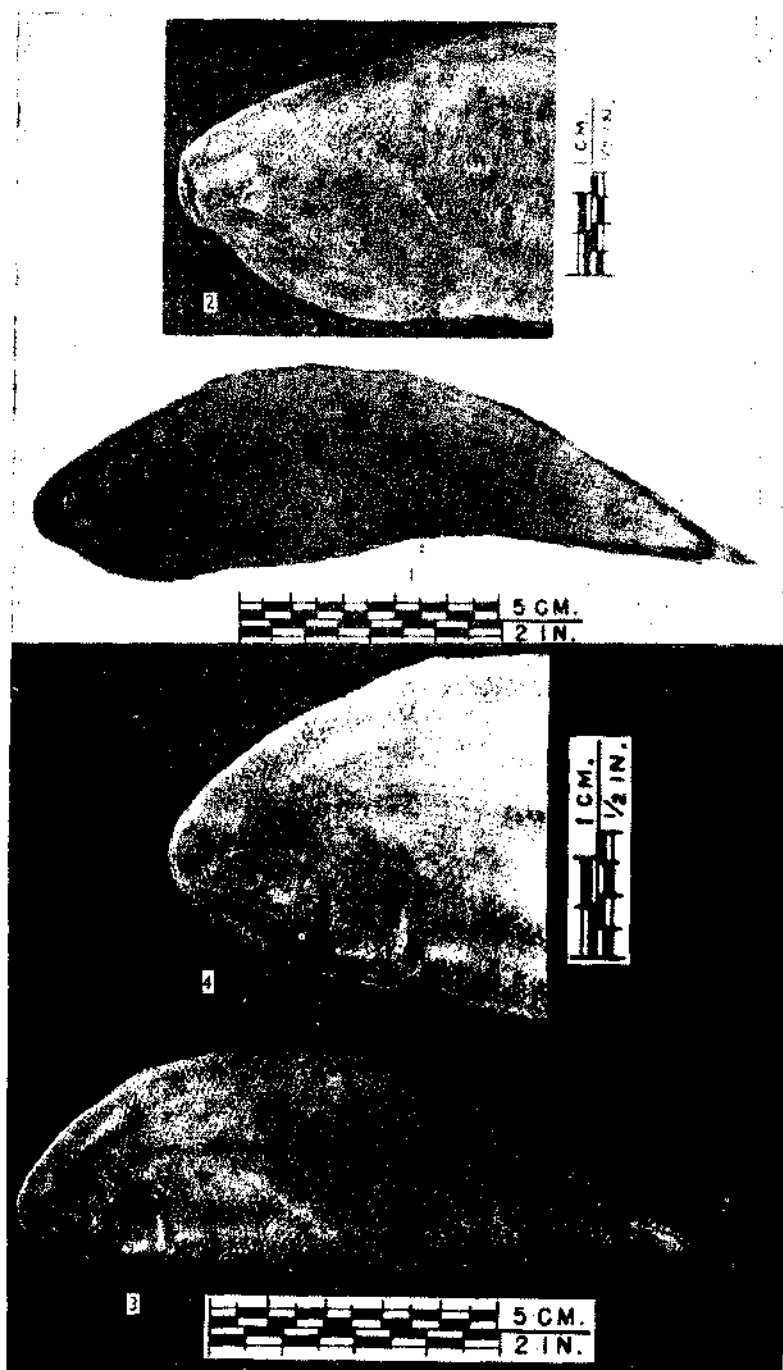


PLATE I. FIG. 1. *Cynoglossus macrostomus* Norman, 127.0 mm. S.L., from Arabian Sea, off Neendakarai, Kerala.

FIG. 2. Left side of head of fig. 1.

FIG. 3. *Cynoglossus semifasciatus* Day, 115.0 mm. S.L., from Bay of Bengal, off Thirumulli Vasal Village, 26 miles south of Porto Novo, Madras State.

FIG. 4. Left side of the head of fig. 3.

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