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A NOTE ON THE SYSTEMATIC POSITION OF TWO SILUROID FISHES, *OMPOK PABDA* (HAM.) AND *OMPOK BIMACULATUS* (BLOCH)

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ABSTRACT

The salient osteological characters and its variations in skull, pectoral girdle, vertebral column, gill-rakers and anal fin of two Siluroid fishes, *Ompok pabda* (Ham.) and *O. bimaculatus* (Bloch.) are recorded. Importance of osteological characters in evaluating the exact taxonomic status of the species is discussed.

INTRODUCTION

Hora (1936), Haig (1952) and Misra (1959) considered *Ompok pabda* (Ham.) and *Ompok bimaculatus* (Bloch) as synonymous. Parameswaran *et al.* (1967, 1971) on the other hand adduced evidence on the basis of the bionomics of the two species, that they are different.

In order to verify whether the differences observed in the bionomics are reflected in the morphological make up of the species, some osteological investigation were made as has been done by Jayaram (1954, 1971), Tilak (1963, 1967), Seshagiri Rao (1974), Dutt and Reddy (1975). Significant differences were noticed in the characters of skull, pectoral girdle, vertebral column, gill-rakers and anal-fin. The salient features and variations which are of specific importance are enumerated here.

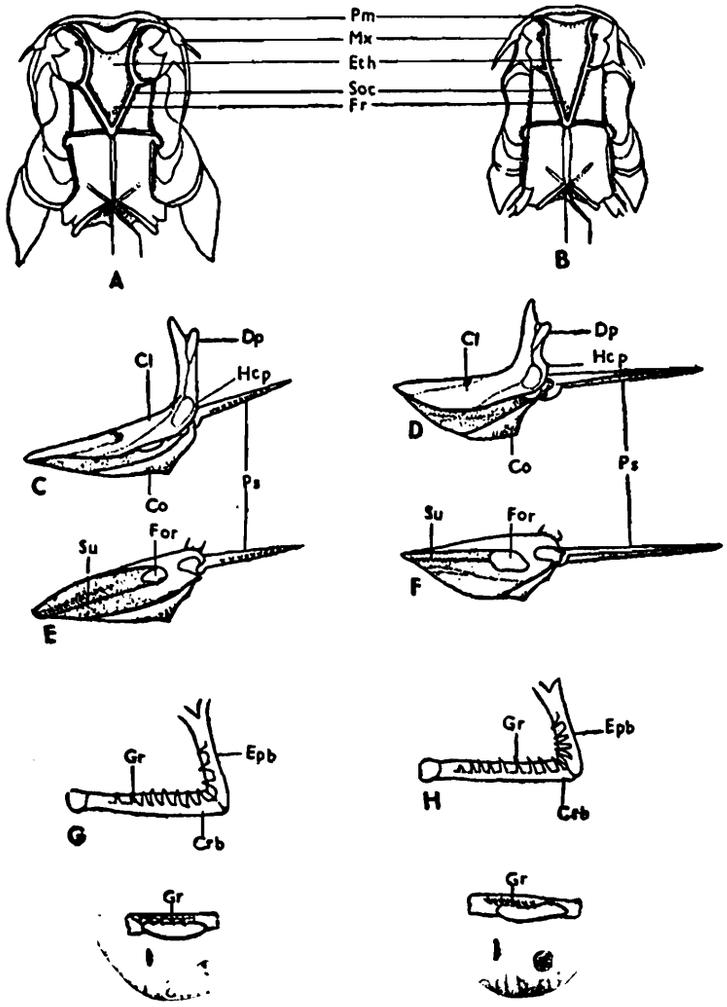
OBSERVATIONS

Skull (1) *Ethmoid* (Fig. 1A-B). It is a median anteriorly situated T-shaped bone articulating with the premaxillaries on the ventral side. Its anterior margin is deeply excavated in *O. pabda* (Fig. 1A) while emarginate *O. bimaculatus* (Fig. 1B).

(2) *Supra-Orbital canal* (Fig. 1A-B Soc) The lateral line system runs anteriorly into sensory canals on the head and are superficially placed below the skin. These are cartilaginous tubular canals running on the head and lodged in the dermal bones at some places and loose at others having external openings. They start from the base of the frontal bone and run anteriorly diverging gradually ahead along the nasal bones and are symmetrically disposed on either side. In the nasal region these are loosely attached to the dermal bones. The disposition of the supra-orbital canal differs in the two species and has been found to be consistent. In *O. pabda* it forms a vase shaped (Fig. 1A) structure with a long and concave neck. In *O. bimaculatus* it forms a more or less thistle or funnel shaped (Fig. 1B) structure having a tampering truncated cone. It has a small neck. This variation is

also noticed in young specimens. *Pectoral girdle* (Fig. 1C-F). It is well ossified, stoutly built and conspicuous by its elongated cleithral process (Tilak 1963 *a*). The cleithrum is large and well ossified while the coracoid is a broad and dagger-shaped bone attached to the ventral side of the cleithrum. The cleithrum has a dorsal process which is an upward prolongation of the lateral part. It is broad at its base and tapers towards its extremity with two terminal processes. On the posterior border at about its middle, the humero-cubital process (Fig. 1C) is given off which is very much reduced in the genus (Tilak 1963a). This process in *O. bimaculatus* is clearly distinguishable while in *O. pabda* it is absent.

The coracoid is suturally united with the cleithrum in most of its length in both the species, except at proximal base where they leave a large foramen in between. The suture in *O. bimaculatus* starts from the middle of the frontal margin of the foramen while in *O. pabda* it is in continuation with the lower margin of the foramen.



Eth. —Ethmoid
Soc. —Supra Orbital Canal
Fr. —Frontal
Mx. —Maxillary
Pm. —Premaxillary
Cl. —Cleithrum
Co. —Coracoid
D.p. —Dorsal process
P.s. —Pectoral spine
H.c.p. —Humero cubital process
Su. —Suture
For. —Foramen
Epb. —Epibranch
Crb. —Ceratobranch
G.r. —Gill raker

Fig. 1.A. Dorsal view of Skull of *O. pabda*.
B. Dorsal view of skull of *O. bimaculatus*.
C & E. Dorso-lateral and lateral (oeter) view of Pectoral girdle of *O. Pabda*.
D & F. Dorse-lateral and lateral (outer) view of girdle of *O. bimaculatus*.
G & I. First and fifth gill arch of *O. pabda*.
H & J. First and fifth gill arch of *O. bimaculatus*..

As common in all siluroids (Tilak 1963a) the scapula is absent and the cleithra and coracoids do not form a symphysis but simply meet each other at their tips which are pointed.

The length and breadth ratio of the girdle has also been found to differ in the two species. In *O. pabda* the length is nearly thrice to that of its maximum breadth and in *O. bimaculatus* it is more or less twice.

The length of pectoral spine in relation to pectoral girdle also differs. In *O. bimaculatus* it is equal to the pectoral girdle while in *O. pabda* it is 2/3 to 3/4 of the girdle length. Further, the pectoral spine in *O. bimaculatus* is comparatively much strong and stout than in *O. pabda.*

Vertebral column : The number of vertebrae significantly varies in the two species. Total numbers of vertebrae including Urostyle ranges between 45 to 47 in *O. pabda* and 51 to 53 in *O. bimaculatus.*

Gill rakers : (Fig. 1G-J) The gill rakers are present only on ceratobranch and epibranch region of the gill arches in the two species. The gill rakers are in the form of spines. These rakers are clearly bony and there is only one row of it on the outer part of 1st and 2nd gill arch. There is variation in the shape and number of gill rakers particularly in 1st gill arch in the two species. These rakers are in the form of hooks curved at the tips in *O. pabda* while in *O. bimaculatus* they are simple and straight. In a few adult specimens of *O. pabda* bifid rakers are also noticed on ceratobranch of 1st gill arch.

The 1st and 5th left gill arches of *O. bimaculatus* bear 14 and 8 rakers on their outer margins respectively. In case of *O. pabda* the numbers are 11-12 on 1st and 5 on 5th gill arches. There is no overlapping of rakers particularly on the 5th gill arch and this is of considerable specific value in seperating the two species.

Anal sheath : The prolongation of the integument on the anal fin covers nearly 2/3 of the anal fin rays in *O. bimaculatus.* In the case of *O. pabda* it covers 1/3 of the anal fin rays.

DISCUSSION

Jayaram and Bhimachar (1967) reviewed the importance of osteological characters and have shown how these characters are useful in solving the problem of species complex in a genus. Tilak (1967) listed the important features of taxonomic value in Weberian ossicles and osteocranium. Deep concavity on the anterior margin of the ethmoid bone has been found to vary in the two species as stated above. Although not mentioned in the text it is evident from the illustrations given by Jayaram and Bhimachar (Op. cit. fig. 1) that similar variation is found in the two species of *M. aor* and *M. seenghala.*

Infra-orbitals have been enlisted by Tilak (Op. cit) as useful in taxonomy but arrangement of supra-orbitals has not been considered up till now. We have found that these characters are not variable and the emargination of ethmoid and dispostion of supra-orbitals in the two species remain constant irrespective of age.

Regan (1911) and Tilak (1963a) recognised the importance of pectoral girdle in distinguishing the families in siluroids. Tilak (Op. cit) extended this even upto specific level in some siluroids. The relative length of pectoral spine is also a very important one. Ford (1937) Clothier (1946 & 1950) and Lindsay (1962) made some studies on the variation in vertebral counts and other vertebral characters. Consideration of the vertebral count has shown that this number

varies in two species and there is no overlapping.

In recent years gill rakers have drawn the attention of fish taxonomists (Regan, 1917 ; Dutt, 1959, 1963 ; Seshagiri Rao, 1974 ; Dutt and Reddy, 1975). The left 1st gill arch has been found to be of value in evaluating the status of a species. Our study on the rakers of gill arches shows that the 1st as well as the 5th left gill arches have the same specific value. The 5th gill arch has more stable number of rakers than the 1st.

Anal fin rays covered by integument for more than half of their length was considered as a characteristic feature of genus *Silurus* by Haig (1952), but as pointed out by Parmeswaran *et al.* (1967) her study was based on a heterogenous collection of *Ompok bimaculatus* and *O. pabda*. This is a character of specific value rather than a generic one.

As such it is clear that *O. pabda* is a separate and a valid species.

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