

ON A LITTLE KNOWN INDIAN COBITID FISH, *ENOBARBICHTHYS
MACULATUS* (DAY)*

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INTRODUCTION

IN 1867 Dr. Francis Day described a small loach from Madras as *Platacanthus maculatus*, with a characteristic long dorsal fin composed of 30 rays. However, the type of the genus *Platacanthus* Day (1865), namely, *P. agrensis* Day is a synonym of *Lepidocephalus thermalis* (Valenciennes), which is characterised by a very short dorsal fin with only 9 rays. This naturally restricted *Platacanthus* Day to the synonymy of *Lepidocephalus* Bleeker and hence Day (1870) proposed the generic name *Jerdonia* to accommodate the second species *Platacanthus maculatus*, defining the genus as 'Body elongated. Barbels eight, one rostral, two maxillary and one mandibular pairs. A free bifurcated suborbital spine. Dorsal fin elongated (thirty rays). Internal pectoral rays osseous. Origin of anal slightly posterior to the termination of the dorsal.'

Unfortunately, the name *Jerdonia* is preoccupied in Malacology (Blandford, 1861), and in Ornithology (Hume, 1870), a situation of which Day himself was probably aware of, as in his monographic series on Indian Cyprinidae (Day, 1872 : 179) in a foot-note under the genus *Jerdonia* there appears an editorial comment that 'This name has been also applied in conology and Ornithology.' Hence, in accordance with the Rules of Zoological Nomenclature, Whitley (1931) proposed the name *Enobarbichthys* to replace *Jerdonia* Day, with *Platacanthus maculatus* Day as the type, and thus far the genus is monotypic.

Besides Day's account of this loach based on a single specimen, nothing more is known about it. Hence it is felt desirable to record here some additional data I was able to gather by re-examining the holotype in the collection of the British Museum (Natural History) in September 1956.

Enobarbichthys maculatus (Day)

Platacanthus maculatus Day, 1867. *Proc. Zool. Soc. London*, 941-942 (Type locality : Madras, India).

Jerdonia maculata Day, 1870. *Proc. Zool. Soc. London*, 700 (1871) (New genus proposed to accommodate *P. maculatus* Day); 1872. *Journ. Asiat. Soc. Bengal*, 42(2) : 179 (Description); Beaven, 1877. *Handbook Freshw. Fish.*

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India, 113 (Diagnosis after Day) : Day, 1878. *Fish. India*, 611, pl. cliv, fig. 6; 1889. *Faun. Brit. India, Fish*, 1 : 223, fig. 82.

Enobarbichthys maculatus Whitely, 1931. *Rec. Aust. Mus.*, 18 : 107 (Nomenclatorial change only).

Material:

Holotype—British Museum (Nat. Hist.) No. 68. 10. 27. 36 labelled as collected by Dr. Day from Madras.

Meristic Counts:

D. iii, 28; P₁, i, 5, I (Fused rays); P₂, i, 7; A. iii, 5; C. i, 21, i. My counts of the holotype slightly differ from those made by Day, which are : D. iii, 27; P₁, 5, I; P₂, 8; A. iii, 6; C. 21.

Measurements:

TABLE I

| Characters | Milli-metres | Thousandths of standard length |
|---|--------------|--------------------------------|
| Standard length..... | 38.00 | |
| Length of head..... | 8.00 | 210 |
| Width of head..... | 3.50 | 92 |
| Diameter of eye..... | 2.00 | 53 |
| Length of snout..... | 3.00 | 79 |
| Inter-orbital distance..... | 1.75 | 46 |
| Inter-nasal distance..... | 1.25 | 33 |
| Height of head at occiput..... | 5.50 | 144 |
| Length of suborbital spine..... | 1.00 | 26 |
| Greatest height of body..... | 7.00 | 184 |
| Width of body..... | 3.00 | 79 |
| Length of caudal peduncle..... | 3.50 | 92 |
| Least height of caudal peduncle..... | 5.00 | 131 |
| Tip of snout to origin of dorsal..... | 17.00 | 447 |
| Height of dorsal..... | 6.75 | 178 |
| Length of base of dorsal..... | 13.25 | 349 |
| Tip of snout to origin of pectoral..... | 9.00 | 237 |
| Tip of snout to origin of pelvic..... | 21.00 | 553 |
| Tip of snout to origin of anal..... | 30.00 | 789 |
| Origin of pectoral to that of pelvic..... | 11.75 | 309 |
| Origin of pelvic to that of anal..... | 9.50 | 250 |
| Height of anal..... | 6.00 | 158 |
| Base of anal..... | 4.50 | 118 |
| Length of pectoral..... | 7.50 | 197 |
| Length of pelvic..... | 6.50 | 171 |
| Length of caudal..... | 10.00 | 263 |

Colouration:

The colour of this specimen was given by Day (1867) as being 'Greyish, becoming dirty white below the centre of the body. A dark line passes from the eye to the centre of the tail. Along its first half are six black spots, whilst the whole extent of the back is irregularly lineated. Fins yellowish. Dorsal with four darkish bands

along it. Caudal with three bands and a black margin. A black mark at the base of the tail, with a smaller one above and another below it. Much of this pretty pattern has disappeared in the specimen due to long preservation. However, a conspicuous black spot similar to the one seen at the upper part of the base of the caudal fin in *Lepidocephalus thermalis* is present in the specimen (Fig. 1). The lateral band from the posterior margin of the eye to the base of the caudal fin is faintly discernible.

Scale Structure:

But for the remarks that 'scale minute, covering body' (Day, 1867), and 'Scales small, but distinct' (Day, 1872), nothing more is known about them. I find that as in *Lepidocephalus* the scales are non-deciduous. I have been able to examine a few typical scales of this specimen from the side of the body below the insertion of the dorsal fin and above the mid lateral line and the details are summarised in Table III, and two of the scales are figured (Plate, figs. A & B). Distinctive features are the shape which is oblong, markedly longer than broad; the basal position of the nucleus and the more numerous complete and incomplete radii. A scale from another part of the body just above the middle of the pectoral (size 0.628×0.513 mm.) has an unusually large number of radii, the counts being 22 complete and 2 incomplete basal radii; 21 complete and 3 incomplete apical radii; 8 and 3, and 7 and 3 complete and incomplete lateral radii on either side. However, the number of basal and apical circuli remains less variable, the numbers being 9 and 22 respectively.

The shape and sculpturing of the scales of *E. maculatus* show affinities to that of *Lepidocephalus thermalis*, but distinctly differ from the condition seen in the cobitid genera *Botia*, *Noemacheilus*, etc. As such, the scales from an identical area of a specimen of *L. thermalis*, 38 mm. in standard length were also examined and to facilitate comparison, the details of 9 such scales taken at random from the selected area are given in Table III, and one figured (Plate, fig. C). The scales of *E. maculatus* are larger and relatively longer than broad when compared to those of *L. thermalis* as will be seen from Table II.

TABLE II

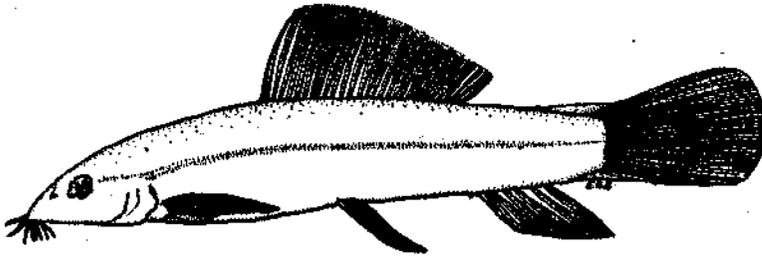
| Species | No. of scales | Length (mm.) | | Width (mm.) | |
|---|---------------|-----------------|---------|-----------------|---------|
| | | Range | Average | Range | Average |
| <i>Enobarbichthys maculatus</i> (Day) | 6 | 0.571- 0.742 | 0.637 | 0.342- 0.399 | 0.380 |
| <i>Lepidocephalus thermalis</i> (Valenciennes) | 9 | 0.456- 0.571 | 0.526 | 0.342- 0.399 | 0.380 |

The nucleus is basal and well defined in *L. thermalis*, and in addition it has relatively fewer radii, especially in the apical region and also fewer basal and apical circuli, while the number of incomplete lateral radii are greater than in *E. maculatus*.

TABLE III

| Scales No. (Length × Width) in mm. | Basal Radii | | Apical Radii | | Lateral Radii | | | | Basal Circuli (Maximum Number) | Apical Circuli (Maximum Number) |
|--|----------------|--------------|------------------|------------|---------------|---------------|---------------|--------------|---|--|
| | Complete | Incomplete | Complete | Incomplete | Left | | Right | | | |
| | | | | | Complete | Incomplete | Complete | Incomplete | | |
| 1. (0.571 × 0.342) | 9 | 4 | 13 | 1 | 4 | 4 | 3 | 2 | 9 | 21 |
| 2. (0.571 × 0.399) | 12 | 2 | 13 | 2 | 4 | 2 | 4 | 2 | 10 | 22 |
| 3. (0.685 × 0.399) | 9 | 2 | 14 | 1 | 5 | 2 | 4 | 2 | 10 | 22 |
| 4. (0.685 × 0.399) | 14 | — | 15 | — | 5 | — | 4 | 2 | 10 | 21 |
| 5. (0.742 × 0.399) | 10 | 2 | 14 | — | 5 | 3 | 6 | 2 | 10 | 25 |
| 6. (0.571 × 0.342) | 10 | 2 | 12 | 4 | 5 | 1 | 5 | 2 | 9 | 22 |
| Range and (Average) <i>Enobarbichthys</i> <i>maculatus</i> (Day). (Standard Length 38 mm.) | 9—14 (10.6) | 2—4 (2.4) | 12—15 (13.01) | 1—4 (2) | 4—5 (4.63) | 1—4 (2.4) | 3—6 (4.33) | 2 (2) | 9—10 (9.66) | 21—25 (22.16) |
| Range and (Average) For 9 scales of <i>Lepi-</i> <i>docephalus ther-</i> <i>malis</i> (val.) (Standard Length 38 mm.) | 9—12 (10.1) | 2 (2) | 8—11 (9.5) | 1—3 (2) | 2—5 (3.33) | 2—4 (3.11) | 2—5 (3.77) | 1—5 (3.0) | 8—10 (8.66) | 18—20 (19.1) |

¹ Scales of both the species were taken from an identical place below the insertion of the dorsal and above the mid-lateral line.



Enobarbichthys maculatus (Day). Lateral view of holotype 38 mm. in standard length. x2.

Habits:

The observations of Day (1867 : 942) on some habits of this interesting loach are worth reiterating. He remarks that 'This pretty loach was kept upwards of a month in a vase of water. When at rest it usually remained on the sand or rock work supported by its two pectoral and anal fins, its abdomen not touching the ground. When frightened it burrowed under the sand with great rapidity. It consumed animal or vegetable food indifferently and grew considerably while in confinement.' Whether the fused inner pectoral rays has anything to do with sexual dimorphism as in *Lepidocephalus thermalis*, in which the male has a similar development, is not known. If this is not the case it may represent a functional adaptation of the animal to help it to rapidly burrow under the sand. But if so, it is enigmatic why the inner and not the outer pectoral rays should show such modifications. The stance it takes while at rest is reminiscent of certain burrow dwelling gobies which remain at the entrance of burrows in a slanting position supported by the tips of the pectoral and anal, the rays of the latter fin also being generally elongate as in *E. maculatus* in which when adpressed it reaches the base of the caudal. It is interesting that there is no mention in Day's above cited reference to this fish normally ever showing restlessness and ascending to the surface of the water to gulp in atmospheric air, a conspicuous behaviour of species of *Lepidocephalus*.

Affinities:

In the possession of the bifurcate suborbital spine *Enobarbichthys* differs from the cobitid genera *Noemacheilus*, *Aborichthys*, *Misgurnus*, etc. However, this character is shared by several other genera including *Botia*, *Apua*, *Acanthopsis*, *Acanthopthalmus*, and *Lepidocephalus*, but the usually long dorsal fin of *Enobarbichthys* with 31 rays easily sets it apart from all these genera. As already mentioned, the scale characteristics show divergence from that of *Botia*, as given by Hora (1922), and also that of *Adiposa*, as given by Hora and Annandale (1920), while they appear to be more akin to that of *Lepidocephalus*. The two known species of the genus *Vaillantella* Fowler, namely *V. euepipterus* (Vaillant), and *V. maassi* Weber & de Beaufort from Borneo and Sumatra respectively are characterised by over 60 dorsal rays and unlike *Enobarbichthys*, the suborbital spine is also absent. In short, external morphological characters indicate *Enobarbichthys* to be more allied to *Lepidocephalus* than to any other cobitid genus. Efforts should be made to rediscover this rare fish which is thus far known only from a single specimen.

In conclusion it may be mentioned that in the classification of the Cobitidae, the differentiation of species in certain genera have always confronted the taxonomist

with several problems. It would appear that wherever possible, the study of the scale characteristics of such species may aid in taxonomic discrimination.

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A-B.—Scales from the side of the body below the insertion of the dorsal fin and above the midlateral line of the holotype of *Enobarbichthys maculatus* (Day); C.—Scale from an identical position of *Lepidocephalus thermalis* (Valenciennes), 38 mm. in standard length.