

A NEW GENUS OF SCHILBEID CATFISHES FROM THE DECCAN (INDIA).¹

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INTRODUCTION.

During one of the fish collecting expeditions to locate sources of fry and fingerlings suitable for pond culture, a peculiar catfish, with prominent teeth on the undersurface of its tapering snout, was discovered in the Krishna river in the Satara District. Occurrence of such external teeth in catfishes appeared rather unusual. Superficially, the fish resembled *Pseudeutropius acutirotris* (Day) of the Irrawaddy river, but closer examination of the vomero-palatine teeth and its air-bladder revealed that it belonged to a new genus in the Schilbeid group. Hora's (1941) exhaustive treatment of this group of fishes confirmed my results.

The new genus is designated as *Neotropius* and the species as *Khavalchor*, the specific name having been derived from its local name in the type locality. The genus and species are described in detail in the following notes.

Genus NEOTROPIUS nov.

Diagnostic features.—Fishes of the Schilbeid type with eight barbels and a tapering snout having teeth on its under surface. Head moderately small and depressed. Branchiostegals nine. Mouth inferior, jaws being comparatively wide like Euselachian jaws. Cleft of the mouth hardly reaching below the anterior orbital margin. Eyes large and without adipose lids. They are situated behind and above the angle of the jaw and are partly on the inferior surface of the head. Nostrils patent; the posterior ones more or less longitudinally disposed and considerably apart. The anterior ones tubular and situated near the edge of the snout. Vomero-palatine teeth in separate patches. Vomerine teeth in a continuous crescentic band covering a wide area on the palate. Palatine teeth in two small patches on either side, widely separated from the vomerine. Barbels eight in number; two nasals, two maxillary and four mandibular. Mandibular barbels arise close to the margin of the lower jaw and their basis are almost in a transverse line. Nasal barbels arise at the base of the posterior nostrils. A comparatively small dorsal fin with a short serrated spine and five or six rays. A small adipose fin also present. Pectoral spine truncate, ending abruptly into a curved denticulation and serrated internally.

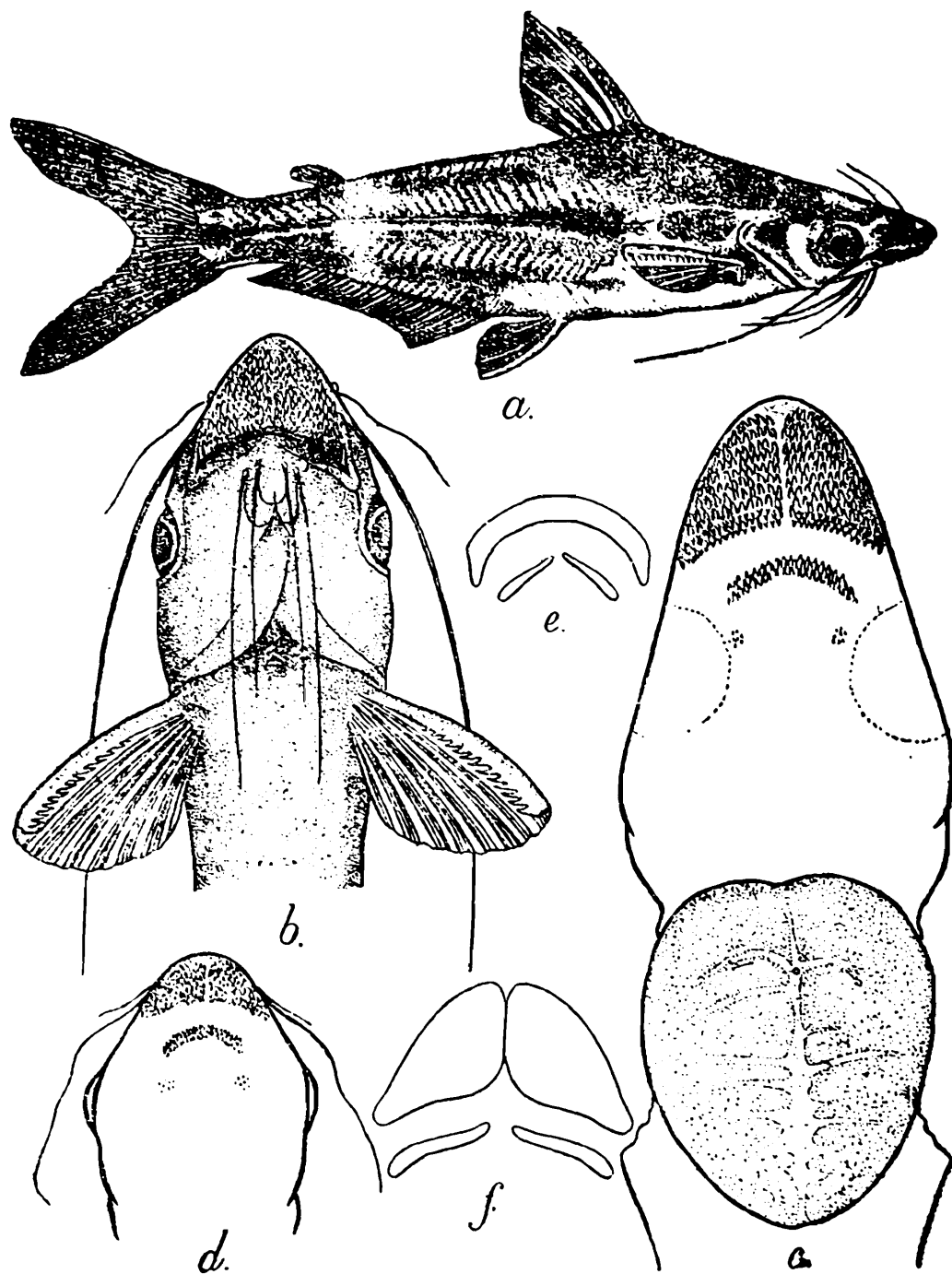
Air-bladder large, abovate in shape and somewhat flattened dorso-ventrally. It is moderately thickwalled and divided internally into three incomplete chambers. It comes in contact with the abdominal parieties above the pectoral fin and gives rise to blister-like areas when seen from outside.

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NEOTROPIUS KHAVALCHOR, gen. et sp. nov.

B. IX ; D.1/6-7 ; A. 2-3/22-33 ; P. 1/7 ; V. 1/5 ; C. 17.

N. khavalchor has a graceful form with a small depressed head and a high back, on the summit of which is the dorsal fin (text-fig. 1a). The body is moderately compressed and rather deep in the anterior half. The dorsal profile is almost a straight line ascending from the tip of the snout to the insertion of the dorsal fin from whence it descends abruptly and proceeds posteriorly in a slight curve up to the base of the caudal fin.



EXPLANATION OF TEXT-FIGURES.

TEXT-FIG. 1.—a. Lateral view of *Neotropius khavalchor* sp. nov. : X $1\frac{1}{2}$; b. Ventral aspect of head of same : X $1\frac{1}{2}$; c. Upper dentition and air-bladder of same : X $1\frac{1}{2}$; d. Upper dentition of juvenile specimen (60 mm.) of same ; e. Upper dentition of *Pseudeutropius atherinoides* (Bl.) (57 mm.) X2 ; f. Upper dentition of same (100 mm.) : X $1\frac{1}{2}$ (after Hora.)

The ventral profile is uniformly arched but it is slightly straightened below the dorsal fin.

The head is short and somewhat tapering; length of the head being contained $4\frac{1}{2}$ times in the length of the fish. Width of the head is contained from 1.5 to 1.6 times and height at the occiput 1.4 to 1.7 times in length of the head. The inter-orbital space is slightly convex, smooth and covered with subcutaneous layer. Above this space, there is a shallow, median, longitudinal groove which ends at the base of the occipital process. The occipital process is long and slender. Its width at the base is contained 5 times in its length and it reaches the basal bone of the dorsal fin.

The mouth is wide and situated on the ventral side. It is almost devoid of lips except at the angle of the jaws (text-fig. 1b). The cleft of the mouth does not extend beyond the anterior margin of the eyes. The denticulated part of the upper jaw extends over the entire undersurface of the snout excepting the tip. Teeth within the gape of the jaw are depressible and villiform with thin apices slightly curved inside, while the teeth on the undersurface of the snout are cuneiform in shape. The latter occupy two extensive sub-triangular patches which form prominent convex dentigerous pads, on the snout. Apices of most of these teeth are slightly bent, those on the sides pointing outwards and the rest pointing forwards. On the lower jaw, teeth are found on the internal as well as external aspect of the mandibles. Those on the inner aspect are slender and villiform like the teeth within the gape of the upper jaw, while those on the outer margin are thicker and stronger somewhat like the teeth on the snout. The outer teeth, however, form a very narrow band as compared to the extensive patches on the undersurface of the snout.

The teeth on the palate are in three separate patches (text-fig. 1c). The vomerine teeth are in a continuous crescentic band running almost parallel to the rounded margin of the upper jaw. The palatine teeth form two very small irregular patches, one on either side of the mouth. They are minute and widely separated from the vomerine teeth.

The eyes are prominent and without adipose lids. They are situated just on the lateral margin of the head, so that half of their diameter can be seen in the dorsal aspect and the other half in the ventral aspect. They are almost in the middle of the length of the head. Their diameter is contained 4.5 to 4.6 times in the length of the head, 1.6 times in the length of the snout and about 2 times in the width of the inter-orbital space. The inter-orbital space is convex and is covered with subcutaneous layer.

The nostrils are wide apart; the anterior nostrils are situated near the antero-lateral margin of the head. They are raised and tubular, but their openings, instead of being vertically upwards like a tube, face forwards like a cowl of ventilators in ships. The posterior nostrils are more or less longitudinally disposed and have an oblong opening with thin margins around them. They are widely separated, space between them being twice the distance between anterior and posterior nostrils on each side. There are eight barbels, one nasal pair, one maxillary and two mandibular pairs. The nasal barbels extend beyond the posterior

margin of the eye. The maxillary barbels extend slightly beyond the posterior extremity of the pectoral fin. The outer mandibular pair extends slightly beyond the base of the pectoral fin and the internal pair reaches the base of the pectoral spine. Maxillary barbels for a short distance from their base, pass through grooves or folds in the skin which extend up to the posterior edge of the eyes. The gill openings are wide, the gill membranes overlapping each other at the isthmus. In front of and above the isthmus the upper chin folds form a small pouch. In the ventral region of the pectoral girdle, there is a small median depression with slightly rugose surface, which may be helpful to the fish in steadying itself on the body of its victim.

The pectoral fin is moderately developed and hardly reaches below the insertion of the dorsal fin. In younger specimens, however, it is slightly longer. The pectoral spine of the fin is strong, short and peculiarly developed. It is not pointed, as in most other fishes, but terminates bluntly into a truncated extremity. On the posterior face, it has strong denticulations about 8 to 13 in number. Proximal dents are slender and smaller but distal ones stronger and larger, the last dent being curved inwards like a hook and its extremity being rather truncated. A thin membrane from the truncated end of the spine grows out for a short distance and terminates along with other fin rays. The truncated end is so irregular that it sometimes appears like the broken end of a spine with a membrane regenerated on it.

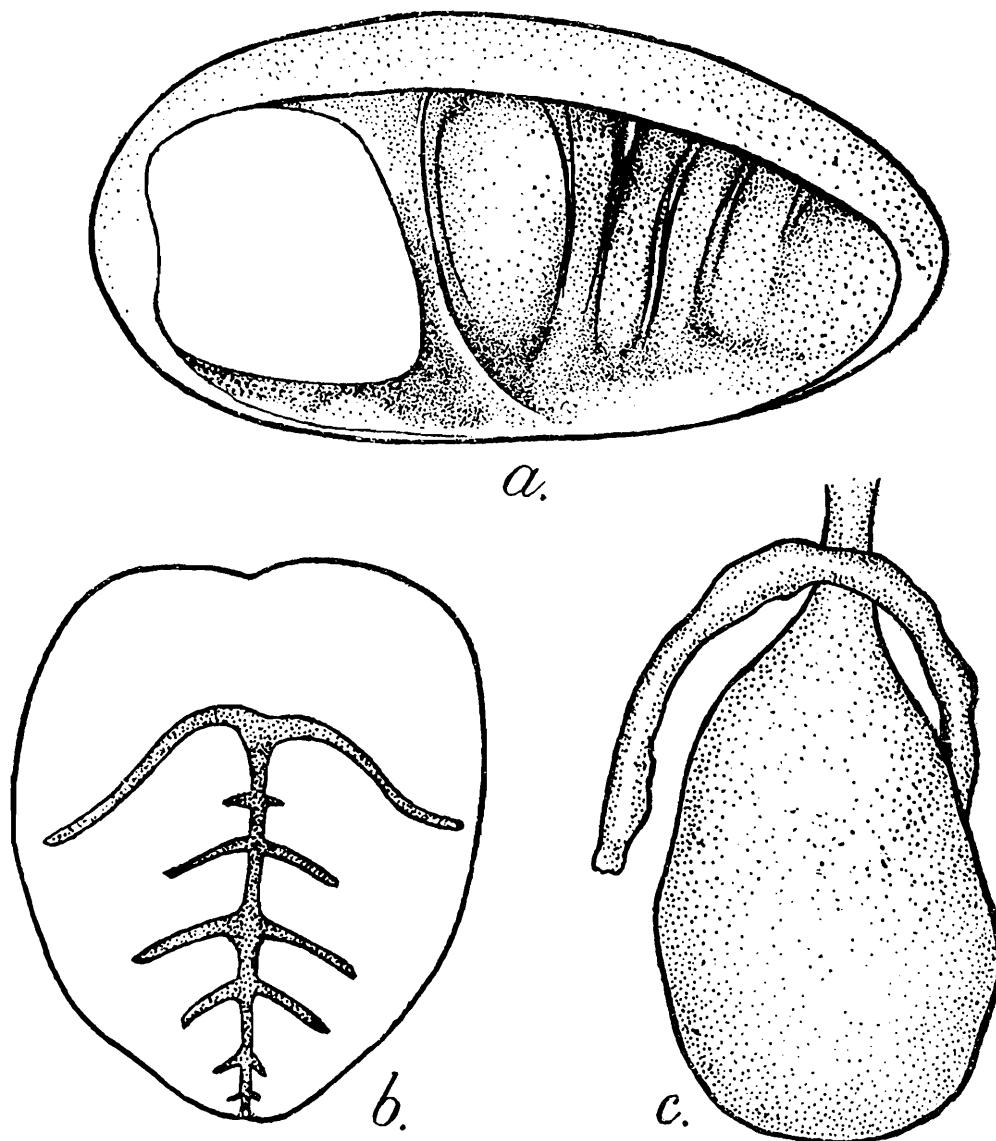
The dorsal fin is situated between the pectoral and pelvic fins but nearer the latter. It has a strong but slender spine which is serrated internally. It is shorter than the two or three rays that follow it. Its outer surface is almost smooth except at its distal end where there are 3 or 4 barb like serrations which, with the internal serrations, make it a formidable structure like a spear with basally directed barbs on either side. The adipose fin is small but well-marked. It is situated on the last quarter of the base of the anal fin. The pelvics are rather well-grown as compared to the pectoral and dorsal fins. They reach the anal fin. The anal is moderately long, its length being contained 4.5 times in the total length of the fish. The caudal is forked and well-developed in structure.

The depth of the body is contained 4 to 4.4 times in the length of the fish without caudal and the least height of the caudal peduncle is about 1.4 to 1.6 times in its length.

In the living condition, the fish is almost silver grey in coloration. In formalin, however, the specimens appear bleached, the grey or brown grey colour being confined only on to the back. A pair of triangular dark areas are seen in the occipital region and an indistinct dark blotch at the base of the caudal fin. The caudal blotch is not present in some forms.

The air-bladder is obovate in form with its narrow end pointing posteriorly (text-fig. 1c). It is somewhat thick-walled and flattened dorso-ventrally. It is divided internally into three chambers, one anterior and two posterior, by a T-shaped vertical partition (text-fig. 2b), the transverse partition being slightly incomplete. The anterior chamber represents almost $\frac{1}{3}$ of the bladder and is disposed transversely. The posterior chambers are formed by the longitudinal division of the remaining

part of the bladder. The T-shaped partition is supported by several fibrous columnar strands extending up and down which strengthen the dorsal and ventral walls of the bladder (text-fig. 2a). The dorsal surface of the anterior chamber is closely applied to the bony elements of the vertebral column and on this account appears to be divided into two longitudinal halves in the dorsal aspect. Its ventral surface is



TEXT-FIG. 2.—*Neotropius khavalchor* sp. nov. a. Vertical section of air-bladder showing vertical partitions and supporting columnar strands: X 2; b. Horizontal section of air-bladder: X $1\frac{1}{2}$; c. Stomach and intestines: X $1\frac{1}{2}$.

smooth but slightly undulated; the bladder is comparatively large and covers the entire width of the fish at its base. It is attached to the abdominal parietes above the pectoral fin, the area of contact manifesting a blister-like appearance from outside. The stomach has no intestinal caeca (text-fig. 2c).

Type-localities.—Krishna river near Islampur, District Satara, and Panchaganga river near Kolhapur, Bombay State.

Holotype.—(F . . .). Zoological Survey of India, Indian Museum, Calcutta.

RELATIONSHIP OF NEOTROPIUS.

Neotropius, is closely related to *Pseudeutropius* Bleekar. It differs from the latter mainly in the form of dentition on the palate and the nature of the air-bladder. The difference, though not very outstanding otherwise, is of a generic importance in Schilbeidae to which *Neotropius* belongs. The genus *Pseudeutropius* was proposed by Bleekar to accommodate *Eutropius branchyopterus* in which the teeth on the palate, as quoted by Hora (1937), were described as "Dentis vomerini in vitam transversam dispositi, palatini distincti nulli". A year later, however, Bleekar revised this definition and stated "Dentis vomero-palatini in vitam transversam indivism dispositi".

Gunther (1864) who examined a typical specimen of Bleekar's *P. branchyopterus* stated that its vomerine teeth "form a very narrow band which is angularly bent and continuous with the palatine teeth". Weber and de Beaufort (1913), who described the same species, state that its dentition consists of "minute teeth in narrow bands on the jaws; on the vomer in two small patches connected by an angular line of teeth". In another species from Sumatra—*P. moolenburghae*—the authors (*op. cit.*) record that the teeth on the palate are "in two widely separate elliptic patches".

Day (1878) describes the dentition of *P. acutirostris* as consisting of "two minute patches on the vomer, and of the same character on the palatines which are not continuous with those on the vomer". Description of dentition of *P. atherinoides* furnished by Day is not accurate according to Hora (1941). Revised and carefully checked account of vomerine dentition of *P. atherinoides* and *P. mitchelli* as illustrated by Hora (*loc. cit.*) indicates that it is composed of two separate patches on the vomer, varying in size according to the age of the specimens. Despite these details, Smith (1945) states that in *Pseudeutropius*, vomeropalatine teeth are in a single continuous band, but, in his earlier writings on the subject (1934 p. 297) he has described vomerine and palatine teeth in four distinct patches.

It will thus be clear from the aforesaid account that the dentition occurring in *Neotropius*, viz., of a single continuous crescentic band on vomer with two minute patches of palatine teeth is entirely of a different type unrecorded hitherto.

Detailed description of the air-bladder of *Pseudeutropius* is not available, but Hora (1937, p. 43) states that "in *Pseudeutropius* the air-bladder is large and thin-walled". Smith (1945, p. 355) also records that it is thin-walled. The three chambers and somewhat thick-walled air-bladder of *Neotropius* described above is thus different from the thin-walled air-bladder of *Pseudeutropius*.

It is considered (Hora, 1941, p. 102) that dentition coupled with the nature of the air-bladder should be able to differentiate and define precisely *Pseudeutropius* and other allied Schelbeid genera occurring in India. Genus *Platyotropius* (Hora, 1937) is also differentiated on the basis of these characters and in creating the present genus *Neotropius* the same factors are taken into consideration.

Further, comparison of dentition of young specimens of *Neotropius* about 60 mm. in standard length (text-fig. 1d) with that of 57 mm. specimen of *P. atherinoides*, (text fig. 1e & f) as illustrated by Hora (*op. cit.*), indicates that they differ radically in the disposition of their dental patches even in early stages. Another feature observed is that, unlike in *Pseudotropius*, the dentition (text fig. 1d) of the juvenile form of *Neotropius* (60 mm.) is found to be almost identical with that of the adult specimen (text-fig. 1c).

Superficially, *N khavalchor* appears to be similar to *P. acutirostris* (Day) in several respects, including the presence of external teeth on the snout. The chief differences relate to the vomero-palatine teeth, the nature of the air-bladder, comparative lengths of barbels, inter-orbital space, anal fin rays, etc. The close resemblance between the two forms indicates that *N khavalchor* occurring in the rivers of Kolhapur of the Western Ghats might have evolved from *P. acutirostris* occurring in the distant waters of Irrawaddy. This probably serves as one of the many examples in Zoogeography of India suggesting Malayan affinities of fresh water fish fauna of Peninsular India and its dispersal along the Satpura trend of mountains as suggested by Hora (1944).

BIONOMICS.

The fish is very remarkable for its lepidophagous habit of feeding on the scales of other fish. Its specific name 'Khavalchor' derived from its common name in Marathi signifies this habit, the literal meaning being a 'scale-stealing fish'. The report of this unusual habit was corroborated by actual observations when a seine net was being dragged ashore. A specimen of *Neotropius* was seen moving excitedly attacking other fish of its own size and rasping off their scales. Examination of stomach contents of some of the specimens of *Neotropius* showed that their stomachs were gorged with fish scales which were arranged like a pack of cards. The scales were covered with mucous and appeared to be in half digested condition. They had become thin and brittle, the markings (circuli and radii) having almost disappeared in some cases. Those which could be identified belonged to *Garra* and *Labeo* sp. One of the specimens had a water insect, along with a few scales in the stomach, while a couple of them had their stomachs completely empty. This unusual habit of the fish coincides with its peculiar adaptations, namely the wide ventrally situated mouth, the specialised teeth on the outer aspect of the jaws and snout and strong, hooked pectoral spines. Appropriately situated prominent eyes and numerous long barbels may also serve as additional adjuncts to suit the pirate activities of the fish. Trewavas (1947) has also recorded a similar lepidophagous habit in two species of *Corematodus* a genus of Cichlid fishes common to Lake Nyasa in Africa. On examination of the gut contents of these species, *C. taeniatus* Trewavas and *C. shiranus* Blgr., she records that "In each case stomach and intestine contained nothing but hundreds of minute scales exactly like those which cover the caudal fins of so many Cichlid fishes. It seems that *Corematodus* specializes in this curious diet." These fishes do not seem to have the external teeth on the under surface of the snout, as found in

Neotropius, but their dentition consists, in each jaw, of a broad file-like band of small pointed teeth which are capable of rasping the scales on the tails of other fishes. The teeth of *Neotropius* are of similar structure though disposed in a different manner. This indicates that although the aforesaid habit is unusual, it is by no means unique in the Piscine world.

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