Redescription of siluroid Catfish *Pterocryptis barakensis* Vishwanath & Nebeshwar (Siluriformes: Siluridae)

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Author Contribution: The study: WV - Supervision of taxonomy and phylogeny of freshwater fishes of northeastern India, KN - Morphometric study and identification of fish species. Current paper: WV - Supervised the work and helped in identifying the species, KN - Detailed examination of specimens and comparison with closely related species to establish the new species.

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Abstract: Description of *Pterocryptis barakensis* from the Barak River, Tamenglong District (Brahmaputra drainage) of Manipur, India is inadequate. It is distinguished from *P. berdmorei* (Blyth) and the only other known species of the genus from the Indian region in having longer caudal fin, distinct sensory pores, serration pattern on posterior edges of anterior and posterior segments of pectoral spine, rounded tip and colour of pectoral and ventral fin, dimorphism in genital papillae in males and females and by a combination of meristic and morphometric characters.

Keywords: Manipur, *Pterocryptis barakensis,* redescription.

Introduction

Fishes of the genus *Pterocryptis* Peters are distinguished from other siluroids in having small dorsal fin, upper jaw longer than the lower jaw, and a confluent anal and caudal fin with a distinct notch between them (Bornbusch 1991). The species distributed in the Indian region are: *P. gangelicus* (Peters) of the Ganges; *P. afghana* (Gunther) of Afghanistan, type locality of which is doubtful (Day 1878; Shaw & Shebbeare 1937; Menon 1999); *P. indicus* (Datta, Barman & Jayaram) of Brahmaputra basin; *P. wynaadensis* (Day) of Western Ghats in Kerala, Cauvery and Tungabhadra river basins. Arunkumar & Tombi (1997) described *Silurus morehensis* from Chindwin drainage basin in Manipur. Ng & Freyhof (2001) considered the species to be a junior synonym of *P. berdmorei* and reported 16 nominal species under the genus.

Vishwanath and Nebeshwar (in Jayaram 2006) described *Pterocryptis barakensis* based on 19 specimens from Vanchengphai village, Barak drainage in Manipur. The description is not adequate. The paper gives a detailed description of the species, and its relationships with its congeners are also given.

Materials and Methods

Fish were collected from the Vanchengphai village using gill nets. The meristic and morphometric measurements followed the techniques of Jayaram (1999). Osteological study followed Kobayakawa (1989). For osteological study, 3 specimens were dissected and stained with Alizarin S following Hollister (1934). The description is based on formalin preserved specimens. Measurements were taken with digital calipers to 0.1mm. The number of specimens exhibiting a given count is indicated in parentheses. Fin ray counts and osteological studies were done using a zoom stereoscopic microscope.

Pterocryptis barakensis Vishwanath & Nebeshwar, 2006 (Image 1)

Pterocryptis barakensis Vishwanath and Nebeshwar, In: Jayaram, 2006: 99-100 (type-locality: Barak River at Vanchengphai village, Manipur).

Material examined

Holotype: Male, 231mm SL, Barak R. at Vanchengphai village, Tamenglong District, Manipur (MUMF-4018).

Paratypes: 18 ex., 128.0-227.3 mm SL, collection data as of holotype (MUMF 4000-4017).

Diagnosis

The species has the following combination of characters: elongated body and caudal fin, rudimentary dorsal fin with two rays or completely absent; body from head to caudal-fin base with 12-16 transverse rows of sensory pores extending from mid dorsal region to

Image 1. Lateral view of *Pterocryptis barakensis*

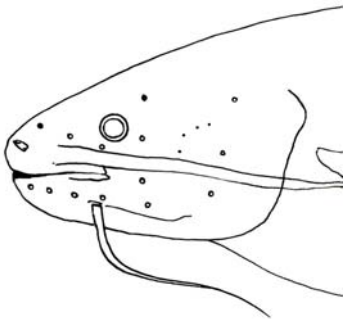

Figure 1. Arrangement of pores on head of *P. barakensis*

lateral line; 12 distinct sensory pores, arranged semicircularly on ventral surface of head extending from anterior sides of opercular region on either side to behind lower lip, outer margin of anal fin, ventral and pectoral fins white to pale white; pectoral fin with 14-15 rays, vomerine teeth band continuous.

Description

Dorsal fin absent or minute and soft with two rays, pectoral-fin rays I, 13-14; pelvic-fin rays i, 7-8; anal fin rays 65-77; caudal fin rays 6-7 + 8-9; vertebrae 54-55; branchiostegal rays 13. Body elongate, compressed behind head region. Head depressed. Upper jaw prominent and longer than lower jaw. Mouth inferior, gape of mouth narrow and semicircular, extends upto the region below anterior margin of orbit. Eyes covered with skin. Barbel two pairs, maxillary barbels extend beyond pectoral fin. In juveniles and in medium sized males (140-185 mm SL), maxillary barbels extend beyond ventral-fin base. A single pair of mandibular barbel present, does not extend to pectoral-fin base. 12-16 transverse lines (vertical lateral line) of widely dotted sensory pores arranged in more or less unequal intervals from the posterior-most end of supra-occipital bone to the base of the caudal fin. A distinct horizontal lateral line is also present in addition to the usual vertical line. Variation in number of transverse lines of dotted sensory pores, 12-13 numbers in males and 15-16 in females. Caudal fin relatively very long and almost truncated. Anal fin long and confluent with caudal fin but with a distinct notch. Anal-fin base extends 1.52-1.64 times of standard length. Anterior nostrils tubular. Anterior margin of pectoral spine smooth, posterior margin granulated in one or two rows and in female posterior margin smooth. Dorsal fin rudimentary with two rays or completely absent.

The species has characteristic arrangement of pores on head (Fig. 1) as follows: (1) one row of 12 pores on the ventral surface behind lower lip, six on either of the mandibular region; (2) two sensory pores run vertically upward above the 1st and 12th pores of mandibular row; (3) one row each with three pores run vertically upward on post-orbital region towards the anterior region of the frontal, behind the eye; (4) one row of four pores run obliquely on mesethmoid region towards the tip of head; (5) two pores on middle region of the frontal behind the frontal pores; (6) two tubercle like structures with pores between the anterior nostrils; (7) three pores on each side of the head in the posterior region of frontal; (8) three canals, one each on pre-opercle, inter-opercle and opercle run towards hyomandibular region.

Colour

Body grayish brown to dirty yellowish-brown or light grayish-white on dorsal surface; light brown to dirty white on ventral surface. Outer margin of anal fin white. Half length of ventral fin light grayish-white or white in colour. ¾ length of pectoral fin white or light grayish-white. Dotted sensory pores above the lateral line white in colour.

Sexual dimorphism

Males are different from females in having pointed and elongated genital papilla vs. rounded one; posteriorly granulated pectoral spine vs. smooth one; shorter caudal-fin base, pectoral-fin base, caudal peduncle; shallower body; shorter pre-anal length and mandibular barbel length.

Osteology

Three specimens were dissected for osteological study.

Skull (Fig. 2a & b): Lateral process of lateral ethmoid prominent; lateral process of mesethmoid remarkably long and slender; mesethmoid narrow at base of its lateral process; sagittal crest confined from middle part to posterior part of supraoccipital pterotic and epioccipital bones project outward, sensory canals on frontal bone forming a mere groove.

Suspensorium (Fig. 3a & b): Metapterygoid small compared with hyomandibular, metapterygoid process well developed; hyomandibular process well developed forming a pterygoid process, an elongated and sheet-like bone separates from metapterygoid bone, quadrate process poorly developed.

Shoulder girdle (Fig. 4a & b): Vertical part of cliethrum short, ventral coracoid lamina poorly developed, coracoid connected with cliethrum by complex suture.

Caudal skeleton: All hypural bones separated from each other, hypurapophysis absent, secondary hypurapophysis forming a well-developed shelf on hypural 1 only.

Table 1. Morphometric data of *Pterocryptis Barakensis*

	Holotype		Paratypes					
	%SL	%HL	%SL			%HL		
Standard length	231.0 mm		128.0-227.3 mm					
			Range	Mean	SD	Range	Mean	SD
Body depth	14.55	82.96	13.5-16.3	14.7		75.1-97.0	85.3	5.90
Caudal length	9.18	52.35	7.6-10.2	8.8	0.6	45.7-58.6	51.0	3.20
Head length	17.53		16.3-18.3	17.3	0.5			
Head height at occiput	9.96	56.79	9.8-10.8	10.1	0.3	56.1-63.3	58.6	2.30
Snout length	7.14	40.74	6.5-7.5	7.1	0.3	39.1-4.2	41.0	0.76
Eye diameter	1.52	8.64	1.4-1.6	1.5	0.1	8.2-9.5	8.7	0.30
Inter-orbital space	9.31	53.09	8.1-9.7	9.0	0.4	48.6-54.8	52.1	0.02
Length of caudal peduncle	3.38	19.26	3.1-4.5	3.6	0.4	17.4-27.1	20.7	2.34
Height of caudal peduncle	7.01	40.2	5.9-7.6	6.5	0.5	34.7-44.3	37.6	2.66
Pre-dorsal length	24.99		23.9-26	24.9	0.6			
Dorsal fin length								
Dorsal fin height								
Pectoral length	11.34	64.69	10.5-12.0	11.2	0.4	60.7-70.0	64.9	2.00
Ventral length	7.14	40.74	6.3-7.9	7	0.5	35.5-44.9	40.5	2.65
Anal fin length	65.8		61.2-76	63.6	1.5			
Maxillary barbell	28.14		26.7-36.7	30.0	2.4			
Mandibular barbell	9.96	56.79	8.7-12.1	10.3	0.8	47.6-69.8	60.0	4.90
Head length at occiput	13.2	75.31	12.6-14.4	13.5	0.6	74.8-83.0	78.0	2.20
Head height at eye	6.93	39.51	6.2-7.3	7.0	0.2	37.4-42.0	40.5	1.34
Head width at eye		11.47	10.1-12.0	11.3	0.5	60.9-70.0	65.5	2.13
Head width at neck region			12.4-14.1	13.4	0.5	74.0-80.0	77.9	2.10
Body width at dorsal fin origin	12.16	69.38	11.1-14.4	12.7	1.0	62.2-87.0	73.6	7.20
Body width at anal fin origin	9.74	55.56	9.1-11.0	9.7	0.5	50.9-64.5	56.5	3.50
Pre-ventral length	30.39		30.5-34.7	33.0	1.2			
Pre-anal length	33.17		33.5-38.8	36.3	1.5			
Pre-anus length	32.03		32.2-35.6	34.4	1.1			
Body depth at anal fin origin	13.85	79.01	13.7-15.4	14.4	0.5	75.8-90.0	83.8	3.76
Inter-nasal distance (anterior)	4.16	23.7	3.8-4.5	4.1	0.2	21.8-24.5	23.5	0.83
Inter-nasal distance(posterior)	4.24	24.2	4.3-4.8	4.5	0.2	24.0-27.9	26.1	0.96
Mouth gap width	10.82	61.73	9.4-11.5	10.5	0.5	56.3-62.9	60.8	1.63
Caudal fin base length	8.65	49.38	6.1-8.9	7.5	0.8	36.9-52.9	43.4	4.57
Ventral fin base length	3.9	22.22	3.0-4.4	3.6	0.4	17.0-25.7	21.1	2.32
Pectoral fin base length	4.33	24.69	3.7-4.7	4.1	0.3	21.0-26.6	23.9	1.52
Distance betn vent &anal fin	1.65	9.38	1.8-3.2	2.3	0.4	10.4-19.1	13.3	2.79
Distance between vent & ventral fin	2.81	16.05	2.4-3.1	2.8	0.2	14.1-18.6	16.1	1.38
Distance between anterior & posterior nostrils	2.6	14.81	2.4-2.9	2.6	0.1	14.4-16.7	15.2	0.58

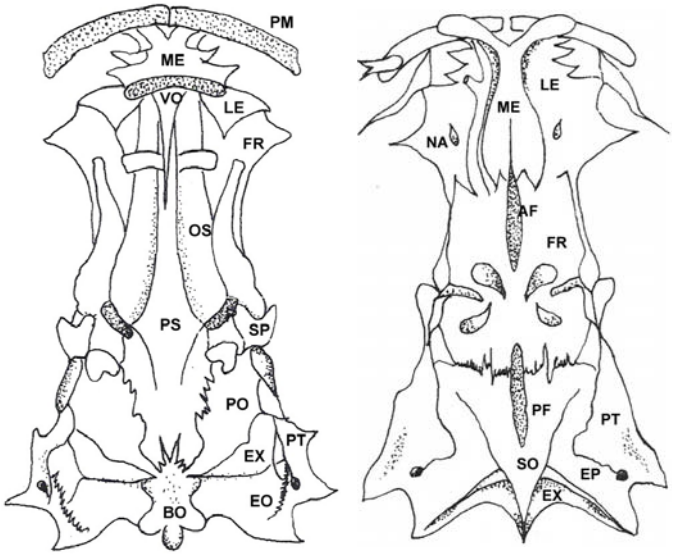

Figure 2. Skull of *Pterocryptis barakensis*
a - dorsal view; b - ventral view; LE - lateral ethmoid; ME - mesethmoid; NA - nasal; AF - anterior fontanel; FR - frontal; PF - posterior fontanel; SO - supraoccipital; PT - pterotic; EP - epioccipital; EX - exoccipital; PM - premaxilla; VO - vomer; OS - orbitosphenoid; PS - parasphenoid; PO - pro-otic; BO - basioccipital.

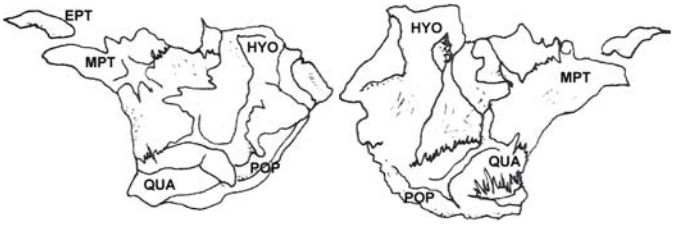

Figure 3. Suspensorium of *Pterocryptis barakensis*
MPT - metapterygoid; EPT - endopterygoid;
HYO - hyomandibular; POP - preopercular; QUA - quadrate

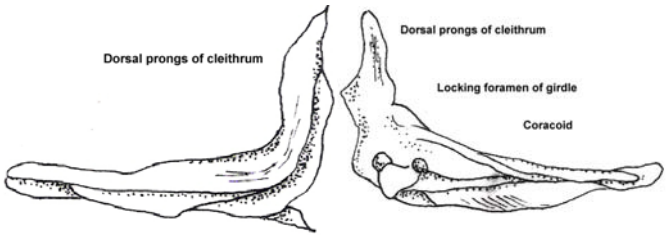

Figure 4. Shoulder girdle of *Pterocryptis barakensis*

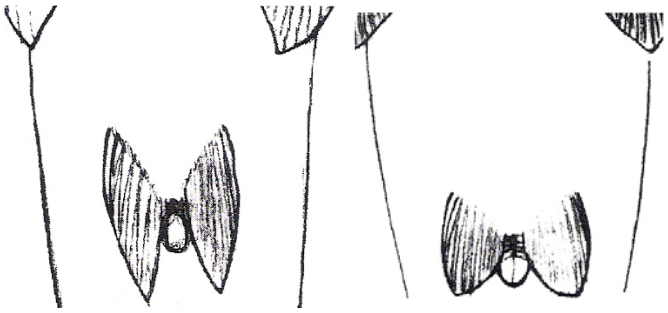

Figure 5. Shapes of pelvic fins in A. *Pterocryptis morehensis* and B. *P. barakensis*

Etymology

The species has been named after the river Barak from where it has been collected.

Distribution

Barak River, Vanchengphai village, Tamenglong district, Manipur, India.

Remarks

This new species is distinct from *Silurus morehensis* Arunkumar & Tombi (1997) in its rounded pelvic fin vs. pointed (Fig. 5); not very distinct notch between anal and caudal fins vs. a very distinct notch; a line of distinct pores in mandibular region with two dorsally directed pore lines from its extremities vs. indistinct pore line without dorsally directed lines; three pore lines obliquely directed towards hyomandibular vs. two lines. The pores are prominent and more regularly arranged in *S. barakensis* (Fig. 1). The species under description is also different from *S. torrentis* Kobayakawa in having 0-2 rays on dorsal fin vs. 2-3 rays; 1-2 rows of finely granulated spines on posterior side of pectoral fin vs. posteriorly serrated one; shorter predorsal length (23.9-26.0 vs. 27.8 % SL).

This new species is also distinct from *S. cochinchinensis* (as described by Kobayakawa 1989) in having a well developed sagittal vs. no crest, Cliethrum and ventral part of coracoid connected by a complex suture vs. simple suture, lateral line with both vertical and horizontal pores vs. vertical pores, posterior surface of pectoral spine in males granulated in one or two rows vs. serrated, vomerine teeth band continuous vs. separated into a pair of small patches, maxillary barbels extend beyond pectoral fin vs. not reaching tip of pectoral fin and mandibular barbels exceed the head length vs. not exceeding head length.

An uncatalogued specimen in the Zoological Survey of India, Kolkata, measuring 161mm SL, labelled as *Silurus cochinchinensis*, collected from Andhra Pradesh on 23.xii.1983 was examined for comparison with the new species. As the specimen did not have the characters as of the label, no comparison could be done.

In the revision of the genus *Silurus*, Kobayakawa (1989) included 17 species. *Silurus wynaadensis* Day (now *Pterocryptis*) is found in the Western Ghats. Eschmeyer (1990) and Menon (1999) considered *Pterocryptis* Peters (1861) a synonym of the genus *Silurus* Linnaeus. However, Bournbusch (1991) removed *Pterocryptis* from synonymy with *Silurus*. Identity of *Silurus cochinchinensis* reported by Hora (1936) from Barak basin in Manipur and also that reported by Shaw & Shebbeare (1937) from Western Duars, northern Bengal, needs verification.

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