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HETEROPNEUSTES LONGIPECTORALIS (SILURIFORMES : HETEROPNEUSTIDAE) A NEW SPECIES FROM THE ANAMALAI HILLS, IN THE WESTERN GHATS

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INTRODUCTION

Heteropneustidae is a monotypic family known by the genus *Heteropneustes* which is restricted in its distribution to the Indian Sub Continent and Southeast Asia. Till recently two species, *H. fossilis* (Bloch) and *H. microps* (Gunther), were recognised under this genus of which the latter is exclusive to Sri Lanka. On the basis of recent studies Pethiyagoda and Bahir (1998) established that the confluence of caudal and anal fins observed in *microps* and used in distinguishing it from its congener *fossilis* has only resulted from the anomalous fin regeneration of damaged or malformed hypurals and that only one species is involved. Hence he considered *microps* a junior synonym of *fossilis*. Two other species, *H. singio* (Hamilton) and *H. macrocephalus* (Gunther) have already been recognized as synonyms of *fossilis* by Day (1875-78), Hora (1936), Misra (1976), Jayaram (1981) and Talwar and Jhingran (1991).

During a faunistic survey of Indira Gandhi Wildlife Sanctuary in the Anamalai Hills in the Western Ghats in 1996, four specimens of an interesting new species of *Heteropneustes* were collected. The species is described here under the name *H. longipectoralis*. The type specimens are deposited in the collections of SRS, ZSI, Chennai.

Heteropneustes longipectoralis sp. nov.
(Plate I, Figs. 1-5)

Holotype : F(Fish) 4935, ZSI/SRS, 150 mm SL, Thirumurthi Dam, Anamalai Hills, Western Ghats, Tamil Nadu, India, Coll. M. B. Raghunathan, 11th Feb., 1996.

Paratypes : 3 exs. F. 5044, ZSI/SRS, 146-154 mm SL, data same as for holotype.

Diagnosis : A siluroid with slender, elongated body having short spineless rayed dorsal, a long anal non confluent with caudal, long pectoral with a strong spine, almost reaching pelvic base, pelvic with 6 rays, long and pointed caudal, four pairs of barbels, wide gill openings with gill membranes free from isthmus and a short air-bladder.

Description : B. 7; D. 7; P. 1/8-9; V. 6; A. 66-73; C. 18 (about 14 branched), Lateral line present.

Body elongate, subcylinderical to pelvic base, compressed behind, its greatest depth is 7.6 (6.97-8.19) in SL, 8.64 (7.78-9.39) in TL, depth at middle of anal 8.41 (7.89-9.25). Head depressed, covered with osseous plates dorsally and laterally, occipital groove a small oval depression in the posterior interorbital; head width almost equalling its length, 1.22 (1.19-1.27) in

head length; snout 3.25 (3.01-3.55) in HL; eyes with free orbital margins, lateral, 5.97 (4.83-6.97) in HL, 2.93 (2.49-3.55) in interorbital width; nostrils wide apart, anterior tubular, posterior a small slit, restricted to behind the nasal barbel; mouth small, terminal, transverse; teeth in wide bands on jaws with 6-7 rows of small villiform teeth, the vomerine in two spindle-shaped patches on either side converging anteriorly and widely diverging posteriorly. Barbels four pairs, nasal barbels extending to pectoral base or beyond, maxillary barbels extend to middle of pectoral as also outer mandibular barbels, inner mandibular barbels extend to a little beyond pectoral base. Gill openings wide, gill membranes free from isthmus, exposed bony area on the ventral side of head from the point of overlap of the gill membranes to the lower end is 3.38 (3.14-3.88) in head width. Dorsal short, without spine, 2.17 (1.78-2.84) in HL, situated in the anterior third of body, predorsal distance 2.20 (2.14-2.24) in post dorsal distance; pectorals long and pointed, 1.23 (1.12-1.35) in head length, pectoral with a strong spine, very faintly serrated anteriorly and internally, pectoral fin length 1.27 (1.11-1.50) in the length between pectoral base to pelvic base; pelvics rounded 1.79 (1.70-1.99) in head length, reaching beyond anus, origin slightly behind or opposite dorsal origin, much nearer to anal origin than to pectoral base; anal very long, not confluent with caudal origin, two eye diameters behind dorsal origin, base 1.62 (1.59-1.67) in standard length; caudal long, pointed, 1.17 (1.14-1.23)in head length. Air bladder reduced in length (Table 2) averaging 39.17% in SL vs. 47.70% (pooled data) in *H. fossilis*, its width is however greater in the former, being 20.79% in body depth vs. 18.56% in the latter, the presence or absence of air probably influencing its size. From table 2 it is also evident that the air bladder is mostly of unequal length on either side of the fish. The number of spiral thickenings on the bladder ranges from 17-21 in the new species vs. 24-28 in *H. fossilis*.

Skin smooth, uniformly dark brown on preservation with no yellowish lateral bands.

Distribution : India : Western Ghats : Anamalai Hills.

Etymology : The species is named *longipectoralis* owing to the long pectorals characteristic of the species.

Comparative material : 4 exs., 98-150 mm SL, F. 5258, Attidiya, Sri Lanka, Coll. Rohan Pethiyagoda, 21.iv.1993; 5 exs., 75-83 mm SL, F. 4274, Mekkarai, Tambraparni drainage, Tirunelveli Dist., Western Ghats, Coll. M. S. Ravichandran, 19.iii.95; 1 ex., 80 mm SL, F. 4458, Kodaimelazakian anaicut, Tambraparani drainage, Tirunelveli District, Western Ghats, Coll. M. B. Raghunathan, 9.iv.95; 7 exs., 100-140 mm SL, F. 4619, Kulsi River, Assam, Coll. R. S. Lal Mohan, 17.xi.95 and 4 exs., 145-205, F. 4408, Pond at Thennur, Pondicherry, Coll. M. Mary Bai, 30.xii.94.

REMARKS

Several biometric characters of the new species were measured and statistically analysed. These have been compared with those of samples of *fossilis* collected from different ecological zones like its type locality in Southeastern India, Brahmaputra drainage in the north-east, from Sri Lanka as also an interesting collection from Tambraparni drainage in Southern Western Ghats. The results are presented in Table 1. with the mean followed by the range in parenthesis.

The new species differs from the widely distributed *fossilis* in having relatively much slender body, larger eyes, longer pectorals, long and pointed caudal, a short air bladder and such other characters as evident from Table 1.

Table 1. Comparison of Biometric Characters of *H. longipectoralis* sp. nov. with *H. fossilis* from Various Localities

Characters	Anamalai Hills	Tirunelveli	Pondicherry	Kulsi River	Sri Lanka
Total length (TL mm)	166-172(N=4)	83-92 (N=6)	(N=4)	114-151 (N=7)	110-168 (N=4)
Standard length (SL mm)	146-154	75-83	145-205	110-140	98-150
Dorsal (D)	7	7	7	7	7
Pectoral (P)	1/8-9	1/7-8	1/8	1/7-8	1/8
Ventral (V)	6	6-7	6	6	6
Anal (A)	66-73	51-68	58-62	68-74	62-71
Caudal (C)	18	20-22	23	21	20
TL/HL	6.46 (6.16-6.84)	6.07 (5.70-6.27)	—	6.52 (6.26-6.92)	6.23 (5.64-6.71)
SL/HL	5.68 (5.52-5.96)	5.45 (5.13-5.61)	5.74 (5.41-6.35)	5.81 (5.58-6.15)	5.54 (5.02-6.05)
SL/BD	7.60 (6.97-8.19)	7.04 (6.50-7.73)	5.64 (5.49-5.77)	6.12 (5.61-6.99)	6.22 (5.85-6.71)
HL/HW	1.22 (1.19-1.27)	1.22 (1.17-1.28)	1.14 (1.05-1.16)	1.22 (1.18-1.27)	1.26 (1.21-1.30)
HL/Snout	3.25 (3.01-3.55)	3.38 (2.85-4.10)	3.25 (2.93-3.62)	3.30 (3.05-3.74)	3.30 (3.05-3.49)
HL/Eye	5.97 (4.83-6.97)	6.81 (6.43-7.30)	6.73 (6.59-6.82)	7.68 (7.20-8.15)	7.92 (7.55-8.57)
IOW/Eye	2.93 (2.49-3.55)	3.69 (3.54-3.92)	3.43 (3.19-3.71)	3.95 (3.73-4.33)	3.73 (3.58-3.90)
HL/Ht. of D	2.17 (1.78-2.84)	1.93 (1.64-2.26)	2.03 (1.92-2.15)	1.73 (1.58-1.84)	2.07 (1.88-2.29)
HL/Lt. of P	1.23 (1.12-1.35)	1.49 (1.38-1.65)	1.38 (1.23-1.60)	1.44 (1.35-1.54)	1.64 (1.35-1.91)
HL/Lt. of P spine	1.38 (1.34-1.45)	1.70 (1.54-1.99)	—	1.76 (1.58-1.94)	1.88 (1.65-2.05)
Dist. betw. P to V/Lt. of P	1.27 (1.11-1.50)	1.67 (1.58-1.77)	1.80 (1.58-2.10)	1.66 (1.51-1.88)	1.84 (1.49-1.97)
Predorsal dist/Postdorsal	2.20 (2.14-2.24)	1.96 (1.91-2.03)	2.17 (1.99-2.30)	2.14 (2.02-2.32)	2.14 (2.04-2.34)
HL/Lt. of V	1.79 (1.70-1.99)	2.03 (1.89-2.26)	1.97 (1.92-2.02)	1.88 (1.59-2.15)	2.06 (1.77-2.09)
Dist. betw. V to A/Lt. of V	0.87 (0.76-0.94)	0.89 (0.77-1.08)	0.77 (0.64-0.91)	0.87 (0.66-1.06)	0.67 (0.61-0.78)

Characters	Anamalai Hills	Tirunelveli	Pondicherry	Kulsi River	Sri Lanka
SL/Lt. of BC	4.06 (3.71-4.36)	3.79 (3.56-3.91)	3.92 (3.32-3.85)	4.01 (3.76-4.32)	4.07 (3.88-4.44)
HW/HD at middle of E	2.29 (2.18-2.40)	2.14 (1.94-2.30)	2.59 (2.39-2.80)	2.18 (1.89-2.40)	2.40 (2.27-2.60)
HW/Lt. of Isthmus	3.38 (3.14-3.88)	3.39 (2.67-4.63)	3.41 (3.17-3.65)	2.70 (2.22-3.25)	2.44 (2.12-2.66)
HW/HD at occiput	1.53 (1.48-1.59)	1.47 (1.42-1.52)	1.50 (1.40-1.62)	1.65 (1.59-1.72)	1.62 (1.57-1.67)
BD at V base/BW at V base	1.43 (1.37-1.48)	1.45 (1.39-1.66)	1.38 (1.08-1.62)	1.35 (1.24-1.41)	1.53 (1.44-1.67)
BD at C base/Greatest BD	2.47 (2.22-2.80)	2.60 (2.40-2.84)	3.19 (2.82-3.53)	2.78 (2.40-3.01)	2.78 (2.61-3.04)
HL/Lt. of C	1.17 (1.14-1.23)	1.57 (1.39-1.83)	—	1.39 (1.24-1.64)	1.47 (1.37-1.69)
Greatest BD/Lt. of A	1.28 (1.21-1.37)	1.52 (1.38-1.76)	2.25 (2.18-2.32)	1.80 (1.64-2.10)	1.76 (1.47-1.91)
Nasal barbel/HL	1.03 (0.86-1.14)	0.79 (0.66-0.83)	1.10 (1.04-1.55)	1.42 (1.27-1.54)	1.30 (1.26-1.33)
Max. barbel/HL	1.38 (1.16-1.50)	1.20 (1.11-1.36)	1.56 (1.41-1.66)	2.09 (1.86-2.35)	1.77 (1.60-1.87)
Outer Mand. Barbel/HL	1.17 (1.08-1.25)	1.12 (0.92-1.42)	1.41 (1.14-1.66)	1.68 (1.54-1.88)	1.63 (1.57-1.74)
Inner Mand. barbel/HL	0.88 (0.76-1.07)	0.94 (0.78-0.96)	1.40 (1.21-1.69)	1.57 (1.38-1.74)	1.46 (1.39-1.60)
SL/Base of A	1.62 (1.57-1.67)	1.69 (1.66-1.74)	1.76 (1.64-1.93)	1.66 (1.63-1.70)	1.58 (1.51-1.64)
SL/Nasal barbel	5.56 (5.18-6.44)	6.69 (4.94-8.06)	5.03 (4.69-5.25)	4.08 (3.75-4.39)	4.27 (3.81-4.79)
SL/Max. barbel	4.15 (3.67-4.78)	4.55 (3.94-5.00)	3.57 (3.26-4.06)	2.80 (2.37-3.13)	3.13 (2.90-3.30)
SL/Outer Mand. barbel	4.89 (4.46-5.52)	4.97 (4.01-5.59)	4.12 (3.76-4.80)	3.40 (2.72-3.71)	3.38 (3.18-3.66)
SL/Inner Mand. barbel	6.53 (5.13-7.84)	5.81 (4.85-6.56)	4.14 (3.75-4.71)	3.70 (3.20-4.06)	3.78 (3.53-4.27)
SL/BD at middle of A	8.41 (7.89-9.25)	7.98 (7.43-9.15)	5.95 (5.47-6.26)	6.27 (5.61-7.19)	6.94 (6.48-7.39)
BD/HD at middle of Eye	2.11 (1.94-2.28)	2.02 (1.90-2.26)	3.01 (2.78-3.28)	2.54 (2.24-2.88)	2.69 (2.38-2.87)
TL/BD	8.64 (7.78-9.39)	7.85 (7.33-8.55)	—	6.88 (6.42-7.97)	7.00 (6.59-7.56)

Abbreviations used : BC—Body Cavity; betw.—between; BD—Body depth; BW—Body width; Dist.—Distance; E–Eye; HD—Head depth; HL—Head length; Ht.—Height; HW—Head width; IOW—Interorbital width; Lt.—Length; Mand.—Mandibular; Max.—Maxillary.

Table 2. Measurements of the air-bladder of *Heteropneustes longipectoralis* sp. nov. and those of *H. fossilis* from various localities

Characters (in mm)	Anamalai Hills n = 2				Tirunelveli n = 3						Pondicherry n = 2				Kulsi River n = 2				Sri Lanka n = 2			
Total length	172		166		92		89		89		188		—		157		122		168		110	
Standard length	154		146		83		79		80		170		176		140		109		150		98	
Body depth	22.1		20.1		11.6		10.8		11.6		30.4		30.8		22.9		18.0		24.9		15.5	
Post dorsal distance	105		101		53.2		52.6		51.9		120		125		95.1		73.6		108		67	
Length of anal fin	98		90		49		47.6		46.2		88		107		85.9		66.2		99		63	
	R*	L*	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L
Length of air-bladder	54.7	61.8	56.3	62	32.4	33	38.5	36.1	38	37	88	85.9	88.2	87.5	66	70.4	54.3	52.6	73	75	47.6	45.9
Width of air-bladder	4.5	5.3	3.4	4.4	2.8	2.7	2.4	2.1	1.7	1.7	6.3	5.9	5.4	5.0	3.3	3.9	3.1	3.1	4.6	5.0	3.0	2.8
Extent of air-bladder behind dorsal origin	28.0	38.3	30.1	36.8	17.8	21.0	23.8	22.6	25.2	23.9	57.9	55.3	61.1	56.3	41.6	47.7	36.8	36.0	50.9	51.5	30.7	30.4
Extent of air-bladder behind anal origin	15.9	25.7	20.9	26.2	13.8	13.8	19.0	17.5	19.6	18.9	41.0	38.6	44.0	42.0	31.7	38.5	29.2	30.0	42.2	43.4	24.0	22.7

* R—Right side

L—Left side

Typical *H. fossilis* is spindle shaped where as in the new species the body is uniformly slender. From the Tables it is apparent that the specimens from Tirunelveli Dt. exhibit many characters intermediate between those of the new species and typical *fossilis* with an inclination for more affinities to the latter especially because of the nature of the eyes and relative lengths of the pectoral and shape of caudal fins. The new species is also distinctive in possessing long and pointed pectoral and caudal fins, larger eyes and such other characters as evident from the tables (Plate II, Figs. 1-5). The Tirunelveli specimens are smaller in size, being juveniles. Assigning their correct taxonomic status should await further detailed studies based on adult specimens.

Key to the species of Heteropneustes

1. Pectorals long and pointed, length $^{3}/_{4}$ths the distance between pectoral to pelvic fin origin; caudal pointed; body slender; eyes large about 6 or less in HL; air bladder short, less than $^{2}/_{5}$ths in SL and extending to about $^{1}/_{4}$th over anal fin ..... *Heteropneustes longipectoralis* sp. nov.

2 Pectorals short and rounded, $^{1}/_{2}$ to $^{1}/_{3}$rd the distance between pectoral to pelvic fin origin; caudal rounded; body slender to deep; eyes small more than 6 times in HL; air bladder relatively longer, about $^{1}/_{2}$ in SL extending to about $^{1}/_{3}$rd to $^{1}/_{2}$ length of anal fin ..... *Heteropneustes fossilis* (Bloch)

SUMMARY

A new species, *Heteropneustes longipectoralis* from the Anamalai Hills in the Western Ghats is described. This is the second species of the genus so far known. A key to both the species is also given.

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