

OLYRA ASTRIFERA A NEW SPECIES OF OLYRID CATFISH FROM THE WESTERN GHATS, SOUTHERN INDIA (TELEOSTI: BAGRIDAE: OLYRININAE) AND THE DESIGNATION OF NEOTYPE, *OLYRA LONGICAUDATA* MCCLELLAND, 1842 FROM NORTH-EASTERN INDIA

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ABSTRACT

Olyra astrifera, a new species of Olyrid catfish is described from the Manimalai River of south Kerala in southern Western Ghats. It can be distinguished from its congeners (except *O. horae*) by its adipose fin confluent of with caudal base, pectoral fins with weak serrations and strong dentitions, a greater length of the adipose fin base, a shorter distance of dorsal fin origin to origin of adipose fin and pores of the lateral line canal. It is further distinguished from *O. horae* by the number of anal fin rays (15 vs. 21) and the upper lobe of the caudal fin greater than one half longer than lower lobe (vs. slightly longer than lower). A neotype of *Olyra longicaudata* McClelland 1842 is designated from specimens collected from north-eastern India. Presence of *Olyra astrifera* from peninsular India is a record of the representation of the subfamily Olyrinae.

KEYWORDS: Olyrine Catfish, Western Ghats-Sri Lanka, Indo-Burma Biodiversity Hotspot

INTRODUCTION

Members of the genus *Olyra* McClelland are fighting catfishes with soft elongated bodies that are flat at the snout, have opercula terminating posteriorly in an oblique direction towards dorsal fin, and a dorsal fin that is shifted posteriorly. Their adipose fin is close to the caudal fin, they possess six pelvic fin rays, and have a well developed posterior process of pelvic girdle, that is distinctly separated anal fin (McClelland, 1842). Species of *Olyra* usually inhabit low flow, shallow water with a pronounced muddy bottom benthic habitat. The genus *Olyra* (1842) was described by McClelland from the Khasyah hills in the northeastern part of India and the type species was *Olyra longicaudata*. Day (1871) described *Olyra burmanica* from Pegu Yomas, Burma; later Chaudhuri (1912) described *Olyra kempfi* from Mangaldai, Darrang district, Assam-Bhutan frontier based on five young specimens. Later, *Olyra horae* was described by Prasad and Mukerji (1929) from Indawgyi Lake, Myitkyina district, upper Burma based on its deeply forked caudal fin with the upper lobe being slightly longer than the lower lobe. *Olyra* has, for many years, been thought to be the only genus of the family Olyridae. However, Mo's (1991) phylogenetic analysis of the family showed that *Olyra* is a highly specialized member of Bagridae. Mo (1991) recognized *Olyra* as the sister group of the lineage comprising *Bagrus*, *Aorichthys*, *Mystus*, and *Hemibagrus*. The distribution of the genus has been recorded as mainly from north-eastern India and Myanmar, although there is a single report of this genus from Nepal (Subba, 1995). During the recent field studies in southern Kerala, Peninsular India, a small olyrid was collected from Manimalai River which represents a species new to science and is described herein. Our

survey work also resulted in the capture of five specimens of *Olyra longicaudata* from the streams of Tlawang River, Sairang village, Aizwal, Mizoram. This species is redescribed here and a neotype is designated for the genus.

MATERIALS AND METHODS

Measurements were taken to the nearest 0.1mm using digital caliper. Counts and measurements were made on the left side of specimens wherever possible using a PC based binocular stereozoom microscope (Optika- SZ61TR) with transmitted light. Methods of counts and measurements were followed Ng (2005). Nomenclature for supraorbital and infraorbital sensory pores follow Arratia and Huaquin (1995) and terminology corresponding to branches of the postotic region of lateral-sensory cephalic system follows Donascimento and Lundberg (2005). Head characters are expressed as proportion of Head Length (%HL), Head length and body characters are expressed as proportion of standard length (%SL). Number in parenthesis following meristic data denote numbers of specimens examined with that count. Type specimens were deposited in Southern Regional Station, Zoological Survey of India, Chennai, Manonmaniam Sundaranar University Museum of Natural History (MSUMNH), Alwarkurichi, Tamil Nadu, India and specimens were preserved as Collections of M. Arunachalam (CMA).

Olyra astrifera, new species

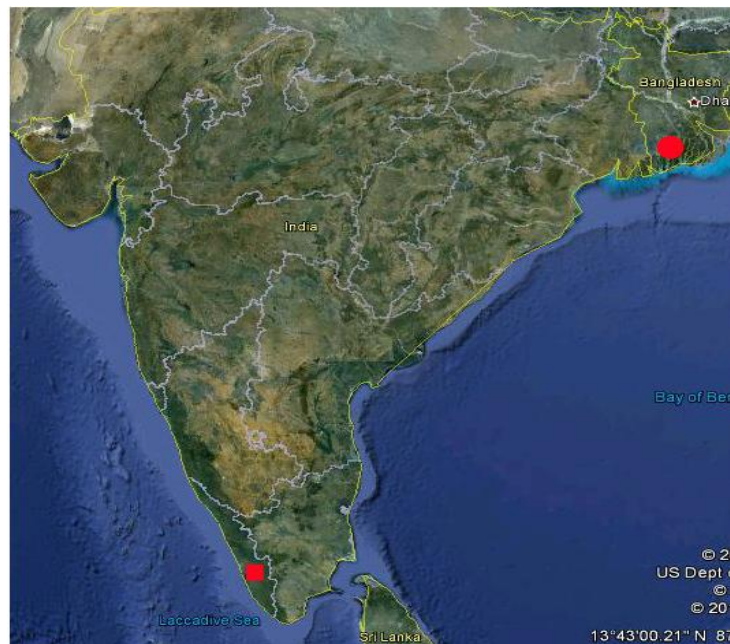


Figure 1: Type Locality of *Olyra astrifera* from Manimalai River at Kottangal Village, Kerala, (Circle) and Collection Site of *Olyra longicaudata* from Tlawang River at Sairang Village, Mizoram (Square)



Figures 2: a & b) *Olyra astrifera* (Colouration in Life Immediately after Capture). Holotype, ZSI/SRS F8662, Male, 33mm SL. India, Kerala, Manimalai River at Kottangal Village, 20 km from Mundakayam

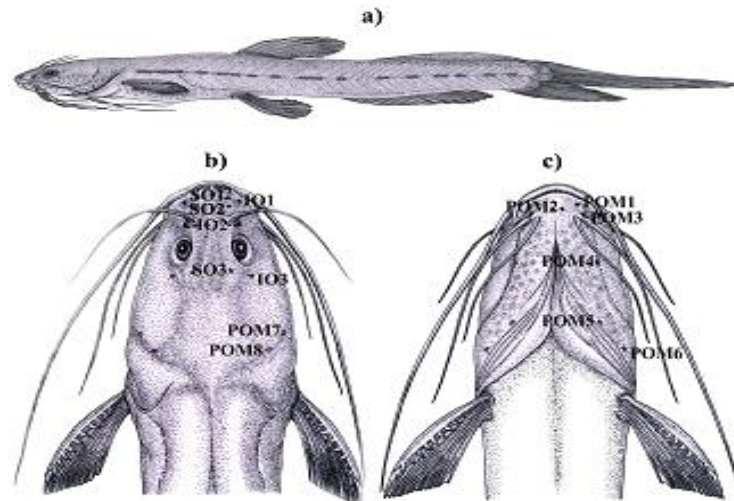


Figure 3: Drawings of *Olyra astrifera*. Paratype MSUMNH 66, 33 mm SL. a) Lateral View b-c) Dorsal and Ventral Views of Head Illustrating Cephalic Sensory Pores (Pores not Draw to Scale). Abbreviations: SO1–3, Supraorbital Pores 1–3; IO1–3, Infraorbital Pores 1–3; POM 1–8; Preoperculomandibular Pores 1-8

Holotype: ZSI/SRS F8662, Male, 33mm SL, India, Kerala, Manimalai River at Kottangal village, 20 km from Mundakayam, (9° 28' 58.8'' N, 76° 40' 31.2'' E), Collectors: M. Arunachalam, A. Chandran, M. Raja, S. Nandagopal and A. Vanadurai. 30 September 2012.

Paratype: MSUMNH 66, 1 ex. Male. 31.2 mm SL; All other details same as Holotype.

DIAGNOSIS

Olyra astrifera can be distinguished from its congeners (except *O. horae*) by its adipose fin confluent with base of caudal fin (vs. separated); pectoral fin with weak serrations and strong dentitions internally numbering 10-12 (vs. strong serrations externally and internally with 13-15); anal fin rays 15 (vs. 16-21); lateral line canal pores 17-23 (vs. 39-40); greater length of adipose fin base (31.2-33.2%SL vs. 17.6-19.9%), shorter distance of dorsal fin origin to origin of adipose fin (21.6-22.5%SL vs. 31.3-38.1%). The species is further distinguished from *O. horae* by its anal fin rays 15 (vs. 21) and the upper lobe of caudal fin extending posteriorly by a length that is more than half the length of the lower lobe (vs. slightly longer than lower).

Olyra astrifera differs from *Olyra longicaudata* by its pre-dorsal length (41.9-42.3 %SL vs. 34-36.1%), greater pre-anal length (61.8-66.2 %SL vs. 54.4-57%), shorter anal fin base length (23.6-25 %SL vs. 26.8-28.9%), greater length of the lower lobe of the caudal fin (21.4-21.6 %SL vs. 18.4-18.9%), shorter caudal peduncle length (10-10.6 %SL vs. 11.6-13.9%), greater caudal peduncle depth (11.1-11.4 %SL vs. 6.7-8.2%), greater head length (23-23.6 %SL vs. 15.9-17.3%), and greater nasal barbel length (42-42.2%HL vs. 32.9-38.1%).

Olyra astrifera can be distinguished from *Olyra kempi* by its greater pre-dorsal length (41.9-42.3 %SL vs. 36.9%), pre-anal length (61.8-66.2%SL vs. 59.2%), depth of caudal peduncle (11.1-11.4 %SL vs. 7.3%), head width at eye (50.5-51.3%HL vs. 58.5%), eye diameter (12.2-12.9%HL vs. 8.4%) and nasal barbel length (42-42.2 %SL vs. 28.6%).

Olyra astrifera differs from *Olyra horae* by the number of dorsal fin rays i 6 (vs. i 7); pectoral fin rays i 6 (vs. i 7), caudal fin with 27 rays (vs. 38-40), greater pelvic fin length (15-15.1 %SL vs. 11.42%), pectoral fin length (11.3-12.1%SL vs. 10 %), length of caudal peduncle (10-10.6 %SL vs. 11.42%), shorter body depth (9.1-9.9%SL vs. 11.42%), greater head length (18-21.6 %SL vs. 16.42%), shorter snout length (32.1-33%SL vs. 34.78%), greater eye diameter (12.2-12.9 %SL vs. 10.86%).

Olyra astrifera differs from *Olyra burmanica* by the number of dorsal fin rays i 6 (vs. i 7), pectoral fin rays i 6 (vs. i 4), pelvic fin rays i 5 (vs. i 6), anal fin rays viii 7 (vs. iii 13), mouth subterminal (vs. terminal), and maxillary barbels reaching pectoral fin base (vs. pelvic fin base).

DESCRIPTION

Morphometric characters of the holotype and paratype are given in Table 1. Head elongate, flattened at the snout, and covered with a soft skin. Operculum terminates posteriorly in an oblique point directed towards the dorsal fin. Mouth sub-terminal, upper jaw slightly longer than lower and the lips are more or less fleshy. Supraoccipital bone apparently free posteriorly.

Nares distant from each other, anterior tubular and posterior oval with a rim that is produced anteriorly as a barbel. Barbels 8. Nasal barbels slender and, when straightened reaching posterior end of preoperculomandibular pores (PO7). One pair of maxillary barbels extending to end of pectoral fin length; outer mandibular barbels longer than inner, reaching the end of the pectoral fin base; inner mandibular barbels reaching posterior end of the preoperculomandibular pores 6. Gill opening wide and not confluent with isthmus. Eyes small and covered by a soft skin.

Cephalic sensory canals simple (Fig. 3). Supraorbital canal with three pores present at (SO1-SO3) and medially adjacent to anterior nostril; canal poster-medial to anterior nasal and mid-distance of inter-narial length. Infraorbital pores present (IO1-IO3); postero-lateral corner of anterior naris slightly behind nasal barbel base and behind eye; pre-opercular mandibular canal with 8 pores, those from pre-opercle with wide foramina. Lateral line complete and with 17-23 pores; canal reaching hypurals.

Dorsal profile nearly horizontal, nape not elevated, body flattened in front of and compressed behind pelvic. Dorsal fin with i 6 rays and without any osseous ray; fin located above vertical through pelvic fin origin. The first ray of dorsal fin shortest while rays 4-5 being the longest. Base of dorsal fin rays are covered by soft skin.

Adipose fin low, smooth, originating at about 60% of SL, and above vertical through 2nd anal fin ray; fin confluent with caudal fin. Pectoral fin originates immediately behind gill opening; length of fin equal to head length. Pectoral fin rays i 6 and minute external serrations and strongly internal serrations or denticulations numbering 10-12. Pelvic fin rays i 5; fin longer than pectoral and situated midway between pectoral fin insertion and origin of anal fin; fin vertically posterior to dorsal fin origin. The tip of pelvic fin is not reaching anal fin base.

Anus and urogenital opening situated slightly posterior to middle of the pelvic fin base. Genital papilla is anterior to base of anal fin; males with a conical papilla reaching to base of caudal fin. Anal fin elongate; first ray simple; total rays vii 8 rays. Anal fin unsheathed in skin and not confluent with caudal. Caudal fin lanceolate, total rays 27; 9+8 principal rays. Upper lobe of caudal fin is more than the half a time of lower lobe; 6th and 7th principal caudal fin rays longest.

COLOURATION

In live specimens, upper surface of head and anterior part of head and dorsum anterior to dorsal fin origin pale brown with reddish tinge. Body light brown and with numerous small star-like spots. Barbels dull white and light greenish above. Opercle region of both sides greenish-white and with numerous star-like spots. Ventral surface of body dull white and with greenish star-like spots from lower lip to anal fin origin. Dorsal, pectoral, pelvic, anal caudal fins covered by dull white soft skin. Dorsal edges of adipose fin dull white; bases dark brown. Lateral sensory canals deep and edged in light green.

HABITAT AND NATURAL HISTORY

The location where this species was sampled is a major fifth order river with relatively clear water and the substratum of mostly sand and small boulders (Fig. 4). Riparian cover was 80-90% with mostly overhanging vegetation. Width of the river 62m; depth varied from 0.5- 4.5m along a single transect. Large stands of bamboo were seen on the right bank of the river (looking at upstream). *Olyra astrifera* was collected from exposed bamboo roots along the edges of the bank with leaf litter and small grasses.

ETYMOLOGY

Olyra astrifera refers to the distribution of star- shaped dots all over the body, feminine noun in adjective.

Olyra longicaudata McClelland, 1842



Figure 4: Type Locality of *Olyra astrifera*, Manimalai River at Kottangal Village, 20 Km from Mundakayam, Kerala, India



Figure 5: Lateral View of *Olyra longicaudata*, Collected from Tlawang River, Sairang Village, 25 Km from Aizwal (Dk), Mizoram, India

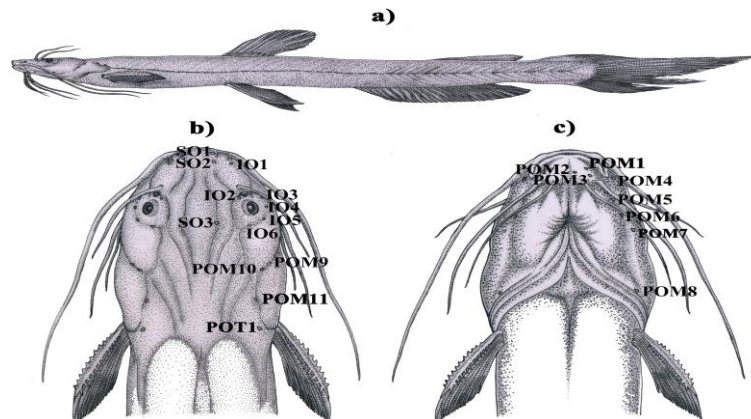


Figure 6: Drawings of *Olyra longicaudata* McClelland 1842. Neotype: MSUMNH 67, 84.1mm, SL. Sampled from Tlawang River, Sairang Village, 25 km from Aizwal (DK), Mizoram, India. a) Lateral View and b-c) Dorsal and Ventral Views of Head. Illustrating Cephalic Sensory Pores (Pores not Draw to Scale). Abbreviations: SO1–3, Supraorbital Pores 1–3; IO1–6, Infraorbital Pores 1–6; POM 8–13; Preoperculo-mandibular Pores 8–13; POT1–3 Postotic pores 1–3 and B. 1–7, Preoperculo-mandibular Pores 1–7



Figure 7: Collection Site of *Olyra longicaudata* from Tlawang River at Sairang Village, 25 Km from Aizwal (Dk), Mizoram, India

Olyra longicaudata McClelland, *Calcutta J. nat. Hist.* 2: 588, tab. 21, Figure 1, 1842 (Type locality Khasyah hills- No types known).

Neotype: Neotype by present designation, *Olyra longicaudata* MSUMNH 67, 3 ex, 76.3-96.8 mm SL; CMA 24, 2ex., 46.21-53.64 mm SL, Tlawang river, Sairang village, 25 km away from Aizwal, India (23⁰ 46' 53'' N, 92⁰ 39' 07.9'' E), 07 May 2011. Collectors: M. Arunachalam, M. Raja, C. Vijayakumar and S. Nandagopal.

DESCRIPTION

Morphometric characters given in Table 2. Head depressed, especially at snout, and covered with a soft skin. Supra-occipital bone apparently free posteriorly. Mouth moderately wide, jaws equal in length. Villiform teeth in both jaws, outer rows slightly longer than lower. Gill opening wide and not confluent with isthmus. Branchiostegal membrane with 6 rays on each side and not confluent with isthmus. Barbels in 4 pairs. Nares distant from one another; anterior nares tubular, posterior oval with a rim formed from anterior edge of barbel. Maxillary barbel extends to end of the pectoral fin, outer mandibular barbel inserted slightly behind inner mandibular barbel, its distal tip reaching end of the branchiostegal rays. Inner mandibular barbel inserted anterior to top of gular fold; distal tip reaching half against its length beyond apex. Eyes small, rounded, positioned completely dorsally and protruding closer to snout tip than margin of opercle; eye subcutaneous without a free orbital margin; eyes covered by superficial thin and translucent lateral skin fold.

Cephalic sensory canals simple. Supraorbital canal with three pores at SO1 and medially near to anterior nasal, SO2 postmedial to anterior nasal, SO3 centre of the internasal length. Infraorbital pores present at IO1 corner of anterior nasal, IO2 near to maxillary groove, IO3 behind maxillary barbel base, IO4 anterior to eye, IO5 postrolateral to eye, IO6 behind eye, IO7 postrolateral on head. Preoperculomandibular canal with 12 pores. Postotic canal with three pores above opercle and gill opening. Lateral line canal complete with 39-40 pores.

Body elongate and subcylindrical. Dorsal profile nearly horizontal, nape not elevated. Dorsal fin with i, 6 (5) rays and without any osseous ray; first ray shortest and 4th ray longest. Distal tips of adpressed posterior rays not reaching origin of adipose fin. Bases of dorsal fin rays covered by soft skin. Adipose fin short and low, originating about 75% SL and above vertical through 10th ray of anal fin. Pectoral fin with i, 6 (5) rays with stout, dorsoventrally serrated spine. Pectoral fin spine with finely serrated externally with 13-15 (5) antrose spines and coarsely serrated internally with 13-15 (5) antrose spines along the entire length.

Pelvic fin rays i, 5 (5); origin of fin at vertical through posterior end of dorsal fin base. Pelvic fin longer than pectoral; tip of adpressed pelvic fin not reaching anal fin base. Anus and urogenital opening situated slightly posterior to middle of the pelvic fin base. Genital papilla anterior to base of anal fin; genital papilla of males conical and reaching base of anal fin. Anal fin elongate and with 18 (3), 20 (1), or 21 (1) rays; first ray simple. Anal fin rays increasing in length and not confluent with caudal base. Caudal peduncle moderately deep. Caudal fin lanceolate and with 27 total rays and 9+8 principle rays. Upper lobe of caudal fin greater than 1.5 the length of lower lobe; 4th and 5th principle caudal fin rays longest.

COLORATION

Specimens were obtained from a fisher women along the banks of the river and not in live condition. Efforts to collect in live from the river were unsuccessful. In dead specimens, upper surface of head and anterior part of head and predorsal dusky brown. Ventral surface, pectoral, pelvic, anal, and caudal fins dusky white. Adipose fin dark brown.

HABITAT AND NATURAL HISTORY

In this area the species reported to be sampled from a fourth order stream with a width of 27m (Figure 7). Water turbid from previous night rain (6th may 2011); flow moderate; stream substratum sand and clay. Banks mostly unstable and with riparian canopy of trees; evidence of tree cutting was clearly present along riparian zone of left bank.

DISCUSSION

The genus *Olyra* (1842) was described by McClelland in Khasyah Hills in the northeastern part of India. *Olyra longicaudata*, the type species (*Olyra longicaudatus* in original description) was described based on a single specimen. *Olyra laticeps* (plate 21 Figure 2a, b) was described with the former and subsequently allocated by Gill (1861-1862) to *Amblyceps*.

Talwar and Jhingran (1991) merged *O. kempfi* Chaudhuri with *O. longicaudata* and Menon (1999) synonymised *O. horae*, *O. kempfi* and *O. burmanica* under *O. longicaudata*. Jayaram (2006), however, considered all four species as valid. There was a report (Subba, 1995) on the occurrence of *O. longicaudata* from Kodaya River, Nepal but in the description it was mentioned the presence of a sucker and hence the identity of the genus is doubtful.

The occurrence of the genus *Olyra* in the Western Ghats is rather unexpected as all of the four valid species are distributed in north-eastern India and from Myanmar. The new species extends the distribution of the genus *Olyra* and of the subfamily Olyrinae as a whole to the Western Ghats of Southern India. The discovery of *Olyra astrifera* parallels that of other freshwater fish taxa with a mostly northeastern India/ Myanmar distribution. Some examples include *Psilorhynchus tenura*, (Arunachalam & Muralidharan, 2008), *Pseudolaguvia austrina* (Radhakrishnan, Sureshkumar & Ng, 2011) *Pseudolaguvia lapillicola* (Britz, Anwar Ali & Rajeev Raghavan, 2013) and *Dario urops* (Britz, Anwar Ali & Siby Philip, 2012).

COMPARATIVE MATERIALS

Olyra kempfi- MSUMNH, C18, 41.1mm SL. Bordijul river, Podumori village, Balijan, Lakhmipur (Dt), Assam, India. Coll. M. Arunachalam and team 14 Nov. 2010.

Olyra kempfi- MSUMNH, C19, 70.5-88.9mm SL. Karala river at Belahoba village, New Jalpaiguri (Dt), West Bengal, India. Coll. M. Arunachalam and team 28 Nov. 2012.

Olyra horae- Published information used for comparison: Prasad, B. & Mukerji, D.D (1929) The fish of the Indawgyi lake and the streams of the Myitkyina district (Upper Burma). *Records of the Indian Museum*, Vol. 21 161-223, X. pls.

Olyra burmanica- Published information used for comparison: Day, F. (1871) On the Freshwater Siluroids of India and Burma. *Proceedings of the Zoological Society of London*, 711 pp.

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APPENDICES

Table 1: Morphometric Data of *Olyra astrifera* (n=2)

		Holotype ZSI/SRS F8662,	Paratype MSUMNH 66
1	Standard length (mm)	33.0	31.2
% of SL			
2	Pre dorsal length	42.3	41.9
3	Pre anal length	66.2	61.8
4	Pre pelvic length	42.9	41.3
5	Pre pectoral length	20.5	20.1
6	Length of dorsal fin base	12.1	12.2
7	Length of longest dorsal fin ray	16.5	16.2
8	Length of dorsal spine	8.5	7.8
9	Length of anal fin base	20.6	21.0
10	Length of longest anal fin ray	10.8	10.2
11	Pelvic fin length	15.1	15.0
12	Pectoral fin length	12.1	11.3
13	Distance b/w pectoral to pelvic	21.2	20.3
14	Distance b/w pelvic to anal	18.2	17.4
15	Length of caudal fin upper lobe	42.0	37.2
16	Length of caudal fin lower lobe	21.6	21.4
17	Length of adipose fin base	33.2	31.2
18	Distance b/w dorsal origin to adipose origin	21.6	22.5
19	Length of caudal peduncle	10.6	10.0
20	Depth of caudal peduncle	11.4	11.1
21	Body depth at anus	12.5	12.9
22	Body depth at dorsal fin origin	13.8	13.2
23	Head length	23.0	23.6
24	Head width	14.0	13.8
25	Head depth	10.3	10.5
% of HL			
1	Snout length	30.0	22.1
2	Head depth at nape	25.0	20.1
3	Head depth at eye	34.6	32.3
4	Head depth at occiput	48.2	42.4
5	Head width at eye	51.3	50.5
6	Inter orbital distance	22.6	19.3
7	Inter nasal distance	19.7	17.7
8	Eye diameter	12.9	12.2
9	Maxillary barbel length	153.7	132.2

Table 1:Contd.,

10	Nasal barbel length	42.0	42.0
11	Inner mandibular barbel length	48.0	43.2
12	Outer mandibular barbel length	79.3	76.4

Table 2: Morphometric Data of *Olyra longicaudata* (N=5)

		Lectotype	Range	Mean±SD
1	Standard length	77.2	76.3-96.8	
% SL				
2	Pre dorsal length	34.3	34.0-36.1	34.8±0.8
3	Pre anal length	57.0	54.4-57.0	55.6±1.2
4	Pre pelvic length	37.6	34.8-37.6	35.8±1.2
5	Pre pectoral length	14.6	14.6-16.4	15.6±0.8
6	Length of dorsal fin base	8.5	7.9-9.0	8.5±0.4
7	Length of longest dorsal fin ray	17.2	16.4-20.7	18.3±0.5
8	Length of dorsal spine	8.6	8.4-9.2	8.7±0.4
9	Length of anal fin base	28.2	26.8-28.9	28.0±0.9
10	Length of longest anal fin ray	10.4	10.1-11.3	10.5±0.6
11	Pelvic fin length	13.9	11.3-14.1	13.3±1.2
12	Pectoral fin length	11.2	9.5-11.2	10.2±0.7
13	Distance b/w pectoral to pelvic	18.2	17.5-20.3	18.4±0.4
14	Distance b/w pelvic to anal	17.1	16.8-18.2	16.9±0.4
15	length of caudal fin upper lobe	29.8	27.7-30.1	29.6±1.3
16	length of caudal fin lower lobe	20.4	18.4-18.9	19.3±0.7
17	length of Adipose fin base	18.2	17.6-19.5	18.7±0.8
18	Distance b/w dorsal origin to adipose origin	33.2	31.3-34.3	33.1±1.2
19	Length of caudal peduncle	11.6	11.6-13.9	12.4±1.0
20	Depth of caudal peduncle	7.6	6.7-8.2	7.3±0.6
21	Body depth at anus	8.2	7.5-8.6	8.1±0.5
22	Body depth at dorsal fin origin	9.0	7.9-9.1	8.5±0.5
23	Head length	17.3	15.9-17.3	16.7±0.6
24	Head width	10.2	9.7-11.8	10.4±0.8
25	Head depth	6.2	6.0-7.2	6.6±0.5
% HL				
1	Snout length	33.1	33.1-35.2	34.2±0.8
2	Head depth at nape	22.1	21.5-24.8	22.8±1.3
3	Head depth at eye	26.7	26.1-28.4	27.0±1.0
4	Head depth at occiput	44.6	40.2-45.0	43.3±1.9
5	Head width at eye	53.0	51.9-57.1	54.5±2.0
6	Inter orbital distance	36.1	30.1-37.0	33.8±2.8
7	Inter nasal distance	24.0	24.0-29.8	25.4±2.5
8	Eye diameter	9.8	9.8-12.2	10.8±1.1
9	Maxillary barbel length	152.7	152.7-172.0	162.3±7.9
10	Nasal barbel length	32.9	32.9-38.1	35.4±2.0
11	Inner mandibular barbel length	43.6	43.6-49.3	46.5±2.2
12	Outer mandibular barbel length	76.9	76.9-82.5	78.5±1.9