Rec. zool. Surv. India: Vol 120(1)/ 25-32, 2020
DOI: 10.26515/rzsi/v120/i1/2020/147937

ISSN (Online) : 2581-8686
ISSN (Print) : 0375-1511

Glyptothorax distichus, a New Species of Catfish (Teleostei: Sisoridae) from Mizoram, North-Eastern India

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Zoobank: http://Zoobank.org/urn:1sid:zoobank.org:act:BC7E37E0-349A-4C7F-BCE3-F1B9F0203196

Abstract

A new sisorid catfish, *Glyptothorax distichus*, is described from the Barak-Meghna-Surma drainage in Mizoram, North-east India. It is distinguished from its congeners in having a combination of the following characters: a chevron-shaped thoracic adhesive apparatus, with poorly developed median depression that is widely opened posteriorly by skin ridges; short dorsal fin spine; short and slender caudal peduncle; unculiferous ridges of adhesive apparatus not extending anteriorly onto gular region; absence of plicate on ventral surfaces first pectoral and pelvic fins rays, smooth skin on head and body; presence of two broad pale cream longitudinal stripes on body; and 20 + 17 Vertebrae.

Keywords: *Glyptothorax distichus,* Mizoram, New Species, Tlwang River

Introduction

Fishes of the catfish genus *Glyptothorax* are characterized by having a thoracic adhesive apparatus, comprising of an elliptical field of folded longitudinal pleats of skin, a detached distal portion of the premaxilla with long and thin arms of the vomer that extend underneath the entire length of the articular process of the lateral ethmoid (de Pinna, 1996). Seven species of *Glyptothorax* have been recorded from the Barak-Meghna-Surma drainage in India, viz., *G. cavia, G. clavatus, G. indicus, G. maceriatus, G. manipurensis, G. scrobiculus,* and *G. techitta* (Lalramliana & Vanlalhriata, 2010; Kosygin, 2011; Rameshori & Vishwanath, 2014). The occurrence of a few species of the genus from the drainage suggests inadequate sampling due to inaccessibility or meagre amount of collections being made from small sections of the drainage (Rameshori & Vishwanath, 2014).

An ichthyological survey conducted during September, 2007 in the Tlwang River (Barak-Meghna-Surma drainage) in Mizoram, India, two specimens of an unnamed *Glyptothorax* were collected, which represent a new species described here as *Glyptothorax distichus.*

Material and Methods

Morphometric measurements were made point to point with slide callipers and data recorded to tenths of a millimeter. Counts and measurements were made on the left side of specimens whenever possible, following Ng and Kottelat (2013). Body depth at dorsal fin origin was measured as a straight vertical distance from the belly to the dorsal fin origin. Head Length (HL) and the measurements of body parts were taken as proportions of Standard Length (SL) and the subunits of the head as proportions of HL. Width of the midlateral stripe on the body was measured vertical at the anus. Fin rays were counted under a stereo-zoom binocular microscope. Vertebral counts were made from radiographs, following the method of Roberts (1994). Number in parenthesis following a count indicates the frequency of that count. Type specimens are deposited in the Zoological Survey of India, Kolkata (ZSI).

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Article Received on: 02.10.2019 Accepted on: 28.11.2019

Glyptothorax distichus sp .nov.
(Figure 1)

Figure 1. *Glyptothorax distichus*, ZSI FF 5390, holotype, 101.1 mm SL; India: Mizoram: Tlawng River; dorsal, lateral and ventral views.

*Material examined***:** Holotype: ZSI FF 5390, 101.1 mm SL; India: Mizoram: Aizawl district: Tlwang River near Sairang (Barak-Meghna-Surma drainage), 23°48'26" N 92°38'45" E; Coll. L. Kosygin, 24-ix-2007. Paratypes: ZSI FF 5391, 1, 78.0 mm SL; same data as holotype.

Diagnosis: Glyptothorax distichus is diagnosed from congeners in the Indian subcontinent in having a combination of the following characters: a chevron-shaped thoracic adhesive apparatus, with poorly developed median depression that is widely opened posteriorly by skin ridges; short dorsal fin spine (10.4, 12.4% SL); deep body (depth at anus 12.7, 13.2% SL); short caudal peduncle (17.6, 16.3% SL vs. 21.4–23.9); slender caudal peduncle (7.8, 7.9% SL); short predorsal length (32.7, 34.2% SL) unculiferous ridges of adhesive apparatus not extending anteriorly onto gular region; absence of plicate on ventral surfaces first pectoral and pelvic fins rays, smooth skin on head and body; presence of two broad pale cream longitudinal stripes on body; and 20 + 17 Vertebrae.

Description: Morphometric data as in Table 1 Body elongate. Head depressed with almost conical snout when viewed dorsally. Dorsal profile rising evenly from tip of snout to origin of dorsal fin, then sloping gently from there to end of caudal peduncle. Occipital process not in contact with anterior nuchal plate elements. Ventral profile flat till posterior end of pectoral fin base, then slightly convex till anterior end of pelvic fin base, and then rising gently from anterior end of pelvic fin base to end of caudal fin base. Caudal peduncle moderately deep. Mouth inferior, lips papillate, teeth on upper jaw as one continuous band with anterior margin almost truncate; those on lower jaw in two patches, separated by a narrow partition. Eyes small and round, located on dorsal surface of head.

Thoracic adhesive apparatus chevron-shaped, slightly longer than broad, extending from isthmus to middle of pectoral fin base with poorly developed chevron-shaped median depression that is widely opened posteriorly by skin ridges (Figure 2). Striae of thoracic adhesive apparatus uninterrupted, medial striae oriented anteriorly, lateral ones anterolaterally. Anus and urogenital openings located at vertical through posterior end of adpressed pelvic fin. Skin on head and body almost smooth. Lateral line complete and midlateral. First branchial arch bearing 2+9 (1) or 3+8 (1) gill rakers. Vertebrae 20 + 17 = 37 (2).

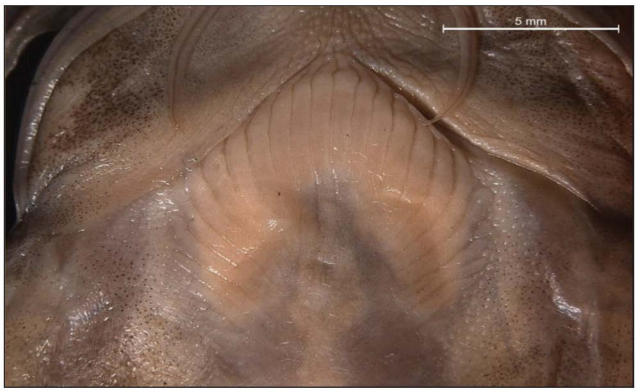

Figure 2. Thoracic adhesive apparatus of *Glyptothorax distichus*, ZSI FF 5390, holotype, 101.1 mm SL.

Barbels in four pairs. Maxillary barbel long and slender, reaching ends of pectoral fin base. Outer mandibular barbel longer than inner, slightly exceeding base of pectoral fin spine base. Inner mandibular barbel not reaching operculum. Nasal barbel short, not reaching anterior margin of eye when adpressed, extending halfway to orbital margin.

Dorsal fin located halfway between snout tip and adipose-fin origin, with I, 6 rays. Dorsal fin spine strong, gently curved, serrated posteriorly, shorter than depth of body immediately ventral. Adipose-fin short, anterior margin straight, posterior margin convex. Pectoral fin slightly shorter than head, with I, 9, i rays. Pectoral fin spine broad, anterior margin smooth, posterior margin with 10–12 serrae without furrow at approximate juncture of anterior and posterior portions of each fin-spine element (Figure 3). Pelvic fin with I, 5 rays, not reaching the origin of anal fin when adpressed. Ventral surface of paired-fins not pleated. Anal fin long, with II, 8, i rays, originating at vertical slightly posterior to adipose-fin origin. Caudal fin forked, with 17 or 15 rays.

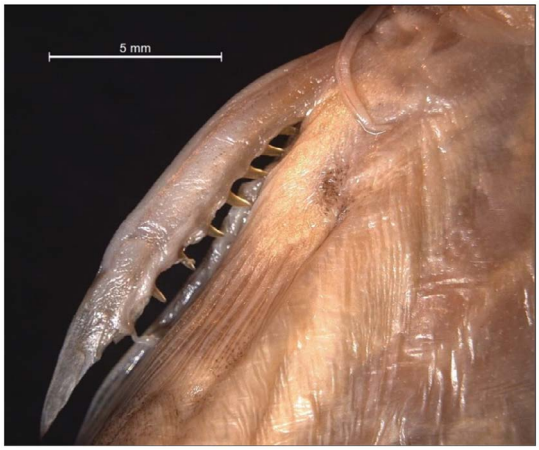

Figure 3. Ventral surface of pectoral fin spine of *Glyptothorax distichus*, ZSI FF 5391, paratype, 78.0 mm SL.

Coloration: In 70% alcohol: Dorsal and lateral surfaces of head and body dark brown, fading to pale cream ventrally. Two broad pale cream longitudinal stripes: one mid-dorsal, originating from end of dorsal fin base and another midlateral (width 17.1, 22.1% body depth at anus) originating from operculum to the caudal fin base on either side of body. Dorsal fin with a distinct broad blackish brown band at distal half. Adipose-fin dark brown with pale creamish posterior edge. Pectoral, pelvic, anal and caudal fins dusky with hyaline margins.

Distribution: Presently known only from the type locality, the Tlawng River near Sairang, Aizawl District, Mizoram (Barak-Meghna-Surma drainage), India (Figure 4).

Figure 4. Tlwang River at Sairang, Mizoram, type locality of *Glyptothorax distichus*.

Etymology: The species name comes from the Latin 'distichus' meaning having two longitudinal rows of grain or lines, in allusion to the two broad longitudinal stripeson the body. An adjective.

Discussion

The genus *Glyptothorax* includes a large number of valid species and is distributed over a vast geographical area extending from Turkey to Southern China and Java (Ferraris & Britz, 2005). Since, *Glyptothorax* species are typically restricted to one or a few adjacent river drainages (Ng & Rachmatika 2005; Premananda *et al.*, 2015), our comparisons of *G. distichus*is therefore restricted to congeners from the Barak-Meghna-Surma drainage, and its neighbouring drainages, viz., the Ganga-Brahmaputra River, the Kaladan River and the Chindwin River.

Currently, seven species of *Glyptothorax* are known from the Barak-Meghna-Surma drainage *viz.*, *G. cavia,*

G. clavatus, G. indicus, G. maceriatus, G. manipurensis, G. scrobiculus, and *G. techitta.* The new species, *G. distichus* is distinguished from *G. cavia* in the absence (vs. presence) of a deep central pit in the thoracic adhesive apparatus, absence (vs. presence) of dark brown spots on the skin, and in having a deeper caudal peduncle (7.9, 7.8% SL vs. 4.8–6.4). It differs from *G. clavatus* in having a slender caudal peduncle (depth 7.9, 7.8% SL vs. 8.6-10.1), a shorter dorsal fin spine (10.4, 12.4% SL vs. 17.1–18.8); more gill rakers on the first branchial arch (2+9 or 3+8 vs. 2 + 7), broader midlateral stripe on the body, fewer caudal vertebrae (17 vs. 19) and smooth (vs. densely tuberculate) skin on head and body. It is further distinguished from *G. indicus,* in having the unculiferous ridges of the thoracic adhesive apparatus not extending (vs. extending) anteriorly onto the gular region, shorter predorsal length (32.7, 34.2% SL vs. 36.8–38.6), shorter caudal peduncle (17.6, 16.3% SL vs. 21.9–24.4) and presence (vs. absence) of two broad pale cream longitudinal stripes on body. It differs from *G. maceriatus* in having a shorter caudal peduncle (17.6, 16.3% SL vs. 21.4–23.9), shorter dorsal fin spine (10.4, 12.4% SL vs. 13.0–17.1), and thoracic adhesive apparatus with chevron- (vs. elliptic-shaped) central depression that is widely opened (vs. almost enclosed) posteriorly. The new species is distinguished from *G. manipurensis* in having a slender body (depth at dorsal fin origin 14.2, 15.3% SL vs. 18.9–20.5), shorter thoracic adhesive apparatus (11.5, 11.9% SL vs. 14.1–16.2), shorter predorsal (length 32.7, 34.2% SL vs. 36.1, 36.2), shorter caudal peduncle (16.3, 17.6% SL vs. 18.0–20.2), smaller eye (10.3, 12.7% HL vs. 14.5–15.0), smaller interorbital width (26.0, 26.4% HL vs. 32.2–34.0) and presence (vs. absence) of two broad pale cream longitudinal stripes on body. *Glyptothorax distichus* is distinguished from *G. scrobiculus* in having a broader midlateral stripe on the body (17.1, 22.7% body depth at anus vs. 4.8), absence (vs. presence) of furrow at approximate juncture of anterior and posterior portions of each fin-spine element, smaller head length (23.9, 24.2% SL vs. 25.0–26.6), shorter adipose dorsal fin length (12.9, 10.9% SL vs. 14.1–17.8), longer post adipose length (17.9, 17.6% SL vs. 15.0–16.9), shorter nasal barbel (18.6, 20.6% HL vs. 23.0–31.0), larger eye (10.3, 12.7% HL vs. 7.0–8.0), chevron- (vs. rhomboidal-shaped) thoracic adhesive apparatus with pointed (vs. blunt) anterior tip, poorly (vs. well) developed median depression and fewer vertebrae (37 vs. 38–40). It differs from *G. techitta* in having a deeper and shorter caudal peduncle (depth 7.8, 7.9% SL vs. 4.7–5.9; length16.3, 17.6% SL vs. 19.2–23.8), longer dorsal fin to adipose-fin length (27.1, 28.2% SL vs. 20.2–25.9), shorter post adipose distance (17.9, 17.6% SL vs. 20.0–22.7), smooth (vs. tuberculate) skin and more abdominal vertebrae (20 vs. 13–15).

Fourteen more species of *Glyptothorax* are considered valid in the Ganga-Brahmaputra River drainage: *G. alaknandi, G. botius, G. brevipinnis, G. conirostris, G. dikrongensis, G. gracilis, G. mibangi, G. pantherinus, G. pasighatensis, G. pectinopterus, G. radiolus, G. saisii, G. stolickae* and *G. striatus. Glyptothorax distichus* is distinguished from *G. alaknandi* in having in having a dorsal fin origin considerably nearer to the tip of the snout than to the origin of the adipose-fin (vs. equidistant between the tip of the snout and the adipose-fin origin), slender caudal peduncle (7.8. 7.9% SL vs. 10.8), shorter adipose dorsal fin base (12.0, 12.4% SL vs. 19.2), the presence (vs. absence) of two broad longitudinal stripes on the body and by the absence (vs. presence) of plicate ventral surfaces of paired fins; from *G. botius* in having a deeper body (depth at anus 12.7, 13.2% SL vs. 10.6–12.3), a deeper caudal peduncle (7.8, 7.9% SL vs. 3.1–4.2), maxillary barbel shorter (vs. longer) than head length, more abdominal vertebrae (20 vs. 13–15) and the absence (vs. presence) of dark saddles on the body; and from *G. brevipinnis* in having a slender caudal peduncle (7.8, 7.9% SL vs. 10.1–10.8), a thoracic adhesive apparatus slightly longer than broad (vs. broader than long), presence (vs. absence) of two broad longitudinal stripes on body and by the absence (vs. presence) of plicate ventral surfaces of paired fins. G. *distichus* differs from *G. conirostris* in having nasal barbel not reaching (vs. reaching) posterior margin of eye, shorter and slender caudal peduncle length (length 16.3, 17.6% SL vs. 21.1; depth 7.8, 7.9% SL vs. 9.3), slender body (depth at dorsal fin origin 14.2, 15.3% SL vs. 17.6), and by presence (vs. absence) of two broad longitudinal stripes on body; from *G. dikrongensis* in having the unculiferous ridges of the thoracic adhesive apparatus not extending (vs. extending) anteriorly onto the gular region, shorter predorsal length (32.7, 34.2% SL vs. 39.0–39.8) and presence (vs. absence) of two broad longitudinal stripes on body; and from *G. gracilis* in having a shorter caudal peduncle (16.3, 17.6% SL vs. 20.7-23.7), shorter dorsal fin spine (10.4, 12.4% SL vs. 14.0-17.8), more gill rakers (2+9 or 3+8 vs. 2+8) on the first branchial arch, a shorter thoracic adhesive apparatus (11.5, 11.9% SL vs. 13.3–16.8) and a broad (vs. narrow) longitudinal pale cream stripe present on the sides of the body. The new species is distinguished from *G. mibangi* in having a chevron- (vs. obtuse-shaped) thoracic adhesive

apparatus, a shorter caudal peduncle (16.3, 17.6% SL vs. 20.5-22.6), shorter dorsal fin spine (10.4, 12.4% SL vs. 15.1-15.7), nasal barbel not reaching (vs. reaching) anterior margin of eye, a broad (vs. narrow) longitudinal pale stripe present on the sides of the body and more vertebrae (37 vs. 35); from *G. pasighatensis* in having a shorter dorsalf in spine (10.4, 12.4% SL vs. 16.5-18.9), shorter thoracic adhesive apparatus (11.5, 11.9% SL vs. 15.1-16.2), smooth (vs. tuberculate) skin on head, and shorter nasal barbel (18.6, 20.6% HL vs. 26.0-31.6) which is not reaching (vs. reaching) anterior matgin of eye; from *G. pantherinus* in having a body without (vs. with) mottled skin, presence (vs. absence) of two broad longitudinal stripes on body, by the absence (vs. presence) of plicate ventral surfaces of paired fins and fewercaudal vertebrae (17 vs. 19); from *G. pectinopterus* in having a more slender caudal peduncle (7.8, 7.9% SL vs. 9.4–9.9), a nasal barbel not reaching (vs. reaching) anterior margin of eye, longer thoracic adhesive apparatus (11.5, 11.9% SL vs. 6.6–7.2), presence (vs. absence) of distinct pale midlateral stripe on body and by the absence (vs. presence) of plicate ventral surfaces of paired fins. *Glyptothorax distichus* differs from *G. radiolus* in having deeper body (depth at anus 12.7, 13.2% SL vs. 11.2–11.4), presence (vs. absence) of distinct pale midlateral stripe on body, by absence (vs. presence) of prominently plicate ventral surfaces of the pectoral fin spine and the first pelvic fin ray and more abdominal vertebrae (20 vs. 18); from *G. saisii* in having a shorter head length (23.9, 24.2% SL vs. 30.8–31.0), presence (vs. absence) of distinct pale midlateral stripe on the body, and by absence (vs. presence) of prominently plicate ventral surfaces of the pectoral fin spine and the first pelvicf in ray; from *G. stoliczkae* in having nasal barbel not reaching (vs. reaching) anterior margin of eye, the presence (vs. absence) of two broad longitudinal stripes on body and by the absence (vs. presence) of prominently plicate ventral surfaces of the pectoral fin spine and the first pelvicfin ray; and from *G. striatus* in having a shorter caudal peduncle (16.3, 17.6% SL vs. 18.4–20.7), caudal fin without (vs. with) scattered dark brown spots and by the absence (vs. presence) of prominently plicate ventral surfaces of the pectoral fin spine and the first pelvic fin ray.

Seven species are known from the Kaladan River drainage: *G. ater, G. caudimaculatus, G. chimtuipuiensis, G. churamanii, G. gopii, G. jayarami*, and *G. verrucosus*. *Glyptothorax distichus* is distinguished except *G. caudimaculatus* from *G. ater, G. chimtuipuiensis, G. churamanii, G. gopii, G. jayarami, and and G. verrucosus* by absence (vs. presence) of plicate ventral surfaces of paired fins. Further, *G. distichus* is distinguished from *G. caudimaculatus* in having a chevron- (vs. rhomboidal-shaped) thoracic adhesive apparatus; the unculiferous ridges not extending (vs. extending anteriorly onto) the gular region, more vertebrae (37 vs. 35) and the absence (vs. presence) of an oval blue-black band at the caudal fin base.

Currently, nine species of *Glyptothorax* are distributed in the Chindwin drainage, *viz*., *G. burmanicus, G. chavomensis, G. granulus, G. igniculus, G. minutus, G. ngapang, G. senapatiensis, G. trilineatus* and *G. ventrolineatus*. However, *G. distichus* is distinguished from *G. burmanicus* in having thoracic adhesive apparatus with a chevron- (vs. ovoid-shaped) central depression which open widely (vs. fully enclosed by the skin ridges caudally), shorter head length (23.9, 24.2% SL vs. 28.4), the absence (vs. presence) of a central pit in the middle and the presence (vs. absence) of two broad longitudinal stripes on body; from *G. chavomensis* in having slender body (depth at anus 12.7, 13.2% SL vs. 17.0–18.2), a deeper caudal peduncle (7.8, 7.9% SL vs. 6.5–6.7), slender head (head depth at occiput 51.6, 54.5 vs. 70.1-76.8) and smooth (vs. tuberculate) skin; from *G. granulus* in having a shorter adhesive apparatus (11.5, 11.9% SL vs. 13.3–15.7), more vertebrae (37 vs. 35–36) and the presence (vs. absence) of two broad longitudinal stripes on the body; from *G. igniculus* in having a shorter dorsal fin spine (10.4, 12.4% SL vs. 16.9-21.6), nasal barbel not reaching (vs. reaching) anterior margin of orbit when adpressed, a thoracic adhesive apparatus with chevron- (vs. lanceolate-shaped) median depression that is widely opened (vs. almost enclosed) posteriorly, more abdominal vertebrae (20 vs. 17–18) and the presence (vs. absence) of a pale cream mid-dorsal stripe extending from behind the occiput to the caudal fin base; from *G. minutus* in having more serrae on the posterior edge of the pectoral fin spine (10–12 vs. 6), an chevron- (vs. U-shaped) thoracic adhesive apparatus, and a longer maxillary barbel (reaching posterior margin of pectoral fin base vs. reaching origin of pectoral fin base); and from *G. ngapang* in having a shorter adhesive apparatus (11.5, 11.9% SL vs. 14.0–15.7), shorter caudal peduncle (16.3, 17.6 vs. 19.8–20.7), slender head (height at occiput 51,6, 54.5% HL vs. 61.3–65.6% HL), smooth (vs. tuberculate) skin and fewer caudal vertebrae (17 vs. 19–20). The new species, *G. distichus* is distinguished from *G. senapatiensis* in having a shorter head (23.9, 24.2% SL

vs. 26.0-29.5), a slender body (depth at anus 12.7, 13.2% SL vs. 17.1–18.2), shorter dorsal fin spine (10.4, 12.4% SL vs. 14.6-15.8), thoracic adhesive apparatus with a chevron- (vs. U-shaped) median depression and more vertebrae (37 vs. 36); from *G. trilineatus* in having a broader midlateral stripe on the body (17.1, 22.7% body depth at anus vs. 7.8), shorter dorsal fin (10.4, 12.4% SL vs. 14.0), longer adipose-fin base (10.9, 12.9% SL vs. 9.5), slender caudal peduncle (7.8, 7.9% SL vs. 8.9), shorter adhesive apparatus (11.5, 11.9% SL vs. 13.0), smaller inter orbital width (26.0, 26.4% SL vs. 32.8) and shorter pectoral fin (62.8, 67.2% SL vs. 98.4); from *G. ventrolineatus* in having a slender caudal peduncle (7.8, 7.9% SL vs. 9.2-10.3), nasal barbel not reaching (vs. reaching) anterior margin of orbit, and absence (vs. presence) of a mid-ventral stripe extending from behind pectoral fin to the caudal fin base.

Comparative materials: Glyptothorax alaknandi: ZSI F 6154/2, holotype, 57.5 mm SL; India: Uttar Pradesh: Pauri Garhwal district: Alaknanda River, Srinagar. *G. ater:* ZSI FF 4618, 1 paratypes, 48.5 mm SL; India: Mizoram: Lawntlai district: Koladyne River, Kolchaw, 22°23'N 92°57'E. Additional data from Anganthoibi & Vishwanath (2010a). *G. brevipinnis:* ZSI F 10134/1, 4 syntypes, 44.6–79.0 mm SL; India. *G. burmanicus*: ZSI F 10877/1, holotype, 102 mm SL; Myanmar: Upper Myanmar: Myitkyina district: Sankha, a large hill stream between Kamaing and Mogaung. Additional data from Ng & Kullander (2013). *G. caudimaculatus*: ZSI FF 4619, 1 paratype, 39.4.0 mm SL; India: Mizoram: Lawntlai district: Koladyne River at Kolchaw. Additional data from Anganthoibi & Vishwanath (2010a). *G. cavia*: ZSI FF 5817, 4, 76.8-78.2 mm SL; India: Arunachal Pradesh: Kameng River near Bhalukpong. Additional data from Anganthoibi & Vishwanath (2010a). *G. chimtuipuiensis:* ZSI FF 4617, 1 paratype, 40.0 mm SL; India: Mizoram: Lawntlai district: Kaladan River, Kolchaw, 22°23'N 92°57'E. Additional data from Anganthoibi & Vishwanath (2010b). *G. churamanii:* ZSI FF 5271, 1 paratype, 60.0 mm SL; India: Mizoram: Lawntlai district: Kaladan River, Kolchaw, 22°23'N 92°57'E. Additional data from Rameshori & Vishwanath (2012a). *G. clavatus*: ZSI FF 5273, 3 paratypes, 61.0-67.1 mm SL; India: Manipur: Senapati district: headwaters of Barak River, Maram Khullen, 25°23' N 94°04' E. Additional data from Rameshori & Vishwanath (2014). *G. conirostris*: ZSI F 10382/1, 1 ex., 102 mm SL; India: Himachal Pradesh: Shimla. *G. gopii*: ZSI FF 5007, holotype, 63.5 mm SL;

Table 1. Morphometric data of holotype and one paratype of *Glyptothorax distichus*.

	Holotype ZSI FF 5390	**Paratype ZSI FF 5391**
Standard length (in mm)	101.1	78.0
In percent of standard length		
Head length	23.9	24.2
Body depth at dorsal fin origin	15.3	14.2
Body depth at anus	12.7	13.2
Predorsal length	32.7	34.2
Prepectoral length	18.8	20.1
Prepelvic length	45.9	47.4
Preanal length	68.8	67.9
Dorsal fin spine length	10.4	12.4
Dorsal fin height	17.7	18.6
Length of dorsal fin base	12.0	12.4
Dorsal fin to Adipose-fin length	27.1	28.2
Postadipose distance	17.9	17.6
Length of Adipose-fin base	12.9	10.9
Pectoral fin length	20.9	22.6
Pelvicf in length	16.2	18.5
Anal fin length	17.9	18.6
Anal fin base length	12.6	13.3
Caudal peduncle length	17.6	16.3
Caudal peduncle depth	7.9	7.8
Caudal fin length	24.7	27.8
Adhesive apparatus length	11.9	11.5
Head Width	17.8	19.7
In percent of head length		
Head depth at occiput	51.6	54.5
Head width (max.)	74.4	81.5
Orbital diameter	10.3	12.7
Snout length	48.3	46.0
Interorbital width	26.0	26.4
Nasal barbel length	18.6	20.6
Maxillary barbel length	90.5	95.8
Inner mandibular barbel length	35.1	33.9
Outer mandibular barbel length	53.7	54.5
Mouth width	45.0	41.8
Pectoral fin spine length	62.8	67.2

India: Mizoram: Champhai district: Tuipui River near Champhai (Kaladan drainage), 23°27'N 93°15'E; ZSI FF 5008, 1, 61.6 mm SL; same data as holotype, ZSI FF 5009, 1, 57.0 mm SL; same data as holotype. Additional data from Kosygin *et al.* (2019). *G. gracilis*: ZSI F8293/1, 1, 93.5 mm SL; India: Sikkim : Rangit River at Manghitar. Additional data from Darshan *et al.* (2015) *G. granulus*: ZSI FF 4142, 1 paratype, 72.5 mm SL; India: Manipur: Ukhrul district: Iril River, Phungdhar. Additional data from Vishwanath & Linthoingambi (2007). *G. igniculus*: ZSI 7088, 1, 52.1 mm SL; India: Manipur: Chakpi River (Chindwin drainage). Additional data from Ng & Kullander (2013). *G. jayarami:* ZSI FF 4620, 2 paratypes, 61.0–84.5 mm SL; India: Mizoram: Lawntlai district: Kaladan River, Kolchaw, 22°23'N 92°57'E. Additional data from Rameshori & Vishwanath (2012b). *G. manipurensis*: ZSI F 738/2, holotype, 74.5 mm SL; India: Manipur: Barak river at Karong. – ZSI F 739/2, 740/2, 741/2, 742/2, 743/2, 5 paratypes, 48.0-74.5 mm SL; India: Manipur: Barak river, Karong. Additional data from Vishwanath & Linthoingambi (2007). *G. ngapang*: ZSI FF 4141, 1 paratype, 90.5 mm SL.; India: Manipur: Iril River, Bamonkampu. Additional data from Vishwanath & Linthoingambi (2007). *G. pectinopterus:* ZSI F 216/2, 1, 61.0 mm SL; India: Punjab: Kangra valley. Additional data from Javed, *et al.* (2013). *G. pantherinus:* MUMF10047, holotype, 131.2 mm SL; India: Arunachal Pradesh: Changlang district: NoaDehing River, Deban-Namdapha, 27°30'N 96°23'E. Additional data from Anganthoibi and Vishwanath (2013). *G. saisii*: ZSI F 2583/1, 1, type, 59.0 mm SL; India: Jharkhand: Seta Nullah, Parasnath Hills. Additional data from Rameshori & Vishwanath (2012b). *G. scrobiculus*: ZSIFF 5408, paratype, 93.5 mm SL; India: Mizoram: Aizawl district: Sur stream, a tributary of Tuivai River, 23°59'3.2" N 93°14'29.9" E. Additional data from Ng & Lalramliana (2012a). *G. senapatiensis*: ZSI FF 4971, holotype, 51.5 mm SL; India: Manipur: Senapati district: Imphal River at Motbung (Chindwin River drainage); ZSI FF 4972, 6 paratypes, 44.0-61.3 mm SL; same data as holotype. *G. striatus:* ZSI F 10379/1, 1, 88.0 mm SL; India: Maghalaya: Cherrapunji; ZSI F10264/1, 1, 63.5 mm SL, India: Assam: Someswary River, Bagmara. Additional data from Ng & Lalramliana (2013). *G. telchita*: ZSI F 239/2, 2, 27.0-38.0 mm SL; India: Bihar: Right bank of Kamala River about a mile north-east of Jainagar Railway Station, Darbhanga. Additional of data from Ng (2005). *G. trilineatus*: ZSI F 10380/1, 1 syntype, 78.5 mm SL; Myanmar: Tenasserim. *G. verrucosus:* ZSI FF 5272, 1 paratype, 60.0.0 mm SL; India: Mizoram: Lawntlai district: Kaladan River, Kolchaw, 22°23'N 92°57'E. Additional data from Rameshori & Vishwanath (2012c). *G. ventrolineatus*: ZSI FF 4227, 1 Paratype, 83.0 mm SL; India: Manipur: Lokchao river, Moreh Additional data from Vishwanath & Linthoingambi (2005).

Published information used for comparison: Arunkumar (2016) for *G. pasighatensis*; Arunkumar & Moyon (2017) for *G. chavomensis*; Hora (1921) for *G. minutus*; Jayaram (2006) for *G. stoliczkae*; Lalramliana & Vanlalhriata (2010) for *G. indicus*; Ng & Lalramliana (2012b) for *G. maceriatus*; Darshan *et al.* (2015) for *G. mibangi*; Ng (2005) for *G. botius*; Ng & Lalramliana (2013) for *G. radiolus*; Tamang & Chaudhry (2011) for *G. dikrongensis*;

Acknowledgements

We are grateful to Dr. Kailash Chandra (Director, ZSI) for permission to undertake the work; and to Waikhom Vishwanath (Manipur University) for permitting the first author to study type specimens in the Manipur University Museum of Fishes (MUMF). The authors are also thankful to Dr. Heok Hee Ng of the National University of Singapore for providing literatures.

References

Anganthoibi, N. and Vishwanath, W. 2010a. Two new species of *Glyptothorax* from the Koladyne basin, Mizoram, India (Teleostei: Sisoridae). *Ichthyological Exploration of Freshwaters,* **21**: 323-330.

Anganthoibi, N. and Vishwanath, W. 2010b. *Glyptothorax chimtuipuiensis* a new species of catfish (Teleostei: Sisoridae) from the Koladyne basin, India. *Zootaxa,* **2628**: 56-62. https://doi.org/10.11646/zootaxa.2628.1.4.

Anganthoibi, N. and Vishwanath, W. 2013. *Glyptothorax pantherinus*, a new species of catfish (Teleostei: Sisoridae) from the NoaDehing River, Arunachal Pradesh, India. *Ichthyological Research,* **60**: 172-177. https://doi.org/10.1007/s10228-012-0328-5.

Arunkumar, L. 2016. *Glyptothorax pasighatensis*, A New Species of Catfish (Teleostei: Sisoridae) From Arunachal Pradesh, Northeastern India. *International Journal of Pure and Applied Zoology,* **4**(2): 179-185.

Arunkumar, L. and Moyon, W. A. 2017. *Glyptothorax chavomensis* sp. nov. (Teleostei: Sisoridae) with its congeners from Manipur,

North-Eastern India. *International Journal of Zoology Studies,* **2**(5): 242-254.

Darshan, A., Dutta, R., Kachari, A., Gogoi, B. and Das, D. N. 2015. *Glyptothorax mibangi*, a new species of catfish (Teleostei: Sisoridae) from the Tisa River, Arunachal Pradesh, northeast India. *Zootaxa,* **3962** (1): 114-122. https://doi.org/10.11646/zootaxa.3962.1.5. PMid: 26249379.

de Pinna, M. C. C. 1996. A phylogenetic analysis of the Asian catfish families Sisoridae, Akysidae, and Amblycipitidae, with a hypothesis on the relationships of the neotropical Aspredinidae (Teleostei, Ostariophysi). *Fieldiana: Zoology (New Series),* **84**: 1-83. https://doi.org/10.5962/bhl.title.5359.

Ferraris, C. J. and Britz, R. 2005. A diminutive new species of *Glyptothorax* (Siluriformes: Sisoridae) from the upper Irrawaddy River basin, Myanmar, with comments on sisorid and erethistid phylogenetic relationships. *Ichthyological Exploration of Freshwaters,* **16**: 375-383.

Hora, S. L. 1921. Fish and fisheries of Manipur with some observations on those of Naga Hills. *Records of the Indian Museum,* **22**: 180-182. https://doi.org/10.5962/bhl.part.1473.

Javed, M. N., Kalsoom, S., Pervaiz, K., Mirza, M. R. and Azizullah. 2013. Catfishes of the genus *Glyptothorax* Blyth (Pisces: Sisoridae) from Pakistan. *Biologia (Pakistan),* **59**(1): 69-83.

Jayaram, K. C. 2006. *Catfishes of India.* Narendra Publishing House, Delhi; p. 383.

Kosygin, L. 2011. Biodiversity and Conservation Strategies of Fishes of the Talwng River, Mizoram with some New Records. In: *Biodiversity, Ecology and Conservation of Rivers and Streams of North East India.* (ed. Kosygin, L.), Akansha Publishing House, New Delhi; p. 1-13.

Kosygin, L., Das, U, Singh, P. and Chowdhury, B. R. 2019. *Glyptothorax gopii* a new species of catfish (Teleostei: Sisoridae) from Mizoram, north-eastern India. *Zootaxa,* **4652**(3): 568-578. https://doi.org/10.11646/zootaxa.4652.3.12. PMid: 31716864

Lalramliana and Vanlalhriata, R. 2010. First record of sisorid catfish *Glyptothorax indicus* Talwar, 1991 (Teleostei: Sisoridae) from Mizoram, India. *Science Vision,* **10**(4), 137-142.

Ng, H. H. and Kottelat, M. 2013. Revision of the Asian catfish genus *Hemibagrus* Bleeker, 1862 (Teleostei: Siluriformes: Bagridae). *Raffles Bulletin of Zoology,* **61**: 205-291.

Ng, H. H. and Kullander, S. O. 2013. *Glyptothorax igniculus* a new species of sisorid catfish (Teleostei: Siluriformes) from Myanmar. *Zoology,* **3681**: 552-562. https://doi.org/10.11646/zootaxa.3681.5.4. PMid: 25232627.

Ng, H. H. and Lalramliana. 2013. *Glyptothorax radiolus* a new species of sisorid catfish (Osteichthyes: Siluriformes) from northeastern India, with a redescription of *G. striatus* McClelland 1842. *Zootaxa* **3682**(4): 501-512. https://doi.org/10.11646/zootaxa.3682.4.1. PMid:25243305.

Ng, H. H. and Lalramliana. 2012a. *Glyptothorax scrobiculus* a new species of sisorid catfish (Osteichthyes: Siluriformes) from northeastern India. *Ichthyol. Explor. Freshwaters,* **23**(1): 1-9.

Ng, H. H. and Lalramliana. 2012b. *Glyptothorax maceriatus* a new species of sisorid catfish (Actinopterygii: Siluriformes) from north-eastern India. *Zootaxa,* **3416**: 44-52. https://doi.org/10.11646/zootaxa, https://doi.org/10.11646/zootaxa.3416.1.4.

Ng, H. H. and Rachmatika, I. 2005. *Glyptothorax exodon* a new species of Rheophilic catfish from Borneo (Teleostei: Sisoridae). *The Raffles Bulletin of Zoology,* **53**(2): 251-255.

Ng, H. H. 2005. *Glyptothorax botius* (Hamilton, 1822), a valid species of catfish (Teleostei: Sisoridae) from northeast India, with notes on the identity of *G. telchitta* (Hamilton, 1822). *Zootaxa,* **930**: 1-19. https://doi.org/10.11646/zootaxa.930.1.1.

Premananda, N., Kosygin, L. and Saidullah, B. 2015. *Glyptothorax senapatiensis* a new species of catfish (Teleostei: Sisoridae) from Manipur, India. *Ichthyological Exploration of Freshwaters*, **25**(4): 323-329.

Rameshori, Y. and Vishwanath, W. 2012a. A new catfish of the genus *Glyptothorax* from the Kaladan basin, Northeast India (Teleostei: Sisoridae). *Zootaxa,* **3538**: 79-87. https://doi.org/10.11646/zootaxa.3538.1.3.

Rameshori Y. and Vishwanath, W. 2012b. *Glyptothorax jayarami*, a new species of catfish (Teleostei: Sisoridae) from Mizoram, Northeastern India. *Zootaxa,* **3304**: 54-62. https://doi.org/10.11646/zootaxa.3304.1.4.

Rameshori Y. and Vishwanath, W. 2012c. *Glyptothorax verrucosus*, a new sisorid catfish species from the Koladyne basin, Mizoram, India (Teleostei: Sisoridae). *Ichthyological Exploration of Freshwaters,* **23**: 147-154.

Rameshori, Y. and Vishwanath, W. 2014. *Glyptothorax clavatus* a new species of sisorid catfish from Manipur, northeastern India (Teleostei: Sisoridae). *Ichthyological Exploration of Freshwaters,* **25**: 185-192.

Roberts, T. R. 1994. Systematic revision of Asian bagrid catfishes of the genus *Mystus* sensu stricto with a new species from Thailand and Cambodia. *Ichthyological Exploration of Freshwaters,* **5**: 241-256.

Tamang, L. and Chaudhry, S. 2011. *Glyptothorax dikrongensis,* a new species of catfish (Teleostei: Sisoridae) from Arunachal Pradesh, northeastern India. *Ichthyological Research,* **58**: 1-9. https://doi.org/10.1007/s10228-010-0179-x.

Vishwanath, W. and Linthoingambi, I. 2005. A new sisorid catfish of the genus *Glyptothorax* Blyth from Manipur, India. *Journal of the Bombay Natural History Society,* **102**(2): 201-203.

Vishwanath, W. and Linthoingambi, I. 2007. Fishes of the genus *Glyptothorax* Blyth (Teleostei: Sisoridae) from Manipur, India, with description of three new species. *Zoos' Print Journal,* **22**(3): 2617-2626. https://doi.org/10.11609/JoTT.ZPJ.1443.2617-26.