

A new sisorid catfish of the genus *Glyptothorax* Blyth (Teleostei: Sisoridae) from Kasom Khullen of Manipur, India

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Abstract

Glyptothorax lairamkhullensis new species, is described from the Taretlok River, a tributary of the Chindwin Basin in Kasom Khullen, Manipur, India. The new species is very similar to *G. ventrolineatus* but can be distinguished from it in having ventral surface of pectoral and pelvic fins pleated (vs not pleated or smooth) and dorsal-fin spine not serrated (vs finely serrated at tip). The new species has a U-shaped adhesive apparatus open caudally; broader than its length and not extending up to the gular region; interdorsal distance (22.7-26.9% SL); claspers present at anus. Congeners from the Chindwin basin of Manipur have the ventral surface of paired fins smooth. The present species is unique in having pleated skin on paired fins.

Keywords: New species, *Glyptothorax lairamkhullensis*, Manipur.

Introduction

Glyptothorax Blyth, 1860 is the most diverse species and widely distributed genus of sisorid catfishes (Ng and Kullander, 2013). The fish species is characterised by the presence of a thoracic adhesive apparatus bearing longitudinal folds or pleats of skin, a detached portion of the premaxilla, and lateral arms of the vomer extending under entire length of the articular process of the lateral ethmoid (de Pinna, 1996). Currently 10 species of *Glyptothorax* are known from Chindwin basin viz., *G. burmanicus*, *G. chavomensis*, *G. granulus*, *G. igniculus*, *G. minutus*, *G. ngapang*, *G. senapatiensis*, *G. trilineatus*, *G. ventrolineatus* and *G. waikhomi* Shangningam & Kosygin, 2022 from Chakpi River Manipur (Premananda *et al.* 2015, Arunkumar and Wanglar, 2017 and Ng and Kullander, 2013). While species reported from Koladyne basin includes *G. jayarami* Rameshori and Vishwanath 2012, *G. ater* and *G. chimtuipuiensis* Anganthoibi and Vishwanath 2010a, *G. caudimaculatus* Anganthoibi and Vishwanath 2010b, *G. gopii* Kosygin *et al.* 2019, *G. kailashi* Kosygin *et al.* 2020, *G.*

churamanii Rameshori & Vishwanath 2012, *G. verrucosus* Rameshori & Vishwanath 2012. From Brahmaputra river basin includes 20 species viz., *G. cavia* (Hamilton 1822), *G. pantherinus* Anganthoibi & Vishwanath 2012, *G. radiolus* Ng & Lalramliana 2013, *G. alaknandi* Tilak 1969, *G. brevipinnis* Hora 1923, *G. botius* (Hamilton 1822), *G. telchitta* (Hamilton 1822), *G. conirostris* (Steindachner 1867), *G. garhwali* Tilak 1969, *G. gracilis* (Gunther 1864), *G. mibangi* Darsan *et al.* 2015, *G. distichus* Kosygin *et al.* 2020, *G. manipurensis* Menon 1954, *G. rupiri* Kosygin *et al.* 2021, *G. pasighatensis* Arunkumar 2016, *G. pectinopterus* (McClelland 1842), *G. stolicka* (Steindachner 1867), *G. indicus* Talwar 1991, *G. dikrongensis* Tamang & Chaudhry 2011 and *G. striatus* (McClelland 1822).

During an ichthyological survey of the Taretlok River in Manipur, specimens of a species of *Glyptothorax* with distinctive features were obtained. Further study revealed this material to belong to an unnamed species, which is described here as *G. lairamkhullensis*, new species.

Material and Methods

Specimens were collected, preserved in 10% formalin and stored for further analysis. Dial calliper with nearest 0.1 mm in percentage of SL and HL was used for measurements of morphometric and meristic counts. General counts and measurements follow Hubbs and Lagler (1946) with measurements of thoracic adhesive apparatus as in Vishwanath and Linthoingambi (2005, 2007). Fin rays were counted under stereoscopic microscope. Asterisks after a meristic value indicates the condition for the holotype. The holotype and paratypes are deposited in the Freshwater fish section, Zoological Survey of India, Kolkata and Dhanamanjuri University Museum of Fishes, Manipur respectively. Four specimen were radiographed at Dr P. Shyamsunder Home Clinic, Imphal to count Veretebrae.

Glyptothorax lairamkhullensis, new species.

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Material Examined: Holotype: ZSI Calcutta F 9797, 86.7 mm SL; India: Manipur: Kamjong District: Taretlok River at Lairam Khullen, Kasom Khullen, 24°38' N 16°94' E Altitude 1822 ft above sea level; 17-ii-2023, Coll: K. Babyrani and K. Shyamchandra.

Paratypes: DMUMF-KB002, (6), 66.3-91.4 mm SL; data same as holotype.

Diagnosis. *Glyptothorax lairamkhullensis* belongs to the group having pleated folds of skin on ventral surface of pectoral fin spine and first ray of pelvic fin. It is very similar to its Chindwin congener *G. ventrolineatus* in having three longitudinal lines on the body (Mid dorsal, mid ventral and mid lateral). However it differs in having nasal barbel short (vs long), inferior mouth (vs terminal), low head depth at occiput (50.2-57.0% HL vs 57.5-66.3). The species differs from *G. trilineatus* in having two longitudinal lines (mid ventral and lateral), non serrated dorsal spine (vs serrated) and undersurface of paired fins pleated (vs smooth). Species is similar to Indian subcontinent congeners from Brahmaputra and Koladyne basin viz., *G. ater*, *G. churamanii*, *G. alaknandi*, *G. brevipinnis*, *G. pectinopterus*, *G. striatus*, *G. radiolus*, *G. sasihii*, *G. stolicka*, *G. pantherinus*, *G. jayarami*, *G. verrucosus*, *G. gopii*, *G. chimtuipeiensis*, *G. rupiri* and *G. nelsoni* in having pleated folds of skin on the ventral surface of paired fins. However, it differs from them in having three stripes on body vs. two or no stripes. A detailed distinguishing character are discussed.

Description. Body medium sized, elongated and posteriorly compressed. Skin granulated, smooth on head. Ventral profile flattened till posterior base of pectoral fin, slightly elevated till posterior end of anal fin and tapers towards caudal fin; mouth inferior with fleshy papillated lips, upper jaw longer than lower with teeth on upper jaw in a single lunate shaped patch, those of lower jaw interrupted in the middle by slightly narrow gap. Premaxillary tooth band visible even with mouth open slightly. Eyes small in size and ovoid; orbital diameter greater than interorbital width; snout length greater than mouth width; anterior and posterior nares distinctly large, separated by base of nasal barbel; barbels four pair; nasal barbel longer than internarial space; maxillary barbel long, thick, slightly curved at the end, reaching posterior base of pectoral fin; inner mandibular lesser than interorbital; inner and outer mandibular barbel reach anterior region of thoracic adhesive apparatus when adpressed. Outer mandibular barbel longer than inner mandibular, extending and reaching pectoral spine base; occipital process not in contact with the first pterygiophore. Thoracic adhesive apparatus with longitudinal, uninterrupted (except at posterior base) continuous folds of skin or striae present with its edge almost reaching the posterior base of pectoral fin. Dorsal fin with *I, 6, i (5), I, 5, i (2) rays, distal region slightly concave its spine strong, hard and not serrated posteriorly. Pectoral fin positioned low, short, not reaching anterior origin of pelvic fin, with *I, 8, i (5), I, 9, i (2) rays its spine hard, smooth, broad, serrated posteriorly with 10-17 serrae, its undersurface plicated with more number of plicae comparatively than that in pelvic fin (9-23). Pelvic fin soft, with *i, 5 (5), i, 4 (2) rays and lesser number of plicae (6-16), its origin vertically level of base of dorsal fin, its 2nd branched ray almost reaching anal fin origin surpassing anus and urogenital opening. Anal fin with *ii, 8, i (6), ii, 9, i (1) rays. Deep caudal peduncle. Caudal fin with i, 7+8, i (7) rays and deeply forked, lower lobe longer than upper lobe. Lateral line complete, midlateral. Clasper present. Vertebrae 32(4) (Fig 5).

Colouration. In 10 % formalin, body dark grey. Ventral and dorsal profile shows dusky black base in nasal, maxillary and outer mandibular barbel. Wherein maxillary barbel with faded black line at the base with cream or yellow edge; creamy inner mandibular barbel. Dusky black base with cream or yellow edge is also seen in dorsal and adipose fins. Dusky black stripes is also present on submarginal and half on proximal and distal portion of dorsal, pectoral, pelvic and anal fins with cream or yellow edges. Three prominent

Creamy longitudinal lines at the region of mid dorsal, mid lateral and mid ventral of the body. Caudal fin base with black wide blotch.

Etymology. The species is named after the Lairam Khullen Village where the type series was collected from.

Distribution. Taretlok River of Lairam Khullen village of Kasom Khullen Sub-Division, Kamjong District, Manipur, India. Taretlok River flows in the natural boundary of Kasom Khullen Sub-Division to drain into the tributaries of Chindwin River of Myanmar.

Discussion. The *Glyptothorax* species are diagnosed with the following characteristic features: presence (vs absence) of pleated folds of skin on the ventral surface of paired fins, shape of thoracic adhesive apparatus (Ng & Kottelat, 2008), presence (vs absence) of longitudinal bands on the surface of body and thoracic adhesive apparatus reaching (vs not reaching) gular region, presence of furrow running on the ventral surface of the pectoral spine (Ng & Lalramliana, 2012). *G. lairamkhullensis* is unique in having plicae on undersurface of paired fins and presence of longitudinal bands on body. The genus is restricted to a particular river basin rarely extending to other basins (Ng and Rachmatika, 2005). *G. lairamkhullensis* differs from its congeners from the Chindwin river drainage viz., *G. granulus*, *G. burmanicus*, *G. ngapang*, *G. senapatiensis*, *G. igniculus*, *G. chavomensis*, *G. minutus* and *G. waikhomi* in having pleated undersurface of paired fins vs smooth and three longitudinal lines on body present vs absent. The new species further differs from *G. granulus* in having dorsal spine not serrated (vs serrated), thoracic adhesive apparatus U shaped (vs oval), longer head (30.4-33.3% SL vs 26.0-26.7), longer dorsal fin (16.7-20.3% SL vs 13.5-14.5); from *G. burmanicus* in having granulated skin (vs smooth); from *G. ngapang* in possessing U shaped (vs V shaped) thoracic adhesive apparatus, skin granulated (vs tuberculated), dorsal spine not serrated (vs serrated); longer head (30.4-33.3 % SL vs 22.2-25.0), pelvic, pectoral and anal fins dusky black (vs spotted brown); longer dorsal fin (19.4-22.2 % SL vs 11.9-12.9), from *G. senapatiensis* in possessing skin on body granulated (vs densely tuberculated), dorsal spine not serrated (vs serrated), body depth at dorsal fin origin (15.2-20.3 % SL vs 21.0-26.8); from *G. igniculus* in possessing thoracic adhesive apparatus U shaped (vs lanceolate), skin granulated (vs almost smooth with minute tubercles), body dark black, greyish (vs uniform brown), longer head (30.4-33.3 % SL vs 20.3-21.8); greater interdorsal distance (22.7-26.9 % SL vs 19.8-24.6); from *G. chavomensis*

in possessing granulated (vs tuberculated) skin, absence (vs presence) of ridges or bumps in front of adipose dorsal fin, longer head (30.4-33.3 % SL vs 22.4- 24.3), deeper caudal peduncle (10.1-12.9 % SL vs 6.5-6.7); from *G. minutus* in possessing more serrae on pectoral spine (10-17 vs 6); dorsal spine smooth (vs serrated); from *G. waikhomi* in possessing thoracic adhesive apparatus U shaped (vs oblongate leaf-shaped), longer head (30.4-33.3% SL vs 22.0-23.4), dorsal spine not serrated (vs serrated), absence (vs presence) of dark brown blotches; presence of 3 (vs1) longitudinal band on the body; from *G. rugimentum* of Ataran, Salween and Sittang River drainages in Myanmar and Western Thailand in possessing Thoracic adhesive apparatus not extending (vs extending) upto the gular region; shorter predorsal (34.7-37.4 % SL vs 39.9-42.7); greater interdorsal (22.7-26.9 % SL vs 17.2-22.2); longer caudal fin (26.5-35.5 % SL vs 23.3-30.2); from the congener of Barak River drainage *G. scobiculus* in lacking (vs presence) of furrow running along the entire length of the ventral surface of the pectoral spine.

G. lairamkhullensis is also distinguished from its congeners Kaladan River drainage viz., *G. ater*, *G. churamanii*, *G. jayarami*, *G. verrucosus*, *G. gopii* and *G. chimtuipuiensis* and further distinguished from *G. ater* in possessing longer head (30.4-33.3 % SL vs 23.4-25.3), longer dorsal fin base (12.1-14.7 % SL vs 9.8-10.8), longer dorsal spine (15.3-18.2 % SL vs 8.3-13.7), deeper caudal peduncle (10.1-12.9 % SL vs 6.7-8.1) having (Ushaped vs rhomboidal) thoracic adhesive apparatus; without (vs with) central depression; not extending up to the gular region; from *G. churamanii* differ in possessing U shaped (vs V-shaped) thoracic adhesive apparatus, having (granulated vs tuberculated) skin; from *G. gopii* in possessing U shaped (vs elliptical) thoracic adhesive apparatus, deeper caudal peduncle (10.1-12.9 % SL vs 7.9-9.1); from *G. chimtuipuiensis* in possessing longer pectoral fin (20.0-23.8 % SL vs 16.8-21.9), longer dorsal spine (15.3-18.2% SL vs 5.1-8.9), longer caudal fin (26.5-35.5 % SL vs 17.7-23.4), caudal fin deeply forked (vs emarginate), U shaped (vs chevron) thoracic adhesive apparatus; longer interdorsal distance (22.7-26.9 % SL vs 11.9-21.5); From *G. jayarami* in having U shaped (vs elongate ovoid) thoracic adhesive apparatus; granulated (vs densely tuberculated) skin; longer head (30.4-33.3 % SL vs 24.8-27.0), deeper caudal peduncle (10.1-12.9 % SL vs 5.5-7.9); from *G. verrucosus* in possessing U shaped (vs elliptical) thoracic adhesive apparatus, nasal barbel not reaching vs reaching anterior margin of the eye; from *G. caudimaculatus* in possessing U shaped (vs rhomboidal shaped) thoracic adhesive apparatus; not

extending (vs extending) upto gular region; ventral surface plaited (vs non plaited); from *G. kailashi*. in possessing shorter nasal barbel not reaching (vs reaching) anterior margin of the eye; dorsal fin spine (15.3-18.2 % SL vs 15.3-16.9). *G. alaknandi* (presence of 3 vs absence) of longitudinal strips on the body mid dorsal, mid lateral and mid ventral of body, bands extending towards the caudal fin, slender caudal peduncle (15.2-18.9 % SL vs 10.8), Greater interdorsal (22.7-26.9 % SL vs 18.6); *G. brevipinnis* (occipital process not in contact vs contact) with the first dorsal fin pterygiophore

Furthermore it is also compared with the species of the Indian subcontinent and Ganga-Brahmaputra River drainage viz., *G. pasighatensis*, *G. mibangi*, *G. distichus*, *G. cavia*, *G. manipurensis*, *G. rupiri*, *G. conirostris*, *G. gracilis*, *G. alaknandi*, *G. brevipinnis*, *G. radiolus*, *G. stolickae*, *G. pantherinus*, *G. pectinopterus*, *G. pasighatensis*, *G. garhwali*, *G. striatus* and *G. telchitta*. From *G. garhwali* in possessing longer interdorsal (22.7-26.9 %SL vs 16.7-17.6), more slender body (body depth at anus 15.1-17.7%SL vs 15.8-20.1); caudal peduncle depth (10.1-12.9%SL vs 8.8-14.4). From *G. pasighatensis* in possessing smooth (vs tuberculated) skin on head; nasal barbel not reaching (vs reaching) towards the anterior margin of orbit; from *G. striatus* in possessing body black greyish (vs dark brown), presence of 3 (vs 2) longitudinal bands on body, U shaped (vs wedge shaped) adhesive apparatus without (vs with) median depression, Nuchal plate elements distinctly visible (vs not distinct), dorsal spine not serrated (vs serrated), adipose fin slightly arched at the tip (vs not arched), adipose fin dusky black at the base (vs entirely brown), greater post adipose distance (14.03-17.3 % SL vs 7.4-9.9), deeper caudal peduncle (10.1-12.9 % SL vs 7.1-7.5), longer caudal fin (26.5-35.5%SL vs 23.6-33); head less depressed vs more depressed. Differs from *G. mibangi*, *G. distichus*, *G. cavia* and *G. manipurensis* in having plicae (vs smooth). Further from *G. mibangi* possessing deeper caudal peduncle (10.1-12.9 % SL vs 6.8-8.3); from *G. distichus* possessing 3 (vs 2) longitudinal strips; U shaped (vs chevron) adhesive apparatus; from *G. cavia* in having adhesive apparatus without central pit (vs presence); from *G. manipurensis* in body granulated (vs smooth); nasal barbel not reaching (vs reaching) anterior margin of orbit; absence (vs presence) of black spot at dorsal, adipose and caudal fin bases; From *G. rupiri* in possessing greater dorsal spine (15.3-18.2 % SL vs 11.3-12.2)); Ushaped (vs Vshaped) thoracic adhesive apparatus; greater pectoral fin length (20.0-23.8% SL vs 19.5-22.1), greater predorsal length (34.7-37.4 %SL vs 33.1-34.9); from *G. conirostris* in possessing

Ushaped (vs Chevron shaped) thoracic adhesive apparatus; plaited (vs non plaited) paired fins; dorsal spine not (vs serrated) from *G. gracilis* in possessing presence (vs absence) of 3 longitudinal strips on the body; granulated (vs smooth) skin. from *G. brevipinnis* in possessing greater pectoral fin length (20.0-23.8 % SL vs 19.9); from *G. pectinopterus* in possessing nasal barbel not reaching (vs reaching) to middle of pectoral fin base; *G. radiolus* in possessing U shaped (vs rhomboidal shaped) thoracic adhesive apparatus; From *G. stolickae* in possessing presence (vs absence) of pale mid dorsal stripe on the dorsal surface of body; nasal barbel (not reaching vs reaching anterior margin of orbit), but longer than internarial space; From *G. pantherinus* in possessing presence (vs absence) of 3 longitudinal bands on the body; longer adipose fin base (13.5-14.9 % SL vs 10.8-11.8) deeper caudal peduncle (10.1-12.9% SL vs 8.0-8.9); from *G. telchitta* in possessing deeper caudal peduncle (10.1-12.9 %SL vs 4.7-5.9). It also differs from *G. nelsoni* having more serrae (10-17 vs 10-11) on posterior margin of pectoral spine

Therefore, Ichthyofaunal study of Taretlok river of Kasom Khullen remain unexplored. Future Investigation will help for taxonomical study of diverse fish species found at the Taretlok river.

Comparative Materials

Glyptothorax verrucosus: ZSI FF 5272, 1 paratype, 60.0 mm SL; India: Mizoram: Lawntlai district: Kaladan River, Kolchaw, 22° 23' N 92° 57' E.

Glyptothorax churamanii: ZSI FF 5271, 1 paratype, 60.0 mm SL; India: Mizoram: Lawntlai district: Kaladan River, Kolchaw, 22° 23' N 92° 57' E.

Glyptothorax conirostre: ZSI F10382/1, 1 paratype, 102 mm SL; India; Himachal Pradesh: Shimla.

Glyptothorax waikhomi: ZSI FF 8679, holotype, 85.0mm SL; India: Manipur; Chandel District: Chakpi River near Chakpikarong, headwaters of Chindwin drainage; ZSI FF 8680, paratype 1, 74.2 mm SL; ZSI FF 8707, 1 paratype, 79.0 mm SL. Approximately 24° 11' N 93° 54' E.

Glyptothorax kailashi: ZSI FF 5010, holotype, 59.9 mm SL; India: Mizoram; Champhai District: Tuipui River near Champhai (Kaladan River drainage).

Glyptothorax pectinopterus: ZSI F 216 /2,1, 61.0 mm SL; India: Punjab: Kangra valley.

Glyptothorax brevipinnis: ZSI F 10134 / 1, 4 syntypes, 44.6-79.0 mm SL; India.

Glyptothorax garhwali: ZSI F 6152/ 2, 1 paratype, 86.6 mm SL, Alaknanda River, near Srinagar District, Pauri, Garhwal, Utter Pradesh, India.

Glyptothorax burmanicus: ZSI F 10877/ 1, holotype, 102 mm SL, Myanmar: Upper Myanmar: Myitkyina District: Sankha, a large hill stream between Kamaing and Mogaung.

Glyptothorax ater: MUMF 10044, 4 paratypes, 48.3-126.5 mm SL, Koladyne River at Kolchaw, Lawntlai District, Mizoram, India.

Glyptothorax alaknandi: ZSI F 6154/2, holotype, 57.5 mm SL; India: Uttar Pradesh: Pauri Garhwal district: Alaknanda River, Srinagar.

Glyptothorax chindwinica: MUMF 6366, holotype, 145.4 mm SL; MUMF 6368 (5), paratypes, 115.6-14.5 mm SL; India: Manipur, Iril River.

Glyptothorax caudimaculatus: MUMF 10029, holotype, 59.8 mm SL; MUMF 10030-10032 (3), paratypes, 41.5-58.9 mm SL; India: Mizoram, Kaladan River, Kolchaw, Lawntlai District, 22° 23' N 92° 57' E.

Glyptothorax chimtuipuiensis: MUMF 10022, holotype, 57.8 mm SL; MUMF 10023 (6), paratypes, 33.7-55.3 mm SL; India: Mizoram, Kaladan River at Kolchaw, Lawntlai District, 22° 23' N 92° 57' E.

Glyptothorax granulus: MUMF 6151, holotype, 76.6 mm SL; MUMF 6152 (10), paratypes, 61.7-76.6 mm SL; India: Manipur, Iril river, Ukhrul District.

Glyptothorax jayarami: MUMF 14012, holotype, 104.5 mm SL; India: Mizoram state, Kaladan River at Kolchaw, Lawntlai District.

Glyptothorax ngapang: MUMF 6131, holotype, 82.7 mm SL; MUMF 6152 (10), paratypes, 80.5-89.8 mm SL; India: Manipur, Iril river, Imphal East District.

Glyptothorax pantherinus: MUMF 10047, holotype, 131.2

mm SL; India: Arunachal Pradesh, Noa Dehing River at Deban-Namdapha, Brahmaputra basin, Additional data from Anganthoibi and Vishwanath (2012).

Glyptothorax ventrolineatus MUMF L0221, holotype, 85.8 mm SL; MUMF L0222(5), paratypes, 85.1-94.5 mm SL India: Manipur, Iril River, Ukhrul District.

Published information used for comparison

Anganthoibi and Vishwanath (2010) for *Glyptothorax ater*; additional data from Kosygin *et al.*, (2020) and Ng and Kullander (2013); for *Glyptothorax burmanicus*; Anganthoibi and Vishwanath (2010) for *Glyptothorax chimtuipuiensis* and *Glyptothorax cavia*; Arunkumar, and Moyon (2017) for *Glyptothorax chavomensis*; Vishwanath and Linthoingambi (2007) for *Glyptothorax manipurensis*; Kosygin *et al.*, (2020) for *Glyptothorax distichus*; Ng and Kullander (2013) for *Glyptothorax igniculus* Rameshori and Vishwanath (2012) for *Glyptothorax jayarami*; Darshan *et al.*, (2015) for *Glyptothorax mibangi*; Premananda *et al.*, (2015) for *Glyptothorax senapatiensis*; additional data from Vishwanath and Linthoingambi (2005) and Rameshwori *et al.*, (2012) for *Glyptothorax trilineatus*; Shangningam *et al.*, (2022) for *Glyptothorax waikhomi*; *Glyptothorax striatus*: uncat. DMUMF, collected from east Khasi hills Meghalaya. Data from Kosygin *et al.*, (2020) for *Glyptothorax Kailashi*, *Glyptothorax alaknandi*, *Glyptothorax saisii*; Arunkumar (2016) for *Glyptothorax pasighatensis*; Ng and Kottelat (2008) for *Glyptothorax rugimentum* and *G. dorsalis* additional data from Kosygin *et al.*, (2021) for *Glyptothorax brevipinnis*, *Glyptothorax conirostris*, *Glyptothorax garhwali*, and *Glyptothorax telchita*; Jayaram (2006) for *Glyptothorax stolicka* and *Glyptothorax pectinopterus*; from Darsan *et al.*, (2015) for *Glyptothorax gracilis*, *Glyptothorax rupiri*; from Rameshwori and Vishwanath (2012b) for *Glyptothorax saisii*; Ng and Lalramliana (2013) for *Glyptothorax radiolus*; Kosygin *et al.*, (2019) for *Glyptothorax gopii*; Rameshwori and Vishwanath (2012) for *Glyptothorax churamanii* and *Glyptothorax verrucosus*; Hora (1921) for *Glyptothorax*

Table.1. Morphometric data of holotype (ZSI Calcutta F 9797) and 6 paratypes (DMUMF-KB 001-006) of *Glyptothorax lairamkhullensis*

	Holotype	Range	Mean	SD
Standard length (in mm)	86.7	66.3-91.4		
In % SL				
Head length	32.2	30.4-33.3	31.5	1.0
Body depth at dorsal fin origin	15.2	15.2-20.3	17.6	1.7
Body depth at anus	15.2	15.1-17.7	16.2	1.1
Pre dorsal length	37.4	34.7-37.4	36.0	1.1
Pre pectoral length	20.5	18.3-22.1	20.0	1.2
Pre pelvic length	49.4	45.5-51.0	49.2	1.8
Preanal length	67.2	64.1-71.9	68.4	2.6
Dorsal fin spine length	15.8	15.3-18.2	16.8	2.6
Dorsal fin height	20.6	19.4-22.2	20.9	1.0
Length of dorsal fin base	14.0	12.1-14.7	14.0	0.6
Inter dorsal distance	25.3	22.7-26.9	24.5	1.4
Post- adipose distance	17.3	14.03-17.3	16.1	1.3
Length of Adipose- fin base	13.9	13.5-14.9	14.2	0.6
Pectoral fin length	22.7	20.0-23.8	21.8	1.2
Pelvic fin length	16.3	15.7-18.8	17.2	2.3
Caudal peduncle length	18.3	15.2-18.9	18.0	1.3
Caudal peduncle depth	11.6	10.1-12.9	11.4	1.0
Caudal fin length	27.9	26.5-35.5	31.9	3.5
Adhesive apparatus length	14.4	10.6-14.6	12.8	1.5
Adhesive apparatus width	13.1	9.7-13.1	10.7	1.1
In % of head length				
Head depth at occiput	56.6	50.2-57.0	53.5	3.1
Head width (Maximum)	70.3	66.2-74.5	71.2	3.4
Orbital diameter	7.3	6.2-10.5	8.2	1.5
Snout length	42.4	38.0-42.4	39.5	1.4
Inter orbital width	26.5	21.2-28.3	25.6	2.4
Nasal barbel length	22.2	20.4-26.9	23.3	2.0
Maxillary barbel length	57.0	57.0-93.0	75.2	11.2
Inner mandibular barbel length	21.1	21.1-25.0	23.4	1.4

	Holotype	Range	Mean	SD
Outer mandibular barbel length	27.9	27.8-44.0	38.8	5.3
Mouth width	31.7	28.5-35.3	31.3	2.2
Internarial space	12.3	8.4-14.7	12.1	2.0

minutus; Ganguly *et al.*, (1972) for *Glyptothorax nelsoni*. Ng and Lalramliana (2012) for *Glyptothorax maceriatius* and

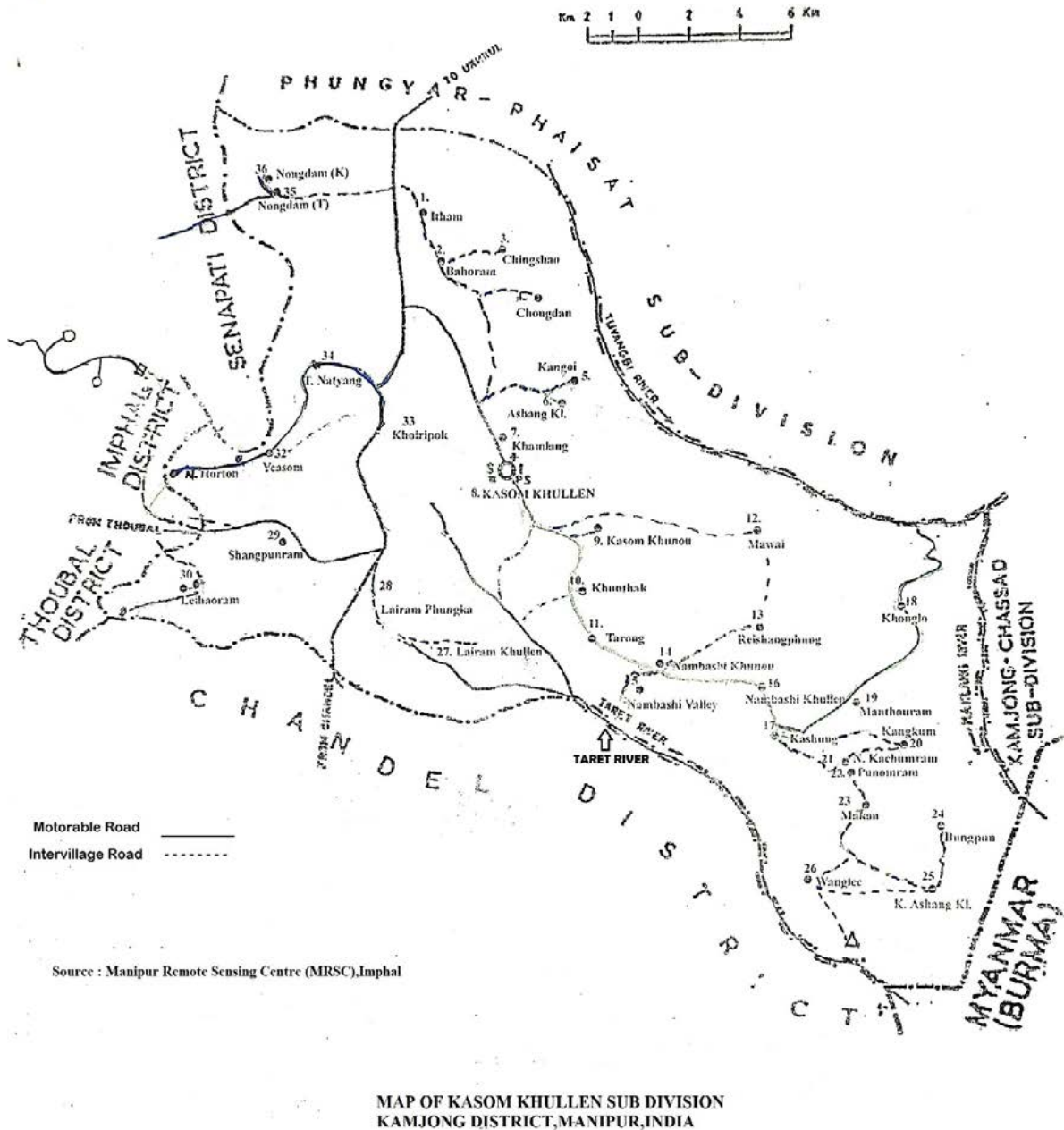


Figure 1: Map of Ukhrul district showing Taretlok river, Kasom Khullen and Lairam Khullen, the collection site of *Glyptothorax lairamkhullensis*.



Figure 2 A. Showing a. dorsal, b. ventral and c. lateral views



Figure 2 B. Thoracic adhesive apparatus
Holotype 86.7mm SL of *Glyptothorax*
lairamkhullensis.



Figure 3 A and B: Showing the ventral surface of pleated and plicae on pectoral spine and pelvic fin ray.



Figure 4. Type locality: Habitat of *Glyptothorax lairamkhullensis*, Taretlok river of Lairam Khullen, Kasom Khullen, Manipur.



Figure 5. Radiograph of *G. lairamkhullensis* showing vertebrae

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