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First Report of Glyptothorax ngapang (Vishwanath & Linthoingambi, 2007) from Nagaland, Northeast India

Shekhumcha Y* and Limatemjen

Department of Zoology, Kohima Science College, Jotsoma, Nagaland, 797002, India

Corresponding author email: shekhumchay@gmail.com

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ABSTRACT

The study documents the first record of Glyptothorax ngapang (Vishwanath & Linthoingambi, 2007) from the Zungki River, Nagaland. Morphological characteristics and morphometric data were analyzed, and identification was confirmed by comparing with known descriptions. The species is diagnosed by oval-shaped tubercles with cornified longitudinal ridges, a yellow-brown body coloration, a thoracic adhesive apparatus opening posteriorly with a median depression, and a well-developed adipose fin. This finding adds to the fish diversity of Nagaland and highlights the importance of the region's freshwater habitats in sustaining endemic species.

INTRODUCTION

The genus *Glyptothorax* is the most diverse (Ferraris, 2007) and the most widely distributed sisorid catfish genus, adapted to fast-flowing freshwater habitats through unique morphological adaptations. Members of this genus possess a thoracic adhesive apparatus composed of folded pleats of skin, allowing them to cling to substrates in high-gradient environments (De Pinna, 1996). In South and Southeast Asia, *Glyptothorax* species are frequently home in rivers and streams (Ferraris, 2007).

Nagaland, a mountainous hilly state in Northeast India, is home to a range of aquatic biodiversity with rivers and streams supporting numerous endemic fish species (Ao et al., 2008). While previous studies have documented over 197 fish species (Ezung et al., 2020), the occurrence of *Glyptothorax ngapang* has only been reported from Manipur in India (Arunkumar & Moyon, 2017; Vishwanath, 2021).

The present study marks the first record of *Glyptothorax ngapang* from Nagaland, specifically from Zungki river in Kiphire district, extending its known range within Chindwin basin, Northeast India.

MATERIALS AND METHODS

The specimen was collected from January 2023 to December 2023 using traditional fishing gear from the Zungki river (25.82319° N, 94.7867° E) a tributary of Chindwin River. The river is fast-flowing with a rocky bottom consisting of gravel, pebbles, and boulders. It shows seasonal fluctuation. Fast flowing with high velocity during monsoon season, slow and gentle during pre-monsoon and post-monsoon season.

Morphometric measurements were recorded to the nearest tenth of a millimeter with vernier dial calliper, and fin rays were counted under a stereozoom microscope (Zeiss Stemi 508). Measurement and counts followed Ng & Kottelat (2013) and identification followed Vishwanath & Linthoingambi (2007), Jiang et al., (2012), Arunkumar & Moyon (2017), Vishwanath (2021), etc. The specimen was fixed in 10 % formalin and deposited in the Freshwater and Fish Biology lab, Kohima Science College, Jotsoma.

RESULTS AND DISCUSSION

Glyptothorax ngapang (Vishwanath & Linthoingambi, 2007) (Fig.1).

Glyptothorax ngapang (Vishwanath & Linthoingambi, 2007) (Type locality: 6.vii.2001, Iril river, Bamonkampu, Manipur, India, 82.7mm SL, coll. I. Linthoingambi (MUMF 6131).

Materials examined: KSCJK01, 95 mm SL; India: Nagaland, Kiphire district, Zungki river, a tributary of Chindwin River (25.82319° N, 94.7867° E); Collection: Shekhumcha Y, 14th April 2023.

Local name: Süxüi (Sanphure Naga).

Diagnosis: The species is characterized by tubercles oval in shape with cornified longitudinal ridges on the body (vs absence in *G. yuensis* , *G. dorsalis*, *G. minimaculatus*); smaller head of 24.2 % SL (vs 22.2-27.4 in *G. lanceatus*); maxillary barbel extending to the middle of the pectoral fin (vs not reaching in *G. yuensis*); smaller interorbital space 26.1 % HL (vs 29.5-33.3 in *G. yuensis*, 28.5 in *G. dorsalis*, 27.9-33.6 in *G. chavomensis*); dorsal fin with 2 serrae distally (vs 5-6 in *G. yuensis* and 6-7 in *G. waikhomi*); longer dorsal-fin spine 19.9 % SL (vs 13.2-14.3), presence of two dark brown bands on dorsal fin (vs absence in *G. yuensis*); well-developed adipose fin 28.3 % HL (vs barely visible in *G. dorsalis*); shorter adipose base length 11.2 % SL (vs 14.1-19.6 in *G. obliquimaculatus* and 13.1-17.8 in *G. longinema*); from *G. chavomensis* in having body depth at anus 15.8 % SL (vs 17.0-18.2), body depth at dorsal fin origin 20.5 % SL (vs 22.2-22.3), head depth 12.6 % SL (vs 17.0-17.2), an adhesive apparatus length 63.9 % HL (vs 50.9-52), an adhesive apparatus width amounting to 57.3 % of the head width (vs 59.9-70.6), longer caudal peduncle 21.1 % SL (vs 14.8-18.9).

Description

The morphometric data for *Glyptothorax ngapang* are presented in Table 1. The morphometric and characteristics of the specimen is consistent with the original description with few variations but fits in the range described by authors who reported similar variations in populations of G. *ngapang* like dorsal fin height 19.9 % SL in specimen falls within the range 14.5-19.9 by Arunkumar & Moyon (2017) vs 11.9-12.9 in original description; body depth at

dorsal 20.5 % SL with little variation compared to original description 16.2-19.1; adhesive apparatus width % its length 72.1 vs 58.4-63.0 in original description vs 56.4-70.0 by Vishwanath (2021); mouth small with distinctive nasal and outer mandibular barbels (Ng & Kullander, 2013); nasal barbel length 21.7 % HL falls within the range 14.1-25.5 by Jiang et al., (2012) and 15.0-28.7 by Ng & Kullander (2013); body depth at anus 15.8 % SL fits in the range 11.2-16.4 by Jiang et al., (2012); eye diameter 11.7 % HL fits in the range 8.4-12.9 by Arunkumar & Moyon (2017); head width 19.5 % SL falls within the range 13.2-19.7 by Ng & Kullander (2013) and 15.8-19.7 by Jiang et al., (2012); dorsal fin base length 12.6 % SL fits in the range 12.3-14.1 by Arunkumar & Moyon (2017); anal fin base length 61.7 % HL fits in the range 61-72 by Shaningam & Vishwanath (2015) and 61.5-72.0 by Vishwanath (2021); adipose fin base 11.3 % SL falls within the range 10.7-14.0 by Jiang et al., (2012); a slender caudal peduncle 6.3 % SL fits in the range 5.3-7.4 described by Jiang et al., (2012), 5.3-6.3 by Ng & Kullander (2013) and 5.3-6.9 by Arunkumar & Moyon (2017); caudal peduncle length 21.1 % SL falls within the range 18.7-23.6 described by Jiang et al., (2012); a yellow-brown body coloration with black spots (Fig1a) and a thoracic apparatus opening posteriorly with a median depression (Fig1b) (Rameshori et al., 2022).

Dorsal fin is positioned closer to the head than to the caudal fin bearing i,6 rays; dorsal spine strong with 11 serrae on the internal side; pectoral fin with i,10 rays originating near the operculum; pelvic fin with i,5 rays reaching up to the anus but does not extend to the anal fin; anal fin long and high with i,9 rays, its origin vertically in advance of adipose fin; all fins except the caudal fin exhibit broad bars, while the caudal fin displays small spots and lighter coloration at the tip; caudal 9+8 and deeply forked; caudal peduncle height 30 % of its length.

Table 1: Morphometric data for *Glyptothorax ngapang* (Vishwanath & Linthoingambi, 2007)

Characters	*G. ngapang*	*G. ngapang* (Vishwanath & Linthoingambi, 2007).
Standard length (SL)	95	61.7-99.5
Standard length (SL) in percentage		
Head length	24.2	22.2-25.0
Body depth at dorsal	20.5	16.2-19.1
Caudal peduncle length	21.1	19.8-20.7
Adhesive apparatus length	15.5	14.0-15.7
Pre pelvic length	49.5	46.5-50.7
Pre anal length	67.4	62.7-67.5
Dorsal fin height	19.9	11.9-12.9
Adipose fin length	6.8	11.2-14.0
Pectoral fin length	20.9	20.7-21.0
Pelvic fin length	14.7	14.5-14.8
Anal fin length	13.7	15.5-16.3
Caudal peduncle height % its length	30	28.0-34.8
Head length (HL) in percentage		
Head depth at occiput	65.2	61.3-65.6
Head width	80.4	71.2-78.4
Eye diameter	11.7	9.8-12.9
Snout length	52.2	48.8-51.8
Inter orbital distance	26.1	22.1-27.5
Mouth gap width	33.9	31.2-35.1
Adhesive apparatus length	63.9	61.5-68.9
Adhesive apparatus width % head width	57.3	41.9-59.5
Adhesive apparatus width % its length	72.1	58.4-63.0

Figure 1: Images of *Glyptothorax ngapang (*Vishwanath & Linthoingambi, 2007).
(a) Lateral view (b) Thoracic apparatus showing median depression

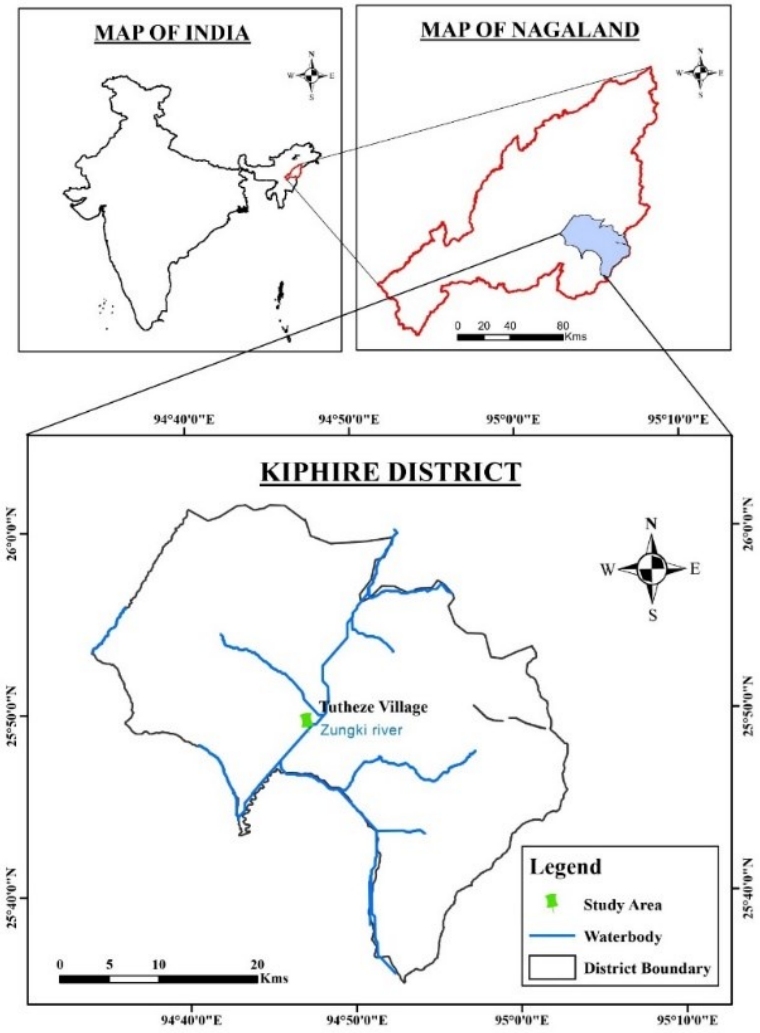

Figure 2: Map showing study area of *G. ngapang (*Vishwanath & Linthoingambi, 2007).

Distribution and Habitat

Previously recorded only in Manipur, *G. ngapang* is adapted to the fast-flowing rivers and streams of Northeast India. The presence of this species in the Zungki river, part of the Chindwin drainage system, marks its first record in Nagaland. This finding emphasizes the significance of the Chindwin basin as a habitat for specialized fish species and expands the range of *G. ngapang* within the region.

CONCLUSION

This study reports the first record of *Glyptothorax ngapang* in Nagaland, expanding its known distribution from Manipur to Nagaland from Zungki river. This finding contributes to our knowledge of freshwater biodiversity in Nagaland and underscores the ecological importance of the state's river systems in sustaining endemic fish populations. *G. ngapang* is of Least concern as per IUCN status (Panda et al., 2019; Chandra et al., 2021) however further surveys are recommended to monitor the conservation status and habitat range of *G. ngapang* within the region.

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