

VALIDITY AND REDESCRIPTION OF *GLYPTOTHORAX MANIPURENSIS* MENON AND RECORD OF *G. SINENSE* (REGAN) FROM INDIA¹

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Glyptothorax manipurensis Menon, originally described from Barak-Brahmaputra drainage of Manipur (India), has hitherto been considered a junior synonym of *G. sinense* (Regan). Based on the type specimens and 7 specimens collected recently from Ukhrlul district, Manipur (Chindwin drainage), *G. manipurensis* Menon is redescribed here as a valid species. It is distinguished from *G. sinense* in having a more broadly rounded snout, broader head, wider teeth band, origin of rayed dorsal fin equidistant between snout tip and adipose dorsal fin (vs. nearer snout tip than adipose dorsal fin), a caudal fin spotted or dusky with black spots (vs. plain) and granulated skin (vs. smooth). *G. sinense* (Regan) hitherto known from China and Myanmar is recorded here for the first time from India. The distribution of both the species is discussed.

Key words: New record, redescription, *Glyptothorax sinense*, *G. manipurensis*

INTRODUCTION

Menon (1954) described *G. manipurensis* from Karong (Brahmaputra basin), Manipur, India. He distinguished it from its closest congener *G. sinense* (Regan) by its broader head and presence of black colour at the base of the dorsal fin, adipose dorsal fin and caudal fin. Misra (1976) and Talwar and Jhingran (1991) considered *G. manipurensis* as a junior synonym of *G. sinense* and extended the distribution of the latter to India. However, Jayaram (1979) recognised two subspecies within this species, namely *G. sinense sinense* (Regan) and *G. sinense manipurensis* Menon. Kosygin and Vishwanath (1998) reported *G. sinense manipurensis* for the first time from Nagaland (Chindwin drainage), India.

Regan (1908) described *Glyptothorax sinense* based on a single specimen collected from Tungting, China. Tungting (= Tungting or Dongting) lake is in the valley of the Yangzi (=Yangtze) river in the northern Hunan province in southeast China. Mukerji (1933) reported the species for the first time from the Mali-Hka river. He remarked that J.R. Norman confirmed the specimen, which is in the Zoological Survey of India, Kolkata (ZSI F 11444/1), as *G. sinense* after comparing it with the type specimen in the British Museum of Natural History.

In the present study, eight specimens of *Glyptothorax* were collected from the Ukhrlul district of Manipur, which is drained by the Chindwin-Irrawaddy drainage. Out of these, seven specimens agree with the description of *G. manipurensis* Menon, while one specimen agrees with *G. sinense* (Regan). In the present paper, *G. sinense* is reported for the first time from India and *G. manipurensis* Menon, 1954 is redescribed as a valid species.

MATERIAL AND METHODS

Specimens collected during the present study have been deposited in the Manipur University Museum of Fishes (MUMF). Specimens of the present collection were compared for confirmation with the type and other specimens of *Glyptothorax* in the Zoological Survey of India, Kolkata (ZSI). Measurements and counts follow Jayaram (1981). Measurements were made with dial calipers (Mitutoyo, Japan) to the nearest 0.1 mm, and body proportions are expressed as percentage of standard length (SL) or head length (HL).

Glyptothorax manipurensis Menon 1954

Glyptothorax manipurensis Menon 1954, *Rec. Indian Mus.* 52 (1): 23 (type locality: Barak river at Karong, Manipur).

Glyptothorax sinense manipurensis: Jayaram, 1979, *Occ. Paper, Zool. Surv. India*, 14: 1-62.

Material examined: ZSI F 738/2, Holotype, 74.5 mm SL, Barak R. (Brahmaputra basin), Karong, Naga hills, Manipur, India, Coll. A.G.K. Menon and party, February, 1953; ZSI F 743/2, 1 ex., 54.0 mm SL, Paratype (Figured in original description), same data as Holotype. MUMF 2027, 1 ex., 89.0 mm SL, Laniye river near Jessami (Chindwin basin), Manipur-Nagaland state border, India, Coll. L. Kosygin, February 28, 1994; MUMF 2103-2104, 2 exs., 80.5-90.0 mm SL, Laniye river near Jessami, Manipur-Nagaland state border, India, Coll. L. Kosygin, May 31, 1994; MUMF 2190-2193, 4 exs., 74.0-108.0 mm SL, Tizu River (Chindwin basin), Akash Bridge, near Thetsi, Manipur-Nagaland state border, India, Coll. L. Kosygin, August 15, 1994.

Diagnosis: A species of *Glyptothorax* with the

following combination of characters: Head large, broad (width 21.1-22.8% SL, 86.5-94.4% HL); broadly rounded snout (length 11.1-12.9% SL, 46.1-50.0% HL); rayed dorsal fin origin equidistant between snout tip and adipose dorsal fin; predorsal length 34.0-36.2% SL; occipital process does not reach basal bone of rayed dorsal fin; dorsal spine serrated posteriorly; 8-9 branched anal fin rays; granulated skin.

Description: Morphometric data are shown in Table 1 and general body shape in Fig 1. Rayed dorsal fin with 1 simple and 5-6 branch rays. Anal fin with 2 simple and 8-9 branched rays. Caudal fin forked, with 17 principal rays. Pectoral fin with one simple and 9 branched rays. Pelvic fin with 6 rays. Lateral line distinct. Body elongate, compressed dorso-ventrally, from head to anal fin. Caudal peduncle slightly compressed laterally. Head wide, almost as long as wide. Snout broadly rounded. Eye moderate, not visible from ventral side, in posterior half of head. Mouth inferior, horizontal, lips papillated. Teeth villiform, those on upper jaw form a wide, continuous band, while band in lower jaw is

interrupted in the middle. Barbels four pairs. Maxillary barbels reach middle of pectoral fin base. Outer mandibular barbels reach upper angle of gill opening. Inner mandibular barbels reach anterior margin of thoracic adhesive apparatus. Nasal barbels reach anterior margin of orbit. Occipital process distinctly separated from basal bone of dorsal fin. Thoracic adhesive apparatus triangular, longer than broad with slight depression in the middle (Fig. 2). Dorsal spine strong, osseous, serrated posteriorly, its origin equidistant between snout tip and adipose dorsal fin. Pectoral fins with an internally denticulated spine. Paired fins non-plaited. Skin granulated.

Proportional measurements in percentage [mean (range) ± standard deviation]: Body depth 21.2 (16.9-25.0 ± 2.6) of SL, head length 24.6 (22.7-25.9 ± 0.9), head width 21.8 (21.1-22.8 ± 0.6), snout length 11.9 (11.1-12.9 ± 0.6), caudal peduncle length 20.0 (18.1-22.1 ± 1.3), caudal peduncle height 9.2 (8.3-10.1 ± 0.6), predorsal length 35.1 (34.0-36.5 ± 0.9), dorsal fin height 20.5 (19.4-22.9 ± 1.1), dorsal spine length 18.2 (16.2-22.9 ± 2.2), adipose dorsal fin length 15.3 (12.3-18.9 ± 2.2), adipose

Table 1: Comparison of proportional measurements of *Glyptothorax manipurensis* Menon and *G. sinense* Regan

	<i>G. manipurensis</i>				<i>G. sinense</i>	
	ZSIF 738/2 Holotype (Brahmaputra basin)	ZSIF 743/2 Paratype (Brahmaputra basin)	MUMF 2027, 2103, 2104, 2190- 2193 Mean (range) (Chindwin basin)	sd	ZSIF 11444/1 (Irrawaddy basin)	MUMF 2244 (Chindwin basin)
Standard Length	74.5	54.0	87.3 (74.0 - 108.0)	11.2	102.0	98.3
In % of SL						
Head length	24.2	25.9	24.4 (22.7 - 25.7)	0.9	22.1	23.4
Head width	22.8	22.2	21.6 (21.1 - 22.3)	0.4	18.1	19.8
Snout length	12.1	12.9	11.7 (11.1 - 12.5)	0.5	10.3	10.7
Body depth	19.5	18.5	21.8 (16.9 - 25.0)	2.7	15.7	21.8
Caudal peduncle length	18.1	18.5	20.5 (19.2 - 22.1)	1.0	20.6	20.7
Caudal peduncle height	10.1	8.3	9.2 (8.7 - 10.1)	0.5	6.4	9.7
Predorsal length	36.2	36.1	34.8 (34.0 - 36.2)	0.7	33.8	32.6
Dorsal fin height	20.8	20.4	20.5 (19.4 - 22.9)	1.3	17.6	20.0
Dorsal spine length	18.8	17.6	18.2 (16.2 - 22.9)	2.6	13.2	16.3
Adipose dorsal fin length	13.4	13.3	15.9 (12.3 - 18.9)	2.2	12.7	18.1
Adipose dorsal fin height	4.3	4.0	5.3 (4.6 - 5.8)	0.5	2.9	5.5
Pectoral fin length	22.1	22.2	23.3 (21.7 - 25.0)	1.3	21.6	23.2
Anal fin base length	14.8	13.1	14.3 (12.9 - 15.7)	1.1	11.8	15.5
Anal fin height	17.4	18.0	18.5 (16.2 - 19.2)	1.1	16.7	17.3
Caudal fin length	25.5	-	24.4 (22.3 - 28.1)	2.3	-	23.6
In % of HL						
Head height at occiput	61.1	60.7	65.5 (60.5 - 73.9)	4.9	53.3	63.5
Head width	94.4	86.5	88.4 (86.4 - 93.9)	2.6	82.2	84.8
Eye diameter	13.9	14.3	13.1 (10.9 - 16.3)	2.0	8.9	14.8
Inter-orbital space	27.8	22.8	26.2 (22.5 - 28.3)	2.1	28.9	26.1
Adhesive apparatus length	63.9	-	59.6 (56.4 - 65.2)	3.0	62.2	64.8
Adhesive apparatus width	44.4	-	48.1 (43.6 - 54.3)	4.0	48.9	55.2
Snout length	50.0	50.0	47.9 (46.1 - 50.0)	1.2	48.8	46.1
In % of caudal peduncle length						
Caudal peduncle height	55.5	45.0	44.4 (41.2 - 51.4)	3.7	33.3	46.6

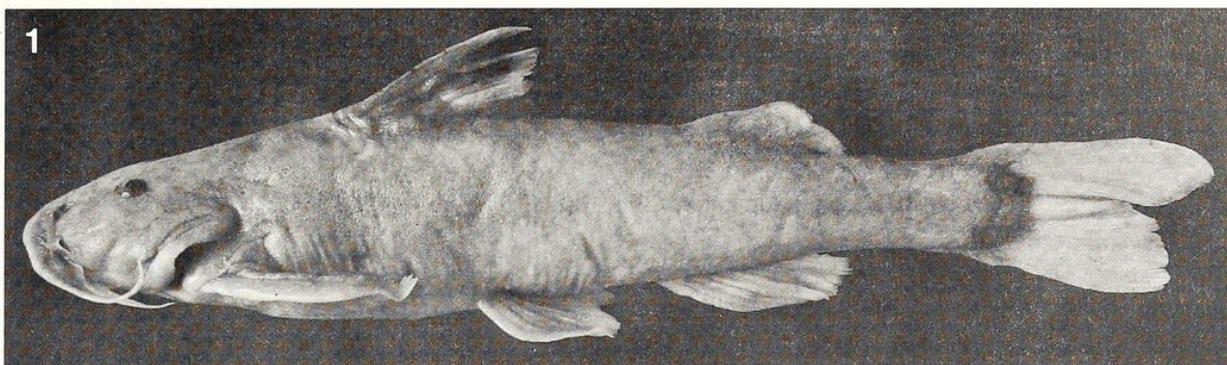


Fig. 1: *Glyptothorax manipurensis* Menon, lateral view (MUMF 2190, 108.0 mm SL)

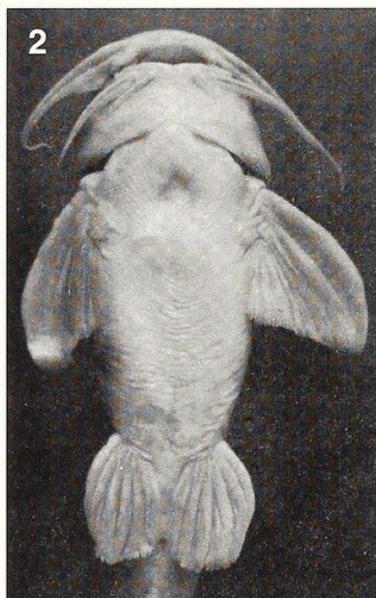


Fig. 2: *G. manipurensis* Menon, ventral view (MUMF 2190, 108.0 mm SL)

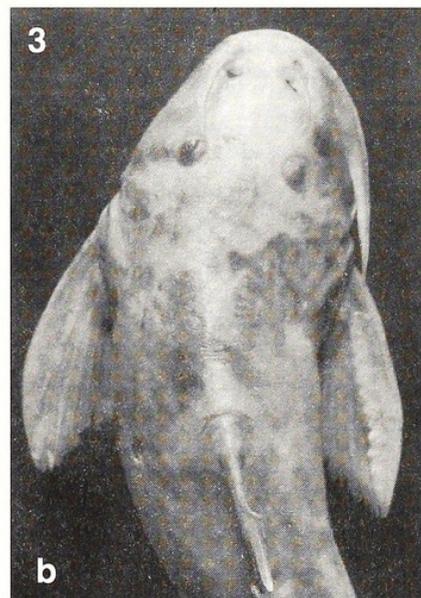
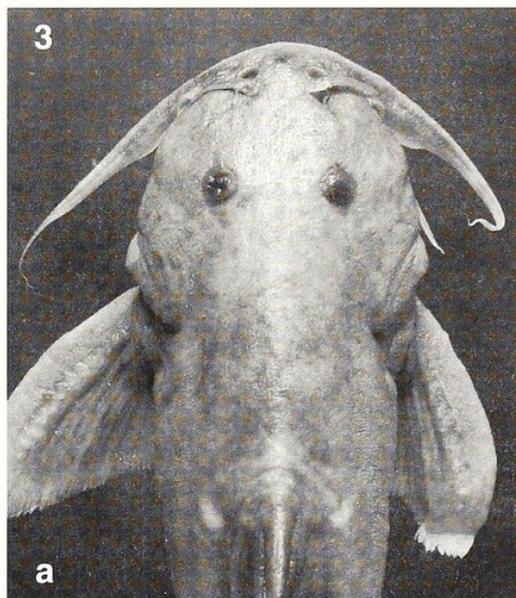


Fig. 3: Comparison of head shape:
a. *G. manipurensis* (MUMF 2190, 108.0 mm SL);
b. *G. sinense* (MUMF 2244, 98.3 mm SL)

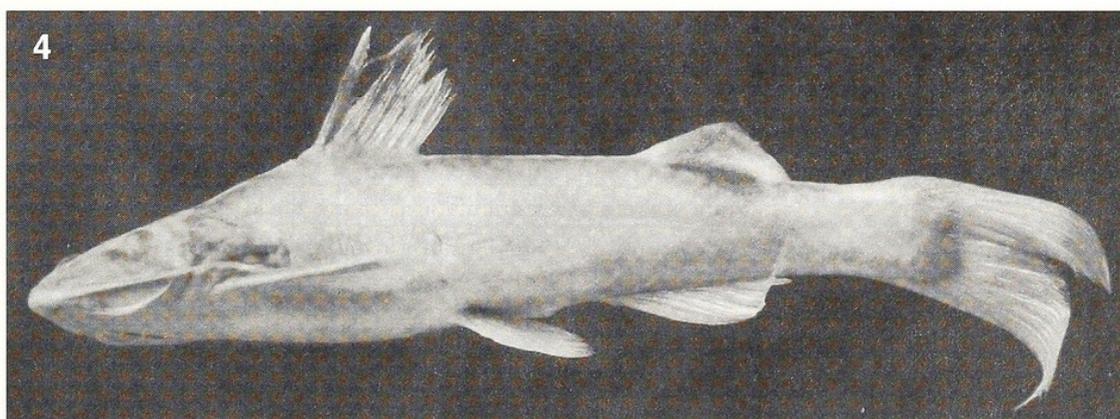


Fig. 4: *Glyptothorax sinense* (Regan) (MUMF 2244, 98.3 mm SL)

dorsal fin height 4.9 (4.0-5.8 \pm 0.7), pectoral fin length 23.0 (21.7-25.0 \pm 1.2), ventral fin length 16.3 (14.8-17.4 \pm 0.7), anal fin base length 14.2 (12.9-15.7 \pm 1.1), anal fin height 18.3 (16.2-19.2 \pm 1.0), caudal fin length 24.6 (22.3-28.1 \pm 2.1). Head width 88.9 (86.5-94.4 \pm 3.1) of HL, head height at occiput 64.5 (60.5-

73.9 \pm 4.7), eye diameter 13.3 (10.9-16.3 \pm 1.8), interorbital space 26.0 (22.5-28.3 \pm 2.3), snout length 48.4 (46.1-50.0 \pm 1.4), adhesive apparatus length 60.1 (56.4-65.2 \pm 3.3), adhesive apparatus width 47.7 (43.6-54.3 \pm 4.0). Caudal peduncle height 45.9 (41.2-55.5 \pm 4.9) of its length.

Colour: Body grey to olivaceous dark brown with dark patches at the base of rayed dorsal fin, adipose dorsal fin, and caudal fins. Rayed dorsal fin with a broad longitudinal black band in the middle. Caudal fin is dusky or with black dots.

Distribution: INDIA: Barak R., (Brahmaputra basin), Karong, Senapati district, Chalou R., (Chindwin basin), Ukhrul district, Manipur.

Remarks: Menon (1954) distinguished *Glyptothorax manipurensis* from its closest congener *G. sinense* by its broader head and presence of black colour at the base of dorsal fin, adipose dorsal fin and caudal fin. In the present study, the first character holds true (Fig. 3), but the second character seems to be misleading because the specimens of *G. sinense* also have similar faint dark patches, even though the markings are more distinct in *G. manipurensis*. He further erroneously described the nature of the skin as smooth. However, in the present study, the type specimen of the fish in the ZSI and specimens collected from the Chindwin basin were examined and found to have granulated skin in all the specimens. Based on the present study, *G. manipurensis* is distinguished from *G. sinense* in having granulated skin (vs. smooth), broadly rounded snout (vs. slightly conical snout), broader head (head width 21.1-22.8% SL vs. 18.1; 86.5-94.4% HL vs. 82.2), longer snout (11.1-12.5% SL vs. 10.3), origin of rayed dorsal fin equidistant between snout tip and adipose dorsal fin (vs. nearer snout tip than adipose dorsal fin), and a caudal fin spotted or dusky with black spots (vs. plain). The fish is similar to *G. trilineatus* (Blyth) in having granulated skin on the body and head. However, *G. manipurensis* is easily distinguished from *G. trilineatus* in having a body without any longitudinal bands on its body (vs. three longitudinal bands on the body of the latter). *G. manipurensis* is so far known only from Manipur and Nagaland in India.

Other material examined: *Glyptothorax sinense*: ZSI F 11444/1, 1 ex., Phungin Hka, Myitkyina district, Myanmar. *G. burmanicus*: ZSI F 10877/1, 1 ex., Myitkyina district, Myanmar, Prasad & Mukherji. *G. cavia*: MUMF 2500, 3 ex., Manipur, India. *G. trilineatus*: ASB (Asiatic Society of Bengal) Cat. 581, 1 ex., paratype, Tenasserim, Myanmar. *G. pectinopterus*: ZSI F 216/2, 1 ex., Kangra valley, India. *G. gracile*: ZSI F 2479/2, 1 ex., Kameng, India. *G. saisii*: ZSI F 25837, holotype, Parasnath hills, India. *G. telchitta*: ZSI F 239/2, 1 ex., Darbhanga, India. *G. prashadi*: ZSI F 10845/2, 1 ex., Sritamarat, Siam.

Glyptothorax sinense (Regan, 1908)

Glyptosternon sinense Regan, 1908, *Ann. Mag. nat. Hist.* (8)11: 110 (type locality: Tungting, China).

Glyptothorax sinense: Mukerji, 1933, *J. Bombay Nat. Hist. Soc.*, 36: 280, pl. 2, fig. 1 (Phungting Hka, tributary of Mali Hka River, Upper Burma).

Material examined: ZSI F 11444/1, 1 ex., 102.0 mm, Phungin Hka, tributary of Mali Hka river, Myitkyina district, Myanmar, Coll. Lt. Col. R.W. Burton, no date. MUMF 2244, 1 ex., 98.3 mm SL, India: Tizu River (Chindwin basin), Akash Bridge near Thetsi, Manipur-Nagaland state border, India, Coll. L. Kosygin, August 7, 1995.

Diagnosis: A species of *Glyptothorax* with the following combination of characters: Head small, conical (width 18.1-19.8% SL; 82.2-84.8% HL); more or less pointed snout (length 10.3-10.7% SL); dorsal fin origin nearer snout tip than adipose dorsal fin; occipital process does not reach basal bone of rayed dorsal fin; dorsal spine serrated posteriorly; 9-10 branched anal fin rays; soft and smooth skin.

Description: Morphometric data are given in Table 1 and general body shape in Fig. 4. Rayed dorsal fin with 1 simple and 6 branch rays. Anal fin with 2 simple and 9 branched rays. Caudal fin forked, with 17 principal rays. Pectoral fin with one simple and 9 branched rays. Pelvic fin with 6 rays. Lateral line distinct. Body elongate. Head depressed, conical, longer than broad. Snout broadly rounded. Eye of moderate size, almost in the middle of head, not visible from ventral side. Mouth inferior, upper jaw longer, lips papillated. Four pairs of barbels. Maxillary barbels with broad bases, reaching posterior base of pectoral spine. Outer mandibular barbels reach origin of pectoral fin. Inner mandibular barbels much shorter than outer mandibular. Nasal barbels reach anterior margin of orbit. Nostril closer to snout tip than to orbit. Occipital process not reaching basal bone of dorsal fin. Thoracic adhesive apparatus rhomboidal, considerably longer than broad, without central pit. Dorsal spine strong, osseous, serrated posteriorly. Its origin nearer to snout tip than caudal fin base. Pectoral spine strong, osseous, with 10 sharp denticulations along the posterior edge. Adipose dorsal fin high, its origin opposite anal fin origin. Inter-dorsal wide, with a series of visible small spines below the skin. Skin smooth.

Colour: Body greenish-brown with irregular dark patches. Prominent deep brown patches present at the base of rayed dorsal fin, adipose dorsal fin and another less prominent one on caudal fin base. Dorsal fin with one broad black band. Other fins pale white.

Distribution: INDIA: Nagaland, Tizu River (Chindwin basin), Manipur; Myanmar: Mali Hka river (Irrawaddy basin); China: Dongting lake, Yangtze river basin.

Remarks: The present specimen of *G. sinense* collected from Manipur-Nagaland border (Chindwin basin) agrees with

the description of the species. However, while re-examining the Burmese specimen in the ZSI, differences were found in the body proportions and number of branched anal fin-rays, even though they possess the specific characters of *G. sinense*. Hora (1923) remarked that the members of the genus *Glyptothorax* are still in the process of adaptation to life in hill streams, and the specific characters in them have not yet stabilised. The variation in these two specimens may be due to the ecological factors of the different habitats that they inhabit, and they may be in the process of adaptation to their respective environments.

However, the occurrence of *Glyptothorax sinense* in two river basins, Yangtze drainage in China and Chindwin system in India and Myanmar, which are quite far apart, needs

confirmation. As the type of *G. sinense* is not available for comparison, the identification of the species is based only on Mukerji's (1933) statement, Misra's (1976) description and comparison with Mukerji's collection of the fish from Myanmar (reported to have been compared with the only type in the British Museum by J.R. Norman). The fish from Manipur is presently placed under *G. sinense*, which is being reported for the first time from India in this paper.

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