Miscellaneous Publication

Occasional Paper No. 14

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AID TO THE IDENTIFICATION OF SILUROIDS

by

K. C. JAYARAM

Issued by the Director

Zoological Survey of India, Calcutta

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3. SISORIDAE

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RECORDS

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ZOOLOGICAL SURVEY OF INDIA

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AID TO THE IDENTIFICATION OF THE SILUROID FISHES OF INDIA, BURMA, SRI LANKA, PAKISTAN AND BANGLADESH

3. SISORIDAE

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K. C. JAYARAM

Edited by the Director, Zoological Survey of India

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No. 14 **1979** **Pages 1–62**

CONTENTS

Introduction

This paper is the third in the series "Aid to the identification of Siluroids" Part 1 (Jayaram, 1977) contained Keys to the genera and species of the family Bagridae, besides a general key to all the families of Siluriformes. Part 2 (Jayaram, 1977a) dealt with the families, genera and species of Siluridae, Schilbeidae, Pangasiidae, Amblycipitidae and Akysidae. The general arrangement is as the same adopted in the earlier two parts. As far as possible important Key characters are illustrated. Under descriptions of genera and diagnosis of species, further characters which will help in identification are printed in italics.

Abbreviations:

In text-figures.—a.d.=adipose dorsal fin; adh. app.=adhesive apparatus; Bb. df.=Basal bone of dorsal fin; c.pd.=Caudal peduncle; fng. proc=finger-like processes; g.m.=gill membrane; g.o.=gill opening; m.b.=mandibular barbels; oc.p.=occipital process; pc.f.=pectoral fin; pc.sp.=pectoral spine; post lab.gr.=post-labial groove; tblc.=tubercles.

In text.—BM (N.H.)=British Museum (Natural History), London; GCM (NH)=Govt. College Museum Natural History, Lahore; TF=Text-figure; ZMA=Zoological Museum, Amsterdam; ZSD=Zoological Survey Department, Karachi; ZSI=Zoological Survey of India, Calcutta.

Acknowledgements

The value of this paper chiefly lies in the illustrations and most of them were ably drawn by Shri Parimal Biswas, Senior Artist, Zoological Survey of India, Calcutta under my guidance. A few were done by Shri D. Pyne and Shri A. Karmakar of the same department. To these gentlemen I am very grateful. I am thankful to the Director, Zoological Survey of India for facilities. I am obliged to my colleague Dr. P. K. Talwar, for information on some type specimens.

Family Sisoridae

Generally small to medium sized fishes with head and anterior part of body depressed, and tail compressed or entire body compressed. An adhesive apparatus on thorax may be present or absent. Teeth on premaxillaries and mandible; palate edentate. Nostrils close together, slit-like, separated by nasal barbel of varying length. Barbels eight, generally well developed, in some genera thick, fleshy with broad bases. Gill openings wide or narrow, restricted to sides; free or confluent with isthmus.

Rayed dorsal fin inserted far in advance of pelvics. Adipose dorsal fin smooth, generally free, but in some genera confluent with caudal, in some, rudimentary represented by a small short spine (*Sisor*). Paired fins inserted horizontally, may or may not be plaited below. Pectoral fins with or without a spine, denticulated either on inner or outer margin, or on both; in some genera (*Euchiloglanis*) outermost ray pinnate, cartilaginous, a spine in typical sense being absent. Outermost ray of pelvic fins thick, pinnate. Anal fin short, not confluent with caudal. Caudal fin deeply forked, emarginate, truncate or rounded. Lateral line present, complete.

Air-bladder small, partly enclosed in a bony capsule.

Lateral ethmoid facet for articulation of palatines more lateral than ventral. Palatines very well developed, broad. Endopterygoid absent. Ecto-and mesopterygoid present, variously developed. Metapterygoid connected to hyomandibular. Prevomer small, edentate. Autosphenotics alone provide ventrally the articular facet for hyomandibular. Post-temporals present, united to skull with sutures, with inferior limb weak, fused to basioccipital.

Vertebrae 34 to 40.

Distribution.—Freshwaters of Asia; India, Pakistan, Bangladesh, Burma, Thailand, Viet-Nam, Malaya, China. Not known from Sri Lanka so far.

Type-genus.—*Sisor* Hamilton.

Remarks.—This family is a composite assemblage of divergent forms. Hora and Silas (1952) revised certain genera. Menon, M.A.S. (1954) revised *Glyptothorax*. Tilak (1963) gave a good account of the osteocranium and Weberian apparatus of a few genera. It seems possible that the heterogenous assemblage of genera under the family could be split into different sub-families if not families. Misra (1976) has in fact done so, dividing this family into three subfamilies: Bagarinae, Glyptosterninae and Sisorinae. Much work remains to be done on this and several other aspects.

A total of 18 genera* are known; all are dealt here.

* Misra (1976) also has dealt with 18 genera. A new genus *Pseudolaguvia* has been proposed to accommodate *Glyptothorax tuberculatus* (Prashad & Mukerji) (see page 27). *Batasio* Blyth has been erroneously included under this family instead of under Bagridae.

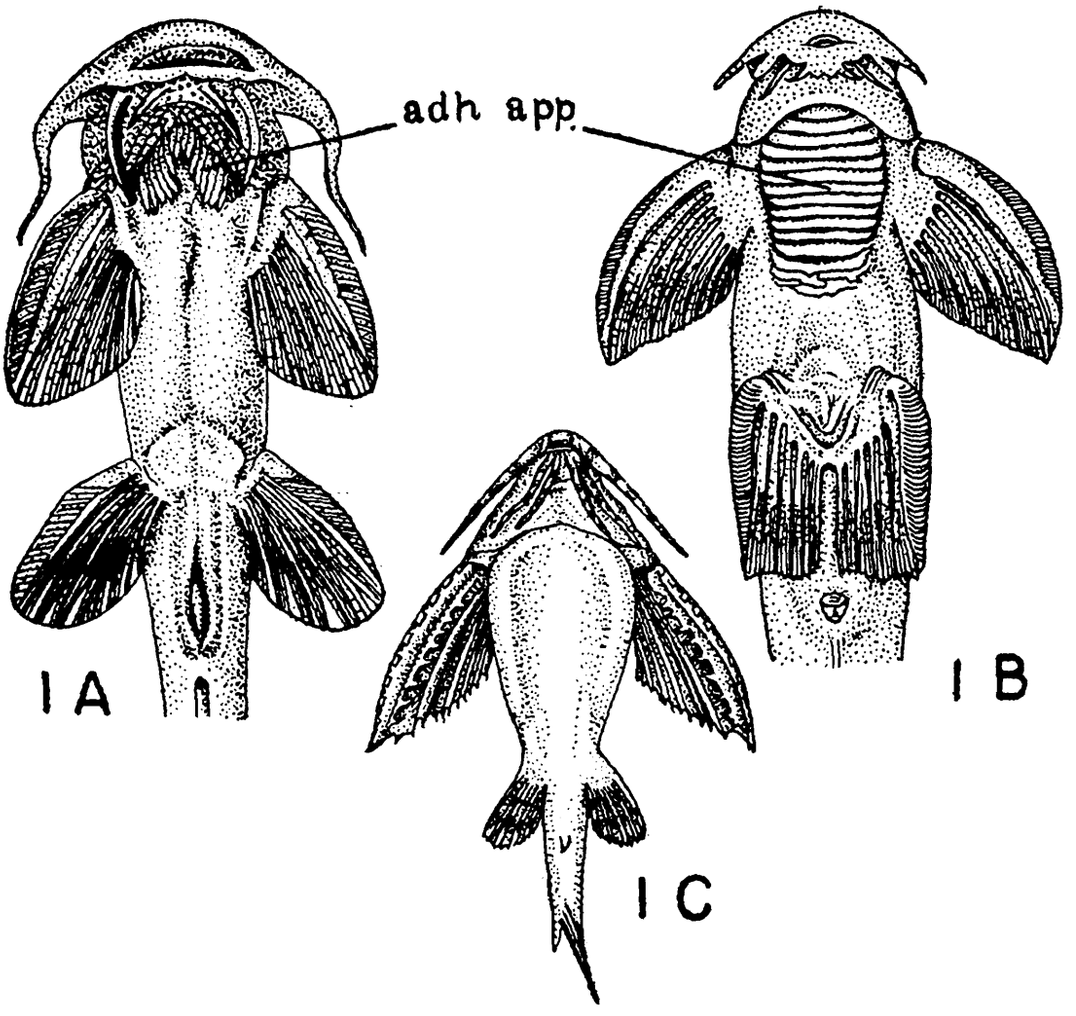
KEY TO THE GENERA

1. An adhesive apparatus on ventral surface of body present, distinct and well developed. ... ... 2 (TF 1A, B)

   An adhesive apparatus on ventral surface of body absent, if present faintly developed, indistinct. ... ... 5 (TF 1C)

2. Adhesive apparatus in the form of prominent, well developed transverse folds. ... ... *Pseudecheneis* Blyth (TF 1B)

   Adhesive apparatus in the form of longitudinal folds. ... ... 3 (TF 1A)



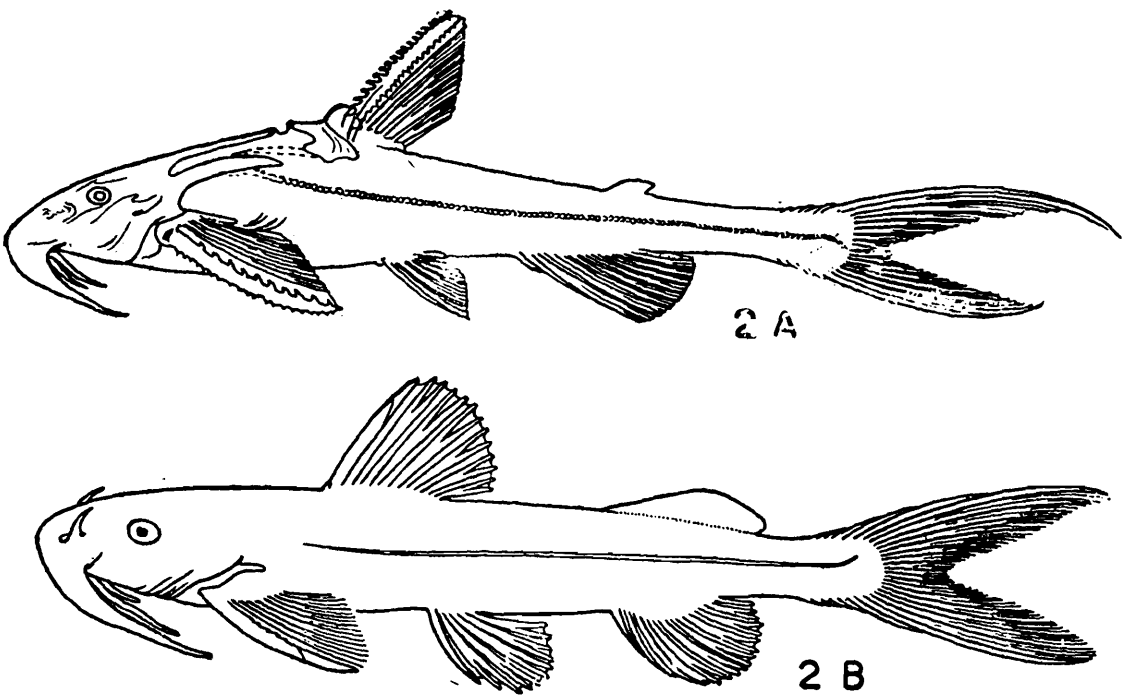
3. Gill membrane separated by broad isthmus. Caudal fin rays prolonged. Head oval-shaped, compressed.... ... ... *Conta* Hora (TF 2A)

   Gill membranes united with isthmus. Caudal fin rays not prolonged. Head flat, depressed. ... ... 4 (TF 2B)

4. Cubito-humeral process inconspicuous, hidden by skin. ... ... *Glyptothorax* Blyth

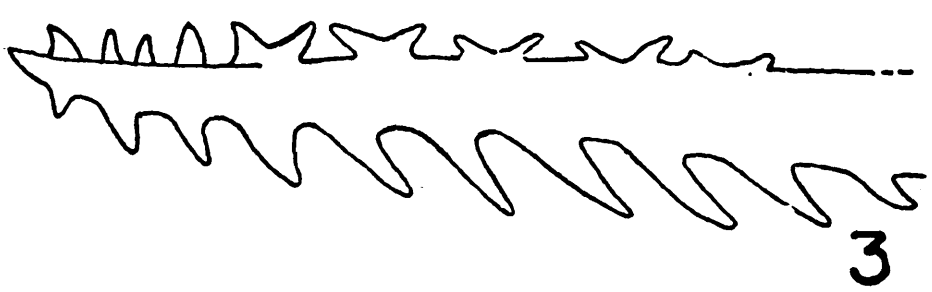
   Cubito-humeral process conspicuous, exposed, prominently seen. ... ... *Pseudolaguvia* Misra

5. Dorsal spine present, well developed. 6
Dorsal spine absent, anteriormost ray thick, but not bony. 12



6. Serrations along outer margin of pectoral spine divergent or a combination of retrorse and antrorse teeth. ... ... 7 (TF 3)
Serrations along outer margin of pectoral spine either absent or when present weak in one direction only. 8

7. Serrations along outer margin of pectoral spine divergent. ... ... *Erethiste* Müller & Troschel (see TF 3)



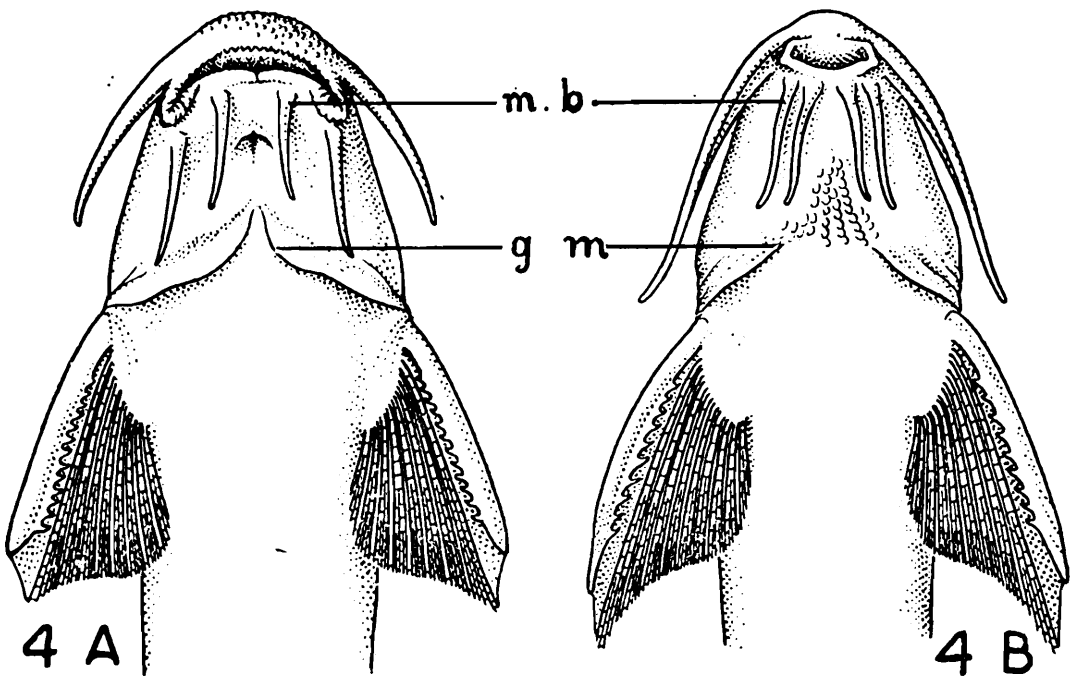
Serrations along outer margin of pectoral spine directed towards base in proximal half (antrorse), while along distal half directed towards tip (retrorse).... ... *Erethistoides* Hora

8. Caudal fin rays not prolonged. Body smooth, without bony plates. 9
Caudal fin rays prolonged. Body with bony plates.... 11

9. Maxillary barbels with stiff base, lying in a groove anteriorly. 10

Maxillary barbels without any stiff base and groove anteriorly. 12

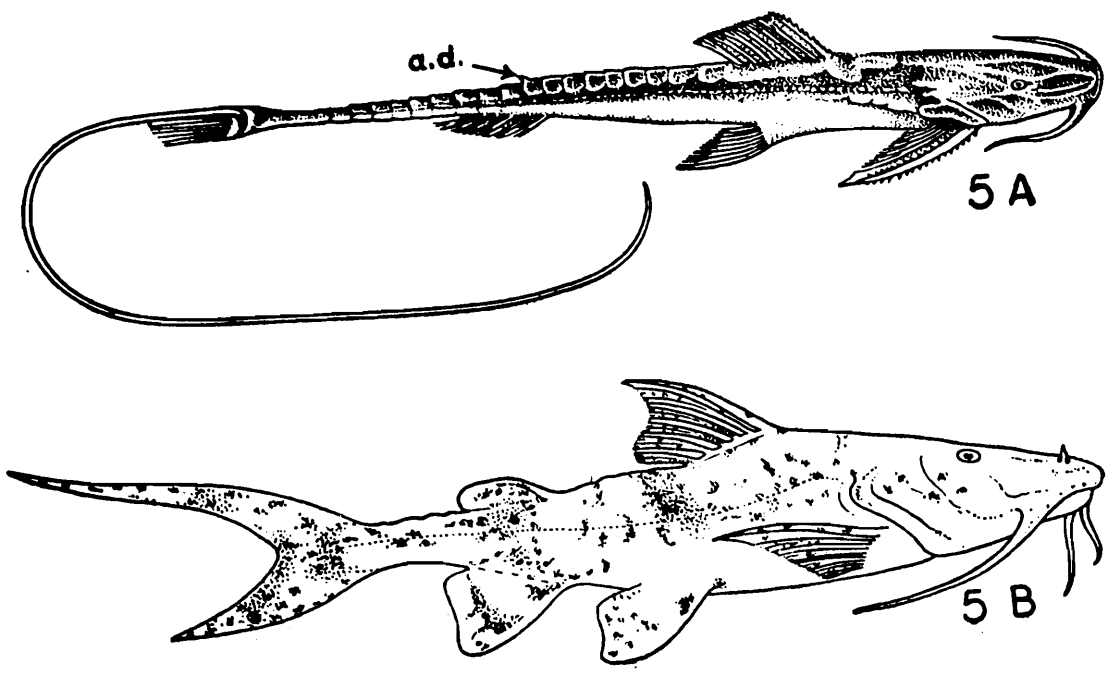
10. Mandibular pair of barbels inserted on a transverse line at different levels. Gill membranes free from isthmus or only slightly adherent to it. Ventral surface of head flat and broad. ... ... *Nangra* (TF 4A)



Mandibular pair of barbels inserted on a transverse line at the same level. Gill membranes broadly united with isthmus. Ventral surface of head compressed and narrow. ... ... *Gagata* (TF 4B)

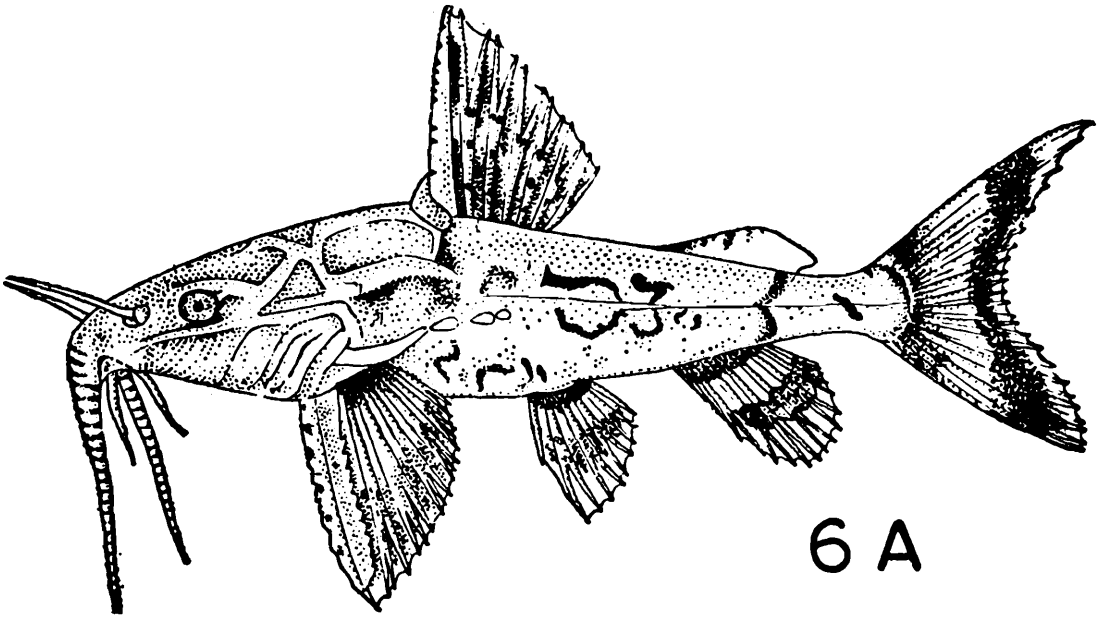
11. Gill openings small. Adipose dorsal fin in the form of a spine. Upper ray of caudal fin much prolonged.... ... ... *Sisor* Hamilton (TF 5A)

Gill openings wide. Adipose dorsal fin long, smooth. Both lobes of caudal fin may be prolonged, but not very long. ... ... *Bagarius* Hamilton (TF 5B)

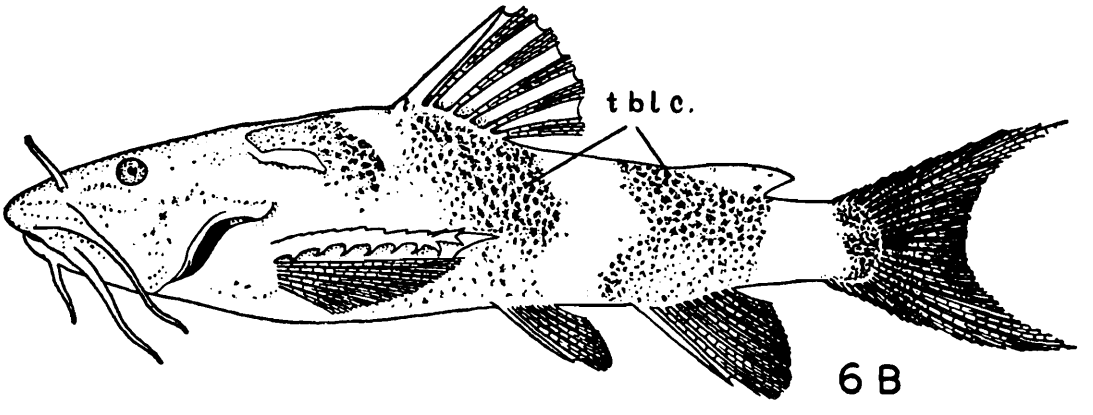


12. Caudal fin emarginate, semicircular. 13
Caudal fin deeply forked. 14

13. Barbels annulated. Body plain. ... ... *Hara* Blyth
... ... (TF 6A)

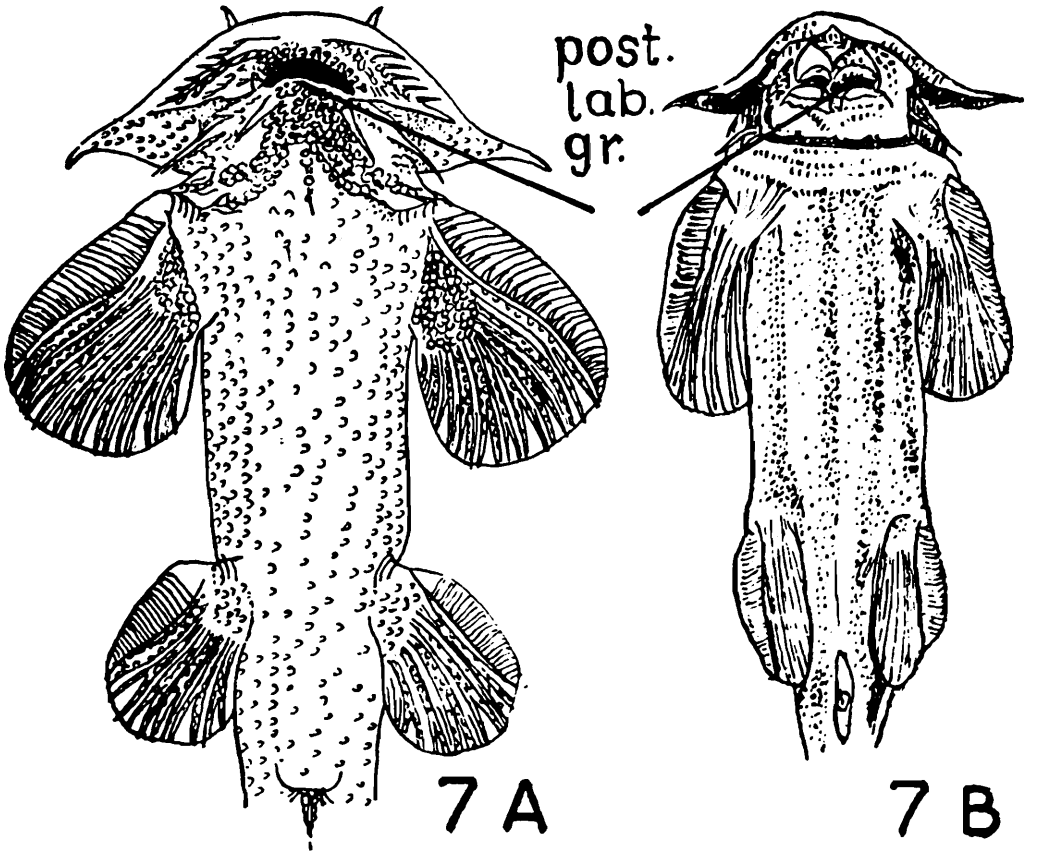


6 A



6 B

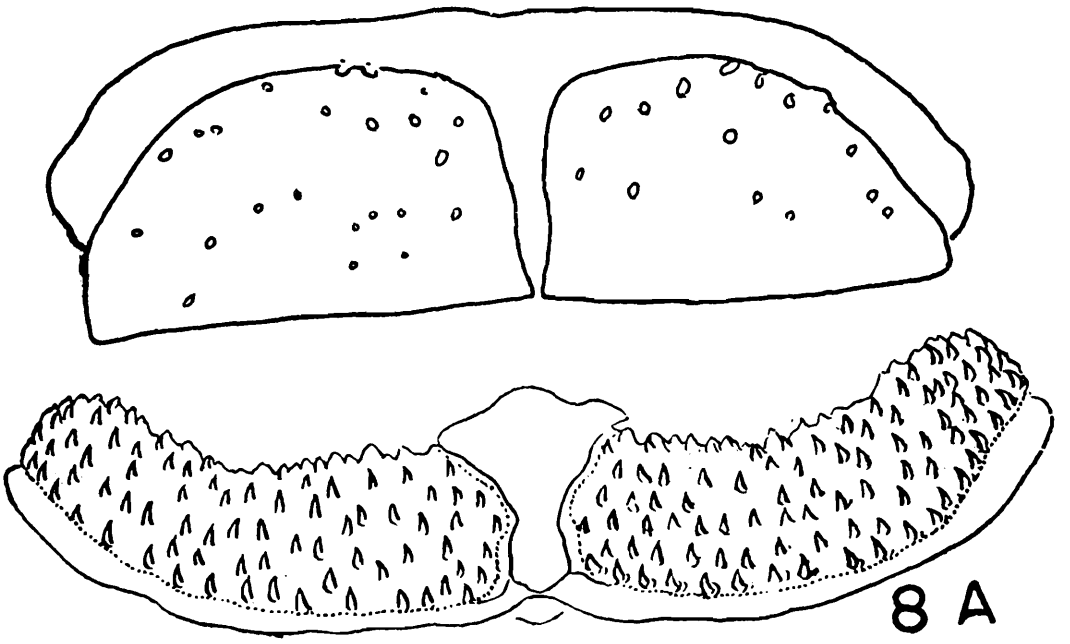
Barbels not annulated. Body with tubercles along sides of body. ... ... *Laguvia* Hora (TF 6B)

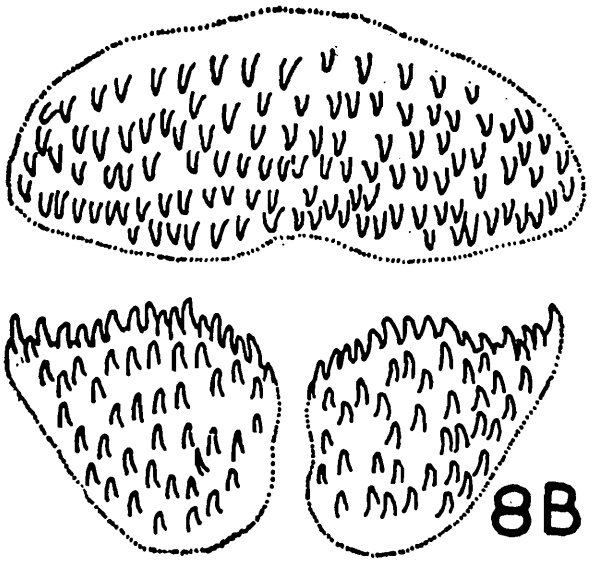


7 A

7 B

14. Post-labial groove interrupted. ... ... 15 (TF 7A)
    Post-labial groove continuous. ... ... 17 (TF 7B)
15. Gill openings extending to ventral surface of body. ... ... *Glyptosternum* McClelland
    Gill openings restricted to dorsal surface of body. 16
16. Teeth on upper jaw in a continuous band extending backwards at sides. ... ... *Coraglanis* Hora & Silas
    Teeth on upper jaw in a discontinuous or continuous band not extending backwards at sides. ... ... *Euchiloglanis* Regan
17. Pectoral fins with 10 to 12 branched rays. Teeth on upper jaw in two well separated patches, oar-shaped.... ... ... *Exostoma* Blyth (TF 8A)
    Pectoral fins with 16 to 19 rays. Teeth on upper jaw in a bilobed band, not produced at sides, villiform. 18





18. All teeth in both jaws conical and pointed. ... ... *Myersglanis* Hora & Silas (TF 8B)
    All teeth in both jaws not conical and pointed. ... ... *Oreoglanis* Smith

Genus **Bagarius** Bleeker

Bagarius Bleeker, 1853, *Verh. Bat. Gen.*, **25**, p. 121 (type species, *Pimelodus bagarius* Hamilton).
Bagarius: Hora, 1939, *J. Bombay nat. Hist. Soc.*, **40**(4) pp. 585–593 (review).

Description.—Head large, naked, osseous, rugose in regular bands and lines, greatly depressed; snout sharply conical, not pointed; jaws subequal, upper jaw the longer; lips thick. Mouth ventral, wide, crescentic. Teeth sharp, unequal in size in bands on jaws; palate edentate. Eyes small, subcutaneous dorsally placed at posterior half of head. Four pairs of barbels; one pair each of maxillary, nasal, and two of mandibular; *maxillary barbels with broad bases.* Gill membranes free from each other up to base of isthmus and overlapping, free from isthmus. Branchiostegals 12.

Rayed dorsal fin with six rays and a smooth spine with *an enlongated soft termination of varying length.* Adipose dorsal fin moderately long, posteriorly free. Pectoral fins with 13 rays and a spine serrated along inner edge and also with a soft prolongation. Pelvic fins with 6 rays. Anal fin short, with 12 to 15 rays. *Caudal fin* deeply forked, upper lobe longer, *and both lobes produced into soft filamentous prolongations.*

Lateral line complete, simple.

Air-bladder small, enclosed in two bony capsules.

Distribution.—India, Pakistan, Bangladesh, Burma, Thailand, Malaya, East Indies, Tonkin.

A single species.

Bagarius bagarius (Hamilton)

Pimelodus bagarius Hamilton, 1822, *Fish. Ganges*, pp. 186, 378, pl. 7 fig. 62 (type locality, Calcutta).
Bagarius bagarius: Hora, 1939, *J. Bombay nat. Hist. Soc.*, **40**(4), p. 585 (revision).

D. I, 6; P. I, 13; V 6; A. 12–13; C. 17

Diagnostic characters.—Head greatly depressed. *Pectoral and caudal fins with soft filamentous prolongations.* Palate edentate. No adhesive apparatus. *Body speckled with coloured dots.*

Colour.—Variable. Generally body greenish or ash coloured, or deep olive-brown, pale below with many scattered irregularly shaped black marks, in fresh condition.

Distribution.— India, Pakistan, Bangladesh, Burma, Thailand, Malaya Java, Borneo, Tonkin.

Size.—Maximum size 1800 mm. TL. Weight over 125 kg.

Fishery value.—Known as the "Goonch" this is a favourite of anglers. One of the largest known freshwater fish, and also called the Freshwater shark, it is very voracious, feeding on small fishes, frogs, shrimps. It is mainly an inhabitant of rapids and rocky pools. Specimens are caught by line fishing though instances of their capture by gill nets are not rare. Being sluggish in habit, it offers no game. The flesh is not much relished as food. Breeding season is prior to the commencement of the monsoon rains. In the Brahmaputra maximum catches are in the months November to March. At this

period they remain in the lower tier of the mid zone in the main stream of the river. At the bifurcation of the river they remain at the bottom (Goswami, 1976).

Type-specimens.—Not known.

Genus **Gagata** Bleeker

Gagata Bleeker, 1858, *Ichthyol. Archipel. Ind. Prodr.*, **I**, p. 204 (type species, *Gagata typus* Bleeker =*Pimelodus gagata* Hamilton).

Gagata: Hora & Law, 1941, *Rec. Indian Mus.*, **43**(1), p. 9 (revision, synonymy).

Description.—Head short, snub-nosed though globular, somewhat elevated, *compressed and narrow;* snout obtusely rounded; jaws subequal; lips thick, fimbriated. Mouth ventral, transverse, narrow. Teeth uniformly villiform on jaws in bands; palate edentate. Eyes large, dorso-lateral. Four pairs of barbels; one pair each of maxillary, nasal and two of mandibular; *mandibular pair of barbels inserted on a transverse line at the same level,* nasal pair forming prolongation of broad flaps separated by two nostrils. *Gill membranes free from each other postero-laterally,* but *broadly united with isthmus.* Branchiostegals 5 to 7.

Rayed dorsal fin with not more than six rays in general and a spine. Adipose dorsal short, posteriorly free. Pectoral fins with 7 to 9 rays and a spine serrated along inner edge. Pelvic fins with 6 rays. Anal fin short, with 11 to 16 rays. Caudal fin deeply forked. Lateral line complete may be with pores in anterior half.

Air-bladder divided into two rounded portions, partly enclosed in bone.

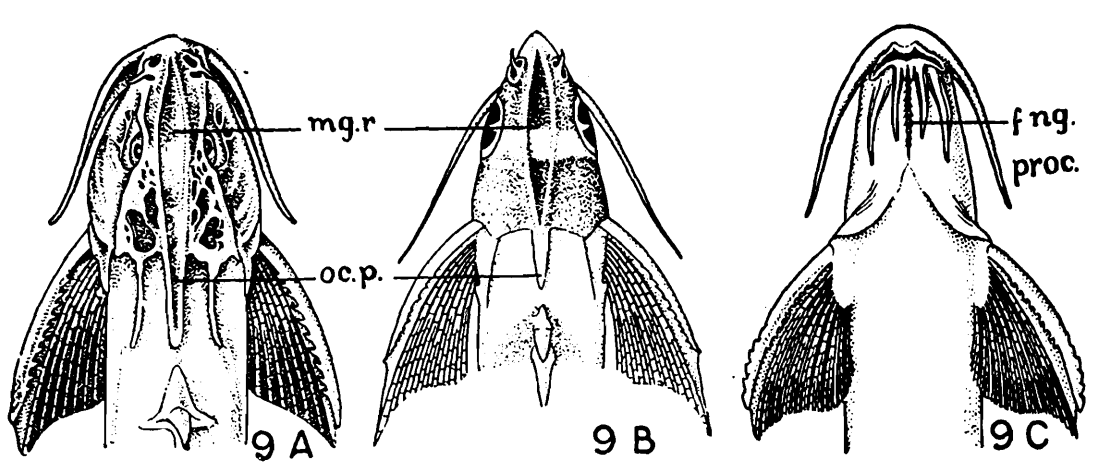
Distribution.—India, Pakistan, Bangladesh, Burma, Thailand, Sumatra. The southern limit in India is Orissa.

Four* species are known, three from the area of our study which are dealt here.

KEY TO THE SPECIES

1. Median longitudinal groove on head extends to end of supraoccipital process. Distal portions of all fins except caudal coloured black. ... ... *G. gagata* (TF 9A)

   Median longitudinal groove does not extend to full length of supraoccipital process but only upto its base. Distal portions of fins not coloured black. 2



* The fourth species *G. schmidti* Volz, known only from Sumatra has now been placed under a separate genus *Sundagagata* Boeseman (Boeseman, 1966).

2. Maxillary barbels longer than head length. Pectoral fin with a filamentous prolongation. ... ... *G. sexualis* (TF 9B)

Maxillary barbels shorter than head length. Pectoral fin without any filamentous prolongation. ... ... *G. cenia* (TF 9C)

Gagata cenia (Hamilton)

Pimelodus cenia Hamilton, 1822, *Fish. Ganges*, pp. 174, 376 pl. 31, fig. 67 (type locality, Northern Bengal).

Gagata cenia: Hora & Law, 1941, *Rec. Indian Mus.*, **43**, p. 21 pl. 1, figs. 5, 6 (synonymy, description).

D. I, 6; P. I, 7–9; V. i, 5; A. ii–iii, 10–12; C. 17–19.

Diagnostic characters.—Seven dark bands over body descending up to lateral line. Head width 1.4–2.0 in its length. *Pectoral fins plain.* Nasal barbels minute. Pelvic fins do not reach anal fin.

Colour.—Yellowish bronze becoming silvery on abdomen; *three dark bands over head, four over back, descending as low as lateral line.* Caudal fin with a semilunar black band or a black blotch on each line or dark mark across dorsal fin.

Distribution.—India: Punjab, Delhi, Bihar, Orissa, Bengal, Assam. Bangladesh: Padma river system. Burma: Chindwin drainage. Nepal. Thailand. Pakistan.

Size.—Maximum size 150 mm. SL.

Fishery value.—Does not grow to a large size, though obtained in good quantity.

Type-specimens.—Not known.

Gagata gagata (Hamilton)

Pimelodus gagata Hamilton, 1822, *Fish Ganges*, pp. 197, 279, pl. 39, fig. 65 (type locality, Rivers and estuaries of Bengal).

Gagata gagata: Hora & Law, 1941, *Rec. Indian Mus.*, **43**, p. 15, pl. 1, figs. 1, 2 (synonymy, description).

D. I, 6; P. I, 9; V i, 5; A. iii–iv, 10–12; C. 19.

Diagnostic characters.—No colour bands over body. Head width 1.2–1.5 in its length. Nasal barbels as long as eye diameter. Pelvic fins reach anal fin.

Colour.—Opaque yellow verging to dull grey. Fins coloured black. Caudal fin whitish.

Distribution.—India: Ganga, Brahmaputra river systems in North India. Bangladesh: Padma river system. Burma: Irrawaddy river system. The southern limit in India is W. Bengal.

Size.—Maximum size 304 mm. TL.

Fishery value.—It is only of limited value.

Type-specimens.—Not known.

Gagata sexualis Tilak

Gagata sexualis Tilak, 1970, *Zoologisch. Meded.*, **44**(4) p. 207, fig. 1 (type locality, North Koel River, Daltonganj, Chotanagpur, Bihar).

D. I, 6; P. I, 8–9; V i, 5; A. 11–12.

Diagnostic characters.—Dorsal and pectoral fins with filamentous prolongations. Head width 1.08–1.54 width length.

Colour.—In preserved specimens, ground colour is yellow with a silvery shine laterally. Two black transverse bands on the dorsal surface of the head, four on the back, and a dark band across the middle of each lobe of the caudal fin. Paired fins plain. A dark band across the dorsal spine and anterior three rays.

Distribution.—Delhi. R. Ganga at Haldi-chapra; R. Koel, Chotanagpur, Bihar.

Size.—58 mm. TL.

Fishery value.—Nil.

Type-specimens.—Holotype Male F. 5592/2, Paratypes three exs. females F. 5593/2, Z.S.I., Calcutta from type locality.

Genus **Nangra** Day

Nangra Day, 1877, *Fish India*, p. 493 (type species, *Pimelodus nangra* Hamilton, by original designation).

Nangra: Hora & Law, 1941, *Rec. Indian Mus.*, **43**, p. 9 (as a synonym of *Gagata* Bleeker).—Jayaram, 1971, *J. zool. Soc. India*, **23**(2): 171 (genus resurrected from synonymy of *Gagata*).

Description.—Head short, compressed; snout obtusely rounded; jaws subequal; lips thick, fimbriated. Mouth ventral, transverse, narrow. Teeth uniformly villiform in bands on jaws; palate edentate. Eyes large, dorso-lateral. Four pairs of barbels; one pair each of maxillary, nasal and two of mandibular; maxillary pair with stiff bases, may be very long; *mandibular pair of barbels inserted on a transverse line at different levels*, a pair of finger-like processes in between inner mandibular pair may be present. *Gill membranes confluent with each other*, and also with isthmus. Branchiostegals 5 to 7.

Rayed dorsal fin with 6 *to* 10 *rays* and a spine. Adipose dorsal short, posteriorly free. Pectoral fins with 8 or 9 rays and a spine serrated either along inner edge only or along both edges. Pelvic fins with 6 rays. Anal fin short, with 11 to 13 rays. Caudal fin deeply forked. Lateral line complete, may be with pores on anterior half.

Air-bladder divided into rounded portions, partly enclosed in bone.

Distribution.—India, Pakistan, Bangladesh.

Four species.

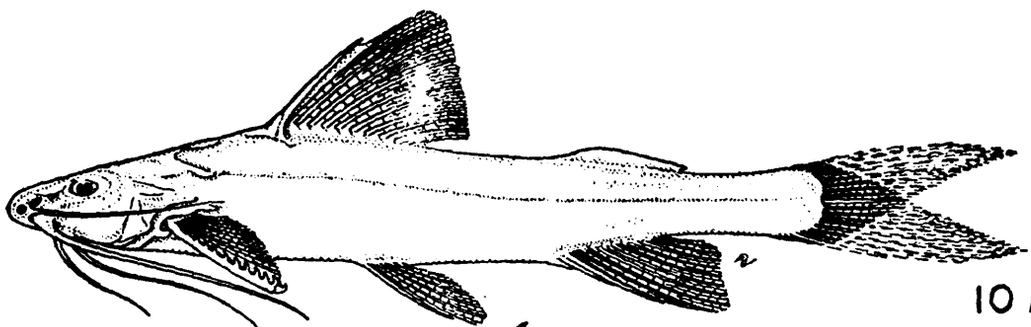
KEY TO THE SPECIES

1. Outer mandibular barbels extend beyond pectoral fin. Nasal pair longer than head. Dorsal fin with 9 or 10 rays. ... ... *N. nangra* (TF 10A)

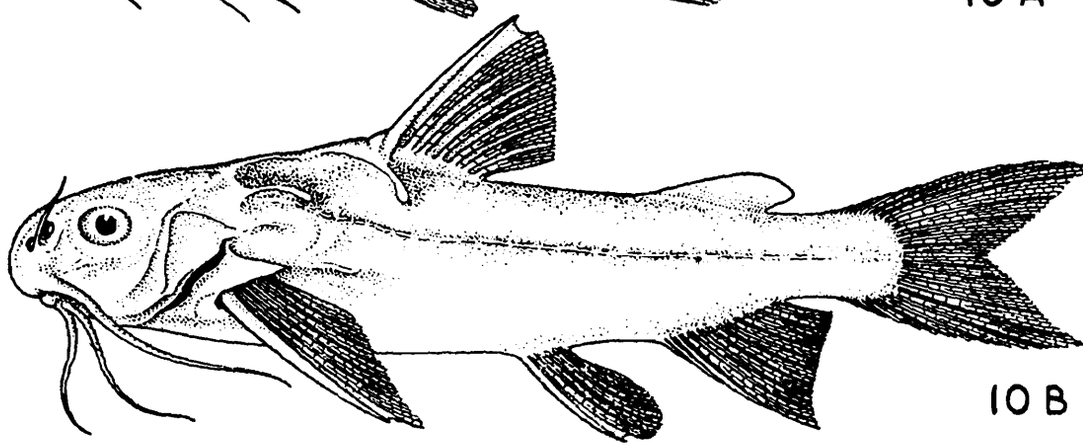
Outer mandibular barbels do not extend beyond pectoral fin. Nasal barbels shorter than head. Dorsal fin with six or seven rays. 2

2. A pair of finger-like processes in between bases of inner mandibular barbels present. Maxillary barbels with stiff bases, lying in a groove. ... ... *N. viridescens* (TF 10B)

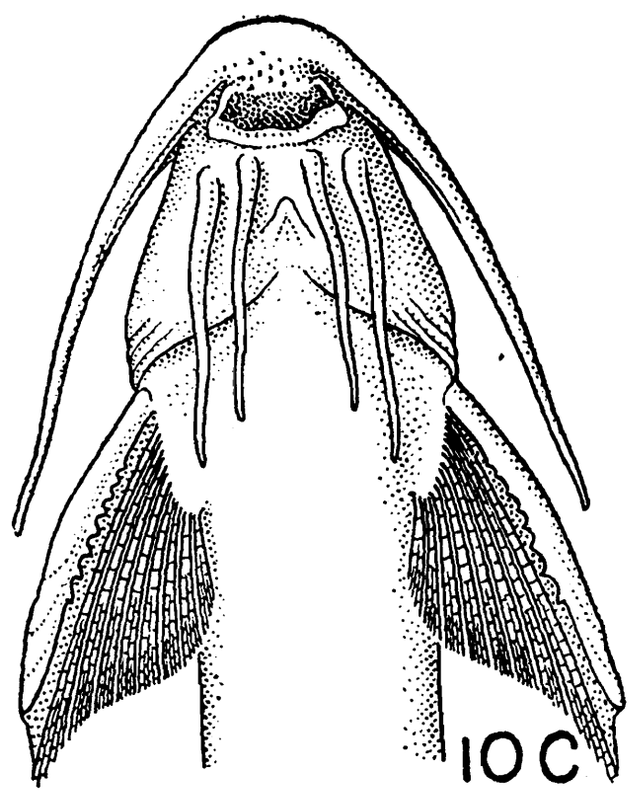
No finger-like processes in between bases of inner mandibular barbels. 3



10 A



10 B



10 C

3. Median longitudinal groove on head extending to base of occipital process and beyond. Maxillary barbels arising from a groove, ... *N. robusta*

Median longitudinal groove as two short fontanelles, not reaching base of occipital process. Maxillary barbels without any groove.	*N. itchkeea* (TF 10C)

Nangra itchkea (Sykes)

Phractocephalus itchkeea Sykes, 1838, *Proc. zool. Soc. Lond.*, part 6, p. 164.—Sykes, 1840, *Trans. zool. Soc. London*, **2**, p. 373, pl. 67, fig. 1 (type locality: Deccan).

Gagata itchkeea: Hora & Law, 1941, *Rec. Indian Mus.*, **43** p. 18, pl. 1, figs. 3, 4 (synonymy, description).

D. I, 6; P. I, 8; V i, 5; A. ii–iii, 9–10; C. 18–19.

Diagnostic characters.—Dorsal fin with 6 rays. Yellowish-bronze in colour, becoming silvery on sides and abdomen. Dark blotches along back descending to half-way down sides. A dark blotch on either lobe of caudal and another on dorsal fin. Mainly endemic in Deccan. No groove at base of maxillary barbels. *Median longitudinal groove as two short fontanelles, not reaching base of occipital process.*

Colour.—Yellowish bronze becoming silvery on belly. Body marked with dark blotches along back descending to half-way down sides. A black blotch on either lobe of caudal and another on dorsal present.

Distribution.—India: rivers of Deccan, Maharashtra State: Deolali, Poona, Satara; Cauvery river, Coorg, Karnataka.

Z.S.I. 1110 is registered under *itchkea* as purchased from F. Day and the locality as "Meema" It has been figured also in plate 115, fig. 6 of Day's *Fish India.* Misra (1976, p. 228) obviously following Hora & Law (1941 p. 20) has erroneously construed "Meema" as in Burma, whereas it is a locality near Pune, Maharashtra.

Size.—Maximum size 60mm. TL.

Fishery value.—It is only of local importance, being a small sized fish.

Type-specimens.—Not known.

Nangra nangra (Hamilton)

Pimelodus nangra Hamilton, 1822, *Fish Ganges*, pp. 193, 378, pl. xi, fig. 63 (type locality, Kosi river).

Gagata nangra: Hora & Law, 1941, *Rec. Indian Mus.*, **43**, p. 26, pl. 1, figs. 8, 10 (synonymy, description, figures).

D. I, 9–10; P. I, 9; V i, 5; A. iii, 10; C. 16–17.

Diagnostic characters.—Dorsal fin with 9 *or* 10 *rays.* No colour blotches on caudal lobes. Body with three indistinct vertical greenish half-bands over a muddy coloured background. Maxillary barbels reaching pectoral fin or slightly beyond, and with stiff bases. *Median longitudinal groove as two fontanelles with lateral edges raised as ridges and reaching base of occipital process: Outer mandibular barbels reach pelvic base. Nasal barbel as long as head.*

Colour.—Muddy with three indistinct vertical greenish half-bands,

Distribution.—India: Ganga, Yamuna river systems. Pakistan: Indus river syestm.

Size.—Maximum size 40 mm. TL.

Fishery value.—Nil.

Type-specimens.—Not known.

Nangra robusta Mirza & Awan

Nangra robusta Mirza & Awan, 1973. *Biologia*, **19** (1 & 2), p. 145 fig. 1 (type-locality, Jinnah barrage, Indus river, Kalabagh, Pakistan).

D. ii, 7; P. 10–11; V 6; A. iii, 8; C. 15.

Diagnostic characters.—Closely related to *N. nangra* (Hamilton) differing from it in having smaller eyes, longer snout, shorter nasal barbels, and narrower caudal peduncle. *Median longitudinal groove reaches occipital base.*

Colour.—Not given in the description.

Distribution.—Pakistan: Indus river, Kalabagh.

Size.—118 mm total length.

Fishery value.—Nil.

Type-specimens.—Holotype, 119.0 mm. SL. F. 9 in Govt. College Museum, Lahore. Paratypes 10 exs., 80–90 mm. SL. at Govt. College Museum, Lahore.

Nangra viridescens (Hamilton)

Pimelodus viridescens Hamilton, 1822 *Fish. Ganges*, pp. 173, 376, pl. 11, fig. 56 (type locality, Northern Bengal).

Nangra punctata Day, 1877, *Fish. India*, p. 494, pl. 125, fig. 7 (type locality, Sone river, Birbhum, W. Bengal).

Gagata viridescens: Hora & Law, 1941, *Rec. Indian Mus.*, **43**, p 24 (synonymy, description).

D. I, 6; P. I, 8; V i, 5; A. iii–iv, 8; C. 18–21.

Diagnostic characters.—A black blotch on occiput. Body coppery glossed with gold colour on sides. Three or four black bands descending up to lateral line on body. *All barbels shorter than head; maxillary pair lying in a groove with stiff bases.* Finger like processes between bases of inner mandibular barbels present. *Median longitudinal groove on head as a single fontanelle and reaching base of occipital process.*

Colour.—Coppery glossed with gold on sides, a black blotch on occiput. Three or four black bands along back descending along sides up to lateral line. A black band on dorsal, and some black markings on caudal fin present.

Distribution.—India: Bihar, W. Bengal, Assam. Bangladesh. Record from Poona doubtful.

Size.—Maximum size 85 mm. TL.

Fishery value.—Heavy catches of this fish are recorded in river Sone, Bihar where it is much relished among the poorer classes. It occurs with considerable frequency in North Bengal waters also.

Type-specimens.—Not known.

Genus **Erethistes** Müller & Troschel

Erethistes Müller & Troschel, 1845, *Horae Ichthyol.*, **3,** p. 12 pl. 1,fig. 3 (type species, *Erethistes pussilus* Müller & Troschel, by monotypy).

Erethistes: Hora, 1950, *Rec. Indian Mus.*, **47,** p. 183 (synonymy, revision).

Description.—Head small, naked, granulated, dorsal surface covered *with very short, backwardly directed spines;* snout conical; jaws subequal; lips thin. Mouth ventral, crescentic, narrow. Teeth sharp, unequal in size in bands on jaws; palate edentate. Eyes minute, dorsal, situated in middle length of head. Four pairs of barbels, one pair each of maxillary, nasal and two of mandibular. Gill membranes fused with each other and also with isthmus. Branchiostegals 6.

Rayed dorsal fin with six rays and a spine. Adipose dorsal very low, small, short. *Pectoral fins with* 5 *rays and a spine serrated along both edges; serrations along outer edge arranged in the form of divergent spines.* Pelvic fins with 6 rays. Anal fin short, with 11 rays. Caudal fin truncate. *Lateral line complete, may be with tubercles.*

Air-bladder divided into two globular lateral lobes but free.

Distribution.—India: W. Bengal, Assam, Bihar, Orissa. Bangladesh. Burma. Its distribution in Orissa needs confirmation.

A single species.

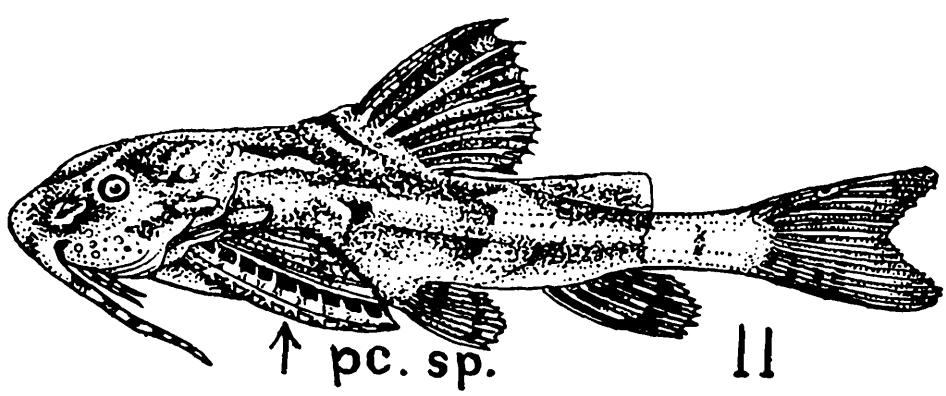
Erethistes pussilus Müller & Troschel

Erethistes pussilus Müller & Troschel, 1845, *Horae Ichthyol.*, **3,** p. 12, pl. 1, fig. 3 (type locality, Assam).

Erethistes pussilus: Hora, 1950, *Rec. Indian Mus.*, **47,** p. 186 (synonymy, revision).

D. I, 6; P. I, 5; V 6; A. 11.

Diagnostic characters.—Body with four or five rows of tubercles. *Pectoral spine serrated along outer margin with divergent spines.* Paired fins not plated below.



11. Lateral view of *Erethistes pussilus* Müller & Troschel .(*After* S.L. Hora 1949. *Rec. Indian Mus.*, **47,** pl. 1, fig. 1.)

Colour.—Dark mud-coloured, lighter beneath. Fins with faint dark bands. Body covered with four or five rows of tubercles.

Distribution.—India: Saran district, Bihar; North Bengal; Kamrup dist., Assam. Bangladesh. Burma. Record from Orissa doubtful.*

Size.—Maximum size 40 mm. TL.

Fishery value.—Being a sluggish fish inhabiting deep waters overgrown with vegetation it is not of any value as a food fish.

Type-specimen.—Holotype, in Zool. Mus., Berlin.

Genus **Erethistoides** Hora

Erethistoides Hora, 1950, *Rec. Indian Mus.*, **47**, p. 190 (type species, *Erethistoides montana* Hora, by original designation).

Description.—*Body* elongate, greatly depressed with ventral surface flat and horizontal, *covered with small backwardly directed spines, on dorsal surface.* Dorsal profile gently rising from tip of snout to dorsal fin base. Head small, depressed, broadly pointed in front, covered; *snout projecting like a broad hood in front of mouth;* jaws subequal; lips thin. Mouth inferior, of moderate width, more or less transverse. Teeth uniformly villiform in bands on jaws; palate edentate. Eyes small, dorso-laterally situated in posterior half of head. Four pairs of barbels; one pair each of maxillary, nasal and two of mandibular. Gill membranes fused with each other, and also with isthmus; *portion of gill opening in front and somewhat inner to base of pectoral spine modified into a spoutlike formation.*

Branchiostegals 6.

Rayed dorsal fin with five rays and a spine. Adipose dorsal short, low. *Pectoral* fins with 6 rays and a *spine strongly serrated along outer edge with teeth directed towards tip of spine in distal half; spine tips produced into a filiform process,* along with similar structure of some outer rays. Pelvic fins with 6 rays. Anal fin short, with 9 rays. *Caudal fin emarginate, lower portion greatly produced, but not filiform.* Lateral line complete, simple.

Air-bladder as in *Erethistes.*

Distribution.—India: Uttar Pradesh, Assam.

A single species with one subspecies.

Erethistoides montana montana Hora

Erethistoides montana montana Hora, 1950, *Rec. Indian Mus.*, **47**, p. 191 (type locality, Tangla, Darrang dist., Assam).

D. I, 5; P. I, 6; A. 9; C. 13.

Diagnostic characters.—Dorsal spine serrated along anterior margin, pectinated along posterior margin. Pectoral spine serrated along outer margin with antrorse teeth up to proximal half and with retrorse teeth in distal half, only with antrorse teeth along inner margin.

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* Recent intensive surveys of Orissa undertaken by the Z.S.I. has failed to record this species. It seems probable the species does not occur in Orissa.

Colour.—Dusky above, dirty white below. A dark band at nape, and three bands on body.

Distribution.—India: Darrang dist., Assam.

Size.—Maximum size 37.8 mm. SL.

Fishery value.—Nil.

Type-specimen.—Holotype. F. 314/2, in Z.S.I., Calcutta.

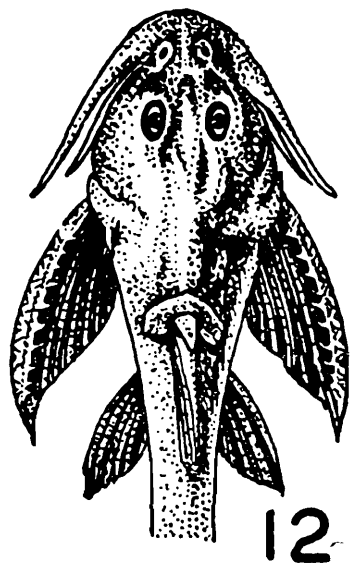
Erethistoides montana pipri Hora

Erethistoides montana pipri Hora, 1950, *Rec. Indian Mus.*, **47**, p. 193 (type locality, Pipri, Rihand river, Mirzapur dist., U.P.)

D. I, 5; P. I, 6; V i, 5; A. 9; C. 15.

Diagnostic characters.—Similar to *Erethistoides montana montana, but less depressed, less densely tuberculated. Maxillary barbels reach pectoral fin base.*

Colour.—Dusky above, lighter below with no cross bands on body.



12. Dorsal view of head and anterior part of body of *Erethistoides montana pipri* Hora. (*After* S.L. Hora, 1949. *Rec. Indian Mus.*, **47**, pl. 1, fig. 8.)

Distribution.—India: Rihand river at Pipri, U.P.

Size.—Maximum size 30.8 mm. SL.

Fishery value.—Nil.

Type-specimen.—Holotype, F. 315/2, un Z.S.I., Calcutta.

Remarks.—Known so far only by the holotype and not recorded subsequently.

Genus **Hara** Blyth

Hara Blyth, 1860, *J. Asiat. Soc. Beng.*, **2**:, p. 151 (type species, *Pimelodus hara* Hamilton, by original designation).

Hara: Hora 1950, *Rec. Indian Mus.*, **47**, p. 199 (synonymy, revision).

Description.—Head small, conical, exposed, not covered with skin, snout obtusely sharp, not pointed; jaws subequal, lower jaw slightly prolonged; lips thick, fleshy, papillated. Mouth ventral, transverse, narrow. Teeth minute, uniformly villiform on jaws; palate edentate. Eyes small dorso-lateral, situated in posterior half of head. *Occipital process, cleithral processes, scapular processes all prominent and naked. Humeral processes prominent on ventral side. Four pairs of barbels, all annulated,* one pair each of maxillary, nasal and two of mandibular; *maxillary pair with broad cutaneous flaps at their bases.* Gill membranes free from each other but united broadly with isthmus. Gill openings extend to ventral surface for a short distance. Branchiostegals 6.

Rayed dorsal fin with five or six rays and a spine. Adipose dorsal short, high, posteriorly free. *Pectoral* fins with 5 or 6 rays and *a spine serrated along both edges, serrations along outer edge retrorse, along inner edge antrorse.* Pelvic fins with 6 rays. Anal fin short, with 8 to 10 rays. *Caudal fin emarginate, semicircular,* with lower lobe slightly longer. Lateral line complete, simple.

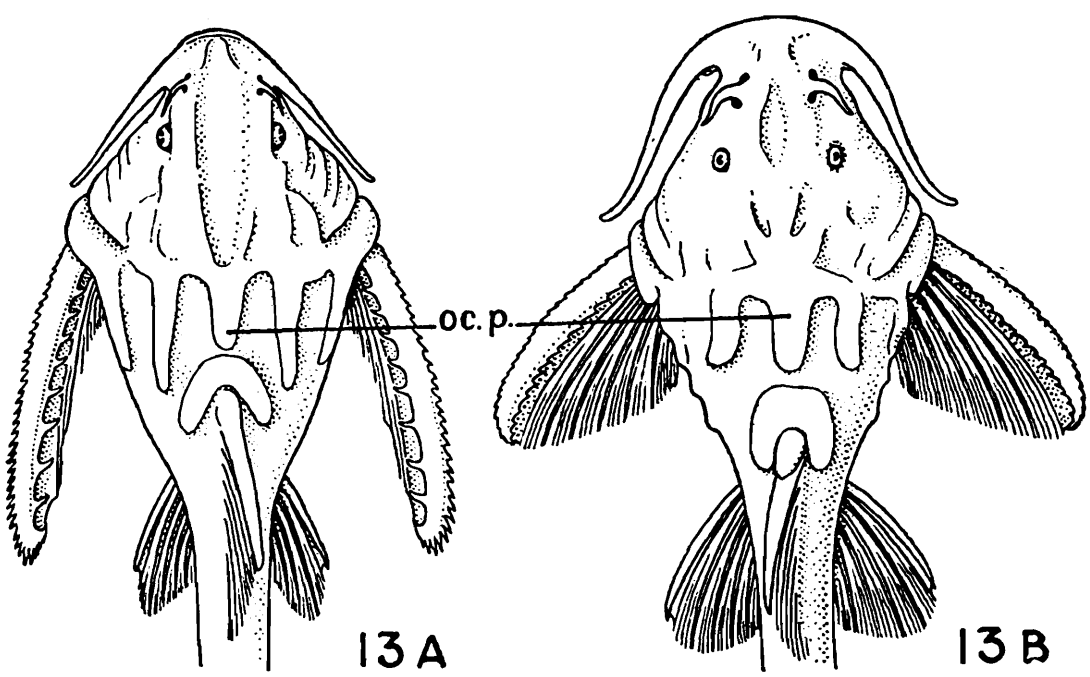
Air-bladder structure not known.

Distribution.—India: U.P., Bihar, Bengal, Assam, Orissa. Bangladesh. Burma.

Four species.

KEY TO THE SPECIES

1. Pelvic fin inserted just below last ray of dorsal fin. Upper lobe of caudal fin with a long filamentous prolongation. ... ... *H. filamentosus*
   Pelvic fin inserted below, anterior to last ray of dorsal fin. Upper lobe of caudal fin simple. 2
2. Occipital process reaching basal bone of dorsal fin. ... ... *H. jerdoni* (TF 13A)
   Occipital process not reaching basal bone of dorsal fin. ... ... 3 (TF 13B)



3. Pectoral spine just equal to head length. ... ... *H. horai*
   Pectoral spine shorter (1.05–1.08) than head length. ... ... *H. hara* (TF 13B)

Hara filamentosa Blyth

Hara filamentosa Blyth, 1860, *J. Asiat. Soc. Bengal.*, **29,** p. 151 (type locality, Tenasserim).—Misra, 1976, *Fauna of India*, Pisces, Ed. 2, **3,** p. 242.

D. I, 6; P. I, 6; A. iii, 8; C. 17.

Diagnostic characters.—Pelvic fin inserted just below last ray of dorsal fin. Occipital process not reaching basal bone of dorsal fin. *Upper caudal lobe with a filamentous prolongation.*

Colour.—Brownish yellow with three vertical bands. Skin tuberculated. Ventral surface of body with many pores.

Distribution.—Burma: Tenasserim, Bassein, Mandalay, Meetan, Indawygi Lake.

Size.—80 mm. in TL.

Fishery value.—Nil.

Type specimens.—Syntypes 5 exs., Cat. 585, Z.S.I., Calcutta. Donated by Major Berdmore. (*fide* Hora, 1951, p. 201).

Hara hara (Hamilton)

Pimelodus hara Hamilton, 1822, *Fish. Ganges*, p. 190 (type locality, Kosi river).
Hara hara: Hora, 1950, *Rec. Indian Mus.*, **48,** p. 200 (systematic status discussed, no description).

D. I, 6; P. I, 5; V i, 5; A. 8.

Diagnostic characters.—Skin tuberculated. Abdomen round. *Pectoral spine equal to or slightly longer than head length, not very long. Occipital process not reaching basal bone of dorsal fin. Median longitudinal groove on head short.*

Colour.—Dark or yellowish brown all over body and sides, with a pale band below adipose fin. Anal and caudal fin banded. Barbels may be annulated with black rings. Exposed bones pale coloured. Skin tuberculated.

Distribution.—India: Bihar, U.P., Orissa, North Bengal, Assam. Bangladesh. Burma.

Size.—Maximum size 140 mm. SL.

Fishery value.—Nil.

Type-specimens.—Not known.

Hara jerdoni (Day)

Hara jerdoni Day, 1870, *J. Asiat. Soc. Bengal*, **39,** p. 39 (type locality, Sylhet dist., Assam).
Hara jerdoni: Hora, 1950, *Rec. Indian Mus.*, **47,** p. 202 (no description).

D. I, 5; P. I, 6; V i, 5; A. 10; C. 12.

Diagnostic characters.—Skin smooth. Abdomen rounded. *Pectoral spine very long,* 1.5 *times in head length. Occipital process reaching basal bone of dorsal fin. Median longitudinal groove on head long* (see Text-Fig. 13-A).

Colour.—Brownish, irregularly banded; barbels annulated with black.

Distribution.—Bangladesh: Sylhet District.

Size.—Maximum size 35 mm. SL.

Fishery value.—Nil.

Type-specimen.—Holotype, No. 431, in Z.S.I., Calcutta. Original of plate 102, fig. 3 in Day's *Fish India.*

Hara horai Misra

Hara hara (*nec.* Hamilton), Hora (in part), 1950, *Rec. Indian Mus.*, **47**, p. 200, pl. 2, figs. 1-3 (type locality: Terai and Duars, N. Bengal).

Hara horai Misra, 1976, *Fauna of India*, Pisces, Ed. 2, **3**, p. 245, pl. ix, figs. 1–3.

Diagnostic characters.—Pelvic fins inserted below anterior to last ray of dorsal fin. *Occipital process not reaching basal bone of dorsal fin. Skin profusely tuberculated.* Ventral surface of body with glandular pores.

Colour.—Greyish yellow with faint cross bands on body; anal and caudal fin with bands.

Distribution.—Terai Duars, N. Bengal: India.

Size.—79.6 mm. TL.

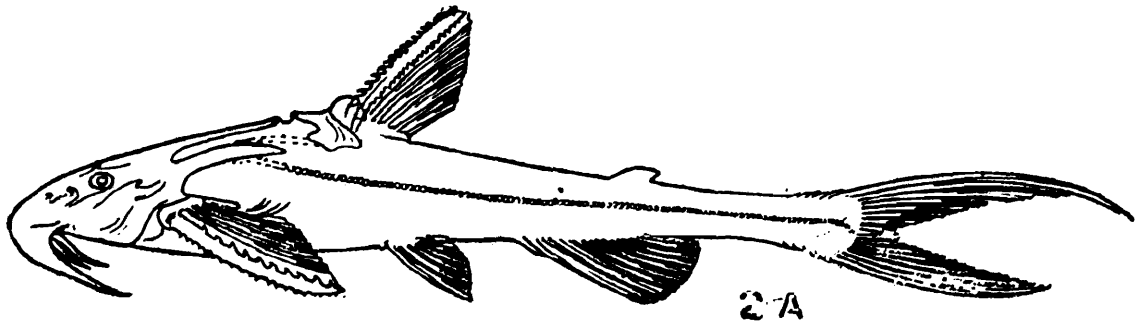
Fishery value.—Nil.

Type-specimen.—Misra (1976) inadvertantly did not designate any type specimen. Tilak & Talwar (1976) proposed a Neotype No. F.F. 955 preserved in Z.S.I., Calcutta (earlier registered as F. 11390/1 as *Erethistes hara*).

Genus **Conta** Hora

Conta Hora, 1950, *Rec. Indian Mus.*, **47**, p. 194 (type species, *Pimelodus conta* Hamilton, by original designation).

Description.—Head small, oval; snout obtuse; jaws subequal; lips thick, fleshy, papillated. Mouth ventral, transverse. *An adhesive pad similar to that found in* Glyptothorax *formed by plaited skin folds present on abdomen.* Teeth uniformly villiform in bands on jaw; palate edentate. Eyes small, dorsolateral, situated in posterior half of head. Four pairs of barbels; one pair each of maxillary, nasal and two of mandibular; *maxillary pair with broad cutaneous flaps at their bases.* Gill membranes united with each other and also with isthmus. *Gill openings* restricted upto pectoral base, *provided with spout-like structures in front of pectoral spine base.* Branchiostegals six.



2 A. Outline drawing of lateral view of *Conta conta* to show prolonged caudal fin ray, oval shaped compressed head. (*After* S.L Hora, 1949. *Rec. Indian Mus.*, **47**, p. 197, fig. 4C.)

Rayed dorsal fin with five rays and a spine serrated along both edges. Adipose dorsal short, posteriorly free. Pectoral fins with 6 rays and a spine serrated along both edges. Pelvic fins with 6 rays. *Paired fins not plaited below.* Anal fin short, with 9 or 10 rays. *Caudal fin deeply furcate with both lobes greatly produced. Lateral line* straight, *high on sides, marked by prominent tubercles.*

Distribution.—India: N. Bengal, Assam. Bangladesh.

Two species.

KEY TO THE SPECIES

1. Least height of caudal peduncle 5.0 to 8.0 in its length. Pelvic origin below middle of rayed dorsal fin. ... ... *C. conta*

   Least height of caudal peduncle 2.2 in its length. Pelvic origin below last dorsal fin ray. ... ... *C. elongatus*

Conta conta (Hamilton)

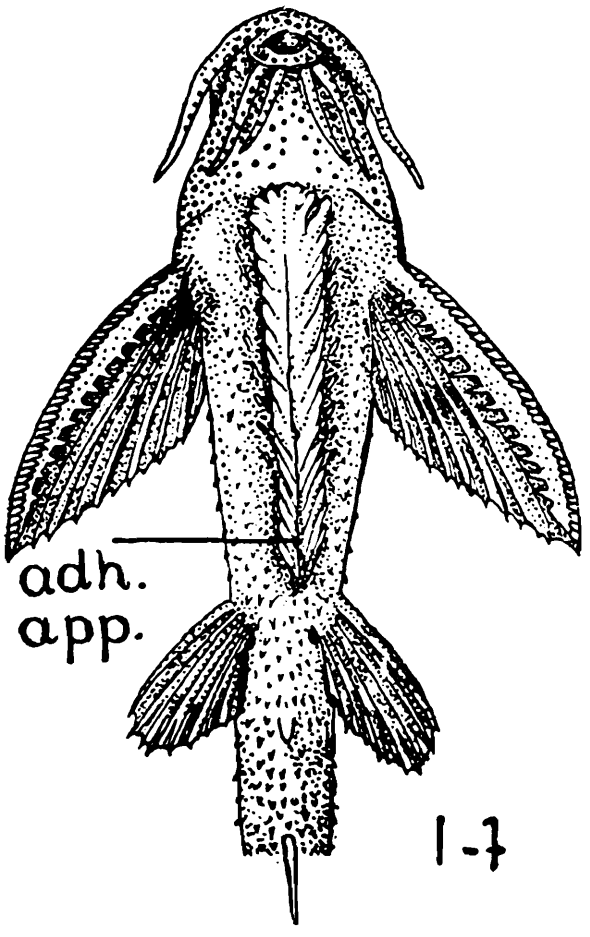
Pimelodus conta Hamilton, 1822, *Fish Ganges*, p. 191 (type locality, Mahananda river, N.E. Bengal).

Erethistes elongatus Day, 1889, *Fauna Brit. India*, Fish, **1**, p. 207 (type locality, Naga hills, Assam).

Conta conta: Hora, 1950, *Rec. Indian Mus.*, **47**, p. 195 (synonymy, revision).

D. I, 5; P. I, 6; V 6; A. ii–iii, 7; C. 17.

Diagnostic characters.—Adhesive apparatus well developed. Caudal fin rays greatly elongated. Least height of caudal peduncle 5.0–8.0 *in its length.*



14. Ventral view of head and part of body of *Conta conta* (Ham.) to show well developed adhesive appartus. (*After* S.L. Hora, 1951. *Rec. Indian Mus.* **47**, pl. 13, fig. 5.)

Colour.—Chocolate dusky all over, white beneath. Barbels annulated with dark bands. Fins dark with light patches or bands. Outer rays of caudal fin lightly coloured with a white border.

Distribution.—India: Bhareli river, Mahananda river, N.E. Bengal, Garo hills, Meghalaya. Bangladesh.

Size.—Maximum size 49 mm. SL.

Fishery value.—Nil.

Type-specimens.—Not known.

Remarks.—Known to live along with *Amblyceps* and *Olyra* with which they resemble to a little extent.

Conta elongata (Day)

Hara elongata Day, 1871, *Proc. Zool. Soc. London*, p. 704 (type-locality, Garo hills, Assam).
Conta elongata, Misra, 1976, *Fauna of India*, Pisces, Ed. 2, **3**, p. 239.

D. I, 6; P. I, 6; V 6; A. iii, 7; C. 17.

Diagnostic characters.—Adhesive apparatus feebly developed. Caudal fin rays prolonged. *Least height of caudal peduncle* 2.2 *in its length.*

Colour.—Brown with dark bands. Fins yellow with black bands.

Distribution.—India: Garo hills; Meghalaya; Bhareli river, N. Bengal.

Size.—78 mm. TL.

Fishery value.—Nil.

Type specimen.—Holotype 436, Z.S.I., Calcutta.

Genus **Glyptosternum*** McClelland

Glyptosternon McClelland, 1842, *Calcutta J. Nat. Hist.*, **2**, p. 584 (type species, *Glyptosternum reticulatum* McClelland).

Glyptosternum (in part, Group I): Hora, 1923, *Rec. Indian Mus.*, **25**, p. 30.

Glyptosternum: Hora, 1934, *Rec. Indian Mus.*, **36**, p. 285 (synonymy, characterisation of the genus).

Glyptosternum: Hora & Silas, 1952, *Rec. Indian Mus.*, **49**, p. 8 (key to species).

Description.—Head small, flattened, covered with thick skin; snout broadly rounded; jaws subequal, upper jaw overhanging lower; *lips* thick, fleshy, *papillated, labial groove broadly interrupted.* Mouth inferior, transverse. Teeth small, villiform in bands on jaws; palate edentate. Four pairs of barbels, one pair each of maxillary, nasal and two of mandibular; *mandibular barbels provided with very broad bases on ventral surface, and bear striated pads of adhesive skin on outer halves.* Gill membranes free from each other, not overlapping, united with isthmus.

Rayed dorsal fin with six or seven rays and without any spine. Adipose dorsal long, low, posteriorly free. *Pectoral fins with* 11 *branched rays and without*

* The original spelling *Glyptosternon* was latinised to *Glyptosternum* by Günther (1864).

any spine. Pelvic fins with 6 rays. *Paired fins* horizontally inserted, their *first ray soft, pinnate, skin on ventral surface corrugated in pinnate folds for adhesion.* Anal fin short, with 5 or 6 rays. Caudal fin truncate, obliquely truncate or somewhat rounded. Lateral line complete, simple.

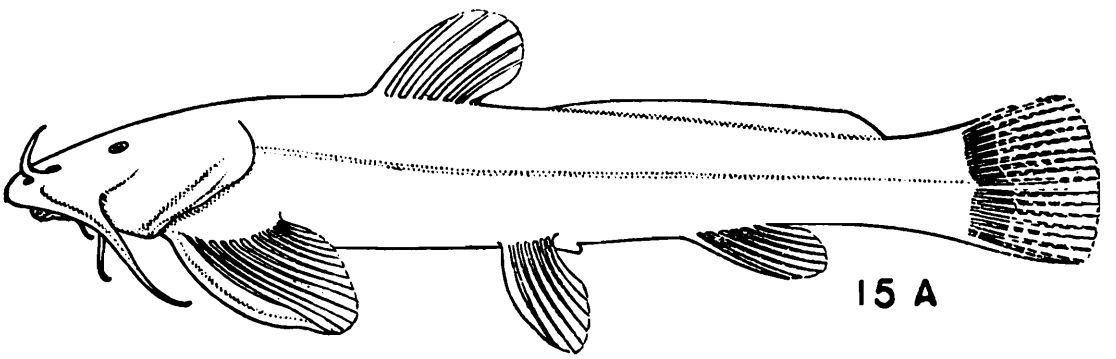
Air-bladder small, enclosed in bone.

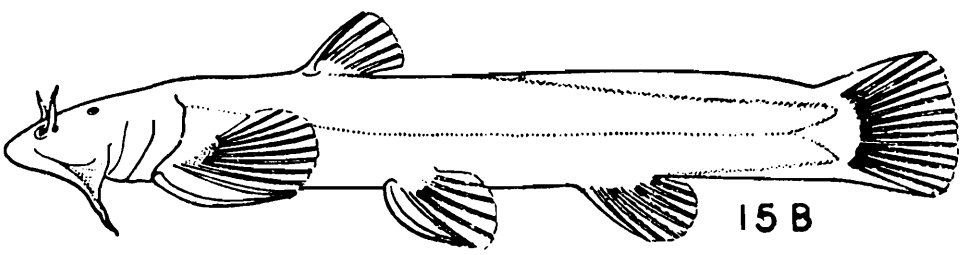
Distribution.—Afghanistan, E. Turkestan. West Pakistan. India: Leh, Ladak, Sikkim. Tibet.

Two species are known.

KEY TO THE SPECIES

1. Body 3.6 to 5.1 in standard length Adipose dorsal not continuous with caudal fin. ... ... *G. maculatum* ... (TF 15A)





Body 7.5 to 8.0 in standard length Adipose dorsal continuous with caudal fin. ... ... *G. reticulatum** ... (TF 15B)

Glyptosternum maculatum (Regan)

Parexostoma maculatum Regan, 1905, *Ann. Mag. nat. Hist.* (7) **15,** p. 185 (type locality, Lhasa. Tibet).

Glyptosternon maculatum, Misra, 1976, *Fauna of India*, Pisces, Ed. 2, **3,** p. 300, pl. 15, figs. 1, 2, Text fig. 51.

Diagnostic characters.—Pectoral fins not reaching pelvic fins. Maxillary barbels shorter than head length. Pelvic fins do not reach anal fin.

Colour.—Olivaceous with numerous irregular dark spots; caudal white.

Distribution.—India: Sikkim. Tibet.

Size.—255 mm. TL.

Fishery value.—Nil.

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* Misra, 1976 in his *Fauna* has considered *Exostoma stoliczkae* Day = *G. stoliczkae* as a separate species. Hora (1933), Mukerji (1936) have synonymised this species under *G. reticulatum.*

Type-specimens.—BMNH, London, 2 exs., type not specified (*fide* Hora & Silas, 1952, p. 10).

Glyptosternum reticulatum McClelland

Glyptosternum reticulatum McClelland, 1942, *Calcutta J. nat. Hist.* **2,** p. 584 (type locality, Sir-i-Chushma at the source of Kabul river, Afghanistan).

Glyptosternum reticulatum: Hora & Silas, 1952, *Rec. Indian Mus.*, **49,** p. 8 (list of material in ZSI, synonymy).

Diagnostic characters.—Pectoral fins reaching pelvics. Caudal peduncle 3 *times as long as deep. Maxillary barbels longer than head.*

Colour.—Dull yellowish green, becoming lighter along abdomen. Fins yellowish, with dark edges or bands.

Distribution.—Afghanistan: head waters of Kabul river, Oxus river system. W. Pakistan: Chitral valley. India: Kashmir: Harwan, Ladak, Leh.

Size.—Maximum size 225 mm. TL.

Fishery value.—Only of local value.

Type-specimens.—Type of *G. reticulatum* does not seem to have been preserved (Hora & Silas, 1952, p. 8).

Remarks.—This is a highly variable species. Hora (1933) ably demonstrated the variations likely to be met with. The synonymy given by Hora also indicates the different taxa created by earlier ichthyologists on such variations.

Genus **Laguvia** Hora

Laguvia Hora 1921, *Rec. Indian Mus.*, **22,** p. 739 (type species, *Pimelodus asperus* McClelland, by original designation).

Laguvia: Menon, 1954, *Rec. Indian Mus.*, **52,** p. 27 (as a synonym of *Glyptothorax*).

Description.—Head small, slightly depressed, covered with skin; snout semicircular, broad; jaws subequal; lips thick, fleshy. *Ventral surface of body corrugated or with faint V-shaped grooves forming an inconspicuous adhesive apparatus, but not so well developed or prominent as in Glyptothorax.* Mouth subterminal, transverse, wide. Teeth villiform in bands on jaws; palate edentate. Eyes dorsal, in middle of head, minute. Four pairs of barbels, one each of maxillary, nasal and two of mandibular; maxillary barbels with broad bases; barbels may be annulated. Gill membranes free from each other, but united narrowly with isthmus. Branchiostegals 6.

Rayed dorsal fin with five or six rays and a strong spine. Adipose dorsal short, posteriorly free. Pectoral fins with 6 to 8 rays and a spine serrated along inner edge with antrorse teeth. Pelvic fins with 6 rays. Anal fin short, with 9 or 10 rays. Paired fins not plaited. Caudal fin truncate, or slightly emarginate, its free portion of posterior border semicircular. Lateral line complete, simple.

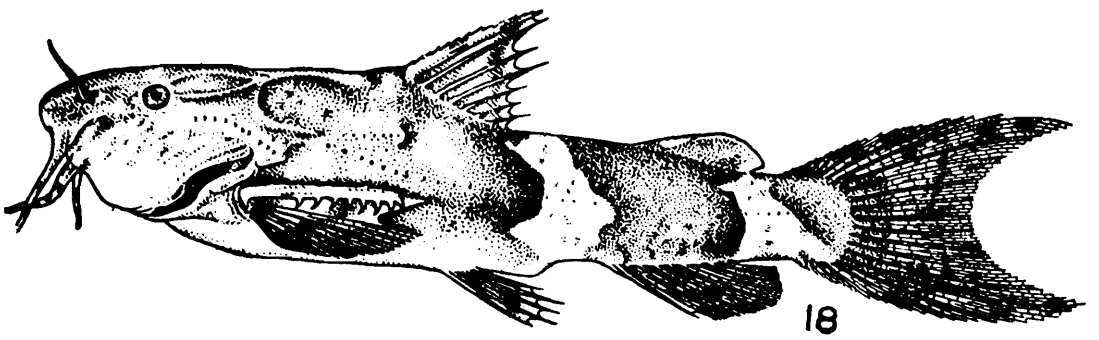
Air-bladder small, in the form of two capsules enclosed by bone.

Distribution.—India: North Bengal, Mahananda and Teesta river systems at the base of Eastern Himalaya, Bangladesh.

Three species, one subspecies.

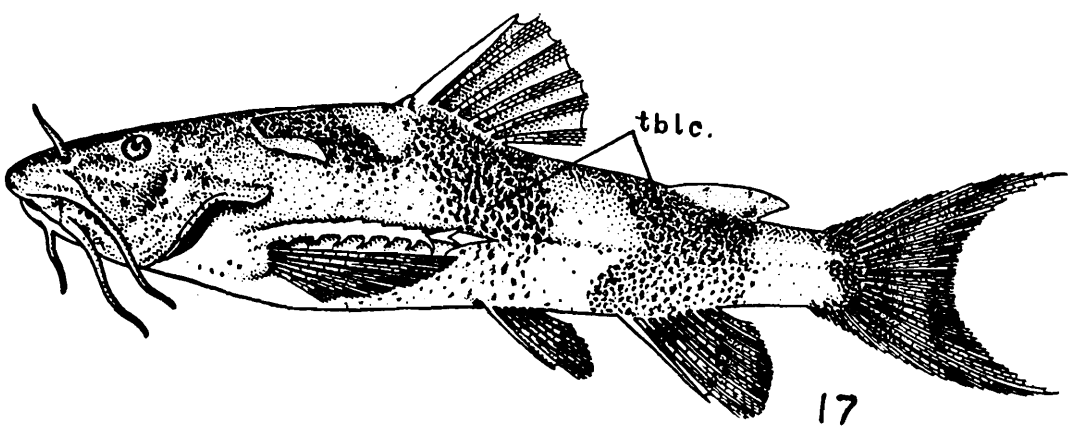
KEY TO THE SPECIES

1. Origin of pelvic fin distinctly nearer base of caudal than tip of snout. Dorsal spine smooth. 2



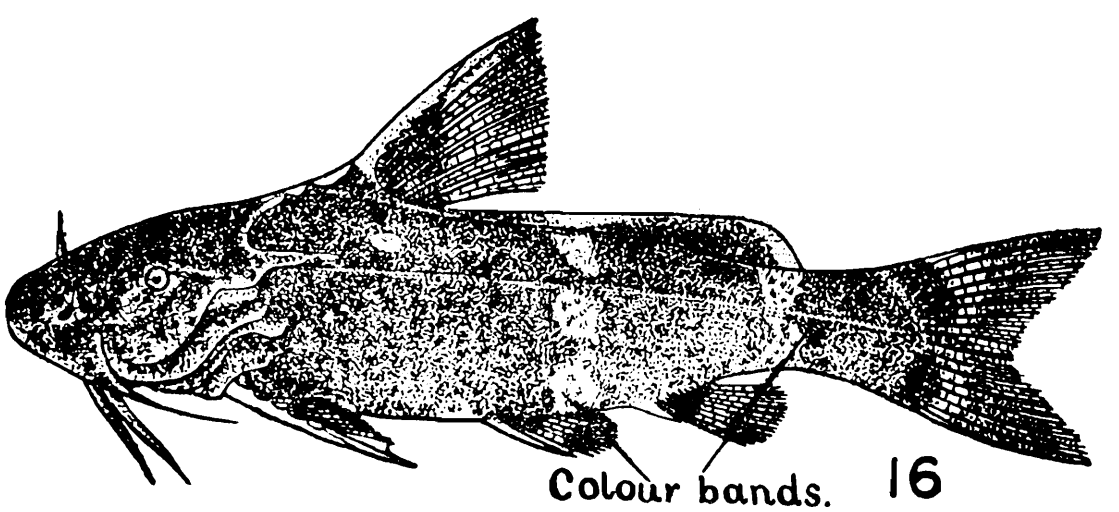
Origin of pelvic fin equidistant from tip of snout and caudal base. Dorsal spine finely serrated along whole of anterior margin and also along upper one third of posterior margin. .. .. *L. ribeiroi ribeiroi* (TF 18)

2. Body depth 4.5 to 5.0 in standard length. Inter-orbital width 3.2 to 3.5, snout length 2.0 to 2.2 in



head length. Body with two bands, posterior band below entire width of adipose dorsal. ... *L. shawi* (TF 17)

Body depth 3.3 to 3.4, in standard length. Inter-orbital width 2.5 to 2.85, snout length 1.66 to 1.82



in head length. Body with two bands, posterior band at base of adipose fin.... ... ... *L. asperus* (TF 16)

Laguvia asperus (McClelland)

Pimelodus asperus McClelland, 1844, *Calcutta J. nat. Hist.*, **4**, p. 404, pl. 24, fig. 2 (type-locality, Chusan, China).

Hara asperus: Günther, 1864, *Cat. Fish. Brit. Mus.*, **5**, p. 189.—Bleeker, 1873, *Ned. Tijdschr. Dierk.*, **4**, p. 105.

Erethistes asperus: Chaudhuri, 1919, *Rec. Indian Mus.*, **16**, p. 276, pl. 22, figs. 2, 2a 2b, (upper Burma).

Laguvia asperus: Hora, 1921, *Rec. Indian Mus.*, **22**, p. 740.

D. I, 5; P. I, 7; V 6*; A. 10.

Diagnostic characters.—Pelvic fin inserted nearer to caudal base than tip of snout. *Bands on body two, posterior band at adipose base.* Dorsal spine smooth.

Colour.—Body dark brown with two white, broad transverse stripes made up of white blotches or bands, anterior band at end of dorsal fin and posterior nearer root of caudal. Pectoral and pelvic fins marked grey with black blotches, caudal fin greyish-brown. Maxillary barbels annulated white and brown, mandibular barbels white.

Distribution.—Burma: Tanja, Northern Frontier. China: Chusan.

Size.—Maximum size 33 mm. SL.

Fishery value.—A rare species. Fishery value nil.

Type-specimens.—Not known.

Laguvia ribeiroi ribeiroi Hora

Laguvia ribeiroi Hora, 1921, *Rec. Indian Mus.*, **22**, p. 741 (type locality, Khoila river, tributary of Teesta river at Jalpaiguri).

Glyptothorax ribeiroi: Menon, 1954, *Rec. Indian Mus.*, **52**, p. 40 (synonymy, list of material in Z.S.I.).

D. I, 6; P. I, 6–8; V i, 5; A. 10.

Diagnostic characters.—Nostrils nearer tip of snout than eyes. *A rudimentary adhesive apparatus on thorax.* Dorsal spine serrated along anterior margin also.

Colour.—Dark along sides and above, dull white beneath. Body speckled with black dots. *Two broad yellowish bands on body, one between rayed dorsal and adipose dorsal and another below posterior half of base of adipose fin. Fins distinctly banded excepting adipose.* Skin tuberculated.

Distribution.—India: Teesta river system, North Bengal; Kosi river system, Bihar; Rihand river system, U.P.; rivers of Nepal Himalaya.

Size.—Maximum size about 40 mm. TL.

Fishery value.—Very infrequently obtained and not growing to large size. Its value as a food fish is nil.

Type-specimen.—Holotype, F. 10086/1, in Z.S.I., Calcutta.

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* The pelvic fin ray count is erroneously stated by Chaudhuri (1919) as 8.

Laguvia ribeiroi kapuri Tilak & Husain

Laguvia ribeiroi kapuri, Tilak & Husain, 1974, *J. Inland Fish Soc. India*, **6**, p. 1, figs. 1–3 (type-locality, Padhoi river, Saharanpur, U.P.).

D. II, 6; P. I, 8; V i, 5; A. iii, 6; C. 16.

Diagnostic characters.—Similar to *L. ribeiroi ribeiroi*, but differing from it in *having* 6 *rays in the pelvic fin* (*Vs.* 10) *posterior position of the eye, longer maxillary barbels, pelvic fin*, and a wider lower lobe of the caudal fin.

Colour.—As in the nominal form.

Distribution.—India: Padhoi river, Dhamola river, Saharanpur, U.P.

Size.—35 mm. TL.

Fishery value.—Nil.

Type-specimens.—Holotype, ZSI/NRS, 836, ZSI, Northern Regional station, Dehra Dun. Paratypes ZSI/NRS 837, 838 one ex. each, ZSI, Dehra Dun.

Laguvia shawi Hora

Laguvia shawi Hora, 1921, *Rec. Indian Mus.*, **22**, p. 740, pl. xxix, fig. 2 (type locality, Mahanadi river, Darjeeling Himalaya).

Glyptothorax shawi: Menon, 1954, *Rec. Indian Mus.*, **52**, p. 41 (synonymy, diagnostic characters, list of material in ZSI).

D. I, 5–6; P. I, 7; V 6; A. 9.

Diagnostic characters.—Nostrils equidistant from tip of snout and anterior margin of eyes. *Adhesive apparatus on thorax not developed.* Dorsal spine smooth along anterior border. *Colour bands two on body, posterior band below adipose dorsal fin.*

Colour.—Black along sides and above, dark white benath. *Body* pale yellow *with two broad bands formed by an aggregation of black dots*, one below base of dorsal fin and another below base of adipose fin. *Fins indistinctly marked with black bands.* Skin tuberculated.

Distribution.—India: Teesta river system, Darjeeling Himalaya.

Size.—Maximum size 30.0 mm. TL.

Fishery value.—Nil.

Type-specimen.—Holotype, F. 10085/1, in ZSI, Calcutta.

Genus **Pseudolaguvia** Misra

Pseudolaguvia Misra, 1976, *Fauna of India*, Pisces, Ed. 2, **3**: 253 (type-species, *Glyptothorax tuberculatus* Prashad & Mukerji).

Description.—All characters similar to *Glyptothorax*, except that the cubito-humeral process is conspicuous than in all other species of *Glyptothorax*.

Distribution.—Burma.

Remarks.—Misra (1976) stated that the adipose dorsal fin is contiguous with the rayed dorsal fin and that the thoracic adhesive apparatus is longer than broad with an elongated depression in the middle. These characters are shared by many species of *Glyptothorax* and are not diagnostic.

A single species.

Pseudolaguvia tuberculatus (Prashad & Mukerji)

Glyptothorax tuberculatus Prashad & Mukerji, 1929, *Rec. Indian Mus.*, **31**, p. 182, text-fig. 4, pl. 7, fig. 2 (type locality, Sankha, a large hill-stream between Kamaing and Mogaung, Myitkyina dist., Burma).

Glyptothorax tuberculatus: Menon, 1954, *Rec. Indian Mus.*, **52**, p. 41 (redescription, list of material in ZSI).

D. I, 6; P. I, 7; V i, 5; A. ii, 8; C. 20.

Diagnostic characters.—Well-developed adhesive apparatus on thorax. Paired fins without any pinnate padding. Body dark brown, variegated with irregular black blotches and tubercles. Maxillary, mandibular barbels annulated with black. *Cubito-humeral process prominent. Scapular process also conspicuous.*

Colour.—Dark brown, variegated with irregular black patches. Fins black with broad whitish vertical bands. Chest and ventral surface of head dirty yellow. Maxillary and mandibular barbels annulated with black. Skin rough, whole body thickly covered with minute tubercles.

Distribution.—Burma: Myitkyina district.

Size.—Maximum size 30.0 mm. SL.

Fishery value.—Nil.

Type-specimen.—Holotype, F. 10876/1; in ZSI, Calcutta (as *Glyptothorax tuberculatus*).

Remarks.—This species has the humeral and scapular processes well-developed as in fishes of the genus *Laguvia.* However, the forked condition of the caudal fin, excludes it from *Laguvia.*

Genus **Glyptothorax** Blyth

Glyptothorax Blyth, 1860, *J. Asiat. Soc. Bengal*, **29**, p. 154 (type species, *Glyptothorax trilineatus* Blyth, by original designation).

Glyptothorax: Hora, 1923, *Rec. Indian Mus.*, **25**, p. 8 (synonymy, description, taxonomy of species).

Glyptothorax: Menon, 1954, *Rec. Indian Mus.*, **52**, pp. 27–54 (key, revision).

Description.—Body elongate, moderately or greatly depressed. Body skin smooth or rough with granulations or tuberculations. Dorsal profile gently arched. Head small, covered with thick skin, depressed; snout conical, not pointed; jaws subequal, upper jaw the longer; lips thick, fleshy, papillated. *Ventral surface of body provided with an adhesive apparatus with or without a central pit or depression on thorax.* Mouth inferior, transverse, narrow. Teeth villiform in jaws; palate edendate. Eyes dorsal, small. Four pairs of barbels; one pair each of maxillary, nasal and two of mandibular; *maxillary pair with broad bases.* Gill membranes united with each other and also with isthmus. Branchiostegals 6 to 10.

Rayed dorsal fin with five to seven rays *and a spine.* Adipose dorsal short, high, posteriorly free. *Pectoral fins with* 6 to 11 rays and *a spine, strong, broad, serrated with antrorse teeth along inner edge.* Fins may be enveloped in skin. Pelvic fins with 6 rays. Paired fins may be plaited below. Anal fin short, with 7 to 14 rays. Caudal fin deeply forked. Lateral line complete, simple.

Air-bladder enclosed in bone.

Distribution.—Iraq. Pakistan. India. Bangladesh. Burma. Thailand. East Indies.

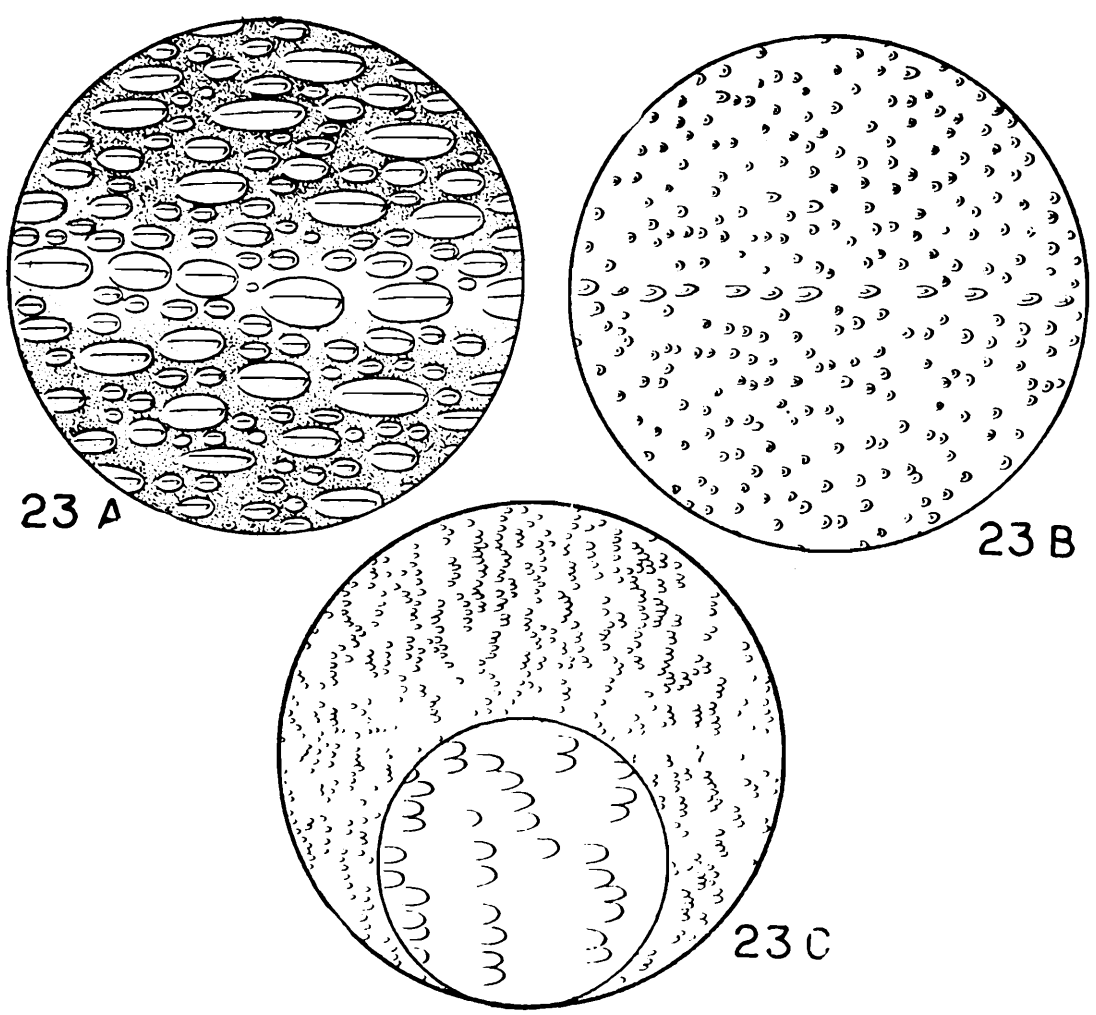
A total of 28 species are known, of which 26 species and 3 subspecies are dealt here.

Remarks.—Hora (1921) created *Laguvia* as a new genus to accommodate *Pimelodus asperus* McClelland and two other new species *L. shawi* and *L. ribeiroi.* Menon (1954) synonymised *Laguvia* with *Glytothorax* considering the diagnostic characters of the former genus as falling within the range of variation of the latter. He did not unfortunately observe certain other important features such as the shape of the caudal fin etc. In a recent paper these points have been elucidated (Jayaram, 1972) justifying the retention of *Laguvia* as a separate taxa.

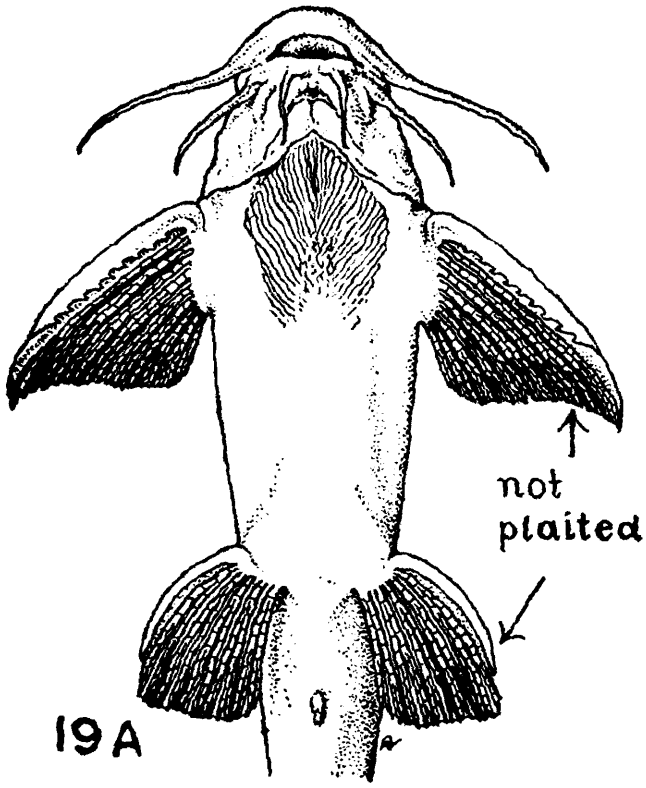
KEY TO THE SPECIES

1. Skin smooth, devoid of granulations or tuberculations. 2
   Skin rough, with granulations or tuberculations. 14

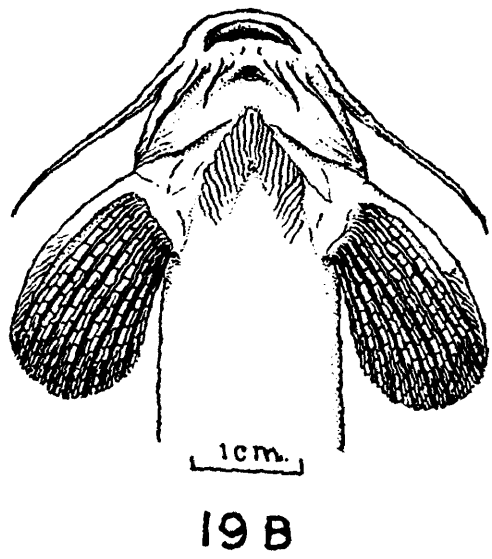
TF 23A, B, C



2. Adhesive apparatus on thorax distinctly longer than broad. 3
   Adhesive apparatus on thorax as long as or broader than long. 12
3. Occipital process reaching basal bone of dorsal fin.... 4
   Occipital process not reaching basal bone of dorsal fin. 5
4. Dorsal spine smooth. Ventral surface of paired fins plaited. ... ... *G. stoliczkae* (TF 19B)

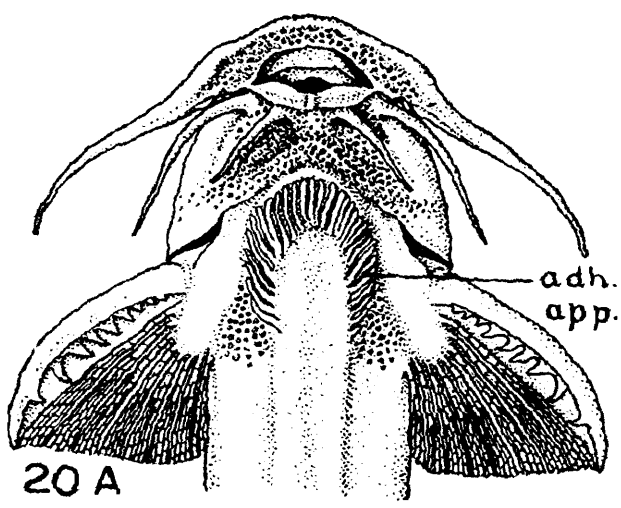


19A

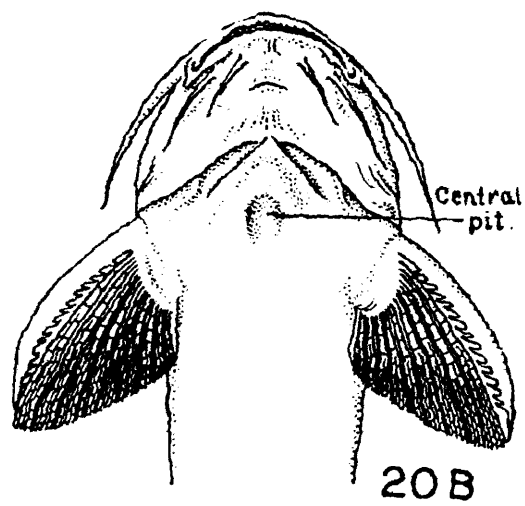


19 B

   Dorsal spine serrated along both margins. Ventral surface of paired fins not plaited. ... ... *G. madraspatanum** (TF 19A)
5. Dorsal spine strong 6
   Dorsal spine weak. 8
6. Adhesive apparatus on thorax with a central pit. 7
   Adhesive apparatus on thorax without a central pit. ... ... *G. sinense manipurensis* (TF 20A)



20 A



20 B

* Occasionally a few tubercles may be present, but overall the skin is smooth.

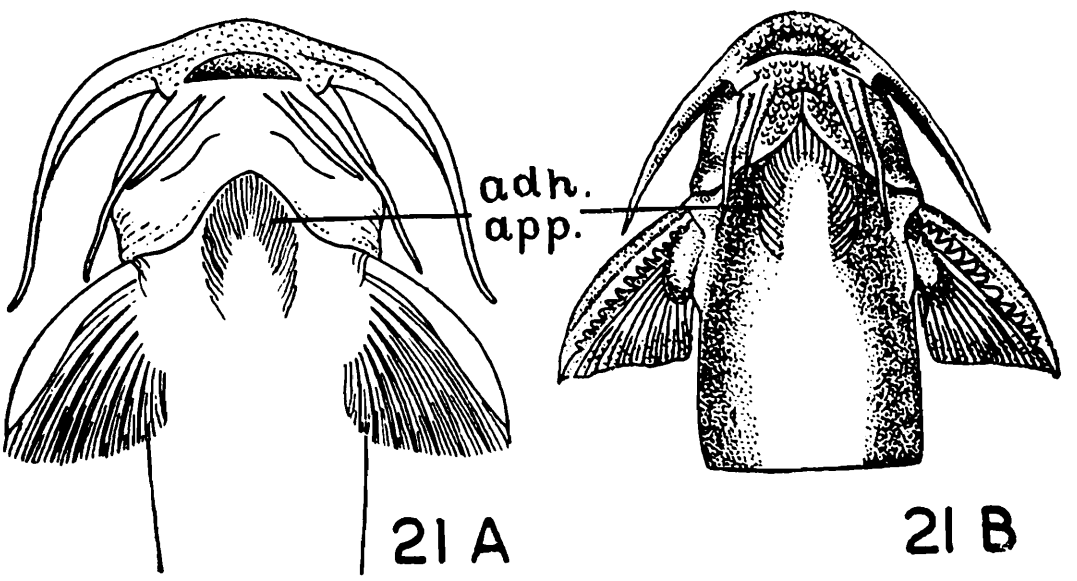
7. Adhesive apparatus on thorax incomplete posteriorly. Body depth 4.95–5.03 in standard length. Least height of caudal peduncle 1.24–1.77 in its length. ... ... *G. garhwali*

   Adhesive apparatus on thorax complete posteriorly enclosing the central pit. Body depth 5.9–6.6 in standard length. Least height of caudal peduncle 2.5 times in its length. ... ... *G. cavia*

8. Dorsal spine serrated along inner margin. ... ... *G. sinense sinense*
   Dorsal spine smooth. 9

9. Origin of rayed dorsal fin, equidistant from base of adipose dorsal and tip of snout. ... ... *G. conirostrae conirostrae*
   Origin of rayed dorsal fin distinctly nearer tip of snout than base of adipose. 10

10. Mandibular and nasal barbels short. Adhesive apparatus on thorax poorly developed. ... ... *G. conirostrae poonaensis*



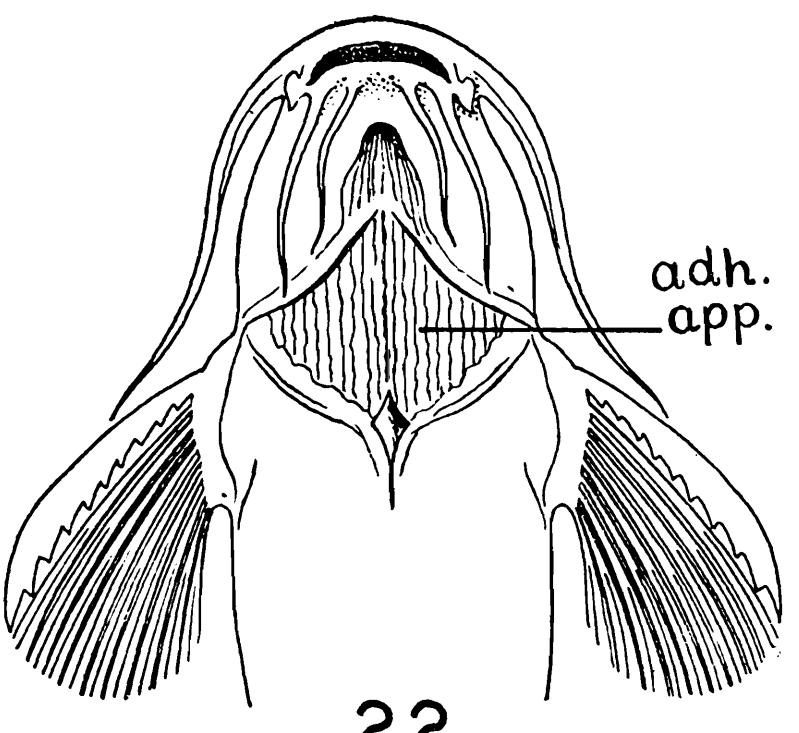
21 A 21 B

   Mandibular and nasal barbels long Adhesive apparatus on thorax well developed. 11

11. Body depth 6.2–6.4 in standard length. ... ... *G. housei* (TF 21 A)

    Body depth 4.63–5.33 in standard length. ... ... *G. punjabensis*

12. Occipital process not reaching basal bone of dorsal fin. Ventral surface of paired fins not plaited. ... ... *G. horai* (TF 22)



22

Occipital process reaching basal bone of dorsal fin. Ventral surface of paired fins plaited. 13

13. Origin of dorsal fin equidistant between tip of snout and origin of the adipose fin. Length of caudal peduncle just 2 times in its height. ... ... *G. brevipinnis alaknandi*

Origin of dorsal fin, considerably nearer to tip of snout than origin of adipose dorsal fin. Length of caudal peduncle more than 2 times in height. ... *G. brevipinnis brevipinnis*

14. Adhesive apparatus on thorax longer than broad. 15

Adhesive apparatus on thorax as long as broad or broader than long. 25

15. Adhesive apparatus with a central pit. ... ... *G. kashmirensis*

Adhesive apparatus without a central pit. 16

16. Dorsal fin higher than body depth below it 17

Dorsal fin shorter than or equal to body depth below it. 19

17. Body depth 5.9–6.8 in standard length. Paired fins plaited below. ... ... *G. coheni*

Body depth 5.0–5.5 in standard length. Paired fins not plaited below. 18

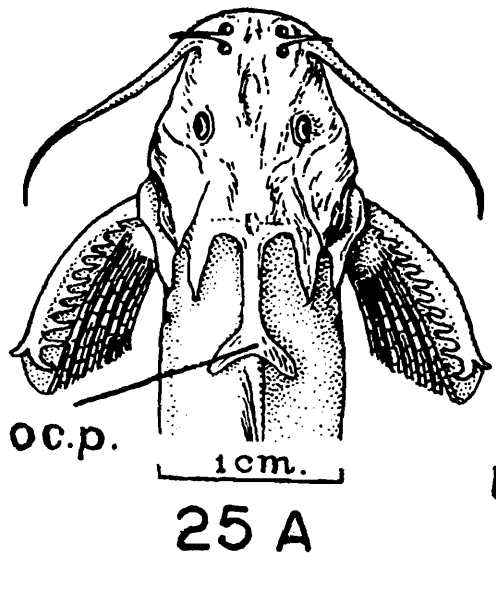
18. Anal fin inserted ahead of adipose origin. Pectoral fins longer than head, reaching pelvic fins. ... ... *G. gracilis*

Anal fin inserted opposite adipose origin. Pectoral fins shorter than head, not reaching pelvic fins. ... *G. platypogonoides*

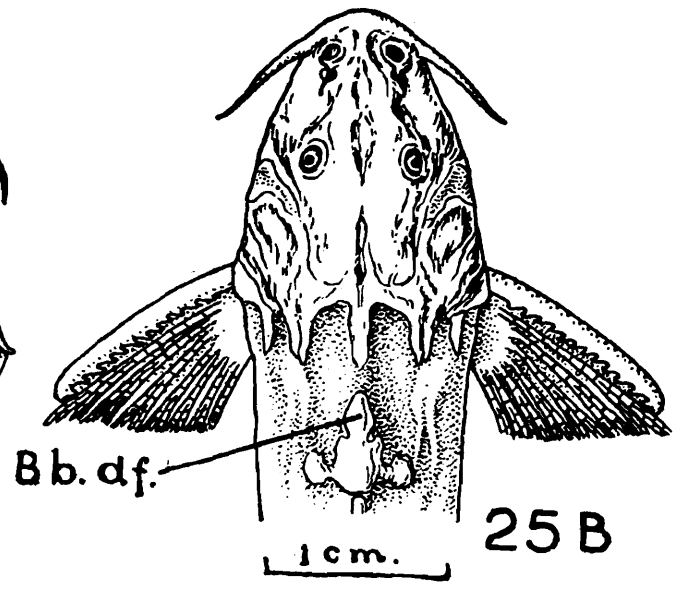
19. Anal fin inserted behind adipose origin. 20

Anal fin inserted opposite or before adipose origin.... 21

20. Body with black dots on body and fins. No longitudinal bands. ... ... *G. prashadi*



25 A



25 B

Body with three longitudinal bands. ... ... *G. nelsoni*

21. Body with one to three color bands. 22

Body plain without any color bands. 24

22. Nasal barbels reaching anterior border of eye. Body with three bands. ... ... *G. trilineatus* ...(see TF 31 on page 48)

Nasal barbels not reaching anterior border of eye. Body with one or two bands.... 23

23. Occipital process reaching basal bone of dorsal fin (TF 25 B). Paired fins plaited below. Body with two light longitudinal bands.... ... ... *G. annandalei* (TF 30 A)

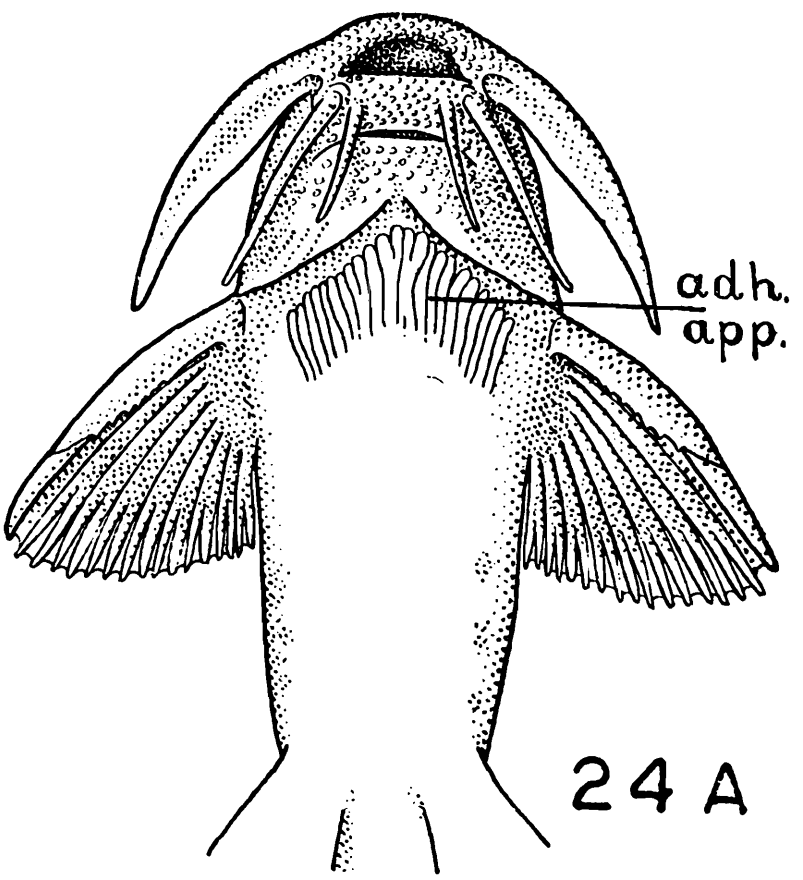
Occipital process not reaching basal bone of dorsal fin (TF 25 A). Paired fins not plaited below. Head sides and fins mottled with dark spots. ... ... *G. telchitta*

24. Least height of caudal peduncle 1.5 in its length. Anal fin inserted opposite adipose origin. Dorsal fin shorter than body depth. ... ... *G. lonah*

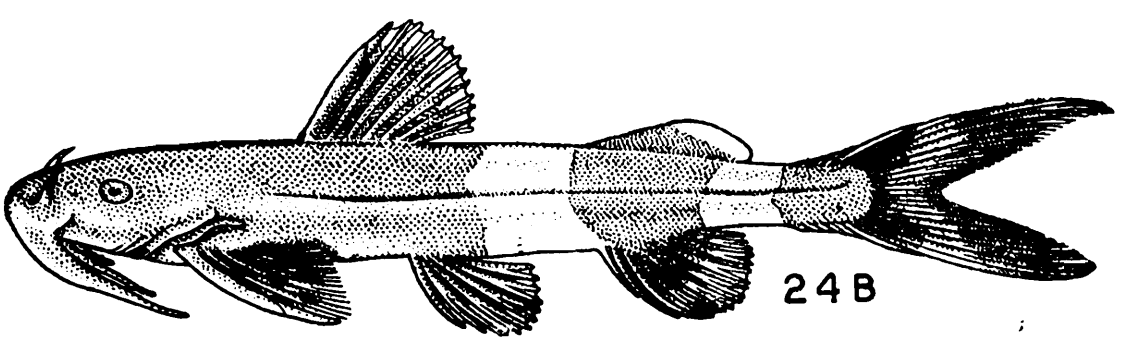
Least height of caudal peduncle 2.0–2.2 in its length. Anal fin inserted before adipose origin. Dorsal fin equal to body depth. ... ... *G. saisii* (TF 30-B)

25. Adhesive apparatus on thorax feebly developed, broader than long. (Body with three white transverse bands, one below rayed dorsal, second below adipose dorsal and third at base of caudal.) (S. India. Anamalai hills). ... ... *G. anamaliensis* (TF 24 A, B)

Adhesive apparatus on thorax well developed, prominent. 26



24 A



24 B

26. Paired fins not plaited below. 27
Paired fins plaited below. 28

27. Occipital process reaching basal bone of dorsal fin. A poorly developed elongate depression in adhesive apparatus present. ... ... *G. stocki*

Occipital process not reaching basal bone of dorsal fin. No central pit in adhesive apparatus ... ... *G. trewavasae*

...(see TF 29 on page 48)

28. Adhesive apparatus broader than long. Nasal barbels reaching beyond eye. Ventral profile peculiar, somewhat straight up to gill apertures, then arching down gently upto level of dorsal fin and then in front of pelvic fin ascending smoothly to caudal region. ... ... *G. naziri*

Adhesive apparatus as long as broad. Nasal barbels just reaching or not reaching eye. Ventral profile normal. 29

29. Nasal barbels not reaching anterior border of eye. No bands on body. ... ... *G. striatus* (see TF 28 on page 46)

Nasal barbels just reaching eye. A light orange streak along dorsal edge present. ... ... *G. pectinopterus*

Glyptothorax anamaliensis Silas

Glyptothorax prox *madraspatanus* Silas, 1951, *J. Bombay nat. Hist. Soc.*, **49**, p. 676, figs. 1, 2, 3 (type locality, Anamalai hills, Western Ghats).

Glyptothorax anamaliensis Silas, 1961, *J. Bombay nat. Hist. Soc.*, **50**, p. 370.

D. I, 6; P. I, 8; V. 6; A. iii, 6, i; C. 17.

Diagnostic characters.—Skin coarsely granulated. *Body with three broad white bands, one below rayed dorsal and another below adipose dorsal, another at base of caudal.*

Distribution.—India: Anamalai hills, Kerala State.

Size.—Maximum size 63.25 mm. TL.

Fishery value.—A rare species of dimunitive size of no value.

Type-specimens.—Holotype, F. 629/2, Syntype, F. 630/2, 1 ex. each, in ZSI, Calcutta.

Remarks.—This species has a remarkable resemblance to *Laguvia rebeiroi* Hora in its colouration. It is known so far only by the two type-specimens.

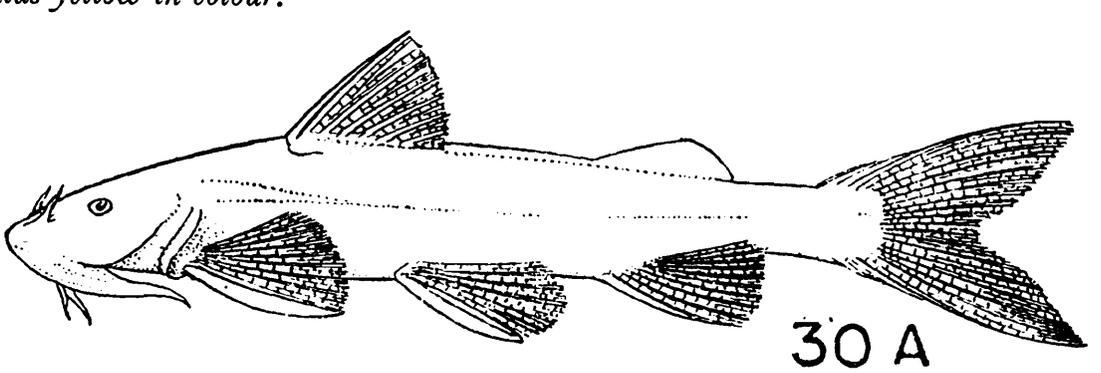
Glyptothorax annandalei Hora

Glyptothorax annandalei Hora, 1923, *Rec. Indian Mus.*, **25**, p. 14 (type locality, Bhavani river at base of Nilgiri hills).

Glyptothorax annandalei: Menon, 1954, *Rec. Indian Mus.*, **25**, p. 52 (synonymy, diagnosis, list of material in ZSI).

D. I, 6; P. I, 9; V i, 5; A. 10.

Diagnostic characters.—Dorsal fin commencing in the beginning of the second-third of the distance between tip of snout and caudal base, somewhat nearer snout than adipose beginning. *A light streak along lateral line. Adhesive apparatus yellow in colour.*



30 A. Lateral view of *Glyptothorax annandalei*. (*After* S.L. Hora, 1923. *Rec. Indian Mus.*, **25**(1), pl. 1, fig. 3.)

Colour.—Greyish all over with a lighter streak along dorsal surface and also along lateral line. Ventral surface whitish. Adhesive apparatus yellow. Skin granulated.

Distribution.—India: Bhavani river at base of Nilgiri hills, South India.

Size.—Maximum size 99.5 mm. TL.

Fishery value.—Nil.

Type-specimens.—Holotype, F. 10135/1, Paratypes, 2 ex., F. 10135/1, in ZSI, Calcutta.

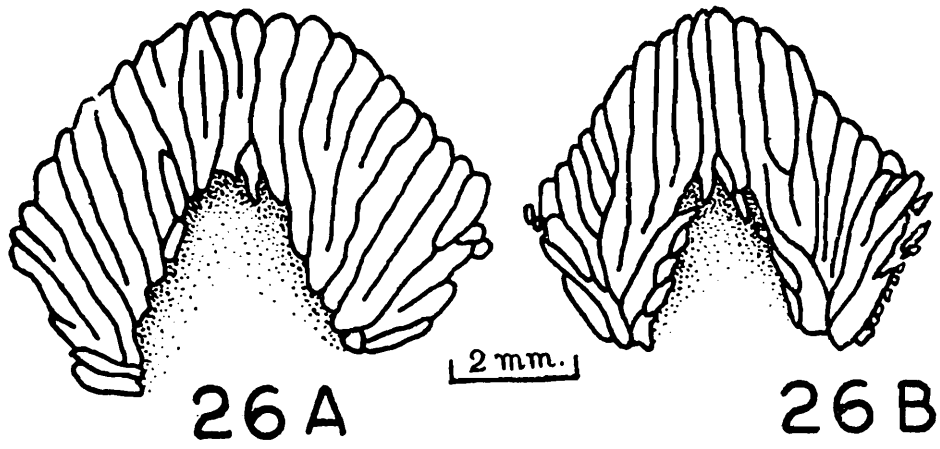
Glyptothorax brevipinnis brevipinnis Hora

Glyptothorax brevipinnis Hora, 1923, *Rec. Indian Mus.*, **25,** p. 16 (type locality, unknown).

Glyptothorax brevipinnis: Menon, 1954, *Rec. Indian Mus.*, **52,** p. 37 (list of material in ZSI, diagnosis).

D. I, 6; P. I, 7; V i, 5; A. 8.

Diagnostic characters.—Dorsal fin nearer tip of snout than commencement of adipose fin. *Adhesive apparatus on thorax broader than long, not well developed* (Text-Fig. 26-B).



26. Drawing of adhesive apparatuses in (B) *Glyptothorax brevipinnis brevipinnis* and (A) *G. brevipinnis alaknandi* to show the relative length/width of the apparatus. (*After* Raj Tilak, 1969. *J. Inland Fish. Soc. India,* **1,** p. 43, figs. 12 & 11.)

Colour.—Light reddish brown on dorsal surface of body and along sides, lighter beneath. Eyes black. Skin smooth.

Distribution.—Not known.

Size.—Maximum size 97 mm. TL.

Fishery value.—Nil.

Type-specimens.—Syntypes, 4 ex., F. 10134/1, in ZSI, Calcutta.

Glyptothorax brevipinnis alaknandi Tilak

Glyptothorax brevipinnis alaknandi Tilak, 1969, *J. Inland. Fish. Soc.*, **1,** p. 42, figs. 8–12 (type locality, Alaknanda river, near Srinagar, Pauri Garhwal dist., U.P.)

Diagnostic characters.—Similar to *G. brevipinnis brevipinnis*, but differing from it in position of rayed dorsal fin, longer nasal barbels, in the length of caudal peduncle being just twice its least height and in coloration (Text-Fig. 26 A).

Colour.—Dorsal side of body dark chocalate; and the tenderside of head and belly lighter. A dark band at the caudal base and another at its middle.

Distribution.—India: Alaknanda river, near Srinagar, Pauri Garhwal Dist., U.P.

Size.—71 mm. TL.

Fishery value.—Nil.

Type-specimen.—Holotype, F. 6154/2 ZSI, Calcutta.

Glyptothorax cavia (Hamilton)

Pimelodus cavia Hamilton, 1822, *Fish. Ganges*, pp. 188, 378 (type locality, Northern Bengal).

Euglyptosternum lineatum Day, 1889, *Fauna Brit. India*, Fish, I, p. 292, fig. 33.

Glyptothorax burmanicus Prashad & Mukerji, 1929, *Rec. Indian Mus.*, **31**, p. 184, fig. 5, pl. xii, fig.3 (type locality, Sankha river, Myitkyina dist., Burma).

Glyptothorax cavia: Hora & Menon, 1948, *Rec. Indian Mus.*, **46**, p. 49, 60, pl. 11, figs. 4, 6 (description).

Glyptothorax cavia: Menon, 1954, *Rec. Indian Mus.*, **52**, p. 34 (synonymy, list of material in ZSI).

D. I, 6; P. I, 9; V 6; A. 12; C. 18.

Diagnostic characters.—*Adhesive disc on thorax encircling a deep central pit.* Teeth on upper jaw in a broad band.

Colour.—Brown olivaceous above and dirty yellowish below; sides and dorsal surface mottled with deep coloured spots, bases of fins provided with dark bands. Skin smooth.

Distribution.—India: North Bengal, Assam, Burma, Bangladesh, Pakistan.

Size.—Maximum size 165.6 mm. SL.

Fishery value.—*Nil.*

Type-specimens.—Not known. Syntype of *Euglyptosternum lineatum* Day present in ZSI, Calcutta, Regd. No. 1312, figured in Day's *Fish India*, pl. 116, fig. 7. Holotype of *Glyptothorax burmanicus* Prashad & Mukherji present in ZSI, Calcutta. Regd. No. P. 10877/1.

Glyptothorax coheni Ganguly, Datta & Sen

Glyptothorax coheni Ganguly, Datta & Sen, 1972, *Copeia* (2), p. 432 (type locality, Subarnarekha river, 200 m below Getalsud dam, Bihar).

D. II, 6; P. I, 10; V ii, 5; A. iv, 8; C. 18.

Diagnostic characters.—Similar to *C. saisii*, but differing from it in having a lesser body depth (5.0–5.4 *vs.* 4.5); a *longer dorsal fin, more number of pectoral fin rays* (10 *vs.* 7), and a broader caudal peduncle (2.5 *vs.* 3.0).

Colour.—In life dorsal surface greyish black, sides and fins dull white.

Distribution.—India: Subernarekha river, Chotanagpur plateau, Bihar.

Size.—92 mm. TL.

Fishery value.—Nil.

Type-specimens.—Holotype USNM 205612, in U.S. National Museum, Washington. Paratypes 2 exs., USNM 205613; 7 exs., Zoology dept., Calcutta University, Calcutta.

Glyptothorax conirostrae conirostrae (Steindachner)

Glyptosternum conirostrae Steindachner, 1867, *S.B.K. Acad. Wiss. Wien.*, **55,** part 1, p. 532, pl. v, fig. 2; pl. vi, fig. 2 (type locality, Simla).

Glyptothorax conirostris: Hora, 1923, *Rec. Indian Mus.*, **25,** p. 28 (synonymy, brief characterisation).

Glyptothorax conirostrae: Menon, 1954, *Rec. Indian Mus.*, **52** p. 36 (synonymy, list of material in ZSI, diagnosis).

D. I, 6; P. I, 9; V 6; A. ii, 9–10; C. 17.

Diagnostic characters.—Adhesive apparatus on thorax large, *horse-shoe-shaped* convex in front, with a large smooth space inside.

Colour.—Brownish, fins yellow stained with black. Skin smooth.

Distribution.—India; Kangra valley, Punjab; Mahananda river, Siliguri, North Bengal. China.

Size.—Maximum size 105 mm. SL.

Fishery value.—Nil.

Type-specimen.—Holotype, in Vienna Natural History Museum, Vienna.

Glyptothorax conirostrae poonaensis Hora

Glyptothorax conirostrae var. *poonaensis* Hora, 1938, *Rec. Indian Mus.*, **40,** p. 368, pl. vii, fig. 8 (type locality, Poona).

Glyptothorax conirostrae poonaensis: Menon, 1954, *Rec. Indian Mus.*, **52,** p. 36 (differences from allied species).

D. I, 6; P. I, 10; V 6; A. 10; C. 17.

Diagnostic characters.—Head broader, dorsal fin shorter. *Skin smooth. Dorsal spine smooth. Pectoral spine short.* Adhesive apparatus broader than long. *Dorsal surface of head and body studded with minute black dots. Some may have saddle shaped bands across dorsal surface of body.*

Colour.—Light dusky above, dirty white below; whole of dorsal surface of head and body studded with minute black dots. In some specimens, three saddle-shaped bands across dorsal surface of body may be present. Skin smooth.

Distribution.—India: Mula Mutha river, Poona.

Size.—Maximum size 81 mm. SL.

Fishery value.—Locally known as *Pathar chatoo* after its stone licking habit, this species is not of any commercial importance.

Type-specimens.—Holotype, F. 12126/1; Paratypes, 3 exs., F. 12126/1 in ZSI, Calcutta.

Glyptothorax garhwali Tilak

Glyptothorax garhwali Tilak, 1969, *J. Inland Fish Soc. Fish. Soc. India*, **1**, p. 37, figs 1–7 (type locality, Alaknanda river, Srinagar, Pauri Garhwal, U.P.).

Diagnostic characters.—Similar to *G. cavia* but differing from it in the *least height of caudal peduncle being* 1.24–1.77 *vs. nearly* 2.5; and *in having a wider teeth band.*

Colour.—Dorsal and lateral sides of head and body uniformly dark. Ventral side of head and belly yellowish. A dark band across the pectorals, pelvic and anal fins.

Distribution.—India: Alaknanda river, Pauri Garhwal; Sarada river, Tanahpur, Nainital dist., U.P.

Size.—117 mm. TL.

Fishery value—Nil.

Type-specimens.—Holotype, F. 6152/2, ZSI, Calcutta. Paratype, One ex. F. 6153/2, ZSI, Calcutta.

Glyptothorax gracilis (Günther)

Glyptothorax gracile Günther, 1861, *Cat. Fish. Brit. Mus.*, **5**, p. 186 (type locality, Nepal).

Glyptothorax gracilis: Menon, 1954, *Rec. Indian Mus.*, **52**, p. 48 (diagnosis, list of material in ZSI).

D. I, 6; P. I, 10; V 6; A. 14.

Diagnostic characters.—Pectoral spine devoid of plaits on its under surface. *Pectoral fins longer than head length* and *almost reach pelvics. Maxillary barbels longer than head. Lower lobe of caudal fin longer than upper.*

Colour.—Body brownish, fins light coloured. Skin granulated.

Distribution.—Nepal. Sikkim.

Size.—Maximum size 123 mm. TL.

Fishery value.—Nil.

Type-specimen.—Holotype, in British Museum Natural History, London.

Remarks.—Day (1878, 1889) did not include this species but considered it as a synonym of *G. trilineatus* Blyth. Hora (1923) resurrected this species after examining a fresh specimen.

Glyptothorax horai Shaw & Shebbeare

Glyptothorax horai Shaw & Shebbeare, 1938, *J. Bombay nat. Hist. Soc.*, **39**, p. 188 (type locality, streams of Terai, W. Bengal).

Glyptothorax horai: Menon, 1954, *Rec. Indian Mus.*, **52**, p. 37 (description).

D. I, 5–6; P. i, 7–9; V i, 5; A. i, 9–10; C. 16–18.

Diagnostic characters.—Adhesive apparatus on thorax very extensive from lip to pectoral base, traversing through gill membranes, of rhomboidal in shape anteriorly, vignitted posteriorly and without any central pit.

Colour.—Copper grey above and on sides, pale brownish yellow beneath. Fins light copper-tinged, caudal fin profusely spotted with grey. Skin smooth.

Distribution.—India: Kosi river, Rihand river, streams in the Vindhya range of mountains, Terai, Eastern Himalaya. Nepal.

Size.—Maximum size 90.1 mm. SL.

Fishery value.—Being of a small size and living in restricted fast-flowing streams, it is commercially not very important.

Type-specimen.—Holotype, F. 11376/1, in ZSI, Calcutta.

Glyptothorax housei Herre

Glyptothorax housei Herre, 1942, *Standford Ichth. Bull.*, **2,** pp. 117–118, fig. (type locality, Puthuthottam estate, Kerala).

Glyptothorax housei: Silas, 1951, *J. Bombay nat. Hist. Soc.*, **50,** p. 369 (description).

Glyptothorax housei: Menon, 1954, *Rec. Indian Mus.*, **52,** p. 28 (name only).

D. I, 5; P. I, 9; V 6; A. ii, 10.

Diagnostic characters.—Similar to *G. conirostrae poonaensis* Hora, but differing from it in having *dorsal origin much closer to tip of snout than to commencement of adipose fin.* Least height of caudal peduncle 2.5 times in its length.

Colour.—In live condition reddish, pinkish or flesh coloured with yellow or dusky mottling above, and flesh colour below. In preserved specimens general colour is blackish with darker fin bases and lighter margins. Under surface of body pale.

Distribution.—India: Puthuthottam estate, Kerala.

Size.—Maximum size 103 mm. TL.

Fishery value.—Nil.

Type-specimen.—Holotype, in California Academy of Sciences, San Francisco, U.S.A.

Glyptothorax kashmirensis Hora

Glyptothorax kashmirensis Hora, 1923, *Rec. Indian Mus.*, **25,** p. 22, text-fig. 2 (type locality, Kashmir valley).

Glyptothorax kashmirensis: Menon, 1954, *Rec. Indian Mus.*, **52,** p. 52 (synonymy, diagnosis, list of material in ZSI).

D. I, 5; P. I, 8–9; V 6; A. ii, 6.

Diagnostic characters.—Adhesive apparatus on thorax well developed, *triangular, longer then broad.* Paired fins not plaited below. *A central pit present on adhesive apparatus. Body with a number of black dots.*

Colour.—Uniformly dark brown, lighter beneath. In some a number of black dots may be present on body. Skin profusely granulated.

Distribution.—India: Kashmir valley. Pakistan: Azad Kashmir

Size.—Maximum size 117.0 mm. TL.

Fishery value.—Nil.

Type-specimens.—Snytypes, 2 exs., F. 10270/1, in ZSI, Calcutta.

Glyptothorax lonah (Sykes)

Bagrus lonah Sykes, 1841, *Trans. Zool. Soc. Lond.*, **2,** p. 371 (type locality, Deccan).

Glyptothorax lonah: Hora, 1923, *Rec. Indian Mus.*, **25,** p. 30 (synonymy, diagnostic features).

Glyptothorax dekkanensis Günther; Hora, 1938, *Rec. Indian Mus.*, **40,** pp. 363–375 (synonymy).

Glyptothorax lonah: Menon, 1954, *Rec. Indian Mus.*, **52,** p. 48 (synonymy, diagnosis, list of material in ZSI).

D. I, 6; P. I, 9; V 6; A. iii–iv, 8–10; C. 15–17.

Diagnostic characters.—Pectoral spine not as long as head, considerably shorter. Dorsal spine weak, smooth. Maxillary barbels reach beyond pectoral base. *Differs from* G. annandalei Hora *in having a broader caudal peduncle,* 1.5 *times as long as deep.*

Colour.—Yellowish brown, banded with black. *Fins yellow, dorsal, caudal and anal with black bands.* Skin tuberculated.

Distribution.—India: Deccan platèau, Godavari and Krishna river systems.

Size.—Maximum size 150 mm. TL.

Fishery value.—Does not grow to large size, and as such its value is limited and local.

Type-specimen.—Holotype, in British Museum Natural History, London.

Glyptothorax madraspatanum (Day)

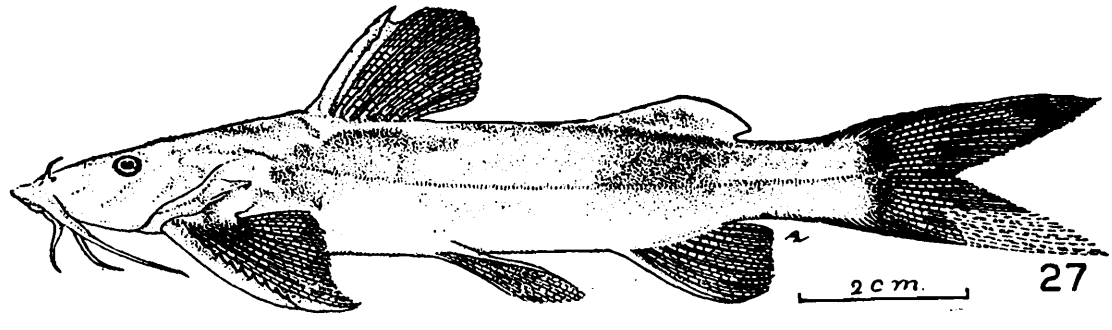
Glyptosternum madrspatanum Day, 1873, *J. Linn. Soc. London.*, **11,** p. 526 (type locality, Bhavani river at base of Nilgiri hills).

Glyptothorax madraspatanus: Hora, 1923, *Rec. Indian Mus.*, **25,** p. 29 (brief characterisation, air-bladder).

Glyptothorax madraspatanum: Menon, 1954, *Rec. Indian Mus.*, **52,** p. 31 (diagnosis, description, list of material in ZSI).

D. I, 6; P. I, 9–10; V. i, 5; A. ii–iii, 10–11; C. 17.

Diagnostic characters.—Pectoral spine as long as head or somewhat longer. Dorsal spine strong and serrated near the apex. *Body with three vertical bands, greyish yellow in colour. Adhesive apparatus on thorax well developed, vignitted posteriorly* without any central pit.



27. Lateral view of *Glyptothorax madraspatanum* to show dorsal spine with apical serration, length of pectoral spine, colour bands. (After a specimen from Tenmalai, S. India.)

Colour.—Greyish yellow with dark bands; fins also yellowish with black bands. Dark greyish examples have thin vertical white bands. Skin smooth.

Distribution.—India: Western Ghats, Anamalai hills, Nilgiri hills.

Size.—Maximum size 125 mm. TL.

Fishery value.—It is not commercially important since it does not grow to large sizes.

Type-specimens.—Syntypes, 2 exs., No. 1235, 1313 (original of pl. 116 fig. 4 in Day's *Fish India*) in ZSI, Calcutta.

Remarks.—Menon (1954) syonymised *G. prox. madraspatanus* Silas, 1951 with this species. The body proportions of Silas' species differ considerably from this species. It is a synonym of *G. anamaliensis* (see p. 34) also known from the Anamalai Hills.

Glyptothorax naziri Mirza & Naik

Glyptothorax naziri Mirza & Naik, 1969, *Pakistan J. Sci.*, **21** (5 & 6) p. 123 (type locality, R. Zhob, Quetta division, Pakistan).—Mirza & Hameed, 1974, *Biologia*, **20** (1), p. 92.

Diagnostic characters.—Barbels long; maxillary extending to pectoral fin end. *Ventral profile peculiar, caudal region constricted.* Adhesive apparatus small, broader than long.

Colour.—Dark brown dorsally, and along sides. Light pink ventrally. Dorsal and caudal fins dark at base and other fins light pink.

Distribution.—Pakistan: Zhob river, Baluchistan. N.W.F.P., Punjab.

Size.—61.6 mm. Total length.

Fishery value.—Nil.

Type-specimens.—Holotype, Govt. College Museum, Lahore.

Glyptothorax nelsoni Ganguly, Datta & Sen

Glyptohorax nelsoni Ganguly, Datta & Sen, 1972, *Copeia* (2) p. 341 (type locality, Subarnarekha river, 200 m. downstream from Namkum, Bihar).

D. II, 6; P. I, 9–10; V ii, 5; A. iii, 9; C. 16–18.

Diagnostic characters.—Similar to *G. striatus* but differing from it in having a lesser body depth (6.9–7.4 *vs.* 6.00 in total length). *Shorter dorsal fin equalling to body depth, a strong denticulated dorsal spine and a longer adhesive pad.*

Colour.—Blackish-brown dorso-laterally and pale yellowish ventro-laterally, in fresh condition. *Three dull yellow horizontal stripes present* in live specimens.

Distribution.—India: Subarnarekha river, Chotanagpur plateau, Bihar.

Size.—85 mm. TL.

Fishery value.—Nil.

Type-specimens.—Holotype USNM 205611 in U.S. National Museum, Washington. Paratypes two exs., Zoology dept., Calcutta University, Calcutta.

Glyptothorax pectinopterus (McClelland)

Glyptosternum pectinopterus McClelland, 1842, *Calcutta J. nat. Hist.*, **2**, p. 587 (type locality, mountains of Simla).

Glyptothorax pectinopterus: Hora, 1923, *Rec. Indian Mus.*, **25**, p. 18, pl. 1, fig. 1; pl. 4, fig. 3 (description).

Glyptothorax pectinopterus: Menon, 1954, *Rec. Indian Mus.*, **52**, p. 47 (diagnostic features, list of material).

D. I, 5; P. I, 8; V 6; A. 7; C. 17.

Diagnostic characters.—A light orange streak along dorsal edge of body and tail. Adhesive apparatus on thorax small. Pectoral fins with 9 *rays.* Caudal fin plain, without spots.

Colour.—Uniformly dark brown above and on sides; a light orange streak along dorsal edge of body and tail. Ventral surface pale white. Skin granulated.

Distribution.—India: Kangra valley, Simla hills, Punjab. Pakistan: Azad Kashmir.

Size.—Maximum size 74.5 mm. TL.

Fishery value.—Nil.

Type-specimens.—Not known.

Glyptothorax platypogonoides (Bleeker)

Pimelodus platypogonoides Bleeker, 1855, *Nat. Tijid, Ned. India*, **9**, p. 272 (type locality, Lahat, Sumatra).

Glyptothorax dorsalis Vinciguerra, 1889, *Ann. Mus. Stor. nat. Genova*, **29**, p. 246, pl. vii, fig. 4 (type locality, Irrawaddy river, Burma).

Glyptothorax minutus Hora, 1921, *Rec. Indian Mus.*, **22**, p. 180, text-fig. 1 (type locality, Imphal stream, Manipur valley, Manipur).

Glyptothorax platypogonoides: Menon, 1954, *Rec. Indian Mus.*, **52**, p. 44 (synonymy, description).

D. I, 6–7; P. I, 9–10; V i, 5; A. i, 9–10; C. 16–18.

Diagnostic characters.—Upper surface of body brown *and head thickly covered with pale rounded or elongate flattened tubercles. A whitish saddle-shaped spot below and on either side of dorsal fin conspicuously present.*

Colour.—Brownish olive on dorsal and lateral regions of body merging into pale yellow below. Head and sides speckled with dark, oblong spots. Fins marbled with spotted bands. Skin rough with prominent tubercles arranged in regular longitudinal rows.

Distribution.—India: Assam. Burma. Thailand. Sumatra. Pakistan: Punjab, N.W.F.P.

Size.—Maximum size 103 mm. SL.

Fishery value.—It is not commercially important. Whatever is obtained is purely of local and limited value.

Type-specimen.—Holotype, F. 10548/1, Nakon Sritamarat hills, Thailand, H.M. Smith coll., (type of *G. siamensis* Hora which is a synonym of this species), in ZSI, Calcutta.

Remarks.—In Thailand females of 74 mm. had the abdomen distended with well developed eggs. The eggs measured 0.8 mm. in longest diameter and 0.6 mm. in short diameter.

Glyptothorax prashadi Mukerji

Glyptothorax prashadi Mukerji, 1934, *Rec. Indian Mus.*, **34,** p. 281, text-fig. 1 (type locality, Kyen-chaung river, Mergui dist., Burma).

Glyptothorax prashadi: Menon, 1954, *Rec. Indian Mus.*, **52,** p. 42 (synonymy, diagnosis, list of material in ZSI).

D. I, 6; P. I, 7; V. i, 5; A. iii, 10; C. 17.

Diagnostic characters.—Body covered with irregularly distributed black spots, and *cone shaped sharp prickles. Closely allied to* G. platypogonoides, *but differing from it in having a deeper body, shorter pectorals and shorter caudal peduncle.*

Colour.—Dark brownish with a few black spots irregularly scattered all over body and the fin membranes. Abdominal portion yellowish white. Skin covered with cone-shaped sharp prickles.

Distribution.—Burma. Thailand.

Size.—Maximum size 52.0 mm. SL.

Fishery value.—Nil.

Type-specimen.—Holotype, F. 11334/1, in ZSI, Calcutta.

Glyptothorax punjabensis Mirza & Kashmiri

Glyptothorax conirostris punjabensis Mirza & Kashmiri, 1971, *Biologia*, **17**(2), p. 88 (type-locality, Rawal dam, Rawalpindi).—Mirza & Hameed, 1974, *Biologia*, **20**(1), p. 93.

D. I, 6; P. I, 8; V i, 5; A. ii–iii, 8–9; C. 17–18.

Diagnostic characters.—Differs from *G. conirostris conirostris* in length of barbels, shape and extent of thoracic adhesive apparatus, structure of dorsal spine, number of serrations in the pectoral spine and the length pectoral fin. Differs from *G.c. poonaensis* in width of head, longer occipital process, longer nasal barbels, thoracic adhesive apparatus being broader than long, deeper body, and position of pelvic fins.

Colour.—Yellowish brown on dorsal and lateral sides, and yellowish white beneath; each cheek with a large yellow spot; dorsal, pectoral and caudal fins dark brown at base, yellowish with black stripes at tip, other fins yellowish.

Distribution.—Pakistan: Rawal Dam, Rawalpindi, Lahore,. Azad Kashmir.

Size.—191 mm. Total length.

Fishery value.—Nil.

Type-specimens.—Holotype, F. No. 7 in Govt. College Museum, Lahore. Paratypes five exs.

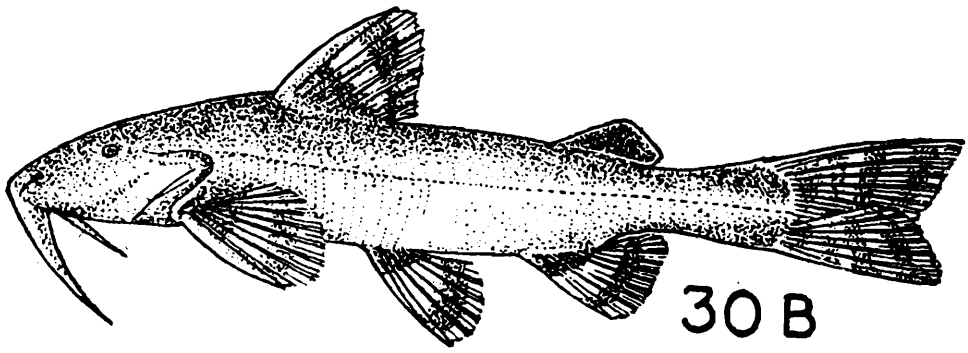
Glyptothorax saisii (Jenkins)

Glyptothorax saisii Jenkins, 1910, *Rec. Indian Mus.*, **5**, p. 128, text-fig., pl. vi, fig. 6 (type locality, Pareshnath hills, Bihar).

Glyptothorax saisii: Menon, 1954, *Rec. Indian Mus.*, **52**, p. 54 (synonymy, diagnostic characters, list of material in ZSI).

D. I, 6; P. I, 7; V 6; A. 10; C. 14.

Diagnostic characters.—Very close to G. pectinopterus, but *differing from it in having a head longer than broad and adhesive apparatus being much longer than wide,* well developed. *Caudal fin with black spots.*



30 B. Lateral view of *Glyptothorax saisii* to show body without any colour band. (*After* J.T. Jenkins, 1910. *Rec. Indian Mus.*, **5**, pl. 6, fig. 6.)

Colour.—Greyish black all over except ventral surface, thoracic and abdominal regions which are whitish. Caudal fin with black spots. Skin granulated.

Distribution.—India: Pareshnath hills, Bihar.

Size.—Maximum size 60 mm. SL.

Fishery value.—Nil.

Type-specimens.—Holotype, F. 2583/1, in ZSI, Calcutta. Paratypes, 2 exs., F. 3260/1 and F. 3261/1, in ZSI, Calcutta.

Glyptothorax sinense sinense (Regan)

Glyptothorax sinense Regan, 1908, *Ann. Mag. nat. Hist.*, (8) 1, pp. 109–111, pl. 4, fig. (type locality Tungting, China).

Glyptothorax sinense: Mukerji, 1938, *J. Bombay nat. Hist., Soc.*, **36**(4), p. 820 (Malinka stream N. Burma).

Glyptothorax sinense: Menon, 1954, *Rec. Indian Mus.*, **52**, p. 35 (list of material in ZSI, diagnosis).

D. I, 6; P. I, 9; V. i, 5; A. ii, 9; C. 17.

Diagnostic characters.—Thoracic adhesive apparatus triangular, prominent, without a central pit. Paired fins not plaited. *Greenish brown with two faint dark patches below dorsal fins.* Dorsal spine serrated.

Colour.—Greenish brown with two faint and irregular dark patches, one below rayed dorsal and another below adipose dorsal. *Rayed dorsal fin with a broad black longitudinal band in middle.* Skin smooth.

Distribution.—Burma: Mali Hka stream, China: Tungting.

Size.—Maximum size 105 mm. SL.

Fishery value.—Nil.

Type-specimen.—Holotype, in British Museum Natural History, London, No. 1907, 11.26.4, from Tungting, China, by Raffles.

Remarks.—Mukerji's (1938) report from Burma is the second record of this otherwise rare species.

Glyptothorax sinense manipurensis Menon

Glyptothorax manipurensis Menon, A.G.K., 1954, *Rec. Indian Mus.*, **52,** p. 23, text-fig. (type locality, Barak river, Karong, Manipur).

D. I, 6; P. I, 9; V i, 5; A. ii, 9; C. 22–24.

Diagnostic characters.—Dark patches conspicuous at base of dorsal, adipose and caudal fins. *No transverse band on rayed dorsal fin as in G. sinense with which it is related.*

Colour.—Oliveceous with dark patches at base of unpaired fins. Skin smooth.

Distribution.—India: Manipur valley, Barak river, Karong.

Size.—Maxmium size 94.5 mm. TL.

Fishery value.—Nil.

Type-specimens.—Holotype, F. 738/2; Paratypes 6 ex., F. 739/2 in ZSI. Calcutta.

Glyptothorax stocki Mirza & Nijssen

Glyptothorax platypogonoides (non Bleeker) Sufi, 1969, *Biologia*, **9**(1) pp. 23–27.

Glyptothorax stocki Mirza & Nijssen, *Bull. zool. Mus. Amsterdam*, **6**(11), p. 79 (type locality, Swat River, N.W. Frontier division, Pakistan).

D. I, 6; P. I, 10–11; V i, 5; A. i, 10–11; C. 16–18.

Diagnostic characters.—Similar to *G. platypogonoides* Bleeker, but differing from it in having larger eyes, more slender caudal peduncle, longer nasal and maxillary barbels. Lower lobe of caudal fin longer than upper. Body colour lighter than *G. platypogonoides.*

Colour.—Brown on back and sides, pinkish-tan ventrally. Dorsal, adipose and caudal fin with dark bands. A fine whitish streak runs from posterior margin of eye to caudal fin base.

Distribution.—Swat River, tributary of Kabul river, near Abazai, Peshawar Division, North W. Frontier Province, Pakistan.

Size.—73.5 mm. in standard length.

Fishery value.—Nil.

Types specimens.—"ZMA 114.763, holotype sl 54.6 mm., Pakistan: Bhed Nullah, small stream on G.T. road to Rawalpindi, about 7 miles from Lahore (=31°34′ N74°22′E), Coll. M. Ashraf Chaudhri, 16-VIII-1970.—ZMA 115.027, one paratype, sl 34.3 mm., same data as holotype.—GCM (NH) 15F, one paratype, sl 70.7 mm., Azad Kashmir, Punch river near Kotli (=33°13′ N73°51′E), coll. Waheed-ud-Din, 24-VIII-1971. ZSD 1782 F, five paratypes, sl. 52.0–73.5 mm., Pakistan, North West Frontier Province, Peshawar

Division, Swat River near Abazai, about 0.5 mile South of Abazai Rest House, coll. S.M.K. Sufi, 9-XI-1955." (Mirza & Nijssen, 1978.)

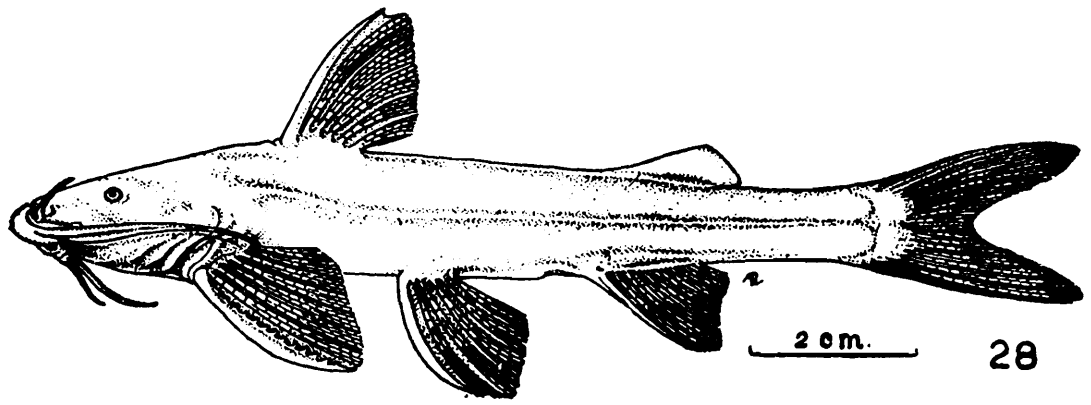
Glyptothorax stoliczkae (Steindachner)

Glyptosternum stoliczkae Steindachner, 1867, *S.B. Akad. Wiss. Wien.*, **55**(1), p. 533, pl. 5, fig. 1; pl. 6, fig. 1 (type locality, Simla, probably the headwaters of Jamuna river).

Glyptothorax stoliczkae: Menon, 1954, *Rec. Indian Mus.*, **52**, p. 31 (synonymy, differentiation, no description).

D. I, 6; P. I, 9; V i, 5; A. i, 9.

Diagnostic characters.—Adhesive apparatus on thorax distinctly longer than broad. Maxillary barbels long, reaching pectoral middle. Occipital process reaching basal bone of dorsal fin. *An yellowish mark along back, fins stained yellow.*



28. Lateral view of *Glyptothorax striatus* to show short barbels. (Drawn after a specimen).

Colour.—Uniformly brown with a yellowish mark along back; fins yellow, stained with black. Skin smooth.

Distribution.—India: Western Himalaya, Simla.

Size.—Maximum size 90 mm. SL.

Fishery value.—Nil.

Type-specimen.—Holotype, in Vienna Natural Hist. Mus., Vienna.

Glyptothorax striatus (McClelland)

Glyptosternon striatus McClelland, 1842, *Calcutta J. nat. Hist.*, **2**, p. 587, pl. 6, fig. 1, 2 (type locality, Kashi mountains).

Glyptothorax striatus: Hora, 1923, *Rec. Indian Mus.*, **25**, p. 20 (description).

Glyptothorax striatus: Menon, 1954, *Rec. Indian Mus.*, **52**, p. 53 (synonymy, diagnosis, list of material in ZSI).

D. I, 6; P. I, 11; V 6; A. ii, 9; C. 17.

Diagnostic characters.—Occipital process not reaching basal bone of dorsal fin. Adhesive apparatus on thorax well developed, its greatest breadth equalling its length. *All barbels shorter than head length. Body in well grown specimens with vertical bands.*

Colour.—Varies considerably with growth. In individuals upto 80 mm., upper surface and sides of head and body are uniformly dark brown, under surface pale white. With growth dark vertical bands begin to appear on body. In fully grown specimens, body dark above, dirty white below. Skin granulated.

Distribution.—India: Meghalaya, Kashi and Garo hills.

Size.—Maximum size 250 mm. TL.

Fishery value.—It is only of local value.

Type-specimen.—Holotype, in British Museum Natural History, London. No. 1860. 3.19.95 from 'Khasya' presented by Griffith.

Glyptothorax telchitta (Hamilton)

Pimelodus telchitta Hamilton, 1822, *Fish. Ganges*, pp. 185, 378 (type locality, Jungipur, Nathpur, Bengal and Bihar; description inadequate).

Glyptosternum telchitta: Day, 1871, *Proc. zool. Soc. Lond.*, p. 228.

Glyptothorax telchitta, G. sp., Hora, 1923, *Rec. Indian Mus.*, **25,** pp. 28, 26 (no description).

Glyptothorax botia: Hora & Menon, 1949, *Rec. Indian Mus.*, **46,** pp. 55–62 (synonymy).

Glyptothorax telchitta: Menon, 1954, *Rec. Indian Mus.*, **52,** p. 42 (synonymy, list of material in ZSI).

D. I, 6–7; P. I, 7–9; V i, 5; A. 9–12; C. 16–18.

Diagnostic characters.—Body spindle-shaped. Skin tuberculated, rough. Adhesive apparatus on thorax longer than broad, spindle-shaped, without any central pit. All barbels shorter than head. Caudal peduncle whip-like.

Colour.—Dark brown or cement grey above and on sides, dirty yellow below. Head and sides and fins mottled with dark spots. Anal, dorsal, caudal and paired fins marked with spotted bands. Skin rough with horny tubercles.

Distribution.—India: U.P. (Vindhya range of mountains), Bihar, North Bengal. Pakistan: D.G. Khan, Punjab; Sehwan, Sind.

Size.—Maximum size 85.4 mm. TL.

Fishery value.—Amongst all the species of *Glyptothorax* this is one of the more common species found in North Bengal especially. It is sold in markets in small quantities, but the flesh content being not much, it fetches a poor price and is not much valued.

Type-specimens.—Not known.

Remarks.—Hora and Menon (1949) gave the reasons for synonymising *Pimelodus botia* Hamilton with this species. The differences between the two are in the texture of the skin and form of the pupil, which are within the range of variation of *G. telchitta*, which is rather common in North Bengal where *P. botius* is also reported to occur.

Glyptothorax sp. Hora, 1923 (pp. 13, 26) is identifiable with this species.

Glyptothorax trewavase Hora

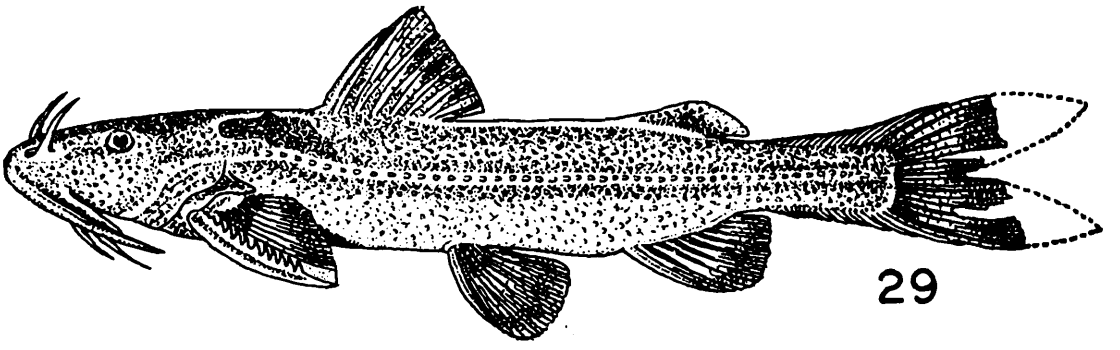
Glyptothorax dekkanensis: Hora (*nec* Günther), 1937, *Rec. Indian Mus.*, **39,** p. 14.

Gyptothorax trewavase Hora, 1938, *Rec. Indian Mus.*, **40,** p. 273, pl. 7, fig. 3, 4 (type locality. Yenna valley, Satara dist., Maharashtra).

Glyptothorax trewavase: Menon, 1954, *Rec. Indian Mus.*, **52,** p. 46 (list of material in ZSI).

D. I, 6; P. I, 7–8; V i, 5; A. 10; C. 15.

Diagnostic characters.—Adhesive apparatus on thorax almost as wide as long, extending forwards to a point in between union of gill membranes to isthmus. Ventral surface of head ridged, grooved, papillated.



29. Lateral view of *Glyptothorax trewavasae* to show colour pattern, papillated lateral line, and tuberculated skin. (*After* S.L. Hora, 1938. *Rec. Indian Mus.*, **40**(4), pl. 7, fig. 3.)

Colour.—Uniformly light grey with the bases of pectoral, dorsal, adipose and caudal fins dark. Dorsal, anal, pelvic fin rays infuscated with black. Skin finely tuberculated.

Distribution.—India: Krishna river system; Yenna, Koyna, Tunga rivers, South India.

Size.—Maximum size 113 mm. SL.

Fishery value.—Of local importance only.

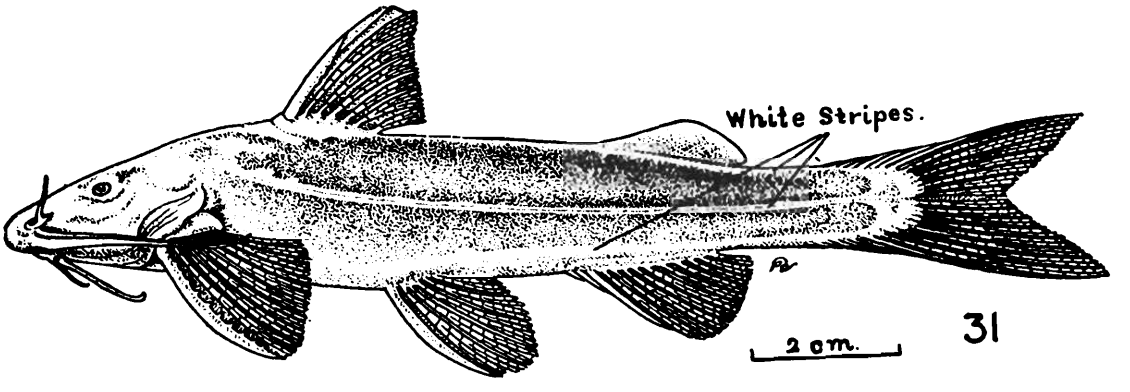
Type-specimen.—Holotype, F. 9723/1, in ZSI, Calcutta.

Glyptothorax trilineatus Blyth

Glyptothorax trilineatus Blyth, 1860, *J. Asiat. Soc. Beng.*, **29,** p. 154 (type locality, Tenasserim).
Glyptothorax trilineatus: Hora, 1923, *Rec. Indian Mus.*, **25,** p. 29 (synonymy, differentiation).
Glyptothorax trilineatus: Menon, 1954, *Rec. Indian Mus.*, **52,** p. 49 (synonymy, redescription, list of material in ZSI).

D. I, 6–7; P. I, 10–11; V i, 5; A. i, 9–10; C. 16–18.

Diagnostic characters.—Body with three white or pale yellow stripes; one median dorsal from occiput to upper base of caudal fin, one from eye or upper end of



31. Lateral view of *Glyptothorax trilineatus* to show three white stripes. (Drawn from a specimen F. 238/2.)

gill opening along lateral line to midbase of caudal fin, and the last distinct from posterio-ventral region to lower base of caudal fin. Adhesive apparatus on thorax longer than broad without any central pit.

Colour.—Blackish-brown, chestnut brown over body and sides, pale-yellow beneath. A well marked dirty white longitudinal streak along back from occiput to caudal fin base may be present. A similar one runs along lateral line.

Distribution.—India: Manipur. Burma. Thailand.

Size.—Maximum size 300 mm. TL.

Fishery value.—Nil.

Type-specimens.—Syntypes, 2 ex., F. 10380/1; Cat 579, 1 ex., in ZSI, Calcutta.

Remarks.—The record from Nepal is erroneous. This is one of the largest member of this genus. In Burma a length of 300 mm. is reached, but very rarely.

Genus **Euchiloglanis** Regan

Chimarrhichthys Sauvage, 1874, *Rev. et. Mag. Zool.*, **25,** p. 332 (name preoccupied; type species, *C. davidi* Sauv).

Euchiloglanis Regan, 1907, *Rec. Indian Mus.*, **1,** p. 158 (substitute name for *Chimarrhichthys*).

Euchiloglanis, Hora & Silas, 1952, *Rec. Indian Mus.*, **49,** p. 14 (revision).

Description.—Head small, depressed; snout broadly rounded; jaws sub-equal; upper jaw overhanging lower; lips thick, fleshy, papillated, fold of lower lip broadly interrupted. Mouth ventral, transverse. Teeth small, pointed in bands on jaws; palate edentate. Eyes minute, subcutaneous, dorsal. Four pairs of barbels, one pair each of maxillary, nasal, and two of mandibular; *maxillary with broad bases, their ventral surface of outer halves with striated pads of adhesive skin.* Gill membranes united with each other and also with isthmus. *Gill openings as an aperture above pectoral base.*

Rayed dorsal fin with seven rays and without any spine. Adipose dorsal long, low, posteriorly free. *Pectoral fins* with 13 to 17 rays and *without any spine.* Pelvic fins with 6 rays. *Outer rays of paired fins* soft, *pinnate, their inner halves vertical, outer halves horizontal; skin on ventral surface of outer rays corrugated in pinnate folds for adhesion.* Anal fin short, with 5 to 7 rays. *Caudal fin* obliquely *truncate or somewhat rounded.* Lateral line straight, complete, simple.

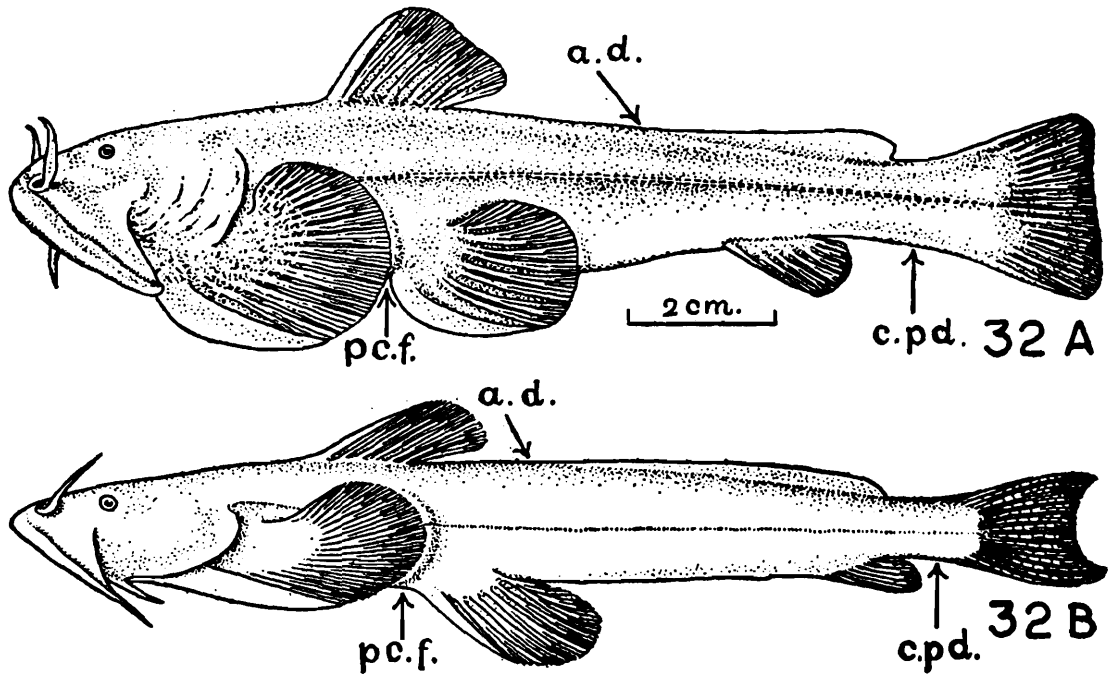
Air-bladder small, enclosed in bone.

Distribution.—Burma. China: E. Tibet, Yunnan. India: North Bengal, Assam.

Six species are known, three are dealt here.

KEY TO THE SPECIES

1.	Pectoral fins extending scarcely 2/3 of distance from its base to base of pelvics.	*E. feae*
	Pectoral fins extending 3/4 or more of distance from its base to base of pelvics.	2 (see TF 32A & B)



2. Caudal peduncle 2.01 to 2.66 as long as deep. Adipose dorsal fin 2.3 to 3.2 times dorsal fin base. ... ... *E. kamengensi* (TF 32A)

Caudal peduncle 1.0 to 1.2 as along as deep. Adipose dorsal fin 3.25 to 4.20 times dorsal fin base. ... ... *E. hodgarti* (TF 32)

Euchiloglanis feae (Vinciguerra)

Exostoma feae Vinciguerra, 1881, *Ann. Mus. Stor. nat. Genoa*, **29**, p. 256, pl. vii, fig. 6 (type locality, Karen-ni hills, Upper Burma).

Exostoma feae: Hora & Silas, 1952, *Rec. Indian Mus.*, **49**, p. 16 (synonymy, revision).

D. i, 5; P. 15; V. 6; A. 6.

Diagnostic characters.—Maxillary and nasal barbels long. Adipose dorsal fin long, low. Body 8.25 to 8.30 in standard length. *Upper jaw teeth not continuous, divided in the middle. Pectoral fin with* 15 *branched rays.*

Colour.—Lead grey over body, lighter beneath.

Distribution.—Burma.

Size.—Maximum size 133 mm. SL.

Fishery value.—Nil.

Type-specimens.—Syntypes, 4 ex., No. 14411, in Museo Civico di Storia Naturelle, Genova.

Euchiloglanis hodgarti (Hora)

Glyptosternum hodgarti Hora, 1923, *Rec. Indian Mus.*, **25**, p. 38 (type locality, Pharping, Nepal).

Euchiloglanis hodgarti: Hora & Silas, 1952, *Rec. Indian Mus.*, **49**, p. 17 (synonymy, revision).

D. ii, 5; P. 16–17; V 6; A. 5.

Diagnostic characters.—Pectoral fin with 16 *or* 17 *branched rays, just reaching pelvics.* Adipose dorsal fin long. Caudal peduncle about as long as deep. *Upper jaw teeth in an uninterrupted band.*

Colour.—Brown all over, dorsal surface and sides of body, fins and ventral surface pale.

Distribution.—Nepal. India: rivers below Darjeeling and Abor hills (between Rotung and Renging).

Size.—Maximum size 57.5 mm. SL.

Fishery value.—Nil.

Type-specimen.—Holotype, F. 1553/1, in ZSI, Calcutta.

Remarks.—Shaw & Shebbeare (1933) reported a number of specimens of this species.

Euchiloglanis kamengensis Jayaram

Euchiloglanis kamengensis Jayaram, 1963; *J. zool. Soc. India*, **15**(1), p. 85 (type locality, Norgum river at Kalaktang, Kameng Frontier division, NEFA).

D. ii, 5; P. i–11, 14–15; V i, 5; A. 6–7; C. 19.

Diagnostic characters.—Caudal peduncle long, narrow. *Pectoral fin with* 16 *branched rays*, almost extending to pelvics. Adipose dorsal fin short. *Upper jaw teeth continuous.*

Colour.—Grey over dorsal surface of head and body, lighter beneath upto anal opening. Caudal fin with a dull whitish band at about its middle. Fins fringed white.

Distribution.—India: Kameng Frontier Division, N.E.F.A. Rivers Norgum and Dupla Ko.

Size.—Maximum size 160.5 mm. SL.

Fishery value.—Mainly caught by the local tribal people and eaten by them.

Type-specimens.—Holotype, F. 2105/2, Paratypes, F. 2106/2, six ex., all in ZSI, Calcutta.

Genus **Coraglanis** Hora & Silas

Coraglanis Hora & Silas, *Rec. Indian Mus.*, 1952, **49**, p. 12 (type species, *Euchiloglanis kishinouyei* Kimura, by original designation).

Description.—Similar to *Euchiloglanis* in all features, except that the *teeth bands on the upper jaw* are continuous and *extend backwards at sides;* lower band of teeth interrupted in the middle.

Distribution.—Essentially a Chinese genus, which has been recently recorded from Nepal in the Eastern Himalaya.

A single species.

Coraglanis kishinouyei (Kimura)

Euchiloglanis kishinouyei Kimura, 1934, *J. Shanghai Sci. Inst.*, Sec. 3, **1**, pp. 178–179, pl. 6, figs. 1–3 (type locality, the Yang-tse-kiang, China).

Coraglanis kishinouyei, Hora & Silas, 1952, *Rec. Indian Mus.*, **49**, p. 12, pl. 1, figs. 1–3, text. fig. 1 (Chengtu, or Keating, China).

Coraglanis kishinouyei, Dutta, 1962, *Proc. 1st All India Congr. Zool.*, Jabalpur, 1959, part 2, p. 18 (from Eastern Himalaya, 3,000 metres, Indian Cho-oyu Expedition).

D. I, 6; P. I, 13; V i, 5; A. i, 5; C. 17.

Diagnostic characters.—Mouth inferior, broadly crescentic; lips thick, *post labial groove broadly interrupted.* Teeth pointed, conical in both jaws, *upper band continuous extending backwards at sides,* the lower band interrupted in the middle as two bands with their pointed ends directed upward. Caudal fin truncate. *No adhesive apparatus.*

Colour.—Brownish grey above, lighter beneath. A light dark transverse band at caudal base.

Distribution.—China. Nepal, Eastern Himalaya.

Size.—126.5 mm. TL.

Fishery value.—Nil.

Type-specimens.—In the Museum of Zoology. Michigan University, Ann Arbor U.S.A. Regd. No. M. 158522. Syntype 113.25 mm. in TL. F. 646/2, ZSI, Calcutta.

Remarks.—This species is included because of its record from Nepal by Dutta (1962).

Genus **Myersglanis** Hora & Silas

Myersglanis Hora & Silas, 1952, *Rec. Indian Mus.*, **49,** p. 19 (type species, *Myersglanis blythii* (Day), by original designation).

Description.—Head small, depressed; snout broadly rounded; jaws subequal, upper jaw overhanging; lips thick, fleshy, fold of lower lip continuous. Mouth ventral, crescentic. *Teeth conical in bands on jaws only; palate edentate.* Eyes minute, subcutaneous, dorsal. Four pairs of barbels; one pair each of maxillary, nasal and two of mandibular; maxillary pair with broad bases. Gill membranes united with isthmus and also with each other. *Gill opening restricted to dorsal surface above pectoral fin base, as an aperture.*

Rayed dorsal fin with seven rays *without any spine.* Adipose dorsal long, posteriorly free. Pectoral fins with 16 rays and without any spine. Pelvic fins with 6 rays. Paired fins rounded, flat, horizontal, vertical in inner, and horizontal in outer halves. Skin on ventral surface of outer rays corrugated in pinnate folds for adhesive purpose. Anal fin short, with 8 rays. *Caudal fin lunate, with outer rays slightly produced.* Lateral line complete, simple.

Air-bladder small, enclosed in bone.

Distribution.—Nepal.

A single species.

Myersglanis blythi (Day)

Exostoma blythi Day, 1869, *Proc. zool Soc. Lond.*, p. 525 (type locality, Pharping, Nepal).
Myersglanis blythi: Hora & Silas, 1952, *Rec. Indian Mus.*, **49,** p. 20 (description).

D. i, 6; P. i, 16; V 6; A. ii, 6; C. 13.

Diagnostic characters.—As in the genus.

Colour.—Yellowish brown over body and along sides, pale beneath

Distribution.—Nepal; Pharping.

Size.—Maximum size 85 mm. TL.

Fishery value.—A very rare species. Commerical importance nil.

Type-specimens.—Syntypes, 3 ex., Cat. 599. in ZSI, Calcutta, original of pl. 117, fig. 2, *Fish. India.*

Genus **Oreoglanis** Smith

Oreoglanis Smith, 1933, *J. Siam Soc. nat. Hist. Suppl.*, **9**, p. 70 (type species, *Oreoglanis siamensis* Smith, by monotypy).

Oreoglanis Smith, 1945, *Bull. U.S. nat. Mus.*, 188, p. 395.

Description.—Dorsal profile nearly straight. Head moderate sized, covered with skin; snout flatly rounded; jaws subequal; lips thick, *lower lip with a continuous fold.* Mouth ventral, narrow, transverse. *Teeth conical or pointed* in bands on jaws; palate edentate. Eyes minute, dorsal. Four pairs of barbels; one pair each of maxillary, nasal and two of mandibular; maxillary barbels with broad bases. Gill membranes fused with each other and also with isthmus; *gill openings extend to pectoral base.*

Rayed dorsal fin with five rays and without any spine. Adipose dorsal short, posteriorly free. *Pectoral fins with* 19 *rays, overlapping pelvic fins and without any spine.* Pelvic fins with 6 rays. Outer ray of pectoral fin thick, pinnate. Anal fin short with 5 rays. Caudal fin truncate. Lateral line complete, simple.

Distribution.—Thailand. Burma

A single species.

Oreoglanis macropterum (Vinciguerra)

Exostoma macropterum Vinciguerra, 1889, *Ann. Mus. Stor. nat. Genova*, **29**, p. 253, pl. vii, fig. 5 (type locality, northern frontier of Burma).

Oreoglanis macropterum: Hora & Silas, 1952, *Rec. Indian Mus.*, **49**, p. 22 (see for synonymy).

D. 5; P. 19; V i, 5; A. ii, 3; C. 17.

Diagnostic characters.—As in the genus.

Colour.—Body reddish brown, fins light wooden colour.

Distribution.—Burma: northern frontier, Kakhyen hills and Pazi, Monghong Hsipai State.

Size.—Maximum size 67 mm. TL.

Fishery value.—Nil.

Type-specimens.—Syntypes, 3 exs., No. 14410, in Museo Civico di Storia Naturelle, Genova.

Remarks.—Four specimens of this interesting fish was examined by Hora in 1923, but these are not present now in the Zoological Survey of India. The syntypes in the Genova Museum would indicate the precise systematic status of this fish.

Genus **Exostoma** Blyth

Exostoma Blyth, 1860, *J. Asiat. Soc. Beng.*, **29**, p. 154 (type species, *Exostoma berdmorei* Blyth, by original designation).

Exostoma: Hora & Silas, 1952, *Rec. Indian Mus.*, **49**, p. 23 (revision).

Description.—Head small, depressed; snout broadly rounded; jaws subequal, upper jaw overhanging lower; lips thick, fleshy, papillated, forming a continuous labial fold around mouth. Mouth ventral, more or less crescentic, narrow. *Teeth large, movable, oar-shaped, flattened distally and directed backwards in patches on jaws only;* palate edentate. Eyes minute, subcutaneous, dorsal. Four pairs of barbels, one each of maxillary, nasal and two of mandibular; maxillary pair with broad bases, their ventral surface of outer halves with striated pads of ahdesive skin. Gill membranes united with isthmus. *Gill openings restricted to dorsal surface abbve pectoral base.*

Rayed dorsal fin with six or seven rays and *without any spine. Adipose dorsal* long, *may be confluent with caudal fin. Pectoral fins* with 10 to 13 rays* and *without a spine;* outer ray of paired fins with soft, pinnate folds for purposes of adhesion and giving off soft pointed cartilaginous rays along anterior margin which are enveloped in membrane of fin. Pelvic fins with 6 rays. Anal fin rays 5 to 8. Caudal fin truncate, forked, slightly or deeply emarginate. Lateral line straight, complete, simple.

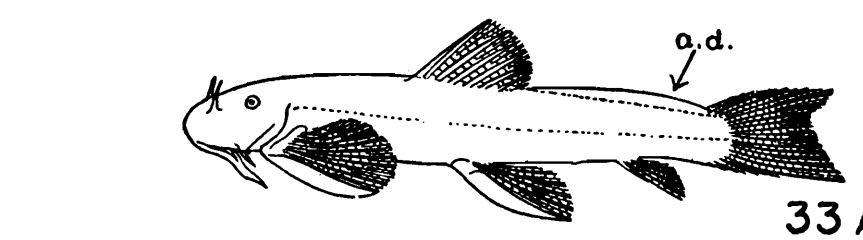
Air-bladder small, enclosed in bone.

Distribution.—India: Abor and Naga hills, Nagaland. Burma.

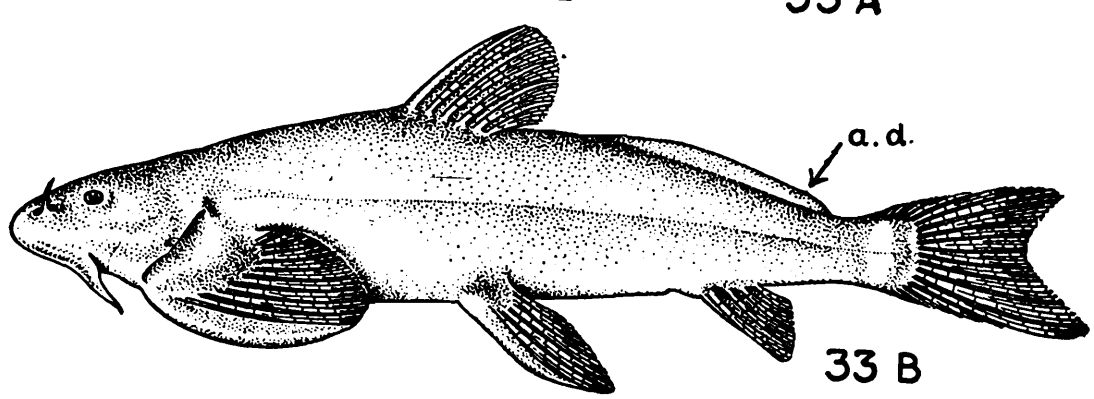
A total of 5 species are known, of which four are dealt here.

KEY TO THE SPECIES*

1. Caudal fin truncate or slightly emarginate. 2
   Caudal fin forked or deeply emarginate 3
   Adipose dorsal confluent with caudal (see arrow in TF). Caudal peduncle 3.0 to 3.25 as long as deep.... ... ... *E. vinciguerrae* (TF 33A)



33 A

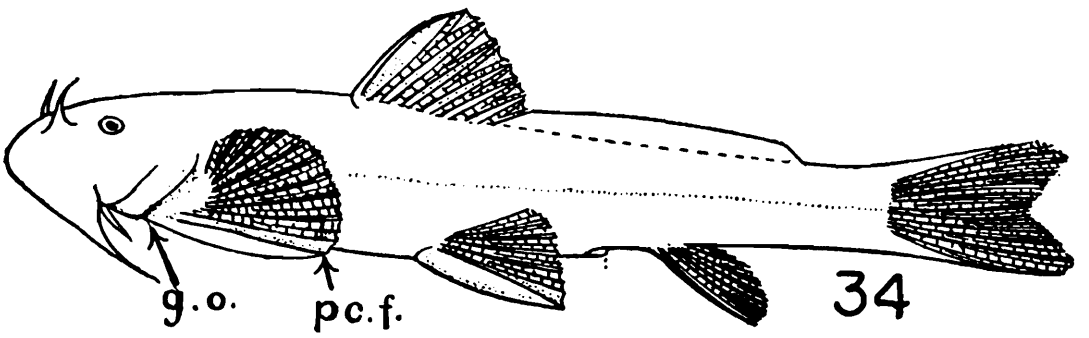


33 B

2. Adipose dorsal free fiom caudal (see arrow in TF). Caudal peduncle 2.0 to 2.5 as long as deep. ... ... *E. stuarti* (TF 33B)

* Relates to species dealt here only.

3. Pectoral fins with 10 branched rays. Gill openings greatly restricted, extending to above base of pectorals. ... ... *E. berdmorei*



Pectoral fins with 12 branched rays. Gill openings wide, extending to opposite base of pectoral spine.... ... ... *E. labiatum* (TF 34)

Exostoma berdmorei Blyth

Exostoma berdmorei Blyth, 1860, *J. Asiat. Soc. Beng.*, **29,** p. 155 (type locality, Tenasserim).

Exostoma labiatum Day, 1869, *Proc. zool. Soc. Lond.*, p. 525.

Exostoma berdmorei: Hora & Silas, 1952, *Rec. Indian Mus.*, **49,** p. 27 (revision).

D. i, 6; P. i, 10; V i, 5; A. 6.

Diagnostic characters.—Pectoral fins with 10 *branched rays. Gill openings greatly restricted,* extending to above base of pectoral fins.

Colour.—"Dingy olive-brown, with obscure broad dark bands, presenting more or less a clouded appearance, the fins mostly darker, below pale" (Blyth, 1860).

Distribution.—Burma: Tenasserim.

Fishery value.—Nil.

Size.—Maximum size 100 mm. SL.

Type-specimens.—Syntypes, 2 ex., 597, in ZSI, Calcutta. Cat. 600 bears the type-label of this species and is in a damaged condition.

Exostoma labiatum (McClelland)

Glyptosternon labiatus McClelland, 1842, *Calcutta J. nat. Hist.*, **2,** p. 588 (type locality, Mishmi hills).

Exostoma labiatum: Day, 1889, *Fauna Brit. India*, Fish, **1,** p. 108.

Exostoma labiatum: Hora & Silas, 1952, *Rec. Indian Mus.*, **49,** p. 27, (synonymy, revision).

D. i, 6; P. i, 12; V 6; A. i, 5; C. 17.

Diagnostic characters.—Pectoral fins with 12 *branched rays. Gill openings wide* and *extend to opposite base of pectoral spine.*

Colour.—Light yellow to greyish, in the latter case the ventral surface and fins lighter

Distribution.—India: Teesta river and its tributaries, N. Bengal, Assam.

Size.—Maximum size 58.5 mm. SL.

Fishery value.—Nil.

Type-specimens.—Not known.

Exostoma stuarti (Hora)

Glyptosternon stuarti Hora, 1923, *Rec. Indian Mus.*, **25,** p. 39 (type locality, Nam Yak river at Tanga in the northern frontier of Burma).

Exostoma staurti: Hora & Silas, 1952, *Rec. Indian Mus.*, **49,** p. 26 (synonymy, revision).

D. i, 5; P. 11; V 6; A. 5.

Diagnostic characters.—Dorsal profile greatly arched. *A distinct black spot at base of pectoral fin.* Least height of caudal peduncle 2.5 in its length.

Colour.—Uniformly grey on sides and above. A well marked black spot at base of pectoral fin present.

Distribution.—Burma: Nam Yak river at Tanja on the northern frontier of Burma.

Size.—Maximum size 47.0 mm. SL.

Fishery value.—Nil.

Type-specimen.—Holotype, F. 9742/1, in ZSI, Calcutta.

Remarks.—Known only by the type-specimen this species has not been subsequently recorded. Norman (1925) treated this species as a synonyms of *E. vinciguerrae* Regan, but Hora and Silas (1952) after reexamining the material considered the two as distinct.

Exostoma vinciguerrae Regan

Exostoma labiatum (*non* McClelland) Vinciguerra, 1889, *Ann. Mus. Stor. nat. Genoa,* **29,** p. 252.

Exostoma vinciguerrae Regan, 1905, *Ann. Mag. Nat. Hist.*, (7) 15, p. 184.

Glyptosternon chaudhurii Hora, 1923, *Rec. Indian Mus.*, **25,** p. 41 (type locality, Putao Plains, Burma).

Exostoma vinciguerrae: Hora & Silas, 1952, *Rec. Indian Mus.*, **49,** p. 25 (synonymy, revision, material examined).

D. i, 6; P. i, 10; V i, 5; A. 6.

Diagnostic characters.—Adipose dorsal confluent with caudal fin. Least height of caudal peduncle 3.0 to 3.25 in its length.

Colour.—Uniformly brownish; fins pale.

Distribution.—Burma: Putao Plains, Cachin, Razi, Hsipi State, North Shan States.

Size.—Maximum size 73 mm. SL.

Fishery value.—Nil.

Type-specimen.—Holotype, F. 9741/1, in ZSI, Calcutta (holotype of *G. chaudhurii* Hora).

Holotype of *E. vinciguerra* in BMNH, London, No. 1893. 2.16.17, from upper Burma presented by Fea.

Genus **Pseudecheneis** Blyth

Pseudecheneis Blyth, 1860, *J. Asiat. Soc. Beng.*, **29,** p. 154 (type species, *P. sulcatus* (McClelland), by original designation).

Pseudecheneis: Hora, 1923, *Rec. Indian Mus.*, **25,** p. 43 (definition of genus).

Description.—*Head* short, anteriorly depressed, provided *with a broad, oval adhesive apparatus ventrally composed of a series of transverse plates;* snout sharp, not pointed; jaws subequal; lips thick, fleshy, papillated, continuous around mouth. Mouth inferior, transverse, small. Teeth somewhat flattened with truncate apices in small patches on jaws; palate edentate. Eyes small, subcutaneous, dorsal. Four pairs of barbels; one pair each of maxillary, nasal, and two of mandibular. Gill membranes united with each other and also with isthmus.

Rayed dorsal fin with six rays and a spine. Adipose dorsal fin short, high, well developed, posteriorly free. Pectoral fins with 13 rays and a spine, enveloped in skin, feebly serrated along inner edge with antrorse teeth. Pectoral fins inner third vertical, outer two-thirds horizontal, with a striated skin ventrally. *Pelvic fins* with 6 rays, outer pelvic fin rays with striated skin ventrally, *with large number of pointed cartilaginous rays along outer border.* Anal fin short, with 9 to 13 rays. Caudal fin emarginate. Lateral line complete, simple.

Air-bladder with rounded lateral portions, enclosed in bone.

Distribution.—India: North Bengal, Khasi hills, Assam.

A single species.

Pseudecheneis sulcatus (McClelland)

Glyptosternon sulcatus McClelland, 1842, *Calcutta J. nat. Hist.*, **2**, p. 587, pl. 6, fig. (type locality, Khasi hills).

D. I, 6; P. I, 13; V 6; A. ii–iv, 7–9; C. 17.

Diagnostic characters.—As in the genus.

Colour.—Blackish with some large irregular yellowish blotches. Fins yellow with black bands.

Distribution.—India: North Bengal, Darjeeling Himalaya; Meghalaya, Khasi hills.

Size.—Maximum size 180 mm. TL.

Fishery value.—Very limited, being an inhabitant of fast flowing hill streams.

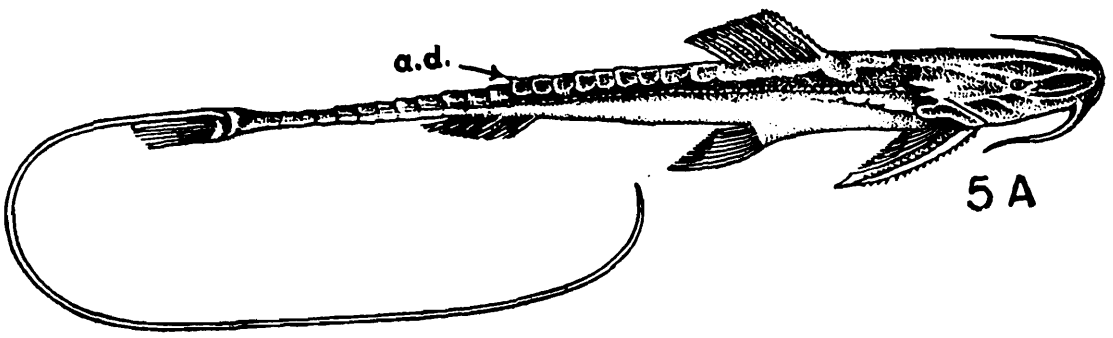
Type-specimens.—Not known.

Genus **Sisor** Hamilton

Sisor Hamilton, 1822, *Fish. Ganges*, pp. 208, 379 (type species, *Sisor rhabdophorus* Hamilton, by monotypy).

Description.—Body elongate and compressed, but anterior portion broad and depressed. *Head* moderate, anteriorly depressed, *with numerous rough ridges, covered by very thin skin;* snout pointed but not sharp; jaws subequal, upper jaw longer; lips thick, fleshy, papillated. Mouth inferior, small, transverse. Teeth absent. Eyes small, nearer gill opening than end of snout. *Six pairs of barbels;* one pair maxillary, *five short mandibular pairs arising from lower labial fold. Maxillary pair dilated* at base. Gill membranes united with each other and also with isthmus. Branchiostegals four.

Rayed dorsal fin with six rays and a weak spine serrated anteriorly. *Five plates on either side of dorsal fin present; six elevated scale-like plates* along median line behind dorsal fin, *last plate in the form of a spine. Adipose dorsal fin* present



5 A. Lateral view of *Sisor rhabdophorus* to show prolonged caudal fin ray, body with bony plates, small gill openings, adipose fin in the form of spine. (Drawn from a specimen.)

in the form of a spine. Pectoral fins with 8 rays and a spine, compressed, serrated along both edges, but strongly along outer edge. Pelvic fins with 7 rays. Anal fin short with 6 rays. *Caudal fin truncate, upper caudal ray prolonged into a very long filament.* Lateral line with a series of small rough bony plates.

Air-bladder reduced, enclosed in a bony capsule. An axiliary pore present.

Distribution.—India: confined to Indus, Ganga, Yamuna rivers of Northern India. Pakistan.

A single species.

Sisor rhabdophorus Hamilton

Sisor rhabdophorus Hamilton, 1822, *Fish. Ganges*, pp. 208, 379 (type locality, northern rivers of Bengal and Bihar).

D. I, 6; P. I, 8; V 7; A. ii, 4; C. 11.

Diagnostic characters.—As in the genus.

Colour.—Blackish above, lighter below.

Distribution.—India: Ganga, Yamuna, Brahmaputra river systems. Not known from South India. Pakistan: Indus river system.

Size.—Maximum size 200 mm. TL.

Fishery value.—Said to lie under stones when young, it is eaten by the poor classes. Motwani & David (1957) however recorded it from Sone river and observed that they were found sheltering along the vertical plane of sandy cascades formed in the stream by the force of current.

Type-specimens.—Not known.

REFERENCES

BOESEMAN, M. 1966. A new Sisorid catfish from Java, *Sundagagata robusta* gen *et* sp. nov.—*Proc. K. ned. Akad. Wet.*, **69C**: 242–247.

BLYTH, E. 1860. Report on some fishes received chiefly from the Sittang river and its tributary streams, Tenasserim provinces.—*J. Asiat. Soc. Beng.*, **29**: 138–174.

CHAUDHURI, B. L. 1919. Report on a small collection of fish from Putao (Hkamto Long) on the northern frontier of Burma.—*Rec. Indian Mus.*, **16**: 271–287, 1 pl.

DATTA, A. K. 1962. Zoological results of the Indian Cho-oyu Expedition (1958) in Nepal. Part 6. Pisces (in part).—*Rec. Indian Mus.*, **59**: 245–255, 1 pl.

DAY, F. 1878. *The fishes of India.* London: Wm. Dawson & Sons., xx+778 pp., 189 pls.

DAY, F. 1889. *The Fauna of British India including Ceylon and Burma.*—London: Taylor and Francis., **1,** xx+548 pp.; **2,** xiv+509+2 pp.

GOSWAMI, U. C. 1976. An ecological approach of freshwater Sisoridae of the Brahmaputra river system.—*Proc. Indian Sci. Congr.*, **63**(3): 209.

GUNTHER, A. 1864. *Catalogue of the fishes in the British Museum*, London: Trustees of the British Museum.—**5,** Physostomi, xxii+455 pp.

HORA, S. L. 1921. On some new or rare species of fish from the Eastern Himalayas.—*Rec. Indian Mus.*, **22**(5): 731–744, pl.

HORA, S. L. 1923. Notes on fishes in the Indian Museum. V. On the composite genus *Glyptosternon* McClelland.—*Rec. Indian Mus.*, **25**(1): 1–44, 4 pls.

HORA, S. L. 1933. The fish of Chitral.—*Rec. Indian Mus.*, **36**(3): 279–319, 2 pls.

HORA, S. L. AND LAW, N. C. 1941. Siluroid fishes of India, Burma and Ceylon. IX. Fishes of the genera *Gagata* Bleeker and *Nangra* Day. X. Fishes of the genus *Batasio* Blyth.—*Rec. Indian Mus.*, **43**(1): 9–42, 2 pls.

HORA, S. L. AND MENON, M. A. S. 1949. Systematic position of three Glyptosternoid fishes described by Hamilton.—*Rec. Indian Mus.*, **46:** 55–62, 1 pl.

HORA, S. L. 1951. Siluroid fishes of India, Burma and Ceylon. XIII. Fishes of the genera *Erethistes* Müller and Troschel, *Hara* Blyth and two new allied genera.—*Rec. Indian Mus.*, **47** [1949]: 183–201, 2 pls.

HORA, S. L. AND SILAS, E. G. 1952. Notes on fishes in the Indian Museum. XLVII. Revision of the Glyptosternoid fishes of the family Sisoridae with description of new genera and species.—*Rec. Indian Mus.*, **49**(1): 5–30, 1 pl.

JAYARAM, K. C. 1971. Siluroid fishes of India, Burma and Ceylon. 18. Resurrection of the genus *Nangra* Day and its systematic position (Sisoridae).—*J. zool. Soc. India*, **23**(2): 171–174.

JAYARAM, K. C. 1972. Siluroid fishes of India, Burma and Ceylon. 19. Systematic position of the genus *Laguvia* Hora and its relationships.—*Rec. Indian Mus.*, **67:** 385–389.

JAYARAM, K. C. 1977. Aid to the identification of the Siluroid fishes of India, Burma, Sri Lanka, Pakistan and Bangaldesh. 1. Bagridae.—*Occ. Papers* No. 8, *Zool. Surv. India*, 41 pp.

JAYARAM, K. C. 1977a. Aid to the identification of the Siluroid fishes of India, Burma, Sri Lanka, Pakistan and Bangladesh. 2 Siluridae, Schilbeidae, Pangasiidae, Amblycipitidae, Akysidae.—*Occ. Papers* No. 10, *Zool .Surv. India*, 33 pp.

MENON, M. A. S. 1954. Notes on fishes of the genus *Glyptothorax* Blyth.—*Rec. Indian Mus.*, **52**(1): 27–54.

MIRZA, M. R. AND NIJSSEN, H. 1978. *Glyptothorax stocki*, a new sisorid catfish from Pakistan and Azad Kashmir (Siluriformes, Sisoridae).—*Bull. zool. Mus. Univ. Amsterdam*, **6**(11): 79–82, 1 pl.

MISRA, K. S. 1976. *The Fauna of India and the adjacent countries.*—Pisces, Ed. 2, **3,** Teleostomi: Cypriniformes; Siluri.—Delhi: Manager of Publications, xxi+367 pp., 15 pls.

MOTWANI, M. P. AND DAVID, A. 1958. Fishes of the river Sone with observations on the zoogeographic significance.—*J. zool. Soc. India*, **9:** 9–15.

MUKERJI, D. D. 1933. Report on Burmese fishes collected by Lt. Col. R. W. Burton from the tributary streams of the Mali Hka river of the Myitkyina district (upper Burma). Part I. *J. Bombay nat. Hist. Soc.*, **36:** 812–831, 3 pls.

MUKERJI, D. D. 1936. Report on fishes. Part II: Sisoridae and Cyprinidae.—*Mem. Conn. Acad.*, **10:** 323–359.

NORMAN, J. R. 1925. Two new fishes from Tonkin, with notes on the siluroid genera *Glyptosternum, Exostoma* etc.—*Ann. Mag. nat. Hist.*, (9) **15:** 570–575.

SHAW, G. E. AND SHEBBEARE, E. O. 1938. The fishes of northern Bengal.—*J. Roy. Asiat. Soc. Bengal Sci.*, **3**(1): 1–137, 6 pls.

SILAS, E. G. 1951. On a collection of fish from the Anamalai and Nelliampathi hill ranges (Western ghats) with notes on its zoogeographical significances.—*J. Bombay nat. Hist. Soc.* **49:** 670–681.

TILAK, R. 1963. The osteocranium and the Weberian apparatus of the fishes of the family Sisoridae (Siluroidea): a study in adaptation and taxonomy. *Zeitschr. Wiss. Zool. Leipzig* **168** (3–4): 281–320.

TILAK, R. AND TALWAR, P. K. 1976. A taxonomic reassessment of *Hara horai* (Pisces: Siluroidea) with a designation of Neotype.—*Newsl. Zool. Surv. India*, **2**(6): 245–247.

EXPLANATIONS FOR TEXT-FIGURES

1 A. Ventral view of *Glyptothorax pectinopterus* to show adhesive apparatus (*After* S.L. Hora 1952, *J. Asiat. Soc.*, **18**(2), p. 125, text-fig. 2, fig. a).

1 B. Ventral view of *Pseudecheneis sulcatus* to show adhesive apparatus. (*After* S.L. Hora, 1952. *J. Asiat Soc.*, **18**(2), p. 124, text-fig. 1 fig. C).

1 C. Ventral view of *Erethistes pussilus* to show absence of adhesive apparatus. (*After* S.L. Hora, 1949. *Rec. Indian Mus.*, **47**(1), pl. 1, fig. 3).

2 A. Outline drawing of lateral view of *Conta conta* to show prolonged caudal fin ray, oval shaped compressed head. (*After* S.L. Hora, 1949. *Rec. Indian Mus.*, **47**, p. 197, fig. 4C.)

2 B. Outline drawing of lateral view of *Glyptothorax anamaliensis* Silas to show caudal fin without any prolongation, flat and depressed head. (*After* E.G. Silas, 1951. *J. Bombay nat. Hist. Soc.*, **49**, fig. 1, 2, 3.)

3. Left pectoral spine of *Erethistes pussilus* to show divergent serrations. (*After* S.L. Hora, 1949. *Rec. Indian Mus.*, **47**, p. 185, TF 2.)

4 A. Ventral view of head of *Nangra viridescens* to show insertion of mandibular barbels at different levels; gill membranes free from isthmus, and ventral surface of head flat and broad. (*After* S.L. Hora & N.C. Law, 1941. *Rec. Indian Mus.*, **43**(1), fig. 7.)

4 B. Ventral view of head of *Gagata gagata* to show insertion of mandibular barbels at same levels, gill membranes broadly united with isthmus and ventral surface of head compressed and narrow. (*After* S.L. Hora & N.C. Law, 1941. *Rec. Indian Mus.*, **43**(1) fig. 1.)

5 A. Lateral view of *Sisor rhabdophorus* to show prolonged caudal fin ray, body with bony plates, small gill openings, adipose fin in the form of spine. Drawn from a specimen.)

5 B. Lateral view of *Bagarius bagarius* to show prolonged caudal fin rays, wide gill openings, smooth, long adipose fin. (*After* S.L. Hora, 1939. *J. Bombay nat. Hist. Soc.*, **40**(4), p. 587, fig. 1.)

6 A. Lateral view of *Hara hara* to show annulated barbels. (*After* S.L. Hora, 1949. *Rec. Indian Mus.* **47**, p. 200.)

6 B. Lateral view of *Laguvia shawi* to show emarginate caudal fin, barbels without annulations and tubercles on body. (Drawn from a specimen.)

7 A. Ventral view of head and anterior part of body of *Glyptosternum reticulatum* to show post-labial groove interrupted. (*After* S.L. Hora & E.G. Silas, 1952. *Proc. nat. Inst. Sci. India*, p. 311, TF 20.)

7 B. Ventral view of head and anterior part of body of *Exostoma labiatum* to show post-labial groove continuous. (*After* S.L. Hora & E.G. Silas, 1952. *Proc. nat. Inst. Sci. India* p. 311, TF 20.)

8 A. Drawing of dentition of *Exostoma labiatum* to show upper jaw teeth in two well separated oar-shaped patches. (Drawn from a specimen No. F. 118191/1.)

8 B. Drawing of dentition of *Myersglanis blythii* to show all teeth in both jaws conical and pointed. (Drawn from Cat. 599 ASB, Type.)

9 A. Drosal view of head and anterior part of body of *Gagata gagata* to show median longitudinal groove extending to end of occipital process. Tip of pectoral fin tinged black. (*After* S.L. Hora & N.C. Law. 1941. *Rec. Indian Mus.*, **43**(1), pl. 1, fig. 1.)

9 B. Dorsal view of head and anterior part of body of *Gagata sexualis* Tilak to show maxillary barbels longer than head, median longitudinal groove not extending to end of occipital process. (*After* Raj Tilak, 1970. *Zool. Meded.* **44**(4), p. 207, fig. 1.)

9 C. Ventral view of *Gagata cenia* to show presence of finger like processess in between mandibular barbel, and the tip of pectoral fin plain. (*After* S.L. Hora & N.C. Law, 1941. *Rec. Indian Mus.*, **43**(1), pl. 1, fig. 5.)

10 A. Lateral view of *Nangra nangra* to show outer mandibular barbels extending beyond pectoral fin, nasal barbels longer than head, and dorsal fin with nine or ten rays. (Drawn from specimen No. F. 13501/1, Nawabgunge, W. Bengal.)

10 B. Lateral view of *Nangra viridescens* to show maxillary barbels with stiff bases. (Drawn from specimen No. F. 1052/2, Bombay.)

10 C. Ventral view of *Nangra itchkeea* to show absence of finger-like process between bases of mandibular barbels. (*After* S.L. Hora & N.C. Law, 1941. *Rec. Indian Mus.*, **43**(1) pl. 1, fig. 3.)

11. Lateral view of *Erethistes pussilus* Müller & Troschel. (*After* S.L. Hora 1949. *Rec. Indian Mus.*, **47,** pl. 1, fig. 1.)

12. Dorsal view of head and anterior part of body of *Erethistoides montanapipri* Hora. (*After* S.L. Hora, 1949. *Rec. Indian Mus.*, **47,** pl. 1, fig. 8.)

13 A. Dorsal view of head of *Hara jerdoni* to show occipital process reaching basal bone of dorsal fin.

13 B. Dorsal view of head of *Hara hara* to show occipital process not reaching basal bone of dorsal fin and pectoral spine shorter than head length. (Both figures *After* S.L. Hora, 1949. *Rec. Indian Mus.*, **47**(2) fig. 2 & 7.)

14. Ventral view of head and part of body of *Conta conta* (Ham.) to show well developed adhesive apparatus. (*After* S.L. Hora, 1951. *Rec. Indian Mus.*, **47,** pl. 13, fig. 5.)

15 A. Lateral view of *Glyptosternum maculatum* to show adipose dorsal fin free from caudal fin. (Drawn from a specimen No. F. 2145/1, Gyantse, Sikkim.)

15 B. Lateral view of *Glyptosternum reticulatum* to show adipose dorsal fin continuous with caudal fin. (Drawn from a specimen No. F. 2386/2, Tehsil stream, Kashmir.)

16. Lateral view of *Laguvia asperus* to show colour pattern, smooth dorsal spine, and position of pelvic fin. (*After* B.L. Chaudhuri, 1919. *Rec. Indian Mus.*, pl. 22, fig. 2.)

17. Lateral view of *Laguvia shawi* to show colour band on body and tuberculated skin (*After* S.L. Hora, 1921. *Rec. Indian Mus.*, **22,** pl. 29, fig. 2.)

18. Dorso-lateral view of *Laguvia ribeiroi ribeiroi* to show colour bands on body, serrated nature of spine. (*After* S.L. Hora, 1921. *Rec. Indian Mus.*, **22,** pl. 29, fig. 3.)

19 A. Ventral view of *Glyptothorax madraspatanum* to show non-plaited paired fins. (Drawn from a specimen from Tenmalai, S. India.)

19 B. Ventral view of *Glyptothorax stoliczkae* to show plaited pectoral fins. (Drawn from specimen No. 1311.)

20 A. Ventral view of *Glyptothorax sinense manipurensis* to show adhesive apparatus on thorax without a central pit. (*After* A.G.K. Menon, 1954. *Rec. Indian Mus.*, **52**(1), p. 23.)

20 B. Ventral view of *Glyptothorax cavia* to show adhesive apparatus with a central pit. (*After* S.L. Hora & M.A.S. Menon, 1950. *Rec. Indian Mus.*, **46,** pl. 2, fig. 5.)

21 A. Ventral view of *Glyptothorax housei* to show well developed ahesive apparatus and long mandibular barbels. (*After* A.W.C.T. Herre, 1942. *Stanford. Ichthyol. Bull.*, **2,** p. 118.)

21 B. Ventral view of *Glyptothorax conirostrae poonaensis* to show poorly developed adhesive apparatus and shorter mandibular barbels. (*After* S.L. Hora, 1938. *Rec. Indian Mus.*, **40,** pl. 7, fig. 6.)

22. Ventral view of *Glyptothorax horai* to show pectoral fins not plaited, adhesive apparatus broader than long. (*After* G.E. Shaw & E.O. Shebbeare, 1938. *Fishes of Northern Bengal*, p. 102.)

23 A. Magnified portion of skin of *Glyptothorax bolia* to show tuberculated skin.

23 B. Magnified portion of skin of *Glyptothorax prashadi* to show denticulated skin.

23 C. Magnified portion of skin of *Glyptothorax kashmirensis* to show granulated skin.

24 A. Ventral view of *Glyptothorax anamaliensis* to show feebly developed adhesive apparatus.

24 B. Lateral view of *Glyptothorax anamaliensis* to show colour bands. (Both figures *after* E.G. Silas, 1961. *J. Bombay nat. Hist. Soc.*, **49,** p. 675.)

25 A. Dorsal view of *Glyptothorax prashadi* to show occipital process reaching basal bone of dorsal fin. (Drawn from specimen No. F. 10848/1.)

25 B. Dorsal view of *Glyptothorax telchitta* to show occipital process not reaching basal bone of dorsal fin. (Drawn from specimen No. 1488 labelled *G. botia.*)

26. Drawing of adhesive apparatuses in (B) *Glyptothorax brevipinnis brevipinnis* and (A) *G, brevipinnis alaknandi* to show the relative length/width of the apparatus. (*After* Raj Tilak, 1969. *J. Inland Fish. Soc. India*, **1,** p. 43, figs. 12 & 11.)

27. Lateral view of *Glyptothorax madraspatanum*-to show dorsal spine with apical serration, length of pectoral spine, colour bands. (After a specimen from Tenmalai, S. India).

28. Lateral view of *Glyptothorax striatus* to show short barbels. (Drawn after a specimen).

29. Lateral view of *Glyptothorax trewavasae* to show colour pattern, papillated lateral line, and tuberculated skin. (*After* S.L. Hora, 1938. *Rec. Indian Mus.*, **40**(4), pl. 7, fig. 3.)

30 A. Lateral view of *Glypothorax saisii* to show body without any colour band. (*After* J.T. Jenkins, 1910. *Rec. Indian Mus.*, **5,** pl. 6, fig. 6.)

30 B. Lateral view of *Glyptothoraxannandalei*. (*After* S.L. Hora, 1923. *Rec. Indian Mus.*, **25**(1), pl. 1, fig. 3.)

31. Lateral view of *Glyptothorax trilineatus* to show three white stripes. (Drawn from a specimen F. 238/2.)

32 A. Lateral view of *Euchiloglanis kamengensis* to show extent of pectoral fin, adipose fin and shape of caudal peduncle. (Drawn from a specimen in the type series.)

32 B. Lateral view of *Euchiloglanis hodgarti* to show extent of pectoral fin, adipose fin and shape of caudal fin. (Drawn from a specimen.)

33 A. Lateral view of *Exostoma vinciguerrae* to show adipose fin confluent with caudal fin. (*After* S.L. Hora, 1923. *Rec. Indian Mus.*, **25**, pl. 3, fig. 1.)

33 B. Lateral view of *Exostoma stuarti* to show adipose fin free from caudal fin. (*After* S.L. Hora, 1923. *Rec. Indian Mus.*, **25**(1), pl. 2, fig. 4.)

34. Lateral view of *Exostoma labiatum* to show pectoral fin with 12 branched rays and gill opening opposite base of pectoral spine. (*After* S.L. Hora, 1923, *Rec. Indian Mus.*, **25** pl. 1, fig. 2.)