

SYSTEMATIC POSITION OF THREE GLYPTOSTERNOID FISHES DESCRIBED BY HAMILTON.

By SUNDER LAL HORA, *D.Sc., F.R.S.E., F.Z.S., F.R.A.S.B., F.N.I.,*
Director, and M. A. S. MENON, *M.Sc., Assistant, Zoological Survey*
of India, Calcutta.

(Plate II)

Of the 49 species of Catfishes described by Hamilton¹ in his "Gangetic Fishes", three have doubtfully been assigned by later workers to *Glyptothorax* Blyth, viz., *Pimelodus telchitta* from Bengal and Bihar (p. 185), *P. botius* from Northern Bengal (p. 192) and *P. cavia* from Northern Bengal (p. 188). It is most surprising that Hamilton, very keen observer as he was, did not notice the well-marked, plaited, adhesive apparatus on the chest region of these species. His descriptions were published without any figures and he did not preserve any specimens. In view of these handicaps, the specific limits of these species have not been well defined and it is the object of this note to elucidate their taxonomic position.

Pimelodus telchitta was doubtfully referred by Günther² to *Glyptosternum* in a foot-note with the remark that "The unpublished drawing shows 11 rays, and all the barbels shorter than the head." This M. drawing was reproduced by one of us³ in 1929 but without any comments on the systematic position of the species. In 1871, Day⁴ redescribed this species but did not mention the locality of his specimens. Later in 1877, Day⁵ gave a description of the species with figure and noted its distribution as "Punjab, N. W. Provinces, Bengal and Bihar". The same description was repeated by him in his volume on Fishes in the *Fauna of British India* series (Vol. I, p. 199; 1889). In 1923, one of us⁶ recognised *G. telchitta* in the sense in which Day had applied it and for lack of sufficient material he did not make any further comments on the taxonomy of the species. Fortunately, a considerable amount of fresh material has now become available in the collection of the Zoological Survey of India from North-east Bengal, Bihar and U. P. and it is, therefore, possible to define this species with a fair degree of accuracy.

A careful analysis of Hamilton's description of *Pimelodus botius* and its comparison with that of *P. telchitta* shows that the two species do not differ from each other in any fundamental character. The following table gives the characteristic features of the two species as described by Hamilton :—

Pimelodus telchitta.

Pimelodus botius.

- | | |
|---|---|
| <p>1. Caudal fin divided into two nearly equal lobes.</p> <p>2. Opaque, rough reddish body, having on each side one faint stripe.</p> | <p>Caudal fin divided into two equal lobes.</p> <p>Opaque, brownish, scabrous body.</p> |
|---|---|

¹ Hamilton, F., *An Account of the Fishes found in the River Ganges and its branches* (Edinburgh: 1822).

² Günther, A., *Cat. Fish. Brit. Mus.* V, p. 185 (1864).

³ Hora, S. L., *Mem. Ind. Mus.* pl. xxi, fig. 3 (1929).

⁴ Day, F., *Proc. Zool. Soc. London*, p. 288 (1871).

⁵ Day, F., *Fish. India*, p. 498, pl. cxvi, fig. 2 (1877).

⁶ Hora, S. L., *Rec. Ind. Mus.* XXV, p. 28 (1923).

Pimelodus telchitta.*Pimelodus botius*.

- | | |
|---|--|
| 3. A. 13 ; D. 8. | A. 11 ; D. 6. |
| 4. Long in <i>proportion</i> to its breadth, tapers gradually to the tail, and is scarcely compressed at the sides. | Long in <i>proportion</i> to its breadth, sharp at both ends, and scarcely compressed. |
| 5. Head small, oval and sharpish ; covered with bony plates. | Head small, oval, rather blunt ; covered with a very rough thick skin. |
| 6. All tendrils shorter than head. | All tendrils shorter than head. |
| 7. Mouth placed under and behind extremity of nose. | Mouth below and behind the extremity of nose. |
| 8. Lips fleshy ; teeth not visible. | Lips fleshy ; no teeth. |
| 9. Nostrils nearer the jaw than eye. | Nostrils nearer the jaw than eye. |
| 10. There is no slit under the throat. | There is no slit under the throat. |
| 11. Vent rather behind the middle. | Vent near middle of body. |
| 12. Dorsal spine smooth and pectoral indented behind. | Dorsal spine smooth and pectoral indented behind. |

Day, who regarded the two species as valid, recognised them on the following characters :

Glyptosternum botia, A. 11-12. Pupil of eyes transversely oval. Maxillary barbels reach to below the hind edge of the eye. Skin roughened with small spinate tuberosities. Jumna and rivers of Northern Bengal.

Glyptosternum telchitta, A. 11. Pupil of eyes circular. Maxillary barbels reach to below the hind edge of eyes. Skin looks as if it had scales embedded in it. Punjab, N. W. Provinces, Bengal and Behar.

We have examined Day's originals of his figures in the *Fishes of India* and feel that they cannot be separated specifically. The texture of the skin depends on preservation and the form of the pupil is not a dependable character, especially as the eyes are subcutaneous and greatly reduced. In 1923, Hora (*loc. cit.*, p. 27) was able to recognise this species only in the sense in which Day had used the name. An examination of fresh material from various parts of the overlapping ranges of the two species shows that they are conspecific.

Considerable uncertainty has, however, prevailed with regard to Hamilton's *Pimelodus cavia*, for even Day only gave quotations from Hamilton's description in his *Fishes of India* and the "Fauna" volume. Hamilton discovered this species "in the northern rivers of Bengal" and remarked on its affinity to *Pimelodus cous* Lacépède. With these two clues, we hunted for this species among the records of fishes known from Northern Bengal and fixed up *Glyptothorax lineatus* Day) as the likely species. Day had found this species in the river Jumna (? Bengal) and at Suddya in Upper Assam. Shaw and Shebb are¹ found it in "Small rivers of the Terai (Sivoke River) and Duars (Ghish and Chel Rivers)" When the specimens were compared with Hamilton's description, there seemed no doubt that Day's *G. lineatus* must be regarded as identical with Hamilton's *G. cavia*. The form of the head and mouth are very characteristic of this species.

¹ Shaw, G. E. & Shebbeare, E. O., *Journ. Roy. As. Soc. Bengal. Science*, III, p. 102, 1937 (1938).

An examination of the entire material of *Glyptothorax* has further shown that *G. cavia* also embraces *G. burmanicus* Prashad & Mukerji¹ from the Myitkyina District in Burma. It will thus be seen that Hamilton's *G. cavia* is not only found in Northern Bengal (type locality), but in Assam and Burma as well. We propose to give below full descriptions of *G. telchitta* and *G. cavia* in the light of the above discussion.

***Glyptothorax telchitta* (Hamilton).**

(Plate II, figs. 1-3.)

- 1822 *Pimelodus telchitta*, Hamilton, *Gangetic Fishes*, pp. 185, 378.
 1822. *Pimelodus botius*, Hamilton, *Ibid.*, pp. 192, 378.
 1871. *Glyptosternum telchitta*, Day, *Proc. Zool. Soc. London*, p. 228.
 1877. *Glyptosternum telchitta*, Day, *Fish. India*, p. 498, pl. cxvi, fig. 2.
 1877. *Glyptosternum botia*, Day, *Ibid.*, p. 497, pl. cxii, fig. 4.
 1889. *Glyptosternum telchitta*, Day, *Faun. Brit. India*, Fish. I, p. 199.
 1889. *Glyptosternum botium*, Day, *Ibid.*, p. 198.
 1923. *Glyptothorax botia*, Hora, *Rec. Ind. Mus.* XXV, p. 27.
 1923. *Glyptothorax telchitta*, Hora, *Ibid.*, p. 28.
 1929. *Pimelodus telchitta*, Hora, *Mem. Ind. Mus.* IX, pl. xxi, fig. 3 (Hamilton's drawing published).
 1939. *Glyptothorax botia*, Das, *Rec. Ind. Mus.* XLI, p. 448.

D. 1/6-7; A. 9-12; P. 1/7-9; V. 6, C. 16-18+.

Glyptothorax telchitta is a more or less spindle-shaped fish, being deepest at the region of the rayed dorsal fin. The dorsal profile rises gently from the tip of the snout to the base of the dorsal, thereafter sloping gradually to the base of the caudal fin. The ventral profile is less arched and gently convex as far as the origin of the pelvic fins and thereafter gradually rises to the base of the caudal fin. Both the head and the body are subcylindrical and stream-lined. The head is bluntly pointed anteriorly; its length is contained from 4.1 to 4.6 times in the standard length; its height at the occiput is contained from 1.3 to 1.6 times and its width 1.2 to 1.4 times in its length. The eyes are small and dorso-lateral in position; their diameter is contained from 10.0 to 11.7 times in the length of the head. The snout is almost equal to half the length of the head. The interorbital width is contained from 3.2 to 3.7 times in the width of the head. The mouth is inferior and horizontal; the width of its gape is almost equal to half the length of the snout; the lips are papillated and reflected round the corner. The teeth in the jaws are villiform; those in the upper jaw form a narrow, continuous band while in the lower jaw the band is interrupted in the middle. The nasal openings are close to the tip of the snout, and separated from it by a distance equal to the diameter of the eye. The nasal barbels are nearly as long as the distance between their bases; the maxillaries extend only upto the eyes; the outer mandibulars are almost half as long as the snout while the inner mandibulars are as long as the gape of the mouth. The gill-openings form spout-like, channelled structures on the ventral surface in front of the bases of the pectoral fins. The gill-membrane is flap-like near the upper angle of the opening.

¹Prashad, B. & Mukerji, D. D., *Rec. Ind. Mus.* XXXI, p. 184, fig. 5, pl. vii, fig. 3 (1929).

The depth of the body is contained from 5.5 to 6.9 times in the standard length. The caudal peduncle is 3.0 to 3.8 times as long as high. The dorsal fin commences midway between the tip of the snout and the adipose dorsal, its height is almost equal to the length of the snout. When the skin is removed from the spine, it is found to be smooth along both the edges. The pectoral spine is strong and broad; it is denticulated internally. The pectoral fin extends nearly to the middle of the base of the dorsal fin and is about equal to the head behind the base of the nasal barbels; it is separated from the pelvic by a considerable distance. The pelvic fins are usually longer than the dorsal spine and extend only up to the vent. There is a small anal papilla. The anal fin is situated opposite the adipose dorsal. The caudal fin is deeply forked and the lobes are more or less equal.

The adhesive apparatus on the chest is spindle-shaped without any central pit.

The colour in the preserved specimens is darkish brown on the dorsal, and lateral regions, being dirty-yellow below. The head and sides and the fins are mottled with dark spots. The anal, dorsal, caudal and paired fins are marked with spotted bands. The skin is rough with horny tubercles.

Glyptothorax telchitta is represented in the collection of the zoological Survey of India from the following localities:—

Register No.	Locality.	Donor or Collector.
F 81/2	Rihand Dam Site, Mirzapur Dt., U. P.	Drs. H. A. Hafiz & K. S. Misra.
F 10268/1	Jharahi R., Siripur, Saran Dt., Bihar.	Mr. M. Mackenzie.
F 10274/1	Siripur, Saran Dt., Bihar.	Do.
F 5374/1	Do.	Do.
F 13326/1	Damodar R. near Ramgarh town, Hazaribagh Dt., Bihar.	Dr. H. S. Rao.
F 6887/1	Mawai, Bara Banki, U. P.	Mr. M. M. Khan.
F 9735/1 (Cat. 580)	Birbhum, Bengal.	Museum Collector (A. S. B.).
F 11377/1		
1314	No locality.	Purchased from Dr. F. Day; Original of Day's pl. cxvi, fig. 2 (<i>G.</i> <i>telchitta</i>).
1488	"Jumna".	Purchased from Dr. F. Day; Original of Day's pl. cxiii, fig. 4 (<i>G.</i> <i>botium</i>).

Distribution.—United Provinces (Vindhyan Mountains), Bihar and Northern Bengal. Its record from the Punjab needs confirmation.

Measurements in millimetres

—	F 81/2					F 10208/1	F 10274/1	F 5374/1	F 13326/1				F 6887/1	F 9735/1			F 11377/1		1314	1468
	85.5	63.2	68.5	69.0	49.5				64.5	61.3	61.2	44.3		34.0	42.5	37.0	45.2	60.0		
Standard length	85.5	63.2	68.5	69.0	49.5	64.5	61.3	61.2	44.3	34.0	42.5	37.0	45.2	60.0	52.8	36.0	63.0	67.5	68.0	76.4
Length of head	20.8	15.0	16.0	16.0	11.5	14.0	14.8	14.3	10.3	8.0	9.5	9.0	11.0	13.5	12.0	8.5	14.3	16.0	15.0	17.2
Height of head at occiput	13.5	10.0	11.0	11.0	7.8	10.7	9.8	9.9	6.5	5.0	6.2	5.4	7.0	9.0	8.0	5.4	9.5	9.8	11.0	10.4
Width of head	15.0	11.0	12.0	11.9	8.5	11.2	10.6	10.9	7.7	5.8	7.5	6.4	8.0	10.2	9.2	6.3	10.9	11.6	11.8	13.0
Length of snout	10.0	7.5	7.2	7.7	5.5	7.0	7.3	7.0	4.8	4.0	4.4	4.0	5.0	6.0	5.7	3.5	7.0	7.5	7.0	8.4
Diameter of eye	1.9	1.5	1.5	1.5	1.0	1.3	1.4	1.3	1.0	0.8	0.8	0.8	1.0	1.2	1.2	0.8	1.3	1.5	1.5	1.5
Interorbital width	4.0	3.2	3.2	3.2	2.6	3.3	3.0	3.3	2.3	1.6	2.2	2.0	2.3	3.0	2.8	1.8	3.3	3.2	3.0	4.0
Depth of body	14.5	11.0	12.8	12.2	8.0	11.6	10.0	10.2	7.2	5.0	6.8	5.3	7.2	9.0	8.0	5.2	10.8	11.0	10.0	12.0
Length of caudal peduncle	18.3	13.0	14.0	14.5	11.0	15.0	13.5	13.2	10.2	7.2	9.0	7.6	9.4	13.5	10.0	6.0	15.0	15.0	15.0	17.3
Least height of caudal peduncle.	5.0	3.8	4.0	4.0	2.8	4.5	4.2	4.0	3.0	2.2	3.0	2.5	3.0	4.0	3.0	2.0	3.2	3.2	3.4	4.0
Longest ray of dorsal	13.8	11.0	11.5	12.0	9.5	11.8	10.5	9.3	8.9	7.0	8.2	7.0	8.2	12.0	10.0	8.0	10.5	11.4	D	15.0
Length of dorsal spine	10.3	8.0	8.9	9.0	7.0	8.8	8.0	6.3	6.2	5.0	6.7	5.0	6.8	9.0	8.0	5.0	7.0	8.4	8.3	10.8
Length of pectoral	15.0	12.0	12.0	13.0	9.0	12.0	10.5	10.2	8.4	7.7	9.0	7.3	9.0	12.0	10.0	8.2	11.3	11.7	12.5	15.8
Length of pectoral spine	12.5	10.8	10.8	11.5	8.0	9.6	8.8	7.0	6.5	5.5	6.4	5.2	6.5	9.5	9.0	5.2	9.0	9.0	11.0	12.3
Length of pelvic	11.0	9.0	9.0	10.0	7.0	8.5	9.4	8.3	6.5	5.2	6.0	6.0	6.6	8.5	8.0	6.0	8.3	8.7	10.0	10.8
Longest ray of anal	13.3	11.4	11.5	12.0	9.0	11.5	11.4	10.0	9.0	7.3	8.3	7.0	10.0	11.8	11.0	7.5	11.0	11.2	D	14.9
Length of base of anal	13.5	11.0	11.8	11.5	8.7	9.7	9.6	9.8	8.0	6.0	6.3	6.0	8.8	11.0	8.5	6.2	11.0	10.8	10.5	12.0
Length of base of adipose dorsal.	10.0	6.8	7.0	8.0	5.5	6.8	5.8	7.0	5.2	4.2	5.0	4.6	7.0	6.5	6.5	5.0	7.0	8.6	6.5	8.2

Glyptothorax cavia (Hamilton).

(Plate II, figs. 4, 5.)

1322. *Pimelodus cavia*, Hamilton, *Gangetic Fishes*, pp. 188, 378.
 1877. *Euglyptosternum lineatum*, Day, *Fish. India*, p. 500, pl. cxvi, fig. 7.
 1889. *Euglyptosternum lineatum*, Day, *Faun. Brit. India*, Fish. I, p. 202, fig. 73
 1923. *Glyptothorax lineatus*, Hora, *Rec. Ind. Mus.* XXV, pp. 9, 10, fig. 1a.
 1929. *Glyptothorax burmanicus*, Prashad & Mukerji, *Rec. Ind. Mus.* XXXI
 p. 184, fig. 5, pl. vii, fig. 3.

D. 1/6; A. 12; P. 1/9; V. 6; C. 18+.

In *Glyptothorax cavia*, the dorsal profile rises gently from the tip of the snout to the base of the dorsal fin and thereafter it slopes down gradually to the base of the caudal fin. The ventral profile is straight and horizontal as far as the anal fin and thereafter it rises gradually to the base of the caudal fin. Both the head and the body are broad and flattened. The head is broadly rounded anteriorly; its length is contained from 3.5 to 3.6 times in the standard length; its height at the occiput is contained nearly 2 times and its width 1.3 times in its length. The eyes are small and dorso-lateral in position; their diameter is contained from 10.0 to 12.0 times in the length of the head. The snout is almost equal to half the length of the head. The interorbital width is contained from 3.2 to 3.7 times in the width of the head. The mouth is inferior, broad and horizontal; the width of its gape is almost equal to the length of the snout; the lips are papillated and reflected round the corner. The teeth in the jaws are villiform; those in the upper jaw form a broad, continuous band while in the lower jaw the band is interrupted in the middle. The nasal openings are close to the tip of the snout, separated from it by a distance equal to the diameter of the eye. The nasal barbels are almost as long as the distance between their bases; the maxillaries extend slightly beyond the base of the pectoral spine the outer mandibulars are as long as the postorbital part of the head while the inner mandibulars are as long as the nasals. The gill-openings form spout-like structures on the ventral surface in front of the bases of the pectoral fin. The gill-membrane is flap-like near the upper angle of the opening.

The depth of body is contained from 5.9 to 6.6 times in the standard length. The caudal peduncle is nearly two and a half times as long as high.

The dorsal fin commences midway between the tip of the snout and the adipose dorsal. In the two Indian specimens, its height is greater than the depth of body below it whereas in the Burmese example it is somewhat shorter. The dorsal spine is strong and almost equal to the head excluding the snout. When the skin is removed, it is found to be roughened along both edges. The pectoral spine is broad and strong; it is denticulated internally. The pectoral fin almost extends to the end of the base of the dorsal fin and is equal to the head behind the base of the nasal barbel; it is separated from the pelvic by a considerable distance. The pelvic fins are longer than the dorsal spine and extend beyond the vent but not as far as the base of the anal fin. There is a small anal papilla. The anal fin is situated opposite the adipose dorsal. The caudal fin is deeply forked with the lower lobe slightly the longer.

The adhesive apparatus on the chest is very characteristic ; it is incomplete posteriorly but surrounds a deep central pit which is probably capable of suctional action. The adhesive ridges show that the structure is very closely applied to the rocks and stones in rapid waters.

The colour in the preserved specimens is brown o'ivaceous above and dirty yellowish below. The sides and the dorsal surface are mottled with deep coloured spots and the bases of the fins are provided with dark bands. There are indications of spotted bands on the pectoral, pelvic, anal and caudal fins.

Glyptothorax cavia is represented in the collection of the Zoological Survey of India from the following localities :—

Register No.	Locality.	Donor or Collector.	Remarks.
1312	Jumna (? Bengal).	Purchased from Dr. F. Day.	Type of <i>G. lineatus</i> : Original of Day's pl. cxvi. fig, 7.
F 10877/1	Sankha R., Myitkyina Dt., U. Burma.	Dr. B. N. Chopra.	Type of <i>G. burmanicus</i> .
F 11375/1	Rivers below Darjeeling, Bengal.	Messrs. G. E. Shaw & E. O. Shebbeare.	

In discussing the relationships of *Glyptothorax burmanicus*, Prashad and Mukerji¹ referred to Hora's work on the revision of the genus *Glyptothorax*² but overlooked the fact that Day's *G. lineatus* had not been included in the key to the species on account of its characteristic band of teeth in the upper jaw.

Distribution.—Northern Bengal, Assam and Burma.

Measurements in millimetres.

	1312	F 10877/1	F 11375/1
Standard length	122.2	106.0	165.5
Length of head	33.9	29.5	46.5
Height of head at occiput	16.8	15.2	24.0
Width of head	26.0	22.5	37.5
Length of snout	17.6	14.5	23.0
Diameter of eye	2.8	2.5	4.5
Interorbital width	8.7	6.0	10.0
Depth of body	18.8	19.0	28.0
Length of caudal peduncle	7.8	7.5	11.5
Longest ray of dorsal	21.2	17.8	30.5
Length of dorsal spine	17.3	13.5	23.5
Length of pectoral	25.1	21.0	38.0
Length of pectoral spine	24.0	16.0	30.5
Length of pelvic	19.1	14.5	25.5
Longest ray of anal	20.1	19.5	32.5
Length of base of anal	14.7	13.2	23.0
Length of base of adipose dorsal	13.8	14.5	24.0

¹ Prashad, B. & Mukerji, D. D., *Rec. Ind. Mus.* XXXI, p. 185 (1929).

² Hora, S. L., *Rec. Ind. Mus.* XXV, pp. 8-30 (1923).