

# Notes on Malayan Fishes in the Collection of the Raffles Museum, Singapore

## Part 4

### The Cyprinid Fishes

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#### Introduction

IN RESPONSE to a request made to the authorities of the Raffles Museum, Singapore, by Dr. S. L. Hora in 1940, for an examination of the fresh-water fishes preserved in that Museum with a view to studying the zoogeographical relations of the countries comprising the Oriental Region, Mr. M. W. F. Tweedie, Director of the Raffles Museum, very readily agreed to send him the material in lots—first the Siluroids, then the Homalopterids and the Cobitids and afterwards the entire collection of the Cyprinids. The material was partly worked out and the results were published in three parts (*Bull. Raffles Mus.* No. 17, 1941), the first comprising the families Siluridae, Bagridae, Amblycepidae, Akyridae, Sisoridae, Chacidae, Schilbeidae and Clariidae, the second Cobitidae and the third Homalopteridae. Further work on this interesting collection was interrupted during the war when the Survey office had to be shifted from Calcutta to Banaras consequent on Japan's entry in the hostilities and owing to the fact that Dr. Hora's services were loaned for five years as Director of Fisheries, Bengal. When I joined the Survey in 1948 as a research trainee, Dr. Hora kindly entrusted this collection to me for study and report. Though this work was immediately commenced it had to be again postponed for sometime as I accepted a Fellowship of the N. I. S. I. and had, therefore, to carry out the researches for which the Fellowship was awarded.

The Cyprinid collection contains three new subspecies, *Puntius daruphani tweediei*, *Puntius leiacanthus malayensis* and *Osteochilus hasseltii tweediei* all of which have been fully described in this paper. Also notes on certain interesting fishes have been given and the occurrence of *Chela laubuca* (Ham.), *Paralaubuca riveroi* (Fowler), *Rasbora*

*dusonensis* (Blkr.) and *Lobocheilus cornutus* Smith has been noted here for the first time from the Malay Peninsula. The new forms described are related to species which inhabit either the neighbouring countries of the Asiatic continent or the Archipelago to the south of the Malay Peninsula.

In the next paper of this series it is hoped to give an account of the geographical range of all the fresh-water fishes of the Malay Peninsula and to trace the origin and migration of this fauna.

I am greatly indebted to Dr. S. L. Hora for having given me the opportunity to study this interesting collection and for his kind help and guidance in the course of my work. My best thanks are also due to Mr. M. W. F. Tweedie, Director of the Raffles Museum for his keen interest in the study of this material and extremely helpful suggestions.

**Systematic Account**

Order: Cypriniformes

Suborder: Cyprinoidei

Family Cyprinidae

Subfamily Abramidinae

1. *Chela laubuca* (Ham.)

WEBER & DE BEAUFORT, 1916, pp. 48-49.

SMITH, 1945, pp. 81-82.

One, 67 mm., Kaki Bukit, Perlis; five, 73 to 84.5 mm.,<sup>✓</sup> Condor River, Kelantan. *New to the Malay Peninsula.*

2. *Macrochirichthys macrochirus* (C.V.)

WEBER & DE BEAUFORT, 1916, pp. 54-55.

One, 340 mm., Chenderoh Lake, Perak.

3. *Oxygaster anomalura* Van Hasselt

WEBER & DE BEAUFORT, 1916, pp. 52-53 (*Chela oxygaster*).

SMITH, 1945, pp. 75-76.

Two, 120 mm. each, Mawai District, Johore; one, 177 mm., Chenderoh Lake, Perak; one, 162 mm., River Teris, Pahang; one 87 mm., Kota Tampan, Perak.

4. *Oxygaster hypophthalmus* (Blkr.)

WEBER & DE BEAUFORT, 1916, p. 52.

✓ Five, 55 to 68.5 mm., Kota Tampan, Perak.

NOTES ON MALAYAN FISHES

5. *Oxygaster johorensis* (Steind.)

DUNCKER, 1904, p. 183.  
HERRE, 1940, pp. 28-29.

Four, 23.5 to 45 mm., Bukit Merah Reservoir, Perak.

6. *Oxygaster oxygastroides* (Blkr.)

WEBER & DE BEAUFORT, 1916, pp. 51-52.  
SMITH, 1945, pp. 76-77.

Six, 34 to 66 mm., Johore, five, 42 mm., Kuala Tahan, Pahang,  
one, 55 mm., Kuala Pilah, Negri Sembilan, four, 27.5 to 31.5 mm.,  
Lake Chin Chin, Malacca.

7. *Paralaubuca riveroi* (Fowler)

FOWLER, 1935, p. 108.  
SMITH, 1945, p. 84.

One, 128 mm., Pahang River, off Mentakab., one, 150 mm.,  
Tembeling River, Kuala Atok, Pahang. *New to the Malay Peninsula.*

8. *Rasborichthys altior* Regan

WEBER & DE BEAUFORT, 1916, pp. 55-56.

Two, each 68 mm., Singapore.

Subfamily Rasborinae

9. *Barilius guttatus* (Day)

SMITH, 1945, pp. 159-61.

Three, 162.5 to 280 mm., River Sapia, Pahang.

10. *Brachydanio albolineatus* (Blyth)

WEBER & DE BEAUFORT, 1916, p. 85.  
SMITH, 1945, p. 101.

Four, 30 to 37.5 mm., Sauk, Perak.

11. *Danio regina* Fowler

FOWLER, 1934, p. 342, fig. 6.  
HERRE & MYERS, 1937, pp. 55-58.  
SMITH, 1945, pp. 97-98.

Four, 75 to 111.5 mm., Kaki Bukit, Perlis.

12. *Luciosoma setigerum* (C.V.)

WEBER & DE BEAUFORT, 1916, pp. 87-88.  
SMITH, 1945, pp. 103-104.

Two, 187 and 208 mm., Jalong, Perak, one, 133.5 mm., Kuala  
Kangsar, Perak, one, 174 mm., Kuala Tahan, Pahang.

13. *Luciosoma trinema* (Blkr.)

WEBER & DE BEAUFORT, 1916, pp. 86-87.

One, 183 mm., Lake Chini, Pahang.

14. *Rasbora cephalotaenia* (Blkr.)

WEBER & DE BEAUFORT, 1916, pp. 74-75.  
Five, 46.5 to 86.5 mm., Kota Tinggi, Johore.

15. *Rasbora dorsiocellata* Duncker

WEBER & DE BEAUFORT, 1916, p. 68.  
Two, 40 mm., each, Tasek Bera, Pahang.

16. *Rasbora dusonensis* (Blkr.)

BLEEKER, 1863, pp. 122-23, Atl. tab. cxx fig. 1.  
SAUVAGE, 1883, p. 153.  
Three, 94 to 162 mm., Kuala Kangsar, Pahang; one, 162 mm.,  
Kuala Tahan, Pahang.

Weber and De Beaufort (1916, p. 61) considered *R. dusonensis* as synonym of *R. argyrotaenia*. *R. dusonensis* is a perfectly distinct species with the dorsal fin originating midway between the front margin of the eye and the base of the caudal (instead of midway between the snout and the base of the caudal as in *R. argyrotaenia*). Smith's (1945, pp. 110-112) *retrodorsalis* approximates well with this species and probably prove to be one and the same. *This is new to the Malay Peninsula.*

17. *Rasbora einthovenii* (Blkr.)

WEBER & DE BEAUFORT, 1916, p. 72.  
SMITH, 1945, p. 114.  
Three, 55 to 66 mm., Mandai Road, Singapore; six, 38 to 58 mm.,  
Mawai District, Johore, three, 62.5 to 69.5 mm., Kota Tinggi, Johore.

18. *Rasbora heteromorpha* Duncker

SMITH, 1945, p. 107.  
Four, each about 32 mm., Mawai District, Johore.

19. *Rasbora lateristriata* (Blkr.)

WEBER & DE BEAUFORT, 1916, pp. 76-77.  
SMITH, 1945, pp. 114-115.  
Eight, 78 to 98.5 mm., 2 miles north of Sauk, Perak, six, 44.4 to  
57 mm., Chenderoh Lake, Perak, ten, 71 to 106.5 mm., Kota Tampan,  
Perak; Thirteen, 34 to 98 mm., Jalong, Perak; one, 119 mm., Baling,  
Kedah; ten, 71 to 100.5 mm., Kaki Bukit, Perlis; four, 43.5 to 72 mm.,  
Kedah; sixteen, 25 to 84 mm., Kota Bharu, Kelantan.

20. *Rasbora lateristriata* var. *elegans* Volz.

WEBER & DE BEAUFORT, 1916, p. 78.  
Six, 75.5 to 107 mm., Panti Forest Reserve, Johore; four, 58 to  
98 mm., Kuala Tahan, Pahang; eight, 70 to 105 mm., River Ketil,  
Kelantan.

NOTES ON MALAYAN FISHES

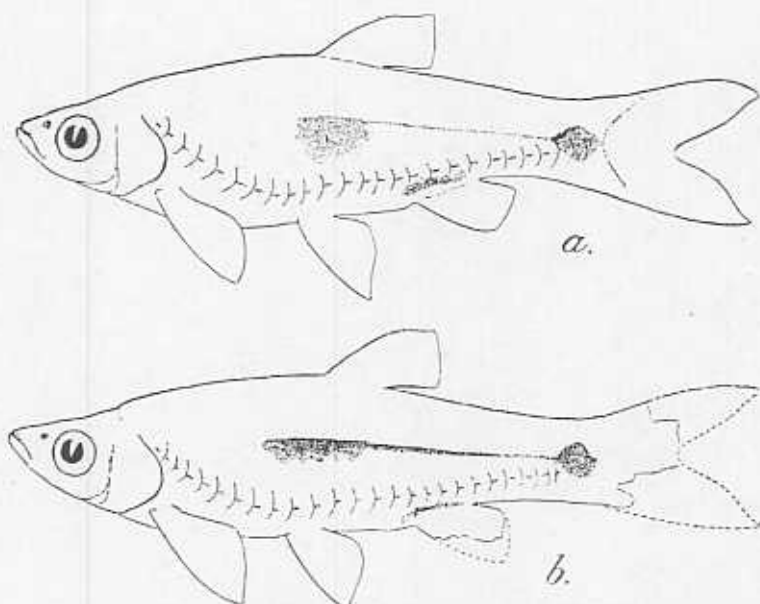


Fig. 1. Lateral view in outline of two specimens of *Rasbora lateristriata* var. *elegans* Volz,  $\times 5/6$ . a, from Johore; b, from Kelantan.

There is considerable colour variation among the specimens in the collection, the most northern specimens have the lateral spots more elongated and produced into a streak than do those from the south.

21. *Rasbora lateristriata* var. *sumatrana* (Blkr.)

WEBER & DE BEAUFORT, 1916, pp. 77-78.

SMITH, 1945, p. 116.

Four, 58 to 66.5 mm., Jalong Perak; two, 55.5 to 58.5 mm., Rengam, Johore; two, 48 mm., Kota Tinggi, Johore; five, 52 to 65 mm., River Ketil, Kelantan.

22. *Rasbora maculata* Duncker

WEBER & DE BEAUFORT, 1916, p. 70.

HERRE & MYERS, 1937, p. 55.

HERRE, 1940, p. 29.

Six, 16.5 to 21.5 mm., Johore.

Herre and Myers (*op. cit.*) pointed out the error of Weber and De Beaufort in retaining this tiny brilliant fish as synonymous with the much larger *Rasbora kalochroma*. *R. maculata* is a distinct species showing a very characteristic colour marking on the body.

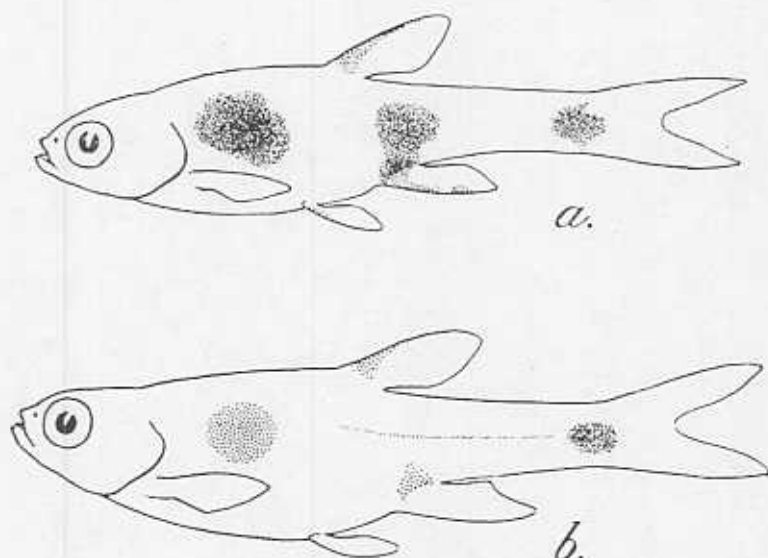


Fig. 2. *a, b*, Lateral view in outline of two specimens of *Rasbora maculata* Duncker from Johore showing variation in the intensity of pigmentation,  $\times 5$ .

23. *Rasbora pauciperforata* (W. and De B.)

WEBER & DE BEAUFORT, 1916, p. 79.

Twenty, 20 to 48.5 mm., Mawai District, Johore; one, 30 mm., Bukit Merah, Perak.

24. *Rasbora taeniata* Ahl

BRITTAN, 1949, pp. 21-28.

Eight, 32 to 44 mm., Mawai District, Johore.

25. *Rasbora trilineata* Steind.

WEBER & DE BEAUFORT, 1916, pp. 67-68.

SMITH, 1945, pp. 112-113.

Eleven, 38 to 65.5 mm., Kota Tampan, Perak.

Subfamily Cyprininae

26. *Acrossocheilus deauratus* (C.V.)

DE BEAUFORT, 1933, p. 34.

SMITH, 1945, p. 200-201.

Two, 123 to 150 mm., Kuala Terla Cameron, Pahang, one, 212.5 mm., River Lumpat, Pahang; four, 90 to 124 mm., Kuala Tahan, Pahang; three, 71.5 to 133.5 mm., West of Ginting Sempak, Selangor;

NOTES ON MALAYAN FISHES

fourteen, 55.5 to 108 mm., River Ketil, Kelantan; five, 80.5 to 162.5 mm., Kota Tinggi waterfalls, Johore; one, 148 mm., Johore (Type of *L. smedleyi* De Beaufort).

27. *Acrossocheilus hexagonolepis* (McClell.)

HORA, 1940, pp. 306-319.

Three, 81.5 to 107 mm., West of Ginting, Sempak, Selangor; three, 129.5 to 158.5, Kuala Terla, Cameron highways, Pahang; two, 99.5 and 139.5 mm., locality slip missing.

28. *Balantiocheilos melanopterus* (Blkr.)

WEBER & DE BEAUFORT, 1916, p. 206.

SMITH, 1945, p. 206.

One, 295 mm., Chenderoh Lake, Perak.

29. *Cyclocheilichthys apogon* (Valenciennes)

WEBER & DE BEAUFORT, 1916, pp. 156-57.

SMITH, 1945, pp. 141-42.

Three, 79 to 116 mm., Kuala Tahan, Pahang; three, 101 to 173 mm., River Galas, Kelantan.

30. *Cyclocheilichthys armatus* (C.V.)

WEBER & DE BEAUFORT, 1916, pp. 163-65

SMITH, 1945, p. 144.

Two, 123.5 and 177.5 mm., Kuala Tahan, Pahang; one, 149.5 mm., River Tabong, Pahang; seven, 56.5 to 93 mm., River Ketil, Kelantan; five, 88.5 to 134 mm., River Galas, Kelantan; three, 128 to 173.5 mm., George V National Park.

31. *Cyclocheilichthys heteronema* (Blkr.)

WEBER & DE BEAUFORT, 1916, p. 156.

SMITH, 1945, pp. 142-43.

Two, 69 and 80 mm., Tasek Bera, Pahang.

32. *Cyclocheilichthys repasson* (Blkr.)

WEBER & DE BEAUFORT, 1916, pp. 160-61.

SMITH, 1945, p. 147.

Seven, 80.5 to 225.5 mm., Kuala Tahan, Pahang.

33. *Labiobarbus cuvieri* (C.V.)

WEBER & DE BEAUFORT, 1916, pp. 115-16.

Three, 76 to 93 mm., Kota Tampan, Perak; one, 182.5 mm., Bukit Merah Reservoir, Perak; four, 131 to 173.5 mm., Kuala Tahan, Pahang; two, 133.5 to 169.5 mm., Kaki Bukit, Perlis; four, 83.5 to 112 mm., Baling, Kedah; four, 166 to 192.5 mm., Chenderoh Lake; two, 149 and 154.5 mm., George V National Park.

34. *Labiobarbus fasciata* (Blkr.)

WEBER & DE BEAUFORT, 1916, 114-15.

One, 204.5 mm., River Lumpat, Pahang.

35. *Labiobarbus festiva* (Heckel)

WEBER & DE BEAUFORT, 1916, p. 118.

Four, 56.5 to 62.5 mm., Kota Tinggi, Johore.

36. *Lobocheilus cornutus* Smith

SMITH, 1945, pp. 242-44.

Seven, 149.5 to 220 mm., Kuala Tahan, Pahang; three, 68.5 to 110 mm., Baling, Kedah; two, about 191 mm. each, George V National Park; one, 155 mm., Kedah. *New to the Malay Peninsula.*

37. *Mystacoleucus marginatus* (C.V.)

WEBER & DE BEAUFORT, 1916, pp. 108-09.

SMITH, 1945, pp. 130-31.

Four, 105 to 120 mm., River Ketil, Kelantan; one, 131.5 mm., Kedah.

38. *Osteochilus brachynotopterus* (Blkr.)

WEBER & DE BEAUFORT, 1916, p. 134.

Five, 78 to 123.5 mm., Kuala Tahan, Pahang.

39. *Osteochilus hasseltii* (C.V.)

WEBER & DE BEAUFORT, 1916, pp. 135-36.

Four, 61.5 to 116 mm., Sauk, Upper Perak; four, 119.5 to 155 mm., Kuala Tahan, Pahang; two, 188 mm., each, River Sedili, Johore; four, 85.5 to 137.5 mm., Kaki Bukit, Perlis; one, 197.5 mm., Chenderoh Dam, Perak; one, 200.5 mm., Bukit Merah Reservoir.

40. *Osteochilus hasseltii tweediei*, subsp. nov.

Seven specimens, 81 to 124 mm. in length, from the rivers Ketil and Condor, Kelantan and three from Kuala Tahan, Pahang, differ markedly from the typical form in the proportion of the depth of their body and in the relative position of their fins. In these specimens the depth of the body is more than three times in the standard length (Depth always less than three times in the typical form), the caudal peduncle is longer than high (Caudal peduncle is as long as or slightly shorter than high in the typical form) and the origin of the anal fin is opposite to or slightly behind the end of the dorsal (considerably in advance in the typical form, the dorsal of which is invariably many-rayed). On account of these differences and also on geographical grounds, I am inclined to consider these specimens as representing a new subspecies of *O. hasseltii*.

D.4/12-13; A.3/5; P.1/13; V.1/8; L.1.34/35; L-tr.5½/1/6½.



NOTES ON MALAYAN FISHES

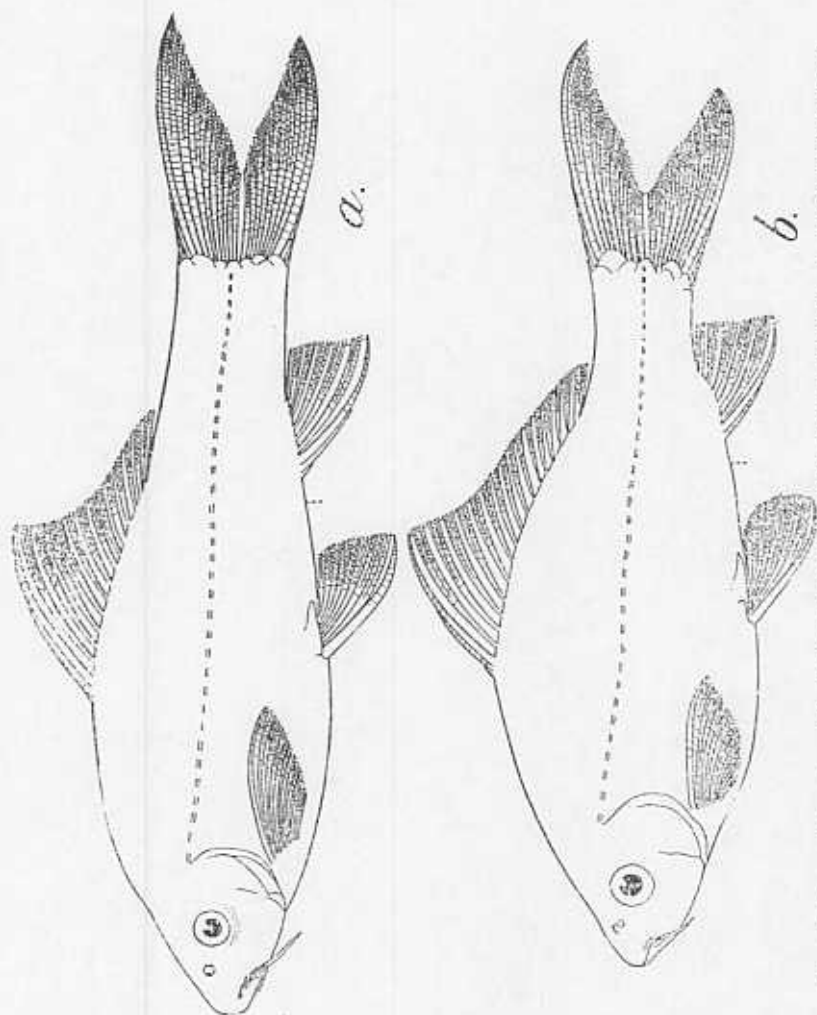


Fig. 3. *Osteochilus hasseltii* (Valenciennes) and its new subspecies. *a*, Lateral view of *O. hasseltii* subsp. *tweediei*, nov.,  $\times \frac{1}{2}$ ; *b*, Lateral view of *O. hasseltii* (Valenciennes),  $\times \frac{1}{2}$ .

The head and the body are not compressed in the adult, though slightly so in the young. The dorsal profile is slightly more arched than the ventral, it is convex from the tip of the snout to the origin of the dorsal fin beyond which it descends very gradually to the base of the caudal fin. The head is rather short, conical and slightly depressed; its length is contained 4-6 times in the standard length, its height at occiput

is contained 1.5 times, and its breadth 1.3 times in its length. The depth of the body is contained 3.2 times in the standard length. The caudal peduncle is longer than high, its height being about 1.2 times in its length; it is surrounded by 16 scales. The eyes are of moderate size and situated in the posterior half of the head; its diameter is contained about 3.6 times in the length of the head, 1.9 times in the inter-orbital width and 1.7 times in the length of the snout. The nostrils are situated in the posterior half of the distance between the tip of the snout and the anterior margin of the eye. The mouth is inferior and horse-shoe shaped. The lips are well developed, entire and continuous around the corners of the mouth, the upper lip being fimbriated and the lower one papillated and confluent with the isthmus. The post-labial groove is broadly interrupted. A rostral and a maxillary pair of barbels are present, the former are almost equal in length to and the latter  $1\frac{1}{2}$  times as long as the diameter of the eye. They are relatively shorter in the young.

The dorsal fin originates slightly in front of the commencement of the pelvics, opposite the 10th scale of the lateral line and separated by 10-11 scales from the occiput. It is situated nearer the tip of the snout than the base of the caudal fin, and has 4 spines and 13 branched rays. The dorsal fin has no osseous spine; it gradually increases in height anteriorly, its maximum height being about equal to the length of the head. The origin of the anal is slightly behind the end of the dorsal; it contains 3 spines and 5 branched rays, the third spine being the longest. The paired fins are subequal and are almost as long as the head. The pectoral is separated from the pelvics by half its own length. The pelvics extend as far as the anal opening; its origin is separated by  $4\frac{1}{2}$  scales from the 11th scale of the lateral line. The caudal fin is deeply emarginate with pointed lobes of almost equal length; it is much longer than the head.

The colour, in spirit, is brownish with 6 to 8 longitudinal lines of black spots, one spot being on every scale and a large round black spot at the base of the caudal fin. This characteristic colouration is very prominent in young specimens; in larger specimens the black round spot at the base of the caudal is completely absent.

*Type-specimen.*—F.  $\frac{324}{2}$  (Holotype); F.  $\frac{325}{2}$  (Paratypes) Zoological Survey of India, Calcutta.

*Locality.*—Kuala Tahan, Pahang (Holotype and 2 Paratypes).  
River Ketil and Condor, Kelantan (4 Paratypes).

NOTES ON MALAYAN FISHES

*Remarks.*—*O. hasselti* is a very widely distributed species in the rivers and lakes on the western coast (Perak, Kuala Lumpur, Malacca and Johore) of the Malay Peninsula and has not been found on the east. *O. hasseltii tweediei* should, therefore, be looked upon as a form getting itself fixed up as a new species in Kelantan and Pahang, on the eastern coast of the Peninsula. This would imply a complete separation of the watersheds of the two areas at least during the Pleistocene and the consequent isolation of the form on the East Coast.

MEASUREMENTS IN MILLIMETRES

Standard length	.. 123.5	106.50	106.0	105.50	104.50	89.0	81.0
Length of head	.. 27.0	24.50	24.0	23.50	24.0	19.50	17.50
Depth of body	.. 39.0	35.50	32.0	35.0	34.50	28.0	27.0
Height of head at occiput	.. 23.0	18.50	18.0	18.0	18.0	15.0	14.50
Width of head	.. 19.50	16.0	16.0	15.0	16.0	13.50	12.0
Diameter of eye	.. 6.50	6.0	6.0	6.0	6.0	5.50	5.50
Length of snout	.. 13.0	11.0	11.50	10.50	11.0	8.50	7.50
Inter orbital width	.. 14.50	12.50	12.0	12.50	12.50	10.0	9.50
Longest ray of dorsal	.. 30.0	24.50	24.0	23.50	24.0	20.0	20.0
Longest ray of anal	.. 25.0	21.0	20.0	20.0	21.0	16.50	15.0
Length of pectoral	.. 26.0	21.0	21.0	20.0	21.50	18.0	16.50
Length of ventral	.. 25.50	20.50	20.0	19.50	21.0	16.0	16.0
Length of caudal peduncle	.. 20.0	18.50	18.0	18.0	17.0	14.0	10.0
Least height of caudal peduncle	17.0	14.50	14.50	15.0	15.0	13.0	9.50

41. *Osteochilus melanopleura* (Blkr.)

WEBER & DE BEAUFORT, 1916, pp. 127-28.

SMITH, 1945, pp. 213-13.

One, 320 mm., Chenderoh Lake, Perak.

42. *Osteochilus spilurus* (Blkr.)

WEBER & DE BEAUFORT, 1916, p. 139.

Three, 78 to 100 mm., Kota Tinggi, Johore.

43. *Osteochilus vittatus* (C.V.)

WEBER & DE BEAUFORT, 1916, pp. 131-33.

SMITH, 1945, p. 216.

Two, 120 to 220 mm., Kuala Tahan, Pahang; two, 72.5 and 84 mm., Baling, Kedah; one, 161.5 mm., River Sedili, Johore.

44. *Puntius binotatus* (C.V.)

WEBER & DE BEAUFORT, 1916, pp. 186-89.

SMITH, 1945, pp. 183-84.

Eight, 65.5 to 157.5 mm., Mawai District, Johore; nineteen, 55 to 125.5 mm., Singapore; ten, 54.5 to 120.5 mm., River Condor, Kelantan; four, 72.5 to 108 mm., Jalong, Perak; thirteen, 78.5 to 124.5 mm., Kaki Bukit, Perlis; five, 64 to 104.5 mm., Kota Bharu, Kelantan; seven 54 to 102 mm., Kuala Tahan, Pahang.

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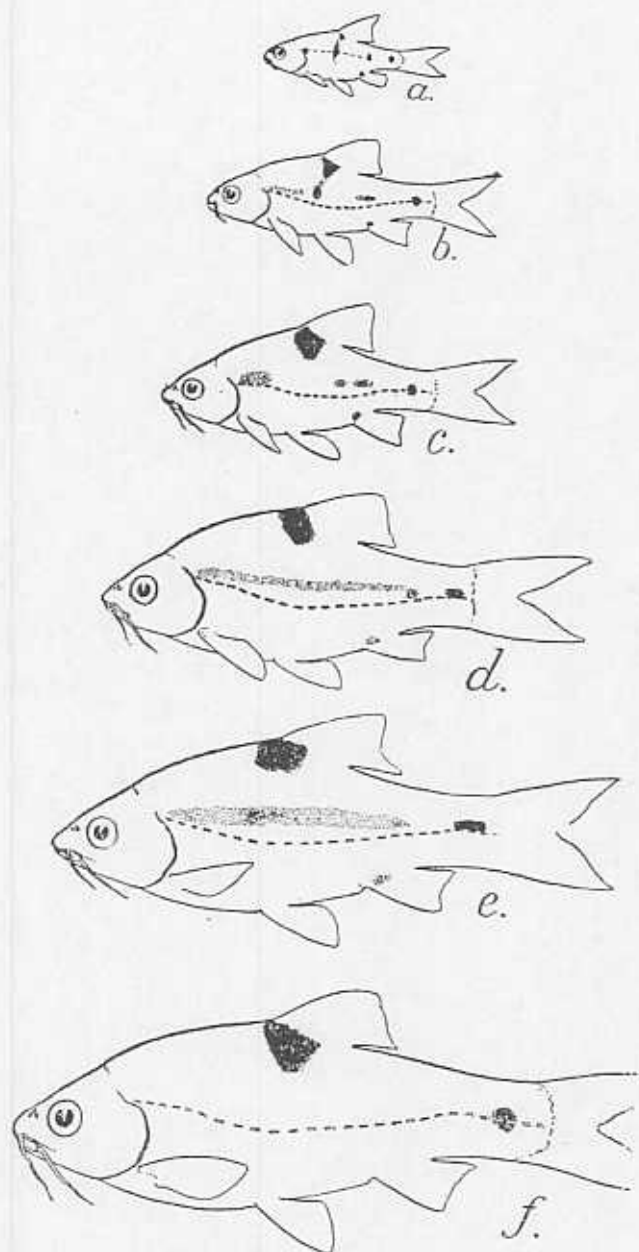


Fig. 4. *Puntius binotatus* (C.V.). Six stages of growth from 32 to 122.5 mm. in total length to show the changes in the markings according to size. a, 32 mm.; b, 51.5; c, 63.5; d, 89; e, 104; f, 122.5.

## NOTES ON MALAYAN FISHES

There is considerable variation among individuals of this species as regards the markings on their body, mainly depending on age. As the name implies, the characteristic marking of the species is a round black spot at the base of the anterior dorsal ray and another on the caudal peduncle; these two spots are, however, generally absent in fairly large specimens.

45. *Puntius birtwistlei* Herre

HERRE, 1940, p. 32.

One, 265.5 mm., Chenderoh Lake, Perak.

46. *Puntius bulu* (Blkr.)

WEBER & DE BEAUFORT, 1916, pp. 199-200.

SMITH, 1945, p. 169.

Two, about 300 mm. each, Chenderoh Lake, Perak.

47. *Puntius daruphani tweediei*, subsp. nov.

Seven specimens, 105 to 194.5 mm., long, differ markedly from the other members of the genus *Puntius* so far known from Malaya. However, they apparently resemble *P. daruphani*, a Siamese form, but actually differ from it in having a deeply concave anal fin, in longer barbels and in the pectorals not extending as far as the pelvics. I propose to describe it here as a new subspecies of *Puntius daruphani*.

D.4/8; A.3/5; P.12; V.9; L.1.25-28; L.tr.5-5½/1/3.

In this fish, the body is roughly triangular and somewhat compressed; its greatest depth, which is below the commencement of the dorsal fin, is 2.5 (2.4 to 2.68) times in the standard length. The head is rather small and somewhat compressed; its length is 3.4 (2.6 to 4.2) times in the standard length and its width is almost equal to its height. The caudal peduncle is a little higher than long, its height being 1.1 (1 to 1.2) times in its length. The eye is large, comparatively larger in young and is located in the middle of the head, nearer the dorsal profile than the ventral; its diameter is contained 3.4 (3 to 3.8) times in the length of the head. The inter-orbital space is concave, especially so in the young and is 1.3 (1 to 1.65) times in the diameter of the eye. The snout is conical and bluntly pointed; it is 1.3 (1 to 1.5) times as long as the diameter of the eye. The mouth is semicircular and inferior, and the upper jaw is slightly longer than the lower. There are four barbels, the maxillary ones are 1.3 (1.2 to 1.4) times as long as the diameter of the eye, the rostral ones are somewhat shorter.

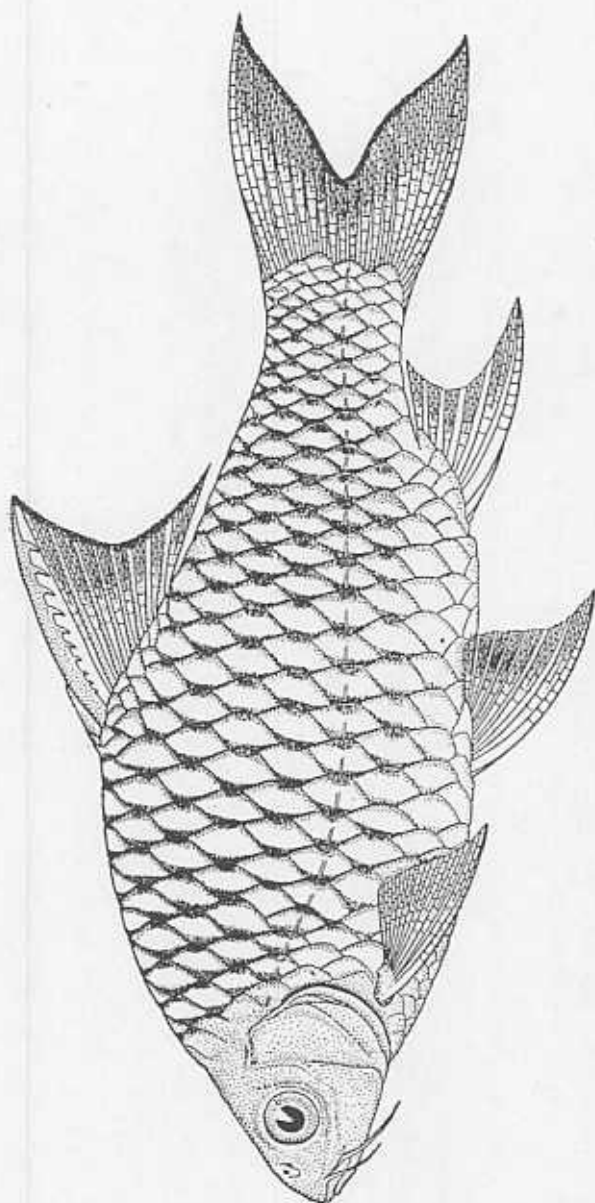


Fig. 5. Lateral view of the type-specimen of *Puntius daruphani tweediei*, subsp. nov.,  $\times 4$ .

NOTES ON MALAYAN FISHES

The dorsal fin commences opposite the ventral and mid-way between the tip of the snout and the base of the caudal fin. It is separated by 10 scales from the occiput. The last undivided osseous spine is very strong with 12 serrae along its hind edge, and is somewhat longer than head. The free margin of the dorsal fin is concave. The pectoral fins are somewhat falciform and nearly as long as the head; they are separated from the base of the ventral fin by a quarter of their own length. The ventral fins have an obliquely truncate free margin and when pressed reach the anus. The anal fin has a very deeply concave free margin with the third unbranched ray very much longer than the rest; it reaches well to the base of the caudal. The caudal is deeply forked with lobes of equal length.

The general colour of specimens preserved in spirit is pale brown with dark brown bases to the scales of the back and sides; the fins are pale yellow with dorsal and caudal fins tipped with black.

*Type specimen.*—F.248 (Holotype); F.249 (Paratypes) Zoological Survey of India, Calcutta.

*Locality.*—Kuala Tahan, Pahang.

MEASUREMENTS IN MILLIMETRES

Standard length .. ..	153	128.5	183	97.5	83.5	80.5
Height of body .. ..	63	46.5	40	35.5	33	30
Length of head .. ..	36.5	33	24.5	22.5	22.5	21
Breadth of head .. ..	24.5	21	16.5	14	14	12.5
Height of head .. ..	27.5	25.5	18	17.5	16	16.5
Length of snout .. ..	14	11	7.8	7.5	7	7
Diameter of eye .. ..	9.5	9.5	7.8	7	7.5	7
Inter-orbital width .. ..	16	13	10	9	8	7.5
Height of dorsal fin .. ..	43.5	41.5	27.5	26.5	24	24
Length of pectoral fin .. ..	36	33	21.5	20	19.5	20.5
Length of ventral fin .. ..	38.5	34	22	20.5	20	20.5
Length of anal fin .. ..	39.5	32	23.5	22	20.5	22
Length of caudal peduncle .. ..	19.5	17	15.5	14.5	11.5	11.5
Least height of caudal peduncle	23	18	16	15.5	11.5	11.5
Length of the rostral barbel .. ..	11.5	11.5	7	6.8	6.5	6
Length of the maxillary barbel	14	14	9	9	9	8.5

48. *Puntius everetti* Boulenger

WEBER & DE BEAUFORT, 1916, p. 180.

Five, 69.5 to 91 mm., 8 miles north of Kota Tinggi, Johore.

The specimens under report are not typical, but it may be possible that they are the generalised form which has given rise to *Puntius tetrazona* as well as *Puntius everetti*. The black spots on either side above the pelvic and anal fins unite to form more or less complete cross bars and thus resemble *tetrazona*.

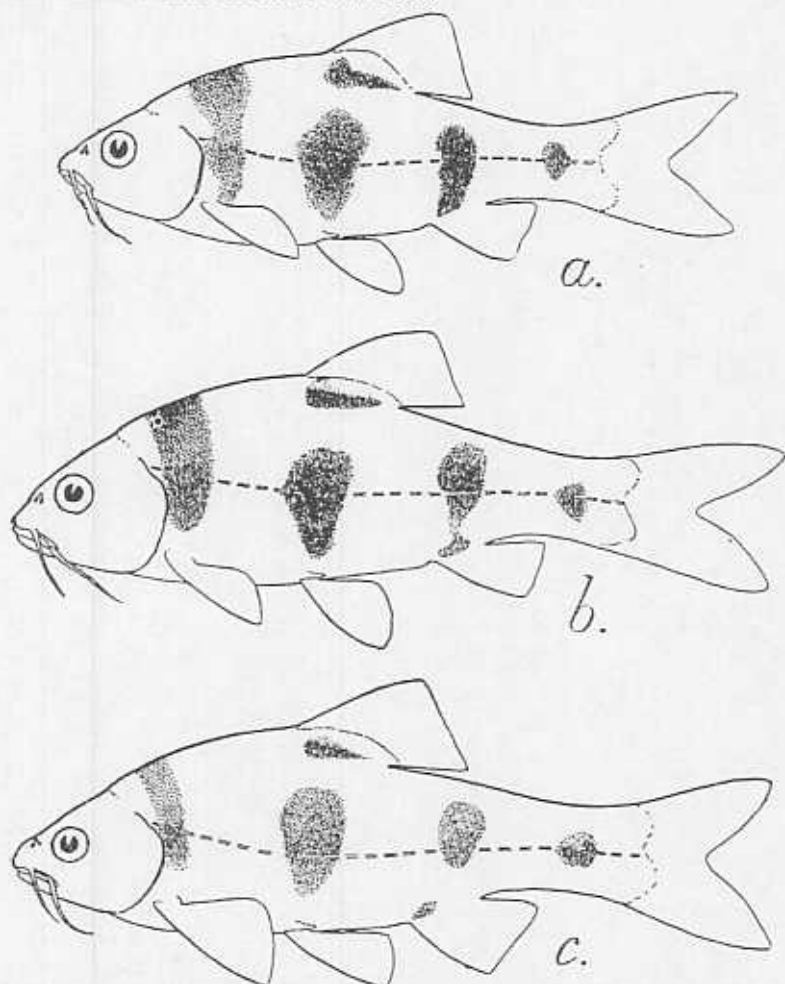


Fig. 6. Lateral view of three specimens of *Puntius everetti* Boulenger from Kota Tinggi, Johore,  $\times 1.3$ .



NOTES ON MALAYAN FISHES

49. *Puntius fasciatus* (Blkr.)

WEBER & DE BEAUFORT, 1916, pp. 184-85.

Four, 55.5 to 62.5 mm., Pahang; one, 73 mm., Kota Tinggi, Johore.

They are not typical, but are a variety of *P. fasciatus*. There are only two longitudinal bands above the lateral line band and one below it.

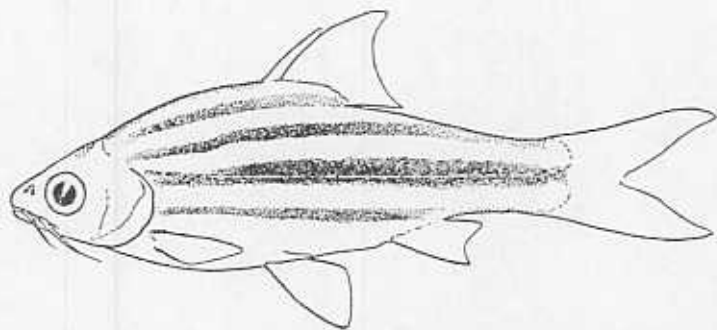


Fig. 7. Lateral view of *Puntius fasciatus* from Kota Tinggi, Johore, natural size.

50. *Puntius halei* Duncker

DUNCKER, 1904, p. 178.

One, 98.5 mm., Kuala Tahan, Pahang.

51. *Puntius hexazona* (W. and De B.)

WEBER & DE BEAUFORT, 1916, pp. 181-82.

Four, about 40 mm. each, Mawai District, Johore.

52. *Puntius lateristriga* (C.V.)

WEBER & DE BEAUFORT, 1916, pp. 176-80.

SMITH, 1945, pp. 181-82.

Eight, 71.5 to 123.5 mm., River Condor, Kelantan; three, 121 to 133 mm., Gunong Pulai, Johore; five, 81.5 to 132.5 mm., Kaki Bukit, Perlis.

Specimens from Kelantan and Johore differ from one another in the depth of their body and the head length, the characteristic body colouration remaining the same; I am inclined to consider them as two distinct races of this species.

53. *Puntius leiacanthus malayensis*, subsp. nov.

Five specimens, 61.5 to 87.5 mm. long, differ from all the other members of the genus *Puntius* so far known from Malaya. However, they approximate to *Puntius leiacanthus*, a species known from Java

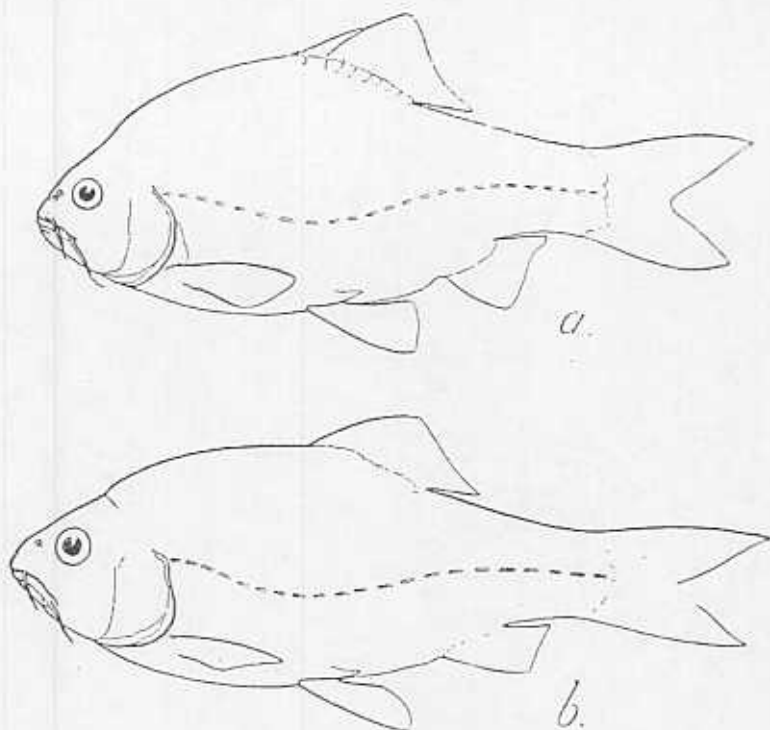


Fig. 8. *Puntius lateristriga* (C.V.). Outline sketches of 2 specimens of approximately the same length. *a*, a specimen from Gunong Pulai, Johore. *b*, a specimen from River Condor, Kelantan.  $\times 4$ .

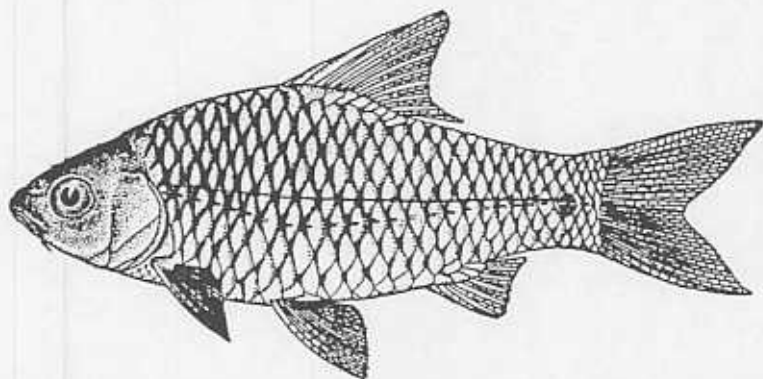


Fig. 9. Lateral view of the type-specimen of *Puntius leiacanthus malayensis*, subsp. nov.,  $\times 1.2$ .

## NOTES ON MALAYAN FISHES

and Siam, from which they differ mainly in the body coloration, the deeper nature of the body and the extent of the pectorals which do not reach the base of the pelvics. I propose to describe them here as a new subspecies of *Puntius leiacanthus*.

D.3/8., A.3/5; P.13; V.9; L.1.24-26; L.tr.5/1/2½.

*Puntius leiacanthus malayensis* is a small species in which both the dorsal and the ventral profiles are considerably arched. The body is moderately compressed; the dorsal surface in front of the dorsal fin is slightly keeled. The greatest depth of the body, which is below the commencement of the dorsal fin, is 2.35 (2.1 to 2.6) times in the standard length and its width is about half its height. The head is bluntly pointed; its length is contained 3.6 (3.5 to 3.7) times in the standard length. The height of the head at the occiput is contained 1.2 times and its width 1.75 (1.7 to 1.8) times in its length. The caudal peduncle is a little longer than high, its height being 1.3 (1.2 to 1.4) times in its length. The eye is rather large; its diameter is contained 3.3 times in the length of the head; it is placed nearer to the dorsal profile than to the ventral and is distinctly in the anterior half of the head. The inter-orbital space is nearly flat and is 1.3 times in the diameter of the eye. The snout is conical and bluntly pointed; it is nearly as long as the diameter of the eye. The nostrils are situated close to the front border of the eye and are separated by a flap of skin. The mouth is small, semicircular and sub-inferior; its cleft does not reach below the anterior border of the eye. The lips are thin but continuous; the labial groove is interrupted in the middle. There is a single maxillary pair of barbels which are slightly shorter than the diameter of the eye.

The dorsal fin, which is as long as the head, commences midway between the tip of the snout and the base of the caudal fin and almost opposite to the pelvics; it is separated by 9 (9-10) scales from the occiput. The last undivided dorsal ray is osseous and smooth and the free margin of the fin is deeply concave. The pectoral fins are somewhat falciform and much shorter than the length of the head; they reach the 6th (6th-7th) scale of the lateral line and are separated from the base of the ventral fin by a third of their own length. The ventral fins have an almost straight free margin and they do not extend to the base of the anal. The vent is situated just in front of the anal. The anal has a slightly concave or nearly straight free margin. The caudal is deeply forked with lobes of equal length; it is longer than the head.

The most characteristic feature of the species is its colouration. The colour of the specimen preserved in spirit is brownish with dark crescents at the base of each scale forming a sort of net work, and a dark

lateral thin stripe extending from the operculum to a black blotch on the side of the tail slightly in front of the base of the caudal fin. The fins are yellowish white in colour.

*Type specimen*.—No.  $\frac{F246}{2}$  (Holotype);  $\frac{247}{2}$  (Paratypes) Zool.

logical Survey of India, Calcutta.

*Locality*.—Kota Bharu, Kelantan.

*Remarks*.—The typical form of *Puntius leiocanthus* is known from Java on the one hand, and Siam on the other. The occurrence, therefore, of a new subspecies in Malaya is of special palaeogeographical interest.

MEASUREMENTS IN MILLIMETRES

Standard length	..	..	69	66	53	51	46.5
Length of head	..	..	18.5	17	15	13.5	13
Depth of body	..	..	26.5	25.5	19	18.5	16
Height of head at occiput	..	..	14.5	14	11.5	11.5	10.5
Width of head	..	..	10.5	10	8	8	7.5
Diameter of eye	..	..	5.5	5	4.5	4	4
Length of snout	..	..	6	6	5	4.5	4
Inter-orbital width	..	..	7.5	6.5	5.5	5.5	5
Longest ray of dorsal	..	..	17	16.5	13	13	11.5
Longest ray of anal	..	..	10.5	10.5	8.5	8.5	8
Length of pectoral	..	..	12.5	12.5	10.5	10	10
Length of ventral	..	..	14.5	13.5	11.5	11	10
Length of caudal peduncle	..	..	12	12	9.5	8.5	8.5
Least height of caudal peduncle	..	..	10	10	8	7.5	6

54. *Puntius schwanefeldi* (Blkr.)

WEBER & DE BEAUFORT, 1916, pp. 178-79.  
SMITH, 1945, p. 190.

Two, 70 and 78.5 mm., Kota Bharu, Kelantan; nine, 78.5 to 168.5 mm., Kuala Tahan, Pahang; two, 82.5 to 96 mm., Kaki Bukit, Perlis.

55. *Puntius sumatranus* var. *partipentazona* (Fowler)

DUNCKER, 1904, p. 180.  
FOWLER, 1934, p. 344.  
SMITH, 1945, p. 175.

Three, 34 to 40 mm., Tasek Bera, Pahang; five, 23 to 34.5 mm., Lake Chin Chin, Jasin, Malacca.

This differs from the typical form in the colour markings on its body; it was noticed by Duncker (*op. cit.*) in specimens collected from Malacca and he recorded and figured this form as a variety of *sumatranus*. Fowler (*op. cit.*), however, overlooked this fact and described specimens from Siam showing exactly the same colour markings as that

NOTES ON MALAYAN FISHES

of the Malacca form as a new species, *Barbus partipentazona*. The Malayan form differs from the typical form in its third transverse bar being non-confluent with the black markings on the dorsal fin.

56. *Puntius pinnauratus* (Day)

SMITH, 1945, p. 194.

PILLAY, 1951, pp. 331-48.

Thirteen, 84.5 to 111.5 mm., Kaki Bukit, Perlis.

57. *Puntioplites proctozysron* (Blkr.)

FOWLER, 1934, p. 125-27, fig. 82.

SMITH, 1945, pp. 194-95.

Four, 91.5 to 146 mm., Kuala Tahan.

58. *Tor tambroides* (Blkr.)

WEBER & DE BEAUFORT, 1916, p. 150.

SMITH, 1945, pp. 137-38.

Two, about 187 mm. each, George V National Park; one, 173.5 mm., River Lumpat, Pahang; one, 207 mm., Jalong, Perak; one, 237 mm., (Locality slip missing).

59. *Thynnichthys thynnoides* (Blkr.)

WEBER & DE BEAUFORT, 1916, pp. 122-23.

SMITH, 1945, pp. 209-10.

One, 259 mm., Chenderoh Lake, Perak.

Subfamily Garrinae

60. *Crossocheilus oblongus* (C.V.)

WEBER & DE BEAUFORT, 1916, p. 233.

SMITH, 1945, pp. 269-70.

Six, 86 to 126.5 mm., Jalong, Perak.

61. *Epalzeorhynchus kalopterus* (Blkr.)

WEBER & DE BEAUFORT, 1916, pp. 230-31.

SMITH, 1945, pp. 263-64.

One, 161 mm., Kuala Tahan, Pahang.

62. *Epalzeorhynchus siamensis* Smith

SMITH, 1945, pp. 265-66.

Two, 50 mm. each, 2 miles north of Sauk, Perak.

63. *Garra taeniata* Smith

SMITH, 1945, pp. 260-61, fig. 50.

Two, 141.5 and 159 mm., River Galas, Kelantan; three, 81.5 to 114 mm., Baling, Kedah.

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