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**A survey of the Cauvery river system with a
major account of its Fish Fauna**

By

K. C. Jayaram

T. Venkateswarlu

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Issued by the Director
Zoological Survey of India

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MAJOR ACCOUNT OF ITS FISH FAUNA

BY

K. C. Jayaram

Zoological Survey of India, Calcutta-700 016

AND

T. Venkateswarlu, M. B. Ragunathan

Southern Regional Station, Zoological Survey of India, Madras 600 028



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CONTENTS

	PAGE
INTRODUCTION	1
WORK PROGRAMME	1
AUTHORSHIP ASSIGNMENTS	2
ACKNOWLEDGEMENTS	3
THE CAUVERY RIVER	3
CLIMATE AND VEGETATION	5
TRIBUTARIES	5
COLLECTING STATIONS WITH ECOLOGICAL NOTES	7
MARGINAL AND AQUATIC BIOTA	18
SYSTEMATIC LIST OF CAUVERY FISHES	20
SYSTEMATIC ACCOUNT	28
DISCUSSION	107
CONCLUSIONS AND RECOMMENDATIONS	110
REFERENCES	112

INTRODUCTION

Cauvery, Krishna and Godavary rivers constitute the major three river systems in South India. Geologically they are much older than the Ganga, Indus and Brahmaputra rivers of Northern India. The economic prosperity of the southern states of Andhra Pradesh, Tamil Nadu, Kerala and Karnataka is closely intertwined with the water-supply and potentialities of these three rivers. Since historical times their waters have been extensively utilised for agriculture, fisheries, irrigation and navigation purposes. In recent years they have been further subjected to many multi-purpose hydro-electric and other utilitarian projects. A number of old and new barrages, weirs, *anaicuts* or dams, big and small, have been constructed across these rivers. New channels have been dug out and taken in different directions for diverse purposes. Their entire form and structure, content and quality have changed with passage of time and have also been altered by human interference and agencies. Innumerable factories, workshops, human habitations, new townships have sprung up along their banks discharging their effluents and wastes into these rivers thereby polluting the waters. The quality of the water thus markedly changed have impinged upon their aquatic inhabitants such as fin fish and shell-fish. Moreover the introduction of many exotic fish species, plantation of cash-crops and economically valuable plants along the banks have also considerably affected the biota.

Despite all such importance, unfortunately not much attention has been given to these rivers especially in respect of their bio-resources. Their faunistic content and composition is very poorly known. Except some scattered piece-meal work no consolidated account of their aquatic fauna is known.

WORK PROGRAMME

Under a long-term programme of an assessment of the bio-resources of these three rivers, a survey of the Cauvery river, was undertaken first.

The survey was planned and executed in four stages as mentioned below. The river was divided into two stretches (i) from its confluence with the Bay of Bengal at Kaveripattinam to Hogenakal in Tamil Nadu and (ii) from its origin at Talacauvery to Chikalur (Kollegal Taluq) in Karnataka. Each one of these sectors was surveyed for two seasons,

one during the premonsoon period and another during the post-monsoon period. The period and personnel were as below.—

Sector I. Stretch of the Cauvery in Tamil Nadu
(from Kaveripattinam to Hogenalkal).

Premonsoon period.—March 17, 1973 to April 18, 1973.

Dr. K. C. Jayaram, Shri M. B. Raghunathan, Shri S. N. Nayak, Shri M. Arumugam.

Postmonsoon period.—January 25, 1974 to February 24, 1974.

Dr. K. C. Jayaram, Shri T. Venkateswarlu, Shri N. Govindan, Shri P. Egambaram.

Sector II. Stretch of the Cauvery river in Karnataka
(from Talacauvery to Chikalur).

Postmonsoon period. —September 28, 1975 to October 23, 1975.

Dr. K. C. Jayaram, Shri M. B. Raghunathan, Shri K. T. Dhanapal, Shri P. Egambaram.

Premonsoon period. —May 3, 1977 to May 14, 1977.

Dr. K. C. Jayaram, Shri P. Ponnurangam, Shri N. Janakiraman.

Besides collections of fishes in principal, other aquatic inhabitants such as tadpoles, prawns, crabs, molluscs were also obtained. Marginal biota, temperature of air and water and other characteristics of the river were noted. Relevant meteorological data such as rainfall, humidity, etc. were obtained from the India Meteorological department of the Govt. of India.

This paper presents for the first time a comprehensive account of the fish fauna of the Cauvery river system in its entirety, besides a summary of other biota.

AUTHORSHIP ASSIGNMENTS

The idea to undertake an ichthyological survey of the Cauvery river system in its entirety was mooted, planned and executed by the first author. Excepting for a short period (10.2.74 to 24.2.74) all the four field survey programmes were undertaken by the senior author. The identification and writing up of this paper was also done by him. The second author (Shri T. Venkateswarlu) could accompany the party only during the postmonsoon survey of the river in Tamil Nadu (25.1.74 to 24.2.74) and also acted as the leader of the team for a brief period (10.2.74 to 24.2.74). He also made a preliminary identification, and took certain counts and measurements. The third author Shri M. B. Raghunathan was a member of the party during the premonsoon survey

of the Cauvery in Tamil Nadu (17.3.73 to 18.4.73) and also during the postmonsoon work in Karnataka (28.9.75 to 23.10.75). He also assisted in the identification, measurements and in the write up of the details of the river and its tributaries.

ACKNOWLEDGEMENTS

Such a survey as undertaken by us would not have been possible but for the willing cooperation and active participation of the concerned state and district fishery officials of the Tamil Nadu and Karnataka governments. We are indebted to the Directors of the two State Fishery departments, especially to Sarvashri Jaya Raj, Muddanna, C. G. Krishnamurthy, Malliapps Urs of Karnataka fisheries, Sarvashri Choodamani, Krishnaswami, Govindaswamy, Govindaraju of Tamil Nadu fisheries, for making all arrangements and assistance in the field. We are thankful to the Director, Zoological Survey of India for facilities. Some fin ray counts of a few *Puntius* species were taken by Smt. T. J. Indra, Museum Assistant, Z. S. I., S. R. S., Madras. The marginal biota were identified by our colleagues in the Z. S. I. at Calcutta. We are thankful to all of them for their help.

ABBREVIATIONS AND CONDENSATIONS USED

A=Anal fin, BD=Body depth, BM (NH)=British Museum (Natural History), London, D=Dorsal fin, Ex=Example, examples, HCPD=Least height of caudal peduncle, IOW=Interorbital width, LCPD=Length of caudal peduncle, LH=Head length, LL=Lateral line, PDS=Predorsal scales, SL=Standard length, S. R. S.=Southern Regional Station, Stn=Station (=locality of collection), TL=Total length, ZSI=Zoological Survey of India.

THE CAUVERY RIVER

Affectionately called by the tamils the "Ponni" meaning the gold giver or gold bearer, the Cauvery river is India's fourth largest and Tamil Nadu's biggest. It takes its origin at the Brahmagiri hills (12°25'N, 75°34'E) in the Sahayadri range in the Western ghats at Coorg district, Karnataka State at an elevation of 1355 m altitude. It traverses nearly 850 km draining approximately an area of 89,600 km² en route. The Hireng hole with its tributaries drain the entire northern plateau of Mercara and contribute an immense bulk of waters to the Cauvery. The average rainfall of the catchment area is certainly not less than 500 cms and is spread over eight months of the year. At its origin at Talai Cauvery, it is a small channel emanating from a perennial spring. (Plates VI, Fig. 41, VIII, Fig. 53). It runs through a deep gorge of thick

evergreen jungle for about 19 km in a narrow channel of hardly three meters width up to Bhagamandala where it is joined by its first tributary the Kannige river. The upper course of the river exhibits all the characteristics of the typical Malanad zone of the Mysore plateau, namely the river being very swift, flowing through deep gorges and steep ravines developing a number of rapids and small falls. Such a course is witnessed up to Krishna Raja Sagar dam (K. R. S. dam, $12^{\circ}20'N$, $76^{\circ}32'E$), 16 km near Mysore town. This dam incidentally is the first man made barrier across its course. The river is joined by Hemavathi and Lakshmanathirtha, important tributaries both having their sources in the rainy Malanad and sub-arid eastern Mysore plateau.

At Srirangapatnam the river bifurcates into two branches because of the structural peculiarities of the bedrock and the two branches reunite again at a place called Sangam about 5 km from Srirangapatnam town. Just below this dam and above its confluence with Shimsha the river crosses the 610 m. contour at Sivasamudram Island ($12^{\circ}16'N$, $77^{\circ}13'E$) on either side of which it branches off in a succession of falls and rapids to a total drop of about 85 meters.

Below Sivasamudram the river plunges through a succession of wild gorges with right angle bends conforming to the NW/SE and SW/NE stress of the plateau edge. Pannandu chakravani (=12 whirl pools) Megatadu (=goat leap) are some of the landmarks in this course. The Hogenakal falls (at Wadepati with a drop of about 18 meters may be taken as the end of its plateau course (Spate, 1957). The second man made barrier "the Mettur dam" is placed in the narrow gorge west of Salem at Mettur ($11^{\circ}52'N$, $77^{\circ}50'E$) in Tamil Nadu. Below Mettur the river turns southwards maintaining this direction for a long distance till it reaches Erode where it takes a south-easterly direction. The river from Sivasamudram to Erode is joined by a number of tributaries namely, Amaravathy, Arkavathi, Bhavani, Kabani, Kodamurutty etc.

Below Mettur the Cauvery flows across a vast monotonous plain almost a level land. The gradient is very gentle and the flow becomes almost sluggish. Near Srirangam $10^{\circ}52'N$, $78^{\circ}44'E$, another place of sanctity, 16 km west the upper Anaicut, another artificial irrigation regulator branches off the Coleroon from the main Cauvery. The Coleroon is mainly designed to take away the excess flood waters of the Cauvery and runs from upper Anaicut to near Porto Novo as a separate effluent stream. Before Tiruchy is reached the Cauvery maintains an easterly direction and flows with a continuous process of silt deposition. At Grand Anaicut the fourth barrier on its course,

a large masonry dam dating to the period of Karikala Chola 200 A D, has been constructed beyond which the river is well monitored into several irrigation channels and weirs such as the V. V. R. Dam, etc. which drains the stream of almost every drop of its water. This system of tapping its water is so well organised that the Cauvery is considered as the best utilised river system in southern India. When the river reaches the Bay of Bengal at Kaveripattinam, it is an insignificant small brook of hardly 3 or 4 meters wide.

CLIMATE AND VEGETATION

The middle course of the River Cauvery is completely land locked and being a table land suffers from insufficient rains. The temperature conditions are on an average less than in other parts (see Table 1) because altitude lowers temperature. The eastern part of the basin is influenced by the Bay of Bengal and western parts by the Arabian sea. This is the reason why the lower valley gets more rain from north-east monsoon and the upper basin gets rain from south west monsoon. The watershed of the Cauvery as already stated is very near the western edge of the Sahayadri ranges of hills and being at higher elevations and near to the Arabian sea it is natural that this part of the basin should have maximum rainfall in the June—September months. The effects of inter-tropical convergence of two tropical air masses which dominate the climate of a major part of India is felt only to some extent. But again it is in climate as in the case of physiography that there is certain amount of regional homogeneity in the entire basin. The distribution of rainfall over the entire basin is characterized by two maxima, one in the month of June and September and the other from October to January. The total amount of rainfall near the entire basin is about 43" but it varies unevenly and irregular in occurrences. The data of temperature, rainfall, humidity are summarised in table I.

The upper basin is covered with evergreen wet forests, which some time revel in luxuriance and are characterized by stratification and multiplicity of species. The middle basin is to have wood land vegetation but the region is so much put into use that we cannot speak of virgin vegetation. There is the secondary growth of scrub and near water course and low land zone there may be cover of open wood lands.

TRIBUTARIES

1. *River Kannige* is a small tributary in Coorg which joins the Cauvery at Bhagamandala about 16 km from Brhamagiri hills of the western ghat region.

2. *River Hemavathy* is one of the important tributaries of River Cauvery in Karnataka, arising near Ballarayan Durga at an elevation of 1506 meters. This joins Cauvery at Krishnarajasagar dam, draining, north of Coorg, forming the extreme northern boundary between Coorg and Mysore and runs eastwards. Collections were made from this river near Holenarasipur and S. R. D. Katte.

3. *River Kabbani* with a good catchment and heavy rainfall from south west monsoon, arises near Vayittiri at an altitude of 2330 m. It joins River Cauvery at Thirumukudar Narsipur. Collections were made from this river at T. Narsipur and Nanjangud.

4. *River Shimsha* an important tributary in Karnataka, arising at an altitude of 1387 m near Sivaganga joins River Cauvery after Sivasamudram falls. Collections were made from this river near Maddur.

5. *River Arakavathy* is a small tributary in Karnataka arising at an altitude of 1467 m in Nandidurg and joining the River Cauvery after Sivasamudram falls.

6. *River Bhavani* is a major tributary of River Cauvery in Tamil Nadu, arising near Doddapedda, Nilgiris at an altitude of 2637 m. This river joins Cauvery at Bhavani town at an altitude of 166 m. Bhavanisagar dam is constructed on River Bhavani at Bhavanisagar, 70 km from Bhavani town where intensive fish culture is being undertaken.

7. *River Amaravathy*. After River Noyyal's confluence, Cauvery takes a turn towards east. River Amaravathy, arises at an altitude of 2696 m in Palni hills (Anaimudi) and joins Cauvery at about 7 km east of Karur town. River Amaravathy has a sandy bottom and collections were made at Kothampalayam near Karur.

8. *River Coleroon* is the northern branch from Upper Anaicut, being the main distributary of the River Cauvery. The two branches namely Cauvery and Coleroon unite below again to form the island of Srirangam. The Grand Anaicut is constructed at the junction of River Cauvery and River Coleroon. Mulletts in large numbers were noted in River Coleroon at Grand Anaicut. Coleroon river runs north east and discharges into Bay of Bengal a little south of Porto Novo.

River Cauvery branches off into *Kodamurutti*, *Arasalar*, *Vennar*, *Vettar* and numerous other smaller streams forming the vast Cauvery delta. Some of these are.—

9. *River Vennar* is one of the important branches of River Cauvery forming the fertile Thanjavur delta. This river branches near Lalgudi from Cauvery and joining with Bay of Bengal near Vedaranyam—

Muthupet swamp. The main regulator near Thanjavur is Vennar-Vettar regulator at Thenperambur, 18 km west of the town.

10. *River Vettar* also branches off from River Cauvery in the same place as Vennar. One distributary of Vennar also joins with Vettar at Kodavasal. River Vettar joins the Bay of Bengal near Nagore and Nagapattinam.

11. *River Arasalar*. After Papanasam and before Kumbakonam, River Arasalar separates from River Cauvery. Cauvery-Arasalar dam (C. A. Dam) situated at Mettu street 18 km north west of Kumbakonam is an important fishing centre. Here fishing is done mainly by castnet and dragnets.

12. *River Kodamurutti* is one of the important branches of River Cauvery separating at Thirukattupalli. Fish collections were made at Mudikondan-Kodamurutti regulator (M. K. regulator) at village Sundaraperumalkoil and Thirumalarajan-Kodamurutty (T. K. head) near village Rajagiri. River Kodamurutti itself separates near Papanasam into Mudikondan and Thirumalarajan river.

COLLECTING STATIONS WITH ECOLOGICAL NOTES

1. Fish market, Mayuram town. Catch reported from Manjalar river near Vadagarai, *ca* 8 km from Mayuram town. 17.3.73.
2. Fish market, Mayuram town. Catch reported from tanks and ponds in the town. 17.3.73.
3. Fish market, Mayuram town. Catch reported from Uppanar river near Kaveripattinam which is a brackish water stream. 17.3.73.
4. Tiruvalangadu, 16 km west of Mayuram town. Collected from a dry irrigation channel with little water, *ca* 3 meters wide, sandy bottom, marginal vegetation sparse. 17.3.73 ; 25.1.74.
5. River Cauvery at Tiruvalangadu at the regulator with River Vikraman, 16 km west of Mayuram town. 17.3.73 ; 25.1.74. River 20 meters wide, flow moderate. Fishing done by drag net. The river outlet was dammed with stems of plantain trees placed between stone platforms. The congregating fish, mostly *Puntius ticto* were scooped out with the drag net. Some were caught by cast net from water pools formed below regulator where, because of poor demand, *Cirrhinus reba* were stocked alive by fishermen. 17.3.73. (Plate II, Fig. 1)

During post-monsoon period (25. 1.74) an average of 20 fishermen took ten buckets of fish of about 500 kg weight in total.

Mostly the composition was of *Puntius ticto*, *P. filamentosus*, *C. reba*.

6. River Vikraman at Tiruvalangadu regulator 16 km west of Mayuram town. 25.1.74. (Plate II, Fig. 2)

River ca 40 m wide. Caught with cast net and drag nets. Mostly sluggish fishes such as *Mastacembelus*, *Xenentodon* were obtained.

7. River Cauvery at Melaiyur regulator, 18 km east of Mayuram town. 18.3.74 ; 26.1.74. (Plate II, Fig. 3)

River shallow with muddy bottom with six to eight meter width, running as a meandering stream (18.3.73). Greenish, sluggish 30 meter wide, 1.5 meter deep (26.1.74). Fishing with cast net, gill net. *Rhinomugil corsula* ripe with oozing eggs were obtained in this locality (18.3.73).

8. River Cauvery at Mayuram town. 18.3.73, 20.3.73, 27.1.74. River near regulator ca three of four meters deep, but sluggish, greenish in colour. River used for bathing humans, cattle. Cast nets employed.

9. River Cauvery at Kaveripattinam, from its confluence with Bay of Bengal to Dharmakulam ca 4 km upstream, 24 km east of Mayuram Town. 18.3.73 ; 26.1.74.

River at confluence hardly 3 or 4 meters wide, one to two meters deep, tidal influence not beyond two or three km (18.3.73). Mostly cast net was used.

10. Veeranam Lake, six km west of Lalpet. 19.3.73 ; 27.1.74. Lake 38.84 km, 3878 hectares in water spread. Maximum storage capacity 40.95 cub m. Maximum width ca 115 meter, depth 12 to 15 meters. Water slightly bluish or light green in colour. Vegetation thick on banks with timber yielding trees. Submerged shrubs and weeds plenty (19.3.73). Nets generally employed are Rangoon nets, cast nets, hook and line, gill nets. When water level goes down many catfishes such as *A. aor*, *A. seenghala*, *W. attu* are caught. Some exotic fishes *Cyprinus carpio communis*, *Tilapia mossambica* have been introduced. Water Birds, Teals seen in plenty.

11. River Arasalar at Sakkottai, 2 km east of Kumbakonam town on road to Mannargudi. Collected at regulator on Arasalar and Nattar rivers. 21.3.73,

12. River Kudamurutty at its bifurcation with Mudikondan river, 11 km west of Kumbakonam town, popularly known as "MK" head. Collected near shutters on the river, below the tail end with help of wall nets. 23.3.73 ; 29.1.74. (Plat II, Fig. 4)
13. River Mudikondan at its bifurcation from River Kudamurutty 11 km west of Kumbakonam town. 23.3.73 ; 29.1.74.
River full with water covering both embankments and deep (29.1.74).
14. River Kudamurutty at Rajagiri at its bifurcation as Tirumalairajan, Kudamurutty, 16 km west of Kumbakonam town. Popularly known as "TK" head. 23.3.73 ; 29.1.74. Drag Net.
15. Nursery tanks on bank of River Kudamurutty at Rajagiri, TK head. 29.1.74. (Plate II, Fig. 5)
16. River Cauvery at its bifurcation with Veera cholan river at Mananjeri village 8 km east of Kumbakonam Town. 22.3.73. River shallow, meandering. Collected below regulator.
17. River Arasalar at Cauvery—Arasalar dam at Mettu Street, 18 km north west of Kumbakonam Town. Popularly known as C. A. Dam. 23.3.73 ; 29.1.74. (Plate II Fig. 6)
Fishes are extensively trapped taking advantage of their jumping against the current. A bamboo frame with a gunny spread 1 m×1 m square is suspended from above to just 0.3 meter water level at a point away from the sluice gates of the regulator. The fishes jump against the onrushing current and land straight on to the gunny.
18. River Cauvery at C.A. dam, Mettu street. 29.1.74.
19. Putthar—Valarvar river regulator branching from Kodamurutty river at village Vadaseri, 28 km east of Kumbakonam Town. 24.3.73.
Collected from a pool in the dried up bed of the river. *Mystus vittatus* was dominant.
20. River Coleroon at Lower Anaicut, 26 km east of Kumbakonam Town with Vadavar branching. 22.3.73 ; 30.1.74. (Plate II, Figs. 7, 8).
River very wide, water flowing as a meandering stream. Fishing was done with help of cast net along the southern bank where water was about 3 m deep. Fishermen use logs of Moringa tree as floats and swim about. Rangoon nets are rarely used.

21. River Vennar at Pamaniyar, Vennar, and Korayar head popularly known as PVK head, 23 km south from Kumbakonam on Nidamangalam Road. 31. 1. 74. (Plate II, Fig. 9)
22. River Paminiyar at PVK head. 31. 1. 74. (Plate II, Fig. 10)
23. Nursery tanks at Korayar river bank. 31. 1. 74.
24. Thanjavur fish market, purchased. Reported catch from Vennar-Vettar regulator popularly known as "V. V. R." 25. 3. 73.
25. River Vennar at its bifurcation from River Vettar at V. V. R. near Thenperambur village, 18 km west of Thanjavur town. 26. 3. 73 ; 4. 2. 74. Water flow moderate, not deep. Fished with cast net and drag net (26. 3. 73). River full, current fast, deep, clear (4. 2. 74). (Plate III, Fig. 22).
26. River Vettar at V. V. R. near Thenperambur village, 18 km west of Thanjavur town. 26. 3. 73 ; 4. 2. 74. River one or two meters deep, slow, moving as a meandering stream. Water clear (4. 2. 74) fished with cast net, drag net. (Plate III, Figs. 23, 24).
27. River Vadavar, old Vadavar channel at V. V. R. near Thenperambur village, 18 km west of Thanjavur town. 4. 2. 74. Current fast, deep.
28. Nursery tanks on bank of Vettar river at Thenperambur village 18 km west of Thanjavur town. 26. 3. 73.
29. Thiruvaiyaru fish market, purchased. Catch from River Cauvery. Town situated 13 km north west of Thanjavur. 27. 3. 73 ; 2. 2. 74.
30. River Cauvery at Thiruvaiyaru, 13 km. north west of Thanjavur. Collected with cast net and drag net below road bridge. 27. 3. 73 ; 2.2.74. (Plate II, Fig. 11)

River full with turbid water. Current fast, depth four or five meters (2.2.74).
31. River Kudamurutty at Kandiur village 2.5 km south east of Thiruvaiyaru town. 27. 3. 73 ; 2. 2. 74. (Plate II, Fig. 12)

River as a slow, clear meandering shallow stream in middle. River bed dry, sandy in patches. Water stretch hardly 0.25 meter wide.
32. River Vettar at Ammanpettai village, 8 km south east of Thiruvaiyaru town. 27.3.73 ; 2. 2. 74. River full, current fast, deep. (Plate III, Fig. 13)
33. River Vennar at Palliagraharam village 5 km north west of Thanjavur. 27. 3. 73 ; 2. 2. 74. River full, fast flowing, water turbid 2. 2. 74. (Plate III, Fig. 14)

34. River Vadavar at Karuthatangudi village, one km north west of Thanjavur town. 27. 3. 73 ; 2. 2. 74. (Plate III, Fig. 15).
River full, turbid. Current fast. Heavily abused by men and cattle (2. 2. 74). Caught with cast net.
35. River Cauvery at Grand Anaicut 43 km west of Thanjavur town. 28. 3. 73 ; 3. 2. 74 ; 1. 2. 77. (Plate III, Figs 16, 18)
A grand masonry granite dam constructed across Cauvery river by Karikala Chola of 2nd century A. D. This regulates the water into many irrigation channels and rivulets so that almost 98% of the river water is utilised. The excess flow, if any, during flood season is diverted into Coleroon river.
Water stagnant. Bed rocky with boulders. Water reddish in colour reported to be due to the effluent of a distillery 16 km upstream near Tiruchy (28. 3. 73). Water clear, very fast especially below regulator. Fished with cast nets. (3. 2. 74 ; 1. 2. 77).
36. River Coleroon at Grand Anaicut 43 km west of Thanjavur town with Uyyakondan at a distance. 28. 3. 73 ; 3. 2. 74 ; 1. 2. 77. (Plate III, Fig. 17)
Water fast flowing, deep and clear. Mulletts predominant, swimming with their eyes above water level. With the throw of cast net they move away fast. Locally called "Rockets" (28.3.73). Water slow moving, moderately deep as a meandering stream (3.2.74 ; 1.2.77). Fished with cast nets. (Plate III, Fig. 20).
37. River Vennar at Grand Anaicut, 43 km west of Thanjavur town. 28.3.73 ; 3.2.74 ; 1.2.77. Cast net. (Plate III, Fig. 19).
38. River Uyyakondan at its confluence with River Cauvery at Grand Anaicut. 3.2.74.
River highly polluted with molasses of a sugar mill 16 km upstream at Tiruchy. Fishes mostly *Mystus vittatus*, *Puntius* species die and float which villagers scoop. Vultures plenty. 3.2.74.
39. River Cauvery at Tirukkattupally, 16 km west of Grand Anaicut. 28.3.73 ; 3.2.74 ; 1.2.77.
Fished below regulator with drag nets by damming river flow. Current very fast. Water clear (3.2.74).
40. River Kudamurutty at its bifurcation from River Cauvery at Tirukkattupally. 28.3.73 ; 3.2.74 ; 1.2.77. Cast net. (Plate III, Fig. 21).
41. River Cauvery at Upper Anaicut, 22 km west of Tiruchy town. 30.3.77. One of the first barrages to be constructed below Mettur dam, but built earlier. Mainly designed to carry the overflow and flood waters in the Cauvery, the Coleroon of "Kolladam"

in the meaningful Tamil starts from here. The two rivers Cauvery and Coleroon encircle the Srirangam Island to meet again at Grand Anaicut 16 km east of Tiruchy. Cast net.

42. River Coleroon at Upper Anaicut. 30.3.73.

Water flowing as a slow meandering stream along the north bank. Drag net, cast net in puddles of water.

43. Fish market, Tiruchirapalli town. Catch reported from Cauvery, Coleroon, and tanks. 31.3.73 ; 10.2.74 ; 11.2.74.

44. River Coleroon at Thirumullaivasal 2 km east of road bridge on Madras Trunk Road, near Srirangam. Fished along south bank. Cast net, bamboo traps, drag net. 31.3.73 ; 9.2.74.

Fishermen move from place to place to locate stretches of deep water puddles. (Plate IV, Fig. 29).

45. Fish market at Kulithalai town 36 km west of Tiruchy. Catch reported from River Cauvery and Mayanur irrigation canal. 2.4.73.

46. River Cauvery at Kulithalai town. 5.4.73 ; 8.2.74.

River very broad, stream meandering as a central channel deep at places along bank (5.4.73).

47. Mayanur canal at Kulithalai town. 5.4.73 ; 7.2.74. Close meshed cast net.

48. River Cauvery at Mayanur below Mayanur regulator. 21 km west of Kulithalai town. 3.4.73 ; 7.2.74. Cast net. (Plate IV, Fig. 26).

49. River Coleroon at Vathalai. Caught from Aiyan channel. 6.2.74. (Plate IV, Fig. 25).

50. Aiyan channel, an irrigation channel from Cauvery river at Vathalai village. 6.2.74. Cast net.

Fished below regulator. Fast current, clear water. Plenty of "Half beaks" seen.

51. River Amravathy a tributary to Cauvery at Kothampalayam Village 32 km west of Karur town. 4.4.73.

River flowing over a rocky boulderous bed. An overflow dam is constructed at this village. Cast nets.

52. Fish market at Komarapalayam, opposite bank of Bhavani town. 6.4.73 ; 17.2.74.

53. Bhavanisagar dam at Bhavanisagar town 72 km west of Bhavani town. Dam placed across the confluence of Moyar river and Bhavani river. 7.4.73. Rangoon nets. Water spread 90 sq km. Fish of 600 kg. to one ton landed daily.

54. Fish market at Erode town. Catch reported from Cauvery river. 8.4.73 ; 15.2.74.
55. River Cauvery at Pallipalayam, 14 km from Bhavani, 2 km from Erode. 8.4.73 ; 14.2.74. (Plate IV, Figs. 30, 31).
River bed very rocky with big boulders, very wide forming rock pools, clear. Paper mill effluent and town sewages led into river 8. 4. 73. Rotenone, Bleaching powder, traps.
56. River Cauvery at Bhavani town. 8. 4. 73 ; 16. 2. 74. River bed boulderous, water clear. Town sewage led into river. Bleaching powder. (Plate IV, Figs. 32, 33).
57. River Bhavani at Bhavani town. 8. 4. 73. ; 16. 2. 74. Bleaching powder, cast nets in puddles.
58. River Cauvery at Jedarpalayam. 43 km east of Bhavani town. 9. 4. 73 ; 15. 2. 74.
River on a rocky bed, broad about one km wide. An overflow dam is constructed across the river besides shutters. Coracles in use. Cast nets.
59. Mettur reservoir on River Cauvery at Pannavadi 19 km west of Mettur. 11. 4. 73. An upper reach of the main reservoir where water is shallow. A main fishing centre.
60. Mettur reservoir on River Cauvery at Keerakaranur, 17 km north east of Mettur. 12. 4. 73. Drift gill nets.
Situated further upstream wherefrom the reservoir on River Cauvery forms the water stretch, this is the second important fish landing centre.
61. River Cauvery at Periapallam village 10 km east of Mettur town. 13. 4. 73 ; 18. 2. 74. (Plate IV, Figs. 35, 36).
River bed with heavy large boulders, shingles, rocks, water very clear with pools, not deep. Bleaching powder. Cast nets.
62. River Cauvery at Ammapetai village 21 km east of Mettur town. 13. 4. 73 ; 18. 2. 74. (Plate IV, Fig. 34).
River course tortuous, over rocky bed. Water clear, not fast, moderate. Cast net, drag net, rotenone.
63. River Cauvery below Mettur Dam. 14. 4. 73 ; 19. 2. 74. Rocky bed, clear, fast flowing. Cast net in puddles. (Plate V, Figs. 37, 38).
64. River Cauvery at Hogenaikal, 46 km west of Dharmapuri. 16. 4. 73 ; 21. 2. 74. (Plate V, Fig. 40).

River cutting through rocks and forming cascades. Deep water pools are formed. Cast net.

65. River Cauvery at Bhagamandala, 33 km south west of Mercara, Coorg dist. 756 m MSL. 4. 10. 75 ; 4. 5. 77. (Plate VI, Fig. 43).

River six or seven meter wide, water clear, fast flowing west to east. 71°F water temp. 74°F air temp. 4. 10. 75.

River narrow, fast, hardly a meter deep. Water clear, muddy, forming pools, sandy bed. Marginal vegetation thick. Sky overcast. It had rained heavily everynight since three days. Collected with fine muslin drag net. 4. 5. 77.

66. River Kannige at Bhagamandala, 33 km south west of Mercara, Coorg dist. 756 m MSL. 4. 10. 75 ; 4. 5. 77. (Plate VI, Fig. 42).

A small stream, the first tributary of the Cauvery. Stream turbid, fast with deep pools, hardly a meter wide with steep, thick forest covered banks. 4. 10. 75.

River fast, narrow, one or two meters wide, clear water, sandy bottom. Traps, castnets, drag nets. 4. 5. 77.

67. River Harangi at Kudige, Somwarpet taluq, Coorg dist., 36 km south east of Mercara. 4. 10. 75 ; 5. 5. 77. (Plate VI, Figs. 45, 46).

River 20 meters wide, water with a greenish hue, slow over a rocky bed. three or four meters deep in middle. Water temp. 72.5°F, air temp. 71.5°F. 4. 10. 75.

River sluggish, water dark coloured, moderately cold, flowing over rocks and boulders, one to three meter deep. 5. 5. 77.

68. River Cauvery at Kudige, Somwarpet, Coorg dist. 5. 10. 75 ; 5. 5. 77. (Plate VI, Fig. 44).

River turbid 15 or 16 meters wide. 3 meter deep. Sluggish. Marginal vegetation sparse. 5. 10. 75.

River muddy, highly turbid, brownish due to heavy rains. Sluggish, $\frac{1}{2}$ meter wide, 3 meter deep. 5. 5. 77. Cast net.

69. River Cauvery at Ramanathapura, 36 km north-east of Hole Narsipur, Hassan dist. 5. 10. 75.

River 15 or 16 meters wide, with a strong current and clear water. A fish sanctuary by side of temple present. Large sized *Puntius carnaticus* found. 5. 10. 75.

70. Fish market, Hole Narsipur, Hassan dist. Catch reported from River Hemavathi. 5. 10. 75 ; 6. 5. 77.

71. River Hemavathi at Hole Narsipur, Hassan dist. 90 km north west of Mysore. 6.10.75 ; 6.5.77. (Plate VII, Fig. 47).

River about 20 meter wide flowing over a rocky, boulderous bed forming rock pools. Paddy fields along margins. Water current fast, turbid. 6.10.75.

River water clear, fast at places forming deep puddles. 6.5.77. Cast net.

72. River Hemavathi at Hulivala village 16 km north-west of Hole Narsipur town. 7.5.77.

River bed mixed, boulderous and sandy. Cultivated fields on either bank. River hardly 0.25 meters wide. Water below, clear, forming puddles. Castnet, traps.

73. River Hemavathi at S. R. D. Katte (=Sri Rama Deva Katte) 12 km west of Hole Narsipur town. 7.5.77. (Plate VII, Figs. 48, 52).

River flowing over rocky and boulderous bed. A barrage is constructed across the river which falls over a broad 10 meter high wall as a cascade. Heavy rains preceeding the catch. Cast nets.

74. River Cauvery at Chunchana Katte 12 km from K. R. Nagar (=Krishna Raja Nagar). 8.10.75 ; 8.5.77.

River very shallow with weeds overgrown. Hardly $\frac{1}{2}$ meter deep, about 10 meters wide, but stream confined to a narrow strip meandering along either banks. Cattle, men using the water for washing, the water is polluted. Cast net. 8.10.75.

River cuts through a granite rocky mountain forming cascades and falls. Current very rapid, water clear. Bed with pebbles and shingles. Fishermen obstruct a narrow gully called "Sita Balta" with twigs, bamboo etc. and thus stop the flow of water in the narrow channel. A reservoir of water is formed above the falls which is declared a sanctuary but poaching being common fishes are caught. Traps, cast nets, gillnets. 8.5.77.

75. River Lakshmanathirtha at Bolanhalli village 12 km south east of K. R. Nagar. 8.5.77 ; 9.10.75.

River very shallow with weeds overgrown. Hardly $\frac{1}{2}$ meter deep about 10 meters wide, but stream confined to a narrow strip meandering along either banks. Cattle and men using the water for washing, the water is polluted. Cast net. 8.5.77.

76. River Lakshmanathirtha at Hunsur town, Coorg dist., 19 km west of K. R. Nagar. 9. 10. 75.
Water very shallow, turbid, brownish in colour and stream sluggish. Clayey soil. River 25—30 meter wide. Water temp. 71°F ; air temp. 73°F. Cast net.
77. River Cauvery at K. R. S. (=Krishna Raja Sagar) dam, 19 km west of Mysore city. 10. 10. 75 ; 9. 5. 77.
Water spread 139.85 sq km depth 38 meter. River cutting through big boulders over rocky terrain. Current fast. 10. 10. 75. Water spread 126. sq. km. Level much reduced, running out only through spillway. Rocky bed exposed. (9.5.77). Cast nets.
78. River Cauvery at Srirangapatnam, 19 km north of Mysore city. 11.10.75 ; 13.5.77. (Plate VIII, Fig. 54). River flowing over rocky bed, interspersed with sandy patches. A barrage is constructed across the river which is about a kilometer wide. Cast nets. 11.10.75. Bamboo traps.
79. River Kabbani at Nanjankud town 26 km south of Mysore City. 13. 10. 75 ; 10. 5. 77. River full with water due to rains, muddy, brownish, turbid, fast, four or five meters deep, 0.5 to one kilometer wide. River bed sandy. 10. 5. 77. Cast nets. Water slow, sluggish. Water temperature 75°F ; air temperature 73°F (13.10.75).
80. River Kabbani at T. Narsipur 35 km from Mysore. 14. 10. 75.
81. River Cauvery at T. Narsipur after its confluence with Kabbani 14. 10. 75 ; 11. 5. 77. A "hapa" net.
82. Fish market at Bonnur 16 km north of T. Narsipur. Catch reported from River Cauvery. 15. 10. 75.
83. River Ulubella, a small rivulet joining Cauvery river at Bluff, 52 m alt. Sivasamudrum, Mandya dist. 17. 10. 75.
River flowing over a deep gorge north to south above the falls, about 3 meter of water stretch. Pebbly and rocky bottom. Swift, clear water, hardly 0.5 meter deep. Marginal vegetation barren except grass and shrubs. Width of ravine about 70 to 80 meters. Cast nets. 17. 10. 75.
84. River Cauvery above the falls at Sivasamudram. 18. 10. 75, 13. 5. 77. (Plate VIII, Fig. 55). Cast nets, Bleaching powder, Rotenone, Endrin.
85. River Cauvery at Dasanpura, 3 km near Kollegal. 18.10.75 ; 12.5.77. River 100 meter wide, moderately fast, and turbid, bottom sandy. Marginal vegetation cultivated fields, 18.10.75. River flowing

over sandy bottom. 3 to 15 meters deep, fast, brownish, turbid. 12.5.77. (Plate VIII, Stn. 56). Cast nets.

86. River Kodihalla, a small streamlet joining Shimsha river at Maddur, 20.10.75. Stream 15 meter wide, clear. Water temperature 79°F ; air temperature 76°F (20.10.75). Cast nets.
87. River Shimsha at Maddur. 20.10.75.
River 100 meter wide, fast, very turbid and deep, sandy bottom, interspersed with boulderous rocks. Marginal vegetation cultivated fields. Water temperature 79°F ; air temperature 81°F. 20.10.75.
88. Nursery tanks of State fisheries department at Maddur. 20.10.75.
89. River Cauvery at Chikalur, Kollegal taluq. 13.5.77.
River about 100 to 200 meter wide, flowing over rocky and boulderous bed, very fast, deep, turbid. Marginal vegetation shrub jungle. Cast nets.
90. Fish market, Mysore City. Catch reported from Cauvery at K. R. S. 14, 5. 77.

MARGINAL AND AQUATIC BIOTA

Although no extensive studies were undertaken to study the gut content of fishes collected and thereby their food habits, or their predator prey relationship, marginal, submerged and bottom biota known from the Cauvery system were noted. These indicate in a way the food available and other associations.

Annelida

Oligochaeta

Nais sp.

Megascolex mawritii

Tubifex tubifex

Mollusca

Class GASTROPODA

Subclass PROSOBRANCHIA

Order MESOGASTROPODA

Family PILIDAE

Pila virens (Lamarck)

Bellamya bengalensis (Lamarck)

Bellamya dissimilis (Müller)

Family THIARIDAE

Subfamily THIARINAE

Thiara (Thiara) scabra (Müller)

Thiara (Stenomelania) torulosa (Bruguiere)

Thiara (Tarebia) lineata (Gray)

Thiara (Melanoides) tuberculata (Müller)

Subfamily PALUDOMINAE

Paludomus monile Hanley & Theobald

Subclass PULMONATA

Order BASOMMATOPHORA

Family LYMNAEIDAE

Lymnaea (Pseudosuccinea) luteola Lamarck

Lymnaea sp.

Family PLANORBIDAE

Indoplanorbis exustus (Deshayes)

Order STYLOMMATOPHORA

Family ARIOPHANTIDAE

Cryptozona (Xestina) semirugata (Beck).

Class BIVALVIA

Order EULAMELLIBRANCHIATA

Family UNIONIDAE

Lamellidens corrianus Lea*Lamellidens marginalis* (Lamarck).*Parreysia (Parreysia) favidens* (Benson)**Crustacea***Caridina nilotica* Roux*Potamon leschnaulti* M. Edw.*Paratelphusa (Oziotelphusa) bouvieri* Rathbun.*Macrobrachium malcolmsonii**Macrobrachium rosenbergii* (de Man)**Insecta**

Coleoptera

Odonata

Dictyoptera

Orthoptera

Diptera

Plecoptera

Hemiptera

Trichoptera

Hymenoptera

Ephemeroptera

Lepidoptera

Amphibia*Rana curtipipes* Jerdon (Tadpoles)*Rana cyanophyllyctis* Schneider*Rana hexadactyla* Lesson*Bufo melanostictus* Schneider*Microhyla rubra* (Jerdon)

Reptilia

- Natrix piscator* (Schn.)
Crocodilus palustris Less.
Geoemyda trijuga (Schweigger)
Testudo elegans Schoepff
Lissemys punctata (Bonnaterre)
Trionyx leithi Gray

Aves

- Halcyon smyrnensis fusca* Bodd.
Strix leptogrammica indranee Sykes
Haliastur indus indus (Bodd.)
Milvus migrans govinda Sykes
Amaurornis phoenicurus phoenicurus (Pennant)
Pelecanus philippensis philippensis Gmel.
Phalacrocorax niger (Veiell)
Ardeola grayii (Sykes)

Mammalia

- Lutra indica*, Gray

SYSTEMATIC LIST OF CAUVERY FISHES

Order ELOPIFORMES

Family ELOPIDAE

Genus **Megalops** Lacépède

1. *M. cyprinoides* (Broussonet)

Order ANGUILLIFORMES

Family ANGUILLIDAE

Genus **Anguilla** Shaw

2. *A. bengalensis bengalensis* (Gray & Hardwicke)
3. *A. bicolor bicolor* McClelland

Order CLUPEIFORMES

Family CLUPEIDAE

Genus **Dayella** Talwar & Whitehead

4. *D. malabarica* (Day)

Genus **Hilsa** Regan

5. *H. ilisha* (Hamilton)

Order OSTEOGLOSSIFORMES

Family NOTOPTERIDAE

Genus **Notopterus** Lacépède

6. *N. notopterus* (Pallas)

Order SALMONIFORMES

Family CHANIDAE

Genus **Chanos** Lacépède

7. *C. chanos* (Forsk.)

Order CYPRINIFORMES

Family CYPRINIDAE

Subfamily CULTRINAE

Genus **Chela** Hamilton

8. *C. (Chela) cachius* (Ham.)
9. *C. (Chela) laubuca* (Ham.)

Genus **Salmostoma** Swainson

10. *S. acinaces* (Val.)
11. *S. boopsis* (Day)
12. *S. clupeoides* (Bloch)
13. *S. untrahi* (Day)

Subfamily RASBORINAE

Genus **Esomus** Swainson

14. *E. barbatus* (Jerdon)
15. *E. danricus* (Ham.)

Genus **Danio** Hamilton

16. *D. (Danio) aequipinnatus* McClelland
17. *D. (Brachydanio) rerio* (Hamilton)

Genus **Rasbora** Bleeker

18. *R. daniconius* (Ham.)
19. *R. caverii* (Jerdon)

Genus **Aspidoparia** (Heckel)

20. *A. morar* (Ham.)

Genus **Amblypharyngodon** Bleeker

- 21. *A. melettina* (Val.)
- 22. *A. microlepis* (Bleeker)

Genus **Barilius** Hamilton

- 23. *B. bendelisis bendelisis* Ham.
- 24. *B. canarensis* (Jerdon)
- 25. *B. gatensis* (Val.)
- 26. *B. vaga vaga* Ham.

Subfamily CYPRININAE

Genus **Cyprinus** Linnaeus

- 27. *C. carpio carpio* Linn.

Genus **Carassius** Nilsson

- 28. *C. carassius* (Linn.)

Genus **Puntius** Hamilton

- 29. *P. amphibius* (Val.)
- 30. *P. arulius arulius* (Jerdon)
- 31. *P. bovanicus* (Day)
- 32. *P. carnaticus* (Jerdon)
- 33. *P. cauveriensis* (Hora)
- 34. *P. chola* (Ham.)
- 35. *P. conchoniis* (Ham.)
- 36. *P. coorgensis* Jayaram
- 37. *P. curmuca* (Ham.)
- 38. *P. dorsalis* (Jerdon)
- 39. *P. dubius* (Day)
- 40. *P. filamentosus* (Val.)
- 41. *P. jerdoni* (Day)
- 42. *P. lithopidos* (Day)
- 43. *P. melanampyx melanampyx* (Day)
- 44. *P. melanostigma* (Day)
- 45. *P. micropogon* (Val.)
- 46. *P. narayani* Hora
- 47. *P. nigrofasciatus* (Günther)
- 48. *P. parrah* Day

- 49. *P. pulchellus* (Day)
- 50. *P. sarana sarana* (Ham.)
- 51. *P. sarana subnasutus* (Val.)
- 52. *P. sophore* (Ham.)
- 53. *P. thomassi* (Day)
- 54. *P. ticto ticto* (Ham.)
- 55. *P. vittatus* (Day)
- 56. *P. wynaadensis* (Day)

Genus **Rohtee** Sykes

- 57. *R. ogilbii* Sykes

Genus **Osteobrama** Heckel

- 58. *O. cotio cotio* (Ham.)
- 59. *O. neilli* (Day)

Genus **Labeo** Cuvier

- 60. *L. ariza* (Ham.)
- 61. *L. bata* (Ham.)
- 62. *L. boga* (Ham.)
- 63. *L. boggut* (Sykes)
- 64. *L. calbasu* (Ham.)
- 65. *L. dussumieri* (Val.)
- 66. *L. fimbriatus* (Bloch)
- 67. *L. kontius* (Jerdon)
- 68. *L. pangusia* (Ham.)
- 69. *L. potail* (Sykes)
- 70. *L. rohita* (Ham.)

Genus **Tor** Gray

- 71. *T. khudree* (Sykes)
- 72. *T. mussullah* (Sykes)

Genus **Cirrhinus** (Oken) Cuvier

- 73. *C. cirrhosa* (Bloch)
- 74. *C. fulungee* (Sykes)
- 75. *C. mrigala* (Ham.)
- 76. *C. reba* (Ham.)

Genus **Osteocheilus** Günther

- 77. *O. (Osteochilichthys) nashii* (Day)
- 78. *O. (Osteochilichthys) thomassi* Day
- 79. *O. (Kantaka) brevidorsalis* (Day)

Genus **Catla** Valenciennes

- 80. *C. catla* (Ham.)

Genus **Ctenopharyngodon** Steindachner

- 81. *C. idella* (Val.)

Subfamily GARRINAE

Genus **Garra** McClelland

- 82. *G. gotyla stenorhynchus* (Jerdon)
- 83. *G. mcClellandi* (Jerdon)
- 84. *G. mullya* (Sykes)

Family HOMALOPTERIDAE

Genus **Bhavana** Hora

- 85. *B. australis* (Jerdon)

Genus **Balitora** Gray

- 86. *B. mysorensis* Hora

Family COBITIDAE

Subfamily NOEMACHEILINAE

Genus **Oreonectes** Günther

- 87. *O. evezardi* (Day)

Genus *Noemacheilus* Van Hasselt

- 88. *N. denisonii* Day
- 89. *N. guentheri* Day
- 90. *N. monilis* Hora
- 91. *N. semiarmatus* Day
- 92. *N. sinuatus* Day
- 93. *N. striatus* Day

Subfamily COBITINAE

Genus **Lepidocephalus** Bleeker

- 94. *L. thermalis* (Val.)

Order SILURIFORMES

Family BAGRIDAE

Genus **Mystus** Scopoli

- 95. *M. armatus* (Day)
- 96. *M. bleekeri* (Day)
- 97. *M. cavasius* (Ham.)
- 98. *M. gulio* (Ham.)
- 99. *M. malabaricus* (Jerdon)
- 100. *M. menoda* (Ham.)
- 101. *M. montanus* (Jerdon)
- 102. *M. punctatus* (Jerdon)
- 103. *M. vittatus* (Bloch)

Genus **Aorichthys** Wu

- 104. *A. aor* (Ham.)
- 105. *A. seenghala* (Sykes)

Family SILURIDAE

Genus **Wallago** (Bleeker)

- 106. *W. attu* (Bloch & Schneider)

Genus **Silurus** Linn.

- 107. *S. berdmorei wynaadensis* Day

Family SCHILBEIDAE

Genus **Pseudeutropius** Bleeker

- 108. *P. atherinoides* (Bloch)

Genus **Proeutropiichthys** Hora

- 109. *P. taakree* (Sykes)

Genus **Silonia** Swainson

- 110. *S. childreni* Sykes

Family PANGASIIDAE

Genus **Pangasius** Val.

- 111. *P. pangasius* (Ham.)

Family SISORIDAE

Genus **Nangra** Day

- 112. *N. viridescens* (Ham.)

Genus **Glyptothorax** Blyth113. *G. lonah* (Sykes)114. *G. madraspatanum* (Day)

Family CLARIIDAE

Genus **Clarias** Scopoli115. *C. batrachus* (Linn.)

Family HETEROPNEUSTIDAE

Genus **Heteropneustes** (Müller)116. *H. fossilis* (Bloch)

Order ATHERINIFORMES

Family BELONIDAE

Genus **Xenentodon** Regan117. *X. cancila* (Ham.)

Family CYPRINODONTIDAE

Genus **Aplocheilus** McClelland118. *A. lineatus* (Val.)119. *A. panchax* (Ham.)Genus **Oryzias** Jordan & Snyder120. *O. melanostigma* (McCl.)

Family POECILIDAE

Genus **Gambusia** Poey121. *G. affinis patruei* (Baird & Girard)

Order CHANNIFORMES

Family CHANNIDAE

Genus **Channa** Scopoli122. *C. leucopunctatus* (Sykes)123. *C. marulius* (Ham.)124. *C. orientalis* (Schneider)125. *C. punctatus* (Bloch)126. *C. striatus* (Bloch)

Order PERCIFORMES

Family CHANDIDAE

Genus **Chanda** Hamilton127. *C. nama* (Hamilton)128. *C. ranga* (Hamilton)

Family CICHLIDAE

Genus **Etroplus** Cuvier129. *E. maculatus* (Bloch)130. *E. suratensis* (Bloch)Genus **Tilapia** A. Smith131. *T. mossambica* Peters

Family MUGILIDAE

Genus *Liza* Jordan & Swain.132. *L. parsia* (Ham.)133. *L. tade* (Forsk.)Genus **Rhinomugil** Gill134. *R. corsula* (Ham.)

Family GOBIIDAE

Genus **Awaous** Val.135. *A. stamineus* (Val.)Genus **Glossogobius** Gill136. *G. giuris giuris* (Ham.)

Family ANABANTIDAE

Genus **Anabas** Cuvier137. *A. testudineus* (Bloch)

Family BELONTIDAE

Genus **Macropodus** Lacépède138. *M. cupanus* Val.

Family OSPHRONEMIDAE

Genus **Osphronemus** Lacépède139. *O. goramy* Lacépède

Order MASTACEMBELIFORMES

Family MASTACEMBELIDAE

Genus *Macrognathus* Lacépède140. *M. aculeatus* (Bloch)Genus *Mastacembelus* Scopoli141. *M. armatus armatus* Lacépède142. *M. pancalus* (Ham.)

SYSTEMATIC ACCOUNT

KEY TO THE FAMILIES

- | | | | |
|----|--|-----|---|
| 1. | Body elongated, more or less cylindrical, long drawn out. | ... | 2 |
| | Body not elongated, fusiform, compressed, not eel-like. | ... | 4 |
| 2. | Pelvic girdle and pelvic fins absent. | ... | MASTACEMBELIDAE (Genus <i>Mastacembelus</i>) |
| | Pelvic girdle and pelvic fins present. | ... | 3 |
| 3. | Dorsal and anal fins confluent with caudal when latter is present. Gill openings of moderate extent, situated nearer base of pectoral fins. Scales present, small, imbedded in skin. | ... | ANGUILLIDAE (Genus <i>Anguilla</i>) |
| | Dorsal and anal fins far from caudal. Gill openings wide, membranes of two sides connected beneath isthmus. Scales moderately large. | ... | CHANNIDAE (Genus <i>Channa</i>) |
| 4. | Skin scaled or rarely without scales, but never with osseous plates. Pectoral fins simple without any spine. | ... | 5 |
| | Skin without scales, either smooth or covered with osseous plates or with scattered tubercles. Pectoral fins with outermost ray modified into osseous spine or thick ray. | ... | 21 |
| 5. | Abdominal edge keeled with double or single serration. | ... | 6 |
| | Abdominal edge smooth, rounded. | ... | 7 |
| 6. | Lateral line present. Abdomen with double serration. | ... | NOTOPTERIDAE (Genus <i>Notopterus</i>) |
| | Lateral line absent. Abdomen with single serration. | ... | CLUPEIDAE |

7.	An osseous gular plate at symphysis of lower jaw covering the intermediate area present. ...	ELOPIDAE (Genus Elops)	
	Gular plate absent. ...	...	8
8.	Gill membranes entirely united below and not attached to isthmus. An accessory branchial organ present. Jaws without teeth. ...	CHANIDAE (Genus Chanos)	
	Gill membranes free. No accessory respiratory organ. Jaws with teeth. ...	...	9
9.	Pelvic fins inserted in the abdominal region and without spines. Dorsal and anal fins without spines. Mostly a single dorsal fin. ...	...	10
	Pelvic fins inserted in the thoracic region and with spines. Dorsal and anal fins with spines. Dorsal fin mostly in two parts, continuous or separate, one spiny, another with rays. ...	...	15
10.	Scales on head and body. Teeth present on jaws. ...	...	11
	No scales on head. No teeth on jaws. ...	...	13
11.	Both jaws produced. ...	BELONIDAE (Genus Xenentodon)	
	Jaws not produced. ...	...	12
12.	Caudal peduncle longer than head. ...	POECILIDAE (Genus Gambusia)	
	Caudal peduncle shorter than head. ...	CYPRINODONTIDAE	
13.	Paired fins horizontally inserted. Two or more anterior rays of pectoral fins simple. ...	HOMALOPTERIDAE	
	Paired fins laterally inserted. Not more than one anterior ray of pectoral fins simple or may be all branched. ...	...	14
14.	Two, four or no barbels. ...	CYPRINIDAE	
	Six or eight barbels. ...	COBITIDAE	
15.	Pelvic fins united with a membrane or frenum across than base, forming a sucking disc. ...	GOBIIDAE	
	Pelvic fins may be close but not united as above, may be apart. ...	...	16
16.	An accessory respiratory organ in the form of a cavity above the third or upper portion of the first branchial arch present. ...	...	17
	No such accessory respiratory organ present. ...	...	19
17.	First ray of pelvic fin produced into a long filament. Pelvic fin inserted behind or posterior to pectoral fin. ...	...	18
	First ray of pelvic fin not produced into a long filament. Pelvic fin inserted below base of pectoral fin. ...	ANABANTIDAE (Genus Anabas)	

- | | | | |
|-----|--|-----|--|
| 18. | Anal fin longer than dorsal fin. | ... | BELONTIDAE (Genus
Macropodus) |
| | Anal fin shorter than or equal to dorsal fin. | ... | OSPHRONEMIDAE (Genus
Osphronemus) |
| 19. | Anal fin with 12-16 spines. | ... | CICHLIDAE |
| | Anal fin with three or four spines. | ... | ... 20 |
| 20. | Spinous and soft portion of dorsal fins well separated. | ... | MUGILIDAE |
| | Spinous and soft portion of dorsal fins continuous. | ... | CHANDIDAE |
| 21. | Adipose dorsal fin absent. | ... | ... 22 |
| | Adipose dorsal present as a smooth, short or long, high or low fin. | ... | ... 24 |
| 22. | Nasal barbels absent. No accessory respiratory organs present. | ... | SILURIDAE |
| | Nasal barbels present. Accessory respiratory organs present on gills or in the body cavity... | ... | ... 23 |
| 23. | Dorsal fin long with 23 to 76 rays. Accessory respiratory organs on gills present. | ... | CLARIIDAE |
| | Dorsal fin short, with 6 or 7 rays. Accessory respiratory organs as a tubular air-sac in body cavity. | ... | HETEROPNEUSTIDAE (Genus
Heteropneustes) |
| 24. | Nostrils close together with very little interspace between the two. | ... | SISORIDAE |
| | Nostrils wide apart, separated by some interspace. | ... | ... 25 |
| 25. | Anal fin short with less than 20 rays (8-16)... | | BAGRIDAE |
| | Anal fin long with more than 20 rays (24-90). | ... | ... 26 |
| 26. | Nasal barbels always present (exception <i>Silonia</i> Swainson, with 40-46 anal fin rays and caniniform teeth on jaws). | ... | SCHILBEIDAE |
| | Nasal barbels absent. (Anal fin with 30-34 rays and villiform teeth on jaws). | ... | PANGASIIDAE (Genus
Pangasius) |

Order ELOPIFORMES

Family ELOPIDAE

Genus *Megalops* Lacépède*Megalops cyprinoides* (Broussonet)

1782. *Clupea cyprinoides* Broussonet, *Ichthyologia*, pl. 9 (type locality, Oceans between the Tropics (not Jamaica and Antiqua or Rio de Janeiro, Brazil) ; Tanna Island, South Pacific.

Local names.—*Mooran kendai*, Tamil ; *Cunay*, Malayalam.

Material.—6 exs. in total : 9-1 ; 20-5.*

Distribution.—Seas of India, Pakistan, Bangladesh, Sri Lanka, Malaysia, Malay Archipelago, Korea, Japan, Queensland, New South-wales, Melanesia, Micronesia, Polynesia, Hawaii, Red Sea, Zanzibar, Natal, Mauritius. Often captured in rivers and common in tanks.

Remarks.—This fish is the Oriental correspondent of the celebrated tarpon of the western Atlantic and has a very wide distribution in the Pacific and Indian Oceans. Though primarily marine it enters freshwater regularly. The adaptability of this species to strictly freshwater habitat is well known. It can be reared in freshwater ponds from young caught in the coast.

Maximum known size 3 feet or 914 mm.

The main diagnostic feature of the species is the presence of a gular plate on the ventral side between the mandibles.

Order ANGUILLIFORMES

Family ANGUILLIDAE

Genus *Anguilla* Shaw

KEY TO SPECIES

- | | | |
|--|-----|-----------------------------------|
| 1. Dorsal fin inserted midway between gill opening and origin of anal fin. Adult colouration variegated. | ... | <i>A. bengalensis bengalensis</i> |
| Dorsal fin inserted above or slightly anterior or posterior to vent. Plain colouration. | ... | <i>A. bicolor bicolor</i> |

* Throughout this paper the first number under material cited following the total number of examples indicates the Station number followed by the number of examples collected at that locality.

***Anguilla bengalensis bengalensis* (Gray & Hardwicke)**

1833-34. *Muraena bengalensis* Gray & Hardwicke, III, *Indian Zool. Hardwicke*, 2, pl. 95, fig. 5 (type locality, the Ganga).

Local names.—*Vilangu*, Tamil.

Material.—2 exs. in total : 39-1 ; 52-1.

Distribution.—Throughout India, Pakistan, Bangladesh, Sri Lanka, Burma, Malay Archipelago, China, Formosa besides the Islands of Indian Ocean and the Pacific.

Remarks.—Maximum size 1219 mm.

***Anguilla bicolor bicolor* McClelland**

1845. *Anguilla bicolor* McClelland, *Calcutta J. nat. Hist.*, 5, p. 178, pl. vi, fig. 1 (type locality, Sandoway, Burma).

Local name.—Nil.

Material.—1 ex. in total : 44-1.

Distribution.—Throughout India, Bangladesh, Burma and the Malay Archipelago.

Remarks.—Maximum size 700 mm.

Order CLUPEIFORMES**Family CLUPEIDAE****KEY TO GENERA**

- | | | |
|---|-----|----------------|
| 1. Upper jaw with a distinct notch in the middle. | ... | Hilsa |
| Upper jaw without a notch in the middle. | ... | Dayella |

Genus *Dayella* Talwar & Whitehead***Dayella malabarica* (Day)**

1873. *Spratelloides malabaricus* Day, *Proc. zool. Soc. Lond.*, p. 240 (type locality, Malabar).

1971. *Dayella malabarica*, Talwar & Whitehead, *Bull. British Mus.*, (N. H.), 22 (2), p. 63.

Local name.—Nil.

Material.—No specimen obtained by us. Recorded by Chacko *et al.* (1954).

Distribution.—Western coast of India in rivers and estuaries,

Genus *Hilsa* Regan*Hilsa ilisha* (Hamilton)

1822. *Clupanodon ilisha* Hamilton, *Fish. Ganges*, pp. 243, 382, pl. 19, fig. 73 (type locality, Ganges estuaries).

Local name.—*Sevva*, *Ullam*, Tamil.

Material.—No specimen obtained by us. Recorded by Hora (1942).

Distribution.—Persian Gulf, Coast of Sind, India and Burma, Malay Archipelago.

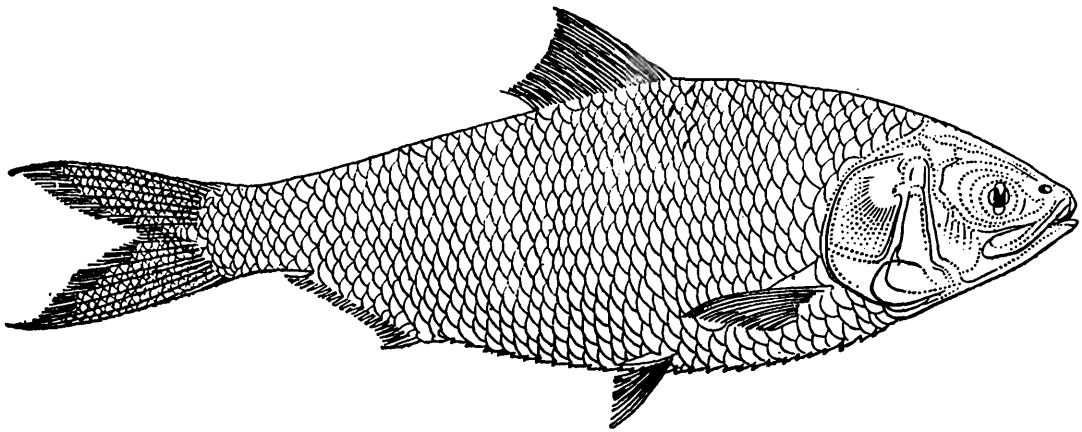


Fig. 1. Lateral view of *Hilsa ilisha* (Hamilton).

Remarks.—In the Cauvery, previous to the construction of the lower Coleroon Anaicut in 1836, *Hilsa* was caught in the neighbourhood of Tiruchirappally about 160 km from the sea but now it is confined to the lower reaches of about 60 km only, where from also it has become scarce.

Order OSTEOGLOSSIFORMES

Family NOTOPTERIDAE

Genus *Notopterus* Lacépède*Notopterus notopterus* (Pallas)

1769. *Gymnotus notopterus* Pallas, *Spicilegia zoologica*, part 7, pl. 6, fig. 2 (type locality, Indian Ocean).

Local names.—*Ambattan vazhai*, *Chinna vazhai*, *Chotta vazhai*, Tamil.

Material.—50 exs. in total ; 10-3 ; 44-8 ; 52-2 ; 53-1 ; 56-1 ; 59-3 ; 60-1 ; 62-3 ; 63-12 ; 64-2 ; 68-5 ; 71-1 ; 76-1 ; 78-4 ; 84-1 ; 85-1 ; 86-1.

Distribution.—Throught India, Pakistan, Nepal, Bangladesh, Burma, Thailand to Malay Archipelago and Indonesia. Occurs in fresh and brackishwaters.

Remarks.—Generally adult fish are uniformly cement grey or bronze or copper coloured. Juveniles may have some cross bands. The smallest example in our collection (118 mm. in total length) does not

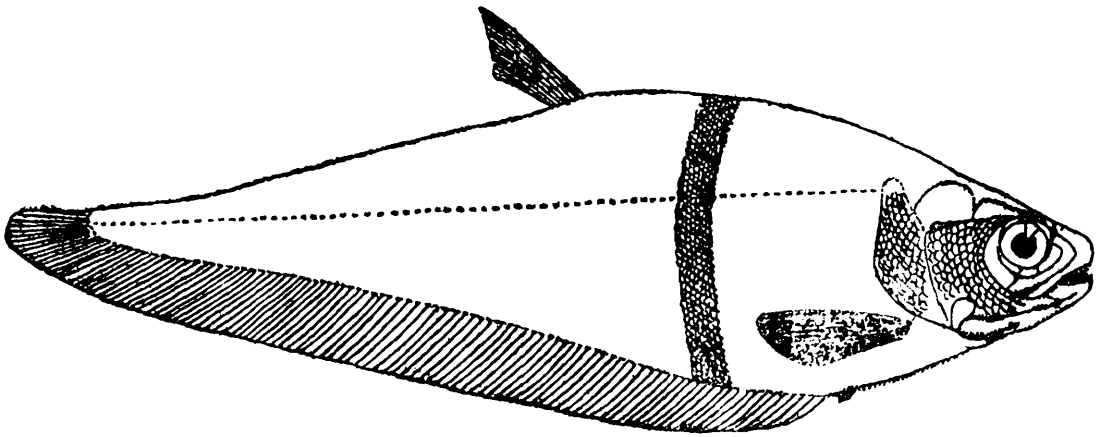


Fig. 2. Lateral view of *Notopterus notopterus* (Pallas).

however show any colour bands. Smaller examples are brighter, more silvery than larger specimens.

Maximum known size 2 feet (609 mm) or more. The largest in our collection is 361 mm long from Bhavanisagar dam collected on 7. 4. 1973.

Order SALMONIFORMES

Family CHANIDAE

Genus *Chanos* Lacépède

Chanos chanos (Forsk.)

1775. *Mugil chanos* Forskal, *Descr. Anim.*, p. 74, No. 110 (type locality, Djedda, Red Sea).

Local names.—*Tulu kendai*, Tamil; *Palah bontah*, Telugu; *Hu-meen*, Kanarese; *Pu-meen*, Tulu.

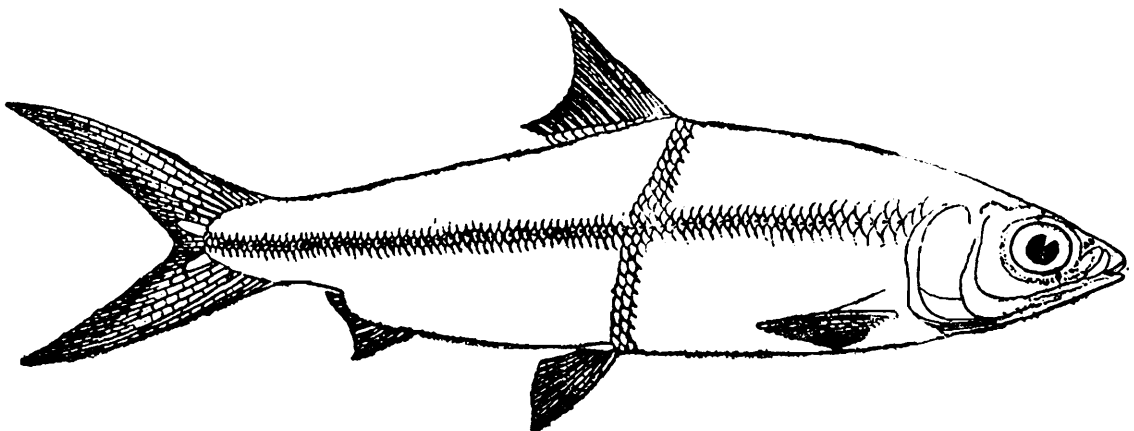


Fig. 3. Lateral view of *Chanos chanos* (Forsk.).

Material.—No specimen obtained by us. Recorded by Chacko *et al.* (1954).

Distribution.—Indian and Pacific Oceans. Acclamatished in S. Kanara tanks.

Order CYPRINIFORMES

Family CYPRINIDAE

KEY TO SUBFAMILIES.

1. Abdomen or part of abdomen compressed into a sharp keel like edge. No barbels. ...

CULTRINAE

Abdomen rounded or flat, not compressed. Barbels one or two pairs present or absent. ...

... 2
2. Upper lip continuous with skin of snout. Mouth conspicuously inferior. Lower lip with a sucker. ...

GARRINAE

Upper lip separate from skin of rostrum by a deep groove. Mouth anterior, subinferior or inferior. Lower lip without an adhesive disk. ...

... 3
3. A knob at symphysis or junction of two arms of lower jaw (exception *Aspidoparia*) fitting into an emargination or incision of upper jaw. Dorsal fin with 6-16 branched rays without any osseous simple ray. Lateral line when complete with an abrupt downward curvature anteriorly running in lower half of caudal peduncle. ...

RASBORINAE

No knob at symphysis or junction of two arms of lower jaw. Dorsal fin with 7-30 branched rays with or without an osseous simple ray. Lateral line complete or incomplete running along middle of caudal peduncle. ...

CYPRININAE

Subfamily CULTRINAE

KEY TO GENERA

1. A knob at the symphysis of lower jaw absent. ...

Chela

A knob at the symphysis of lower jaw present. ...

Saimostoma

Genus **Chela** Hamilton

KEY TO SPECIES

- | | |
|---|-------------------|
| 1. Lateral line scales 51-68. Scales small, much more numerous on body. Body depth 4.0 to 4.25 in total length. ... | <i>C. cachius</i> |
| Lateral line scales 34-37. Scales large, not many on body. Body depth 3.5 to 4.5 in total length. ... | <i>C. laubuca</i> |

Chela (Chela) cachius Hamilton

1822. *Cyprinus (Chela) cachius* Hamilton, *Fish. Ganges*, pp. 258, 384 (type locality, River Ganges, about the commencement of the delta).
1822. *Cyprinus (Chela) atpar* Hamilton, *Fish. Ganges*, pp. 259, 384 (type locality, branches of the Ganges, the Jamuna and Brahmaputra rivers).
1958. *Chela (Chela) cachius*, Silas, *J. Bombay nat. Hist. Soc.*, 55 (1), p. 66 (revision).

Local names.—Kachi, Hindi.

Material.—13 exs. in total : 14-3 ; 16-2 ; 46-5 ; 55-1 ; 58-1 ; 73-1.

Distribution.—India, Nepal, Pakistan, Bangladesh, Burma.

Remarks.—Rajan (1955) reported it from the head waters of Bhavani river.

Chela laubuca (Hamilton)

1822. *Cyprinus laubuca* Hamilton, *Fish. Ganges*, pp. 260, 384 (type locality, ponds in northern parts of Bengal).

Local names.—Nil.

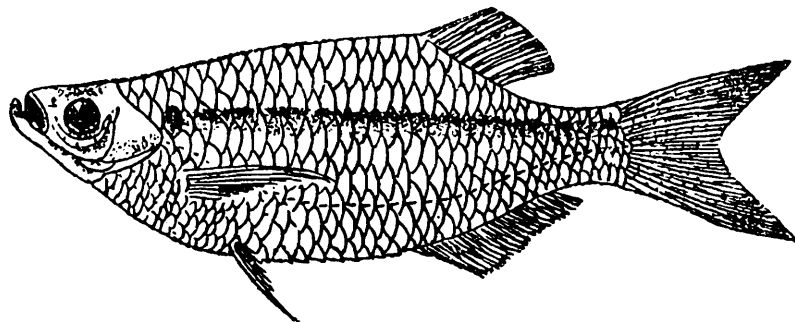


Fig. 4. Lateral view of *Chela laubuca* (Hamilton).

Material.—No material obtained by us. Recorded by Rajan (1955).

Distribution.—Orissa, Ganjam, W. Bengal, Madhya Pradesh, Assam, Burma.

Genus **Salmostoma** Swainson

KEY TO SPECIES

- | | | |
|--|-----|----------------------|
| 1. Lateral line scales above 70 (74-112) | ... | <i>S. clupeoides</i> |
| Lateral line scales below 70 (39-64) | ... | 2 |
| 2. Dorsal fin inserted in advance of anal fin. | | |
| Anal fin with 12-14 branched rays. | ... | <i>S. boopsis</i> |
| Dorsal fin inserted above anal fin. Anal fin with 14 or 15 branched rays. | ... | 3 |
| 3. Lateral line with 42-46 scales. Symphysial knob on lower jaw rudimentary. Lateral line slightly curved. | ... | <i>S. acinaces</i> |
| Lateral line with 59-63 scales. Symphysial knob on lower jaw rudimentary. Lateral line curved sharply. | ... | <i>S. untrahi</i> |

Salmostoma acinaces (Valenciennes)

1842. *Leuciscus acinacss* Valenciennes, *Hist. Nat. Poiss.*, 17, p. 347, pl. 509 (type locality, Mysore).

1867. *Chela argentea* Day, *Proc. zool. Soc. London*, p. 301 (type locality, Bhavani river).

Local names.—*Chaya vallaches*, *Vellachae kendai*, Tamil ; *White carp*, English.

Material.—228 exs: in total : 47-5 ; 57-2 ; 63-2 ; 64-32 ; 67-17 ; 68-21 ; 69-32 ; 75-1 ; 77-22 ; 79-90 ; 95-4.

Distribution.—Bhavani river at base of Cauvery river in Karnataka and Tamil Nadu.

Remarks.—The anal fin is generally reported to be tinged with black but in all the specimens from R. Cauvery at Ramanathapura, the fin was plain. A black streak along lateral line is prominent. The anal fin in most examples has 16 branched rays ; the lateral line scales vary from 44-46.

Salmostoma boopsis (Day)

1873. *Chela boopsis* Day, *Proc. zool. Soc. London*, p. 708 (type-locality, South Canara).

Local names.—Nil.

Material.—1 ex. in total : 89-1.

Distribution.—India : W. ghats, S. Kanara ; Mutha Mula river, Pune, Maharashtra. Day (1889) doubtfully recorded this species from Mysore, which is now cleared by specimens from the upper reaches of the Cauvery.

Salmostoma clupeioides (Bloch)

1795. *Cyprinus clupeioides* Bloch, *Naturg. Ausland, Fische*, 12, p. 49. pl. 408, fig. (type locality, Tranquebar).

Local names.—*Netteli*, Tamil.

Material.—139 exs. in total : 5-13 ; 6-2 ; 8-18 ; 14-5 ; 16-2 : 35-1 ; 44-2 ; 45-1 ; 48-1 ; 50-1 ; 57-1 ; 58-4 ; 64-26 ; 68-1 ; 73-1 ; 79-55 ; 81-1 ; 85-2 ; 86-2.

Distribution.—India : Narbada, Tapi, Krishna, Godavary and Cauvery river systems. Recorded from Nasik, Deolali, Jabalpur. Day (1878) includes Burma also within its range. Recorded from Nelliampathi hill draniage by Silas (1951).

Remarks.—This seems to be the most common of the “Chilwas” in the Cauvery system.

Salmostoma untrahi (Day)

1869. *Chela untrahi* Day, *Proc. zool. Soc. London*, p. 381 (type locality, Mahanadi).

Local names.—*Untrahi*, Oriya.

Material.—84 exs. in total : 5-13 ; 17-9 ; 18-2 ; 20-2 ; 25-3 ; 33-1 ; 35-9 ; 36-1 ; 39-1 ; 40-1 ; 44-8 ; 45-2 ; 46-1 ; 52-2 ; 56-1 ; 57-1 ; 63-3 ; 64-24.

Distribution.—India : Mahanadi river drainage, Orissa. Cauvery river system, S. India.

Subfamily RASBORINAE

KEY TO GENERA

- | | | |
|--|-----|--------------------|
| 1. Lower lip absent. Lower jaw with a sharp crescentic edge. | ... | Aspidoparia |
| Lower lip present. Lower jaw with or without a symphysial knob. | ... | 2 |
| 2. Maxillary barbels very long. No symphysial knob on lower jaw. | ... | Esomus |
| Maxillary barbels short or absent. A symphysial knob present on lower jaw. | ... | 3 |
| 3. Cleft of mouth often extending beyond anterior margin of eye. Body with vertical bands or blotches. | ... | Barilius |
| Cleft of mouth not extending beyond anterior margin of eye. Body plain or with horizontal stripes. | ... | 4 |

4.	Upper lip absent.	...	Amblypharyngodon
	Upper lip present.	...	5
5.	Anal fin with 13-20 rays. Dorsal fin inserted opposite interspace between anal and pelvic fins.	...	Danio
	Anal fin with seven or eight rays. Dorsal fin inserted behind origin of pelvic fin.	...	Rasbora

Genus **Esomus** Swainson

KEY TO SPECIES

- | | | | |
|----|--|-----|--------------------|
| 1. | Lateral line complete or nearly so extending to atleast the base of anal fin. | ... | <i>E. barbatus</i> |
| | Lateral line absent or nearly so, piercing only four to seven scales anteriorly. | ... | <i>E. danricus</i> |

Esomus barbatus (Jerdon)

1849. *Leuciscus barbatus* Jerdon, *Madras J. Lit. Sci.*, 15, p. 322 (type locality, rivers and tanks all over Mysore and Carnatic).

Local names.—*Messaiparavai*, Tamil.

Material.—513 exs. in total : 5-7 ; 8-15 ; 11-1 ; 14-1 ; 19-3 ; 21-29 ; 24-2 ; 26-3 ; 46-450 ; 47-1 ; 57-1.

Distribution.—Confined to South India, recorded so far from Nellore dist., Andhra Pradesh, Chingleput dist., and Mysore. Recorded for the first time from the Cauvery river system in Tamil Nadu also.

Remarks.—Rajan (1955) recorded this species from the head waters of Bhavani river. Silas (1957) considered the Sri Lanka species *E. thermoicos* (Valenciennes) as a subspecies of *E. barbatus*. Hora & Mukerji (1928) differentiated *E. barbatus* from *E. thermoicos* by coloration and possession of 17 predorsal scales. Silas (*op. cit.*) found the predorsal scales to vary from 17 to 19 which is borne out by our material also. Hora and Mukerji (1928) also gave a key to distinguish the five species of this genus known then. Besides *E. danricus*, *E. barbatus* (Jerdon) was also reported, as occurring in South India by the authors. They listed specimens of *barbatus* from Chingleput district, Madras, but not from the Cauvery drainage. *E. barbatus* differs from *E. danricus* by the lateral line extending up to anal fin, besides 30-32 scales on the lateral line in the former (*versus* lateral line incomplete, extending only up to 6 or 7 scales anteriorly and 27-30 scales along lateral line in *E. danricus*).

The frequency distribution of lateral line scales and predorsal scales shown by 79 examples is as below :—

Lateral line scales					Predorsal scales			
30	31	32	33	34	16	17	18	19
3	8	38	29	1	11	35	32	1

***Esomus danricus* (Hamilton)**

1822. *Cyprinus danrica*, *C. jogia*, *C. sutiha*, Hamilton, *Fish Ganges*, pp. 325-327, 390-391, pl. xvi, fig. 88 (type-locality, ponds and ditches of Bengal).

Local names.—*Messiparavai*, Tamil.

Material.—1 ex in total : 75-1.

Distribution.—Generally confined to North India extending up to Krishna river system in South. Hora & Mukerji (1928) reported this species as occurring in S. India also, from Nellore district, and Kolleru Lake.

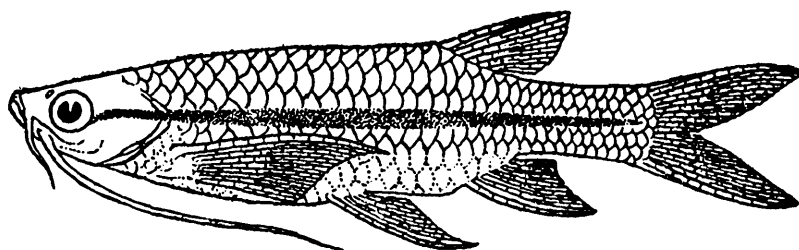


Fig. 5. Lateral view of *Esomus danricus* (Hamilton).

Remarks.—The single example is the first record from the Cauvery river system.

Genus *Danio* Hamilton

KEY TO SUBGENERA AND SPECIES

1. Dorsal fin with 12-16 branched rays. Several lateral stripes coalescing in the caudal region. ... *Danio (Danio) aequipinnatus*
- Dorsal fin with 7 branched rays. Five or six clearly defined lateral stripes present all over body. ... *Danio (Brachydanio) rerio*

***Danio (Danio) aequipinnatus* (McClelland)**

1839. *Perilampus aequipinnatus* McClelland, *Asiatic Researches*, 19, p. 393 (type locality, Assam).

Local names.—*Selai paravu*, *Vannathi Podi*, Tamil,

Material.—373 exs. in total : 5-17 ; 8-4 ; 11-6 ; 12-10 ; 14-48 ; 16-8 ; 17-5 ; 18-10 ; 21-2 : 22-2 ; 24-2 ; 25-10 ; 31-3 ; 35-1 ; 39-2 ; 40-5 ; 46-21 ; 47-42 ; 49-3 ; 54-7 ; 55-7 ; 57-44 ; 63-4 ; 64-3 ; 65-6 ; 66-4 ; 67-2 ; 71-6 ; 73-3 ; 77-11 ; 78-13 ; 79-55 ; 84-6 ; 89-1.

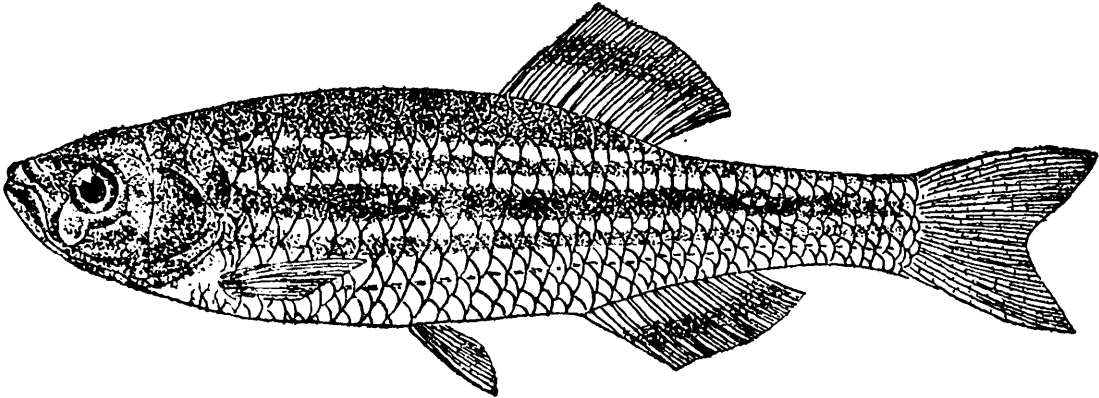


Fig. 6. Lateral view of *Danio aequipinnatus* McClelland.

Maximum size 152 mm.

Distribution.—Throughout India, Pakistan, Sri Lanka, Bangladesh, Burma, Thailand.

Remarks.—A few examples from Mayanur channel at Kulithalai, were juveniles ranging 30 to 55 mm in standard length. The frequency distribution of dorsal and anal fin rays (total count) and of lateral line scales is as below.—

SL in mm	Dorsal fin rays			Anal fin rays			LL Number of Scales				
	12	13	14	15	16	17	32	33	34	35	36
30-35	8	—	—	—	8	—	2	3	3	—	—
36-40	7	3	—	—	9	1	—	7	3	1	—
41-45	5	3	—	1	7	1	—	2	3	2	—
46-50	3	2	—	—	4	—	1	1	—	2	1
51-55	5	3	1	—	6	3	—	4	4	1	—

Hora and Mukerji (1934) gave an artificial key to the species of *Danio* and distinguished *D. strigilifer* Myers, and *D. malabricus* Jerdon from *D. aequipinnatus*. The first species though known only from Burma was recorded by Hora (1937) from S. India also. *D. malabaricus* of course as implied by the name is known only from Kerala. *D. strigilifer* is reported to have 37 scales on its lateral line, *D. malabaricus* 32-34 unlike *D. aequipinnatus* with 34-36 scales. Hora and Law (1944) later found after examination of a large number of young, half grown and adult specimens of *D. aequipinnatus* that the two species are synonymous, The frequency distribution data of some young examples

given above would seem to support this contention although the possibility of existence of geographical subspecies cannot be ruled out. Nine examples from Stn. 78, River Cauvery at Srirangapatnam (13-5-77) measure 55-61 mm in standard length. Of these, five examples (56-59 mm SL) have four barbels well developed, whereas four examples (55-61 mm SL) have no maxillary barbels. These have only 15 or 16 anal fin rays instead of 16 or 17.

Two examples 58 and 59 mm in standard length from R. Kabbini at Nanjangud (Stn. 79) have 12 and 13 dorsal fin rays, 16, 14 anal fin rays and 36 lateral-line scales. Both have two barbels only. The bands along the sides are not prominent. The caudal band coalesces to form a faint bluish band along the middle.

Danio (Brachydanio) rerio (Hamilton)

1822. *Cyprinus rerio* Hamilton, *Fish Ganges*, pp. 323, 390 (type locality, R. Kosi).

Local names.—Nil.

Material.—203 exs. in total : 65-173 (18-32 mm TL) ; 66-30.

Distribution.—India : Eastern India from W. Bengal through Orissa to Andhra Pradesh. Also known from Nepal, Bangladesh and Pakistan.

Remarks.—All the specimens were bright steel grey or blue striped in life. The lateral line extends up to anal fin and in some beyond, and has 28-30 scales. This species has not so far been reported from the Cauvery system and this is the first record.

Genus Rasbora Bleeker

KEY TO SPECIES

- | | | |
|---|-----|----------------------|
| 1. Post dorsal distance (distance from base of first dorsal ray to end of hypural plate) when carried forward falls behind posterior border of eye. | ... | <i>R. caverii</i> |
| Post-dorsal distance when carried forward falls before posterior border of eye. | ... | <i>R. daniconius</i> |

Rasbora daniconius (Hamilton)

1822. *Cyprinus daniconius* Hamilton, *Fish Ganges*, p. 327, pl. 15, fig. 89 (type locality, rivers of southern Bengal).

Local names.—*Patta kunju*, Tamil.

Material.—145 exs. in total : 5-13 ; 6-1 ; 7-1 ; 8-24 ; 11-1 ; 14-1 ; 18-1 ; 19-80 ; 46-1 ; 47-1 ; 54-1 ; 66-7 ; 65-2 ; 68-1 ; 70-2 ; 77-3 ; 78-1 ; 81-3 ; 88-1.

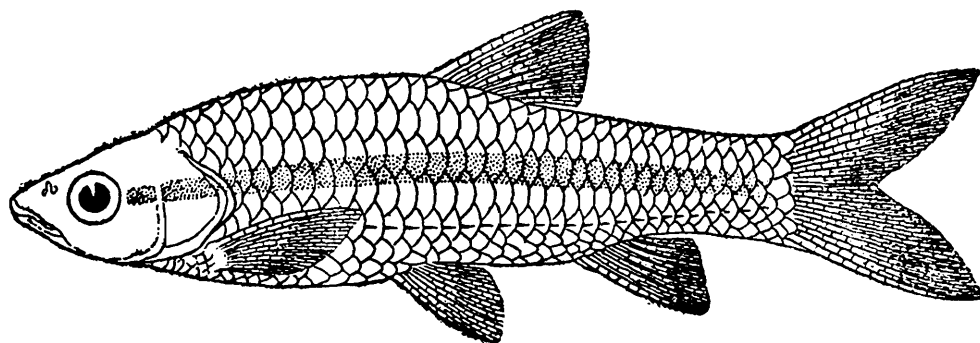


Fig. 7. Lateral view of *Rasbora daniconius* (Hamilton).

Distribution.—Throughout India, Pakistan, Bangladesh, Sri Lanka, Burma, Malaya.

Remarks.—A specimen 114 mm in total length from Stn. 88. Nursery tanks of State fishery department at Maddur collected in Oct., 1975 was a female ripe with eggs.

***Rasbora caverii* (Jerdon)**

1848. *Leuciscus caverii* Jerdon, *Madras J. Lit. & Sci.*, 15, p. 320 (type locality, Cauvery river, Coorg State).

1937. *Rasbora caverii*, Hora, *Rec. Indian Mus.*, 39, pp. 26-28, fig. 11 (description).

Local names.—Nil.

Material.—3 exs. in total : 73-2 ; 81-1 (topotypes).

Distribution.—Cauvery river, Coorg ; also Hemavathy and Kabbini rivers.

Genus *Aspidoparia* Heckel

***Aspidoparia morar* (Ham.)**

1821. *Cyprinus morar* Hamilton, *Fish. Ganges*, pp. 264, 384, pl. 31, fig. 75 (type locality, rivers Yamuna and Teesta).

Local name.—Nil.

Material.—No specimen obtained by us. Recorded by Hora (1937).

Distribution.—According to Day (1889) "Sind, Punjab, continent of India (except the Western coast, and localities south of the Krishna river) also Assam and Burma".

Remarks.—This is mainly a North Indian species, but has been included here on the strength of Hora (1937). Perhaps it may occur in the head waters and head reaches of Cauvery and its affluents.

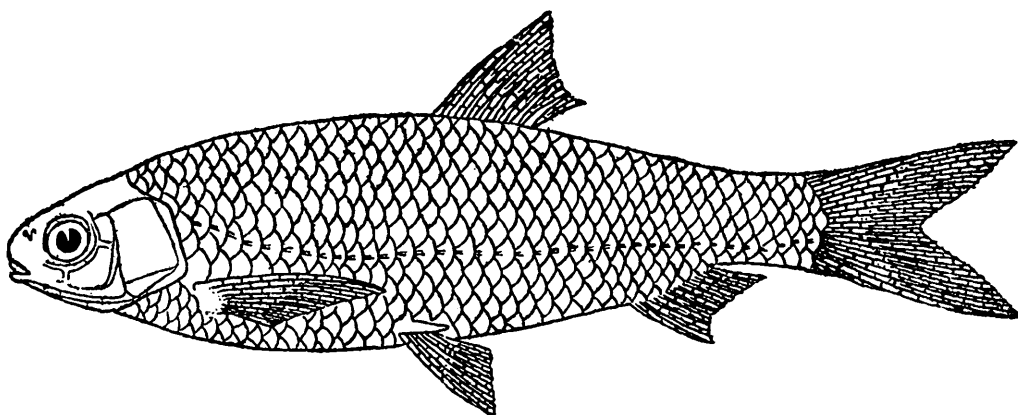


Fig. 8. Lateral view of *Aspidoparia morar* (Hamilton).

Genus *Amblypharyngodon* Bleeker

KEY TO SPECIES

- | | | |
|---|-----|----------------------|
| 1. Head length 4.75-5.0 in total length. A broad silvery band present. | ... | <i>A. microlepis</i> |
| Head length 5.5-6.0. No such lateral band. Greenish along back becoming silvery on sides beneath. A bright greenish yellow band divides the colour of the back. | ... | <i>A. melettina</i> |

Amblypharyngodon melettina (Valenciennes)

1842. *Leuciscus melettina*, Valenciennes, *Hist. nat. Poiss*, 17, p. 304, pl. 501 (type locality, Bombay).

Local names.—*Pachai Talai Kendai*, *Oolares*, Tamil.

Material.—1 ex. in total : 83-1.

Distribution.—India : W. ghats, Tamil Nadu. Sri Lanka.

Remarks.—In life golden streaked along sides, greenish above.

Amblypharyngodon microlepis (Bleeker)

1853. *Leuciscus microlepis* Bleeker, *Verh. Batav. Genootsch*, 25, p. 41 (type locality, R. Hooghly).

Local names.—*Oori*, Tamil.

Material.—No specimen obtained by us. Recorded by Hora (1937).

Distribution.—"From the Hooghly through Orissa and down the Coromandal coast to Madras" (Day, 1889).

Genus **Barilius** Hamilton

KEY TO SPECIES

- | | | | |
|--|-----|-----------------------|---|
| 1. Barbels present. | ... | ... | 2 |
| Barbels absent. | ... | ... | 3 |
| 2. Anal fin with 9-11 rays. No vertical bar, each scale with a black spot. | ... | <i>B. bendelisis</i> | |
| Anal fin with 13-17 rays. 10 vertical bars. | ... | <i>B. vagra vagra</i> | |
| 3. Body without vertical bars. | ... | <i>B. canarensis</i> | |
| Body with 13-15 vertical bars. | ... | <i>B. gatensis</i> | |

Barilius bendelisis bendelisis (Hamilton)

1807. *Cyprinus bendelisis* Hamilton, *Journey Mysore*, 3, p. 345, pl. 32 (type locality, rivers of Mysore).

Local names.—*Vannathi kendai*, *Akkilli*, Tamil.

Material.—58 ex. in total : 14-3 ; 21-1 ; 25-1 ; 35-31 ; 37-1 ; 39-1 ; 40-5 ; 42-1 ; 45-1 ; 46-5 ; 55-1 ; 56-3 ; 63-2 ; 64-2.

Distribution.—Throughout India, Nepal, Pakistan, Sri Lanka, Bangladesh. Maximum size 152 mm.

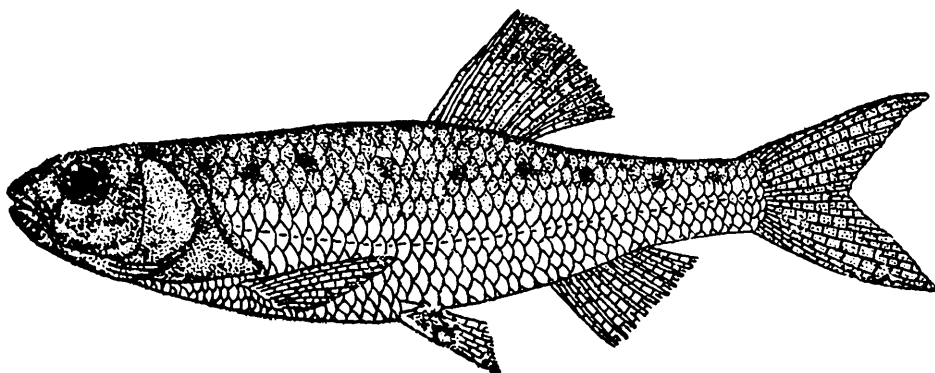


Fig. 9. Lateral view of *Barilius bendelisis bendelisis* (Hamilton).

Remarks.—Day (1889) stated that this species has not been recorded from the Malabar coast, Kanara or Sind. Rajan (1955) recorded this species from the Bhavani river head waters. Our collections from the the Cauvery system indicate its wide prevalence.

Barilius canarensis (Jerdon)

1849. *Opsarius canarensis* Jerdon. *Madras, J. Lit. Sci.*, 15 p. 329 (type locality, Kanara).

Local name.—Nil.

Material.—No specimen seen by us. Recorded by Hora (1942).

Distribution.—Kanara and Kerala.

Barilius gatensis (Valenciennes)

1842. *Leuciscus gatensis* Valenciennes, *Hist. Nat. Poiss.*, 17, p. 309, pl. 503 (type locality, Peninsula of India).

Local names.—Coores, *Art candee*, Tamil ; *River Carp*, English.

Material.—80 ex., in total : 35-4 ; 65-18 ; 66-8 ; 67-25 ; 69-1 ; 73-4 ; 78-1 ; 81-12 ; 84-6 ; 85-1.

Distribution.—INDIA : W. ghats in Southern Karnataka, Kerala. Recorded from Bhavani river headwaters by Rajan (1955).

Remarks.—12 examples collected from River Cauvery at Srirangapatnam (13.5.77) measure 89-117 mm in total length. Adult examples have a number of papillae on jaws and are with 13 or 14 bars.

Barilius vagra vagra (Hamilton)

1822. *Cyprinus vagra* Hamilton, *Fish Ganges*, pp. 269, 385 (type-locality, Ganga river at Patna).

Local names.—Nil.

Material.—19 ex., in total : 66-17 ; 77-2.

Distribution.—INDIA ; Indús, Ganga, Yamuna and the Brahmaputra river systems. Nepal. Bangladesh. Pakistan. Sri Lanka.

Remarks.—Seven examples from River Kannige at Bhagamandala (4. 5. 77) show the following data :—

<i>TL in mm</i>	<i>Number of bars on body</i>	<i>Anal fin rays</i>
24	NIL	15
30	12	15
50	10	16
57	10	15
61	13	14
75	12	16
89	13	16

Hora (1942) included this species in his list of fishes from Mysore state and neighbouring hill ranges and gave the distribution as India as far as Krishna river. He doubted its occurrence in Sri Lanka. This is the first record of this species from below Krishna river system.

Subfamily CYPRININAE

KEY TO GENERA

1.	Anal fin with anterior rays osseous, third spine serrated.	...	2
	Anal fin with anterior rays not osseous.	...	3
2.	Two pairs of barbels present. Upper jaw more or less projecting but not protractile.	...	Cyprinus
	Barbels absent. Jaw more or less projecting and protractile.	...	Carassius
3.	A short smooth anteriorly directed precumbent predorsal spine present.	...	Rohtee
	No precumbent predorsal spine.	...	4
4.	Dorsal fin inserted posterior to pelvic fin in interspace between pelvic and anal fins.	...	Osteobrama
	Dorsal fin inserted above pelvic fin or slightly anterior to it.	...	5
5.	A knob or a horny tubercle present at the symphysis of lower jaw.	...	Cirrhinus
	No such symphysial knob.	...	6
6.	Upper lip absent. Scales large (40-43 along lateral line).	...	Catla
	Upper lip present.	...	7
7.	Lower lip with an uninterrupted posterior groove continuous around corner of mouth.	...	8
	Lower lip with posterior groove interrupted in middle when a groove is present or without any groove.	...	9
8.	Barbels present. Dorsal fin with a spine.	...	Tor
	Barbels absent. Dorsal fin without a spine.	...	Ctenopharyngodon
9.	A horny covering on the inner side of the lips. Lips distinct.	...	Labeo
	No such horny covering on the lips.	...	10
10.	Lower jaw not covered by lips. Attachment of lower lip to lower jaw at some distance from mouth.	...	Osteocheilus
	Lower jaw covered by lip. Lower lip attached to lower jaw along entire mouth.	...	Puntius

Genus **Cyprinus** Linnaeus

Cyprinus carpio carpio Linnaeus

1758. *Cyprinus carpio* Linnaeus, *Syst. Nat.*, Ed. 10, 1, p. 525 (type locality, Europe).

Local names.—*Kannadi kendai*, Tamil : *Doodapni*, Kanarese.

Material.—3 examples in total : 77-2 ; 79-1.

Distribution.—Introduced into our waters from China. Naturally found all through China, Korea, Japan, Taiwan.

Remarks.—This species, the common Carp of Asia, has been successfully transplanted. It is easily recognised by its terminal mouth, 4 barbels, molar-like pharyngeal teeth in 3 series (3, 1, 1), long dorsal fin with 17-22 branched rays with its last simple ray strongly ossified and serrated.

Genus **Carassius** Nilsson

Carassius carassius Nilsson

1832. *Carassius carassius* Nilsson, *Prodron. Ichth. Scandinoy.*, 4, p. 290.

Local names.—*Ponn kendai*, Tamil.

Material.—No specimen obtained by us. Recorded by Hora (1937).

Distribution.—Introduced as an aquarium pet. Naturally found all over China, Korea, Japan, Taiwan and Europe. Also found in Siberia, East Asia south to North Viet Nam (wild form).

Remarks.—This species when it gets into the natural ecosystem, reverts ultimately to a dark olivaceous colour at which time it resembles *Cyprinus carpio*. However, it can be easily differentiated from the common carp by the absence of barbels and pharyngeal teeth being in a single series of 4.

Genus **Puntius** Hamilton

KEY TO THE SPECIES

1. Barbels absent.	...	...	2
Barbels present.	...	...	8
2. Dorsal spine serrated, strong.	...	...	3
Dorsal spine smooth, weak.	...	...	5
3. A black band passing from eye to eye. Body with three vertical bands. Lateral line complete.	...	<i>P. nigrofasciatus</i>	
Body without any vertical bands. Lateral line incomplete.	...	...	4

4.	Body depth 2.4 in total length. Predorsal scales 9. Lateral line incomplete, mostly extending up to 18 scales.	...	<i>P. conchoni</i>
	Body depth 3.0-3.5 in total length. Predorsal scales 8-11. Lateral line incomplete mostly extending up to 6-16 scales.	...	<i>P. ticto ticto</i>
5.	Lateral line incomplete.	...	6
	Lateral line complete.	...	7
6.	A blotch on dorsal fin rays and on tail.	...	<i>P. vittatus</i>
	A blotch only on tail.	...	<i>P. coorgensis</i>
7.	A round black blotch more or less distinct at root of caudal fin present.	...	<i>P. sophore</i>
	Three vertical blotches on sides of body present.	...	<i>P. narayani</i>
8.	Only one pair of barbels.	...	9
	Two pairs of barbels.	...	16
9.	Dorsal spine strong and osseous.	...	10
	Dorsal spine weak and articulated.	...	13
10.	Scales between middle of back and lateral line 5 or 5½.	...	11
	Scales between middle of back and lateral line 3½ to 4½.	...	12
11.	Predorsal scales 10-12. A dark blotch from the 23rd to 25th scales of the lateral line. A dark spot along base of anterior dorsal ray, and occasionally a dark mark behind gill opening.	...	<i>P. chola</i>
	Predorsal scales 8. A diffused black spot on lateral line from 20th to 22nd scale.	...	<i>P. parrah</i>
12.	Dorsal fin inserted ahead of pelvic fin. Scales between lateral line and pelvic fin base 2 or 2½.		
	Anal fin with iii simple rays.	...	<i>P. dorsalis</i>
	Dorsal fin inserted opposite pelvic fin. Scales between lateral line and pelvic fin base 3½.		
	Anal fin with ii simple rays.	...	<i>P. cauveriensis</i>
13.	Lateral line with 26-28 scales. 3-3½ scales between pelvic fin base and lateral line.	...	<i>P. melanostigma</i>
	Lateral line with 21-24 scales. 2 or 2½ scales between pelvic fin base and lateral line.	...	14
14.	A deep black oval mark on lateral line above anal fin present.	...	<i>P. filamentosus</i>
	No such deep black oval spot above anal fin. A dark band along side or horizontally may be present.	...	15

15.	Body depth 4.5-5 times in total length. 2 rows of scales between lateral line and base of pelvic fin. ...	<i>P. amphibius</i>	
	Body depth 3.75-4 times in total length. Only two blotches, oval in shape, one below dorsal fin and another above anal fin. ...	<i>P. arulius arulius</i>	
16.	Dorsal spine osseous, strongly serrated. ...	...	17
	Dorsal spine osseous, smooth and/or weak. ..	...	18
17.	Lateral line scales 30-34. Colour uniform. ...	<i>P. sarana sarana</i>	
	Lateral line scales 29-31. A black lateral blotch, fins orange. ...	<i>P. sarana subnasutus</i>	
18.	Dorsal spine strong and smooth. ...	...	19
	Dorsal spine weak and articulated. ...	...	23
19.	Lateral line with 24-26 scales. $2\frac{1}{2}$ scales between pelvic fin base and lateral line. ...	<i>P. bovanicus</i>	
	Lateral line with more than 29 scales. ...	...	20
20.	3 to $3\frac{1}{2}$ scales between pelvic fin base and lateral line. ...	...	21
	5 scales between pelvic fin base and lateral line. ...	<i>P. dubius</i>	
21.	Lateral line scales 26-28. ...	<i>P. wynaadensis</i>	
	Lateral line scales 29 or more. ...	...	22
22.	Lateral line scales 29-32. ...	<i>P. carnaticus</i>	
	Lateral line scales 39-41. ...	<i>P. micropogon</i>	
23.	A thin cartilaginous covering on inside of either jaw. ...	<i>P. lithopidos</i>	
	No such covering. ...	...	24
24.	Lateral line scales 41. ...	<i>P. curmuca</i>	
	Lateral line scales less than 35. ...	...	25
25.	Lateral line scales 20-28. ...	...	26
	Lateral line scales 30-35. ...	...	27
26.	Lateral line scales 20. ...	<i>P. melanampyx melanampyx</i>	
	Lateral line scales 27-28. ...	<i>P. jerdoni</i>	
27.	Dorsal fin shorter than body depth. $3\frac{1}{2}$ scales between lateral line and pelvic fin base. ...	<i>P. pulchellus</i>	
	Dorsal fin equal to body depth. $2\frac{1}{2}$ scales between lateral line and pelvic fin base. ...	<i>P. thomassi</i>	

Puntius amphibius (Valenciennes)

1842. *Capoeta amphibia* Valenciennes, *Hist. Nat. Poiss.*, **16** : p. 282, pl. 478 (type locality, Bombay).

Local name.—*Oolse perlee*, Malayalam.

Material.—385 exs. in total : 5-16 ; 8-41 ; 11-3 ; 12-3 ; 14-1 ; 17-5 ; 20-1 ; 21-4 ; 25-3 ; 26-9 ; 31-1 ; 35-1 ; 40-1 ; 44-2 ; 45-1 ; 46-242 ; 47-14 ; 48-2 ; 54-1 ; 55-4 ; 57-1 ; 58-1 ; 62-3 ; 66-5 ; 79-6 ; 85-2 ; 87-12.

Distribution.—Freshwaters of Uttar Pradesh, Madhya Pradesh, Orissa, South India and Sri Lanka.

Remarks.—Hora and Law (1941) stated that this species is liable to be confused with *P. dorsalis*. The presence of prominent caudal spot and the absence of dorsal and anal spots in *amphibius* distinguish the two species. *P. amphibius* is more widely distributed than *dorsalis* which appear to be restricted in distribution.

Puntius arulus arulus (Jerdon)

1849. *Systomus arulus* Jerdon, *Madras J. Lit. & Sci.*, **15**, p. 317 (type locality, R. Cauvery at Srirangapatnam).

Local name.—*Aruli*, Kanarese.

Material.—No material collected by us. Recorded by Hora & Law in their (1941) list of fishes from Travancore, Kerala.

Distribution.—Cauvery river at Srirangapatnam, Bhavani river, Wynaad, Nilgiris, Tenmalai, Kalatupuzha, Kerala (Day, 1889).

Puntius bovanicus Day

1878. *Barbus bovanicus* Day, *Fish India*, p. 566, pl. 138, fig. 1 (type locality, Bhavani river at base of Nilgiri hills).

Local names.—Nil.

Material.—48 exs. in total : 13-2 ; 14-2 ; 44-3 ; 45-1 ; 46-9 ; 47-2 ; 49-6 ; 54-1 ; 56-5 ; 57-16 ; 58-1.

Distribution.—Bhavani river at base of Nilgiri hills, Cauvery river.

Remarks.—This species has not been previously recorded, either by Hora (1937, 1942) or Rajan (1955). Originally described by Day from Bhavani river where from we have 6 topotypes, this species is seen to have a wider range being found in the upper reaches of the

Cauvery system at Bhagamandala and down to the plains stretch at Mudikondan river near Kumbakonam. The shape of dorsal profile up to dorsal fin base is noteworthy. Some data taken on the material are as below :

	STN 57	18	46	58	44	45
Total length/Head length	4.65	4.80	4.91	5.07	4.96	5.16 5.5 5.21
Total length/Body depth	4.39	4.59	4.95	4.84	4.72	4.18 4.36 4.12
Standard length/Head length	3.36	3.63	3.59	3.79	3.69	3.80 4.00 3.82
Standard length/Body depth	3.16	3.46	3.62	3.62	3.51	3.08 3.17 3.02
Head length/Eye diameter	3.54	3.73	3.53	3.68	4.04	4.38 4.40 4.50
Head length/Snout	3.11	3.11	2.94	2.82	2.67	2.94 2.80 2.74
Head length/Int. orb. width	3.19	3.59	3.88	3.31	3.37	2.91 2.53 2.66
Head length/LCPD	2.02	1.75	1.88	1.84	1.66	1.58 1.58 2.30
Head length/HCPD	2.09	2.00	2.16	2.12	2.10	1.91 1.91 1.99
LCPD/HCPD	1.04	1.14	1.14	1.15	1.26	1.21 1.21 0.85
Snout/Eye	1.14	1.20	1.20	1.31	1.51	1.49 1.57 1.64
IOW/Eye	1.11	1.04	0.91	1.11	1.20	1.51 1.74 1.69
Dorsal fin rays	iii, 8	iii, 8	iv, 8	iv, 10	iv, 9	iv, 9 iv, 9 iv, 9
Anal fin rays	iii, 5	iii, 5	iii, 5	iii, 5	iii, 5	iii, 5 iii, 5 iii, 5
Lateral line scales	24	25	25	25	23	26 26 26
Predorsal scales	9	9	9	9	9	9 9 10
Circumpeduncular Scales	12	12	12	12	12	12 12 12
Scales between Lat. line and pelvic fin base	3½	3½	3½	3½	3½	3½ 3½ 3½

Puntius carnaticus (Jerdon)

1849. *Barbus carnaticus* Jerdon, *Madras J. Lit. & Sci.*, 15, p. 311 (type locality, Bhavani river).

Local name.—*Pouree, Sall kendai, Sihellee, Pellikendai* Tamil ; *Gendai*, Kanarese.

Material.—35 exs. in total : 35-4 ; 59-1 ; 64-1 ; 68-4 ; 71-2 ; 79-8 ; 80-2 ; 81-8 ; 83-1 ; 85-3 ; 89-1. 3

Distribution.—Kanara, Bhavani river (Day, 1889 ; Mukerji, 1931), South Karnataka, Kerala, Tamil Nadu along the base of hills. Introduced into Ooty and other lakes and reservoirs.

Remarks.—This species provides a fishery of minor importance in the Mettur reservoir area. Fry of this species is reported to be available during September to December. Its growth in lentic waters is very good (Chacko *et al* ; 1954). The dorsal spine is shorter than head length, which Day (1878) opined as representing immature specimens.

Four examples (223-235 mm in total length) from Stn. 68 River Cauvery at Kudige (5. 5. 77), are noteworthy ; of these two were females

with distended abdomen, containing eggs of II/III stage of maturity. The female specimens were light brown in colour, with a deeper body and without any pores on the snout. The male examples were coloured light grey and with the body less deep and having pores on the snout.

Some measurements obtained on *P. carnaticus* from R. Kabbini, Nanjangud are as below :

SL	BD	LH	LL
85.0	29.0	23.0	27
85.5	33.0	22.0	26
86.0	32.0	21.0	26
86.0	32.0	23.0	30
87.0	33.0	23.0	31
87.0	30.0	23.5	27
110.0	41.0	26.5	29
119.0	35.0	26.0	29

***Puntius cauveriensis* Hora**

1937. *Barbus cauveriensis* Hora, *Rec. Indian Mus.*, **39** (1), pp. 20-22 (type locality, Cauvery river, Coorg).

Local name.—Nil.

Material.—5 exs. in total (all topotypes) ; 54-1 ; 66-3 ; 74-1.

Distribution.—Cauvery river, Karnataka.

Remarks.—The present report of five examples are the first record subsequent to Hora (1937). Hora (1937, p.21) considered this species as remarkable and stated that he was “not aware of any other species of the genus *Barbus* in any way closely allied to this species, unless any of Jerdon’s species, which are very little known may prove to be this species” *P. cauveriensis* is most closely allied to *P. dorsalis* in all its features, except that former has $3\frac{1}{2}$ scales between lateral line and pelvic fin base unlike the latter which has $2\frac{1}{2}$. The anal fin in *dorsalis* has in general three simple rays whereas in *cauveriensis* only two are present. It may prove to be a subspecies of *dorsalis* when more material is analysed.

Some of the data on *P. cauveriensis* are as below.

	54—1		66—3	
TL/BD	4.45	4.58	4.49	4.31
TL/LH	4.08	4.27	4.56	4.76
SL/BD	3.5	3.58	3.48	3.35
SL/LH	3.21	3.34	3.54	3.69
LH/Eye	5.07	4.45	4.63	4.08
LH/LCPD	1.41	1.45	1.38	1.31
LH/HCPD	2.54	2.59	2.44	2.45
LH/Snout	2.73	2.54	2.69	3.06
LH/IOW	2.89	3.35	3.07	3.27
IOW/Eye	1.76	1.33	1.51	1.25
Snout/Eye	1.86	1.75	1.72	1.33
LCPD/HCPD	1.79	1.79	1.77	1.87
D	iii, 8	iii, 8	iii, 9	iii, 8
A	ii, 5	ii, 5	ii, 6	ii, 5
LL	25	25	27	25
Scales between pelvic and LL	3½	3½	3½	3½
PDS	9	8	9	8
Circumpeduncular Scales	12	12	12	12

***Puntius chola* (Hamilton)**

1822. *Cyprinus chola* Hamilton, *Fish Ganges* (type locality, north-eastern parts of Bengal).

Local names.—*Kooran kendai*, Tamil ; *Chanddu paddaka*, Telugu.

Material.—120 exs. in total : 5-2 ; 6-3 ; 8-24 ; 9-2 ; 11-2 ; 13-2 ; 14-20 ; 21-1 ; 22-1 ; 26-6 ; 35-1 ; 39-5 ; 45-1 ; 46-20 ; 47-3 ; 48-1 ; 52-2 ; 63-9 ; 64-12 ; 65-1 ; 70-1 ; 77-1.

Distribution.—Throughout India, Pakistan, Bangladesh, Burma, Sri Lanka.

Remarks.—A very widely distributed species, which is of common occurrence in all freshwater habitats. The colouration is characteristic of this species. A dark blotch is generally present between the 21st to 23rd scale on the lateral line, besides a dark mark at base of anterior dorsal ray. In general the lateral line has 26 to 28 scales as mentioned by Day (1889).

***Puntius conchoni* (Hamilton)**

1822. *Cyprinus conchoni* Hamilton, *Fish. Ganges*, pp. 317, 389 (type locality, North-east Bengal and rivers Kosi and Ami)

Local name.—*Kongchon pungti*, Bengal.

Material.—350 examples in total : 19-12 ; 33-1 ; 36-1 ; 46-1 ; 56-1 ; 64-33 ; 66-2 ; 68-4 ; 70-14 ; 71-70 ; 74-129 ; 75-3 ; 77-25 ; 78-43 ; 79-11.

Distribution.—U. P., Punjab, Bihar, Assam, West Bengal, Orissa and the Deccan, Pakistan, Bangladesh.

Remarks.—*P. conchoni* is generally confined to North India, but its occurrence in the Cauvery watershed in large numbers is noteworthy of its spread and establishment of the species. Hora (1942), Chacko *et al.* (1954) did not include this species in their list of Cauvery fishes.

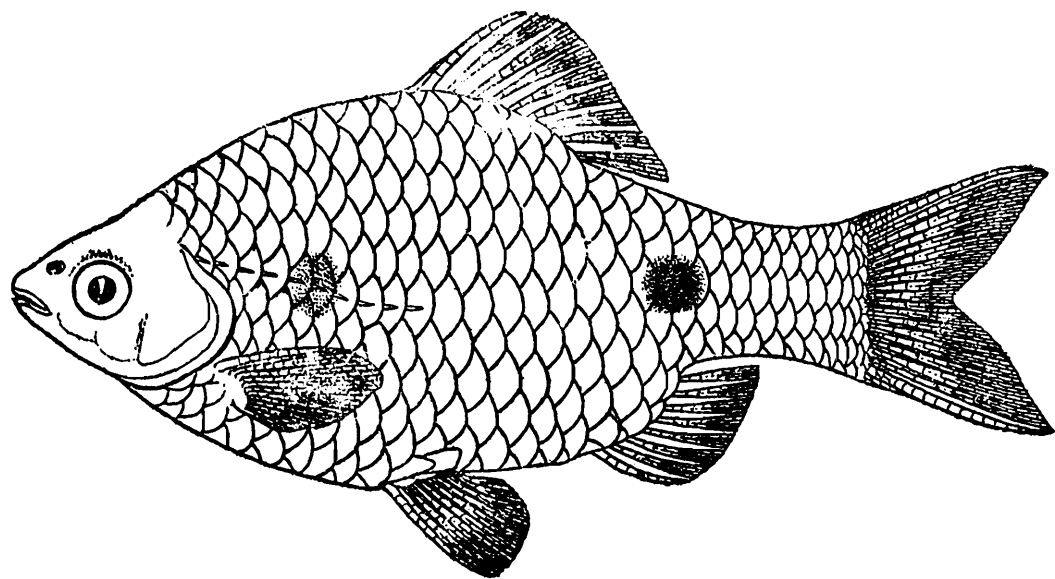


Fig. 10. Lateral of *Puntius conchoni* (Hamilton)

It is also pertinent to point out that the species is more abundant in the mountainous zone than in the plains zone of the Cauvery. In life the fish is golden violet coloured below the lateral line with the opercle shot with red. In preserved material the dorsal fin is tipped jet black. The caudal spot *above* anal fin (unlike in *P. ticto* behind anal fin) is conspicuous. Anal and pelvic fins are tipped black. Generally each scale has a black tinge or a small spot. The length of the lateral line is highly variable as seen from below.

Eleven examples from River Kabbani at Nanjangud (10. 5. 77) have the following data.

SL in mm	LL scale	PDS	LL spots after scale
32	—	9	13
38	—	—	damaged
39	28	9	19
44	27	9	14
48	27	9	18
51	28	10	12
50	28	10	14
50	28	9	21
54	28	9	13
58	27	9	8
68	25	9	19

Puntius coorgensis Jayaram

1982. *Puntius coorgensis* Jayaram, *Matsya* 7, pp. 47-49 (type locality, R. Cauvery at Bhagamandala. Coorg dist., Karnataka).

Local names.—Nil.

Material.—24 exs. in total : 65-24.

Distribution.—R. Cauvery in the upper reaches.

Remarks.—Reference may be made to Jayaram (1982) for a description of this species which is closely allied to *P. vittatus*.

Puntius curmuca (Hamilton)

1807. *Gyprinus curmuca* Hamilton, *Journey in Mysore*, 3, p. 344, pl. 30 (type locality, Western ghats of India).

Local name.—*Curmuca*, Kanarese.

Material.—No specimen obtained by us. Recorded by Rajan (1955), Jayaram *et al* (1976).

Distribution.—W. ghats in India.

Remarks.—Day (1873, p. 567) pointed out that this species is remarkable in possessing two pairs of barbels on the maxillaries and none on the snout. *P. curmuca* is likely to be confused with *T. mussullah* Sykes ; the chief differences between the two being the nature of the labial fold and relative lengths of the barbels. Rajan (1955) recorded a single specimen from the headwaters of the Bhavani river and Jayaram *et al.* from the Cardamon hills, S. India.

Puntius dorsalis (Jerdon)

1849. *Systomus dorsalis* Jerdon, *Madras J. Lit. & Sci.*, pp. 314, 316 (type locality, tanks and rivers in the neighbourhood of Madras).

1936. *Barbus* (*Puntius*) *dorsalis*, Hora, *Rec. Indian Mus.*, 38, p. 2.

Local names.—*Pal pooran Kendai*, *Sall kendai*, *Mookanamkendai*, Tamil, *Marpakke*, Kanarese.

Material.—446 exs. in total : 5-15 ; 6-8 ; 7-1 ; 8-34 ; 9-1 ; 10-1 ; 11-8 ; 12-8 ; 13-1 ; 14-23 ; 15-2 ; 16-2 ; 17-23 ; 19-10 ; 20-7 ; 21-2 ; 22-4 ; 24-2 ; 25-4 ; 26-9 ; 27-1 ; 30-10 ; 31-3 ; 35-9 ; 37-1 ; 39-12 ; 40-6 ; 42-2 ; 43-1 ; 44-3 ; 46-34 ; 48-6 ; 49-4 ; 54-4 ; 56-5 ; 57-1 ; 58-2 ; 64-1 ; 66-5 ; 67-2 ; 70-1 ; 78-1 ; 79-158 ; 87-1 ; 89-1 ; 90-7.

Distribution.—Krishna, Cauvery, Coleroon river systems in South India, Sri Lanka,

Remarks.—The close affinity of this species with *P. amphibius* has already been discussed. From the frequency distribution data given below it can be seen that the two are distinct in respect of dorsal fin rays and lateral line scale count.

Frequency distribution of certain meristic characters
in *Puntius amphibius* and *P. dorsalis*

	Lateral line scales							
	21	22	23	24	25	26	27	28
<i>P. amphibius</i>	1	4	17	86	87	22	3	1
<i>P. dorsalis</i>	—	1	2	13	47	70	19	2
	Transverse scales							
	2	2½	3	3½				
<i>P. amphibius</i>	1	98	125	5				
<i>P. dorsalis</i>	—	61						
	Dorsal fin rays							
	iii, 7	iii, 8	iii, 9	iv, 8				
<i>P. amphibius</i>	2	228	4	—				
<i>P. dorsalis</i>	—	—	—	162				
	Anal fin rays							
	ii, 5	iii, 5						
<i>P. amphibius</i>	23	206						
<i>P. dorsalis</i>	—	162						

Three examples, 90-93 mm in standard length from River Kudamurutty at Kandiyur near Thiruvaiyaru have 28-31 scales along the lateral line, 3½ to 4½ rows of scales transversely, 10 predorsal scales, the dorsal fin with iii,8 and anal fin with iii,5 rays. These could be identified as *P. puckelli* (Day) 1868, known by a single example from Bangalore. Hora (1936) after examining several examples from Chitaldrug district, Karnataka, thought that *puckelli* is only a juvenile of *dorsalis*. However in his report (1940) on the fishes from the Mahanadi head waters he thought otherwise.

The material of *puckelli* is too small to determine its specific status.

***Puntius dubius* Day**

1867. *Puntius* (*Barbodes*) *dubius* Day, *Proc. zool. Soc. London*, p. 291 (type locality, Bhavani river at base of Nilgiri hills).

Local names.—*Kozhi meen*, *Kozhi Arinjan Kendai*, Tamil ; *Ogrlu*, Kanarese.

Material.—6 exs. in total : 42-2 ; 53-2 ; 64-2(380, 325 mm.)

Distribution.—Cauvery river system in South India. Its absence in the lower reaches is noteworthy.

Remarks.—This carp contributes an important fishery in the Cauvery system. Chacko *et al.* (1954) have given an analysis of the stomach contents of 50 specimens of this species.

***Puntius filamentosus* (Valenciennes)**

1844. *Leuciscus filamentosus* Valenciennes, *Hist. nat. Poiss.*, **17**, p. 96, pl. 492 (type locality, Alleppey, Kerala).

1844. *Leuciscus mahecola* Valenciennes, *Hist. nat. Poiss.*, **17**, p. 305, p. 502.

1942. *Barbus* (*Puntius*) *filamentosus*, Hora, *Rec. Indian Mus.*, **39**, pp. 22-24.

1973. *Puntius filamentosus*, Tilak, *Rec. zool. Surv. India* **67** (1-4) (1969) p. 93 (Goa).

Local names.—*Maocha kendai*, *Sevvali*, Tamil ; *DMK fish*, English.

Material.—208 exs. in total : *All males* : 10-1 ; 14-1 ; 17-6 ; 18-11 ; 20-2 ; 22-1 ; 25-1 ; 26-1 ; 30-1 ; 35-11 ; 36-3 ; 39-1 ; 40-2 ; 46-3 ; 52-5 ; 54-1 ; 56-4 ; 58-9 ; 62-11 ; 63-44 ; 64-9 ; 65-1 ; 66-2. *All females* : 35-2 ; 44-8 ; 54-1 ; 56-1 ; 57-5 ; 61-1 ; 62-15 ; 63-23 ; 66-20 ; 68-1.

Distribution.—Freshwaters of Kerala, Southern Karanataka, Tamil Nadu, Sri Lanka.

Remarks.—It is now well known that at breeding time, secondary sexual characters appear in the species. In the males the anterior four or five branched rays of the dorsal fin are prolonged and the snout is

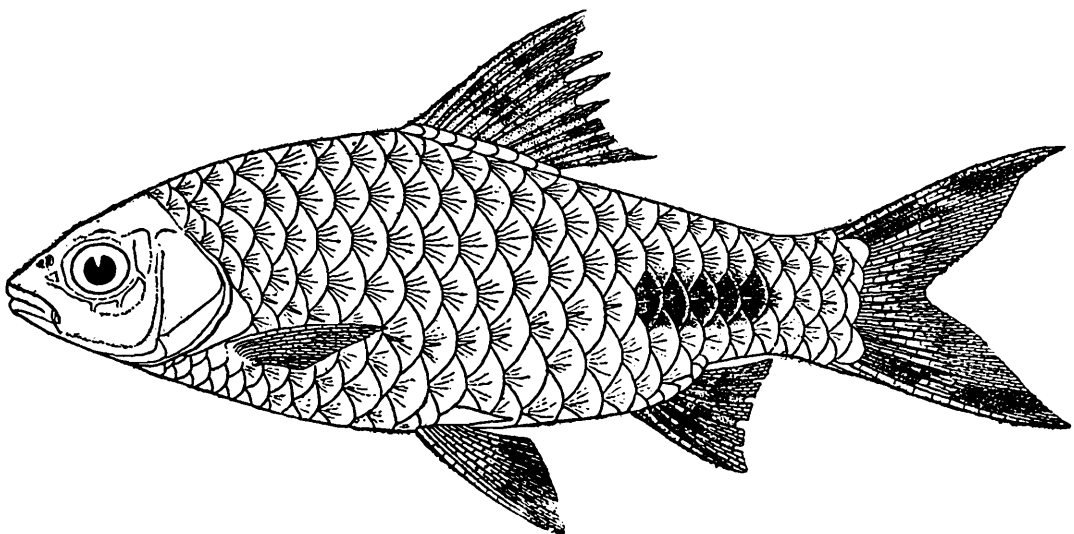


Fig. 11. Lateral view of *Puntius filamentosus* (Val.)

covered with a patch of large tubercles on either side in front of the eyes. For a number of years, this dimorphism was not noticed and the female of this species was described as *P. mahecola*. Hora (1937),

Hora & Law (1941) demonstrated this and synonymised *mahecola* with *filamentosus*. Data obtained on some material are as below :

		LL Scale				PDS			Blotch on Scale			
		21	22	23	24	7	8	9	12	13	14	15
No. of	exs.	3	20	5	1	3	9	2	1	4	12	7

The anal fin is generally iii,5 and dorsal fin iii,8 mostly and very rarely iv,8.

Out of the entire lot 77 exs are females referable to the *mahecola* type. The coloration is characteristic of this species in life. A dash of red alternating with black on the caudal fin has given it a name "DMK fish" since this color pattern resembles the flag color of a political party in South India, Tamil Nadu in particular.

***Puntius jerdoni* Day**

1870. *Barbus jerdoni* Day, *Proc. zool. Soc. London*, p. 372 (type locality, Rivers in Kanara below the ghats).
 1876. *Barbus dobsoni* Day, *J. Linn. Soc. London*, (Zool.), **12**, p. 574.
 1942. *Barbus (Puntius) jerdoni*, Hora & Misra, *J. Bombay nat. Hist. Soc.*, **43** (2), p. 221.

Local names.—*Saymeen*, Kanarese, *Tameen*, Malayalam, *Cha meen*, Tulu.

Material.—18 exs. in total : 57-18.

Distribution.—Kerala, South Karnataka and Tamil Nadu.

Remarks.—Hora and Misra (1942) pointed out that *P. dobsoni* (Day) characterised by smooth snout is the female of *P. jerdoni* and that the male specimens have tubercles on the snout. They synonymised *P. dobsoni* with *P. jerdoni*. All the 18 examples reported here are females as per this criteria. Frequency distribution of certain characters are as below.—

LL				DORSAL		ANAL FIN	
26	27	28	29	iii,9	iii,9	iii,5	iii,6
11	7	—	—	14	4	17	1

Puntius lithopidos Day

1873. *Barbus* (*Barbodes*) *lithopidos* Day, *Proc. zool. Soc. London*, p. 708 (type locality, South Kanara).

Local names.—*Kuri meen*, Kanarese.

Material.—No material obtained by us. Recorded by Hora & Law (1941).

Distribution.—Coorg, S. Kanara, Deccan, Travancore and Madhya Pradesh.

Remarks.—Hora & Law (1941) extended the range of this species further down the W. ghats to include Coorg and Travancore. This is the only species of *Puntius* with a thin cartilaginous covering internally to either jaw. The fish is said to reach 60 cm (2 feet) in length.

Puntius melanampyx melanampyx Day

1865. *Labeo melanampyx* Day, *Proc. zool. Soc. London*, p. 298 (type locality, Wynaad).

Local name.—Nil.

Material.—No specimen obtained by us. Recorded by Hora (1937).

Distribution.—Cauvery river and its head water streams at base of Wynaad, Nilgiri and Travancore hills. Also known from Nallamalai hills, Eastern ghats.

Remarks.—Hora & Law (1941) considered the range of this species as throughout Peninsular India. Misra (1938, p. 258-259) indicated that sexual dimorphism associated with coloration is common in this species.

Puntius melanostigma (Day)

1878. *Barbus melanostigma* Day, *Fish India*, p. 573, pl. cxliii, fig. 1 (type locality, Wynaad).

Local name.—Nil.

Material.—Eight exs. in total : 65-1 ; 74-7.

Distribution.—Wynaad hills, Kerala ; Bhavani and Cauvery river system.

Remarks.—Not recorded by Hora (1937, 1972) or Rajan (1955). This is the first record of this species subsequent to the its first description. Our largest is 80 mm in standard length. The lateral line scales vary from 26-28, and the number of scales between pelvic fin base and lateral line $3-3\frac{1}{2}$.

Puntius micropogon (Valenciennes)

1841. *Barbus micropogon* Valenciennes, *Hist. nat. Poiss.*, **16**, p. 188 (type locality, Mysore).

Local name.—*Coatee kendai*, Tamil.

Material.—No specimen obtained by us. Recorded by Hora (1937).

Distribution.—Bhavani river and other headwaters of Cauvery at base of Nilgiri hills, Wynaad and S. Kanara range of hills.

Remarks.—Attains a large size and has been introduced into reservoirs and lakes.

Puntius micropogon mysorensis (Jerdon) was resurrected by Mukerji (1937) from the synonymy of *P. micropogon*. Raj (1941) described *P. micropogon periyarensis* as a new subspecies from Periyar river system. Pending a revision of *Puntius*—*Barbus* it seems preferable to treat these two subspecies as synonyms of *P. micropogon*.

Puntius narayani Hora

1937. *Barbus narayani* Hora, *Rec. Indian Mus.*, **39** (1), pp. 24-25 (type locality, Cauvery river, Coorg).

Local name.—*Narayani*, Kanarese.

Material.—One ex. in total : 79-1.

Distribution.—Cauvery river in Coorg, Karnataka.

Remarks.—In life the caudal fin is tipped red along upper and lower lobes.

Puntius nigrofasciatus Günther

1868. *Barbus nigrofasciatus* Günther, *Cat. Fish. Brit. Mus.*, **7**, p. 155 (type locality, S. Ceylon).

1939. *Barbus nigrofasciatus*, Hora, Misra & Malik, *Rec. Indian Mus.*, **41** (3), p. 273 (diagnostic features, comparison).

Local name.—Nil.

Material.—No specimen obtained by us. Recorded by Chacko *et al.* (1954) from "Cauvery river".

Distribution.—Sri Lanka. ? Cauvery river, Tamil Nadu.

Puntius parrah Day

1865. *Puntius parrah* Day, *Proc. zool. Soc. London*, p. 301 (type locality, Kuriavanoor near Trichur).

Local name.—*Parrah perles*, Malayalam

Material.—15 exs. in total : 56-1 ; 73-8 ; 74-5 ; 75-1.

Distribution.—Kerala, South Karnataka and Tamil Nadu.

Remarks.—The example from Stn. 75 Lakshmanathirtha, Bolanhalli (8. 5. 77) measuring 94 mm in standerd length has 26 scales in lateral line, $3\frac{1}{2}$ rows of scales between pelvic base and lateral line, and ii,7 in dorsal and 7 rays in anal fin. The upper half of body above the lateral line is dark.

The eight examples from Stn. 73 River Hemavathy at S. R. D. Katte (7. 5. 77) were scarlet coloured when caught fresh with the opercle blood red ; dorsal fin was tinged black.

***Puntius sarana subnasutus* (Val.)**

1865. *Cyclohelichthys pinnauratus* Day, *Proc. zool. Soc. London*, p. 300 ; *Fish. Malabar*, p. 209, pl. 15, fig 2 (type locality, Wynaad).

1963. *Puntius sarana subnasutus*, Menon, *Spolia zeylanica*, 30 (1) p. 69.

Local name.—Nil.

Material.—Three exs, in total : 44-2 ; 46-1 ;

Distribution.—Krishna, Cauvery river systems in Andhra Pradesh, Karnataka, Tamil Nadu and Kerala respectively.

Remarks.—Hora and Misra (1942) synonymised *P. pinnauratus* Day with *P. sarana sarana* stating that specimens from northern India have more predorsal scales than those from southern India and Burma. Pillay (1951) after a biometric comparison of *sarana* and *pinnauratus* considered the latter as a race of the former. Menon (1954) recorded *pinnauratus* as a full-fledged species of *Puntius* from Malaya. However in 1963 he synonymised it with *P. sarana subnasutus*. In general it would seem that *P. pinnauratus* has 10 predorsal scales unlike *P. sarana* having 11 or 12 predorsal scales. In coloration also *pinnauratus* is lighter than *sarana*. Further study on the problem is needed to determine whether *pinnauratus* is a separate species or not.

***Puntius pulchellus* (Day)**

1870. *Barbus* (*Barbodes*) *pulchellus* Day, *Proc. zool. Soc. London*, p. 372 (type locality, S. Kanara)

Local names.—*Khatladi*, Kanarese ; *Tulu*, Malayalam ; *Khudia*, Marathi.

Material.—No specimen obtained by us. Recorded by Hora (1942) and Rajan (1955).

Distribution.—South Kanara (Day, 1878), Mysore (Hora, 1942).

Remarks.—Reported to attain a length of about 45 cms. Hora and Misra (1942) synonymised this species with *Puntius jerdoni* Day, but the count of lateral line scales 30-35 and relative length of the dorsal fin clearly distinguishes this species.

***Puntius sarana sarana* (Hamilton)**

1822. *Cyprinus sarana* Hamilton, *Fish Ganges*, pp. 307 (type locality, Gangetic system, Bengal).

Local names.—*Panjalai*, *Saanee kendai*, Tamil ; *Kannaku*, Telugu ; *Gidpakke*, Kanarese.

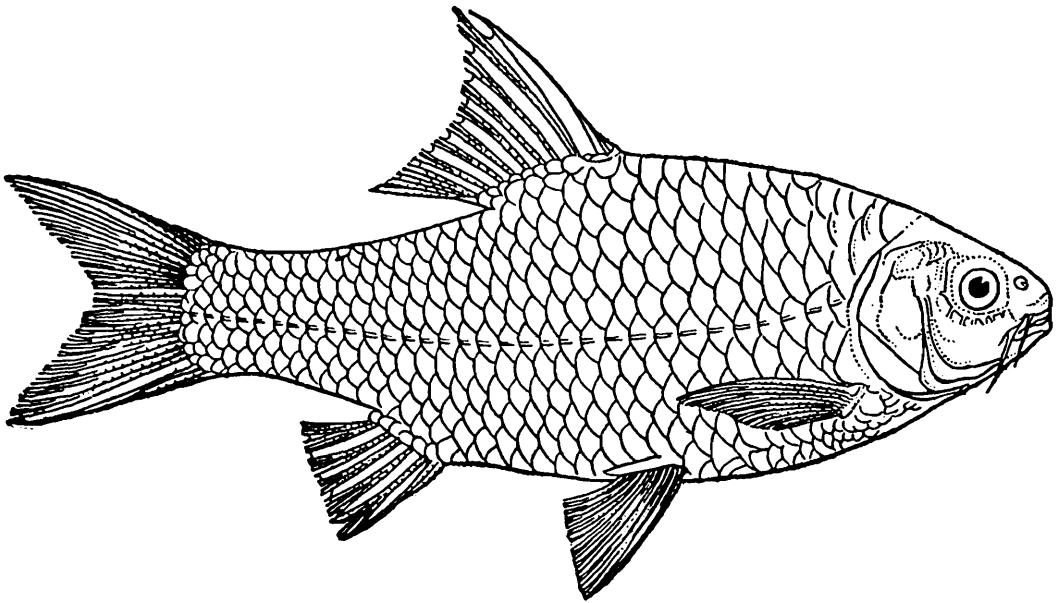


Fig. 12. Lateral view of *Puntius sarana sarana* (Hamilton)

Material.—270 exs. in total : 5-15 ; 6-11 ; 7-7 ; 8-67 ; 12-2 ; 13-1 ; 14-1 ; 15-2 ; 17-4 ; 19-3 ; 20-2 ; 21-1 ; 22-4 ; 25-3 ; 26-14 ; 27-2 ; 29-7 ; 30-9 ; 31-4 ; 32-25 ; 33-3 ; 34-5 ; 35-12 ; 36-5 ; 37-8 ; 38-4 ; 39-4 : 40-9 ; 42-6 ; 46-1 ; 47-5 ; 48-2 ; 49-2 ; 54-1 ; 56-4 ; 58-2 ; 59-1 ; 60-1 ; 62-3 ; 64-3 ; 79-4 ; 78-1.

Distribution.—Throughout India, Pakistan, Sri Lanka, Bangladesh, Burma, Thailand and China.

***Puntius sophore* (Hamilton)**

1822. *Cyprinus sophore* Hamilton, *Fish Ganges*, pp. 310, 319, pl. 19, fig. 86 (type locality, ponds of Bengal).

1944. *Leuciscus stigma* Valenciennes, *Hist. Nat. poiss.*, 17, p. 93, pl. 489 (type locality, Mysore)

Local names.—*Kulla kendai*, *kurun chelli*, Tamil ; *Kolla kendai*, *Katch karawa*, Kanarese.

Material.—396 exs. in total : 5-11, 8-50 ; 9-2 ; 11-4 ; 13-2 ; 21-70 ; 25-1 ; 26-2 ; 27-2 ; 31-1 ; 33-1 ; 35-11 ; 38-2 ; 39-9 ; 45-2 ; 46-145 ; 49-3 ; 53-1 ; 54-2 ; 55-3 ; 56-3 ; 57-5 ; 64-4 ; 65-18 ; 70-2 ; 73-2 ; 79-30 ; 85-8.

Distribution.—Throughout India, Pakistan, Bangladesh, Sri Lanka, Burma and Yunnan.

Remarks.—Chaudhury (1916) clarified the errors in Hamilton's original description of this species in respect of the barbels and also the erroneous identification of Day (1878) of material not referable to this species at all. *P. sophore* is without barbels and is a most common fish in Bengal and other parts of the country. There is no justification in retaining *P. stigma* without barbels, as a separate species. As the name *sophore* has priority over *stigma*, the latter is synonymised with the former.

Two examples from stn, 73, River Hemavathy at S. R. D, Katte, Hole Narsipura (7.5.77) have a red streak along the opercle. The caudal fin spot is black in life, on preservation the red colour turns into black.

***Puntius thomassi* (Day)**

1873. *Barbus* (*Barbodes*) *thomassi* Day, *Proc. zool. Soc. London*, p. 707 (type locality, S. Kanara).

Local name.—*Kempu peruwal*, Kanarese (Red Mahaseer).

Material.—No specimen obtained by us. Recorded by Hora (1937).

Distribution.—S. Kanara, Karnataka. May be found in the upper reaches of the tributaries of the Cauvery river system.

***Puntius ticto ticto* (Hamilton)**

1822. *Cyprinus ticto* Hamilton, *Fish Ganges*, pp. 314, 389, pl. 8, fig. 87 (type locality, Southeastern parts of Bengal).

Local name.—*Pulli kendai*, Tamil.

Material.—278 exs. in total : 19-11 ; 35-1 ; 36-1 ; 39-1 ; 49-6 ; 56-1 ; 57-6 ; 63-6 ; 64-32 ; 65-39 ; 66-40 ; 67-1 ; 71-35 ; 78-23 ; 81-59 ; 86-1 ; 87-15.

Distribution.—Throughout India, Pakistan, Bangladesh, Burma, Sri Lanka and Thailand.

Remarks.—This species is diagnosed by its prominent black spot above the anal fin, and the incomplete lateral line. Based on specimens with complete lateral line, Day (1878) described *Barbus punctatus* from

peninsular India, *Barbus stoliczkanus* from Burma which are all synonymous with this species. Hora, Misra and Malik (1939) critically analysed the variations in respect of the important characters of this species. Hora and Law (1941) state that specimens with complete lateral line have been found in Peninsular India. In the material listed above in none of the specimens the lateral line is complete. In one or two the lateral line extends beyond the posterior dark spot, in many up to the beginning of the posterior spot and in a few up to the 10th or 11th scale from the anterior. Further, Hora and Misra (1939) demonstrated that the males were coloured on the dorsal and anal fins besides having horny tubercles on the caudal fin, and that the females were plain without the tubercles. In the material from the Cauvery, about eight examples are coloured thus but these and all others are without any tubercles.

The 11 examples from stn. 19. Puthar-Valarvar river near Vadaseri are all juveniles but all are with the anterior spot generally on the third and fourth scale. Six examples 80-86 mm in total length from River Cauvery at Mettur are bright silvery in colour resembling *P. conchoni* but in all other respects agreeing with *P. ticto*. The posterior spot above the lateral line is generally over the 18-20th scale.

***Puntius vittatus* Day**

1865. *Puntius vittatus* Day, *Proc. zool. Soc. London*, p. 303 (type locality, Madras).

Local name.—Kooli, Hindi.

Material.—18 exs. in total : 65-18.

Distribution.—Karnataka, Kerala, Tamil Nadu, also Goa, Kutch, Rajastahan, Sri Lanka, Pakistan.

Remarks.—The lateral line is incomplete. Some of the examples have a dark band on the dorsal fin.

***Puntius wynaadensis* Day**

1873. *Barbus* (*Barbodes*) *wynaadensis* Day, *J. Linn. Soc. Zool.*, **11**, p. 528 (type locality, Vithry in Wynaad, Kerala).

Local name.—Nil.

Material.—One example in total : 70-1.

Distribution.—Wynaad, Kerala and headwaters of Cauvery.

Genus **Rohtee** Sykes**Rohtee ogilbii** Sykes

1841. *Rohtee ogilbii* Sykes, *Trans. zool. Soc. London*, **2**, p. 364, pl. lxiii, fig. 2 (type locality, R. Bhima at Pairgaon, Maharashtra).

Local names.—Nil.

Material.—No specimen obtained by us. Recorded by Hora (1937).

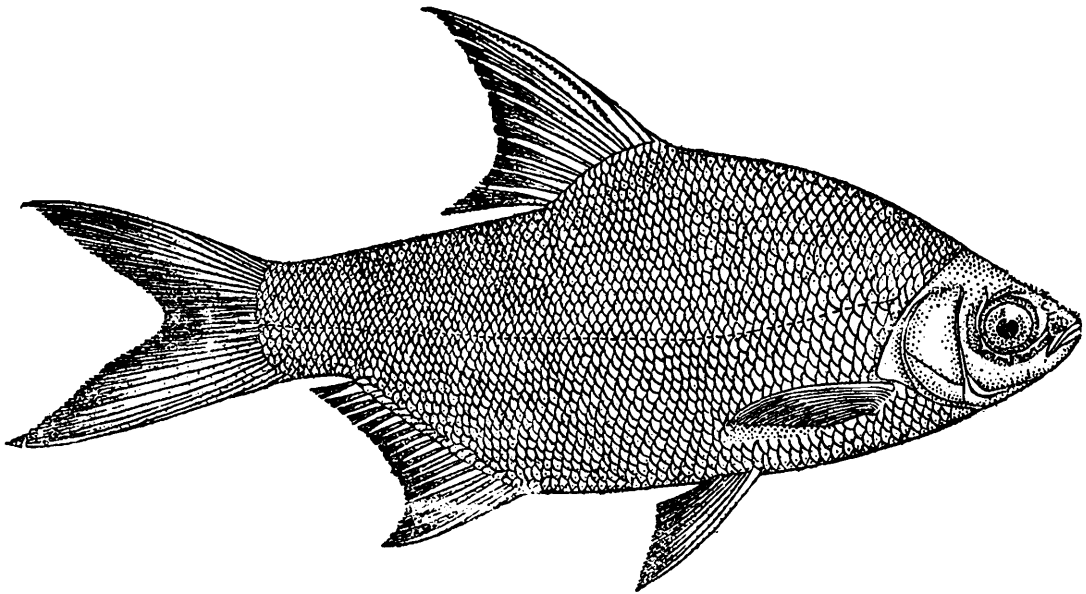


Fig. 13. Lateral view of *Rohtee ogilbii* (Sykes).

Distribution.—Krishna and Godavari river in the Deccan ; may also be in the Cauvery headwaters.

Genus **Osteobrama** Heckel

KEY TO SPECIES

1. Barbels absent.	...	<i>O. cotio cotio</i>
Barbels present.	...	<i>O. neilli</i>

Osteobrama cotio cotio (Hamilton)

1822. *Cyprinus cotio* Hamilton, *Fish Ganges*, pp. 339, pl. 89, fig. 93 (type locality, ponds and ditches of Bengal).

Local names.—*Patta kunju*, Tamil.

Material.—Two examples in total : 64-2.

Distribution.—Throughout India except Malabar, rare in the Cauvery system especially in areas below Krishna. Also, Pakistan, Bangladesh, Burma, China.

Osteobrama neilli Day

1873. *Rohtee neilli* Day, *Proc. zool. Soc. London*, p. 239 (type locality, Bhavani river at base of Nilgiri hills).

Local names.—Nil.

Material.—No specimen obtained by us. Recorded by Hora (1932).

Distribution.—Bhavani river at base of Nilgiri hills.

Genus Labeo Cuvier

KEY TO SPECIES

- | | | |
|--|-----|----------------------|
| 1. Dorsal fin rays not more than 13. Only one pair of barbels. | ... | 2 |
| Dorsal fin rays more than 13. Mostly two pairs of barbels (<i>L. potail</i> exception with one pair). | ... | 6 |
| 2. Lateral line scales 60-65. Scales between pelvic fin base and lateral line 8 or 9. | ... | <i>L. boggut</i> |
| Lateral line scales not more than 54. Scales between pelvic fin base and lateral line not more than 7. | ... | 3 |
| 3. Snout with a distinct lateral lobe. | ... | <i>L. pangusia</i> |
| Snout without any lateral lobe. | ... | 4 |
| 4. A horny covering inside lower jaw. Eyes 5.5-6.0 in head length. | ... | 5 |
| No horny covering inside lower jaw. Eyes 4-4.5 in head length. | ... | <i>L. bata</i> |
| 5. Dorsal fin inserted slightly posterior to tip of pectoral fin. | ... | <i>L. ariza</i> |
| Dorsal fin inserted above tip or slightly anterior to tip of pectoral fin. | ... | <i>L. boga</i> |
| 6. Dorsal fin rays 19-22. | ... | <i>L. fimbriatus</i> |
| Dorsal fin rays 13-18. | ... | 7 |
| 7. Lateral line scales 53-60. | ... | <i>L. dussumieri</i> |
| Lateral line scales less than 50 (38-47). | ... | 8 |
| 8. Lower lip not separated from isthmus by a post-labial groove. | ... | <i>L. potail</i> |
| Lower lip separated from isthmus by a post-labial groove. | ... | 9 |

9. Dorsal fin with 15-16 rays. Only 5 rows of scales between lateral line and pelvic fin base. Head length 6 to 7 times in total length. Snout blunt, truncated. ... *L. kontius*
- Dorsal fin with 16-18 rays. $5\frac{1}{2}$ - $6\frac{1}{2}$ rows of scales between lateral line and pelvic fin base. Head length 4.5-6 in total length. Snout obtuse. ... 10
10. Dorsal fin with 15-16 rays. $6-6\frac{1}{2}$ rows of scales between lateral line and pelvic fin base. Head length 4.5-5 in total length. Bluish or brownish above and silvery below. ... *L. rohita*
- Dorsal fin with 16-18 rays. $5\frac{1}{2}$ -6 rows of scales between lateral line and pelvic fin base. Head length 5-6 in total length. Blackish becoming lighter below. ... *L. calbasu*

Labeo ariza (Hamilton)

1807. *Cyprinus ariza* Hamilton, *Journey Mysore*, 3, p. 344, pl. 31 (type locality, rivers of peninsular India).

Local names.—*Coal kendai*, Tamil

Material.—No specimen obtained by us. Recorded by Hora (1942).

Distribution.—Bhavani river at the foot of Nilgiri hills and the Cauvery river. Known from Wynaad also.

Labeo bata (Hamilton)

1822. *Cyprinus bata* Hamilton, *Fish Ganges*, pp. 283, 386 (type locality, rivers and ponds of Bengal).

Local names.—Nil.

Material.—46 exs. in total: 6-1; 15-4; 18-1; 20-2; 30-1; 35-30 (100-133 mm SL) 39-1; 48-4; 77-2.

Distribution.—Cauvery, Krishna and Godavary river systems in South India; Orissa, Madhya Pradesh, U. P., Bihar, West Bengal, Assam, Bangladesh.

Labeo boga (Hamilton)

1882. *Cyprinus boga* Hamilton, *Fish Ganges*, pp. 286, 386, pl. 28, fig. 80 (type locality, R. Brahmaputra).

Local names.—*Kinda meen*, *Kolarinja kendai*, Tamil, *Ariza*, Telugu.

Material.—72 exs. in total ; 4-28 ; 5-28 ; 6-1 ; 20-2 ; 30-1 ; 35-9 ; 40-3.

Distribution.—Rivers of Gangatic provinces, Madras and Burma according to Day 1878.

Labeo boggut (Sykes)

1841. *Chondrostoma boggut* Sykes, *Trans. zool. Soc. London*, 2, p. 359 (type locality, Poona waterways).

Local name.—Nil.

Material.—One ex. in total : 64-1.

Distribution.—Throughout India except Kerala. Pakistan. Bangladesh.

Labeo calbasu (Hamilton)

1822. *Cyprinus calbasu* Hamilton, *Fish Ganges*, pp. 297, 389, pl. 2, fig. 33 (type locality, rivers and ponds of Bengal and in the western provinces).

Local names.—*Kakka meen*, *Karuppusel*, *Karum chel*, Tamil. *Macchilu*, Kanarese.

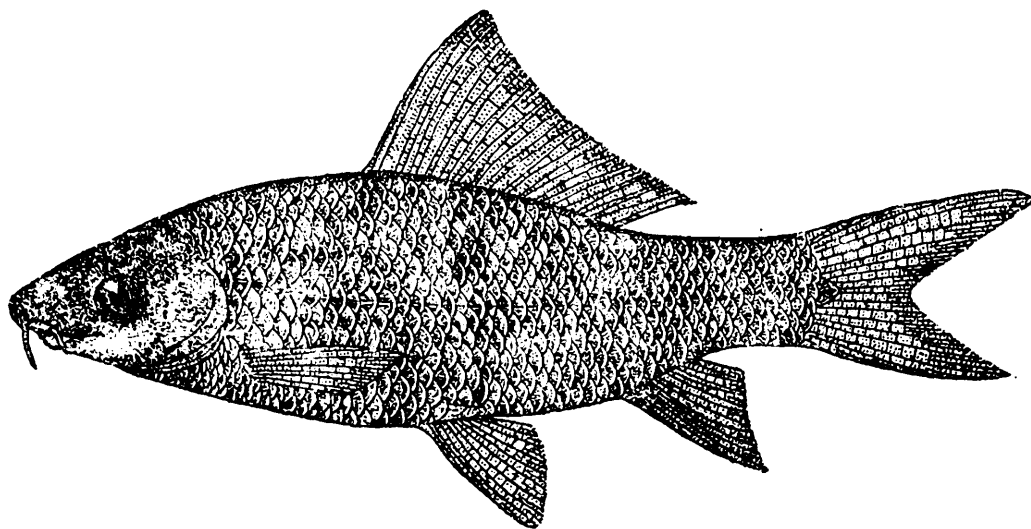


Fig. 14. Lateral view of *Labeo calbasu* (Hamilton).

Material.—51 exs., in total : 5-8 ; 6-4 ; 7-5 ; 9-1 ; 18-3 ; 20-2 , 24-2 ; 25-3 (250 mm TL) ; 26-1 ; 31-2 ; 35-4 ; 40-5 ; 44-1 ; 48-3 ; 63-2 ; 64-5 (240 mm TL).

Distribution.—Throughout India, Pakistan, Bangladesh, Burma, Thailand, Yunnan.

Labeo dussumieri (Valenciennes)

1841. *Rohita dussumieri* Valenciennes, *Hist. Nat. Poiss.*, 16, p. 258, pl. 475 (type locality, Alleppey, Kerala).

Local names.—*Toulee*, Malayalam.

Material.—No specimen obtained by us. Recorded by Hora (1937).

Distribution.—Rivers of southern part of Kerala and Cauvery headwaters. Sri Lanka. Occurrence in Bombay (Day, 1889) doubtful.

Labeo fimbriatus (Bloch)

1797. *Cyprinus fimbriatus* Bloch, *Ichthyol.*, 12, p. 5., pl. 409 (type locality, Madras).

Local names.—*Gundumani Sel*, *Sel kendai*, Tamil ; *Kemmeen*, Kanarese.

Material.—Six exs. in total : 20-3 (158 mm TL) , 22-1 (320 mm TL) ; 26-1 (105 mm SL) ; 51-1.

Disiribution.—Throughout India, Pakistan and Bangladesh.

Labeo kontius (Jerdon)

1842. *Cyprinus kontius* Jerdon, *Madras J. Lit. & Sci.*, p. 302 (type locality, Cauvery and its tributaries).

Local names.—*Currumuzhi kendai*, *Currumunee kendai*, Tamil ; *Kal cher*, *Kontielu*, Kanarese.

Material.—Six exs. in total : 37-3 ; 48-2 ; 52-1.

Distribution.—Cauvery river system in South Karantaka, Tamil Nadu.

Remarks.—Dorsal profile with a distinct hump at base of dorsal fin. The shape of the dorsal profile is very characterstic of this species. In life each scale has a red mark at its center.

Labeo pangusia (Hamilton)

1822. *Cyprinus pangusia* Hamilton, *Fish, Ganges*, pp. 285, 386 (type locality, River Kosi).

Local names.—Nil.

Material.—26 exs. in total ; 13-1 ; 18-4 ; 20-5 ; 24-1 ; 35-1 ; 37-2 ; 40-6 ; 42-1 ; 48-1 ; 51-2 ; 74-1 ; 77-1.

Distribution.—Himalayan range and generally throughout Sind, the Deccan, N. W. Provinces to Bengal, Cachar and Assam (Day, 1878).

Remarks.—Some of the larger examples have a deep groove across the snout with many tubercles and pores.

Labeo potail (Sykes)

1841. *Cyprinus potail* Sykes, *Trans. zool. Soc. London*, 2, p. 354 (type localily, Beema river, Maharashtra).

Local names.—Nil.

Material.—37 exs. in total 35-28 ; 36-7 ; 44-2.

Distribution.—Tungabhadra river, Poona and the Deccan. This is the first record of the species from the Cauvery system.

Labeo rohita (Hamilton)

1822. *Cyprinus rohita* Hamilton, *Fish Ganges*, pp. 301, 388, pl. fig. 85 (type locality, freshwater rivers of the Gangetic provinces).

Local names.—*Kannadi kendai*, *Rohu*, Tamil.

Material.—26 exs. in total : 7-2 ; 14-3 ; 18-3 ; 19-1 ; 20-1 ; 23-7 ; 24-1 ; 37-1 ; 39-5 ; 60-1 ; 64-1.

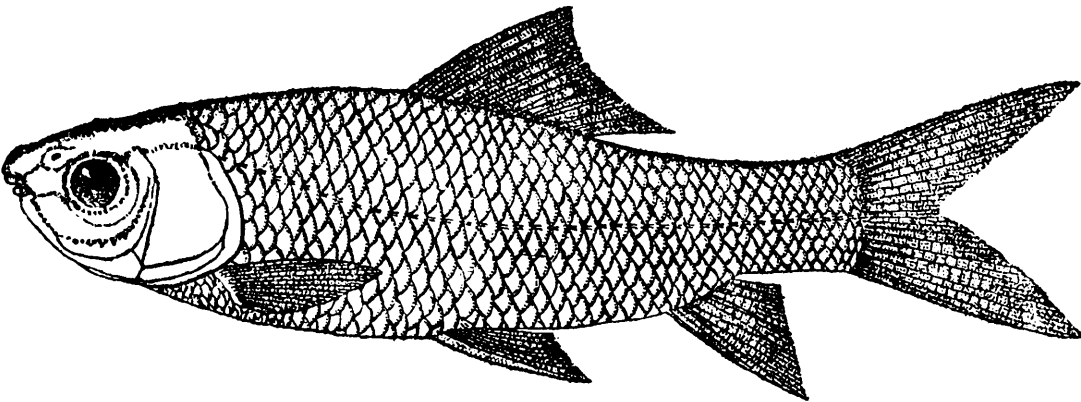


Fig. 15. Lateral view of *Labeo rohita* (Hamilton).

Distribution.—Throughout northern India, Pakistan, Bangladesh and Burma. Introduced into south Indian rivers and well established.

Genus Tor Gray

KEY TO SPECIES

- | | |
|---|---------------------|
| 1. Scales between pelvic fin base and lateral line
2½ rows. Maxillary barbels not prominent. ... | <i>T. khudree</i> |
| Scales between pelvic fin base and lateral line
3½ rows. Maxillary barbels prominent. ... | <i>T. mussullah</i> |

Tor khudree (Sykes)

1841. *Barbus khudree* Sykes, *Trans. zool. Soc. London*, 2, p. 35 (type locality, Mutha Mula river Poona).

1848. *Barbus malabaricus* Jerdon, *Madras J. Lit. Sci.* 15, p. 312 (type locality, mountain streams of Malabar).

1938. *Barbus khudree*, Hora & Misra, *J. Bombay nat. Hist. Soc.* 40 (1), pp. 24-27 TF. 1 (description).

Local names.—*Poomeen*, *Pomueen*, Tamil ; *Bili meen*, Kanarese ; *Kudie*, Telugu.

Material.—31 exs. in total : 5-1 ; 14-2 ; 15-2 ; 20-1 ; 36-3 ; 40-6 ; 42-2 ; 48-3 ; 50-6 ; 65-3 ; 84-2.

Distribution.—Rivers of Western Ghats, such as Godavary, Krishna, and Cauvery and their tributaries.

Remarks.—In life olive green with fins tipped pink and with a faint streak along lateral line. Hora (1939, 1940, 1941, 1942) in a series of articles elucidated the taxonomy of fishes grouped under "Mahseer". In peninsular India, *Tor khudree* (Sykes) often called the Black Mahseer and *Tor musullah* (Sykes) are alone found. The Himalayan and sub-himalayan *Tor tor* (Hamilton) and *Tor putitora* (Hamilton) have not been so far recorded from S. India.

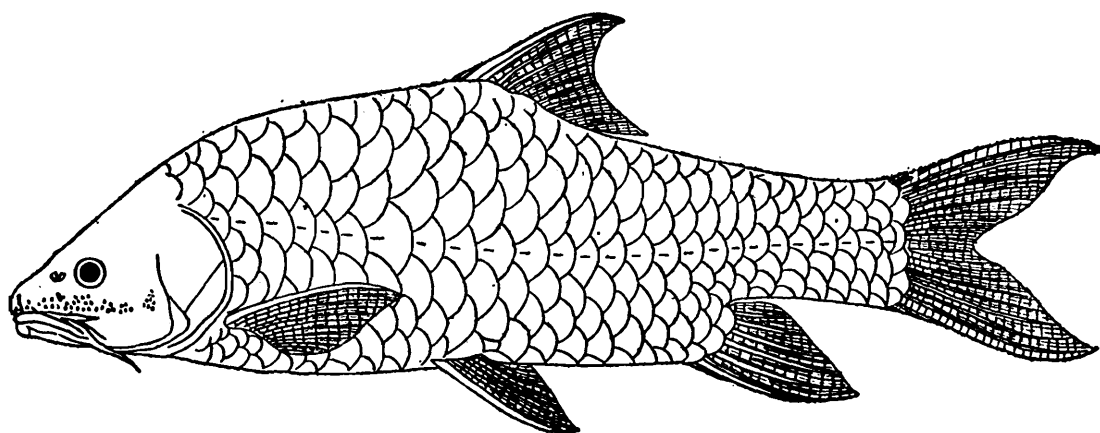


Fig. 16. Lateral view of *Tor khudree* (Sykes).

Tor khudree is characterised by the presence of $2\frac{1}{2}$ rows of scales between pelvic base and lateral line and absence of any tubercles on the snout. Hora and Misra (1938) gave a good description of the species. Hora (1943, p. 166) conclusively proved that Jerdon's *B. malabaricus* is a synonym of this species.

Some data obtained on the material from the Cauvery river at Bhagamandala are as below :

SL	LL	PDS	BD	LH
99	24	8	29	27
93	23	7	28	26
100	24	7	28	28
106	24	8	26.5	25

***Tor musullah* (Sykes)**

1841. *Barbus musullah* Sykes, *Trans zool. Soc. London*, **2**, p. 356 (type locality, Sirur on Ghod river near Poona).

1943. *Barbus musullah*, Hora, *J. Bombay nat. Hist. Soc.*, **43** (2), pp. 164-167, pt. II, 44 (1), pp. 5-6 (description).

Local names.—*Masundi*, Marathi, *Bhavani Mahseer*, English.

Material.—No specimen obtained by us.

Distribution.—Rivers of Western ghats, such as the Krishna, Cauvery, Bhavany and their tributaries.

Remarks.—This is considered to be the largest of the two Deccan Mahaseers, growing to enormous size in the Cauvery and its tributary streams. A length of about 4.5 ft. is known.

Tor mussullah (Sykes) is the second Mahseer fish in southern India. Hora (1942) clarifying the systematic position of Sykes' species of *Barbus* from the Deccan, initially thought *mussullah* as a probable synonym of *P. carnaticus* (Jerdon), but later in 1943 on the basis of fresh material from W. ghats showed that *mussullah* is a species of the genus *Tor* clearly distinct from *P. carnaticus*.

A comparison of the three species is given below for easy identification :

Characters	<i>Tor khudree</i>	<i>Tor mussullah</i>	<i>P. carnaticus</i>
SL/LH	3.1-3.8	2.8-4.0	4.25-4.75
SL/BD	3.4-3.9	2.5-4.0	3.0-3.7
Scales between pelvic base and LL	2½	3½	3½
Body	Long not very deep	Short, deep	Short, deep
Scales	Large	Moderate	Moderate
Lips	Thick, folded	Thin	Thick
Tubercles	Not conspicuous	Conspicuous	Present
Maxillary barbels	Not prominent	Prominent	Prominent
LL	25-27	25-26	28-29

Genus **Cirrhinus** (Oken) Cuvier

KEY TO SPECIES

1.

Dorsal fin with 8 branched rays.

...

2
- Dorsal fin with 11 or more than 11 branched rays.

...

3
2.

Lateral line scales 48. Dorsal fin nearly as high as body.

...

C. fulungee
- Lateral line scales 35-38. Dorsal fin less than body depth.

...

C. reba
3.

Four barbels.

...

C. cirrhosa
- Two barbels.

...

C. mrigala

Cirrhinus cirrhosa (Bloch)

1797. *Cyprinus cirrhosa* Bloch, *Ichth.*, 12, p. 52, fig. 411 (type locality, the Cauvery).

Local names.—*Ven kendai*, Tamil.

Material.—69 exs. in total : 6-1 ; 13-1 ; 14-1 ; 15-6 ; 18-2 ; 25-18 ; 32-4 ; 35-16 ; 39-5 ; 42-1 ; 44-1 ; 45-4 ; 48-5 ; 53-1 ; 55-2 ; 59-1.

Distribution.—Cauvery, Krishna, Godavary rivers in S. India.

Remarks.—14 examples out of 18 collected from Stn. 25, River Vennar at V. V. R. (1.2.77) measuring 84-130 mm in standard length have 41 scales along lateral line, with the upper part of head and dorsal profile dark brown with a silvery base. Larger examples are however uniformly golden coloured in life. Of these only one has 16 rays in the dorsal fin, four with 18 rays and all others with 17 rays.

***Cirrhinus fulungee* (Sykes)**

1841. *Chondrostoma fulungee* Sykes, *Trans. zool. Soc. London*, 2, p. 358 (type locality, Poona waterways).

Local name.—Nil.

Material.—No specimen obtained by us. Recorded by Hora (1937).

Distribution.—Poona and Deccan according to Day (1889). May be found in the catchment area of the Cauvery basin.

***Cirrhinus mrigala* (Hamilton)**

1822. *Cyprinus mrigala* Hamilton, *Fish. Ganges*, pp. 279, 386, pl. 6, fig. 78 (type locality, ponds and freshwater rivers of the Gangetic provinces).

Local names.—*Pudu kendai*, *Mrigala*, Tamil.

Material.—26 exs. in total : 12-3 ; 18-6 ; 24-6 ; 26-1 ; 29-1 ; 35-1 ; 39-5 ; 59-2 ; 76-1.

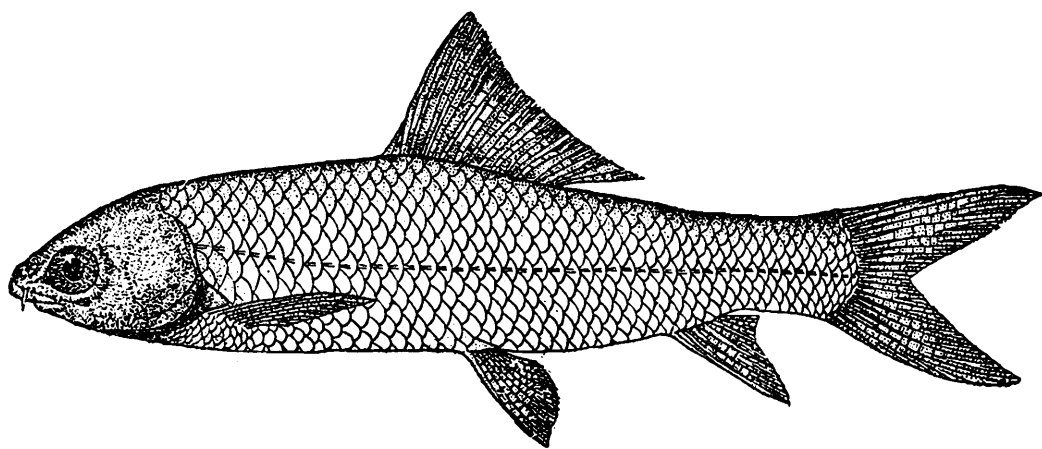


Fig. 17. Lateral view of *Cirrhinus mrigala* (Hamilton).

Distribution.—Throughout India, Pakistan, Bangladesh, Burma. Very widely introduced into many river systems and reservoirs, tanks etc.

Remarks.—The Tamil name “pudu kendai” meaning new carp aptly indicates its introduction in the Cauvery system,

Cirrhinus reba (Hamilton)

1822. *Cyprinus reba* Hamilton, *Fish Ganges*, pp. 280, 386 (type locality, rivers and ponds of Bengal and Bihar).

Local names : *Arinjan*, *Kulla arinjan*, Tamil. *Arja*, Kanarese.

Material.—693 exs. in total : 1-1 ; 5-16 ; 6-3 ; 8-112 ; 9-2 ; 11-14 ; 12-6 ; 13-2 ; 14-28 ; 16-6 ; 17-22 ; 20-19 ; 21-10 ; 22-1 ; 23-1 ; 24-2 ; 25-8 ; 26-26 ; 28-2 ; 29-3 ; 34-1 ; 35-90 ; 36-18 ; 37-8 ; 39-3 ; 40-2 ; 42-6 ; 43-1 ; 44-2 ; 45-1 ; 46-53 ; 47-4 ; 48-17 ; 49-14 ; 51-3 ; 54-17 ; 55-17 ; 56-8 ; 57-6 ; 58-54 ; 62-11 ; 63-16 ; 64-42 ; 71-2 ; 77-6 ; 79-2 ; 90-5.

Distribution.—Throughout India.

Remarks.—By far the most dominant species in the Cauvery system especially in the lower deltaic regions, this species actively competes with other better varieties of carp and has been able to replace many of them. Attaining 30 cm in length which is not very often seen, a size of generally 15 cms is common. Though not of much value in flesh content it is compensated by numbers. In the V. V. R. dam this fish is abundantly caught by a suspended bamboo frame of net described elsewhere.

Genus Osteocheilus Günther

KEY TO SUBGENERA

- | | | |
|--------------------------------------|-----|-------------------------|
| 1. Dorsal fin with a serrated spine. | ... | Kantaka |
| Dorsal fin without any spine. | ... | Osteochilichthys |

Subgenus Osteochilichthys Hora

KEY TO SPECIES

- | | | |
|--|-----|---------------------------------------|
| 1. Lateral line scales less than 40. Body depth 3.5 in total length. No black band along middle of body. A dark band along dorsal fin present. | ... | <i>O. (Osteochilichthys) thomassi</i> |
| Lateral line scales more than 40. Body depth 4.0 or more in total length. A black band from eye to centre of caudal fin present. | ... | <i>O. (Osteochilichthys) nashii</i> |

Osteocheilus (Osteochilichthys) nashii (Day)

1868. *Barbus nashii* Day, *Proc. zool. Soc. London*, p. 584 (type locality, Fraserpet, Coorg).

Local names.—Nil.

Material.—No specimen obtained by us. Recorded by Hora (1942).

Distribution.—Coorg, Wynaad, S. Kanara.

Osteocheilus (Osteochilichthys) thomassi Day

1878. *Scaphiodon thomassi* Day, *Fish India*, p. 551, pl. 134, fig. 1 (type locality, S. Kanara).

Local names.—*Konti*, Kanarese.

Material.—No specimen obtained by us. Recorded by Hora (1942).

Distribution.—S. Kanara. Cauvery river system.

Osteocheilus (Kantaka) brevidorsalis (Day)

1873. *Semiplotus brevidorsalis* Day, *Proc. zool. Soc. London*, p. 239 (type locality, Nilgiri hills).

Local name.—*Mian kendai*, Tamil.

Material.—4 exs. in total : 54-1 ; 62-1 ; 84-2.

Distribution.—Rivers below Nilgiri hills in S. India.

Remarks.—Two examples 104 and 110 mm in standard length obtained from Stn. 84. River Cauvery at Sivasamudram, have 39 and 41 scales along the lateral line, 11 or 12 branched dorsal fin rays, ii, 6 anal fin

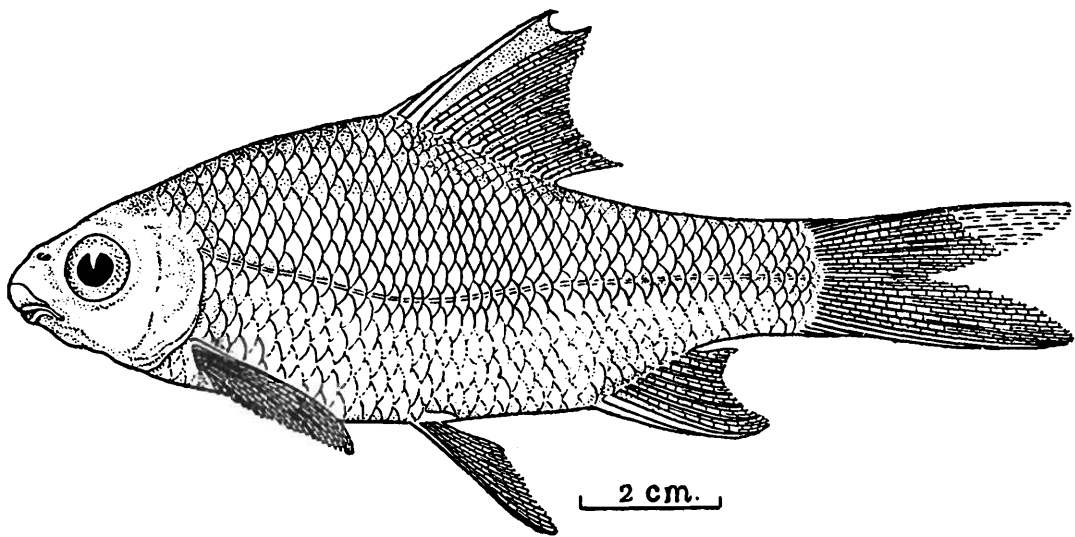


Fig. 18. Lateral view of *Osteocheilus brevidorsalis* (Day).

rays, with the labial fold interrupted. No color bands along the lateral line are present. Pores below eyes indistinct, but on snout clear.

The example from R. Cauvery at Chikalur (Stn. 54) had in life a broad green hue along middle of body with the fins tinged green especially the dorsal fin.

Genus **Catla** Valenciennes**Catla catla** (Hamilton)

1822. *Cyprinus catla* Hamilton, *Fish. Ganges* pp. 287, 387, pl. 13, fig. 81 (type locality, in the rivers and tanks of Bengal).

Local names.—*Thoppa meenu*, *Yamaneri kendai*, Tamil ; *Botcha*, Telugu.

Material.—One ex. in total : 20-1.

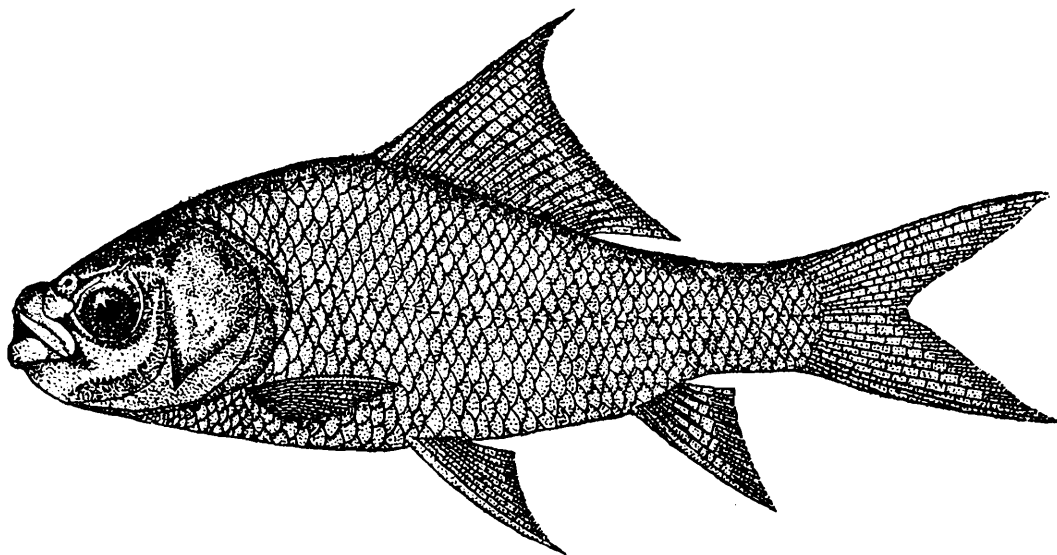


Fig. 19. Lateral view of *Catla catla* (Hamilton).

Distribution.—Throughout India, Pakistan, Bangladesh.

Remarks.—With the exception of the Mahseers, this is the largest carp in India, attaining a maximum length of 6 feet and a weight of 70 kgs. It breeds now in the Mettur reservoir.

Genus **Ctenopharyngodon** Steindachner**Ctenopharyngodon idella** (Valenciennes)

1844. *Leuciscus idella* Valenciennes, *Hist. Nat. Poiss.*, 17, p. 362 (type locality, China).

Local name.—*Grass carp*, English

Material.—Two exs. in total : 77-2.

Distribution.—Naturally found in Amur region (Siberia and Manchuria) ; North China to South China, U. S. S. R., Lower reaches of R. Amur. Introduced into India.

Subfamily GARRINAE

Genus **Garra** McClelland

KEY TO SPECIES

- | | | |
|-------------------------------------|-----|--------------------------------|
| 1. Proboscis present. | ... | <i>G. gotyla stenorhynchus</i> |
| Proboscis absent. | ... | ... 2 |
| 2. Lateral line scales 34 or fewer. | ... | <i>G. mullya</i> |
| Lateral line scales 35-36. | ... | <i>G. mcClellandii</i> |

Garra gotyla stenorhynchus (Jerdon)

1849. *Gonorhynchus stenorhynchus* Jerdon, *Madras J. Lit. Sci.*, **15**, p. 310 (type locality, Bhavani river, Nilgiris).

Local name.—Nil.

Material.—One ex. in total : 42-1.

Distribution.—Cauvery and Krishna river systems, S. India.

Garra mcClellandi (Jerdon)

1849. *Gonorhynchus mcClellandi* Jerdon, *Madras J. Lit. Sci.*, **15**, p. 309 (type locality, Bhavani river at base of Nilgiri hills and also in the Manantoddy river).

1964. *Garra mcClellandi* Menon, *Mem. Indian Mus.*, **14** (4), p. 228 (revision).

Local names.—*Kallu koravai*, Tamil.

Material.—Two exs. in total : 54-2.

Distribution.—From Syria throughout India, Sri Lanka, and Burma as per Day (1878). In India confined to the Cauvery drainage in upper reaches.

Garra mullya (Sykes)

1841. *Chondrostoma mullya* Sykes, *Trans. zool. Soc. London*, **2**, p. 359, pl. 62, fig. 3 (type locality, Poona waterways).

1864. *Garra mullya*, Menon, *Mem. Indian Mus.*, **14** (4), p. 212 (revision).

Local names.—*Kallu kuravai*, Tamil ; *Pandi pakka*, Kanarese.

Material.—75 exs. in total : 18-1 ; 24-1 ; 25-1 ; 47-7 ; 51-2 ; 52-2 ; 54-3 ; 55-1 ; 56-5 ; 58-2 ; 61-1 ; 62-1 ; 63-11 ; 67-2 ; 70-1 ; 71-2 ; 76-1 ; 77-6 ; 78-2 ; 81-1 ; 82-3 ; 84-19.

Distribution.—Throughout India except Assam and Himalaya.

Remarks.—In life, body above lateral line dark, below lateral line golden tinged. Fins tipped yellow, the lateral line forming a black stripe.

Family HOMALOPTERIDAE**KEY TO GENERA**

- | | | |
|---|-----|--|
| 1. Gill openings small and situated entirely above base of pectoral fins. | ... | Bhavana (<i>B. australis</i>) |
| Gill openings of moderate size extending to the ventral surface for a short distance. | ... | Balitora (<i>B. mysorensis</i>) |

Genus **Bhavana** Hora**Bhavana australis** (Jerdon)

1848. *Platycaura australis* Jerdon, *Madras J. Lit. Sci.*, **15**, p. 333 (type locality, Waliar).

1941. *Bhavana australis*, Hora, *Rec. Indian Mus.*, **43**, p. 225.

Local name.—Nil.

Material.—No specimen obtained by us. Recorded by Chacko *et al.* (1954).

Distribution.—Wynaad, Sethumadai hills, Mysore, Kallar stream near Trivandrum.

Remarks.—Hora (1941) has ably discussed the misidentification of *Homaloptera maculata* by Day, which is synonymous with this species.

Genus **Balitora** Gray**Balitora mysorensis** Hora

1941. *Balitora brucei mysorensis* Hora, *Rec. Indian Mus.*, **43** (2), pp. 221-232 (type locality, Cauvery river at Sivasamudram).

1978. *Balitora mysorensis*, Menon *et al.*, *Matsya*, **3**, pp. 31-34.

Local names.—Nil.

Material.—No specimen obtained by us. Recorded by Hora (1942).

Distribution.—Cauvery and Thunga river systems, Karnataka.

Family COBITIDAE

KEY TO SUBFAMILIES

- | | | |
|---|-----|---|
| 1. No spine under or before eye. | --- | NOEMACHEILINAE |
| An erectile spine arising from the ethmoid bone and concealed in a groove under or before each eye. | .. | COBITINAE (Genus <i>Lepidocephalichthys</i>) |

Subfamily NOEMACHEILINAE

KEY TO GENERA

- | | | |
|---|-----|--------------|
| 1. Anterior nostril prolonged into a long nasal barbel. A well developed adipose keel on upper part of caudal peduncle in continuation with caudal fin. | ... | Oreonectes |
| Anterior nostril simple. No adipose keel on caudal peduncle. | ... | Noemacheilus |

Oreonectes evezardi (Day)

1878. *Nemachilus evezardi* Day, *Fish India*, p. 613, pl. 153, fig. 11 (type locality, Poona).
1968. *Oreonectes evezardi*, Banarescu & Nalbant, *Mitt. Hamburg. Zool. Mus. Inst.*, 65, p. 339.

Local name.—Nil.

Material.—No specimen obtained by us. Recorded by Chacko *et al.* (1954).

Distribution.—Travancore hills, Kerala, W. ghats, Pachmarhi hills, Bailadila range, Bastar.

Genus Noemacheilus van Hasselt

KEY TO SPECIES

1.	Lateral line incomplete.	...	...	2
	Lateral line complete.	...	...	4
2.	Caudal fin truncate and cut square.	...	<i>N. sinuatus</i>	
	Caudal fin emarginate or forked.	...	...	3
3.	Body with three rows of pale spots with faint indications of pale bands in tail region. A well defined black spot on caudal base present.	...	<i>N. guentheri</i>	
	Body with 9-12 vertical bands encircling. Anterior bands may coalesce on back.	...	<i>N. denisonii</i>	
4.	Dorsal fin with nine or ten branched rays.	...	<i>N. striatus</i>	
	Dorsal fin with seven or eight branched rays.	...	...	5
5.	A dark line running the centre of the back. Body with numerous irregularly shaped spots and bars proceeding from back up to lateral line.	...	<i>N. semiarmatus</i>	
	A well developed moniliform lateral black band along lateral line in middle of body from caudal base to snout tip.	...	<i>N. monilis</i>	

Noemacheilus denisonii Day

1867. *Nemacheilus denisonii* Day, *Proc. zool. Soc. London*, p. 287 (type locality, Nilgiri and Coorg hills).

Local names.—Nil.

Material.—11 exs. in total : 65-7 ; 66-4.

Distribution.—Rivers in the base of Nilgiri and Coorg hills.

Remarks.—The seven examples from Stn. 65. River at Bhagamandala measuring 46-74 mm in total length have eight to ten bands on body.

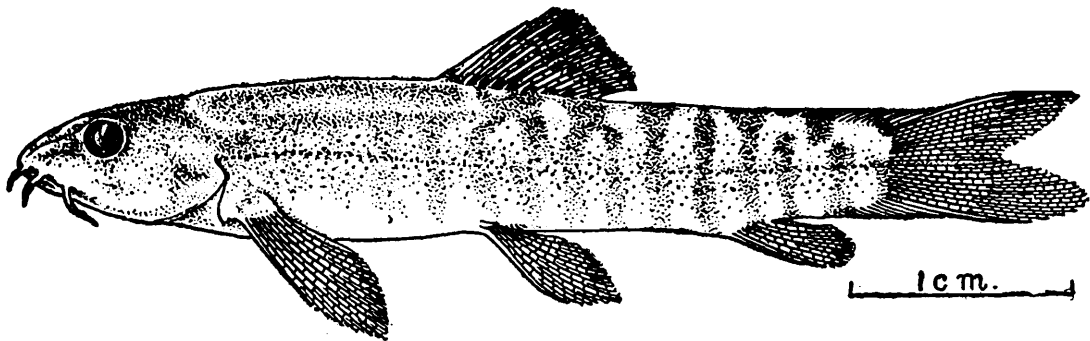


Fig. 20. Lateral view of *N. denisonii* Day

The bands are incomplete in adults but complete in juveniles. A black spot at base of dorsal fin is present.

Noemacheilus guentheri Day

1867. *Nemacheilus guentheri* Day, *Proc. zool. Soc. London*, p. 285 (type locality, rivers along lower slopes of Nilgiri hills).

Local names.—Nil.

Material.—No specimen obtained by us. Recorded by Rajan (1955).

Distribution.—Rivers along base of Nilgiri hills.

Noemacheilus monilis Hora

1921. *Nemacheilus monilis* Hora, *Rec. Indian Mus.*, 22 (1), pp. 19, 20 (type locality, Bhavani river at base of Nilgiri hills).

Local names.—Nil.

Material.—No specimen obtained by us. Recorded by Hora (1942).

Distribution.—Bhavani river, Mettupalayam, Nilgiri hills.

Noemacheilus semiarmatus Day

1867. *Nemacheilus semiarmatus* Day, *Proc. zool. Soc. London*, p. 286 (type locality, Bhavani and Sigur rivers at base of Nilgiri hills).

Local names.—Nil.

Material.—No specimen obtained by us. Recorded by Hora (1942).

Distribution.—Bhavani and Sigur rivers at base of Nilgiri hills. Also known from Karnataka, likely to be obtained from the headwaters of Cauvery.

Noemacheilus sinuatus Day

1870. *Nemacheilus sinuatus* Day, *Proc. zool. Soc. London*, p. 371 (type locality, Wynaad).

Local name.—Nil.

Material.—No specimen obtained by us. Recorded by Hora (1937, 1942).

Distribution.—Wynaad, and Mysore. Likely to occur in the headwaters of Cauvery.

Noemacheilus striatus Day

1867. *Nemachilus striatus* Day, *Proc. zool. Soc. London*, p. 347 (type locality, Wynaad, Kerala).

Local names.—*Kal-irum*, *Kal-nakura*, Tamil (=Stone licking).

Material.—Six exs. in total : 84-6.

Distribution.—Wynaad, Kerala. This is the first record of this species from the Cauvery system.

Subfamily COBITINAE

Genus **Lepidocephalus** Bleeker**Lepidocephalus (Lepidocephalichthys) thermalis** (Valenciennes)

1846. *Cobitis thermalis* Valenciennes, *Hist. nat. Poiss.*, 17, p. 78 (type locality, Ceylon).

Local names.—*Asarat*, Tamil.

Material.—325 exs. in total : 19-32 ; 43-220 ; 44-1 ; 46-3 ; 65-44 ; 66-24 ; 81-1.

Distribution.—Southern Karnataka, Kerala, Tamil Nadu and Sri Lanka.

Order SILURIFORMES

Family BAGRIDAE

KEY TO GENERA

- | | |
|--|-------------------|
| 1. Interneural shield in between occipital process and basal bone of dorsal fin present. ... | Aorichthys |
| Interneural shield absent. ... | Mystus |

Genus **Mystus** Scopoli

KEY TO SPECIES

- | | | |
|---|-----|---|
| 1. Adipose dorsal fin commencing almost after rayed dorsal fin. ... | ... | 2 |
| Adipose dorsal fin commencing after some considerable interspace. ... | ... | 3 |

2. Maxillary barbels reach anal fin. Interorbital width less than 3.0 (2.0 to 3.0) in head length. No dark spot at base of dorsal fin. ... *M. bleekeri*
- Maxillary barbels reach caudal fin base or beyond. Interorbital width more than 3.0 (3.0 to 4.0) in head length. A dark spot at base of dorsal fin. ... *M. cavasius*
3. Body plain without any colour bands. ... 4
- Body with one or two longitudinal colour bands on either side of the lateral line. ... 5
4. Occipital crest rugose. No blotch at base of caudal fin. Adipose dorsal fin base shorter than or equal to anal fin base. ... *M. gilio*
- Occipital crest smooth. A dark blotch at base of caudal fin. Adipose dorsal fin base longer than anal fin base. ... *M. armatus*
5. Occipital process reaching basal bone of dorsal fin. ... 6
- Occipital process not reaching basal bone of dorsal fin. ... 7
6. Eye diameter 3.5 to 4.0 in head length. Body with a bluish shoulder spot and a silvery line along side ending in a dark spot at caudal fin base ; one or two light bands along sides above lateral line. ... *M. montanus*
- Eye diameter 4.5 to 5.0 in head length. Body with 3 or 4 longitudinal colour bands above and below lateral line. A dark shoulder spot. No spot at base of caudal fin. ... *M. vittatus*
7. Median longitudinal groove on head not reaching base of occipital process. ... *M. malabaricus*
- Median longitudinal groove on head reaching base of occipital process. ... 8
8. Ten black rounded solid spots along lateral line. Body depth 7.8 to 8.4 in standard length. ... *M. punctatus*
- Several clusters of small vertical spots along anterior half of lateral line. Body depth 4.4 to 5.0 in standard length. ... *M. menoda menoda*

Mystus armatus (Day)

1865. *Hypselobagrus armatus* Day, *Proc. zool. Soc. London*, p. 289 (type locality, Malabar).

Local name.—Cuaree, Malayalam.

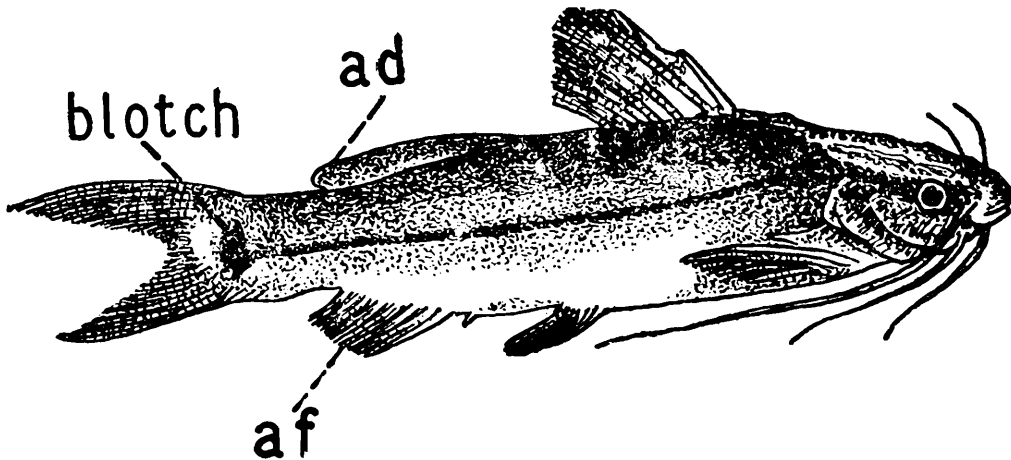


Fig. 21. Lateral view of *Mystus armatus* (Day)

Material.—Nine exs. in total : 70-9.

Distribution.—Wynaad, Cauvery watershed, S. India.

Mystus bleekeri (Day)

1846. *Bagrus keletius keletius* (nec. Valenciennes), *Nat. & Geneesh. Arch. Ned. Ind.*, 3 (2), p. 135 (type locality, Bengal).

Local names.—Nil.

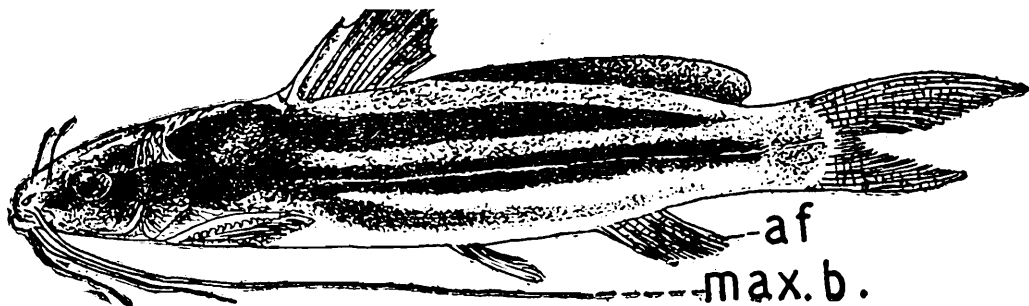


Fig. 22. Lateral view of *Mystus bleekeri* (Day)

Material.—70 exs. in total : 19-7 ; 20-9 ; 39-1 ; 43-2 ; 44-16 ; 47-1 ; 48-1 ; 54-1 ; 78-2 ; 79-30.

Distribution.—Throughout India, Pakistan, Bangladesh and Burma.

Mystus cavasius (Hamilton)

1822. *Pimelodus cavasius* Hamilton, *Fish. Ganges*, pp. 203, 379, pl. 11. fig. 67 (type locality, Gangetic provinces).

Local names.—Cutta, Vellai keletee, Vazhappu keletee, Tamil ; Girlu ; Nai kirle, Kanarese.

Material.—60 exs. in total : 1-8 ; 8-1 ; 19-4 ; 20-1 ; 25-1 ; 35-1 ; 36-6 ; 43-6 ; 44-3 ; 46-1 ; 48-1 ; 51-2 ; 52-3 ; 54-1 ; 64-9 ; 65-3 ; 70-3 ; 71-1 ; 74-3 ; 76-1 ; 86-1.

Distribution.—Throughout India, Pakistan, Bangladesh, Burma and Thailand.

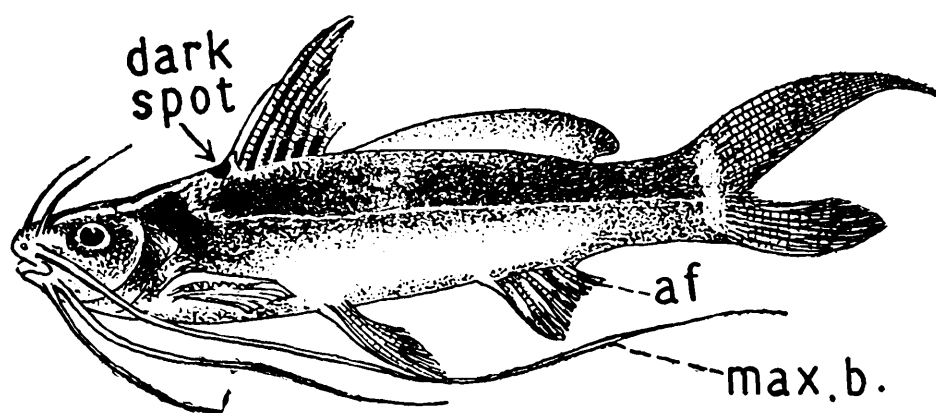


Fig. 23. Lateral view of *Mystus cavasius* (Hamilton).

Remarks.—Most of the specimens examined have a dark spot at base of the dorsal spine. In life the fish is with a metallic blue colour along sides and golden yellow below lateral line and on ventral surface.

***Mystus gulio* (Hamilton)**

1822. *Pimelodus gulio* Hamilton, *Fish Ganges*, pp. 201, 379, pl. 23; fig. 6 (type locality, higher parts of the Gangetic estuaries where the water is not very salty).

Local names.—*Uppang keletee*, Tamil.

Material.—10 exs. in total : 1-2 ; 7-1 ; 8-2 ; 9-2 ; 19-1 ; 26-1 ; 46-1.

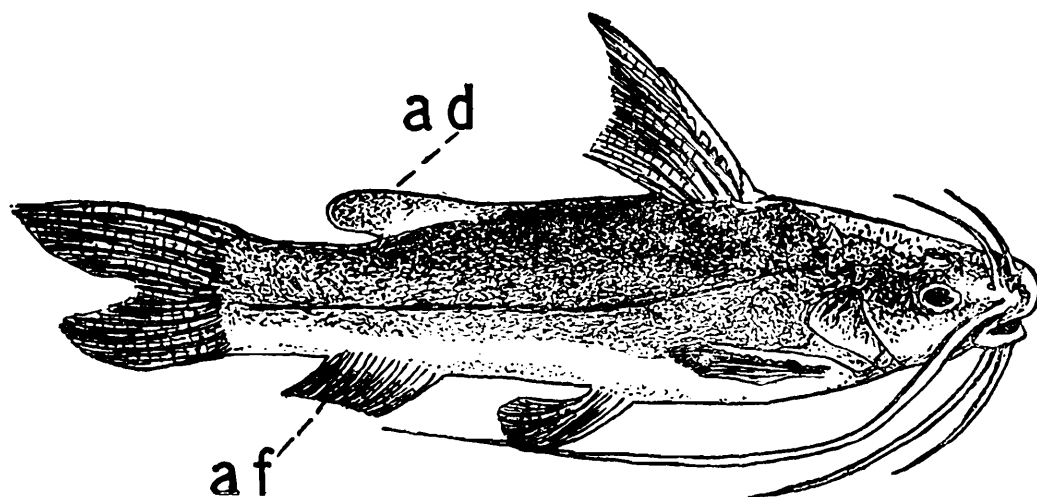


Fig. 24. Lateral view of *Mystus gulio* (Hamilton).

Distribution.—Throughout India, Pakistan, Bangladesh, Burma, Thailand, Sri Lanka, Malaya, Malay Archipelago in freshwaters, estuaries and even in seas.

Remarks.—It is known that in this species the occipital process may not reach the basal bone of the dorsal fin in some examples. This is the only species of *Mystus* in India which is often caught in the sea, but not very far or deep.

***Mystus malabaricus* (Jerdon)**

1849. *Bagrus malabaricus* Jerdon, *Madras J. Lit. & Sci.*, 15, p. 338 (type locality, Malabar).

Local name.—Nil

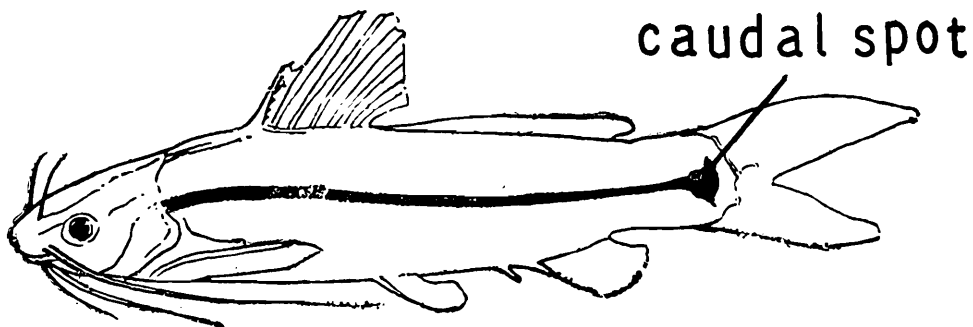


Fig. 25. Outline diagrams of *Mystus malabaricus* (Jerdon).

Material.—No specimen obtained by us. Recorded by Hora (1937).

Distribution.—Wynaad hills, Kerala. May be found in the headwaters of Cauvery.

***Mystus menoda* (Hamilton)**

1822. *Pimelodus menoda* Hamilton, *Fish Ganges*, pp. 203, 379 (type locality, Rivers Kosi, Mahananda in North Bihar and Bengal).

Local name.—Nil.

Material.—Two exs. in total : 72-2.

Distribution.—From Orissa through W. Bengal and Assam, Cauvery and Krishna river systems.

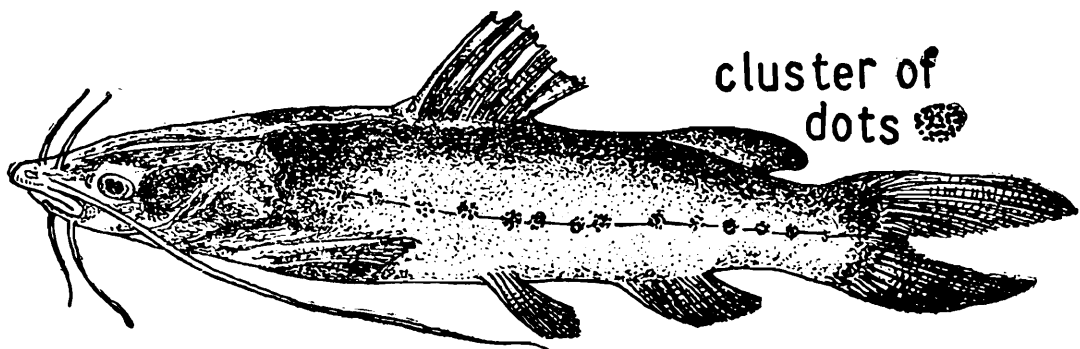


Fig. 26. Lateral view of *Mystus menoda menoda* (Hamilton).

Remarks.—Though generally confined to North India, this species has been in recent years caught from peninsular rivers also.

Mystus montanus (Jerdon)

1849. *Bagrus montanus* Jerdon, *Madras J. Lit. & Sci.*, **15** (2), p. 338 (type locality, Manantoddy river, Wynaad).

Local name.—Nil.

Material.—Nine exs. in total : 70-9.

Distribution.—Manantoddy, Wynaad ; Cauvery headwaters.

Remarks.—In life a bluish-shoulder spot and a dark spot at base of caudal fin prominent. Fins are tinged green, and one or two light bands along side above lateral line faintly seen. The coloration is as given by Day (1889, p. 159).

Mystus punctatus (Jerdon)

1849. *Bagrus punctatus* Jerdon, *Madras J. Lit. & Sci.*, p. 339 (type locality, Cauvery river).

Local names.—Setha keletee, Solang keletee, Tamil.

Material.—2 exs. in total : 40-2.

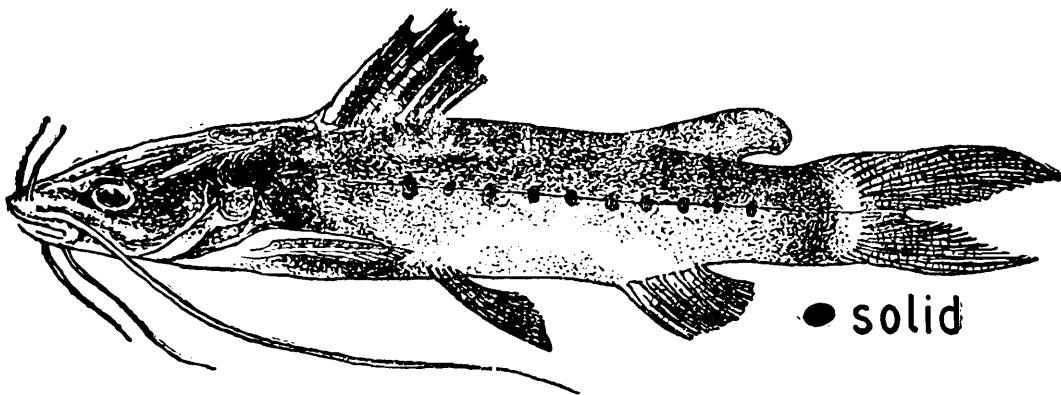


Fig. 27. Lateral view of *Mystus punctatus* (Jerdon).

Distribution.—Mainly Kerala, Southern Karnataka, Nilgiri in Tamil Nadu along base of hills.

Remarks.—Giant sized specimens of this species 1130-1650 mm in length and 11.0 to 58.5 kg in weight have been recorded from Tungabhadra river system (Govind & Rajagopal, 1975).

Mystus vittatus (Bloch)

1797. *Silurus vittatus* Bloch, *Ichthyol Hist. Nat.*, **11**, p. 40, pl. 371, fig. 2 (type locality, Tranquebar, S. India).

Local names.—Sonannng keletee, Nattu keletee, Kattai keletee, Tamil,

Material.—89 exs. in total : 1-4 ; 13-2 ; 19-2 ; 22-20 ; 25-10 ; 26-5 ; 27-2 ; 29-1 ; 30-1 ; 32-1 ; 35-4 ; 36-1 ; 42-2 ; 43-2 ; 46-3 ; 47-1 ; 49-25 ; 54-1 ; 58-1 ; 86-1.

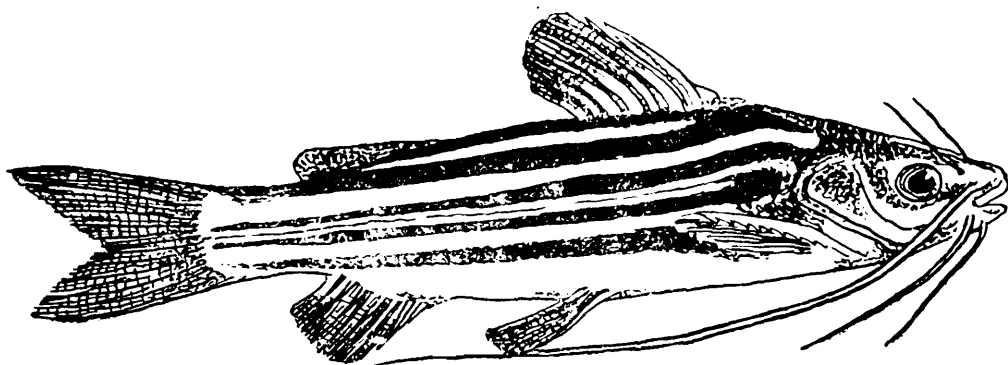


Fig. 28. Lateral view of *Mystus vittatus* (Bloch).

Distribution.—Throughout India, Pakistan, Burma, Thailand, Bangladesh and Sri Lanka.

Genus *Aorichthya* Wu

KEY TO SPECIES

- | | |
|---|---------------------|
| 1. Snout spatulate. Width of gape of mouth
1/3rd head length. Caudal fin with 19-21
rays. ... | <i>A. seenghala</i> |
| Snout rounded. Width of gape of mouth less
than ½ head length. Caudal fin with 17 rays. ... | <i>A. aor</i> |

Aorichthys aor (Hamilton)

1822. *Pimelodus aor* Hamilton, *Fish Ganges*, pp. 205, 379, pl. 20 (type locality, rivers of Bengal and upper parts of Gangetic estuaries).

Local names.—*Poonai keletee*, *Nedunthalai keletee* ; *Kambo keletee*, Tamil ; *Mukul gillah*, Telugu.

Material.—19 examples in total ; 10-1 ; 20-5 ; 42-1 ; 45-1 ; 56-2 ; 59-7 ; 63-1 ; 64-1.

Distribution.—Throughout India, Pakistan, Bangladesh, Burma.

Aorichthys seenghala (Sykes)

1839. *Platystoma seenghala* Sykes, *Trans. zool. Soc. London.*, 2, p. 371, pl. 65, fig. 2 (type locality, Mutha Mula river at Poona).

Local names.—*Kurunthalai keletee*, Tamil.

Material.—one ex. in total : 10-1.

Distribution.—Throughout India up to Krishna river system in the south generally, but occurring in southern areas also in recent years.

Family SILURIDAE

KEY TO GENERA

1. Gape of mouth wide, extending beyond eyes posteriorly. ...

Wallago
- Gape of mouth not wide, not extending beyond eyes posteriorly. ...

Silurus

Genus Wallago Bleeker

Wallago attu (Bloch & Schneider)

1801. *Silurus attu* Schneider, *Syst. Ichth.*, p. 378, pl. 75 (type locality, Malabar).
- Local name.—*Vazhai* ; Tamil ; *Godlay*, Kanarese.
- Material.—One ex. in total : 90-1.
- Distribution.—Throughout India, Pakistan, Bangladesh, Burma, Sri Lanka, Thailand.

Genus Silurus Linnaeus

Silurus berdmorei wynaadensis Day

1873. *Silurus wynaadensis* Day, *Proc. zool. Soc. London*, p. 237 (type locality, Wynaad).
- Local name.—Nil.
- Material.—No specimen obtained by us. Recorded by Rajan (1955).
- Distribution.—Wynaad range of hills, Kerala.
- Remarks.—*S. cochinchinensis* (Val.) is considered as coexisting with this species in Southern India (Hora, 1942). However, *S. cochinchinensis* is purely a species confined to the Eastern Himalaya, and Burma. Its occurrence in W. ghats requires confirmation.

Family SCHILBEIDAE

KEY TO GENERA

1. Two or four barbels ; nasal and one pair of mandibular barbels absent. ...

Silonia
- Eight barbels. ...

... 2
2. Caudal fin bent downwards from caudal peduncle onwards. Teeth on palate in four small patches. ...

Proeutropiichthys
- Caudal fin normal, not bent downwards. Teeth on palate in two extensive patches. ...

Pseudeutropius

Genus **Pseudeutropius** Bleeker**Pseudeutropius atherinoides** (Bloch)

1797. *Silurus atherinoides* Bloch, *Naturges. ausland Fische*, 8, p. 48, pl. 371, fig. 1 (type locality, Tranquebar).

Local name.—Nil.

Material.—Four exs. in total : 19-3 ; 20-1.

Distribution.—Throughout India, Pakistan, Bangladesh, except Kerala and Assam.

Genus **Proeutropiichthys** Hora**Proeutropiichthys taakree** (Sykes)

1841. *Hypophthalmus taakree* Sykes, *Trans. zool. Soc. Lond.*, 2, p. 369, pl. 64, fig. 4 (type locality, Bhima river near Paigaoon).

Local name.—Nil.

Material.—No specimen obtained by us. Recorded by Hora (1937).

Distribution.—Poona ; Krishna river in Deccan. Also the Yamuna.

Genus **Silonia** Swainson**Silonia childreni** Sykes

1841. *Ageniosus childreni* Sykes, *Trans. zool. Soc. Lond.*, 2, p. 375 (type locality, Deccan).

Local names.—*Ponaththee*, Tamil ; *Wanjow*, Telugu.

Material.—Nine exs. in total : 12-1 ; 20-1 ; 26-1 ; 52-4 ; 60-1 ; 64-1.

Distribution.—Cauvery, Krishna, Godavary river systems.

Family PANGASIIDAE

Genus **Pangasius** Valenciennes**Pangasius pangasius** (Hamilton)

1882. *Pimelodus pangasius* Hamilton, *Fish. Ganges*, pp. 163, 376, pl. 33 (type locality, estuaries of Bengal).

Local name.—*Eye keletee*, Tamil.

Material.—Five exs. in total : 36-1 ; 52-1 ; 60-1 ; 63-1 ; 64-1.

Distribution.—Throughout India, Pakistan, Bangladesh, Burma, Thailand, Malaya and Java.

Family SISORIDAE

KEY TO GENERA

- | | | |
|--|-----|---------------------|
| 1. Adhesive apparatus on ventral surface of body well developed. | ... | Glyptothorax |
| Adhesive apparatus absent. | ... | Nangra |

Genus **Nangra** Day**Nangra viridescens** (Hamilton)

1822. *Pimelodus viridescens* Hamilton, *Fish Ganges*, pp. 173, 377, pl. xi, fig. 55 (type locality, Northern Bengal).

Local name.—Nil.

Material.—No specimen obtained by us. Recorded by Hora (1937).

Distribution.—Rivers of N. Bengal, Yamuna in Delhi and also Poona in Deccan.

Genus **Glyptothorax** Blyth

KEY TO SPECIES

- | | | |
|------------------------------------|-----|-------------------------|
| 1. Paired fins plaited ventrally. | ... | <i>G. lonah</i> |
| Paired fins not plaited ventrally. | ... | <i>G. madraspatanum</i> |

Glyptothorax lonah (Sykes)

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

Local name.—Nil.

Material.—No specimen obtained by us. Recorded by Chacko *et al.* (1954).

Distribution.—Deccan, Krishna and Godavary river systems. May be found in the headwaters of the Cauvery also.

Glyptothorax madraspatanum (Day)

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

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

Local name.—*Kal kovitte*, Kanarese.

Material.—Four exs. in total : 52-3 ; 70-1.

Distribution.—Rivers of Anamalai hills, Western Ghats, South Kerala, Tamil Nadu.

Family CLARIIDAE

Genus *Clarias* Scopoli*Clarias batrachus* (Linnaeus)

1758. *Silurus batrachus* Linnaeus, *Syst. Naturae*, 1, 10, p. 305 (type locality, Asia and Africa).

Local names.—*Karuppu thelee*, Tamil; *Hena Meen*, *Hali menu* Kanarese.

Material.—Four exs. in total : 44-1 ; 70-2 ; 72-1.

Distribution.—Throughout India, Pakistan, Bangladesh, Sri Lanka, Thailand, Malaya, Malay Archipelago, Indo-China. Philippines, Hong-kong and South China.

Family HETEROPNEUSTIDAE

Genus *Heteropneustes* (Müller)*Heteropneustes fossilis* (Bloch)

1797. *Silurus fossilis* Bloch, *Ichth. Hist. nat. d. Poiss.*, 11, p. 36, pl. 370, fig. 2 (type locality, Tranquebar).

Local names.—*Thelee*, Tamil; *Seruvu*, *Sini Meen*, Kanarese.

Material.—Three exs. in total : 44-2 ; 70-1.

Distribution.—Throughout India, Pakistan, Nepal, Bangladesh, Sri Lanka, Burma, Thailand and Viet-Nam, Laos.

Order ATHERINIFORMES

Family BELONIDAE

Genus *Xenentodon* Regan*Xenentodon cancila* (Hamilton)

1822. *Esox cancila* Hamilton, *Fish. Ganges*, pp. 213, 380, pl. 27, fig. 70 (type locality, Gangetic provinces).

Local names.—*Mooral*, *Vellai Moorai*, *Setha Moorai*, *Kokku meen*, Tamil.

Material.—64 exs. in total : 6-3 ; 8-1 ; 11-2 ; 18-3 ; 21-19 ; 25-3 ; 26-3 ; 36-3 ; 39-4 ; 44-2 ; 45-4 ; 47-1 ; 49-7 ; 58-3 ; 63-6.

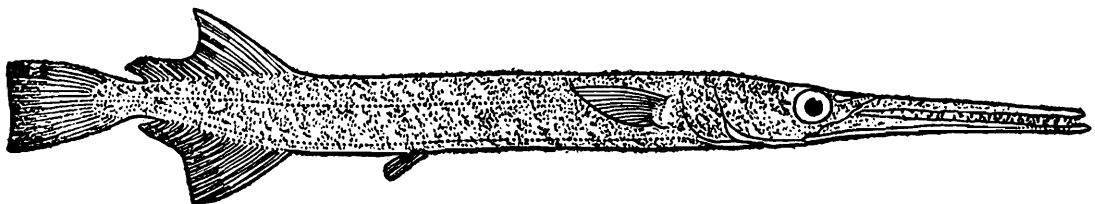


Fig. 29. Lateral view of *Xenentodon cancila* (Ham.)

Distribution.—Freshwaters of Sind, Punjab in Pakistan. Throughout India, Nepal, Bangladesh and Sri Lanka besides Burma, Thailand and Malaya.

Family CYPRINODONTIDAE

KEY TO GENERA

- | | |
|--|--------------------|
| 1. Anal fin with 10-18 rays. Pectoral fins placed below or in level with angle of operculum. ... | Aplocheilus |
| Anal fin with 20-24 rays. Pectoral fins placed above angle of operculum. ... | Oryzias |

Genus **Aplocheilus** McClelland
= **Haplocheilus**

KEY TO SPECIES

- | | |
|--|--------------------|
| 1. Pelvic fin without any prolonged ray. ... | <i>A. panchax</i> |
| Pelvic fin rays prolonged. ... | <i>A. lineatus</i> |

Aplocheilus lineatus (Valenciennes)

1846. *Panchax lineatum* Valenciennes, *Hist. Nat. Poiss.*, 18, p. 381 (type locality, Bombay).

Local name.—*Munda Kanni*, Tamil.

Material.—23 exs. in total : 81-23.

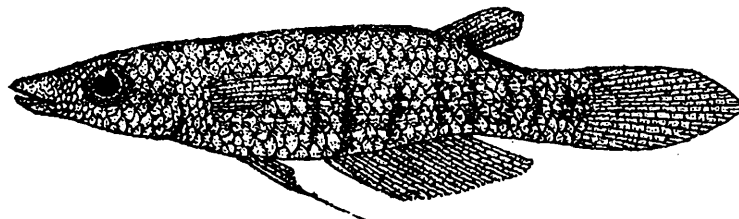


Fig. 30. Lateral view of *Aplocheilus lineatus* (Valenciennes).

Distribution.—Coorg, Wynaad, Nilgiri. Sri Lanka.

Remarks.—All examples have the pelvic fin rays produced. In life each scale has a dark spot.

Aplocheilus panchax (Hamilton)

1822. *Esox panchax* Hamilton, *Fish. Ganges*, pp. 211, 380, pl. 3, fig. 69 (type locality, ditches and ponds of Bengal).

Local name.—Nil.

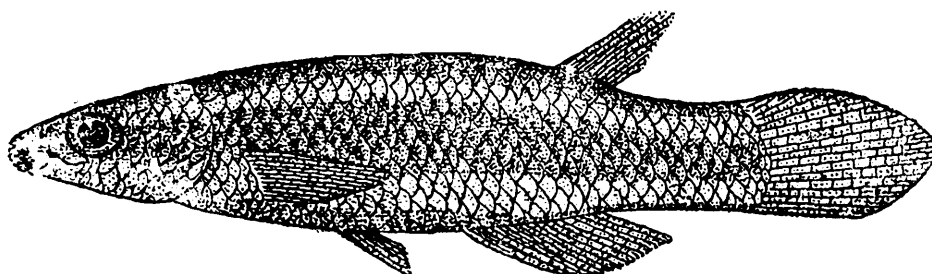


Fig. 31. Lateral view of *Aplocheilus panchax* (Hamilton).

Material.—No specimen obtained by us. Recorded by Hora (1937).

Distribution.—Orissa, W. Bengal, Andamans. Pakistan. Bangladesh. Sri Lanka. Widely introduced and transported to other parts.

Genus *Oryzias* Jordan & Snyder

Oryzias melanostigma (McClelland)

1839. *Aplocheilus melastigma* McClelland, *Asiat. Res.* 19, *Indian Cyprinidae*, pp. 301, 427, pl. 42, fig. 3 (type locality, tanks at Calcutta).

Local name.—Nil.

Material.—No specimen obtained by us. Recorded by Hora (1942).

Distribution.—Wynaad, Tamil Nadu, Orissa, Lower Bengal. Burma.

Family POECILIDAE

Genus *Gambusia* Poey

Gambusia affinis patruelis (Baird and Girard)

1853. *Heterandria patruelis* Baird & Girard, *Proc. Acad. nat. Sci. Philad.* 6, p. 390 (type locality, Rio Sabinal, Texas).

Local name.—Nil.

Material.—17 exs. in total : 86-5 ; 88-12.

Distribution.—Throughout India, Pakistan. Bangladesh. Sri Lanka. Burma. Introduced for larvicidal use.

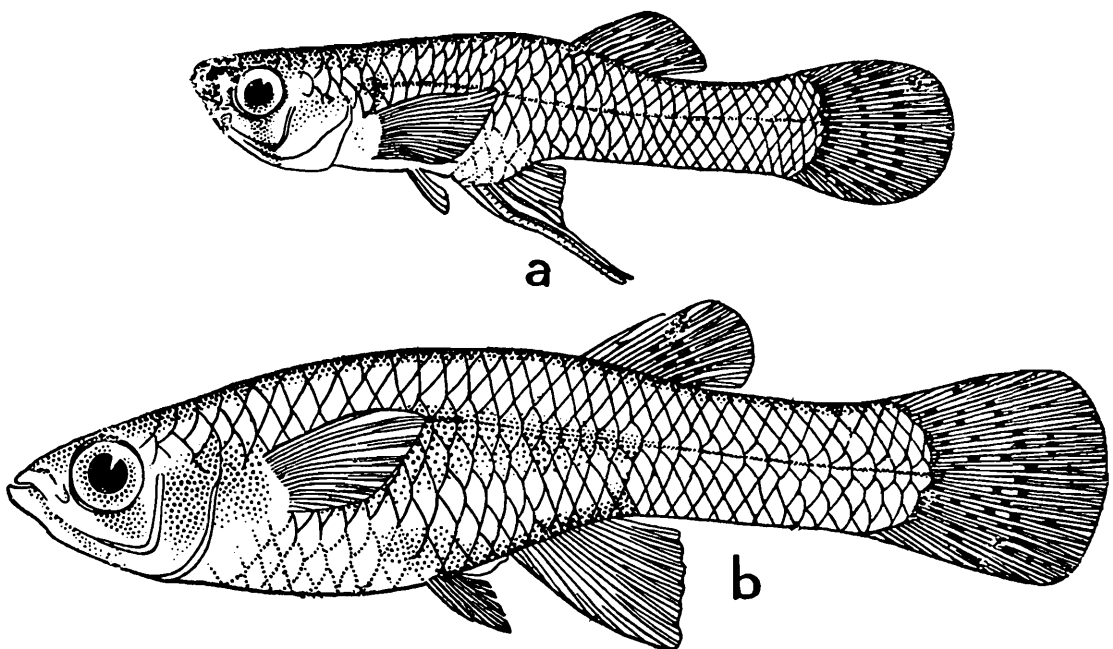


Fig. 32. Lateral views of a. male and b. female of *Gambusia affinis patruelis* (Baird and Girard).

Order CHANNIFORMES

Family CHANNIDAE

Genus *Channa* Scopoli

KEY TO SPECIES

- | | | | |
|----|---|-----|--------------------------|
| 1. | Four or five scales between orbit and angle of preopercle. 12 or 13 predorsal scales. | ... | 2 |
| | Nine to 17 scales between orbit and angle of preopercle. 15-22 predorsal scales. | ... | 3 |
| 2. | Pelvic fin less than half length of pectoral fin. | | |
| | Pectoral fins spotted. | ... | <i>C. orientalis</i> |
| | Pelvic fin more than half length of pectoral fin. Pectoral fin plain. | ... | <i>C. punctatus</i> |
| 3. | 18-20 predorsal scales. Lateral line with peninsula of the darker colour extending into the yellow. | ... | <i>C. striatus</i> |
| | 15-16 predorsal scales. No such colour markings on lateral line. | ... | 4 |
| 4. | A black white-edged ocellus on basal portion of caudal fin. | ... | <i>C. marulius</i> |
| | No such ocellus. | ... | <i>C. leucopunctatus</i> |

***Channa leucopunctatus* (Sykes)**

1841. *Ophicephalus leucopunctatus* Sykes, *Trans. zool. Soc. London*, 2, p. 352, pl. 60, fig. 3 (type locality, Deccan).

Local name.—Nil.

Material.—One ex. in total : 70-1.

Distribution.—Coromandel and Western Coast of India in rivers.

Remarks.—The solitary example collected from Hole Narsipura (7.5.77) has no ocellus on the caudal fin. The eye is 6 times in head length, one diameter from end of snout and 1.25 in interorbital space width. The body is coloured cement grey without any descending bars with very few white spots.

***Channa marulius* (Hamilton)**

1822. *Ophiocephalus marulius* Hamilton, *Fish. Ganges*, pp. 65, 367, pl. 17. fig. 19 (type locality, the Ganges).

Local names.—*Purveral*, *Coaree veral*, *Avuree*, Tamil.

Material.—Seven exmples in total : 64-1 ; 70-6.

Distribution.—Throughout India, Pakistan, Bangladesh, Sri Lanka, Burma, Thailand, China.

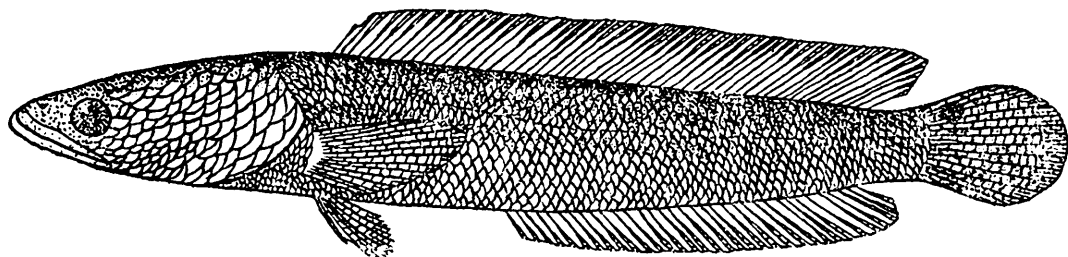


Fig. 33. Lateral view of *Channa marulius* (Hamilton).

Remarks.—Five examples from Stn. 70, Hole Narsipura, were chocolate coloured when fresh with the white streak on body prominent. The ocellus on upper caudal lobe is very conspicuous.

***Channa orientalis* (Schneider)**

1801. *Channa orientalis* Schneider, *Syst. Ichth. Bloch.*, p. 496, pl. 90, fig. 2.

1822. *Ophiocephalus gachua* Hamilton, *Fish Ganges*, pp. 68, 367, pl. 21, fig. 21 (type locality, ponds and ditches of Bengal).

Local name.—*Karuva*, Tamil.

Material.—21 exs. in total : 5-1 ; 8-1 ; 19-1 ; 26-2 ; 29-1 ; 32-1 ; 34-5 ; 35-1 ; 37-1 ; 40-1 ; 44-3 ; 46-1 ; 47-2.

Distribution.—Throughout India, Pakistan, Afganistan, Bangladesh, Sri Lanka, Burma, Thailand, Malaya, Malay Archipelago, Yunnan, Viet-Nam, Laos, Hainan.

***Channa punctatus* (Bloch)**

1793. *Ophiocephalus punctatus* Bloch, *Naturges. Ausland. Fisches*, 2, p. 139, pl. 358 (type locality, Coromandal coast).

Local names.—*Parakoravai*, *Koravai*, Tamil, *Odili Meen*, Kanarese.

Material.—54 exs. in total : 5-1 ; 6-3 ; 7-7 ; 8-1 ; 13-1 ; 19-4 ; 25-10 ; 26-12 ; 27-5 ; 29-2 ; 32-2 ; 34-1 ; 37-1 ; 44-1 ; 47-1 ; 49-2.

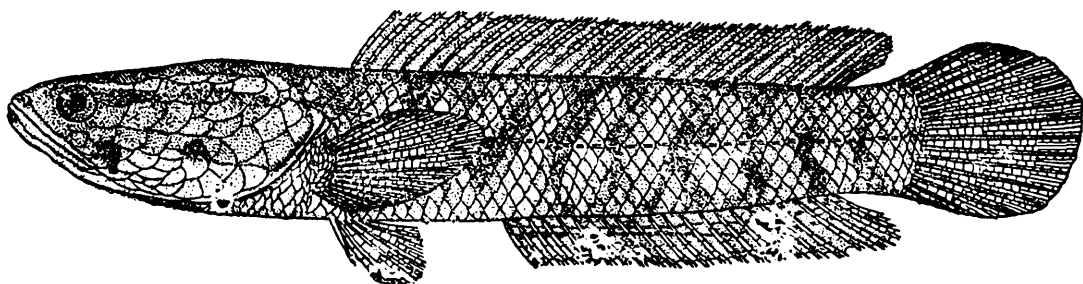


Fig. 34. Lateral view of *Channa punctatus* (Bloch).

Distribution.—Throughout India, Pakistan, Nepal, Bangladesh, Burma and Sri Lanka.

Channa striatus (Bloch)

1798. *Ophiocephalus striatus* Bloch, *Naturg. Ausland. Fisches*, 2, pl. 141, pl. 359 (type locality, Malabar).

Local names.—*Viral*, *Wrahl*, Tamil.

Material.—20 exs. in total; 7-1; 8-1; 19-1; 20-2; 34-12; 40-1; 41-1; 49-1.

Distribution.—Throughout India, Pakistan, Bangladesh, Sri Lanka, Burma, Thailand, Malaya, Malay Archipelago, S. China, and Philippines.

Order PERCIFORMES

Family CHANDIDAE

Genus **Chanda** Hamilton

KEY TO SPECIES

- | | |
|---|-----------------|
| 1. Lateral line indistinct, discontinuous or absent.
A dark blotch on dorsal fin's upper edge. ... | <i>C. nama</i> |
| Lateral line distinct. No such colour blotch,
on dorsal fin. ... | <i>C. ranga</i> |

Chanda nama Hamilton

1822. *Chanda nama* Hamilton, *Fish Ganges*, pp. 109, 371, pl. 39, fig. 37 (type locality Bengal).

Local name.—*Kakkachee*, Tamil.

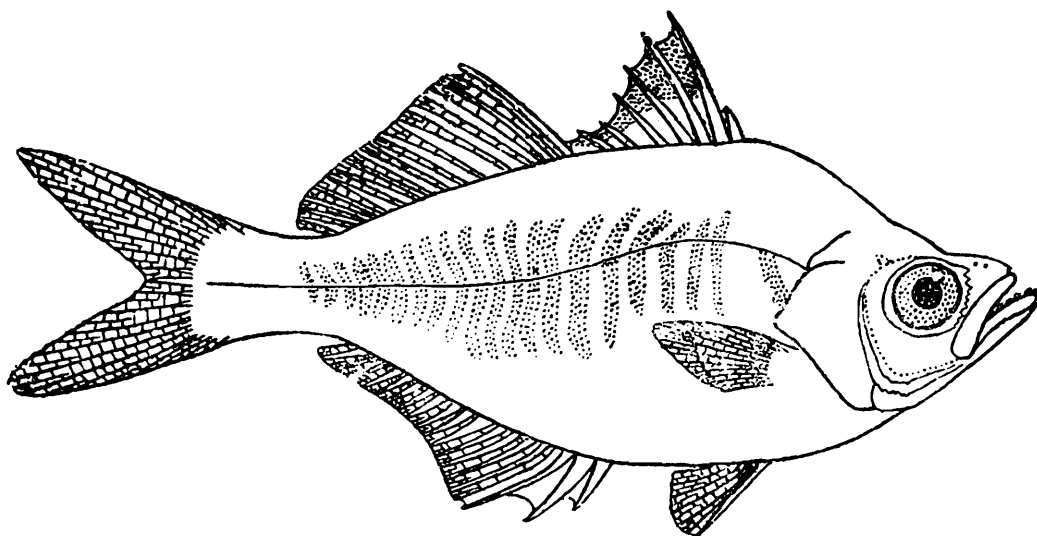


Fig. 35. Lateral view of *Chanda nama* Hamilton.

Material.—Three exs. in total: 20-3.

Distribution.—Throughout India, Pakistan, Nepal, Bangladesh, Burma.

Chanda ranga Hamilton

1822. *Chanda ranga* Hamilton, *Fish Ganges*, pp. 113, 371, pl. 16, fig. 38 (type locality, Ganges provinces).

Local name.—*Kannadi meen*, Tamil.

Material.—Five exs. in total : 9-5.

Distribution.—Throughout India, Pakistan, Bangladesh, Burma and Thailand.

Family CICHLIDAE

KEY TO GENERA

- | | | |
|---------------------------------|-----|-----------------|
| 1. Anal fin with 3 or 4 spines. | ... | Tilapia |
| Anal fin with 12 to 16 spines | ... | Etroplus |

Genus **Etroplus** Cuvier

KEY TO SPECIES

- | | | |
|--|-----|----------------------|
| 1. Body with one to three dark blotches along sides. | ... | <i>E. maculatus</i> |
| Body with transverse bands. | ... | <i>E. suratensis</i> |

Etroplus maculatus (Bloch)

1785. *Chaetodon maculatus* Bloch, *Syst. Ichth.*, pl. 427, fig. 2 (type locality, not given).

Local names.—*Sella kasu*, *Puradi*, Tamil.

Material.—160 exs. in total : 5-1 ; 6-1 ; 8-3 ; 10-1 ; 12-3 ; 20-5 ; 22-32 ; 25-3 ; 26-3 ; 27-1 ; 28-3 ; 32-1 ; 35-4 ; 39-1 ; 40-1 ; 42-1 ; 44-7 ; 46-5 ; 47-2 ; 48-1 ; 49-2 ; 54-1 ; 55-9 ; 56-7 ; 57-3 ; 58-2 ; 61-12 ; 62-19 ; 63-26.

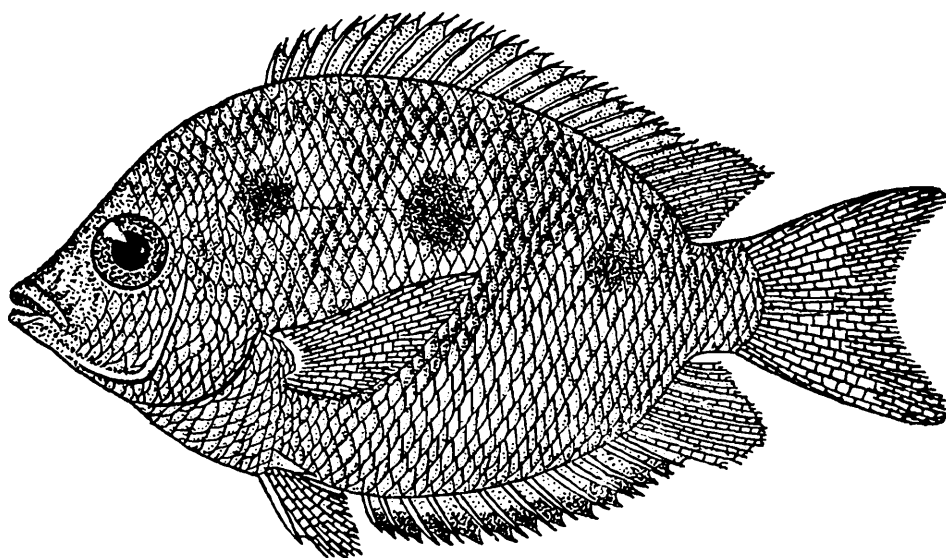


Fig. 36. Lateral view of *Etroplus maculatus* (Bloch).

Distribution.—Tamil Nadu, Kerala, S. Kanara, Sri Lanka,

***Etroplus suratensis* (Bloch)**

1763. *Chaetodon suratensis* Bloch, *Syst. Ichth.*, pl. 217 (type locality, Surat).

Local name.—*Seththa kendai*, Tamil.

Material.—21 exs. in total : 10-1 ; 48-1 ; 52-1 ; 58-1 ; 60-1 ; 61-1 ; 62-13 ; 63-2.

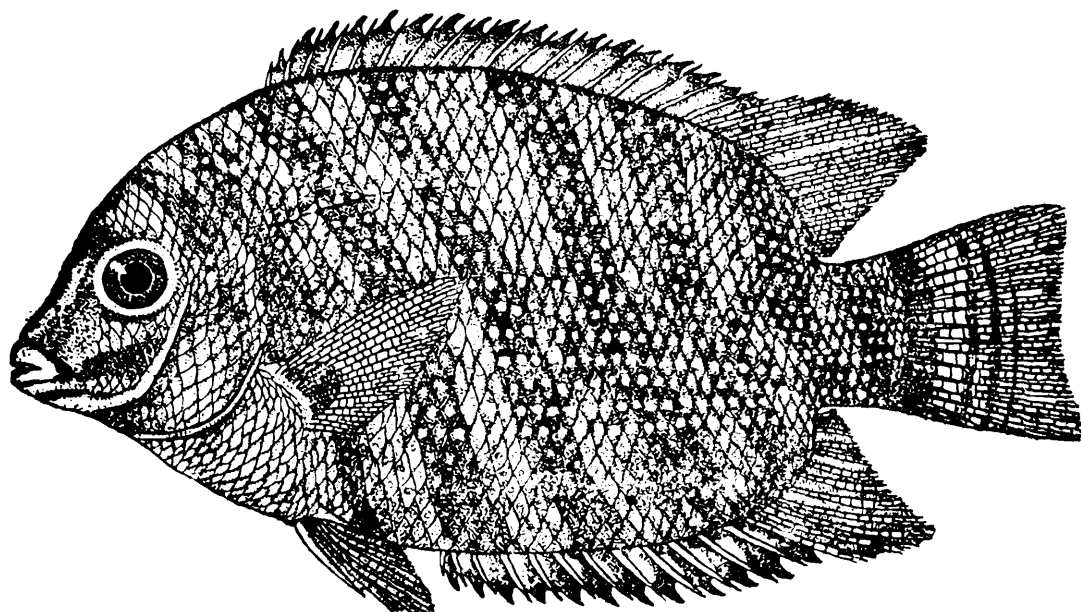


Fig. 37. Lateral view of *Etroplus suratensis* (Bloch).

Distribution.—Peninsular India from Orissa, Andhra Pradesh, Karnataka, Tamil Nadu and Kerala. Sri Lanka.

Genus *Tilapia* A. Smith***Tilapia mossambica* (Peters)**

1852. *Chromis mossambicus* Peters, *Monatsb. Akad. Wiss.*, Berlin, p. 681 (type locality, Zambesi river, S. Africa).

1952. *Tilapia mossambica*, Jones & Sarojini, *J. Bombay nat. Hist. Soc.*, 50 (3) : 606.

Local names.—*Tilapia*, *Jilebi Meen*, Tamil.

Material.—130 exs. in total : 11-2 ; 18-2 ; 20-1 ; 35-17 ; 44-1 ; 46-1 ; 47-4 ; 48-1 ; 52-1 ; 53-1 ; 54-3 ; 55-2 ; 56-78 ; 57-1 ; 59-1 ; 60-1 ; 62-8 ; 63-4 ; 67-1.

Distribution.—East Africa to Natal, widely introduced in India and Pakistan.

Remarks.—Certain meristic counts obtained in a sample from Cauvery river at Bhavani are given in the next page.

Sl. No.	T. L.	D	A	L. Scales
1.	92	XVI+11	III+10	31
2.	90	XVI+12	III+10	30
3.	83	XV +11	III+10	30
4.	90	XV +11	III+10	30
5.	85	XV +12	III+10	31
6.	80	XV +11	III+10	30
7.	83	XVI+11	III+10	30
8.	75	XV +11	III+10	31
9.	72	XV +11	III+10	30
10.	60	XV +11	III+10	30 Tail broken
11.	55	XV +11	III+10	31
12.	42	XV +11	III+10	30
13.	42	XV +11	III+10	30
14.	43	XV +11	III+10	30
15.	40	XV +11	III+10	30
16.	44	XV +11	III+10	30
17.	39	XV +11	III+10	30
18.	40	XV +11	III+10	30
19.	40	XV +11	III+10	30
20.	45	XVI+12	III+10	30

Family MUGILIDAE

KEY TO GENERA

1. Upper lip not forming anterior border of head
but inferior to a fleshy snout. ... Rhinomugil (*R. corsula*)
- Upper lip forming anterior border of head, not
inferior to snout. ... Liza

Genus Liza Jordan & Swain

KEY TO SPECIES

1. Anterior 1/2 of anal fin before origin of second
dorsal fin. ... *L. parsia*
- Anterior 1/3 of anal fin before origin of second
dorsal fin. ... *L. tade*

Liza (Hamilton)

1822. *Mugil parsia* Hamilton, *Fish. Ganges*, pp. 215, 380, pl. 17, fig. 71 (type locality, freshwater rivers of Bengal).

Local name.—*Madavai*, Tamil.

Material.—One ex. in total : 36-1.

Distribution.—India : Coasts of Maharashtra, Kerala and West Bengal. Pakistan. Bangladesh. Burma. Sri Lanka. Often caught from estuaries.

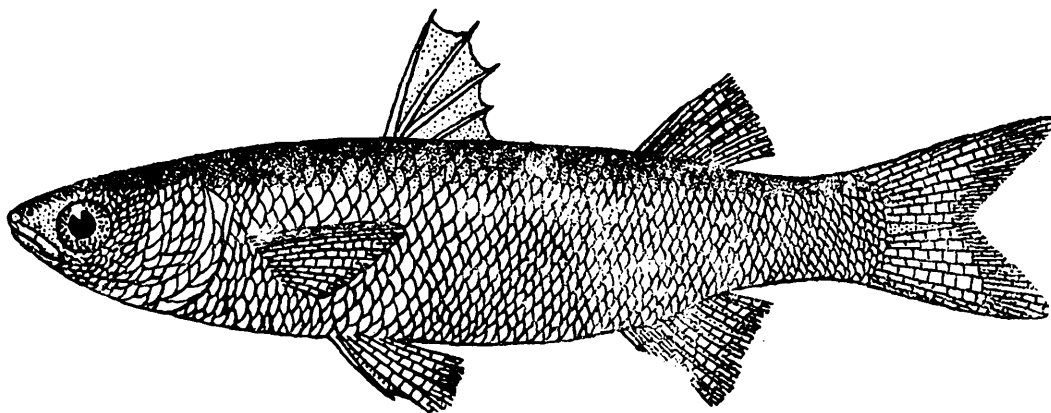


Fig. 38. Lateral view of *Liza parsia* (Hamilton).

Liza tade (Forsk.)

1775. *Mugil tade* Forskal, *Descript. Animal*, p. 74 (type locality, Arabian Sea).

Local name.—Nil.

Material.—Two exs. in total : 20-2.

Distribution.—India : Coasts of Orissa, W. Bengal, Andaman. Pakistan. Burma. Sri Lanka. Often enters tidal rivers and estuaries.

Remarks.—This is the first record from the Cauvery system.

Genus Rhinomugil Gill

Rhinomugil corsula (Ham.)

1822. *Mugil corsula* Hamilton, *Fish Ganges*, pp. 221, 381, pl. 8, fig. 97 (type locality, rivers of Gangetic provinces, in southern parts of Bengal).

Local names.—*Muzhugu Meen*, Tamil : *Town Bus*, *Rocket*, English.

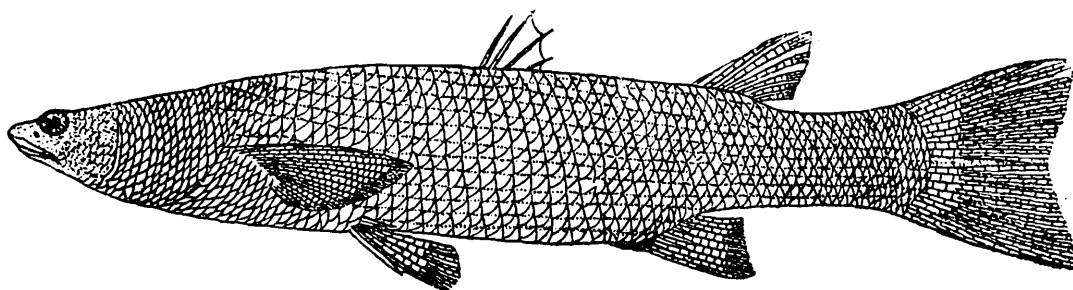


Fig. 39. Lateral view of *Rhinomugil corsula* (Hamilton).

Material.—27 exs. in total : 7-3 ; 19-1 ; 20-2 ; 36-2 ; 43-1 ; 48-2 ; 58-2 ; 59-1 ; 63-1 ; 64-12.

Distribution.—India : Gangetic province and southern parts of Bengal, Chilka lake ; Krishnagiri and Sathannur reservoir across Ponnaiar.

Recorded from the Cauvery system for the first time by Menon & Jayaram, 1977.

Remarks.—Reference may be made to Menon & Jayaram, 1977 for a description of the species and other details.

Family GOBIDAE

KEY TO GENERA

- | | | |
|--|-----|---------------------|
| 1. Some fleshy flaps on inner edge of pectoral girdle present. | ... | Awaous |
| No such fleshy flaps on inner edge of pectoral girdle present. | ... | Glossogobius |

Genus *Awaous* (Val.)

Awaous stamineus (Val.)

1842. *Bobius stamineus* Valenciennes, *Zool. Voy. Bonite*, p. 179, pl. 51, fig. 5 (type locality, Sandwich Islands.)

1876. *Gobius striatus* Day, *Fish India*, p. 292, pl. 62, fig. 6.

1941. *Awaous stamineus*, Koumans, *Mem. Indian Mus.*, 13, p. 252 (see for synonymy).

Local name.—Nil.

Material.—No specimen obtained by us. Recorded by Chacko *et al* (1954).

Distribution.—India, Philippines, Indo-Australian Archipelago, Hawaii. Enters freshwaters.

Remarks.—Day's specimen was from Madras, and the Madras Connemara Museum has an example from Travancore.

Genus *Glossogobius* Gill

Glossogobius giuris giuris (Ham.)

1822. *Gobius giuris* Hamilton, *Fish Ganges*, pp. 51, 366, pl. 33, fig. 15 (type locality, ponds and freshwater rivers of Gangetic provinces).

Local names.—Uluvai, Tamil ; Bengichitha, Jokala, Kanarese.

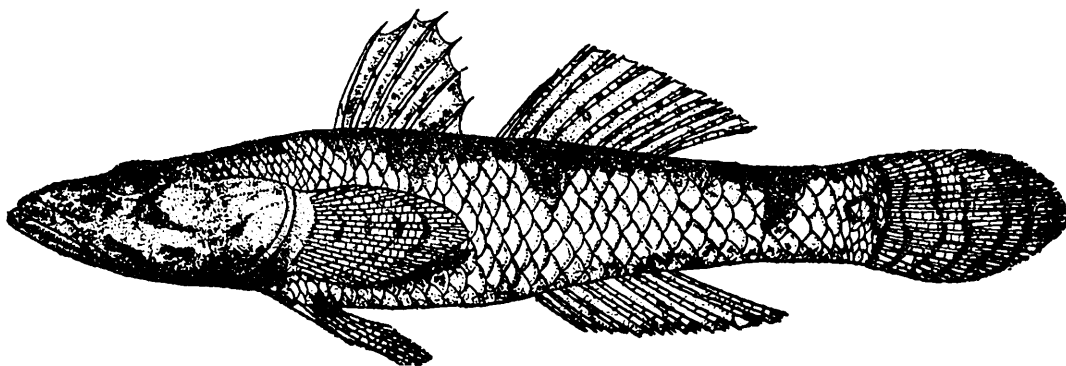


Fig. 40. Lateral view of *Glossogobius giuris giuris* (Ham.)

Material.—83 exs. in total : 5-1 ; 6-5 ; 8-1 ; 10-1 ; 13-1 ; 14-1 ; 15-1 ; 20-3 ; 24-4 ; 25-2 ; 26-7 ; 29-3 ; 30-1 ; 31-1 ; 32-1 ; 33-3 ; 35-3 ; 36-2 ; 38-2 ; 40-3 ; 41-1 ; 42-1 ; 43-1 ; 44-2 ; 48-1 ; 49-1 ; 52-1 ; 57-1 ; 61-1 ; 62-3 ; 63-11 ; 70-1 ; 71-1 ; 73-1 ; 78-3 ; 79-6 ; 82-1.

Distribution.—Throughout India, Pakistan, Nepal, Bangladesh, Burma, Sri Lanka. This species has a wide range from the East coast of Africa to Japan, Australia and S. Pacific.

Family ANABANTIDAE

Genus *Anabas* Cuvier

Anabas testudineus (Bloch)

1792. *Anabas testudineus* Bloch, *Naturg. Ausland. Fisches*, 6, p. 121, pl. 322 (type locality, Japan, East Indies).

Local names.—*Panai yeri kendai*, Tamil.

Material.—13 exs. in total : 5-3 ; 7-2 ; 19-1 ; 24-2 ; 44-5.

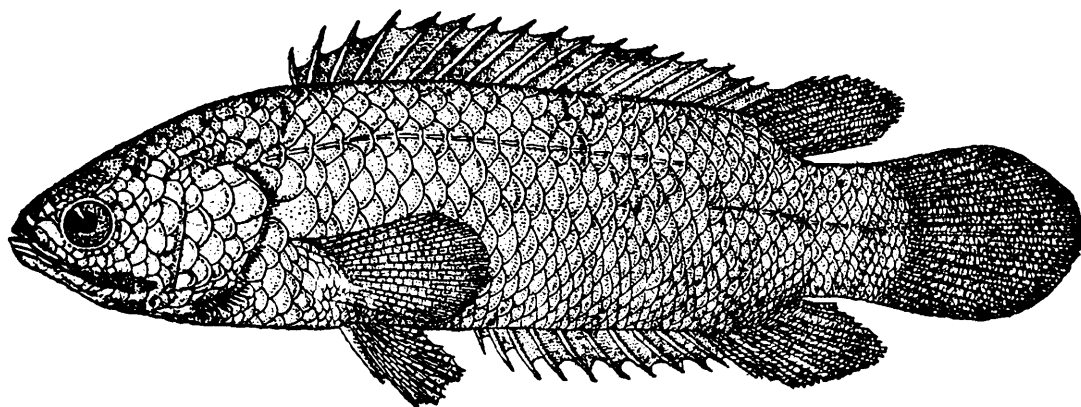


Fig. 41. Lateral view of *Anabas testudineus* (Bloch)

Distribution.—Throughout India, Pakistan, Sri Lanka, Bangladesh, Burma, Thailand, Malaya, Malay Archipelago, Viet-Nam, Laos, China, Philippines, Polynesia.

Family BELONTIDAE

Genus *Macropodus* Lacépède

Macropodus cupanus (Valenciennes)

1891. *Macropodus cupanus* Valenciennes, *Hist. Nat. Poiss.*, 7, p. 357 (type-locality, Ariancoopam river, Pondicherry).

Local name.—*Moran kendai*, Tamil.

Material.—No specimen obtained by us. Recorded by Hora (1937).

Distribution.—Bhavani river and rivers at base of Nilgiri, S. Kanara hills. Also in Coromandal coasts.

Family OSPHRONEMIDAE

Genus *Osphronemus* Lacépède*Osphronemus goramy* Lacépède

1802. *Osphronemus* Lacépède, *Hist. Nat. Poiss.*, 3, p. 116 (type-locality, *Osphronemus gouramy* Lacépède)

Local name.—*Gouramy*, Tamil, Kanarase.

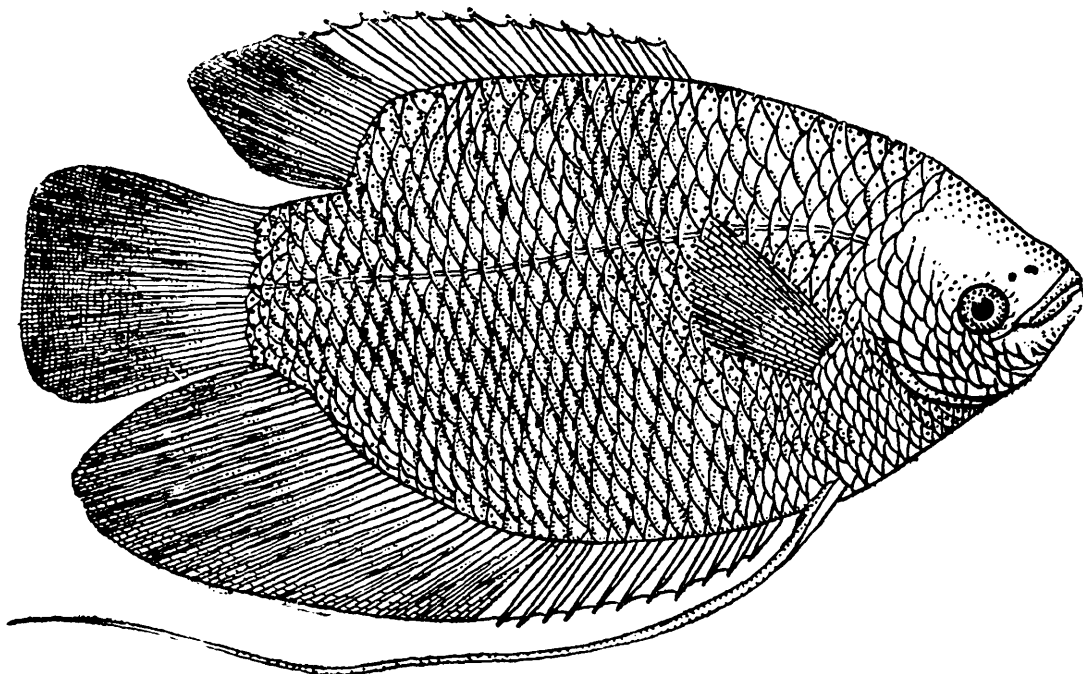


Fig. 42. Lateral view of *Osphronemus goramy* Lacépède.

Material.—No specimen obtained by us. Recorded by Chacko *et al.* (1954).

Distribution.—Throughout India, Pakistan, Sri Lanka. An exotic species from Melanesia.

Order MASTACEMBELIFORMES

Family MASTACEMBELIDAE

KEY TO GENERA

- | | | |
|---|-----|----------------------|
| 1. Snout very long, with a concave prolongation of the upper jaw consisting of a paired series of toothed bony plates | ... | <i>Macrogathus</i> |
| Snout long, conical without any prolongation of the upper jaw. | ... | <i>Mastacembelus</i> |

Genus *Macrogathus* Lacépède*Macrogathus aculeatus* (Bloch)

1787. *Ophidium aculeatum* Bloch, *Ichthyologie*, 5, p. 60, pl. 159, fig. 2 (type locality, East Indies).

Local names.—*Aral*, Tamil ; *Bommiday*, Telugu.

Material.—18 exs. in total : 8-2 ; 26-1 ; 38-2 ; 43-1 ; 78-12.

Distribution.—Throughout India, Pakistan, Sri Lanka, Bangladesh, Burma, Thailand, Malay Archipelago, Laos, Viet-Nam, China.

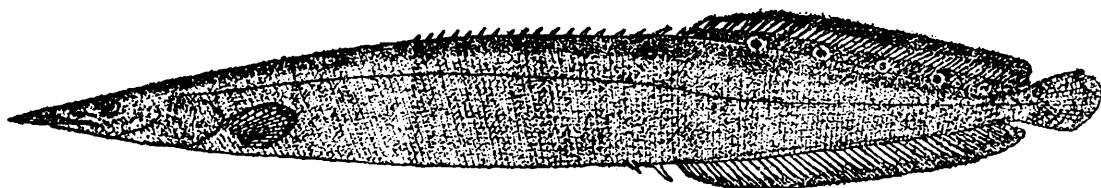


Fig. 43. Lateral view of *Macrognathus aculeatus* (Bloch).

Remarks.—The number of dorsal spines, anal fin rays and ocelli at the base of the caudal fin is subject to much variation. In the material examined some have only one ocelli at base of caudal and a few have no ocelli at all. Generally the ocelli is bright in specimens freshly caught but fade slightly on preservation.

Maximum size attained is 45 cm. (18 inches), caught from stn. 8. River Cauvery at Mayurum Town (18. 3. 73) was donated to the fishermen.

Misra (1962) gave Bloch's *Naturgeschichte de auslandischer Fische* (1795) as the first reference to the species, overlooking that Bloch had described this species in 1787 itself. The specific name should be correctly spelt as *aculeatus* in conformity with *Macrognathus*.

Genus *Mastacembelus* Scopoli

KEY TO SPECIES

- | | | |
|--------------------------------|-----|---------------------------|
| 1. Caudal fin with 11-16 rays. | ... | <i>M. pancalus</i> |
| Caudal fin with 17-21 rays. | ... | <i>M. armatus armatus</i> |

Mastacembelus armatus armatus (Lacépède)

1800. *Macrognathus armatus* Lacépède, *Hist. nat. Poiss.*, 2, pp. 283, 286 (type locality, not given).

Local names.—*Aaraal*, *Kalaaral*, Tamil.

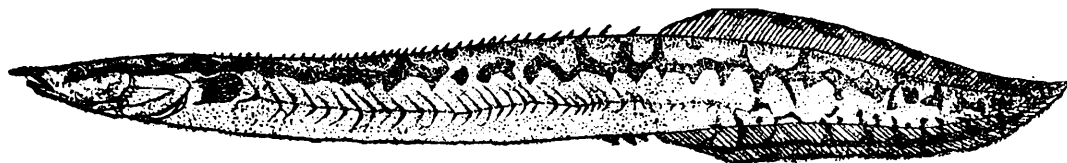


Fig. 44. Lateral view of *Mastacembelus armatus armatus* (Lacépède).

Material.—66 exs. in total : 5-2 ; 6-15 ; 8-8 ; 22-1 ; 25-1 ; 26-10 ; 35-1 ; 37-1 ; 39-1 ; 40-1 ; 43-1 ; 48-4 ; 49-2 ; 52-4 ; 54-1 ; 56-2 ; 59-1 ; 62-3 ; 63-1 ; 64-1 ; 70-1 ; 73-1 ; 84-2 ; 90-1.

Distribution.—Widely distributed throughout India, Pakistan, Sri Lanka, Bangladesh, Burma and Thailand.

Remarks.—A number of varieties have been mentioned by Day (1878) based on colour spots, distance from eye to base of first dorsal spine etc. A random examination of 14 examples from stn. 6. River Vikraman near Tiruvalangadu, showed the following data which justifies that *M. armatus armatus* is a highly variable species. Probably an analysis of samples from all over its range of distribution may indicate presence of different geographical sub-species.

Sl. No.	Total length	No. of dorsal spines	Caudal fin shape	No. of black spots.	Distance eye to base of I dorsal spine
1.	150 mm	35	Round	20	18 mm
2.	160 mm	36	Round	19	18 mm
3.	163 mm	36	Round	19	20 mm
4.	178 mm	36	Round	16	20 mm
5.	180 mm	33	Round	18	20 mm
6.	180 mm	34	Round	22	16 mm
7.	190 mm	37	Round	18	22 mm
8.	200 mm	37	Round	22	22 mm
9.	218 mm	36	Round	20	26 mm
10.	220 mm	34	Round	22	29 mm
11.	236 mm	37	Round	16	22 mm
12.	254 mm	36	Round	23	30 mm
13.	265 mm	37	Round	23	30 mm
14.	290 mm	38	Round	22	30 mm

***Mastacembelus pancalus* (Hamilton)**

1822. *Macrognathus pancalus* Hamilton, *Fish Ganges*, pp. 30, 364 (type-locality, tanks of the Gangetic provinces).

Local name.—*Aaraal*, Tamil.

Material.—No specimen obtained by us. Recorded by Chacko *et al.* (1952).

Distribution.—Throughout India, Pakistan, and Bangladesh.

DISCUSSION

Hora (1937) reporting on the collection of fishes made by the late Prof. C. R. Narayan Rao from the Cauvery river in Coorg listed 54 species. Later in 1942 he elaborated the same to include the piscine fauna in the neighbouring hill ranges of the Nilgiris, Wynaad and cited 121 species in total. More recently Chacko *et al.* (1954) published a list of 80 species under 23 families from a survey of the fisheries of the Cauvery river. Sreenivasan (1980) made a limnological survey of the river in Tamil Nadu, but has not given a detailed list of the inhabiting fish. As a result of our investigations, a total of 142 species are now known to inhabit the entire Cauvery river system within Karnataka and Tamil Nadu. The fish fauna presents an interesting distribution.

ZONATION OF THE RIVER : Division of a river into distinct biological zones, each with a characteristic fish fauna, has been adopted by many workers. Huet (1959) divided the European streams into four zones based on fish distribution. Besides the aquatic fauna which live in a river stretch the physiographical features, nature of bottom, gradient, current velocity are all utilised in classifying a river course. Raj (1941) studied the Cauvery system and discussed the effects of the Mettur dam on the fish fauna. Adopting the above criteria the Cauvery river is divisible into three broad zones as below :

1. *Mountainous course*.—The stretch of the river from its origin up to Sivasamudram (Stations 65-85).
2. *Plateau course*.—Sivasamudram up to Hogenalkal (Stations 86-90).
3. *Plains course*.—From Hogenalkal to its confluence with the Bay of Bengal at Kaveripattinam (Stations 1-64).

Each one of these zones is characterised by attendant geological features. In the mountainous course the river flows through steep gradients in narrow channels over rocky and boulderous beds. The plateau course has less steep gradient with a pebbly bottom. The plains course enables the river to meander through broad deltaic areas gathering silt and sand till it joins the sea.

The Cauvery system has, as mentioned earlier, 142 species of fish under 27 families as its component. A broad analysis of the fauna indicates clearly that each zone has its own peculiar fauna. For instance, out of 142 species over 60% is represented in the plains course and the mountainous course has the minimum number of species and that too mostly of uneconomical varieties. This pattern of distribution has

been elaborated in an earlier paper (Jayaram, 1982), however causes for such distribution and their effect on the fishery economy are discussed below.

CAUSATIVE FACTORS.—In common with most river systems, the head waters and upper reaches of the Cauvery also has an impoverished fauna. It is generally conceded that the main reasons for such a deficiency are :

- (i) Presence of waterfalls of sufficient magnitude to impede upstream movements of colonisers.
- (ii) Reduction of water temperature.
- (iii) Reduction or sudden reduction of water level during the dry season or draught.
- (iv) Excessive turbidity and streambed scouring.

In respect of the Cauvery river system, it is seen that each one of the factors either individually or collectively has contributed to the present faunal pattern. The Sivasamudram falls with a drop of 85 meters act as a formidable barrier for many economically valuable species such as *Puntius kolus*, *Puntius carnaticus*, *Aorichthys seenghala*, *Silonia childreni*, *Mystus menoda* and others from colonising the upper reaches which are otherwise present in the areas below the Shiva falls. Though Hogenakal falls with a drop of 18 meters are also a barrier for movement of fishes from the plains course to the plateau course, the height of these falls has been reduced by the formation of the Mettur reservoir whose water spread reaches this area more particularly during the rainy season. *Catla*, the Carnatic carp (*P. carnaticus*), *Tor khudree*, *Labeo bata*, *Labeo pangusia* and a few others appear to have colonised the plateau course in this manner only.

Records of water temperature in the month of October 1975 at Bhagamandala were 21.5°C at Kudige 22°C, whereas at Maddur it was 26°C and at Najankud 24°C only. The air temperature at Mercara in January, February 1974 was 13.8-25.1°C and 15.2-27.5°C respectively. Details of some relevant meteorological data obtained from the Indian Meteorological office for four stations are given in Table—I.

Cold water species such as *Barilius*, the Black Mahseer, *Tor khudree* the homalopterid *Batitora*, loaches of the genus *Noemacheilus*, and catfishes of the genus *Glyptothorax* have however been recorded from this mountainous course. Cool waters of these areas may be one of the contributory factors for the colonization of these fishes. Jhingran & Sehgal (1978) have stated that the temperature tolerance of cold water fishes lies at lower levels of the thermal scale and they have shown that

that a range of 22.2 to 30.2°C would be ideal for such fishes, which fact seems to be borne out by the presence of these fishes.

The water discharge in the upper reaches depend much on the rainfall in the catchment area and this is evidenced by the pattern of occurrence of certain species only during the post and premonsoon periods. The pattern as evidenced by the percentage of number of examples to the total collected by us for certain species is as below :

<i>Species</i>	<i>Premonsoon period in percent</i>	<i>Postmonsoon period in percent</i>
<i>Salmostoma untrahi</i>	73.5	26.5
<i>Esomus barbatus</i>	63.6	36.4
<i>Danio aequipinnatus</i>	65.2	34.8
<i>Puntius amphibius</i>	36.2	63.8
<i>P. chola</i>	31.1	68.9
<i>P. dorsalis</i>	39.1	60.9
<i>P. filamentosus</i>	27.3	72.7
<i>P. sarana sarana</i>	35.8	64.2
<i>P. stigma</i>	22.2	77.8
<i>Cirrihinus reba</i>	46.9	53.1
<i>Labeo calbasu</i>	65.2	34.8
<i>L. kontius</i>	93.0	7.0
<i>Rasbora caverii</i>	67.4	32.6
<i>Lepidocephalichthys thermalis</i>	99.2	0.8
<i>Ompok bimaculatus</i>	74.4	25.6
<i>Mystus vittatus</i>	23.3	76.7
<i>Mystus cavasius</i>	59.5	40.5
<i>Xenentodon cancila</i>	13.1	86.9
<i>Channa gachua</i>	42.8	57.2
<i>C. punctatus</i>	24.5	75.5
<i>C. striatus</i>	20.0	80.0
<i>Etroplus maculatus</i>	35.2	64.8
<i>Tilapia mossambica</i>	81.3	18.7

From the above analysis certain facts emerge clearly. The *puntius* species or the carps of economic value are dominant only during the postmonsoon period, like that of the murrels and pearl spots. On the other hand the smaller Daniids, Chilwas, and barbs like *Esomus* and *Lepidocephalichthys* etc. seem to be prevalent during the premonsoon period. This supports the view that heavy water discharge and flow are favourable to the major carps and these are replaced by the smaller varieties and catfishes during the summer. Von Urk 1978 has shown that during periods of low discharges a "replacement community" to

exploit the organic load of the river appears. Such a phenomenon seems to be prevalent in the Cauvery system also.

Turbidity in general decreases light penetration, limits production of phyto plankton thereby depleting the source of food for the fish communities. However, this does not appear to be a cause in the Cauvery system especially in its upper reaches. This may be because of the steep incline and the swift run off of the water column. However in the plateau course, especially below Shiva, at places like Kollegal and Chikalur, the yield was poor during the post monsoon survey which may perhaps be attributed to the high turbidity. Likewise at Bhavani and Erode where the stream bed is heavily eroded with boulders and rocks the catches were of uneconomical variety and poor in quantity.

CONCLUSIONS AND RECOMMENDATIONS

From a survey of the Cauvery river undertaken during both the post—and premonsoon periods the following conclusions are drawn :—

- (1) A total of 142 species of fish are recorded as occurring in the river. A few more may be found if some of the inaccessible areas especially in the plateau course could also be covered.
- (2) The river is divisible into three zones : mountainous course extending from its origin to the Sivasamudram falls ; plateau course from Sivasamudram to Hogenaikal, and the plains course from Hogenaikal to confluence with the Bay of Bengal.
- (3) Each one of the above cited three zones have their own characteristic fauna in conformity with their attendant ecological features.
- (4) The Shivasamudram falls act as a considerable barrier for the dispersal and colonisation of economical varieties of fish to the upper reaches.
- (5) Considering the fauna present in the mountainous course, introduction of cold water fishes such as trouts (*Salmo trutta*) may be thought of. The first records of *Esomus danricus*, *Puntius melanostigma* and *Noemacheilus striatus* in this zone are noteworthy.
- (6) Some selected economically valuable fishes such as the carps, or catfishes could be artificially introduced in the upper reaches.
- (7) The plateau course is a potential area for conservation and regulated exploitation.

TABLE 1. Meteorological data as obtained from the India Meteorological Department.

	i	1973		1974		1975	
		JAN., FEB., MAR., APR., SEPT., OCT.	JAN., FEB., MAR., APR., SEPT., OCT.	JAN., FEB., MAR., APR., SEPT., OCT.	JAN., FEB., MAR., APR., SEPT., OCT.	JAN., FEB., MAR., APR., SEPT., OCT.	JAN., FEB., MAR., APR., SEPT., OCT.
MERCARA	(i) Temp Mean } °C Max. }	30.2	29.9	25.1	27.5		
	Mean } Minim. }	17.1	19.2	13.8	15.2		
	(ii) Rainfall Total (mm).	0.0	27.9	0.0	0.0		
	(iii) Relative 08.30	58	74	68	60		
	Mean Humidity 17.30 percent	46	65	36	29		
MYSORE	(i) Temp. Mean } °C Max. }	34.2	34.2	28.9	31.3		
	Mean } Minim. }	19.3	22.0	14.8	16.3		
	(ii) Rainfall Total (mm.)	0.0	155.3	0.0	0.0		
	(iii) Relative 08.30	69	77	73	57		
	Mean Humidity 17.30 percent	41	42	35	18		
METTURDAM	(i) Temp. Mean } °C Max. }	37.1	37.9	32.1	35.0	32.4	31.9
	Mean } Minim. }	23.2	26.7	18.9	19.5	23.3	23.0
	(ii) Rainfall Total (mm.)	12.2	49.8	0.0	0.0	153.6	297.7
	(iii) Relative 08.30	56	60	69	58	75	76
	Mean Humidity 17.30 percent	23	34	31	23	65	67
TIRUCHIRAPALLI	(i) Temp. mean } °C Max. }	35.8	37.7	29.3	31.5	32.7	31.4
	Mean } Minim. }	23.8	26.8	18.8	19.5	24.3	23.8
	(ii) Rainfall Total (mm.)	0.0	3.9	0.0	5.4	149.5	192.2
	(iii) Relative 08.30	78	70	84	81	75	80
	Mean Humidity 17.30 percent	39	42	52	44	61	65

- (8) Gene pools of selected species may be located and conserved in the plateau course.
- (9) Some of the tributaries such as Kabbani, Hemavathy are rich in fishlife and require careful management.
- (10) Suitable sanctuaries similar to one in Ramanathapura could be located and established in the plateau course. The absence of *Puntius dubius* in the lower reaches is worth attention.
- (11) *Cirrhina reba* has replaced a number of economically valuable species, by their abundance in the plains course.
- (12) Suitable fish sanctuaries should be located and established in the plains course also.
- (13) Regulation of stream courses for colonisation of marketable sized varieties of fishes could be attempted in the plains course.
- (14) The distributional range of the following species are extended for the first time from the areas specified.—
 - (i) *Esomus barbatus* (Jerdon)—Zone—III
 - (ii) *Esomus danricus* (Hamilton)—Zone—I
 - (iii) *Barilius vagra vagra* (Hamilton)—Zone—1
 - (iv) *Puntius conchoni* (Hamilton)—Throughout
 - (v) *Puntius melanostigma* (Day)—Zone—I
 - (vi) *Noemacheilus striatus* Day—Zone—I
 - (vii) *Liza tade* (Forsk.)—Zone—III
 - (viii) *Rhinomugil corsula* (Ham.)—Zone—III
- (15) A new species *Puntius coorgensis* Jayaram was also found, from the plateau course.
- (16) Topotypes of *Rasbora caverii*, *Puntius bovanicus*, and *Puntius cauveriensis* have been collected.
- (17) The range of variations in body proportions, meristic counts, colour (both in life and after preservation) have been recorded for a number of species previously known with scanty data.
- (18) The doubtful occurrence of *Salmostoma boopsis* from Mysore has now been cleared by Collection of material from Chikalur, Karnataka.

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PLATES

PLATE I

Map of River Cauvery and its various branches.

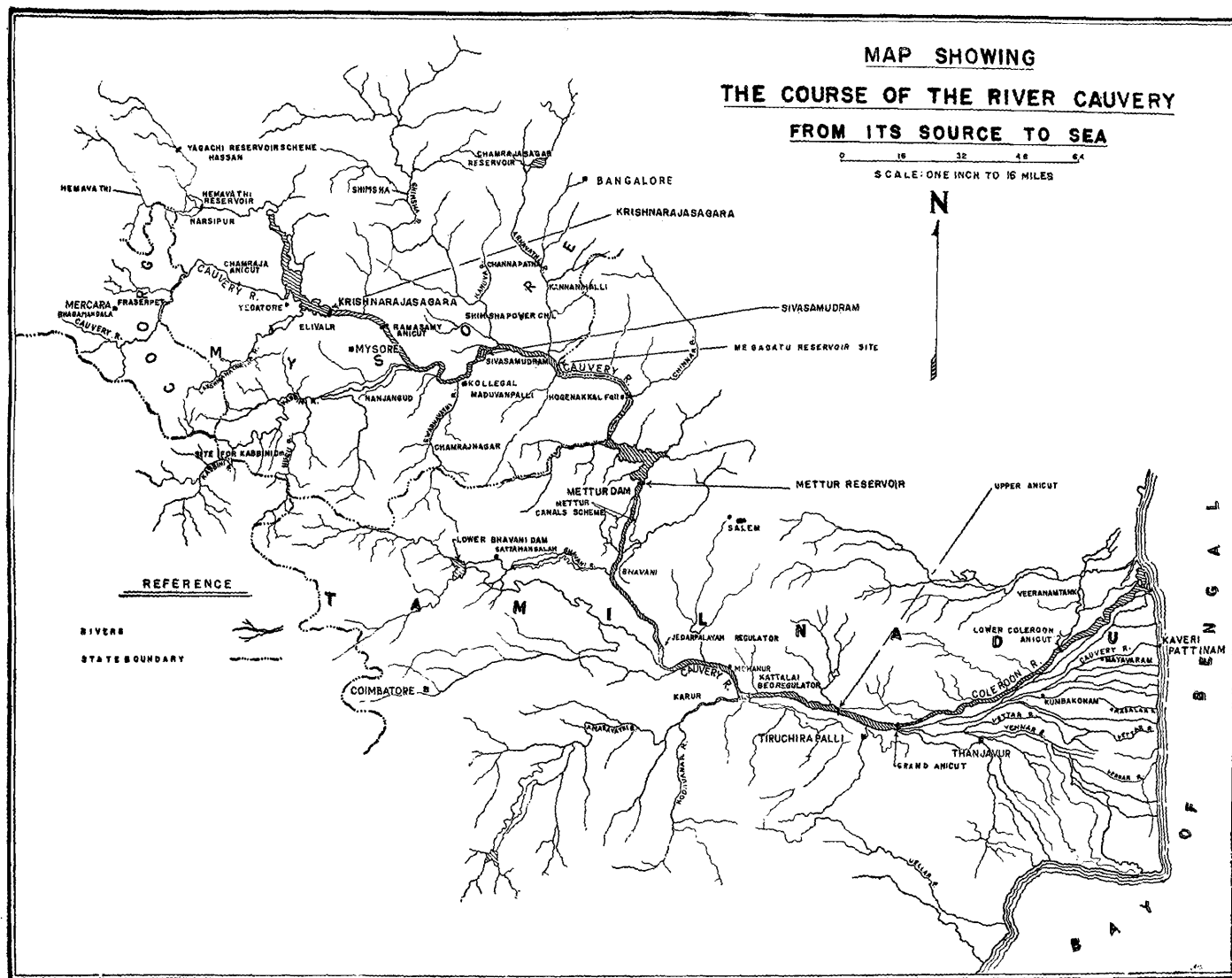


PLATE II

1. River Cauvery at Tiruvalangadu. Fishermen operating the water net. STN. 5. 25. 1. 74.
2. River Vikraman at Tiruvalangadu. STN. 6. 25. 1. 74.
3. River Cauvery at Melaiyur with shutter's in background and fishermen operating nets. STN. 7. 26. 1. 74.
4. River Kodamurutty with the suspended wall net for catching fish, STN. 12. 29. 1. 74.
5. View of Nursery pond at Rajagiri T. K. Head. STN. 15. 29. 1. 74.
6. View of River Cauvery and River Arasalar bifurcation. STN. 17. 29. 1. 74.
7. View of Vadavar branching from Coleroon at Lower Anaicut. STN. 20. 30. 1. 74.
8. View of Vadavar downstream at Lower Anaicut. STN. 20. 30. 1. 74.
9. View of Vennar upstream at Vennar—Pamaniyar—Koraiyar regulator. STN. 21. 31. 1. 74.
10. View of Vennar—Pamaniyar—Koraiyar bifurcation with Shri Govindasamy, Tamil Nadu Fisheries official. STN. 22. 31. 1. 74.
11. View of River Cauvery at Tiruvaiyaru, upstream view. STN. 30. 2. 2. 74.
12. View of River Kudamurutty at Kandiyur village, upstream view. STN. 31. 2. 2. 74.

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PLATE II

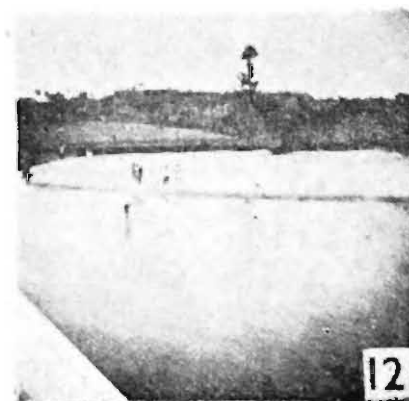
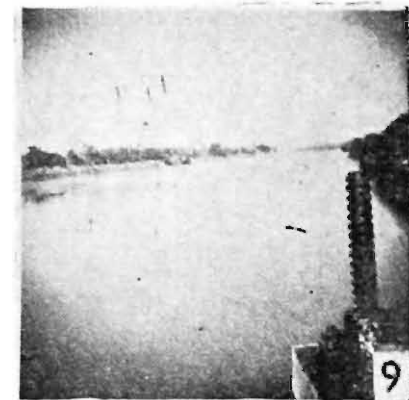
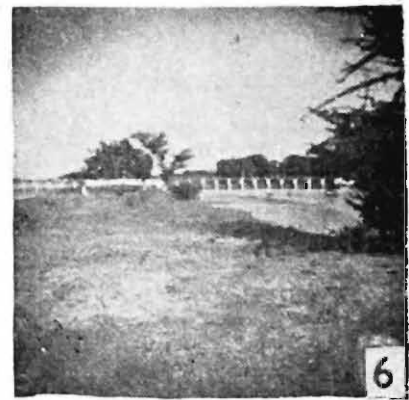
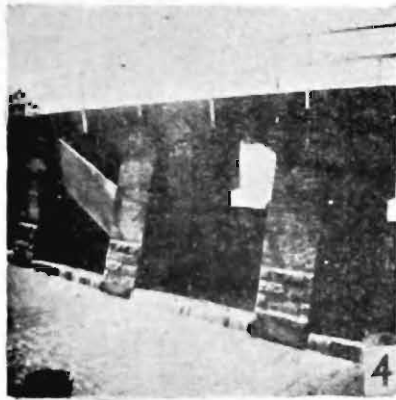
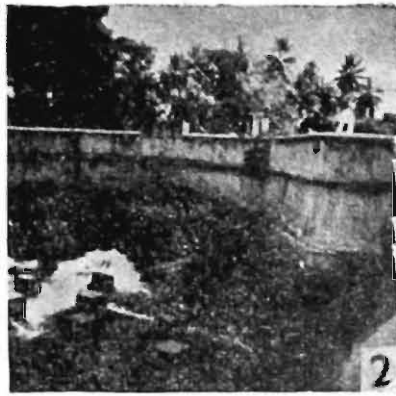


PLATE III

13. View of River Vettar, downstream view. STN. 32. 2. 2. 74.
14. View of River Vennar at Palliagraharam. STN. 33. 2. 2. 74.
15. View of River Vadavar at Karautl attangudi, downstream view. STN. 34. 2. 2. 74.
16. View of River Cauvery at Grand Anaicut, upstream view. STN. 35. 3. 2. 74.
17. Distant view of river Uyyakondan joining at Grand Anaicut. STN. 36. 3. 2. 74.
18. View of River Cauvery upstream view with party at Grand Anaicut. STN. 35. 3. 2. 74.
19. View of River Vennar, upstream view, at Grand Anaicut. STN. 37. 3. 2. 74.
20. View of River Coleroon, upstream view, at Grand Anaicut. STN. 36. 3. 2. 74.
21. View of River Cauvery and Kudamurutty bifurcation at Thirukattupalli, downstream view. STN. 40. 3. 2. 74.
22. View of River Vennar, upstream view, at V. V. R. STN. 25. 4. 2. 74.
23. View of River Vettar, upstream view at V. V. R. STN. 26. 4. 2. 74.
24. View of Vennar and Vadavar bifurcation at V. V. R. STN. 26. 4. 2. 74.

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PLATE III

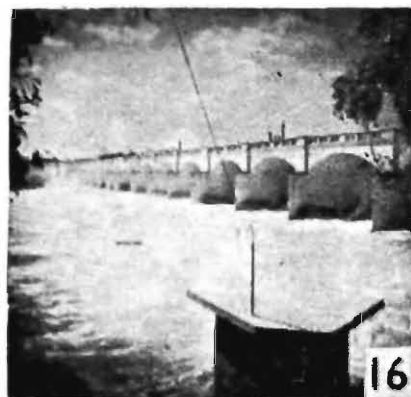
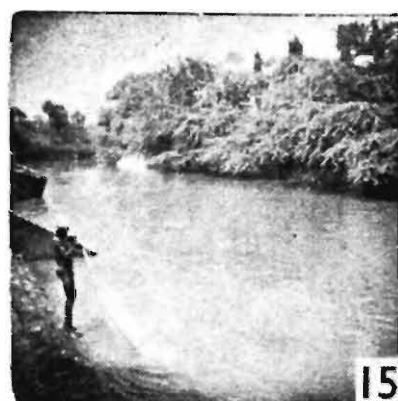


PLATE IV

25. View of South Coleroon river, upstream view, at Vathalai. STN 49.
6. 2. 74.
26. View of River Cauvery upstream view at Mayanur. STN. 48. 7. 2. 74
27. View of River Cauvery at Kulithalai with tour party. STN. 46.
8. 2. 74.
28. View of River Cauvery, upstream, at Kulithalai. STN. 46. 8. 2. 74.
29. View of River Coleroon, off Srirangam (Trichy),
upstream view. STN. 44. 9. 2. 74.
30. View of River Cauvery, upstream view, at Pallipalayam. STN. 55.
14. 2. 74.
31. View of the River Cauvery, upstream, Pallipalayam, with party
members. STN. 55. 14. 2. 74.
32. View of River Cauvery, upstream, at Bhavani. STN. 56. 16. 2. 74
33. View of the confluence of the rivers Cauvery and Bhavani at
Bhavani. STN. 56. 16. 2. 74.
34. View of River Cauvery at Ammapet, upstream view. STN. 62.
18. 2. 74.
35. View of River Cauvery at Periapallam, upstream view. STN. 61.
18. 2. 74.
36. View of River Cauvery of Periapallam, downstream view. STN. 61.
18. 2. 74.

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PLATE IV

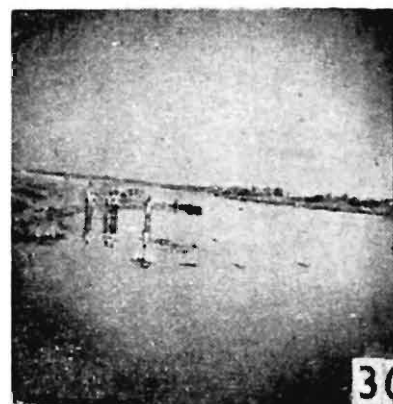
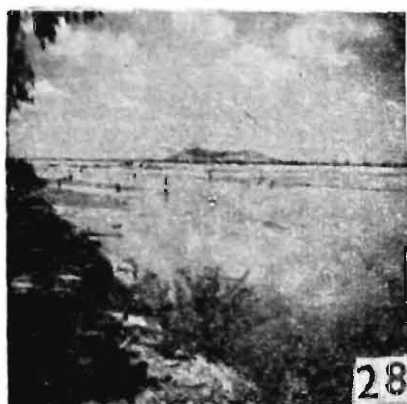


PLATE V

37. View of the Stanley reservoir with Dam in the back-ground. STN. 63. 21. 2. 74.
38. View of River Cauvery (a channel from Dam) near Dam. STN. 61. 21. 2. 74.
39. A big *Catla catla* (Ham.) from Mettur reservoir in the hands of Mr. Egambaram, a member of tour party.
40. View of River Cauvery, below Hogenakkal falls. STN. 64. 21. 2. 74.

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PLATE V

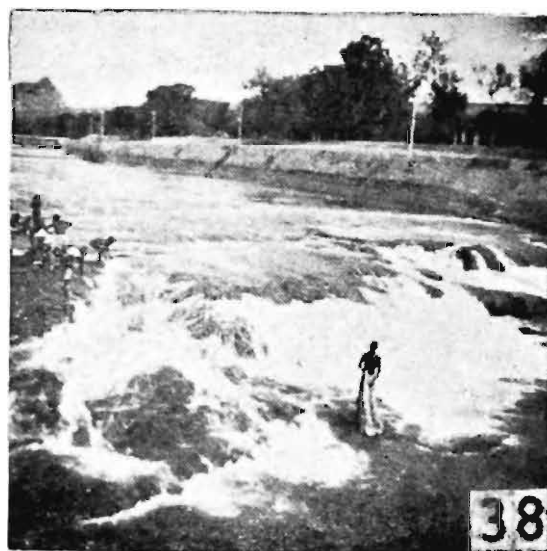


PLATE VI

41. Original dry channel of Cauvery as it emerges from the gorge at Talaicauvery, with Sri Janaki Raman pointing the Channel bed.
42. View of R. Kannige at Bhagamandala. STN. 66. 4. 5. 77.
43. River Cauvery after its confluence with Kannige, at Bhagamandala. STN. 65. 4. 5. 77.
44. River Cauvery at Kudige downstream. STN. 68. 5. 5. 77.
45. River Harangi at Kudige, upstream view. STN. 67. 5. 5. 77.
46. River Harangi at Kudige, downstream view. STN. 67. 5. 5. 77.

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PLATE VI

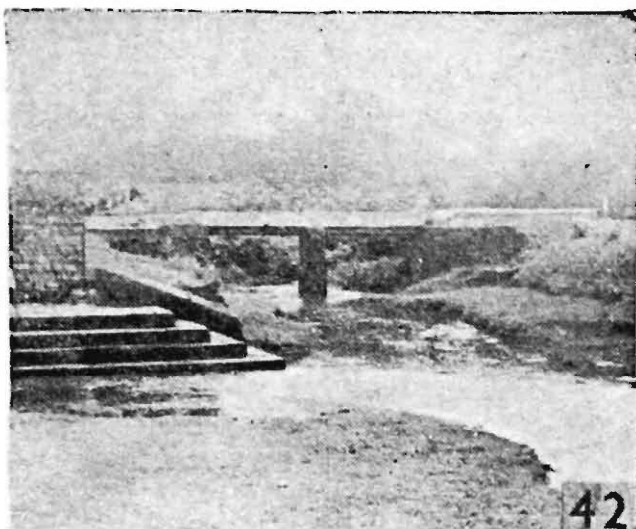


PLATE VII

47. River Hemavathy at Hole Narsipur, upstream view. STN. 71. 6. 5. 77.
48. River Hemavathy at S. R. D. Katte near Hole Narsipur. STN. 73. 7. 5. 77.
49. River Hemavathy at S. R. D. Katte downstream view. STN. 73. 7. 5. 77.
50. View of falls at S. R. D. Katte, near Hole Narsipur. STN. 73. 7. 5. 77.
51. Fishing in the reservoir below the falls at S. R. D. Katte. STN 73. 7. 5. 77.
52. View of Falls at S. R. D. Katte with Sri Janaki Raman, Ponnuragam and Karnataka State Fishery official. STN. 73. 7. 5. 77.

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PLATE VII

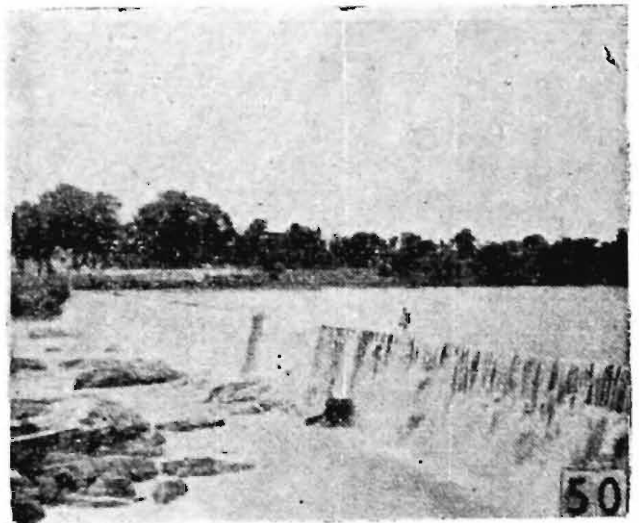


PLATE VIII

53. The perennial spring at Taluicauvery from where the Cauvery is supposed to emerge.
54. River Cauvery at Srirangapatnam. STN. 78. 13. 5. 77.
55. River Cauvery at Shivasamudram falls. STN. 84. 13. 5. 77.
56. River Cauvery at Dasanpura, Kollegal taluq. STN. 85. 12. 5. 77.
57. Cauvery river at Chikalur, Karnataka. STN. 89. 13. 5. 77.
58. Scrub jungle forest on way to Cauvery near Chikaur. STN. 89. 13. 5. 77.

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PLATE VIII

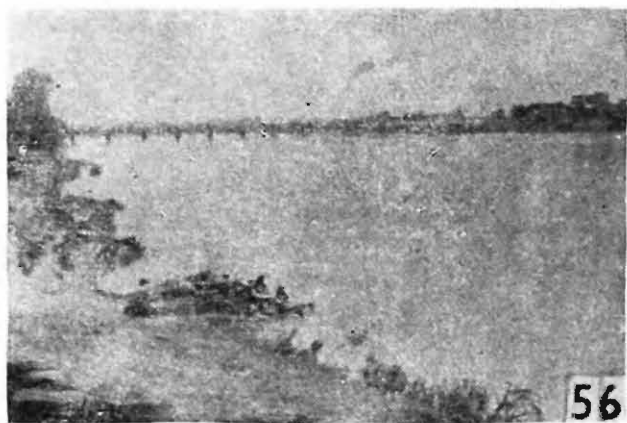
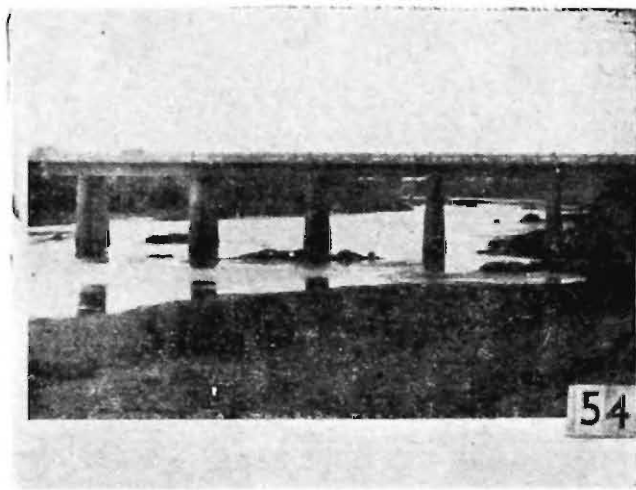


PLATE IX

- A. *Megalops cyprinoides* (Broussonet)
- B. *Anguilla bicolor bicolor* McClelland
- C. *Anguilla bengalensis bengalensis* (Gray & Hardwicke)

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PLATE IX

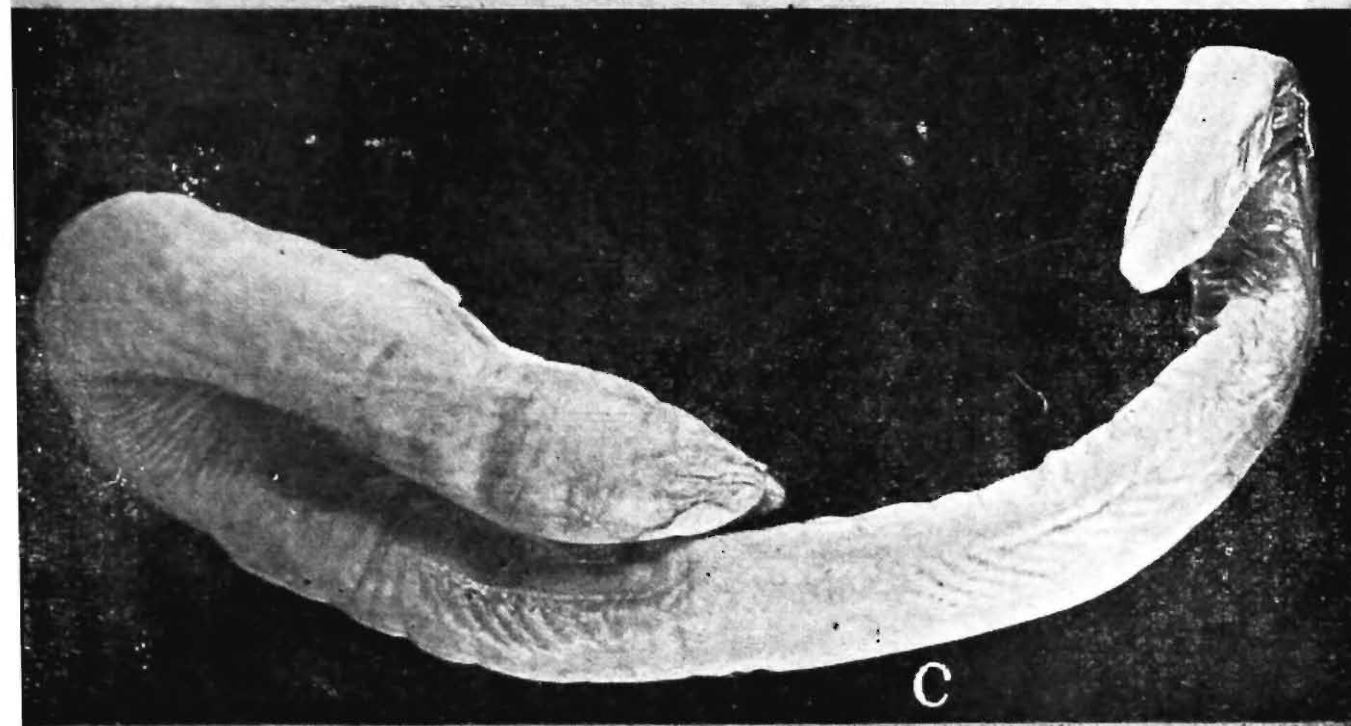
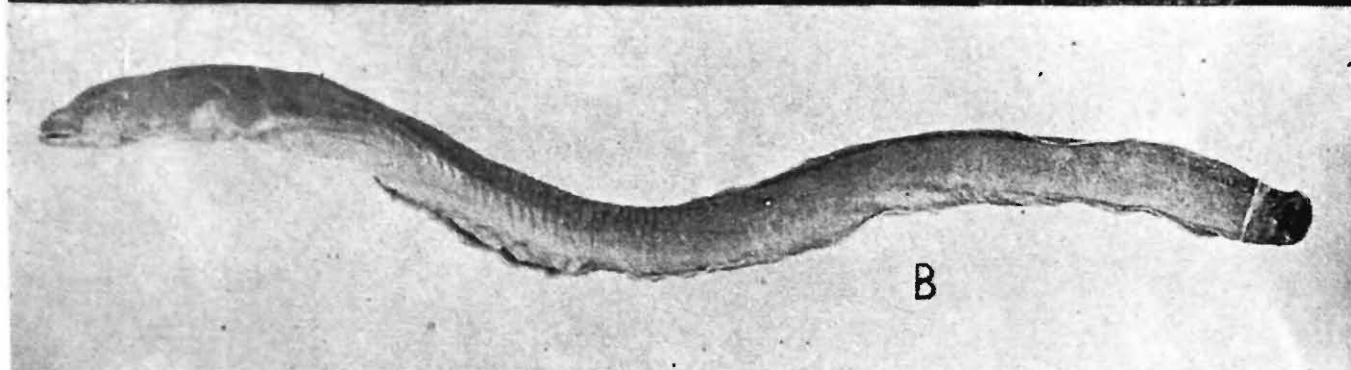
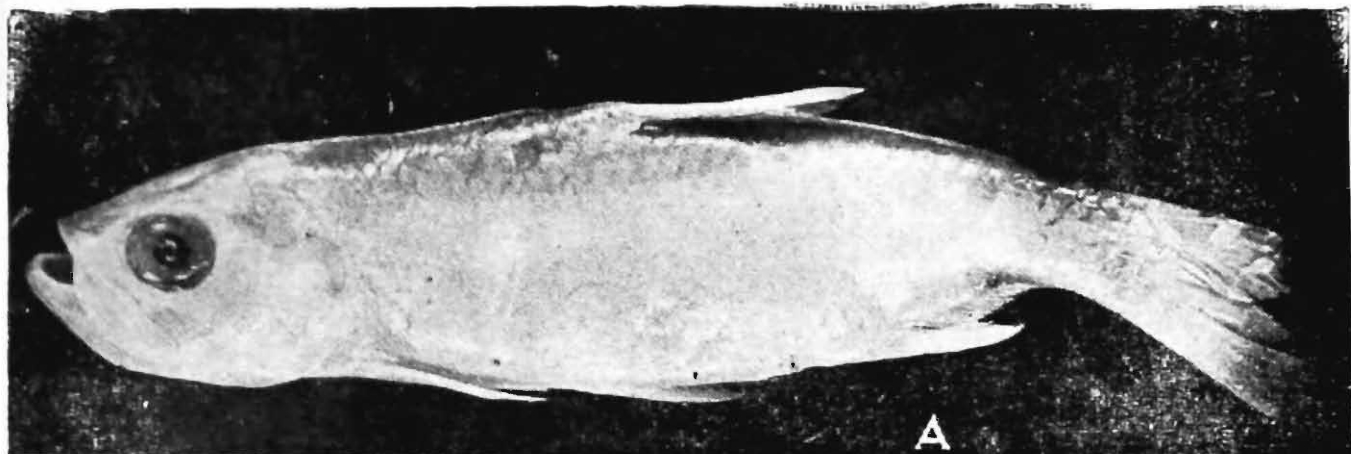


PLATE X

- A. *Garra mullya* (Sykes)
- B. *Lepidocephalus thermalis* (Val.)
- C. *Silonia childreni* Sykes

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PLATE X

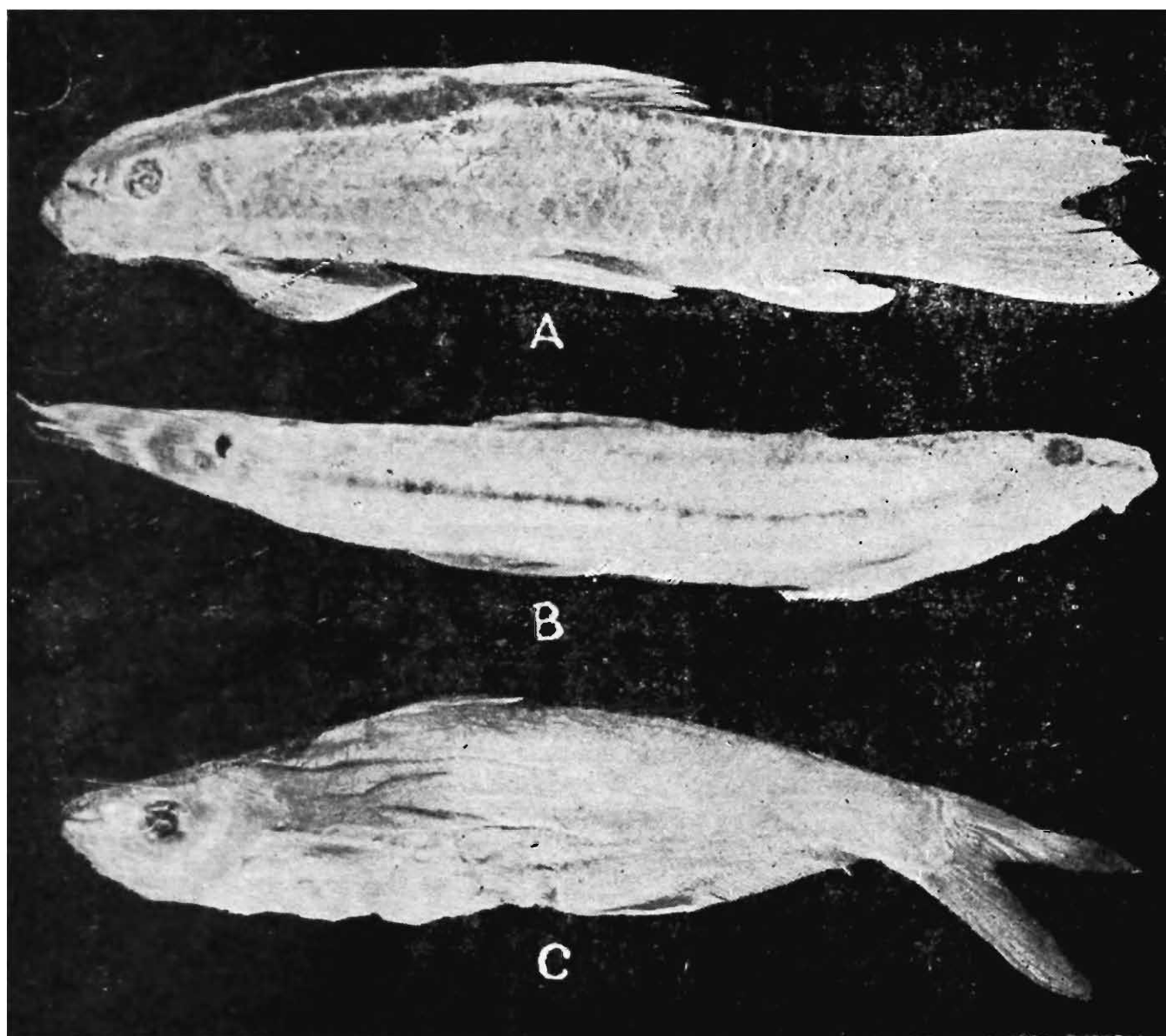


PLATE XI

- A. *Salmostoma acinaces* (Val.)
- B. *Salmostoma clupeoides* (Bloch)
- C. *Salmostoma untrahi* (Day)
- D. *Amblypharyngodon melettina* (Val.)

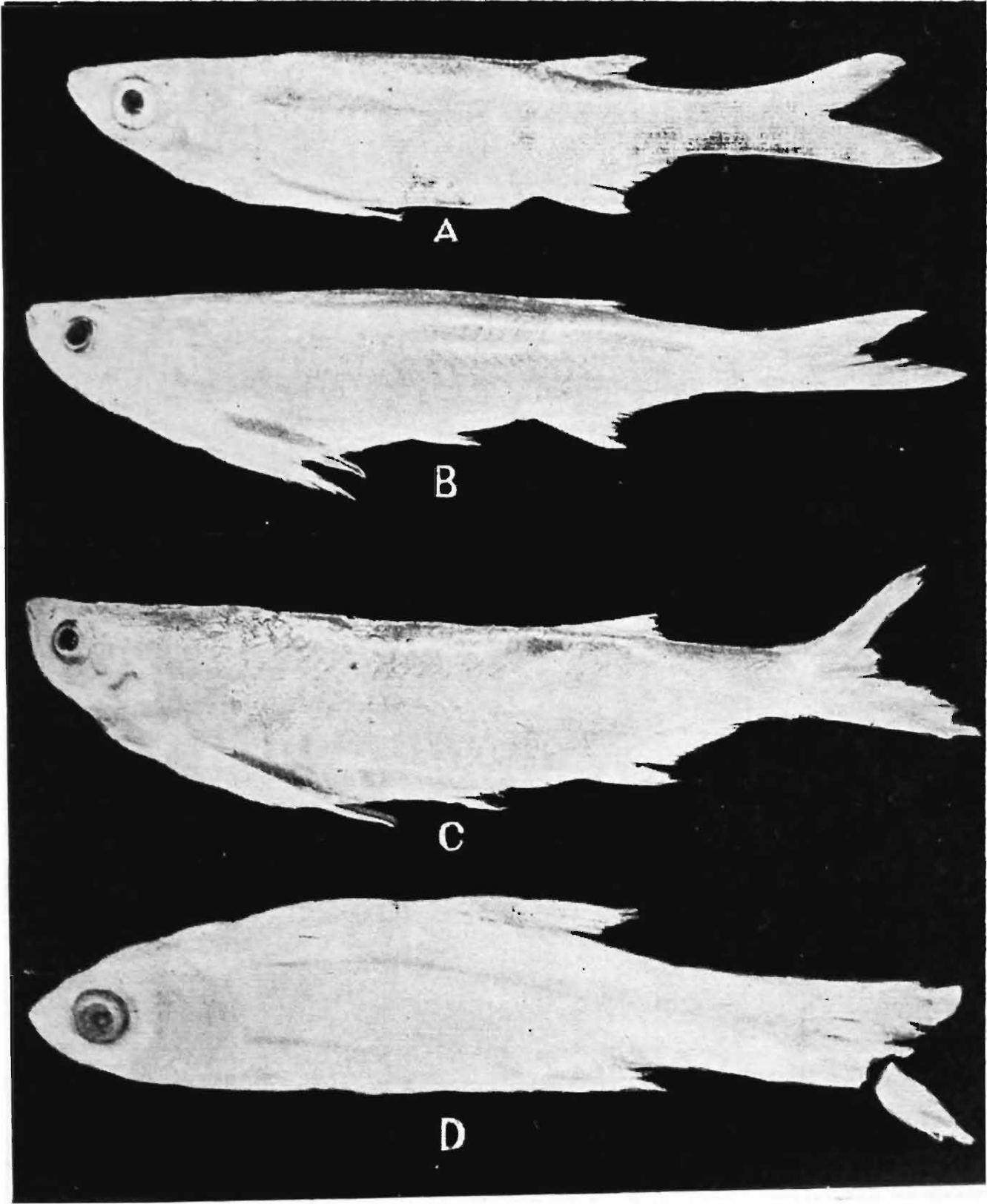


PLATE XII

- A. *Carassius carassius* Nilsson
- B. *Cyprinus carpio carpio* Linn.

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