

ON A COLLECTION OF FISH FROM PUDUKKOTTAI,  
DISTRICT TAMIL NADU

K. REMA DEVI AND K. ILANGO

*Zoological Survey of India, Southern Regional Station  
Madras*

INTRODUCTION

Pudukkottai District lies by the Palk Strait in the Bay of Bengal between latitudes 9°-50'-30' N and 10°-44' N and longitudes 78°-25'-5' E and 79°-16' E. The District with an area of 4650 sq. km. (Map. 1) resembles a star fish with its five radiating arms. Dry open lands with cultivation and semi-barren wastelands form the basic terrain and there are no perennial rivers.

The studies are based on collections brought by two survey parties from S. R. S., Z. S. I. led by Shri T. S. N. Murthy and Dr G. Thirumalai, Scientists 'SD' who visited the area in 1985 and 1986 respectively. The collections included 952 fish specimens comprising 20 species belonging to 13 genera, 7 families and 5 orders.

The systematic list of the species and the systematic account of the species are provided which includes its first reference, the material examined, length range in mm SL, locality and date of collection, the distribution and remarks (wherever noteworthy observations are present).

LIST OF FISHES OF PUDUKKOTTAI DISTRICT

Order : CYPRINIFORMES

Family : CYPRINIDAE

Sub Family : RASBORINAE

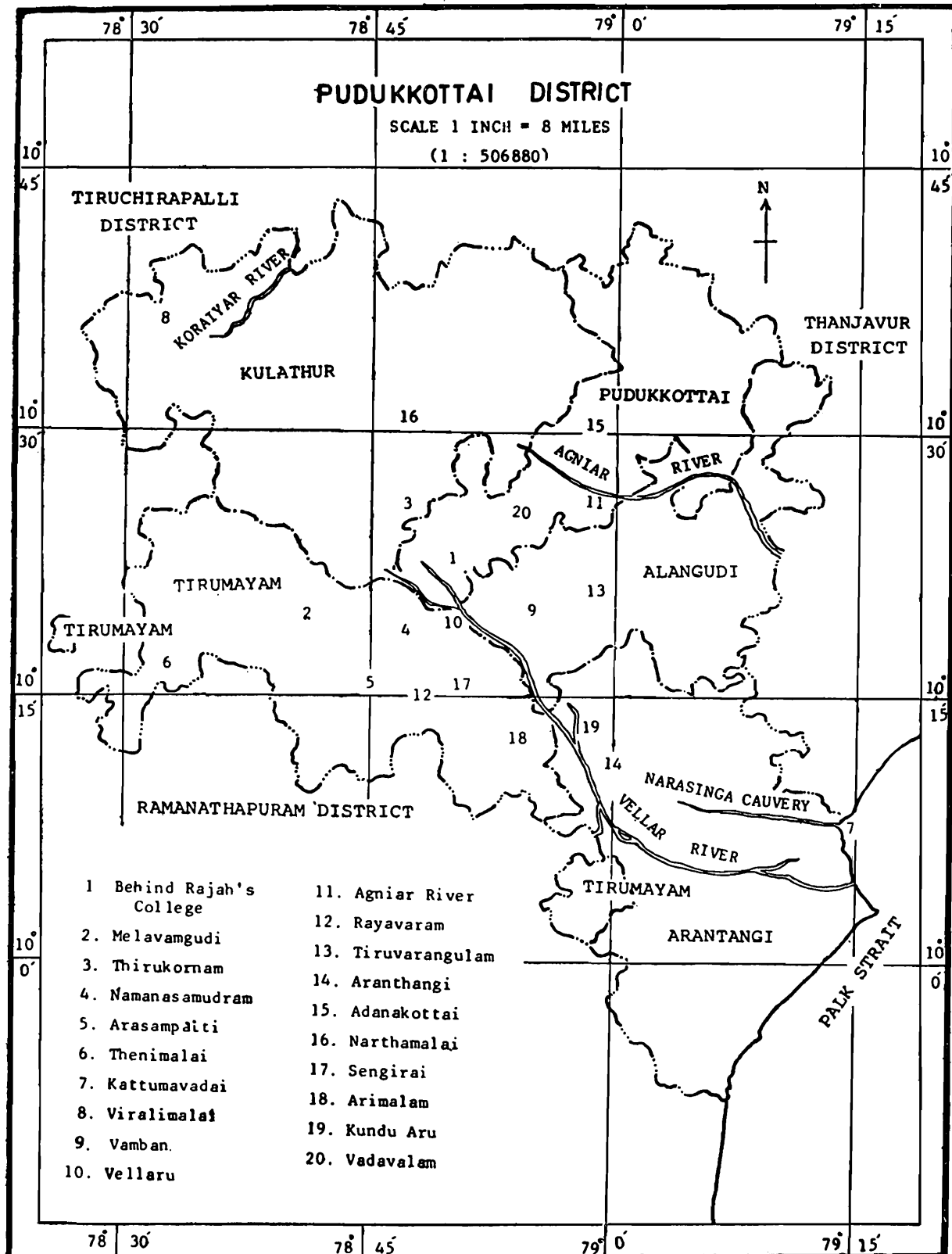
1. *Amblypharyngodon microlepis* (Bleeker)
2. *Esomus barbatus* (Jerdon)
3. *Rasbora (Rasbora) daniconius* (Hamilton)

Sub Family : CYPRININAE

4. *Puntius chola* (Hamilton)
5. *Puntius dorsalis* (Jerdon)
6. *Puntius sophore* (Hamilton)
7. *Puntius vittatus* (Day)

Family : COBITIDAE  
Sub Family : COBITINAE

8. *Lepidocephalus thermalis* (Valenciennes)



Order : SILURIFORMES

Family : BAGRIDAE

9. *Mystus armatus* (Day)
10. *Mystus bleekeri* (Day)
11. *Mystus vittatus* (Bloch)

Order : ATHERINIFORMES

Family : CYPRINODONTIDAE

12. *Aplocheilus blockii* (Arnold)
13. *Oryzias melanostigma* (McClelland)

Family : POECILIDAE

14. *Gambusia affinis patruelis* (Baird & Girard)

Order : CHANNIFORMES

Family : CHANNIDAE

15. *Channa orientalis* (Schneider)
16. *Channa punctatus* (Bloch)

Order : PERCIFORMES

Family : CICHLIDAE

17. *Etroplus maculatus* (Bloch)
18. *Etroplus suratensis* (Bloch)
19. *Oreochromis mossambica* (Peters)

Family : GOBIIDAE

20. *Glossogobius giuris* (Hamilton)

## SYSTEMATIC ACCOUNT

1. *Amblypharyngodon microlepis* (Bleeker)

1853. *Leuciscus microlepis* Bleeker, *Verh. Batav. Genootsch.* 25 : p. 41. (Type locality : River Hooghly).

*Material* : 1 ex., 23.5 mm SL, Melvelemkudi, Pudukkottai-Ponnamaravathi road, 20.1.1985 ; 2 exs., 27.0-30.0 mm SL, Pudukkottai-Royavaram road, 6.5.1986 ; 15 exs., 13.0-35.0 mm SL, Thiruvarangulam R. F., 7.5.1986 ; 3 exs., 20.0-25.0 mm SL, Sengirai, Arimalam-Mimisal road, 13.5.1986.

*Remarks* : Found mainly in road side fields and ponds ; very small species ; the juveniles resemble those of *Rasbora* but can be distinguished by the position of the anal fin which is inserted before or below the middle of dorsal in the former and below the posterior tip of dorsal in the latter ; the scales are small and numerous in

*Amblyphar yngodon* while in *Rasbora*, the scales are large and few in number (L1, scales 48 ; 24-33 in *Rasbora*). This can also be readily distinguished from *A. mola* (Ham.) by its lesser number of lateral transverse row of scales (4-5 in *A. microlepis* and 9-10 in *A. mola*), from *A. melattina* in its head length (H.L. less than 5 in T.L. in *A. microlepis* and H.L. more than 5 in T.L. in *A. melattina*).

*Distribution* : "Hooghly through Orissa and down the Coramandal Coast in Madras", (Day, 1875-78).

## 2. *Esomus barbatus* (Jerdon)

1849. *Leuciscus barbatus* Jerdon, *Madras J. Lit. & Sci.*, 15 p. 322. (Type locality : Rivers and tanks all over Mysore and Carnatic).

*Material* : 1 ex., 36.0 mm SL, Melvelamgudi, Pudukkottai-Ponnamaravathi road, 20.1.1985 ; 1 ex., 36.0 mm SL, Melatemathapatti, Vellaru, 3.5.1986 ; 7 exs., 32.0-42.5 mm SL, Agniaru ; 3 exs., 35.0-39.0 mm SL, Pudukkottai-Royavaram road, 6.5.1986 ; 70 exs., 15.0-26.0 mm SL, Thiruvarangulam R.F., 7.5.1986 ; 2 exs., 40.0-57.0 mm SL, Sengirai, Arimalam road, 13.5.1986 and 1 ex., 43.5 mm SL, Mallaieedu, 14.5.1986.

*Remarks* : In the present collection the L. 1 is complete in some specimens (L.1 34+2) and incomplete in some. In the number of predorsal scales (17-18) this is closer to *E. barbatus*, but the broad, black, lateral band reported to be absent in *barbatus* (Hora and Mukerji, 1928.) is present in these specimens. The length of maxillary barbel is found to vary, extending a little beyond pectoral base to as far as the anal base.

*Distribution* : India ; Confined to South India. Recorded so far from Nellore district, Andhra Pradesh, Chingleput and Mysore.

## 3. *Rasbora daniconius daniconius* (Hamilton)

1822. *Cyprinus daniconius* Hamilton, *Fish Ganges*, p. 327, pl. 15, fig. 89. (Type locality : Rivers of Southern Bengal).

*Material* : 2 exs., 22.0-23.5 mm SL, Melvelamkudi, Pudukkottai-Ponnamaravathi road, 20.1.1985 ; 3 exs., 21.0-46.0 mm SL, Hill slopes of Narthamalai, Thirukonam, 21.1.1985 ; 4 exs., 13.0-21.5 mm SL, Namanasamudram, 22.1.1985 ; 5 exs., 11.0-11.5 mm SL, Thenimalai, 29.1.1985 ; 2 exs., 11.0-22.0 mm SL, Viralimalai road, 2.2.1985 ; 1 ex., 27.0 mm SL, Vamban, 3.2.1985 ; 1 ex., 26.0 mm SL, Vellaru, Melathemathapatti, 3.5.1986 ; 25 exs., 22.0-35.0 mm SL, Agniaru, Pudukkottai-Tanjore road, 5.5.1986 ; 4 exs., 17.0-25.0 mm SL, Thiruvangulam R.F., 7.5.1986 ; 14 exs., 23.0-26.0 mm SL, Arimalam-Mimisal road, 13.5.1986 and 8 exs., 15.0-180 mm SL, Vadavalam, 15.5.1986.

*Remarks* : The post dorsal distance in relation to the distance from eye to dorsal origin, a character used in distinguishing *Rasbora caverii* (Jerdon) and

*R. daniconius* (Ham.) is found to vary with the length of the fish. The present collections resemble *R. daniconius* (Ham.) in its greater post dorsal distance which when carried forwards falls before the posterior border of eye. However, in very small specimens this distance is found to be greater than in the adults, in which it falls on or just behind the posterior border of eye.

*Distribution* : Throughout India, Pakistan, Nepal, Bangladesh, Sri Lanka, Burma, Malay Archipelago, Zanzibar.

#### 4. *Puntius chola*

1822. *Cyprinus chola* (Hamilton), *Fish Ganges*. p. 312, 389. (Type locality : north-eastern parts of Bengal).

*Material* : 8 exs., 36.0-51.0 mm SL, Pudukkottai-Royavaram road, 6.5.1986 ; 2 exs., 75.0-78.0 mm SL, Aranthangi, 9.5.1986 and 1 ex., 49.0 mm SL, Kundu aru, Malaieedu, 14.5.1986.

*Remarks* : Colouration is as given by Day (1889), in addition in some specimens a faint lateral band is seen which extends to the blotch on the posterior end of caudal peduncle ; scales with dark bases ; dorsal spine strong but articulated at tip ; 8-9 scale rows before the dorsal fin ; sensory canal pores seen on head in smaller specimens.

*Distribution* : Throughout India, Pakistan, Bangladesh, Burma and Sri Lanka.

#### 5. *Puntius dorsalis* (Jerdon)

1849. *Systomus dorsalis* Jerdon, *Madras J. Lit. & Sci.*, p. 314, 316. (Type locality : Tanks and rivers in the neighbourhood of Madras).

*Material* : 30 exs., 16.0-18.0 mm SL, Thiruvarangulam R.F., 7.5.1986.

*Remarks* : These juvenile specimens have a spot on the caudal peduncle (Day 1889 remarks that *B. tetraspilus* presently a synonym of *B. dorsalis*) differs in having a dark spot at the caudal fin in addition to the spot at the end of the dorsal base present in both species) ; numerous sensory canal pores are seen on cheek.

*Distribution* : Krishna, Cauvery, Coleroon river systems in India.

#### 6. *Puntius sophore* (Hamilton)

1822. *Cyprinus sophore* Hamilton, *Fish Ganges*. p. 310, 319, pl. 19, fig. 86. (Type locality : Ponds of Bengal).

*Material* : 1 ex., 30.0 mm SL, Melvelamkudi, Ponnamaravathi road, 20.1.1985 ; 1 ex., 36.5 mm SL, Thiruvarangulam R.F., 7.5.1986 ; 1 ex., 67.0 mm SL, Aranthangi,

9.5.1986 ; 5 exs., 28.0-45.0 mm SL, Nartha malai, 12.5.1986 and 9 exs., 43.0-52.5 mm SL, Kunduaru, Malaieedu, 14.5.1986.

*Remarks* : The present collections answer very much to the description of *Puntius stigma* (Val.) (Day, 1875-78) in the absence of barbels, the lateral transverse row of scales from L.1 to ventral base being  $3\gamma 2$ . However, since *P. stigma* has been synonymised with *P. sophore*, which has 4 barbels and  $2\gamma 2$  rows of lateral transverse scales, the present collection is tentatively placed under *P. sophore*.

*Distribution* : Throughout India, Pakistan, Bangladesh, Sri Lanka.

### 7. *Puntius vittatus* Day

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

*Material* : 6 exs., 12.5-25.0 mm SL, Melvelamkudi, Ponnamaravathi road, 20.1.1985 ; 1 ex., 26.5 mm SL, Hill slopes of Narthamalai, in and around Tirukonam, 21.1.1985 ; 1 ex., 13.0 mm SL, Adanakottai, 11.5.1986 and 15 exs., 10.-23.0 mm SL, 15.5.1986.

*Remarks* : Day (1875-78) remarks that the colour markings are highly variable in the species. In the present collection a vertical crescent shaped blotch is seen in mid dorsal, a spot on caudal base and in some a dark spot on anus ; a thick pad is present on inside of lower jaw and tubercles are present on snout in some specimens ; predorsal 6-7, L. tr.  $4/3\frac{1}{2}$ .

*Distribution* : Karnataka, Kerala, Tamilnadu, Goa, Cutch, Rajasthan, Srilanka, Pakistan.

### 8. *Lepidocephalus thermalis* (Valenciennes)

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

*Material* : 2 exs., 28.0 and 45.0 mm SL, Melvelamkudi, Ponnamaravathi road, 20.1.1985 ; 1 ex., 35.0 mm SL, Thirukonam, 21.1.1985 ; 5 exs., 19.5-22.0 mm SL, Namanasamudram, 22.1.1985 ; 2 exs., 28.0 & 29.0 mm SL, Thirumayam and Arasampatti, 22.1.1985 ; 2 exs., 19.0 and 21.0 mm SL, Viralimalai road, 2.2.1985 ; 6 exs., 22.0-40.0 mm SL, Vembal, 3.2.1985 ; 42 exs., 20.0-39.0 mm SL, Agniaru, 5.5.1986 ; 27 exs., 20.5-33.0 mm SL, Pudukkottai-Royavaram Road, 6.5.1986 ; 22 exs., 13.0-77.0 mm SL, Thiruvarangulam R.F., 7.5.1986 ; 2 exs., 12.0 & 44.0 mm SL, Namanasamudram road, 8.5.1986 ; 49 exs., 19.0-39.0 mm SL, Narthamalai, 12.5.1986 ; 1 ex., 46.0 mm SL, Arimalam-Mimisal Road ; 5 exs., 30.0-46.0 mm SL, Malaieedu, 14.5.1986 and 3 exs., 21.0-26.5 mm SL, Vudavattam, 15.5.1986.

*Remarks* : Colour variations are observed in the present collection especially in the caudal fin markings, the number of bands and their thickness in the caudal fin is

found to vary from a few thick bands to several narrow bands. Also the present specimens are deeper and head length smaller than that given for *L. thermalis* in Jayaram (1981).

*Distribution* : Southern Karnataka, Kerala, Tamil Nadu, Srilanka.

### 9. *Mystus armatus* (Day)

1865. *Hyselobagrus armatus* Day, *Proc. Zool. Soc. London*, p. 289. (Type locality : Malabar).

*Material* : 2 exs., 42.0 and 52.0 mm SL, Agniaru, 5.5.1986 and 6 exs., 64.0-78.0 mm SL, Pudukkottai-Royavaram road, 6.6.1986.

*Remarks* : The two specimens (fingerlings) have been tentatively identified as these answer to the description of *M. armatus*.

*Distribution* : Wynaad range of hills, Western Ghats, Cauvery Watershed, South India.

### 10. *Mystus bleekeri* (Day)

1877. *Macrones bleekeri* Day, *Fish India*, p. 451, p. 101. fig. 7. (Type locality : Sind, Jamuna, Upper waters of Ganges, Burma).

*Material* : 1 ex., 15.0 mm SL, Thirukonam and 1 ex., 27.0 mm SL, and Narthamalai, 12.5.1986.

*Distribution* : Throughout India, Pakistan, Bangladesh, Burma.

### 11. *Mystus vittatus* (Bloch)

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

*Material* : 2 exs., 51.0 and 57.0 mm SL, Thirukonam and hill slopes of Narthamalai, 21.1.1985.

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

### 12. *Aplocheilus blockii* (Arnold)

1911. *Haplochilus nanchax* var. *blockii* (Arnold), *Wschv. Terrar-u. Terrariank* 8, p. 672.

1916. *Panchax parvus*, Sundara Raj, *Rec. Ind. Mus.*, 12 : 249-294. (Rivers and tanks of Madras city).

*Material* : 4 exs., 17.0-23.0 mm SL, Melvelangudi, Ponnamaravathi road, 20.1.1985, 1 ex., 14.5 mm SL, Viralimalai road, 2.2.1985 ; 43 exs., 9.0-22.0 mm SL, Vellaru, Melatemathapatti, 3.5.1986 ; 43 exs., 12.0-20.0 mm SL, Agniaru, Pudukkottei-

Tanjore Road, 5.5.1986 ; 35 exs., 9.5-20.0 mm SL, Adanakkottai, 11.5.1986 and 1 ex., 16.0 mm SL, Narthamalai, 12.5.1986.

*Description* : C.5-7/11-12/5-7 ; P.1/12 ; V.1/5 ; D.2/5/1 A.2-3/12/1 ; L.1.25-27+3 ; L.tr. 7-7½ ; predorsal 21-22, prepelvic scale-11 ; Gill rakers 9.

*Remarks* : *Aplocheilus blockii* can be readily differentiated from *A. lineatus* (Val.) in the absence of prolonged pelvic ray and the bold vertical stripes on body. It can also be distinguished from *A. panchax* from its lesser lateral line count.

(L.1 26-27, L.tr, 7 in *A. blockii* and L.1 31-34, L.tr, 9-10 in *A. panchax*)

Sexual dimorphism is seen as colour variation and in fin length. In males, lateral horizontal stripes are visible and the posterior dorsal and anal rays prolonged extending beyond caudal base. In the females, about eleven vertical stripes are visible from the back to the upper-third of body ; a blotch (from 2nd to 5th ray base) in both the sexes.

*Distribution* : Fresh and brackish waters of Peninsular India.

### 13. *Oryzias melanostigma* (McClelland)

1839. *Aplocheilus melastigmus* McClelland, *Asiat. Res.*, 19 : pp. 301, 427, pl. 42, fig. 3. (Type locality : tanks in Calcutta).

*Material* : 19 exs., 10.5-26.0 mm SL, Melvelamgudi, Ponnamaravathi road, 20.1.1985 ; 1 ex., 9.5 mm SL, Viralimalai road, 2.2.1985 ; 6 exs., 17.0-21.0 mm SL, Vellaru, Melathemathapatti, 3.5.1986 ; 64 exs., 13.0-24.0 mm SL, Agniaru, Pudukkottai-Tanjore road, 5.5.1986 ; 167 exs., 9.5-29.0 mm SL, Aranthangi, 9.5.1986 and 3 exs., 17.0-21.0 mm SL, Adanakkottai, 11.5.1986.

*Remarks* : D.1/5 ; P.1/9-10 ; V.1/5 ; C. (5/9/5) ; A.2/19-21 ; The posterior anal rays are found to be filiform in males and also the number of anal rays are more in the males.

*Distribution* : Throughout India, Burma, Pakistan, Ceylon.

### 14. *Gambusia affinis patruelis* (Baird & Girard)

1853. *Heterensia patruelis* Baird and Girard, *Proc. Acad. nat. Sci. Philad.* 6, p. 390. (Type locality : Rio Sabinal, Texas).

*Material* : 3 exs., 15.5.-20.5 mm SL, behind Rajas College, 19.1.1985.

*Distribution* : Throughout India, Pakistan, Bangladesh, Sri Lanka, Burma.

### 15. *Channa orientalis* (Schneider)

1801. *Channa orientalis* Schneider, *Syst. Ichth.*, p. 496, pl. 90, fig. 2. (Type : locality : Not given).



*Material* : 4 exs, 18.0-25.0 mm SL, Thirukonam, hill slopes of Narthamalai, 21.1.1985.

*Distribution* : Throughout India, Pakistan, Afghanistan, Bangladesh, Sri Lanka, Burma, Thailand, Malay Archipelago, Vietnam.

#### 16. *Channa punctatus* (Bloch)

1793. *Ophiocephalus punctatus* Bloch, *Naturg, Ausland, Fisch.*, 2, p. 139, pl. 356. (Type locality : Coromandal Coast.)

*Material* : 1 ex., 24.5 mm SL, Melvelamgudi, Ponnamaravathi road, 20.1.1985 ; 1 ex., 25.5 mm SL, Thirukonam, 21.1.1985 ; 1 ex., 24.5 mm SL, Thirumayam-Aresampatti, 22.1.1985 ; 1 ex., 60.0 mm SL, Vellaru, Melatemathapatti, 3.5.1986 ; 1 ex., 44.0 mm SL, Agniaru, 5.5.1986 ; 5 exs., 30.0-48.0 mm SL, Narthamalai, 12.5.1986 and 2 exs., 47.0-60.0 mm SL, Malaieedu, 14.5.1986.

*Remarks* : The pelvic fin is more than half length of pectoral fin and the pectoral fin has rows of spots unlike given in Jayaram (1981).

*Distribution* : Throughout India, Pakistan, Nepal, Bangladesh, Burma, Sri Lanka.

#### 17. *Etroplus maculatus* (Bloch)

1785. *Chaetodon maculatus* Bloch, *Syst. Ichth.*, pl. 427, fig. 2. (Type locality : Not given).

*Material* : 2 exs., 37.0-39.0 mm SL, Kattumavedai, 1.2.1985 ; 1 ex., 26.0 mm SL, Vallaru, Melatemathapetti, 3.5.1986 ; 5 exs., 40.0-59.0 mm SL, Aranthangi, 9.5.1986 and 13 exs., 31.0-56.0 mm SL, Malaieedu, 14.5.1986.

*Remarks* : In this species also variation in colour pattern is seen in that there are specimens with only a single prominent lateral blotch while specimens exhibit the specific three spots. In darker specimens about five broad vertical bands are seen with the spotted area being a little broader and only slightly prominent, of these, the central spot is the most prominent.

*Distribution* : India, Tamil Nadu, Kerala, S. Kenara, Sri Lanka.

#### 18. *Etroplus suratensis* (Bloch)

1785. *Chaetodon suratensis* Bloch, *Syst. Ichth.*, pl. 217. (Type locality : Surat).

*Material* : 1 ex., 48.0 mm SL, Kattumavadai, 1.2.1985.

*Distribution* : India, fresh and brackish waters of Orissa, Madras, Malabar, Travancore, Cochin, Ceylon,

### 19. *Oreochromis mossambica* (Peters)

1852. *Chromis mossambica* Peters, *Monatsb. Akad. Wiss.*, Berlin, p. 681. (Type locality: Zambesi river, S. Africa).

*Material* : 26 exs, 9.5-34.0 mm SL, behind Rajas College, 19.1.1985 ; 2 exs., 9.0-13.5 mm SL, Melvelamgudi-Ponnamaravathi road, 20.1.1985 ; 1 ex., 21.5 mm SL, Hill slopes of Narthamalai, 21.1.1985 ; 1 ex., 43.0 mm SL, Thirumayam-Arasampatti, 22.1.1985 ; 28 exs., 12.0-45.0 mm SL, Kattumavadai, 1.2.1985 ; and 17 exs., 9.0-33.0 mm SL, Thenimalai, 29.1.1985 and 2 exs., 160.0 and 17.00 mm SL, Vellaru, Melatmathapatti, 3.5.1986.

*Remarks* : In the young, several vertical bands are seen and the dorsal has a dark spot extending from the last spine to the fourth branched rays in the dorsal. In the adults, in some paler specimens the vertical bands are still discernible and no dorsal spots are present ; some specimens are very dark.

*Distribution* : East Africa to Natal. Widely introduced in India and Pakistan.

### 20. *Glossogobius giuris* (Hamilton)

1822. *Gobius giuris* Hamilton, *Fish Ganges*, p. 51, 336, pl. 33, fig. 15. (Type locality : Ponds and freshwaters of Gangetic provinces).

*Material* : 1 ex., 51.0 mm SL, Kattumavadai, 1.1.1985 ; 1 ex., 70.0 mm SL, Vellaru, Melatmathapatti, 3.5.1986 ; 3 exs., 44.0-55.0 mm SL, Aranthangi, 9.5.1986 and 4 exs., 35.0-44.0 mm SL, Malaieedu, 14.5.1986.

*Distribution* : Throughout India, Pakistan, Burma, Bangladesh, Sri Lanka. This species has a wide range of distribution from the East Coast of Africa to Japan, Australia and S. Pacific.

## DISCUSSION

Since few perennial rivers occur in Pudukkottai District, collections could be had only from partly dry beds ; stagnant pools, puddles and from artificial tanks. In all 20 species belonging to 13 genera, 7 families and 5 orders were recorded. Most of the species collected were small species which are suited for the dry conditions.

The larvivorous fish viz., *Aplocheilus blockii*, *Oryzias melanostigma* and *Gambusia affinis* were encountered in large numbers wherever they were present. *Rasbora daniconius* (Ham.) and *Lepidocephalus thermalis* were frequently encountered from the many collection sites.

The tanks in the District are stocked every year with fingerlings of *Catla*, *Rohu*, *Mrigal* and other carps collected from the Cauvery delta for fishery development and exploitation.

## ACKNOWLEDGEMENTS

We wish to thank our Director and Officer-in-Charge, Southern Regional Station for providing the necessary facilities and to Dr A. G. K. Menon, Scientist for critically going through the manuscript.

## SUMMARY

Results of studies on fishes of Pudukkottai District collected by Z. S. I. survey parties (mostly from temple tanks, puddles etc.) are presented. Some morphological observations on the species are also given.

## REFERENCES

Day, F. 1875-78. *The fishes of India, being a natural History of the fishes known to inhabit the seas and freshwaters of India, Burma and Ceylon.* Text and atlas in 4 parts, London, XX, p. 778, 195 pls.

Jayaram, K. C. 1981. *The freshwater fishes of India, Pakistan, Bangladesh, Burma and Sri Lanka.* A handbook. Ed. Z. S. I., Calcutta, 475 pp. 13 pls.