



DEPARTMENT OF FISHERIES, MADRAS

# A SURVEY OF THE FISHERIES OF THE CAUVERY RIVER

BY

P. I. CHACKO, M.A., F.Z.S.

*Assistant Director (Biology)*

G. K. KURIYAN, M.SC., F.Z.S.

*Assistant Director (Craft and Tackle)*

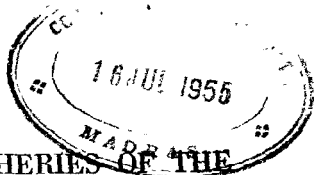
AND

S. THYAGARAJAN, B.A., F.Z.S.

*Assistant Director (Tanjore District)*

(Contribution from the Freshwater Fisheries Biological  
Station, Madras, No. 12, 1954)

PRINTED BY THE SUPERINTENDENT  
GOVERNMENT PRESS  
MADRAS  
1955



# A SURVEY OF THE FISHERIES OF THE CAUVERY RIVER

By P. I. CHACKO, G. K. KURIYAN AND S. THYAGARAJAN,  
*Department of Fisheries, Madras.*

## INTRODUCTION.

Though the river Cauvery yields about 66 per cent of the annual inland fishery revenue of Madras State, diligent search among published records has shown that a more or less comprehensive account of the piscine fauna of the river is lacking. A preliminary survey of the river undertaken by the authors in 1946-47 (Chacko and Kuriyan, 1948) was continued for a few years more with the help of the third author and the report of this survey is incorporated in this paper. The work is in no way exhaustive, but it is anticipated that the present communication would form a basis for further detailed investigations. Mention may, however, be made here of the studies on the migration, spawning and bionomics of the fishes of this river by Alikunhi (1948 a & b, 1949), Alikunhi and Rao (1951), Chacko (1945, 1947, 1951, 1952), Chacko and Kuriyan (1947), Chacko and Thyagarajan (1952 a), Ganapati and Alikunhi (1949), Ganapati, Alikunhi and Thivy (1948, 1949), Ganapati, Alikunhi and Zobairi (1948), Hora (1952, 1953) and by Job and Chacko (1948). Venkataraman and Sreenivasan (1953) have reported the bacterial flora of Mettur area of the river.

The Cauvery, the longest perennial river south of the Krishna, arises on the Brahmagiri Hills on the Western Ghats at an elevation of 4,400 feet and flows in a south-easterly direction and empties into the Bay of Bengal in district of Tanjore, Madras State. It follows a tortuous course on a rocky bed in Coorg, and, after the falls at Sivasamudram in the Mysore State, enters the limits of Madras. Its largest masonry dam in this State is at Mettur, forming a reservoir of nearly 60 square miles. The main tributaries Bhavani, Noyal and Amaravati join it below the Mettur Dam. In the Tanjore Delta the river divides into a northern branch, the Coleroon, and a southern branch, the Cauvery proper. Across the Coleroon are the Upper and lower anicuts and across the Cauvery proper is the Grand Anicut.

## HYDROBIOLOGY OF THE RIVER.

The physico-chemical conditions of the river at six centres obtained by the analysis of water samples collected in 1947 are given in Appendix I.

The list of organisms identified in the collections of plankton from Mettur reservoir is given in Appendix II. Though the data available restricts the scope of comparison it could be safely assumed that the plankton is rich in organisms in the river in general and the Mettur reservoir in particular.

The fauna, other than fishes, found in the river and its banks is enumerated in Appendix III. Many of these animals like the frogs, crocodiles, tortoises and others are enemies of fishes and their presence in the river would have an adverse effect on the fluviatile fisheries. The development and parental care in crab, *Paratelphusia jacquemonti*, from the Mettur area are described by Chacko and Thyagarajan (1952 b).

### LIST OF FISHES.

A consolidated list of 23 families and 80 species of fishes collected from the river during this survey is given in Appendix IV.

Amongst the carps, the species forming a special feature of the Cauvery fish fauna are *Barbus (Lissochilus) hexagonolepis*, *Barbus (Puntius) carnaticus*, *Barbus (Puntius) dubius*, *Barbus (Tor) putitora*, *Labeo kontius*, *Labeo ariza*, *Cirrhina cirrhosa*, *Osteochilus (Kantaka) brevidorsalis* and *Osteochilus (Osteochilichthys) nashi*, while the most important species of the Cat fishes are *Glyptothorax madraspatanus*, *Mystus aor*, *Mystus seenghala* and *Pangasius pangasius*. Though no accurate statistics of landings are available, examination of catches have shown that in the total bulk the latter group predominates.

In pursuance of its programme to replenish the fisheries of the Cauvery system, Madras Fisheries Department undertook to stock the river with fingerlings of *Catla-catla*. The deep perennial pool below Hogainakkal falls was selected for the purpose as the falls would check the ascent of the fish into the Mysore territory and as the fish, after it has established in the pool, would slowly migrate down. It was in 1923 the first consignment of 475 *Catla* fingerlings was released in the river. Another smaller consignment was introduced near Bhavani town (Hornell, 1924). The Hogainakkal pool or the Mettur reservoir (subsequent to the construction of the dam) was being stocked annually and recent investigations have shown that *Catla* has bred in the Cauvery and that it has well established itself in the new environment. The fish is reported to have migrated up the Hogainakkal falls since the formation of the reservoir at Mettur and the resultant rise in the water level (Chacko and Kuriyan, 1950).

Another experiment conducted for the development of the Cauvery fisheries was the introduction of the valuable exotic fish, *Oosphromenus gorami*. Hundred fingerlings were released in the Mettur reservoir on the 2nd April 1940. Some of these migrated

down the dam probably through the surplus channel. One specimen was recovered near the town Bhavani at a distance of over 30 miles from the dam (Chacko and Zobairi, 1950).

The reservoir was also stock with fingerlings of the Pearl spot, *Etroplus suratensis* and two consignments of the Upper Indian Carps, the Rohu (*Labeo rohita*) and the Mrigal (*Cirrhina mrigala*). Consignments of the Milk-fish, *Chanos chanos* collected from the centres at Pamban and acclimatised in freshwater are being released in the reservoir annually with a view to enrich the fishery wealth. Other species newly introduced into the reservoir are the Bekti (*Lates calcarifer*), the Mullet (*Mugil cephalus*), the Mirror Carp (*Cyprinus carpio*), the Dwarf Gourami (*Trichogaster fasciatus*) and the exotic mosquito-fish (*Gambusia affinis*). Adaptation to the new environment, physical and physiological changes and the rate of growth of these fishes are being studied and indications are already available for the breeding of the Upper Indian Carps.

### FISHING METHODS.

There are only few notes on the methods on capture of fish from Cauvery and its tributaries. Wilson (1921) described some of the more popular methods in the Bhavani; and Bhimachar (1942) in his report on the fisheries of Mysore State has given the important fishing tackles in the Cauvery in the Mysore territory. For a detailed study of the fishing methods of the Cauvery system in Madras, the river can be divided into three sections: Upper Cauvery (Mettur reservoir), Lower Cauvery and Cauvery Delta. The prevailing fishing methods with nets being many, its incorporation is beyond the scope of this communication and as such is being presented separately.

Many types of injurious fishing methods are in vogue in the Cauvery and the fisheries should have consequently depleted to a great extent. Poisoning and dynamiting are resorted to in deep pools. Erection of fish traps and fixed engines are still practised in various sections.

Construction of basket traps to capture fish is also adopted by fishermen. The main catches are the Eels, *Anguilla bengalensis* and *A. bicolor*, and the Spiny eels, *Macrognathus aculeatus* and *Mastacembalus pancalus*.

### NOTES ON BIONOMICS.

#### (a) *Cirrhina cirrhosa* Bloch.

This species is abundant both above and below the Mettur Dam and contributes to the main bulk of the carp fisheries of the Cauvery. It grows to over a foot and a half in length and about 3 lb. in weight. Its fondness to swim against the current is shown

by its congregations in the supply channel at Mettur, where it also exhibits its leaping habits. The White Carp is a plankton feeder, the phytoplankton being more abundant in its stomach contents. A few specimens showed fish scales in their stomachs, but their presence is considered as accidental. The following diet analysis is based on an examination of 101 specimens :—

*Myxophyceae* : *Anabaena* ;

*Chlorophyceae* : *Ankistrodesmus*, *Cosmarium*, *Pediastrum* and *Scenedesmus* ;

*Diatomaceae* : *Amphora*, *Fragilaria*, *Navicula*, *Nitzschia*, *Pinnularia*, *Rhopalodia* and *Surirella* ;

*Sarcondina* : *Arcella* and *Diffugia* ;

*Mastigophora* : *Euglena* and *Phacus* ;

*Rotifera* : *Brachionus* and *Salpina* ;

*Infusoria* : *Carchaesium* ;

*Cladocera* : *Ceriodaphnia* and *Diaphanosoma* ;

*Copepoda* : *Microcyclops*, *Eucyclops* and *Diaptomus* ; and

*Ostracoda* : *Cypridopsis*.

This species becomes sexually mature at a size of 8 to 10 inches. In the Mettur reservoir this fish has been observed to undertake a spawning migration to the pools below Hogainakkal falls. Its fry are common in the river stretch from July to November. They stand transport well, and could, therefore, be stocked with advantage in freshwater tanks and reservoirs. They thrive quickly in confined waters and a growth of 14 inches in the first year is not uncommon.

#### (5) *Barbus carnaticus* Jerdon.

The Carnatic Carp provides a fishery of minor importance in the Mettur reservoir. A bottom feeder, feeding mainly on bottom-spreading algae. The following is a full list of the organisms recorded from the stomach-contents of 50 specimens examined :—

*Myxophyceae* : *Coelosphaerium*, *Gloetrichia*, *Merismopedia*, *Lyngbia* and *Oscillatoria* ;

*Chlorophyceae* : *Ankistrodesmus*, *Cosmarium*, *Oedogonium*, *Pediastrum*, *Rhizoclonium*, *Scenedesmus*, *Spirogyra*, *Tribonema* and *Ulothrix* ;

*Diatomaceae* : *Amphora*, *Cyclotella*, *Cymbella*, *Diatoma*, *Eunotia*, *Fragilaria*, *Gomphonema*, *Melosira*, *Navicula*, *Nitzschia*, *Pinnularia*, *Surirella* and *Synedra* ;

*Mastigophora* : *Euglena* and *Trachelomons* ;

*Cladocera* : *Ceriodaphnia* and *Diaphanosoma* ;

*Copepoda* : *Eucyclops* and *Diaptomus* ;

*Ostracoda* : *Cypridopsis* :

*Decapoda* : *Palaemon* and *Caridina* ;

*Insecta* : *Plecoptera* larvae, *Mesovelina*, *Limnogonus*, *Plea* and *Micronecta* ;

*Archigoniatae* : *Ceratophyllum*, *Hydrilla*, *Potamogeton* and *Vallisneria*.

The fry of this species are available in the river during September to December. Its growth in lentic waters is poor, being only 10 inches in 12 months.

(c) *Barbus hexagonolep* is McClelland.

The Chocolate Mahseer is believed to be common in the Assam and Himalayan streams (Hora, 1940). The occurrence of this species in the Cauvery is therefore of significance from the point of view of geographical distribution. The biggest specimen collected during this survey had a length of 30 inches and a weight of 8 lb. The food of the fish consists of—

*Myxophyceae* : *Merismopedia* and *Oscillatoria* ;

*Chlorophyceae* : *Cosmarium*, *Oedogonium*, *Rhizoclonium*, *Scenedesmus*, *Spirogyra* and *Ulothrix* ;

*Diatomaceae* : *Amphora*, *Cymbella*, *Fragilaria*, *Gomphonema*, *Navicula*, *Nitzshia* and *Synedra* ;

*Mollusca* ; *Melanoides tuberculatus* and *Limnaea succinea* ;

*Insecta* : *Plecoptera* larvae, *Ephemeroptera*, larvae, *Laccotrepes*, *Mesovelina*, *Limnogonus*, *Ranatra*, *Plea* and *Micronecta* ;

*Archigoniatae* : *Ceratophyllum*, *Hydrilla* and *Potamogeton*.

The above analysis is based on an examination of 40 specimens.

Breeding season corresponds with the monsoon period. Fingerlings 1 to 2 inches long are common at Bhavani from October onwards. The growth of this species in lentic waters is slower than in the fluviatile environment. Fingerlings of size 1 inch stocked in departmental tanks in Coimbatore attained only 6 inches at the end of one year. The results have not been encouraging if not a failure. Hora and Ahmed (1946) have indicated the cultural possibilities of this species in the Himalayas.

The local fishermen of the Cauvery employ several artificial baits such as bananas, leaves of tolasi (*Ocimum sanctum*), rice paste, earthworm, oil-cake paste, grasshoppers and flowers of cucumber.

(d) *Barbus dubius*, Day.

This carp contributes to an important fishery in the Cauvery system. Its food, as shown by an analysis of the stomach contents of 50 specimens, is as follows:—

*Myxophyceae*: *Anabaena*, *Gloetrichia*, *Merismopedia*, *Oscillatoria* and *Spirulina* ;

*Chlorophyceae*: *Ankistrodesmus*, *Chara*, *Closterium*, *Cosmarium*, *Eudorina*, *Mougeotia*, *Oedogonium*, *Scenedesmus*, *Spirogyra* and *Tribonema* ;

*Diatomaceae*: *Amphora*, *Cocconeis*, *Cymbella*, *Diatoma*, *Eunotia*, *Eragilaria*, *Gomphonema*, *Melosira*, *Meriodon*, *Navicula*, *Nitzshia*, *Pinnularia*, *Pleurosigma*, *Stephanodiscus*, *Surirella* and *Synedra* ;

*Rotifera*: *Brachionus*, *Diurella*, *Hydatnia* and *Pedalion* ;

*Cladocera*: *Bosmina*, *Ceriodaphnia*, *Daphnia* and *Disphanosoma* ;

*Copepods*: *Eucyclops* and *Diaptomus* ;

*Ostracods*: *Cypridopsis* ;

*Insecta*: *Chironomus* larvae, *Laccotrepes*, *Mesovelgia*, *Limnogonus* and *Plea* ;

*Mollusca*: *Limnaea*.

The presence of sand and gastropodan shells in the stomach contents of this fish is presumably due to the bottom feeding habits.

The pores on the snout are more numerous in the male than in the female. The scales of the male display bluish reflections whereas those in the female are predominantly silvery with a pale red tinge. The fish migrates upstream and spawns in the higher reaches of the river. The poisonous effects of its roe is well known to the inhabitants of Mettur.

(e) *Labeo kontius* (Jerdon).

This carp constitutes one of the chief sources of the river fisheries. It grows to a moderate size of a foot and a half. Like other species of the genus, *Labeo kontius*, is a predominantly vegetable feeder, but unlike *Labeo fimbriatus* and *L. calbasu*, it does not confine itself to the bottom for procuring its food. The following organisms constitute its diet (number of specimens examined—50):—

*Myxophyceae*: *Merismopedia*, *Microcystis*, *Oscillatoria* and *Spirulina* ;

*Chlorophyceae*: *Ankistrodesmus*, *Cosmarium*, *Scenedesmus*, *Selenastrum*, *Spirogyra* and *Staurastrum* ;

*Diatomaceæ* : *Cyclotella*, *Cymbella*, *Fragilaria*, *Navicula*,  
*Nitzschia*, *Pinnularia*, *Synedra* and *Tabellaria* ;

*Mastigophora* : *Euglena* and *Trachelomonas* ;

*Rotifera* : *Brachionus*, *Pedalion* and *Salpina* ;

*Copepoda* : *Cyclops* and *Diaptomus* ;

*Insecta* : *Corixa*, *Ranatra*, *Plea* and *Micronecta*.

Natural seed sources of the species along the Cauvery are now being exploited for stocking the provincial waters. They grow well in ponds, and attain a size of 10 to 12 inches at the end of the first year.

(f) *Wallagonia attu* (Bloch).

The freshwater shark forms one of the important items of fishery in the river. Individuals 6 feet in size have been captured from the Mettur reservoir. It has been found to take readily a hook baited with dead fish and at times rises to a fly, spoon or spinning bait. Being a highly predatory fish, the main constituents of its diet as revealed by its stomach contents were fishes and fish remains. Specimens of *Mystus seenghala* and *Cirrhitina cirrhosa* were often noted in its stomach. Other species of fishes recorded were *Labeo fimbriatus*, *Catla catla*, *Amblypharyngodon mola*, *Esomus danrica*, *Rasbora daniconius*, *Barilius bendelisis*, *Danio aequipinnatus*, *Chela untrahi*, *Oryzias melastigma* and *Aplocheilichthys blochii*.

(g) *Pangasius pangasius* (Ham.).

This cat fish predominates in the catches of the Mettur reservoir in the months of June and July when they are in roe. It is highly esteemed as food by the local people. Hora (1938) has regarded this as a foul feeder. But our observations show that there is no such pronounced feeding habit.

Gastropods (*Melanoides tuberculatus* and *Indoplanorbis exustus*) formed the largest single item of food consumed by the species. Insects (*Laccotrephes*, *Mesovelia*, *Limnogonus*, *Leithocerus*, *Plea*, *Ranatra* and *Micronecta*) and young fishes (*Labeo fimbriatus*, *Cirrhitina cirrhosa*, *C. reba* and *Barbus dorsalis*) also formed a considerable proportion of the gut-contents. Fish scales, decaying leaves and twigs were often met with.

(h) *Silonia silondia* (Ham.).

This cat fish, though considered by Hora (1938) to be restricted to the Indo-Gangetic basin of northern India, occurs in fair numbers in the Cauvery. During the months like April and July it constitutes the bulk of the catch of the Mettur reservoir. It is a predatory



fish, and the following species of fishes have been recorded from the stomach of 30 specimens examined by us. *Spratelloides malabaricus*, *Labeo ariza*, *Barbus dubius*, *B. dorsalis*, *Cirrhina reba*, *Barilius bendelisis* and *Esomus danricus*. Crustacea (*Palaemon* and *Caridina*) gastropods (*Melanoides* and *Indoplanorbis*) and insects (*Laccotrephes ruber*, *Lethocerus indicus*, *Plea frontalis*, and *Micronecta*) also enter its diet.

(i) *Notopterus notopterus* (Pallas).

The feather-back occurs in large numbers in the Cauvery and yields a fishery of some importance. It is characteristic of the fish to come up to the surface and make a noisy splash. It grows to a size of 16 to 18 inches. It is carnivorous in habit. The following organisms is the record of the gut contents of over 100 specimens examined by us :—

*Myxophyceae* : *Merismopedia* and *Oscillatoria* ;

*Chlorophyceae* : *Oedogonium*, *Spirogyra* and *Ulothrix* ;

*Mollusca* : *Melanoides*, *Indoplanorbis* and *Limnaea* ;

*Insecta* : *Pelecoptera larvae*, *Ephemeroptera larvae*, *Laccotrephes*, *Mesovelia*, *Limnogonus*, *Ranatra*, *Plea* and *Micronecta* ;

*Crustacea* : *Palaemon* and *Caridina* ;

*Pisces* : *Barbus stigma*, *B. ticto*, *Esomus danrica* and *Amblypharyngodon mola*.

(j) *Ophicephalus marulius* (Ham.).

Though the murrel is rather rare, its fishery is important because of the enormous size to which it grows and its much esteemed flesh. Its predatory habit is well known and to a certain extent is cannibalistic. Like the other members of the family *Ophicephalidae*, this murrel also builds nests and its nest building habits with notes on the culture of young ones in irrigation wells is described elsewhere (Chacko and Kuriyan, 1947).

### THE BREEDING HABITS.

The fishermen living alongside the Cauvery believe that the fishes of this river breed in summer, but their eggs lie dormant during the hot and dry season. When the river receives floods, the eggs undergo development. This conception is perhaps based on beliefs in legends of old. That the majority of the fishes in this river breed from July to November when the river is in full floods, is beyond doubt, though the factor or factors influencing spawning remains to be elucidated and demonstrated. During this survey the authors

have come across various spawning grounds of the major fishes in the low-lying areas adjoining the river banks that get inundated during the floods. When water recedes, large numbers of fry and hatchlings were collected from these areas. The seasonal tributaries, locally known as 'Kombus,' were also found to be favourable spawning grounds. It could hence be inferred that though fish require flood water for spawning it generally avoid torrential flow, a view which corroborates that of Ahmed (1945). Much has been said about the exact factors which influence spawning of fishes in Indian rivers. Majumdar (1940) and Khan (1942) attribute it to physical factors like thunder storm, cloudy weather, floods, rapid flow of water and cool temperature. Majumdar (1940) points out a probable lunar periodicity in the spawning of fishes. He further suggests (1945) that spawning is affected by an increase in the oxygen content of the water. Whether the factors are physical, chemical or physiological (like availability of food) have to be elucidated by further investigations. The need for these investigations are keenly felt than ever before as the fluvial fisheries form the basic stock for inland fishery development in South India. Considerable progress in this direction has been made by the studies of Alikunhi (1948 b), Ganapati and Alikunhi (1949 a), Ganapati, Alikunhi and Thivy (1949), and Job and Chacko (1948).

### FRY COLLECTION.

The season for fry collection commences from the middle of August and extends to the end of January. The collections were made during this survey mainly in the mornings by the technique described by Jagannadhan (1947). The analyses of fry collection have shown the following composition : *Barbus spp.* : 40 per cent ; *Cirrhina spp.* : 20 per cent ; *Ophicephalus spp.* : ten per cent ; *Labeo spp.* 20 per cent ; *Catla* 5 per cent ; and others : 5 per cent. The effects of transport on fish larvae and fry were also studied. The fry of *Barbus hexagonolepis*, *B. carnaticus*, *Cirrhina cirrhosa* and *Ophicephalus marulius* stand the strain admirably and have been utilized for stocking of lentic waters. The fry of *Barbus dubius*, though available in plenty during August and September, have been found to be too delicate for inland stocking operations. A consignment of 500 fry of this species was transported from Bhavani to Madras and released in the Government House Farm. The casualty during transport was 12 per cent but 75 per cent of the fry died on the second day after their release into the nursery pond. Post-mortem examination showed no signs of starvation ; so that this heavy mortality may be assigned either to the strain of transport, or to the inability of this river fish to acclimatize to the lentic waters of the pond. The methods of proper transport and acclimatization to pond conditions are being experimented since this fish is likely to form a valuable addition to pond fisheries of the Madras State.

## CONSERVANCY IN FISHING.

Dams and anicuts across the river form effective barriers to free movement of most fish and facilitate the indiscriminate capture of both adult and young as these congregate below them in their attempt to go up stream. In order to effectively protect the river fishery, fishing is prohibited within a mile below the major weirs. The total prohibition of fishing below the dam at Mettur has had beneficial results on the fishery of the river. River sections above and below to a distance of four miles from the Hogainakkal falls are also conserved from fishing. Fishing in the Mettur reservoir is permitted under a licence issued by the Fisheries Department.

## SUMMARY.

The Cauvery river is the longest perennial river south of Krishna. The fishery of the river is important as it yields 66 per cent of the inland fishery revenue of Madras State. During the survey 80 species have been listed, including six exotic species. Notes on the bionomics of ten species have been given. The breeding habits of fishes, observations on collection of fry and their transport and the more important types of conservancy in fishing have been described.

## REFERENCES.

1. Ahmed, Nazir. 1945. Factors influencing the spawning of Indian Carps. *Proc. Nat. Inst. Sci. India*, 11, 329.
2. Alikunhi, K. H. 1948 a. Food, feeding habits and growth of fingerlings of the Freshwater shark *Wallagonia attu* (Bl. Schn.) *Proc. Indian Sci. Congr.* 3, 206.
3. Alikunhi, K. H. 1948 b. On the bionomics, feeding habits and breeding of Karambai, *Barbus hexagonolepis* MacClelland in the river Cauvery, Madras. *Ibid.*, 3, 207.
4. Alikunhi, K. H. 1949. Observations on the bionomics and post-larval development of the Carnatic Carp, *Barbus carnaticus* (Jerdon). *ibid.*, 3, 160.
5. Alikunhi, K. H. and Rao, S. N., 1951. On the bionomics, development and growth of a Cauvery Carp, *Labeo kontius* Jerdon. *Rec. Indian Mus.*, 49, 157-174.
6. Bhimachar, B. S., 1942. Report on a survey of the Fisheries of Mysore State. *Bull. Dep. Agric. Mysore* 1, 1-39.
7. Chacko, P. I., 1945. On the Bionomics of the baril, *Barilus bendelisis* (Hamilton). *Journ. Bombay Nat. Hist. Soc.* 45, 438-439.
8. Chacko, P. I. 1947. The migratory fishes of the inland waters of Madras. *Curr. Sci.*, 16, 289-290.

9. Chacko, P. I., 1951. Bionomics of the carp, *Labeo ariza* (Hamilton). *Proc. 38th Indian Sci. Congr.*, 3, 225.
10. Chacko, P. I., 1952. Report on a survey of the dams and migratory fishes of Madras. *Contr. Freshwater Fish. Biol. Stat. Madras*, 4, 1-18.
11. Chacko, P. I. and Kuriyan, G. K., 1947. Culture of murrel fish (*Ophiocephalus marulius* Ham.) in irrigation wells. *Journ. Bom. Nat. Hist. Soc.* 47, 392-393.
12. Chacko, P. I. and Kuriyan, G. K., 1948. On a fish survey of the Cauvery, Madras. *Proc. 35th Indian Sci. Congr.*, 3, 205.
13. Chacko, P. I. and Kuriyan, G. K., 1950. The bionomics of the carp (*Catla-catla*) in South Indian waters. *Proc. Zool. Soc. London.* 120, 39-42.
14. Chacko, P. I. and Thyagarajan, S. 1952 a. The food of the cat fish *Callichrous macrophthalmus* (Blyth) in the Mettur area. *Ind-Com Journ.* 7, 76-77.
15. Chacko, P. I. and Thyagarajan, S. 1952 b. On the development and parental care in the Potamonid crab *Paratelphusia* (*Barytelphusa*) *Jacquemonti* (Rathbun). *Journ. Bom. Nat. Hist. Soc.*, 51, 289-291.
16. Chacko, P. I. and Zobairi, A. R. K., 1950. Breeding of the Gourami (*Osphronemus goramy* Lacepede) in Indian rivers, *ibid.*, 49, 562-563.
17. Day, F., 1873. Report on the freshwater fish and fisheries in India and Burma, Calcutta.
18. Day, F., 1883. The fishes of India, London.
19. Day, F., 1889. The Fauna of British India—Fishes, Volumes I and II, London.
20. Ganapati, S. V. and Alikunhi, H. K., 1949 a. On the spawning of carps in the South Indian rivers. *Proc. Indian Sci. Congr.* 3, 160.
21. Ganapati, S. V. and Alikunhi, H. K. 1949 b. Hydrobiological notes on the river Cauvery at selected fishing centres in the Madras Presidency. *ibid.*, 3, 162.
22. Ganapati, S. V., Alikunhi, K. H. and Thivy, F. 1948. Hydrobiological investigation of the Stanley reservoir at Mettur, Madras, *ibid.*, 3, 199.
23. Ganapati, S. V., Alikunhi, K. H., and Thivy, F. 1949. On an interesting case of carp spawning in the River Cauvery. *ibid.*, 3, 208.
24. Ganapati, S. V., Alikunhi, K. H. and Zobairi, A. R. K., 1948. Notes on the hydrobiology of carp spawning in the Cauvery. *ibid.*, 3, 182.
25. Hora, S. L., 1938. The games fishes of India, IV the siluroid cat-fish. *Journ. Bom. Nat. Hist. Soc.* 40, 137-147.

26. Hora, S. L., 1939. The games fishes of India, V the purgas cat-fish. *ibid.*, 40, 355-366.

27. Hora, S. L., 1940. The Mahseers or the large-scale barbels of India, the bokar of the Assamese and Kathi of the Nepalese. *ibid.*, 42, 78-88.

28. Hora, S. L., 1952. Control of molluscan fauna through the culture of *Pungasius pangasius* (Hamilton) *Curr. Sci.* 21, 164-165.

29. Hora, S. L., 1953. Molluse control through fish farming. *Helminthological Society of India. Thapar commemoration volume*, pp. 119-132.

30. Hora, S. L. and Ahmed, N., 1946. Culture of Katli, *Barbus hexagonolepis*, McClelland, in the Darjeeling Himalayas. *Bengal Fish. Dep. Pamphlet*, 2, 1-8.

31. Hornell, J., 1924. Administration Report of Madras Fisheries Department for the year 1922-23. *Madras Fish. Bull.* 18, 1-58.

32. Job, T. J. and Chacko, P. I., 1948. On the breeding grounds of Catla and other major carps in South Indian waters. *Proc. 35th Indian Sci. Congr.* 3, 188.

33. Jagannadham, N., 1947. A note on the collection, conditioning and transport of fingerlings of *Catla* in the Madras Presidency. *Journ. Bom. Nat. Hist. Soc.* 47, 315-319.

34. Khan, Hamid. 1942. Spawning of carps and their spawning grounds in the Punjab. *ibid.*, 33, 416-427.

35. Majumdar, C. H., 1940. Spawning grounds and hatcheries in the district of Chittagong, Bengal. *Sci and Cul.*, 5, 735-739.

36. Majumdar, S. R., 1945. Factors influencing the spawning of Indian Carps. *Proc. Nat. Inst. Sci. India* 11, 329.

37. Venkataraman, R. and Sreenivasan, A. 1953. The bacteriology of freshwater fish. *Indian Journ. Medic Res.*, 41, 385-392.

38. Wilson, H. C., 1921. Report on the methods of capture and supply of fish in the rivers of Nilgiri District, Madras. *Madras Fish. Bull.* 12, 135-156.

## APPENDIX I—Showing physico-chemical conditions of Cauvery river at six places.

## Collection spots.

Conditions.	Collection spots.					
	Lower Anicut. (2)	Grand Anicut. (3)	Upper Anicut. (4)	Bharani town. (5)	Mettur below dam. (6)	Mettu reservoir. (7)
Date .. .. .	15th June 1947.	16th June 1947.	17th June 1947.	23rd June 1947.	14th November 1947.	23rd June 1947.
Temperature, °C. .. .. .	29.5	28.6	31.3	28.8	26.6	27.0
Turbidity in cm. .. .. .	21.8	15.4	30.0	30.0	14.0	30.0
Colour .. .. .	Pale green.	Brownish.	Clear.	Bluish.	Brownish.	Brownish.
Free Co <sub>2</sub> * .. .. .	Nil.	Nil.	0.83	Nil.	0.808	0.326
Co <sub>2</sub> * .. .. .	2.400	1.20	Nil.	0.30	Nil.	Nil.
HCO <sub>3</sub> * .. .. .	17.385	14.845	17.080	17.690	11.590	21.045
Dissolved O <sub>2</sub> (cc/l) .. .. .	5.444	5.026	5.026	5.016	4.718	2.513
Percentage saturation .. .. .	96.9	88.2	Nil.	88.3	80.2	49.03
pH .. .. .	8.5	8.6	7.3	8.5	7.6	7.5
Chlorides* .. .. .	2.3	1.3	1.7	1.70	1.2	1.70
Phosphates* .. .. .	Nil.	Nil.	Nil.	Present.	0.003	0.005
Nitrates * .. .. .	Nil.	Nil.	Nil.	Do.	Present.	Nil.
Silicates * .. .. .	1.68	1.54	0.95	Do.	1.39	3.80

\* Expressed in parts per 100,000.

APPENDIX II.—*Showing systematic list of Planktonic organisms collected from the Mettur reservoir in 1947-48.*

(a) *Myxophyceae*—

*Anabaena*,  
*Aphanocapsa*,  
*Aphanizomenon*,  
*Chroococcus*,  
*Coelosphaerium*,  
*Gleocapsa*,  
*Glootrichia*,  
*Lynobia*,  
*Merismopedia*,  
*Microcystis*,  
*Oscillatoria*,  
*Rivularia*, and  
*Spirulina*.

(b) *Chlorophyceae*—

*Ankistrodesmus*,  
*Chlosterium*,  
*Coelastrum*,  
*Cosmarium*,  
*Eudorina*,  
*Mougeotia*,  
*Oedogonium*,  
*Pandorina*,  
*Pediastrum*,  
*Scenedesmus*,  
*Selenastrum*,  
*Spirogyra*,  
*Staurastrum*,  
*Stigeoclonium*,  
*Tribonema*, and  
*Ulothrix*.

(c) *Diatomaceae*—

*Achnanthes*,  
*Amphora*,  
*Cocconeis*,  
*Cyclotella*,  
*Cymbella*,  
*Diatoma*,

(c) *Diatomaceae*—cont.

*Eunotia*,  
*Eragilaria*,  
*Gomphonema*,  
*Melosira*,  
*Meridion*,  
*Navicula*,  
*Nitzschia*,  
*Pinnularia*,  
*Pleurosigma*,  
*Rhopalodia*,  
*Stauroneis*,  
*Stephanodiscus*,  
*Suriella*,  
*Synedra*, and  
*Tabellaria*

(d) *Sarcodina*—

*Arcella*,  
*Cryptodiffugia*, and  
*Diffugia*.

(e) *Mastigophora*—

*Chilomonas*,  
*Chlamydomonas*,  
*Euglena*,  
*Glenodinium*,  
*Peridinium*,  
*Phacus*,  
*Trachelomonas*, and  
*Volvox*.

(f) *Infusorida*—

*Carchesium*,  
*Paramoecium*,  
*Stentor*,  
*Vorticella* and  
*Zoothamnium*.

(g) *Rotifera*—

*Brachionus*,  
*Diurella*,  
*Furcularia*,  
*Hydatina*,  
*Pedalion*,  
*Rotifer*,  
*Salpina*, and  
*Synchaeta*.

(h) *Cladocera*—

*Alonella*,  
*Bosmina*,  
*Ceriodaphnia*,  
*Daphnia*,  
*Diaphanosoma*,  
*Lynceus* and  
*Sida*.

(i) *Copepoda*—

*Eucyclops*,  
*Microcyclops*,

(i) *Copepoda*—cont.

*Diaptomus*, and  
*Pseudodiaptomus*.

(j) *Ostracoda*—

*Cypridopsis*.

(k) *Coelhelminthes*—

*Aelosoma*, and  
*Chaetogaster*.

(l) *Insecta*—

*Chironomus*;  
*Corixa*,  
*Ephemeroptera larvae*,  
*Hydrometra*,  
*Limnogonus*,  
*Mesovelia*,  
*Micronecta*,  
*Odonata larvae*, and  
*Plea*.



## APPENDIX III.—Showing fauna, other than fishes, in river Cauvery and its branches.

Order.	Scientific name.	Local name.
<i>Crustacea</i>	.. <i>Palaemon carnicus</i> , Fabr.	.. Rattu.
	<i>Palaemon malcolmsonii</i> M. Edw.	Rattu.
	<i>Caridina nilotica</i> de Mar	.. Chinnarattu.
	<i>Telphusia leschnaulti</i> (M. Edwards).	Nandu.
	<i>Paratelphusia jacquemontii</i> Rathnun.	Palnandu.
<i>Mollusca</i>	.. <i>Lamellidens marginalis</i> (L)	.. Kuyalnathai.
	<i>Melanoides tuberculatus</i> (Muller).	Nathai.
	<i>Indoplanorbis exustus</i> (Desh)	.. Nathai.
	<i>Pila globosa</i> (Swainson)	.. Nathai.
	<i>Ariophanta somirugata</i> , Beck	.. Nathai.
	<i>Viviparus dissimilis</i> (Muller)	.. Nathai.
<i>Amphibia</i>	.. <i>Rana hexadactyla</i> Less	.. Tavalai.
	<i>Microhyla rubra</i> (Jerd.)	.. Chinnatavalai.
	<i>Bufo melanosticus</i> , Schneider	.. Tavalai.
<i>Reptilia</i>	.. <i>Natrix piscator</i> (Schneider)	.. Neerpambu.
	<i>Crocodilus palustris</i> , Less.	.. Mudalai.
	<i>Geoemyda trijuga</i> (Schweigger).	Palamai.
	<i>Testudo elegans</i> , Schoepff	.. Amai.
	<i>Lissemys punctatata</i> (Bonnetterre).	Peeamai.
	<i>Trionyx leithi</i> , Gray	.. Peeamai.
<i>Aves</i>	.. <i>Ceryle rudis leucomelanura</i> Reich.	Meenkothi.
	<i>Halcyon smyrnensis fusca</i> Bodd.	Meenkothi.
	<i>Strix indranee indranee</i> Sykes.	Kottan.
	<i>Haliastur indus indus</i> (Bodd.)	.. Karudan.
	<i>Milvus migrans govinda</i> Sykes.	Parunthu.
	<i>Amaurornis phoenicurus chinensis</i> (Bodd.).	Neerkozhi.
	<i>Pelicanus philippensis</i> Gmel	.. Neervathu.
	<i>Phalacrocorax niger</i> (Veiell)	.. Neervathu.
<i>Ardeola grayii</i> (Sykes)	.. Karuthumadayan.	
<i>Mammalia</i>	.. <i>Lutra indica</i> , Gray	.. Neernai.

## APPENDIX IV.—Showing list of fishes recorded from the Cauvery river.

Scientific name.	Local name (Tamil).
Family : <i>Megalopidae</i> .—	
<i>Megalops cyprinoides</i> (Broussonet) .. ..	Kadal velichai.
Family : <i>Chanidae</i> .—	
<i>Chanos chanos</i> (Forsk.) .. ..	Palkendai.
Family : <i>Dussumieriidae</i> .—	
<i>Spratelloides malabaricus</i> (Day) .. ..	Asaraikunju ; Avaraikunju.
Family : <i>Notopteridae</i> .—	
<i>Notopterus notopterus</i> (Pallas) .. ..	Paravalai.
Family : <i>Mastacembelidae</i> .—	
<i>Macrognathus aculeatus</i> (Bloch) .. ..	Sethuara].
<i>Mastacembelus armatus</i> (Lacepede) .. ..	Kalaral.
<i>Mastacembelus pancalus</i> (Hamilton) .. ..	Paejaral.
Family : <i>Anguilloidei</i> .—	
<i>Anguilla bengalensis</i> (Gray) .. ..	Velango.
Family : <i>Cyprinidae</i> .—	
<i>Labeo ariza</i> (Ham.) .. ..	Koolkendai ; Pillarijan.
<i>Labeo calbasu</i> (Ham.) .. ..	Kakkameen.
<i>Labeo fimbriatus</i> (Bloch) .. ..	Selkendai.
<i>Labeo</i> sp... ..	Paral.
<i>Labeo kontius</i> (Jerdon) .. ..	Karumushikendai ; Pannivakendai.
<i>Barbus (Puntius) dubius</i> (Day) .. ..	Kozhimeen ; Kozharanjakendai.
<i>Barbus (Puntius) sarana</i> (Ham.) .. ..	Panjalai ; Sanikendai.
<i>Barbus (Puntius) carnaticus</i> (Jerd.) .. ..	Pavoori.
<i>Barbus (Puntius) dorsalis</i> (Jerdon) .. ..	Koorankendai.
<i>Barbus (Puntius) filamentosus</i> (C. & V.) .. ..	Machhkendai ; Sevvalikendai.
<i>Barbus (Puntius) stigma</i> (C. & V.) .. ..	Kullakendai.
<i>Barbus (Puntius) ticto</i> (Ham.) .. ..	Pullikendai.
<i>Barbus (Puntius) micropogon</i> (C. & V.) .. ..	Pottikendai.
<i>Barbus (Puntius) nigrofaciatus</i> , Gunther .. ..	Varimeen.
<i>Barbus (Puntius) melanostigma</i> , Day .. ..	Kullakendai.
<i>Barbus (Tor) putitora</i> (Ham.) .. ..	Bomeen.
<i>Barbus (Lissochilus) hexagonolepis</i> McClelland. .. ..	Karambai ; Kodaikarambai.
<i>Cirrhina cirrhosa</i> (Bloch) .. ..	Vellaikendai.
<i>Cirrhina reba</i> (Ham.) .. ..	Aranjan ; Thattaran- jan.
<i>Garra mullya</i> (Sykes) .. ..	Kalkavu.

Scientific name.	Local name (Tamil);
<b>Family: Cyprinidae—cont.</b>	
<i>Garra jerdoni</i> (Day) .. .. .	Kalkavu.
<i>Garra stenorhynchus</i> (Jerdon) .. .. .	Kalkavu.
<i>Barilius bendelisis</i> (Ham.) .. .. .	Vannathikunju.
<i>Barilius gatensis</i> (Cuv. & Val.) .. .. .	Vannathikunju.
<i>Chela argentea</i> (Day) .. .. .	Pilvelichai.
<i>Chela baicala</i> (Ham.) .. .. .	Velichai.
<i>Chela clupeioides</i> (Ham.) .. .. .	Velichai.
<i>Chela untrahi</i> (Day) .. .. .	Velichai.
<i>Danio aequipinnatus</i> (McClell) .. .. .	Arrati.
<i>Brachydanio rerio</i> (Ham.) .. .. .	Arrati.
<i>Laubuca atpar</i> (Ham.) .. .. .	Meechati.
<i>Esomus danricus</i> (Ham.) .. .. .	Ovarikendai.
<i>Rohtee cotio</i> (Ham.) .. .. .	Pattakunju.
<i>Catla catla</i> (Ham.) .. .. .	Toppameen ; Duraiméen.
<i>Amblypharyngodon mola</i> (Ham.) .. .. .	Serrukai.
<i>Rasbora daniconius</i> (Ham.) .. .. .	Ovari.
<i>Osteochilus (Kantaka) brevidorsalis</i> (Day) .. .. .	Elamorikendai.
<i>Osteochilus (Osteochilichthys) nashi</i> (Day) .. .. .	Elamorikendai.
<b>Family: Cobitidae—</b>	
<i>Nemacheilus evezardi</i> (Day) .. .. .	Keechhati.
<i>Nemacheilus monilis</i> (Hora) .. .. .	Keelchati.
<i>Lepidocephalus thermalis</i> (Cuv. & Val.) .. .. .	Asarai.
<b>Family: Homalopteridae.—</b>	
<i>Homaloptera maculata</i> (Gray & Hardw.) .. .. .	Kaloothi.
<b>Family: Siluridae.—</b>	
<i>Callichrous bimaculatus</i> (Bloch) .. .. .	Chottavalai.
<i>Wallagonia attu</i> (Bloch) .. .. .	Valai.
<b>Family: Bagridae.—</b>	
<i>Mystus aor</i> (Ham.) .. .. .	Koongkeluru ; Kurunthalaikeluthi.
<i>Mystus cavasius</i> (Ham.) .. .. .	Naikeluthi ; Sonankeluthi.
<i>Mystus punctatus</i> (Jerdon) .. .. .	Mylaiikeluthi.
<i>Mystus seenghala</i> (Sykes) .. .. .	Nedunkeluthi ; Nedunthalaikeluthi.
<i>Mystus vittatus</i> (Boleh) .. .. .	Anakeluthi.
<b>Family: Sisoridae.—</b>	
<i>Glyptothorax madraspatanus</i> (Day) .. .. .	Kalkeluthi.
<i>Glyptothorax lonah</i> (Sykes) .. .. .	Kalkeluthi.

Scientific name.	Local name (Tamil).
<b>Family : Schilbeidae.—</b>	
<i>Silonia silondia</i> (Ham.) .. .. .	Ponathi.
<i>Silonopangasius childreni</i> (Sykes) .. .. .	Walakekeluthi.
<b>Family : Clariidae.—</b>	
<i>Clarias batrachus</i> (L.) .. .. .	Theli.
<b>Family : Saccobranchidae.—</b>	
<i>Heteropneustes fossilis</i> (Bloch.) .. .. .	Theli.
<b>Family : Pangasiidae.—</b>	
<i>Pangasius pangasius</i> (Ham.) .. .. .	Iykeluthi.
<b>Family : Cyprinodontidae.—</b>	
<i>Aplocheilichthys blochii</i> (Arnold) .. .. .	Poochatti.
<i>Oryzias melanostrigatus</i> (McClell) .. .. .	Mundaikanni.
<b>Family : Belontiidae.—</b>	
<i>Xenentodon cancila</i> (Ham.) .. .. .	Kokkumeen ; Mookkumeen.
<b>Family : Ophicephalidae.—</b>	
<i>Ophicephalus marulius</i> (Ham.) .. .. .	Avuri.
<i>Ophicephalus striatus</i> (Bloch) .. .. .	Veral.
<i>Ophicephalus gachua</i> (Ham.) .. .. .	Koravai.
<i>Ophicephalus punctatus</i> (Bloch) .. .. .	Koravai.
<b>Family : Polycanthidae.—</b>	
<i>Macropodus cupanus</i> (C. & V.) .. .. .	Karunkendai.
<b>Family : Osphronemidae.—</b>	
<i>Osphronemus gorami</i> (Lacep) .. .. .	Gourami.
<b>Family : Anabantidae.—</b>	
<i>Anabas scandens</i> (Dald.) .. .. .	Panayeri kendai.
<b>Family : Ambassidae.—</b>	
<i>Ambassis nama</i> (Ham.) .. .. .	Kakkachimeen.
<i>Ambassis ranga</i> (Ham.) .. .. .	Kakkachimeen.
<b>Family : Cichlidae.—</b>	
<i>Etilapia surantensis</i> (Bloch) .. .. .	Sethakendai.
<i>Etilapia maculatus</i> (Bloch) .. .. .	Sellakasu.
<b>Family : Gobiidae.—</b>	
<i>Glossogobius giuris</i> (Ham.) .. .. .	Karumuluvai.
<i>Gobius striatus</i> , Day .. .. .	Mannuluvai.