[*From the* JOURNAL OF THE BOMBAY NATURAL HIST. SOC., August 1958.]

Notes on a Visit to certain Islands of the Laccadive Archipelago, with special reference to Fisheries[1]

BY

V. BALAN

Central Marine Fisheries Research Sub-station, Kozhikode-5

(*With a map*)

INTRODUCTION

A visit to the Laccadives was undertaken by the author in March 1954 at the suggestion of Dr. S. Jones to get a first-hand knowledge of the fishery conditions there and to ascertain if pelagic fishes of economic importance found along the Malabar Coast occur also in this area in appreciable numbers during the different seasons. It was felt that this information might be of value in any expanded programme of fisheries investigations taken up for the west coast of India. I was able to spend about a month in the Laccadives visiting the islands Agathi, Kavarathi, Ameni, and Kadamat.

The information we have on the Laccadive fisheries is based on the observations of Alcock (1902), Hornell (1908), Ayyangar (1922), and on the notes given by Ellis (1924), Burton (1940), and Mathew and Ramachandran (1956).

The Laccadives consist of a group of coral islands lying between Long. 71° 40′ and 74°E., and Lat. 8° and 12°N. in the Arabian Sea (see map). There are ten inhabited islands in all, of which the southern five, namely Minicoy, Agathi, Kavarathi, Kalpeni, and Androth are known as the Malabar Islands, and the northern five, namely Ameni, Kadamat, Chetlat, Kiltan, and Bitra are called the Amindivi or S. Kanara Islands. The inhabitants of all the islands are Muslims. Except for the people of Minicoy who speak Mahl dialect, the others are settlers from Malabar and speak Malayalam. Besides these islands, there are a few uninhabited ones which are frequented by the islanders for fishing operations.

JOURNEY TO THE ISLANDS AND BACK

There is no regular transport facility between the islands and the mainland of India. The journey was, therefore, undertaken in a country craft or *odam* named 'Hydrose'. On the morning of 21st March our

[1]Published with the kind permission of the Chief Research Officer, Central Marine Fisheries Research Station, Mandapam Camp.

vessel set sail to Agathi Island, about 223 miles from Mangalore. The voyage was uneventful except that the major sail rope snapped against a heavy wind during the midnight of 23rd-24th and the *odam* went out of control and rolled violently in the choppy sea for about an hour till the defect was rectified. On the evening of 24th March we landed in Agathi.

During my five days' stay at Agathi, I collected some fish specimens and information relating to methods of fishing, commercially important fishes, and the fishing industry in general. We left in a sailing vessel on the night of 29th March for Kavarathi, about 33 miles from Agathi, which we reached the next day afternoon. After the completion of my work there, I proceeded to Ameni Island, about 36 miles from Kavarathi on the night of 5th April. We could land at Ameni only at about sunrise on the 7th April. On the morning of 11th April I went to Kadamat Island, about 8 miles north of Ameni. From Kadamat I returned to Ameni on the 17th noon from where I started on my return trip in the *odam* named 'Mandum Kuthira' proceeding to the mainland on the 18th, and reached Mangalore on 22nd April.

Fish and Fisheries on the Islands

The fishes occurring in the coralline niches of the lagoon* exhibit the characteristic variety of colours and they consist of perches, gar-fishes, half-beaks, scarids, goat-fishes, carangids, grey mullets, atherinids, sphyraenids, polynemids, balistids, blennids, and globe-fishes.

The offshore fishery is constituted by fishes such as seer-fish, sharks, sail fish, tunnies, flying-fish, carangids, and ribbon fish. Besides these, rays and skates are obtained frequently.

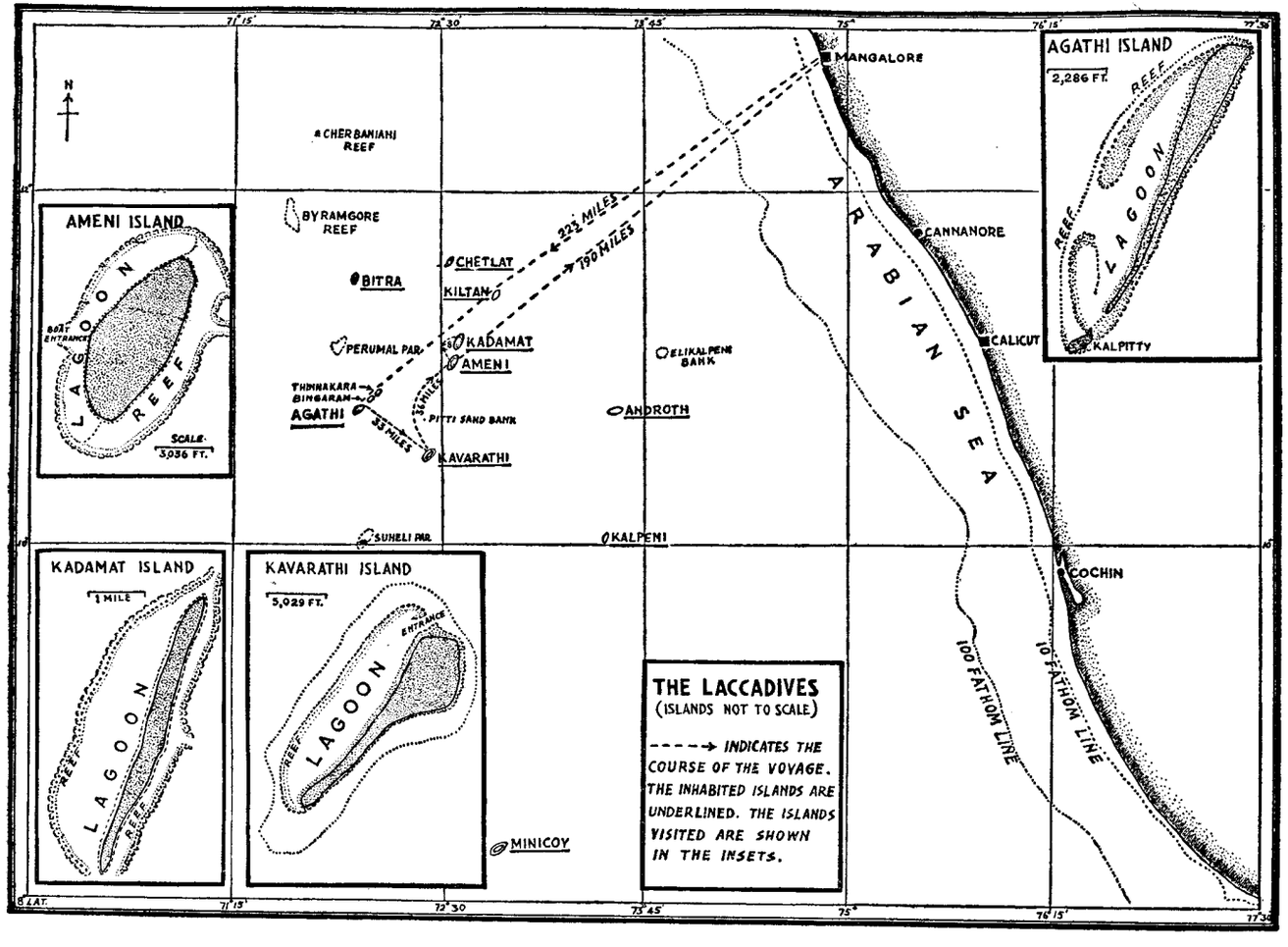
The period extending from September to the end of December is considered very favourable both for the offshore and lagoon fisheries of these islands. The flying-fishes are reported to occur throughout the year, but in decreasing numbers from December to February. Their fishery is lucrative during March, April, and May.

Moderate numbers of tunnies are said to occur from October to January off these islands and it is reported by the island fishermen that the fish are commonly caught from the 20-fathom area and beyond. Only small boats, manned by four each, are used for fishing tunnies by hook and line. They do not use live bait, except in Minicoy.

Agathi Island: Situated Long. 78° 28′ E. and Lat. 10° 51′ 30″ N., the island is 3½ miles long and about 1,000 yards broad at its broadest point, having an area of 688 acres and a population of 2,038†. Coral reefs which encircle the island afford protection from heavy breakers. About 200 people are engaged in fishing as an occupation here.

*The term lagoon is used in the broad sense to denote the shallow and smooth sea water situated between the sea-shore and the outer reefs.

†Figures taken from S. Y. Krishnaswami's Report of 1952.



THE LACCADIVE GROUP
Agathi, Kavarathi , Ameni, and Kadamat Islands in the insets are after R.H. Ellis

12 species of fishes belonging to 7 families as listed elsewhere (see table) were collected from here.

Kavarathi Island: The island (Long. 72° 57′E. and Lat.10° 34′N.), about 3½ miles long and about ¾ mile broad, has an area of 865 acres and a population of 2,500*. Ayyangar (1922) is reported to have observed living pearl oysters here. There are about 400 men engaged in fishing here according to the report of the islanders.

From this island, I collected on the whole 23 species of fishes belonging to 15 families (see table).

Ameni Island: The island (Long. 72° 45′E. and Lat. 11° 5′N.) is about 2 miles long and over a mile wide. It has an area of 622 acres and a population of 4,000. The lagoon adjoining this island is comparatively richer in its fish wealth than the three islands already mentioned. Here there are about 200 fishermen.

I was able to collect 54 species of fishes belonging to 27 families (see table) from here.

Kadamat Island: The island, situated Long. 72° 6′E. and the Lat. 11° 33′N., is about 5 miles long and 600 yards wide. It has an area of 748 acres and a population of 2,000. There are about 500 fishermen here. Ayyangar (1922) observed dead young pearl oysters in the southern region of the island.

10 species of fishes belonging to 7 families were collected from here (see table).

List of Fishes

Collected from the Laccadives †

Table I

Name	Agathi	Kavarathi	Ameni	Kadamat
Family Sphyrnidae				
1. *Sphyrna blochii* (Cuvier)	—	—	—	+
Family Synodontidae				
2. *Synodus indicus* (Day)	—	—	+	—
Family Belonidae				
3. *Belone* (*Eurycaulus*) *persimilis* Günther	—	—	+	—
4. *Tylosurus leiurus* (Bleeker)	+	—	—	—

*Figures taken from S. Y. Krishnaswami's Report of 1952.

†The classification is after Jordan (1923) : A CLASSIFICATION OF FISHES. Stanford University, California.

TABLE I—(*contd.*)

Name	Agathi	Kavarathi	Ameni	Kadamat
Family Hemirhamphidae				
5. *Hemirhamphus dussumieri* Cuvier & Valenciennes	—	—	+	+
Family Exocoetidae				
6. *Cypselurus atrisignis* Jenkins	+	+	+	+
7. *Cypselurus comatus*** (Mitchill)	+	+	+	+
Family Bothidae				
8. *Bothus* (*Platophrys*) *pantherinus* (Rüppell)	—	—	+	—
Family Pegasidae				
9. *Pegasus draconis* Linnaeus	—	+	—	—
Family Fistularidae				
10. *Fistularia petimba* (Lacépède)	—	—	+	—
Family Atherinidae				
11. *Allanetta forskali* (Rüppell)	—	—	+	—
Family Mugilidae				
12. *Crenimugil crenilabis* (Forskal)	—	—	—	+
Family Sphyraenidae				
13. *Sphyraena obtusata* Cuvier	—	—	+	—
Family Polynemidae				
14. *Polynemus sexfilis* Valenciennes	—	+	+	—
Family Carangidae				
15. *Caranx* (*Caranx*) *sexfasciatus* Quoy & Gaimard	+	—	+	—
16. *Selar crumenophthalmus* (Bloch)	+	—	—	—
17. *Caranx oblongus* ? (Cuvier)	—	—	+	—
18. *Trachinotus bailloni* (Lacépède)	—	—	+	—
Family Apogonidae				
19. *Apogon frenatus* Valenciennes	—	+	—	—
Family Serranidae				
20. *Epinephelus merra* Bloch	—	+	+	—
21. *Kuhlia taeniurus* (Cuvier)	—	—	+	+

**Same as *Cypselurus bahiensis* (Ranzani) of Weber & Beaufort (1922) according to Bruun (1935)

TABLE I—(*contd.*)

Name	Agathi	Kavarathi	Ameni	Kadamat
Family Lutianidae				
22. *Lutianus kasmira* (Forskal)	—	+	+	—
23. *Lutianus gibbus* (Forskal)	—	+	+	—
24. *Lutianus johni* (Bloch)	+	—	—	—
Family Lethrinidae				
25. *Lethrinus rhodopterus* Bleeker	—	—	+	—
26. *Lethrinus ornatus* Valenciennes	—	—	+	—
27. *Lethrinus frenatus* Valenciennes	—	—	+	—
28. *Lethrinus nebulosus* (Forskal)	—	—	+	—
29. *Lethrinus hypselopterus* ? Bleeker	—	—	+	—
30. *Lethrinus ramak* (Forskal)	—	+	—	—
31. *Monotaxis grandoculis* (Forskal)	—	—	+	—
Family Gerridae				
32. *Gerres oblongus* Cuvier	—	—	—	+
Family Mullidae				
33. *Mulloidichthys samoensis* (Günther)	+	—	—	+
34. *Pseudupeneus pleurospilos* (Bleeker)	—	—	+	—
35. *Pseudupeneus macronema* (Lacépède)	+	—	+	—
36. *Parupeneus trifasciatus* (Lacépède)	—	—	+	—
Family Chaetodontidae				
37. *Anisochaetodon* (*Linophora*) *auriga* (Forskal)	—	—	+	—
38. *Chaetodon* (*Rhabdophorus*) *trifasciatus* Mungo Park	—	—	+	—
39. *Chaetodon xanthocephalus* Bennett	+	—	—	—
Family Zanclidae				
40. *Zanclus cornutus* (Linnaeus)	—	—	+	—

TABLE I—(*contd.*)

Name	Agathi	Kavarathi	Ameni	Kadamat
41. *Zanclus canescens* (Linnaeus)	—	—	+	—
Family Acanthuridae				
42. *Acanthurus triostegus* (Linnaeus)	+	—	+	—
43. *Acanthurus leucosternon* Bennett	+	—	+	—
44. *Acanthurus lineatus* (Linnaeus)	+	—	+	—
45. *Acanthurus tennentii* (Günther)	—	—	+	—
46. *Naso tuberosus* Lacépède	—	+	—	—
47. *Naso unicornis* (Forskal)	—	+	—	—
Family Siganidae				
48. *Siganus oramin* (Schneider)	—	—	+	—
Family Scorpaenidae				
49. *Scorpaenopsis cirrhosa*? Day (*nec.* Thunberg)	—	—	+	—
50. *Pterois volitans* (Linnaeus)	—	+	—	—
Family Pomacentridae				
51. *Abudefduf septemfasciatus* (Cuvier)	—	—	+	—
52. *Chromis xanthurus*? (Bleeker)	—	+	—	—
Family Coridae				
53. *Gomphosus varius* Lacépède	—	—	+	—
54. *Cheilio inermis* (Forskal)	—	—	+	—
55. *Novaculichthys taeniourus* (Lacépède)	—	—	+	—
56. *Cymolutes lecluse* (Quoy & Gaimard)	—	+	—	—
57. *Thalassoma janseni* (Bleeker)	—	—	+	—
58. *Thalassoma lunare* (Linnaeus)	—	—	+	—
59. *Thalassoma hardwickii* (Bennett)	—	—	+	—
60. *Iniistius pavo* (Cuvier & Valenciennes)	—	+	—	—

TABLE I—(*contd.*)

	Name	Agathi	Kavarathi	Ameni	Kadamat
61.	*Cheilinus trilobatus* Lacépède	—	—	+	—
62.	*Macropharyngodon meleagris*? (Cuvier & Valenciennes)	—	—	+	—
63.	*Anampses diadematus* Rüppell	—	+	—	—
64.	*Stethojulis* sp.	—	+	—	—
65.	*Halichoeres centiquadrus* (Lacépède)	—	—	+	—
Family	Sparisomidae				
66.	*Cryptotomus spinidens* (Quoy & Gaimard)	—	—	+	—
Family	Scaridae				
67.	*Callyodon ghobban* (Forskal)	—	+	—	—
68.	*Callyodon* sp. I	—	+	—	—
69.	*Callyodon* sp. II	—	—	—	+
70.	*Callyodon* sp. III	—	+	—	+
71.	*Leptoscarus coeruleopunctatus* (Rüppell)	—	+	—	—
Family	Blennidae				
72.	*Salarias fasciatus* (Bloch)	—	—	+	—
73.	*Salarias* sp.	—	+	—	—
Family	Eleotridae				
74.	*Eleotris* sp.	—	—	+	—
Family	Balistidae				
75.	*Rhinecanthus aculeatus* (Linnaeus)	—	—	+	—
76.	*Melichthys ringens* (Osbeck)	—	—	+	—
77.	*Balistes* sp.	—	+	—	—
Family	Monacanthidae				
78.	*Amanses sandwichiensis* (Quoy & Gaimard)	—	—	+	—
Family	Tetraodontidae				
79.	*Arothron nigropunctatus* (Bloch)	—	—	+	—
80.	*Arothron hispidus* (Lacépède)	—	—	+	—

Fishing Craft and Gear

Boats: The fishing boats of the islands are of the keeled type and are made of wooden planks sewn together with coir ropes. The timber commonly used is of the locally available *Callophyllum inophyllum* (the Indian Laurel) though other varieties brought from the mainland are used sometimes. The boat is manned by one to three men and is provided with a sail. The oars used are made of coco-nut stem. These boats are described by Hornell (1908), Ayyangar (1922), and Mathew and Ramachandran (1956).

'Therappam': This is a wooden raft composed of an aggregate of fifteen to twenty-five light logs of wood tied together and is operated in the lagoon area. It is usually manned by one man. It has been described by Hornell (1946), and Mathew and Ramachandran (1956).

Nets: The following nets are common in all the four islands visited by me. They have been described in detail except (c) by Hornell (1908), Ayyangar (1922), Burton (1940), and Mathew and Ramachandran (1956). So little more is done beyond enumerating them as observed during my visit:

(a) *Kandali vala:* This is a shore-seine used for fishing in lagoon waters.

(b) *Adi vala* or *vidunna vala* : This is similar to *kandali vala* but of smaller mesh. A smaller meshed shore-seine, called *mulu vala*, of Chetlat Island is described by Burton (1940) and is referred to as *moodu vala* by Mathew and Ramachandran (1956).

(c) *Paattu vala :* This is a gill-net which is provided with floats and sinkers. It consists of three or four rectangular pieces of net laced from end to end, and the whole net combination is left anchored in the sea throughout the night. The net is common at Agathi but appears to be not so in the other islands visited by me.

(d) *Veechu vala* or *kotti vala :* This is a cast net operated from shore for catching fishes from the reefs and lagoons. It is not of the closing type. *Mudu vala* is a similar cast net of Chetlat (described by Burton 1940).

Harpoons: (a) *Chattuli* or *uli* (single harpoon): This is used for spearing fishes, dolphins, turtles, etc. The harpoon is one of the most common fishing implements used in the islands. This has been described by Hornell (1908), Ayyangar (1922), Burton (1940), and Mathew and Ramachandran (op. cit.).

(b) *Kooduli* (three-pronged harpoon): This three-pronged iron harpoon is used for spearing soft-bodied fishes such as seer fish, sail-fish, tunny, etc. It has been described by Burton (1940), and Mathew and Ramachandran (op. cit.).

(c) *Chilla* (multi-pronged harpoon): A multi-pronged wooden harpoon locally called '*chilla*' is also used for catching flying-fishes, half-beaks, etc. at night. Fishing with this implement is done very successfully during new-moon nights. It has been described by Hornell (op. cit.), Ayyangar (op. cit.), Burton (op. cit.), and Mathew and Ramachandran (op. cit.).

Hook and Line: Line-fishing is practised in all the islands. Small types of hooks are used for fishing in the lagoon area. Fishing in the offshore areas is done with larger hooks. Different sizes of hooks used are described by Hornell (op. cit.), Ayyangar (op. cit.), and Mathew and Ramachandran (op. cit.).

Traps: Trap-fishing is also common in these islands. Traps commonly used there have been described by Hornell (op. cit.), Ayyangar (op. cit.), Burton (op. cit.), and Mathew and Ramachandran (op. cit.). The catches obtained in them are generally small.

Torches: After sunset, during dark nights, flaring bundles of coco-nut leaves are employed to lure the young of certain fishes (Upeneoids and Polynemids largely) towards the boat, and these are caught with the aid of rectangular pieces of cloth (measuring about 5ft. × 4ft.). This method of fishing is more common in Agathi during summer months than in the other islands visited.

General Remarks

Fishes, such as sardines, mackerel, soles, silver-bellies, sciaenids, pomfrets, and cat-fishes, which occur in large quantities on the west coast, do not enter the commercial fisheries of the Laccadive Archipelago. Flying-fishes, tuna, sharks, skates, rays, perches, seer-fish, red mullets, gar-fishes, sphyraenids, parrot-fishes, polynemids, balistids, and acanthurids are the economically important fishes occurring in appreciable numbers there. The flying-fishes yield one of the most important fisheries of the islands. Fishes, such as *Crenimugil crenilabis*, *Polynemus sexfilis*, *Naso tuberosus*, *Naso unicornis*, *Gomphosus varius*, *Novaculichthys taeniurus*, *Halichoeres centiquadrus*, and *Anampses diadematus*, though rare on the west Coast are often encountered in the island catches.

Besides fishes dolphins, turtles, edible bivalves, squids, and lobsters are fished in small numbers from the Laccadive sea.

Fishes are cured if there is any surplus catch. Salt-curing is not usually done mainly on account of the scarcity of salt for this purpose. *Kacha-meen*, a kind of cured fish prepared by the islanders, is considered a delicacy there. Curing by sun-drying (i.e. without the application of salt) is also occasionally done. Small fishes are generally dried whole in

the sun. Salted octopi and dolphins are considered delicacies and are sometimes eaten raw by the local population.

A kind of crude oil prepared from the liver of sharks and rays is extensively used for smearing over the boats. The fins of sharks are cut out and frequently transported to the mainland where they fetch a good price.

In the light of the above observations it seems clear that the fishery resources around these islands, at present unexploited, will provide an ample yield in future with the introduction of improved fishing crafts and gear.

ACKNOWLEDGEMENTS

My grateful thanks are due to Dr. N. K. Panikkar and Dr. S. Jones for their valuable suggestions and encouragement given in the course of the preparation of this paper. I am indebted to Mr. R. V. Nair for going through the typescript and offering helpful criticism.

REFERENCES

Alcock, A. (1902) : A naturalist in Indian seas. London.

Ayyangar, S. R. (1922) : Notes on the fauna and fishing industries of the Laccadives. *Madras Fish. Bull.* **15:** 45-69.

Beaufort, L. F. de (1940) : The Fishes of the Indo-Australian Archipelago, Vols. 8 & 9. Leiden.

Bruun, Anton Fr. (1935) : Flying-fishes (Exocoetidae) of the Atlantic. Systematic and Biological studies. *Dana Rept.* No. 6.

Burton, R. W. (1940) : A visit to the Laccadive Islands. *JBNHS* **41** (3) : 489-513.

Day, F. (1865) : The fauna of British India. Fishes including Ceylon and Burma. 2 vols. London.

Ellis, R. H. (1924) : A short account of the Laccadive Islands and Minicoy. Madras Govt. Press.

Gardiner, S. (1903 & 1906) : The Fauna and Geography of the Maldive and Laccadive Archipelagos. Cambridge University Press.

Hornell, J. (1910) : Report on the results of a fishery cruise along the Malabar Coast and the Laccadive Islands in 1908. *Madras Fish. Bull.* **4:** 71-126.

— — (1937) : The fishing methods of the Madras Presidency. Part II. The Malabar Coast. *Madras Fish. Bull.* **27:** 1-69.

— — (1946) : Water Transport — Origins & early Evolution. Cambridge University Press.

Hornell, J. (1950) : Fishing in many waters. Cambridge University Press.

Mathew, M. J. & Ramachandran, T. B. (1956) : Notes on a survey of the fishing industry of the Laccadive Islands. Fisheries Station Report and Year Book (April 1954—March 1955) pp. 125-137. Govt. Press, Madras.

Munro, I. S. R. (1955) : The Marine and fresh water fishes of Ceylon. Halstead Press, Sydney.

Norman, J. R. (1933-34) : Fishes. *'John Murray' Exped. Sci. Repts.* **7** (1) : 1-116.

Smith, J. L. B. (1949) : The Sea Fishes of Southern Africa. Cape Town.

— — (1954) : Apogonid fishes of the subfamily Pseudamiinae from south-east Africa. *Ann. Mag. Nat. Hist.* ser. 12, **7**: 775-795.

— — (1956) : The parrot fishes of the Family Callyodontidae of the Western Indian Ocean. *Ichth. Bull.* No. 1, January 1956.

— — (1957) : The fishes of the family Scorpaenidae in the Western Indian Ocean. Part I. *Ichth. Bull.* No. 4, July 1957.

— — (1957) : ,, Part II. *Ichth. Bull.* No. 5, August 1957.

— — (1957) List of the fishes of the family Labridae in the Western Indian Ocean with new records and five new species. *Ichth. Bull.* No. 7, October 1957.

Weber, M. & Beaufort, L. F. de (1913-1940) : The Fishes of the Indo-Australian Archipelago, Vols. 2-7. Leiden.