ON TWO NEW RECORDS OF CARANGID FISHES FROM INDIAN SEAS

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ABSTRACT

Two species of the fishes, belonging to the family Carangidae, *Alepes macrurus* (Bleeker) and *Carangoides coeruleopinnatus* (Ruppell) are reported for the first time from Indian seas. They are briefly described and their systamatic positions are discussed.

INTRODUCTION

The fishes of the family Carangidae are widely distributed in the warm waters of all the oceans and from the Indian seas, Day (1878) reported 38 species while from the adjacent waters around Ceylon Munro (1955) recorded 37 species.

MATERIAL AND METHODS

At Vizhinjam along the south west coast of India, carangids form an important fishery and 30 species have been identified from the catch landed at this centre. In addition to these, two species, *Alepes macrurus* (Bleeker) and *Carangoides coeruleopinnatus* (Ruppell), hither to not reported from Indian seas have been found to occur in the area. Being additions to the ichthyofauna of the Indian seas, they are described and illustrated in this paper.

In the descriptions of the species, the measurements were done in accordence with the method followed by Williams (1958). The body proportions are given in per cent of standard length, unless otherwise mentioned and the mean values are given within the paranthesis except in the cases of the characters variable with growth, where the mean values are omitted.

SPECIES OF CARANGIDAE KNOWN FROM VIZHINJAM:

1. *Megalaspis cordyla* (Linnaeus)
2. *Decapterus dayi* (Wakiya)
3. *Atropus atropus* (Bloch and Schneider)
4. *Selar crumenophthalmus* (Bloch)
5. *Alepes mate* (Cuveir and Valenciennes)
6. *A. djeddaba* (Forsskal)

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7. *A. kalla* (Cuvier and Valenciennes)
8. *Caranx melampygus* (Cuvier and Valenciennes)
9. *C. sexfasciatus* (Quoy and Gaimard)
10. *C. forsteri* (Cuvier and Valenciennes)
11. *C. celetus* J. L. B. Smith
12. *C. ignobilis* (Forsskal)
13. *C. carangus* (Bloch)
14. *Carangoides praeustus* Bennett
15. *C. ferdau* (Forsskal)
16. *C. gymnostethus* (Cuvier and Valenciennes)
17. *C. ciliarius* Ruppell
18. *C. malabaricus* (Bloch and Schneider)
19. *C. chrysophrys* (Cuvier and Valenciennes)
20. *Uraspis helvola* (Forster)
21. *Selaroides leptolepis* (Cuvier and Valenciennes)
22. *Gnathanodon speciosus* (Forsskal)
23. *Alectis ciliaris* (Bloch)
24. *A. indica* (Ruppell)
25. *Chorinemus tala* (Cuvier and Valenciennes)
26. *C. tooloparah* (Ruppell)
27. *C. lysan* (Forsskal)
28. *Trachinotus blochi* (Lacepede)
29. *T. baillloni* (Lacepede)
30. *Elagatis bipinnulatus* (Quoy and Gaimard)

Description of new records

ALEPES MACRURUS (Bleeker) (Fig. 1)

Selar macrurus Bleeker, 1851. *Nat. Tijdschr. Ned. Indie.*, 1:359 (Type Locality: East Indies).

Caranx macrurus Gunther, 1860. *Catal. Fish. British Mus. London.* 2.

Material: 8 specimens ranging from 139 mm to 356 mm in standard length (178 mm to 479 mm in total length) from Vizhinjam landed by drift nets during January and March 1971 and January, February and March 1972.

Description: D. (I) VIII. I, 25-27 (26); A. II. I, 21-23 (22); P. I, 20-22 (22); V. I, 5; L. l. scutes 61-69 (66); G. R. 10-11 (11) — 1 — 23-24 (24) (total 34-36).

Head 24.25-27.59 (26.13); eye 5.90-7.59 (6.54), inter-orbital 7.58-8.29 (8.02), sub-orbital 1.30-2.16 (1.62), post-orbital 12.28-13.81 (13.02), snout 6.82-7.59 (7.04), maxillary 7.54-8.81 (8.07), maximum height of first dorsal 10.37-13.67 (11.81), height of second dorsal 10.90-15.83 (12.36), height of anal 9.42-13.67 (11.18), second dorsal base 42.70-45.60 (44.20), anal base

37.92-41.73 (39.69), pectoral 23.62-31.23, pelvic 11.17-12.95 (12.10), caudal upper lobe 31.65-39-90 (34.69), caudal lower lobe 29.50-36.27 (31.67), lateral line curved 23.21-27.34 (25.74), lateral line straight 53.24-58.50 (56.33), first pre-anal spine 2.25-3.45 (2.62), second pre-anal spine 3.29-4.48 (3.76), largest scute 2.81-4.14 (3.46), longest gillraker 3.15-4.14 (3.63), snout to first dorsal 34.43-36.78 (35.51), snout to second dorsal 48.42-52.52 (50.11), snout to pectoral 25.79-28.28 (26.45), snout to pelvic 30.90-32.64 (31.62), snout to anal 54.57-57.18 (56.03), depth at posterior orbit 17.37-21.38 (18.93), depth at first dorsal 28.37-33.07 (30.80), depth at second dorsal 29.76-37.31 (34.01) and least depth of caudal peduncle 4.21-5.52 (4.79) per cent of standard length.

Body oblong, compressed, dorsal and ventral profile almost equal; head acute, longer than high; eye situated in anterior half of head, equal to snout and with broad posterior and narrow anterior eyelid; inter-orbital more than eye; cleft of mouth oblique; lower jaw slightly prominent; maxillary reaches eye; minute teeth in single series in both jaws; teeth present on vomer, palatines and tongue; opercular border entire; pectoral falcate, smaller than head in smallest specimens, much longer in the largest forms; pelvic less than half of head; first dorsal with weak spines, lower than second dorsal; no produced rays either in second dorsal or in anal; soft dorsal slightly higher than anal and both with well-developed basal scaly sheath; second dorsal base conspicuously larger than that of anal; caudal deeply forked with sub-equal lobes, upper lobe being longer; breast totally scaled; head naked except for few scales on cheek and on post-orbital part; curved part of lateral line strongly arched, straightens below first or second ray of dorsal and half of that of straight part of lateral line; armed scutes present throughout straight part of lateral line and largest scute almost equals length of longest gillraker; shoulder girdle without any furrow at its junction with isthmus.

When fresh, body bluish green above and paler below; first dorsal dark; tips of second dorsal, anal and tips of caudal lobes dusky in smaller specimens; dark patches on vertical fins extended upto base in larger specimens; pectorals and pelvics are pale; a black opercular spot present.

Remarks

The genus *Alepes* Swainson (1839) is the super synonym of *Atule* Jordan and Jordan (1922) created to accomodate the species which were included under the genus *Selar* Bleeker (1851), but without a deep furrow in the shoulder girdle, and was aptly used by Fowler (1904). Only three species referable to this genus, *Alepes mate* (Cuvier and Valenciennes), *A. kalla* (Cuvier and Valenciennes) and *A. djeddaba* (Forsskal) were reported so far by earlier authors from Indian seas.

The morphometry and meristic counts of the specimens from Vizhinjam show some variations from the descriptions of the species given by earlier

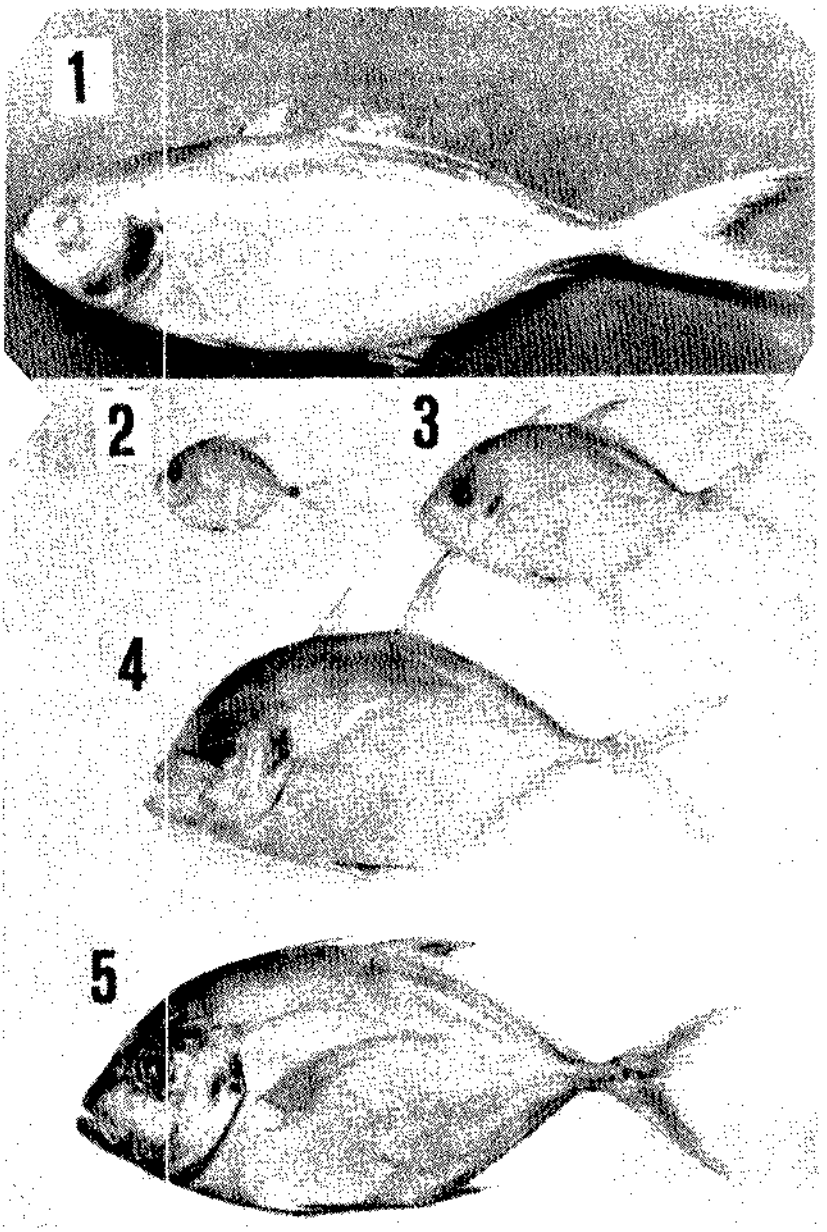

Fig. 1. *Alepes macrurus* (Bleeker) 145 mm in standard length.
Figs. 2-5 *Carangoides coeruleopinnatus* (Ruppell).
Fig. 2. 46 mm. Fig. 3. 97 mm, Fig. 4. 158 mm, Fig. 5. 180 mm in standard length.

workers (Weber and de Beaufort, 1931 after Bleeker) in having more deeper body, maxillary reaching eye, pectoral shorter than head in young and longer in adults and also in having more numbers of scutes and anal rays. The specimens also differ from *Alepes glabra* (1904), a junior synonym of *A. macrurus* in the number of gillrakers. However, Mr. William F. Smith-Vaniz of University of Miami informs me that the gillrakers counts made by Fowler were

TABLE 1. *A comparative account of the meristic characters of* Alepes macrurus *(Bleeker) given by different authors with those of the specimens from Vizhinjam*

Meristic characters	Weber and de Beaufort (1931) after Bleeker.	Gunther (1860)	Fowler (1904)	Smith-Vaniz (personal communication	Specimens from Vizhinjam	Resulting range
1. Dorsal rays	24—27	24	26	25—27	25—27	24—27
2. Anal rays	20—22	20	22	22—24	22—24	20—24
3. Pectoral	21	I. 19	—	—	I, 21—22	I. 19—22
4. L. I. scutes	about 60	60	62	53—67	61—69	53—69
5. Gillrakers	—	31 (8+1+20)	28 (?) (7+21)	33—36 (10—11+1+ 22—24)	33—36 (10—11+1+ 22—24)	28(?)—36 (7—11+ 1+20—24)

often inaccurate and it is very likely that he overlooked some of the smaller rakers, hence *A. glabra* may only be a synonym of *A. macrurus*. He has examined a good series of specimens of this species from differents regions of Indian Ocean and his observations are included in Table 1. Differences are also seen from the specimen of *Caranx macrurus* Gunther (1860) in some characters such as the number of anal rays, pectoral rays, scutes and gillrakers. A comparative account of the meristic counts of the above four authors with those of the specimens from Vizhinjam are given in Table 1.

General distribution: Sumatra, Java, Celebes, Philippines and now from Vizhinjam, South west coast of India.

CARANGOIDES COERULEOPINNATUS (Ruppell) (Figs. 2-5)

Caranx coeruleopinnatus Ruppell, 1828. *Atl. Fische Nordl. Afrika*:100 (Type Locality: Red Sea).

Caranx malabaricus Klunzinger, 1871. *Verh. Zool. Bot. Ges. Wien.*, 21.

Caranx (*Carangoides*) *malabaricus* (*partim*) Weber and de Beaufort, 1931. *Fishes of Indo-Australian Archipelago*, 6.

Carangoides malabaricus Williams, 1958. *Ann. Mag. Nat. Hist.*, (13) 1.

Carangoides coeruleopinnatus Smith, 1967. *Occ. Pap. Rhodes Univ. Dept. Ichthyol.*, 13.

Material: 10 specimens ranging from 46 mm to 180 mm in standard length (59-232 mm in total length) from Vizhinjam landed by boat seines and hooks and lines. This species available occasionally in the fishery.

Description: D. (I) VIII. I, 21-23 (22); A. II-I, 18-20 (19); P. I, 19-20 (20); V. I, 5; L.l. scutes 30-37 (34); G.R. 7 — 1 — 16-17 (17) (totally 24-25).

Head 34.02-36.46 (34.12), eye 9.89-12.50 (10.94), inter-orbital 9.79-11.46 (10.31), sub-orbital 5.17-7.40 (6.52), post-orbital 12.14-14.58 (13.48), snout 10.87-13.19 (12.24), maximum height of first dorsal 13.40-16.67 (15.01), maximum height of second dorsal 20.33-56.52, maximum height of anal 23.01-39.13, second dorsal base 41.21-47.92 (44.13), anal base 36.69-43.75 (39.48), pectoral 29.16-39.00, pelvic 14.84-21.73, caudal 28.87-34.78 (32.12), lateral line curved 43.04-45.83 (44.55), lateral line straight 25.77-29.59 (27.74), largest scute 1.90-2.14 (2.01), longest gillraker 4.29-5.06 (4.76), snout to first dorsal 43.30-47.91 (44.73), snout to second dorsal 58.76-63.54 (60.40), snout to pectoral 31.42-35.42 (33.31), snout to pelvic 39.29-44.92 (42.83), snout to anal 60.13-68.75 (63.44), depth at first dorsal 45.65-60.87, depth at second dorsal 47.24-64.33 and least depth of caudal peduncle 4.40-6.52 (5.21) per cent in standard length.

Body strongly compressed, ovate in young becoming sub-ovate in adults; caudal peduncle wider than high; head higher than long in young and about equal in adults; eye situated in middle of head, more or less equal to blunt snout with a narrow rim of eyelid; inter-orbital less than eye in young but equal in adults; cleft of mouth oblique and well below eye level; lower jaw prominent; maxillary reaches below more than half of pupil; villiform teeth in bands in both the jaws outer row being somewhat enlarged; tongue, vomer and palatines toothed; operculum entire; pectorals strongly falcate; pelvics short reaching vent; dorsal spines weak, normally third spine longest; second dorsal and anal with produced rays anteriorly, comprsing of 5-6 rays in former and 4-5 rays in latter, more so in young; both fins with basal scaly sheath; second dorsal base conspicuously longer than anal base; caudal deeply forked with equal lobes; scales on body minute; breast scaleless ventrally and also laterally in a triangular area from inner pelvic ray to base of pectoral; head naked except for scales on cheek and on post-orbital area; longer, anterior curved part of lateral line moderately arched to meet short straight part below 14th to 15th dorsal ray; straight part with feebly developed scutes except a few scales anteriorly and posteriorly; gillrakers long and stout, twice longer than largest scutes.

When fresh, body bluish white above and silvery below; six vertical dark bands present in young, but fades with age; tips of dorsal, anal and caudal lobes dusky; pectorals pale; pelvics dusky in juveniles, pale in adults; a black opercular spot present.

On preservation in formalin, in the specimens below 200 mm in total length body and head generally silvery, dusky above; dorsal fin pale except at tip and leading edges where it is dusky; anal, caudal, pectorals and pelvics pale; opercular spot distinct; vertical bands become obscure; in specimens above 200 mm, head and body dark; vertical fins pale except at tip; pectorals and pelvics pale; opercular spot present.

Remarks

Allometric growth in some body characters are observed in the case of *C. coeruleopinnatus*. The maximum depth of body decreases from 64.13 in specimens of 46 mm to 47.25 in specimens of 180 mm, resulting in the ovate shape of body of the former becoming sub-ovate in the latter. This is accompanied by shortening of tip of elevated dorsal rays which do not reach the upper caudal lobe in the larger specimens. The growth rate of second dorsal fin lobe was much low, so that from 56.52 in juveniles, it was reduced to 20.33 in larger forms. Height of anal fin also decreases from 39.13 in smaller specimens to 23.01 in larger specimens. It is of interest to note that growth rate of second dorsal was much lower than that of anal, so that the lobe of the former which is longer than the latter at 46 mm, becomes equal at about 160 mm and becomes shorter than anal afterwards. Pectoral and pelvic fins also undergo changes with growth of the fish. Pectoral, which was shorter than head in juveniles becomes longer in adults. On the contrary pelvic fins become reduced from 21.73 in young to 14.84 in adults (all proportions are in hundredth of standard length).

TABLE 2. *Variations in the body proportions between juveniles and adults of* C. coeruleopinnatus (*Ruppell*)

Morphometric characters		Juveniles	Adults
1.	Maximum depth	1.5 in S.L.	2.1 in S.L.
2.	Elevated dorsal rays	1.8 in S.L. Produced and reaches upper caudal lobe.	4.9 in S.L. Not produced and not reaches upper caudal lobe.
3.	Elevated anal rays	2.5 in S.L. Produced.	4.5 in S.L. Not produced.
4.	Pectoral	1.2 in head.	0.86 in head.
5.	Pelvic	1.6 in head.	2.3 in head.
6.	Eye	larger than snout and inter-orbital.	smaller than snout and equal to inter-orbital.
7.	Head	higher than long.	Equal.

Variations in relation to age are also noted in the cases of eye and snout. In the smallest specimens examined, eye diameter was longer than the snout, but at 97 mm both were equal and at 180 mm snout is longer. The inter-orbital distance is less than eye diameter in young, but equal in adults. The changes are summarised in Table 2.

This species was very often confused and united with *Carangoides malabaricus* (Bloch and Schneider) by some earlier authors. (Day, 1878; Weber, 1913), though both are distinct in the characters such as the number of gillrakers (11-12 — 1 — 24-25, totally 36-38 in *C. malabaricus*), in the extension of scaleless area of breast (from anal fin to pectoral surpassing its base in *C. malabaricus*) and in the strongly elevated or produced lobes of dorsal and anal fins (not elevated at any stage in *C. malabaricus*). Wakiya (1924) recognised the existance of two species and described them as such, but Weber and de Beaufort (1931) considered them conspecific recognizing only *C. malabaricus*. Herre (1951) considered them as two distinct species. Klunzinger (1871 & 1884) and Williams (1958) too recognized the existance of these two closely related species, but both of them wrongly assigned Ruppell's *C. coeruleopinnatus* to *C. malabaricus* and for the other species with higher number of gillrakers they coined new names, *viz., C. impudicus* by Klunzinger (1884) and *C. rectipinnus* by Williams (1958). Smith (1967) after examining the type specimens of both Bloch and Schneider's *C. malabaricus* and Ruppell's *C. coeruleopinnatus,* concluded that the former name is valid for the species with 10-11 — 1 — 23-25 gillrakers and the latter name for the species with 7-8 — 1 — 16-17 gillrakers.

Though Day (1878) failed to give the gillrakers counts for *C. malabaricus,* the illustration of the species given by him is enough to confirm that his species was the same as described by Bloch and Schneider (1801). Munro (1955) and Misra (1962) have given the gillrakers counts as 23-25 on the lower part of first arch of left side in their descriptions for *C. malabaricus.* Therefore, the present report is the first to record the occurrence of *C. coeruleopinnatus* from Indian seas.

General distribution: Red Sea, East and West coasts of Africa, Philippines, Cebu, Formosa, Japan and now from Vizhinjam, South west coast of India.

ACKNOWLEDGEMENTS

I am thankful to Dr. S. Z. Qasim, Director, Central Marine Fisheries Researth Institute for his kind encouragements. Thanks are due to Dr. E. G. Silas of this Institute for his helpful comments to the improvement of the paper. My thanks are also due to Dr. M. D. K. Kuthalingam, Officer-in-charge and Shri G. Luther of C. M. F. R. Sub-station, Vizhinjam for going through the manuscript and offering helpful suggestions. I gratefully acknowledge the help

received from Mr. G. Palmer of British Museum Natural History who kindly provided the data of *Alepes macrurus* from Gunther's Collections; Mr. William F. Smith-Vaniz of University of Miami for identifying and giving informations on the same species; Dr. P. K. Talwar of Zoological Survey of India for giving information on *C. coeruleopinnatus* and from Dr. (Mrs.) Margaret M. Smith, Director, J. L. B. Smith Institute of Ichthylology for confirming the identity of the above species.

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