

NOTES ON THE FRIGATE MACKERELS, *AUXIS THAZARD* (LACÉPÈDE) AND *A. TAPEINOSOMA BLEEKER*, FROM INDIAN WATERS*

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INTRODUCTION

THE so-called frigate mackerels of the genus *Auxis* are the smallest of the tunas and could be distinguished from all other genera of the family Thunnidæ by the wide interspace (nearly equal to the length of the head) between the first and the second dorsal. Another distinguishing character is the size of the axillary scales (between the ventral fins) which are equal in length to the fins in *Auxis* while in other Thunnidæ they are only about one-half in length. In addition to the geno-type, *Auxis thazard* (*Scomber thazard* Lacépède), which is a widely distributed fish found in all the warm seas, a few species have been described which according to some are only synonyms of the above. Recently Wade (1949) has shown that two species, viz., *Auxis thazard* and *A. tapeinosoma*, occur in the Philippine waters thereby helping to establish the validity of the second species. It has been possible to obtain recently both the species from the Indian waters and notes on them are given in this article as there are no previous published records of these from India.

Key† for distinguishing the two species of *Auxis*:—

1. Corselet scales abruptly tapering immediately behind the first dorsal and then continued as a narrow band having not more than 4 scales below the position of the second dorsal fin.....*A. thazard* (Lacépède) (Fig. 1).

2. Corselet scales gradually tapering and forming a comparatively wide band with 7-12 scales below the position of the second dorsal fin.....*A. tapeinosoma* Bleeker (Fig. 2).

Wade (1949) refers to the difference in the number of gill rakers in the first gill arch, which according to him is 37-43 in *A. thazard* and 44-48 in *A. tapeinosoma*. The variation in the specimens in the Indian waters is not known as this character has not been studied fully for want of adequate mate-

* Abstract published in *Proceedings of 44th Session of Indian Science Congress, 1957, Part III, p. 319.*

† Adapted from Wade (1949).

rial but in the two specimens of *A. thazard* and *A. tapeinosoma* described below they are 40 and 45 respectively.

Auxis thazard (Lacépède)

- Scomber thazard* Lacépède 1802, *Hist. Nat. Poissons*, 3, 9.
Scomber rochei Risso, 1810, *Ichthyol. Nice*, 165.
Scomber bisus Rafinesque, 1810, *Caratteri etc. animal Sicilia*, 45.
Auxis vulgaris Cuvier, 1831, *Hist. Nat. Poissons*, 8, 139.
Auxis taso Cuvier, 1831, *Ibid.*, 146.
Auxis thynooides Bleeker, 1855, *Nat. Tijdschr. Ned. India*, 8, 301.
Auxis rochei Günther, 1860, *Cat. Fish. British Mus.*, 2, 369.
Auxis thazard Dresslar and Fesler, 1889, *Bull. U.S. Fish. Comm.*, VII (1887), 434.
Auxis hira Kishinouye, 1915, *Sui. Gak. Ho.*, 1, 23.
Auxis thazard Smith, 1949, *Sea Fishes of Southern Africa*, 298.
Auxis thazard Wade, 1949, *U.S. Fish & Wildlife Service, Fish Bull.*, 46, 231.
Auxis thazard Fraser-Brunner, 1950, *Ann. Mag. Nat. Hist.*, (12) 3, 152.
Auxis thazard de Beaufort, 1951, *Fishes of the Indo-Australian Archipelago*, 9, 226.
Auxis thazard Munro, 1955, *Marine and Freshwater Fishes of Ceylon*, 219.

This is a very widely distributed circumtropical species and has been recorded from most of the warm seas of the Atlantic and Pacific Oceans. In the Indian Ocean the previous records are from Java and adjacent islands in Indonesia (de Beaufort, 1951) and the coasts of Natal and Cape Province in South Africa (Smith, 1949). Recently Munro (1955) has recorded the fish from the Ceylon Coast.

At my special request a general collection of fish was made in 1954 from the Minicoy Island in the Arabian Sea by Dr. P. K. Raghava Varrier, the Medical Officer there, and this contained a specimen of *Auxis thazard* shown in Fig. 1. On 10th November 1955, a specimen of *Auxis* with a remarkably rounded body measuring 241 mm. brought by the drift-net fishermen at Malpe in South Kanara was preserved for detailed examination later, ‡ though the possibility of occurrence of more than one species was not visualized then. This on subsequent study turned out to be *A. tapeinosoma* Bleeker (*vide*

‡ On the same day the stomach of a sail fish [*Istiophorus gladius* (Broussonet)] contained 1 complete and 3 partially digested *Auxis*. The species concerned is not known. The stomachs of 8 other sail fish examined on the same day were either empty or contained a few fish bones.

infra). Two specimens of *Auxis thazard* measuring 318 and 404 mm. were seen at Malpe on 12th November 1955. It came to my knowledge subsequently that Mr. S. Gopalan Nair, Fishery Survey Assistant at Vizhingam, near Trivandrum, has been reporting the occurrence of *Auxis*, from the above centre, in his fish-landing statistics from the latter half of 1954 but the species concerned was not determined. During the middle of March 1956 I had occasion to visit Kolachel in South Travancore and examine there a number of specimens of *A. thazard* caught in drift-nets operated from catamarans during night time. The above records indicate beyond doubt the regular occurrence of the fish on the west coast of India. In May 1956 Dr. (Miss) Nora Sproston brought to my attention a juvenile specimen of *Auxis thazard* measuring 131 mm. in length washed ashore near Mandapam Camp on the Gulf of Mannar.

A description of *Auxis thazard* obtained from Minicoy Island is given below:

Body robust, sides slightly laterally compressed, dorsal outline broadly and evenly curved, ventral outline flattened abdominally.

Height 4.25 in the standard and 4.36 in the furcal length. Head 3.66 in the standard and 3.74 in the furcal length. Snout pointed 3.62 in the head, longer than eye diameter. Eye 5.85 in the head, 1.61 in the snout, 1.7 in the flatly rounded interorbital space. Mouth moderate, oblique, end of maxillary reaching below the anterior third of the eye. Jaws nearly equal, the lower jaw projecting almost imperceptibly beyond the upper. Teeth small, pointed, in a single row on both jaws, none on palate. Branchiostegals 7. Gill rakers long and slender, 40 on the first gill arch.

Two dorsal fins separated by interspace slightly shorter than head length. First dorsal roughly triangular with 10 spines, anterior spine longest. Second dorsal small with 13 rays. Dorsal finlets 8. Anal fin small, with 2 spines, 11 rays. Anal finlets 7. Pectorals roughly triangular, reaching vertical from the base of first ray of first dorsal. Ventral thoracic, axillary scales equal in length to ventrals.

Body naked except for the corselet of scales which taper abruptly to narrow irregular 2-4 scale rows before vertical through second dorsal origin. Scales large and imbricated above pectoral base. Caudal peduncle slender with feebly developed lateral keels. Lateral line slightly undulating and without a distinct arch.

Colour in formalin deep greyish brown dorsally, gradually becoming lighter laterally. Below the corselet light greyish brown becoming almost

pinkish ventrally. Irregular oblique bars above and behind the corselet. A black mark close to the postero-ventral border of the eye. First dorsal brown along the anterior spines. White patch around the base of the anal fin and finlets.

Sex: Male.

Auxis tapeinosoma Bleeker

Auxis tapeinosoma Bleeker, 1854, *Nat. Tijdschr. Ned. Ind.*, **6**, 408.

Auxis tapeinosoma Günther, 1860, *Cat. Fish. British Mus.*, **2**, 369.

Auxis maru Kishinouye, 1915, *Sui. Gak. Ho.*, **1**, 24.

Auxis tapeinosoma Jordan and Hubbs, 1925, *Mem. Carnegie Mus.*, **10**, 220.

Auxis thazard Herre, 1934, *Fishes, Herre Philippine Exped.* (1931), **33**.

Auxis tapeinosoma Wade, 1949, *U.S. Fish & Wildlife Service, Fish Bull.*, No. 46, 231.

Auxis tapeinosoma Herre, 1953, *U.S. Fish & Wildlife Service, Res. Rep.*, **20**, 247.

Auxis tapeinosoma has been recorded previously only from the Pacific region. It occurs in fair abundance around Japan and the Philippines. Two records from places nearest to the Indian Ocean are from Menado and Ternate in the north-eastern section of Indonesia facing the Pacific Ocean and very close to the Philippines.

A single specimen of this fish (Fig. 2) was obtained on the 10th November from Malpe as already stated elsewhere. Though at the time of collection it was presumed to be a young of *A. thazard*, subsequent detailed examination showed that it is *A. tapeinosoma*, the first record of the species outside the Pacific region so far as my information goes.

A description of the specimen from Malpe is given below:—

Body robust, rounded, almost circular in cross-section. Dorsal outline moderately and evenly curved. Ventral outline evenly curved when fresh but slightly flattened abdominally after preservation in formalin.

Height 5.38 in standard and 5.55 in furcal length. Head 3.77 in standard and 3.88 in furcal length. Snout, pointed 3.9 in the head, longer than eye diameter. Eye 4.91 in the head, 1.27 in the snout, 1.27 in the almost flattened interorbital space. Mouth moderate, oblique, end of maxillary reaching vertical from anterior margin of eye. Jaws nearly equal, the lower jaw projecting almost imperceptibly beyond the upper. Teeth small, pointed in a single row on both jaws, none on palate. Branchiostegals 7. Gill rakers long and slender, 45 in first gill arch.

Two dorsal fins separated by interspace slightly shorter than head length. First dorsal roughly triangular with 10 spines, anterior spine longest. Second dorsal small with 13 rays. Dorsal finlets 8. Anal fin small, with 2 spines, 11 rays. Anal finlets 7. Pectorals roughly triangular, reaching vertical from the base of first ray of first dorsal. Ventral thoracic, axillary scales equal in length to ventrals.

Body naked except for the corselet of scales which taper gradually to 9-10 irregular scale rows at vertical through second dorsal and end as a narrow line at vertical below second dorsal finlet. Scales large and imbricated above pectoral base. Caudal peduncle slender with feebly developed lateral keels. Lateral line somewhat undulating and without a distinct arch.

Fresh specimen with an over-all bluish iridescence. Colouration in formalin almost black dorsally gradually becoming deep brown laterally and light brown ventrally. Wavy bars on the sides above and behind the corselet. A black patch at the postero-ventral border of the eye. Anterior spines of the first dorsal brown. Anal fin and finlets almost colourless with white patch around the base.

Sex: Male.

GENERAL REMARKS

The measurements in mm. of *Auxis thazard* and *A. tapeinosoma* described in this note are given in table below.

Species	Furcal length	Std. length*	Head	Snout	Eye	Max. depth	Snout to 1st dorsal	Snout to 2nd dorsal	Snout to ventral	Inter-orbital space	Interspace between dorsals
I	333.5	325.5	89	24.5	15.2	76.5	101.5	201	99	26.5	64.5
II	233	226	60	15.5	12.2	42	69	149	67	15.5	52.5

I = *A. thazard*. II = *A. tapeinosoma*.

* From the tip of snout to the end of the hypural plate.

Significant differences are seen between the body proportions of the two species of *Auxis* from the Indian Coast and from the Philippine waters. Examination of more material from India is necessary before one could say positively if these occurring here could be considered as geographic races distinct from those in the Pacific.

Auxis is generally caught in gill nets. The nets concerned are *Balyana bale*¹ in South Kanara and *Kal-Ketti valai*² in South Travancore. These are operated primarily for other large-sized fishes but *Auxis* forms one of the

minor catches. I was informed by the Kolachel fishermen that they sometimes get the fish when No. 5 hook is used with *Anchoviella* as the bait.

The fishermen at Kolachel do not distinguish *A. thazard* from *Euthynnus alletteratus affinis* (Cantor), which is very common there and consider the former as the young of the latter. Both are known as *churai*, a Tamil name commonly applied to tunas in general. Though at a distance both look somewhat similar, *A. thazard* could be easily distinguished by the interspace between the dorsals, the nature of the corselet and the absence of the black spots between the ventrals and the pectorals. I was informed there that there is a small-sized tuna, known as *Urulan-churai*³ which does not grow beyond a cubit. It is said to be known as *Kutteli-churai*⁴ also. From the description it appears that there is a possibility that this could be *Auxis* but it is premature to say anything before specimens become available for examination. Our present knowledge about the tunas occurring around the Indian Coasts is very meagre. It could be expected that a detailed and systematic study would reveal the occurrence of more species than hitherto recorded.

Subsequent to the communication of this paper for publication 341.16 maunds and 532.5 maunds of *A. tapeinosoma* were landed at Calicut and Quilandy on 17th October 1956 and 24th October 1956 respectively. It is reported that such unusually large catches of this fish have never been recorded in the living memory of the fishermen in these parts. Observations on the specimens of *A. thazard* and *A. tapeinosoma* from different places examined since then will be dealt with elsewhere.

SUMMARY

Records of the occurrence in Indian waters of the so-called, frigate mackerels, *Auxis thazard* (Lacépède) and *A. tapeinosoma* Bleeker, which are the smallest of the tunas, are given in this note. *A. thazard* which is a very widely distributed circumtropical species has been found to be common in the southern section of Travancore. Specimens have also been obtained from Minicoy Island in the Laccadive Archipelago, Malpe in South Kanara and Mandapam in the Gulf of Mannar. *A. tapeinosoma* which has so far been known only from the Pacific, is recorded for the first time from Indian waters where its recent appearance in large shoals is of special interest.

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1. Kanarese: *Balyana* = drifting and *bale* = net.
 2. Tamil: *Kal-Ketti* = stone tied, and *valat* = net.
 3. Tamil: *Urulan* = rounded, and *churai* = tuna.
 4. Tamil: *Kutteli* = small rat—meaning small-sized tuna.

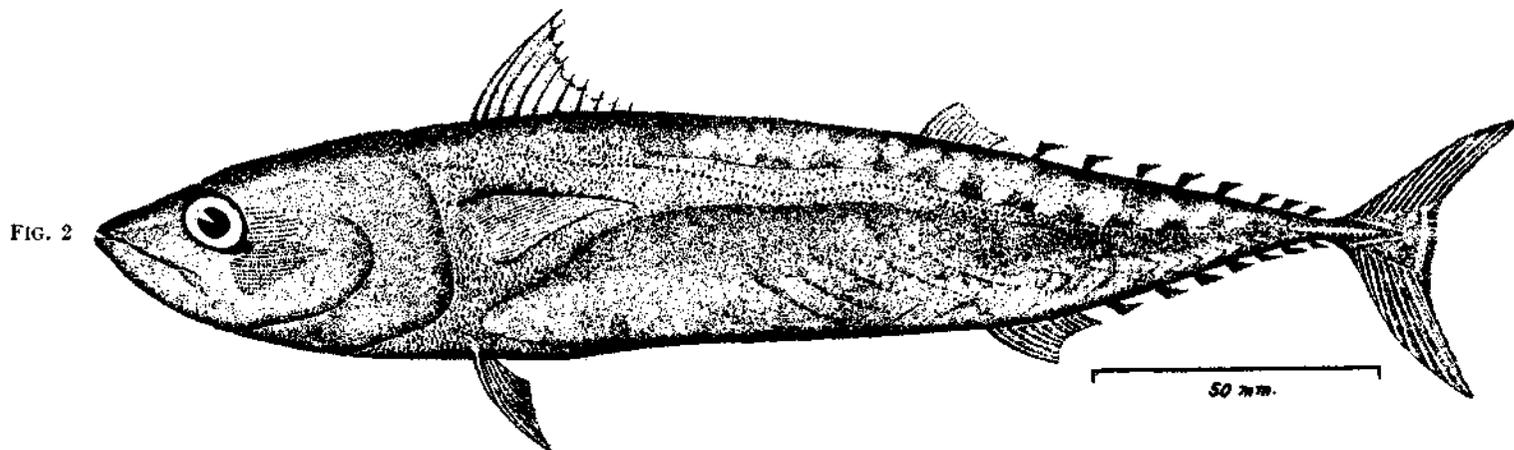
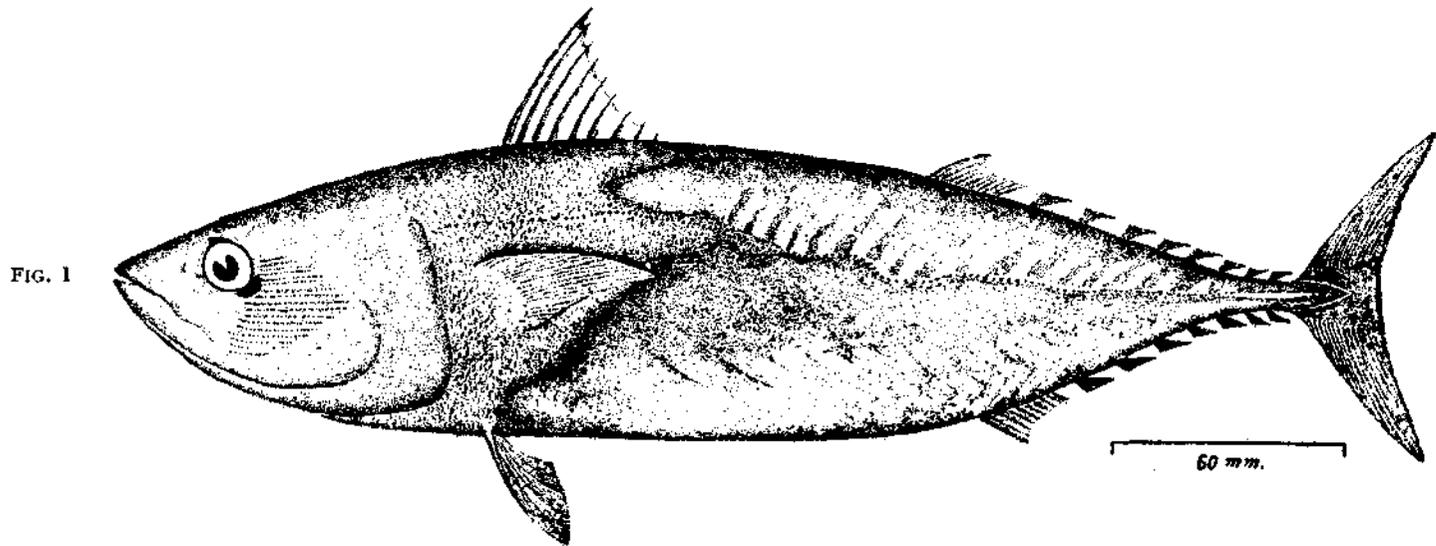


FIG. 1. *Auxis thazard* (Lacépède) from Minicoy Island. (By Shri M. P. Lakshmanan).
FIG. 2. *Auxis tapeinosoma* Bleeker from Malpe (By Shri M. P. Lakshmanan).