



# A Revision of Irvine's Marine Fishes of Tropical West Africa

by

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## ACKNOWLEDGEMENTS

We acknowledge the Food and Agriculture Organization of the United Nations for permission to reproduce approximately 100 FAO species identification sheet drawings. These make up the bulk of the 120 or so figures in the text. They are reproduced from:

Fischer W, Bianchi G, Scott WB (eds) (1981). *FAO Species Identification Sheets for Fishery Purposes. Eastern Central Atlantic; Fishing Areas 34, 47 (in part)*. Canada Funds-in-Trust. Ottawa, Department of Fisheries and Oceans Canada, by agreement with the Food and Agriculture Organization of the United Nations. Vols. 1–7.

The remaining few figures were scanned primarily from Irvine’s book and the excellent illustrations in Max Poll’s accounts (1951–1959) of the fishes of the *Expédition Océanographique Belge dans les Eaux Cotières Africaines de l’Atlantique Sud*.

We thank the Director of the Nigerian Institute of Oceanography and Marine Research for his keen support for the project and use of facilities. We thank Bamikole Williams for compiling a list of common names in Yoruba, Ilaje and Ijaw for inclusion in the text, Edward Ajado, Steve Agbogah and Femi Amusan for their help with field work in Nigeria, Oliver Crimmen for help in tracking down Irvine’s correspondence at the Natural History Museum, and Professor John Blay for helpful comments on a draft of the revision. We would like to thank Rosanna Mumby and Colette Wabnitz for their help with scanning in Irvine’s original text and black and white illustrations of the fishes respectively. We would also like to extend our thanks to Dr Susan Clark for the huge amount of time she put into the management of this Darwin Initiative project.



## PREFACE

### ***What this guide does seek to do***

This Darwin Initiative project has set out to completely revise and update Dr F.R. Irvine's (and his collaborators') seminal work on the marine fishes of Ghana published in 1947 as part of his book *The Fish and Fisheries of the Gold Coast* and bring this part again to the wider audience in West Africa for which it was intended. To allow easy cross-referencing with Irvine's book, we include Irvine's figure numbers in brackets after each illustration and his family numbers in square brackets after each family name.

Keys are based on those of FAO but have been updated and expanded in many cases and generally key down to the species level. They cover about twice as many species as Irvine so that for each family included, all species that are likely to be encountered on the mainland coast of tropical West Africa are covered rather than just the more common species found in Ghana. We have also added notes on the fisheries importance of species within the region.

We considered it important to retain Irvine's carefully researched local names of the fishes. We have used the International Phonetic Alphabet (IPA) for these names as he did and added local names in Yoruba, Ilaje (a Yoruba dialect) and Ijaw. A guide to the pronunciation of the IPA characters is given in Appendix 1. We have also included some guidance to identifying fishes in Appendix 2 and a Glossary of common technical terms.

### ***What this guide does NOT seek to do***

This guide does not seek to replicate what is already widely available in the region. It should be used alongside the *FAO Species Identification Sheets for Fishery Purposes. Eastern Central Atlantic; Fishing Areas 34, 47 (in part)*, as these sheets contain a host a useful explanatory diagrams which we have not the space to reproduce here. Similarly, numerous guides to family exist for fishes including one in the *FAO Species Identification Sheets* and little purpose would be served in duplicating these. We have only provided keys for those families for which Irvine provided keys and have only included illustrations of fishes for those species for which Irvine did.

### ***Where the guide will work***

Our identification keys apply *only* to the tropical mainland coast of West Africa and in particular to the mainland coast of the Gulf of Guinea "Large Marine Ecosystem" between Guinea-Bissau (*ca* 12°N) and Cape Lopez, Gabon (*ca* 1°S). They should thus be reliable, covering all neritic fishes in coastal waters, for Guinea-Bissau, Guinée, Sierra Leone, Liberia, Côte d'Ivoire, Ghana, Togo, Benin, Nigeria, Cameroon, Equatorial Guinea (not offshore islands), Gabon and Congo-Brazzaville (to 5°S). They will also be useful in Sénégal, Gambia, Congo and northern Angola but as one moves north of 13°N and south of 9°S there will be a number of additional sub-tropical species, which are present but not listed in the keys. The Cape Verde Islands, São Tomé and Príncipe, Annobón and Bioko (Fernando Po) have several endemic and other species not recorded on the mainland coast. Accordingly, the keys should *not* be used in the Cape Verde Islands, and only with extreme caution at the other islands.





## INTRODUCTION

Dr F.R. Irvine's *The Fish and Fisheries of the Gold Coast* was published in 1947. The book was based on sixteen years experience as a science teacher in the then Gold Coast (now Ghana) from the mid-1920s until the Second World War and collections of over 420 fish specimens by the author and some 250 specimens by friends and colleagues. It was a remarkable and wide-ranging book which, apart from being the first attempt to catalogue the biodiversity of both the marine and freshwater fishes of Ghana, included detailed accounts of artisanal fishing techniques, methods for curing fish by drying, smoking and salting, the use of local plants for fish poisons, the seasonal occurrence of commercially important species and a fascinating record of the history and workings of the fishery in the Labadi district near Accra by a fellow teacher, Mr A.P. Brown. Irvine was also very interested in local vernacular names for the fishes and their etymology. He provided a unique record of the Fante, Ewe, Nzima, Ga, Adangme and some Yoruba names, inclusion of which he saw as fundamental to stimulating broader awareness of the biology of these resources in the coastal communities. In addition to the fishes, he reported on other aquatic species of fisheries and conservation importance including crustaceans (crabs, spiny lobsters and prawns), turtles, whales and dolphins, and the manatee.

Dr Irvine's work in the field was excellently supported and encouraged by two eminent ichthyologists at the British Museum (Natural History) in London; Mr J.R. Norman, who identified the marine specimens he sent back, and Dr Ethelwynn Trewavas, who identified his freshwater specimens. In both groups were found several species new to science. The result of this collaboration was a uniquely valuable and authoritative work but one which has unfortunately become somewhat dated and in need of revision over the 50 years since publication. It is also a book that was intended for a wider circulation in colleges and schools in the region and among amateur naturalists but is now mainly confined to the shelves of university libraries, museums and academic ichthyologists.

This Darwin Initiative project has set out to revise Irvine's (and his collaborators') seminal work on the marine fishes of Ghana and bring this part again to the wider audience in West Africa for which it was intended. In the process all the collections made by Irvine and colleagues and deposited at The Natural History Museum in London have been re-examined and the currently valid names of his species determined in the light of modern research. Unfortunately, his collection of duplicate specimens deposited in Ghana at Achimota College does not appear to have survived. Although Irvine focused on Ghana, his work has a much wider applicability within the region and the species he recorded are in the main widespread in tropical West Africa with most occurring from Senegal to Angola.

Let us hope that just as the book stimulated a generation of local naturalists and marine biologists in the middle of the 20<sup>th</sup> Century, it can stimulate a fresh interest in West African marine fishes at the start of the 21<sup>st</sup> Century and the new millennium.

### Revising Irvine's marine fishes

The authorship of the section on marine fishes in Irvine's book was by Mr J.R. Norman of the British Museum (Natural History) and Dr F.R. Irvine. Mr Norman had died before publication and Dr Irvine had to finalise the marine fishes section by himself. The final stages of putting the book together were further hampered by World War II and the inaccessibility of type specimens, which had been removed from London for safe storage. These factors explain some curious errors in the identifications.

We have retained the original layout and style of Irvine's book as far as possible and retained a few of the illustrations he used. In particular, we considered it important to retain Irvine's carefully researched local names of the fishes and have used the International Phonetic Alphabet (IPA) for these names as he did. A guide to the pronunciation of the IPA characters is given in Appendix 1. Additional local names in Yoruba, Ilaje (a Yoruba dialect) and Ijaw have been provided by Mr Bamikole Williams of the Nigerian Institute for Oceanographic and Marine Research and incorporated into the text. In the original text, the initial letters of the phonetic spellings of each local fish name were capitalised. This

use of capital IPA characters is contrary to standard practice (and was even in 1947) and we have rewritten phonetic spellings solely in lower case to be consistent with current usage.

We have extensively updated Norman and Irvine's taxonomy in the light of the over 50 years of scientific research that have been undertaken since the book was published. For common names we have adopted the official Food and Agriculture Organisation of the United Nations (FAO) English and French names. Irvine attached numbers to most of the specimens he sent to The Natural History Museum in London and refers to these numbers in the book. We have matched these numbers to the museum's official registration numbers so that future researchers can locate his specimens with ease. An *Access* electronic database has also been set up which matches the scientific names used in Irvine's book to the correct names in current use and matches his numbers with their official registration numbers at The Natural History Museum.

The *Marine Fishes* section of Irvine's book covers about 180 species in almost 60 families with identifications being based on about 280 collections of specimens made by Irvine and collaborators in Ghana. About 225 jars of specimens were located among the 'spirit' collections at The Natural History Museum in London and all the specimens therein were measured and reidentified. Most specimens still retained Irvine's numbered paper tags tied to them and so the BMNH registration numbers could generally be matched to Irvines's collection numbers (listed under each species in his book). About a quarter of the species for which Irvine's specimens were located, were found to have been misidentified. However, given the relatively poor knowledge of the West African fish fauna at that time, correctly identifying the remaining three-quarters was an impressive feat.

Six of the species collected by Irvine were correctly surmised to be new to science by Norman and were described by him as new species between 1930 and 1935. These were the following:-

- Whitespotted guitarfish, *Rhinobatos albomaculatus* Norman, 1930
- Irvine's guitarfish, *Rhinobatos irvinei* Norman, 1931
- Ghanaian comber, *Serranus accraensis* (Norman, 1931)
- Blacktail picarel, *Spicara nigricauda* (Norman, 1931)
- Zebra tilefish, *Branchiostegus semifasciatus* (Norman, 1931) and
- Accra scorpionfish, *Pontinus accraensis* Norman, 1935.

These species are indicated by "\*\*\*" after their common names and the references for their original descriptions are included. A further eight species collected by Irvine were at the time unknown to science and have since been described by others as new species. These were not recognised as new species at the time by Norman and Irvine but were identified by them as similar looking well-known species. These were the following:-

Current name	Irvine name
<i>Panturichthys isognathus</i> Poll, 1953	Not listed in book but specimen collected in 1938
<i>Dentex angolensis</i> Poll and Maul, 1953	<i>Dentex macrophthalmus</i> (Bloch, 1791) (in part)
<i>Dentex congoensis</i> Poll, 1954	<i>Dentex macrophthalmus</i> (Bloch, 1791) (in part), <i>D. cunninghami</i> Regan, 1905 (in part)
<i>Pagrus africanus</i> Akazaki, 1962	<i>Pagrus pagrus</i> (Linnaeus, 1758)
<i>Chromis cadenati</i> (Whitley, 1951)	<i>Chromis chromis</i> (Linnaeus, 1758)
<i>Trachinus collignoni</i> Roux, 1957	<i>Trachinus lineolatus</i> Fischer, 1885
<i>Uranoscopus polli</i> Cadenat, 1953	<i>Uranoscopus scaber</i> Linnaeus, 1758
<i>Chelidonichthys gabonensis</i> (Poll and Roux, 1955)	<i>Trigla hirundo</i> Linnaeus, 1758

The valid names currently accepted for many of the species have changed since 1947 and for 45% of the correctly identified species, the names used by Irvine are now regarded as either as out-of-date 'junior synonyms' or placed the species in a different genus than that which is now accepted. His nomenclature was thus in need of major revision and we have updated it as far as possible. There were

a few species listed by Irvine for which no voucher specimens could be located and which are very unlikely to occur off Ghana. In such cases, where we consider his records likely to be in error, we have added “(?)” after the common name for the species.

Irvine included keys to common genera and species for some 33 families. These included about 145 taxa. We have completely revised these keys and provide keys to the West African genera and species for 35 families of fishes covering some 265 taxa. Our keys are based primarily on the FAO keys in Fischer, Bianchi and Scott (1981), *FAO Species Identification Sheets for Fishery Purposes. Eastern Central Atlantic; Fishing Areas 34, 47 (in part)*. This reference, although now a little dated, remains the best one for identifying fishes from the region. We have updated nomenclature in those families which have been revised since 1981. Other useful references are listed in the reference section.

Our identification keys are generally to species and apply *only* to the tropical mainland coast of West Africa and in particular to the mainland coast of the Gulf of Guinea “Large Marine Ecosystem” between Guinea-Bissau (*ca* 12°N) and Cape Lopez, Gabon (*ca* 1°S). They should thus be reliable, covering all neritic fishes in coastal waters, for Guinea-Bissau, Guinée, Sierra Leone, Liberia, Côte d’Ivoire, Ghana, Togo, Benin, Nigeria, Cameroon, Equatorial Guinea (not offshore islands), Gabon and Congo-Brazzaville (to 5°S). They will also be useful in Sénégal, Gambia, Congo and northern Angola but as one moves north of 13°N and south of 9°S there will be a number of additional sub-tropical species, which are present but not listed in the keys. The Cape Verde Islands, São Tomé and Príncipe, Annobón and Bioko (Fernando Po) have several endemic and other species not recorded on the mainland coast. Accordingly, the keys should *not* be used in the Cape Verde Islands, and only with extreme caution at the other islands. The keys should, where possible, be used alongside the *FAO Species Identification Sheets for Fishery Purposes. Eastern Central Atlantic; Fishing Areas 34, 47 (in part)*, as these sheets contain a host of useful explanatory diagrams which we have not the space to reproduce here. However, we have included some guidance to identifying fishes in Appendix 2 and a Glossary of common technical terms.

We have replaced most of Irvine’s illustrations with much better FAO line drawings, primarily taken from Fischer, Bianchi and Scott (1981). We have included some 120 illustrations and after each we have put Irvine’s figure number in parentheses to allow cross-referencing to his original figures. This should be particularly useful where Irvine and Norman misidentified specimens. Also, after each family name we have retained Irvine’s family numbers in square brackets to allow easy cross-referencing to his original text.

Data on the fisheries importance of the species has been compiled from *FAO Yearbooks on Fishery Statistics: Capture Production* (1998) and average annual landings in tonnes calculated for principal fisheries species for the years 1993–1998. This additional fisheries information has been added to the taxonomic accounts so that the economic importance of the various families and species is clear.

## SHARKS AND RAYS (EUSELACHII)

The principal differences between the selachians and the bonyfishes have been already mentioned. The simplest field character by which the sharks and rays may be distinguished is the possession of five or more slit-like gill-openings on each side<sup>1</sup> instead of the single one, and the covering of the body which is usually beset with minute denticles that extend on to the fins as well. These denticles have a similar structure to the teeth, which in sharks and rays are set in the gums and not embedded in the bones of the jaws as in most bonyfishes. The males are always provided with organs known as 'claspers', which are elongate rod-like processes of the pelvic fins, and whose purpose is to fertilise the eggs of the females. Thus, in sharks and rays it is comparatively easy to determine the sex of a particular fish, whereas in most bonyfishes the sexes are alike and internal fertilisation is the exception rather than the rule. All the larger sharks and many of the rays produce their young alive, unlike the majority of bonyfishes, which produce eggs. In the field the sharks may be distinguished from the rays by their less depressed form and by the powerful caudal fin with well-developed upper lobe, as well as by the position of the external gill-openings on the sides of the head. On average about 40,000 tonnes of sharks and rays are caught in the region each year.

### SIXGILL AND SEVENGILL SHARKS (HEXANCHIDAE) [1.]

These are primitive sharks, distinguished from all other West African forms by having six or seven external gill-openings on each side. There is only one dorsal fin, which is placed opposite to the anal. The body is moderately elongate. The teeth are unlike in the two jaws, those in the upper jaw usually having a large central cusp and smaller lateral cusps, those in the lower jaw comb-like, each consisting of numerous graduated pointed cusps inclining in the same direction and supported on a long basal plate.

The few species of this family are widely distributed in most warm seas. Two occur off the coast of tropical and subtropical West Africa. Irvine did not collect specimens of either but noted that the two species "may perhaps occur" off the coast of Ghana.

#### **Bluntnose sixgill shark, Requin grisé**

*Hexanchus griseus* (Bonnaterre, 1788)

*Irvine name:* Griset or six-gilled shark – *Hexanchus griseus* (Bonn.).

*Reference material:* None.

*Distribution:* In the eastern Atlantic known from Norway to Namibia. Also widespread in the western Atlantic, Mediterranean and Indo-Pacific.

Grows to a total length of 4.8 m or more. Dark brownish grey or black above, paler beneath. Small specimens are brown. Feeds almost entirely on fishes and said to be voracious. Viviparous.

The flesh is stated to be purgative and of no value as food.

This species has been found in West African waters, and may well occur on the coast of Ghana.

#### **Sharpnose sevengill shark, Requin perlon**

*Heptranchias perlo* (Bonnaterre, 1788)

*Irvine name:* Perlon or seven-gilled shark – *Heptranchias perlo* (Bonn.).

*Reference material:* None.

*Distribution:* In the eastern Atlantic known from Morocco to Angola. Also recorded from the Mediterranean, western Atlantic, SW Indian Ocean and the western Pacific.

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<sup>1</sup> This character will serve to distinguish any large shark from a whale or other cetacean. A whale may also be recognised by the position of the tail-fin, which is set horizontally instead of vertically as in a shark.

Grows to a total length of 1.37 m or more. Easily distinguished from the above by the presence of seven instead of six gill-openings. Brown or grey above, becoming paler beneath; the back, especially in the young, sometimes with scattered dark spots.

The livers are used in Japan for the oil.

This species has been found in West African waters, and may well occur on the coast of Ghana.

### SAND TIGER SHARKS (ODONTASPIDIDAE) [2.]

These sharks may be distinguished by the absence of nictitating eyelids, presence of two dorsal fins, five gill-slits on each side which do not extend onto the upper surface of the head and are in front of the pectoral fins, the absence of keels on the caudal peduncle and strong upper precaudal pit, small eyes and their slender, unserrated, dagger-like teeth with cusplets either side.

There are two genera with four species: one of which occurs off the coast of West Africa. Irvine did not collect any specimens but noted that the species below might occur off the coast of Ghana.

#### **Sand tiger shark, Requin tonneau** *Eugomphosus taurus* (Rafinesque, 1809)

*Irvine name:* Sand shark or slender-toothed shark – *Odontaspis taurus* (Rafin.).

*Reference material:* None.

*Distribution:* In the eastern Atlantic ranges from Morocco to Cameroon. Also occurs in the Mediterranean, western Atlantic, western Pacific and off South Africa.

Grows to a total length of about 3.2 m but is usually considerably smaller. Brown or greyish brown above, paler beneath; sometimes blotched or mottled with darker spots, especially in the young. A voracious shark, feeding mainly on fishes, but also taking squids and crustaceans.

The sand tiger shark is of little commercial value, except for its skin, which provides a good leather.

This species has been found in West African waters, but so far I have discovered no records of its occurrence from fishermen on the coast of Ghana (F.R.I.).

### MACKEREL SHARKS (LAMNIDAE) [3.]

Large pelagic sharks, with the spiracles minute or absent, the pectoral fins sickle-shaped, and the caudal fin strongly heterocercal (i.e. with the hinder end of the vertebral column bent upwards and the lower lobe of the fin taking its origin entirely from the lower side of this portion). The second dorsal fin is much smaller than the first and is placed opposite to the anal.

Members of this family are found in most of the seas of the world. Three genera are recognized, of which two occur off the coast of tropical West Africa.

#### *Key to the tropical West African genera and species*

1. Upper teeth triangular and with serrated edges; origin of first dorsal fin directly above or slightly anterior to rear edge of the insertion of the pectoral fins; anal fin origin slightly posterior to rear of dorsal fin base ..... Great white shark, *Carcharodon carcharias*  
Upper teeth with smooth-edged cusps; origin of first dorsal fin distinctly posterior to rear edge of insertion of pectoral fins; anal fin origin below about middle of second dorsal fin base ..... 2
2. Snout usually acutely pointed; pectoral fins considerably shorter than head length; origin of anal fin about under middle of base of second dorsal fin; underside of snout and mouth white ..... Shortfin mako, *Isurus oxyrinchus*  
Snout narrowly to bluntly (usually not acutely) pointed; pectoral fins about as long as head; origin of anal fin approximately under rear-end of second dorsal fin base; underside of snout and mouth dusky ..... Longfin mako, *Isurus paucus*

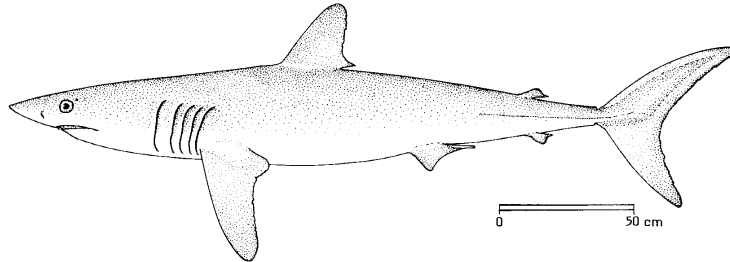
**Shortfin mako, Taupe bleu**  
*Isurus oxyrinchus* Rafinesque, 1810

**sapɛ:** Ga. **sumɛli:** Aɗaŋme. (?) **muẽ-saflo:** Ga. **ofurumo:** Ijaw.

*Irvine name:* Mediterranean mackerel shark – *Isurus oxyrinchus* Rafin.

*Reference material:* None.

*Distribution:* Cosmopolitan in tropical and temperate seas.



Shortfin mako shark, *Isurus oxyrinchus*. (Fig. 17.)

Grows to a length of 4.0 m and common to 2.7 m total length. Dark bluish black above, whitish beneath. The porbeagles and mackerel sharks are fierce and voracious, and feed mainly on fish, which they generally swallow whole. They are savage and may be dangerous to man. They are viviparous, and two to five young may be born at a time.

They are of very little value as food, but the livers of some species provide a useful oil. On average about 30 tonnes of *Isurus* are recorded as being caught in the region each year.

This species was seen by Irvine at Accra in July 1938.

**Great white shark, Grand requin blanc**  
*Carcharodon carcharias* (Linnaeus, 1758)

**ogboole:** Aɗaŋme (Prampram). **ofurumo:** Ijaw.

*Irvine name:* Great white shark or man-eater – *Carcharodon rondeletii* M. & H. A junior synonym.

*Reference material:* None.

*Distribution:* In the tropical eastern Atlantic off Senegal, Ghana and Congo. Elsewhere widespread in subtropical and temperate seas.

Grows to a total length of 6.4 m or even more. Fossil teeth referable to this genus indicate that in Eocene times these sharks must have attained a length of 18–24 m This shark is very similar in appearance to the mackerel sharks, but the teeth are broadly triangular and are finely serrated along the edges. Bluish grey or slaty brown above, yellowish or white beneath. A very voracious shark, feeding mainly on fishes, but also including turtles and even seals and sea lions in its diet. Is said to be dangerous to man. Viviparous. A 4.2 m female, weighing 2.54 tonnes, was captured near Alexandria in Egypt in 1934, and was found to contain nine young (embryos), each 60 cm in length and weighing 49 kg.

Irvine noted that this shark had been found in West African waters and probably occurred off Ghana. Local fishermen have recorded huge specimens of sharks, almost too large to haul into the boats and fierce enough to attack men, which were identified on the spot as belonging to this species, but the description might equally well apply to one of the larger pelagic sharks of the genus *Carcharhinus* (q.v.).

Governor Hodson reported in December 1939 one man being attacked and severely mauled by a shark. Fortunately occupants of the canoe beat off the shark with their paddles.

### THRESHER SHARKS (ALOPIIDAE) [3.]

Irvine included the thresher sharks in the family Lamnidae.

#### **Thresher shark, Renard**

*Alopias vulpinus* (Bonnaterre, 1788)

**awutʃɛ:** Ga (Nortey). **ofurumo:** Ijaw.

*Irvine name:* Thresher shark or fox shark – *Alopias vulpes* (Gmelin). A junior synonym.

*Reference material:* None.

*Distribution:* In the eastern Atlantic recorded from Norway to Ghana. Elsewhere wide-ranging in temperate and tropical seas.

Grows to a total length of 5–6 m and common between 4.3–4.9 m total length. This shark is easily recognized by its excessively long tail, in which the upper lobe is as long as the rest of the body. Unlike the mackerel shark and the great white shark, there is no keel on each side of the tail. It is dark greyish brown or nearly black above and white beneath, the change in colour being abrupt. It is not especially ferocious and is seldom known to attack animals other than small fish such as shoals of herrings, sardines or mackerel, which it ‘rounds up’ by swimming round them and beating the water with its long tail, thus driving them into an ever decreasing area until it is able to devour them with ease. It is harmless to man. It is said to frighten Ghanaian fishermen by laughing, and by striking the canoe with its long tail; the fishermen, in fear, jump overboard. There was no evidence that it bites. (Nortey.) Little is known of its breeding habits, but it is viviparous and the young are said to be born in the summer.

Irvine noted that this species was likely to occur in West African waters, but, that so far, he had been unable to obtain any record for Ghana, and that Ablo stated that it did not occur in the region. He also noted that the Ga name *adzenseke*, given to him when describing a thresher shark, was more probably applied to a porpoise. The Bigeye thresher, *Alopias superciliosus* is also likely to be found in the area and can be distinguished from *A. vulpinus* by the grooves on either side of the nape which form a V-shape on the back of the head stretching from behind the eyes to above the posterior gill-slits.

### NURSE SHARKS (GINGLYMOSTOMATIDAE) [4.]

These are rather large sharks of warm seas. Of the three genera and species only one is found off the coast of West Africa.

#### **Nurse shark, Requin nourrice**

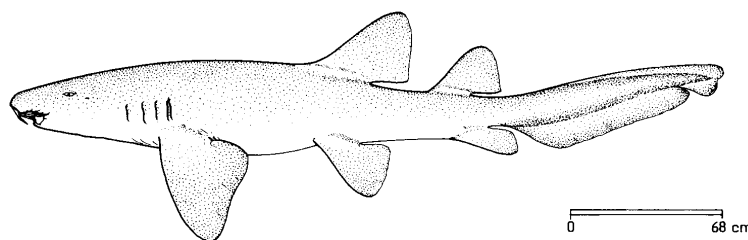
*Ginglymostoma cirratum* (Bonnaterre, 1788)

**abadi oma:** Ijaw.

*Irvine name:* Common nurse shark – *Ginglymostoma cirratum* (Bonn.).

*Reference material:* None.

*Distribution:* In the tropical eastern Atlantic recorded from the Cape Verde Islands to Gabon. Also occurs in the western Atlantic and eastern Pacific.



Nurse shark, *Ginglymostoma cirratum*. (Fig. 18.)

Grows to a total length of 4.3 m but generally under 3 m long. May be readily recognized by the pair of small barbels, one on either side of the mouth, and by the uniform brownish colour. The young often have small scattered spots. The teeth are small, each with two or five cusps, of which the middle one is much the strongest; there are several rows of teeth in use at the same time. Nurse sharks are shore dwelling fishes, often found in shallow water, and sometimes basking in the sun in small groups. Their food is varied, and includes fish, crustaceans, squids, cuttlefishes, sea urchins and molluscs. They are quite inoffensive, and can readily be driven into shallow water and killed with ease. They are ovoviviparous, the eggs being hatched within the body from egg-cases similar to those of the dogfishes. One female, 2.43 m. in length, was found to contain 26 embryos.

The skin makes a particularly good shagreen, but they have little other commercial value.

The name 'nurse' or 'nusse' is an ancient one for a large fish, and is also used as a term of contempt because of the ease with which this shark can be captured. The African fishermen at Dakar, where it is caught from July–August onwards, call it 'sleeper'.

Irvine noted: "This species has been recorded from various parts of the West African coast, and almost certainly occurs off the coast of the Gold Coast [Ghana]" and so did not himself see this species.

#### REQUIEM SHARKS (CARCHARHINIDAE) [5.]

This is a large family which includes the majority of the existing larger sharks. Blue sharks may be recognised especially by the presence of a third eyelid or nictitating membrane, which can be pulled over the eye from below. The tail normally has no keel. There are two dorsal fins, the first being situated well in front of the pelvic fins, the second smaller and placed more or less above the anal fin. Some of the members of the family are large and voracious, while others are quite small, blunt-toothed, and more or less harmless. They are ovo-viviparous, the eggs being hatched in a kind of uterus or 'womb', sometimes with a placenta-like attachment.

The members of the family are cosmopolitan in distribution. About thirteen genera and numerous species are recognised, of which at least eight occur off the coast of Ghana. The hammerhead sharks are now considered to be members of this family but for conformity with Fischer, Bianchi and Scott (1981) we treat them separately here. On average about 29,500 tonnes of 'other' sharks are recorded as being caught in the region each year, the majority of which are probably in this family.

#### *Key to the tropical West African genera and species*

1. Second dorsal fin almost as large as first dorsal fin ..... Lemon shark, *Negaprion brevirostris*  
 Second dorsal fin considerably smaller than first dorsal fin ..... 2
2. Vertical through rear of base of first dorsal fin passes noticeably closer to pelvic fins than to pectoral fins; inner gill slits with short gill-rakers; back dark blue, fading to purple-black after death .....  
 ..... Blue shark, *Prionace glauca*  
 Vertical through rear of base of first dorsal fin is closer to pectoral fins than pelvic fins (usually) or equidistant; no gill-rakers; back grey, blue-grey, or brownish ..... 3
3. Spiracles present; caudal peduncle with a low keel on either side ..... Tiger shark, *Galeocerdo cuvier*  
 Spiracles not present; no keels on sides of caudal peduncle ..... 4
4. Upper labial folds long and prominent, horizontal on upper lip; anal fin base expanded anteriorly into a pair of preanal ridges which are at least as long and usually longer than the anal fin base .....  
 ..... Milk shark, *Rhizoprionodon acutus*  
 Upper labial folds short to rudimentary, almost vertical at mouth corners; preanal ridges absent or very short ..... 5
5. Upper anterior teeth with narrow cusps, well delimited from bases ..... 6  
 Upper anterior teeth with broadly triangular cusps, not well delimited from bases ..... 10



6. Upper teeth with enlarged serrations or small cusplets on bases; dermal ridge present on back between dorsal fins; free rear tip of second dorsal fin notably elongated ..... 7  
Upper teeth without any enlarged serrations or small cusplets on bases; no dermal ridge present on back between dorsal fins (*C. brachyurus* occasionally has a weak ridge); free rear tip of second dorsal fin not elongated ..... 8
7. Snout very long and narrow; cusps of teeth smooth or with weak serrations; first dorsal fin origin about over inner margin of free rear tips of pectoral fins ..... Night shark, *Carcharhinus signatus*  
Snout short and relatively broad; cusps of upper teeth strongly serrated; first dorsal fin origin posterior to free rear tips of pectoral fins ..... Silky shark, *Carcharhinus falciformis*
8. Upper teeth relatively asymmetrical, with bent, oblique cusps; snout rounded; gill slits relatively short ..... Copper shark, *Carcharhinus brachyurus*  
Upper teeth relatively symmetrical, with straight, more erect cusps; snout more pointed; gill slits relatively long ..... 9
9. First dorsal fin relatively low, its height less than 45% of distance between the first and second dorsal fin bases; first dorsal fin origin over or just behind free rear tips of pectoral fins; teeth in lower jaw with smooth edges ..... Spinner shark, *Carcharhinus brevipinna*  
First dorsal fin relatively high, its height more than 45% of distance between the first and second dorsal fin bases; first dorsal fin origin over or just behind rear of pectoral fin insertions; at least some fins with black tips; teeth serrated in both jaws ..... Blacktip shark, *Carcharhinus limbatus*
10. Pectoral and first dorsal fins very broad distally and broadly rounded at their tips; free rear tip of anal fin nearly reaches lower caudal fin origin; pectoral fins as long, or even longer than head length ..... Oceanic whitetip shark, *Carcharhinus longimanus*  
Pectoral and first dorsal fins narrower distally and narrowly rounded or pointed at their tips; free rear tip of anal fin ending well in front of lower caudal fin origin; pectoral fins shorter than head length ..... 11
11. Snout very short, its length about equal to, or less than the internasal space; no dermal ridge present on back between dorsal fins; bases of lower anterior lateral teeth strongly arched ..... 12  
Snout length greater than the internasal space; dermal ridge present on back between dorsal fins; bases of lower anterior lateral teeth usually not strongly arched but nearly straight although may be notched in middle (occasionally arched in large individuals of *C. obscurus*) ..... 13
12. First dorsal fin less than 3.2 times the height of the second dorsal fin ..... Bull shark, *Carcharhinus leucas*  
First dorsal fin 3.2 or more times the height of the second dorsal fin ..... Pigeye shark, *Carcharhinus amboinensis*
13. Origin of first dorsal fin above or anterior to rear of pectoral fin insertions; first dorsal fin very high, its height about half the distance from snout tip to its origin ..... Sandbar shark, *Carcharhinus plumbeus*  
Origin of first dorsal fin posterior to rear of pectoral fin insertions; height of first dorsal fin considerably less than half the distance from snout tip to its origin ..... 14
14. First dorsal fin lower, with a convex anterior margin; pectoral fins falcate; second dorsal fin relatively low, with a nearly straight posterior margin; upper teeth relatively broad and low; anterior nasal flaps rudimentary ..... Dusky shark, *Carcharhinus obscurus*  
First dorsal fin higher, with a nearly straight anterior margin; pectoral fins nearly straight, not very falcate; second dorsal fin relatively high, with a more concave posterior margin; upper teeth relatively narrow and long; anterior nasal flaps prominent ..... Bignose shark, *Carcharhinus altimus*

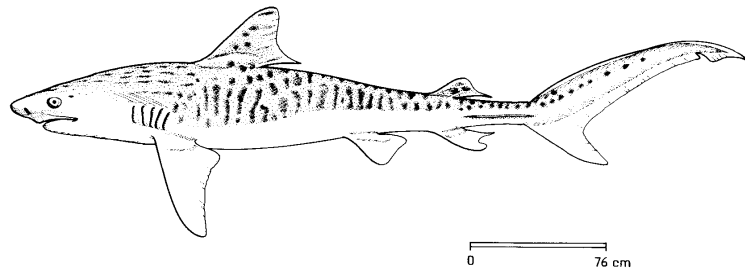
**Tiger shark, Requin tigre commun**  
*Galeocerdo cuvier* (Peron and LeSueur, 1822)

᠒ᠰᠴᠣ᠒ ᠠᠯᠠᠨᠲᠡ: Ga. mpo-agyinamoa: Fante. ʒume-dadi: Ewe. ofurumo: Ijaw.

Irvine name: Tiger shark – *Galeocerdo arcticus* (Faber). A junior synonym.

*Reference material:* Accra (Irvine 155) – BMNH 1934.10.10:1 (1 specimen: 680 mm TL, 444 mm precaudal length).

*Distribution:* All tropical seas.



Tiger shark, *Galeocerdo cuvier*. (Fig. 19.)

Grows to a total length. of 6.5 m or more. Grey or brown above, white beneath; the back and flanks are covered with dark grey spots, of which some on the sides may form short vertical stripes. The teeth are of a peculiar shape, each being flat and sickle-shaped, with a fluted edge, and with a triangular point at the summit which projects obliquely outwards. The head is broad and flat, and the snout bluntly rounded. This shark is celebrated for its voracity, and its food includes porpoises, water birds, turtles, sharks, other fishes, and crabs. It is said to attack man. It has been described as approaching the shore in Ghana, generally in October and November, where it can be caught, and at times enters harbours and estuaries in other parts of the world. Numerous young may be produced at a time, and Captain Young found as many as 57 embryos in a single female.

The tiger shark is said to be edible, but of poorer quality than the blue sharks. Its skin provides a valuable commercial leather, and means have now been discovered of removing the dermal denticles. The liver yields a medicinal oil in good quantity. The fins can be dried and used for making soup, and the flesh is also dried and salted. The rest of the body can be used for the manufacture of poultry food or fertilizer.

The Ga name  $\eta\text{f}\text{o}\eta$  *alonte* is derived from  $\eta\text{f}\text{o}\eta$  (sea) and *alonte* (a cat), probably because of its cat-like mouth. The Fante and Ewe names have the same meaning.

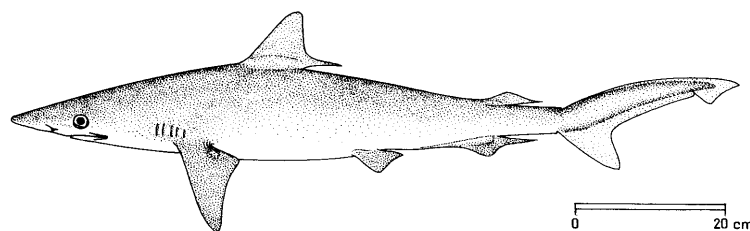
**Milk shark, Requin à museau pointu**  
*Rhizoprionodon acutus* (Rüppell, 1837)

**ogboole:** Ga, Adaŋme. **tʃaflɔbi:** Ga. **mfii:** Ga (when young). **samle:** Adaŋme (Prampram). **sɛmire:** Fante. **sɛmin:** Fante (Dict.). **isua:** Fante (Dict.). **epaa:** Fante. **anzone:** Nzima (Axim). **blekponamu:** Ewe. **nyɔyɔ:** Yoruba. **ofurumo:** Ijaw.

*Irvine name:* Blue shark or sharp-nosed shark – *Scoliodon terraenovae* (Rich.). Misidentification.

*Reference material:* Accra, Jan. 1929 (Irvine 14) – BMNH 1930.3.24:1 (1 specimen: 440 mm precaudal length); Accra, 1935 (Irvine 297); Prampram, Sept. 1938 (Irvine 322) – BMNH 1939.7.12:1 (1 specimen: 610 mm precaudal length); Accra, Sept. 1938 (Irvine 337).

*Distribution:* In the eastern Atlantic recorded from Madeira and Mauritania to Angola. Also found in the Indo-West Pacific from South Africa and the Red Sea eastwards to Japan and Australia.



Milk shark, *Rhizoprionodon acutus*. (Fig. 20.)

Grows to a total length of 1.8 m but adults seldom exceed one metre in length. Bluish grey above, paler on the flanks, and whitish beneath. The food of this shark consists mainly of fish, and specimens of horse mackerel and Spanish mackerel were taken from the stomach of a specimen reportedly 2.4 m long taken at Prampram in September 1938. It can give a severe bite, but is said not to attack man as a rule. In the specimen just mentioned were eight or more eggs, each an inch in diameter and full of yolk, and a number of smaller eggs in addition.

It is edible, and is often cut up into small pieces (steaks), smoked, and sold in the markets. The male reproductive organs (soft roes) are eaten as special delicacies. Backbones of large sharks of this kind are used for making canes.

It is sometimes caught by means of hooks and lines operated from the shore, or in shore seines, the season extending from June to September. It is sometimes taken with hooks in deep water.

The full-grown fish known as *ogboole* (Ga) is said to be the adult stage of *tʃaflɔbi* (Ga): when young it is called *mfii* (Ga).

#### HAMMERHEAD SHARKS (SPHYRNINAE) [5.]

The hammerheads were correctly included in the Carcharhinidae by Irvine but for conformity with Fischer, Bianchi and Scott (1981) we treat them separately here (but as a subfamily grouping). Three species of hammerhead probably occur along the coast of tropical West Africa. However, it is possible that five may occur there, including those reported by Irvine (*Sphyrna zygaena* and *S. tudes*). We consider his records doubtful but could not check them as neither of his voucher specimens could be located. On average about 120 tonnes of hammerheads are recorded as being caught in the region each year. The main fishery species is *Sphyrna lewini*.

#### Smooth hammerhead, Requin-marteau commun (?)

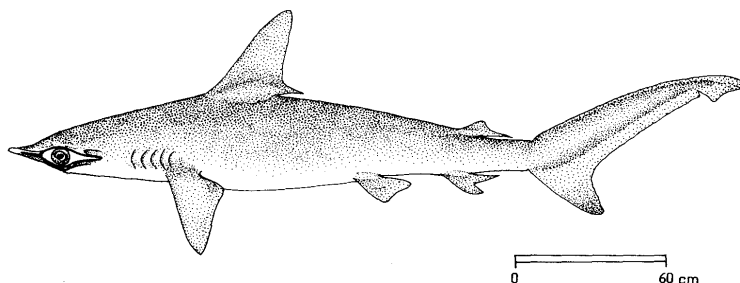
*Sphyrna zygaena* (Linnaeus, 1758)

**antɔŋ:** Ga. **ogboole:** Ga. **paa:** Fante. **anam-tave:** Ewe (Keta). **blekponamu:** Ewe. **toŋkuɖeavalame:** Ewe.

*Irvine name:* Hammer-headed shark – *Sphyrna zygaena* (Linn.).

*Reference material:* Aug. 1938 (Irvine 295). A 210 cm male specimen was seen at Accra in May 1938. No specimens were found which could confirm Irvine's record.

*Distribution:* In the eastern Atlantic known from Morocco to Senegal and it unclear whether reports from Ivory Coast and Ghana, such as Irvine's, refer to this species or the Great hammerhead *Sphyrna mokarran* or Scalloped hammerhead *S. lewini* both of which are reported from the Gulf of Guinea area.



Smooth hammerhead, *Sphyrna zygaena*. (Fig. 21.)

Grows to a total length of about 4 m but adults tend to be in 2.75–3.35 m size range. This remarkable shark has the eyes at the sides of lateral extensions of the front of the head, which give the latter the form of a hammer. The purpose of this arrangement is not clear, but it has been suggested that the expanded area acts as a sort of 'bow rudder'. The general colour is dark grey. It is of a fierce

disposition and is said to attack man. The normal food consists mainly of fishes. A female specimen caught at Dakar, where it is reported as common, had 40 embryos - 20 in each uterus. This specimen was 4.1 m. long and was taken in June. The species is said to occur in deeper water than the next.

The skin is said to be somewhat thin, but to provide a durable and handsome leather.

The Ewe name *anam-tave* is derived from *anam* (the fish), from *nam*, Fante, meaning 'flesh', 'fish', etc., *ta* (head), and *ve* (two), i.e. 'the fish with two heads'. The Ewe name *tonkuɖeavalame* means 'having eyes in each wing (of its head)'.

According to Dr M. J. Field there is a constellation and a season named after this shark.

### **Whitefin hammerhead, Requin-marteau aile blanche (?)**

*Sphyrna couardi* Cadenat, 1950

**ogboole:** Ga. **Sikpon antɔŋ:** Ga. **anam-tave:** Ewe. **blekponamu:** Ewe. **tonkuɖeavalame:** Ewe.

*Irvine name:* Shovel-headed shark – *Sphyrna tudes* (Val.). This western Atlantic species is not recorded from the area although there is a doubtful record from the Mediterranean. Probably a misidentification.

*Reference material:* Tema, Dec. 1935 (Irvine 298, p.p. M. J. Field). No specimens were found which could confirm Irvine's record.

*Distribution:* In the eastern Atlantic known from Senegal to Congo.

Grows to a total length of 3 m. Easily distinguished from the preceding species by the shape of the head, which resembles that of a shovel. The general colour is greyish brown.

Said to be found nearer the shore than other *Sphyrna* species.

### SMOOTH-HOUNDS (TRIAKIDAE) [5.]

The smooth-hounds were included in the Carcharhinidae by Irvine but are generally considered a separate family. The family includes about nine genera and 39 species of which two occur off tropical West Africa.

#### *Key to the tropical West African genera and species*

1. Eyes on sides of head; teeth bladelike, with strong cusp and cusplets, and not in a pavement; second dorsal fin about as large as anal fin; caudal fin with a prominent lower lobe; no interdorsal ridge ..... Tope shark, *Galeorhinus galeus*  
Eyes above sides of head; teeth not bladelike but blunt crowned and forming a pavement; second dorsal fin much larger than anal fin; caudal fin with a weak lower lobe; interdorsal ridge present ..... Smoothhound, *Mustelus mustelus*

#### **Smoothhound, Emissole lisse**

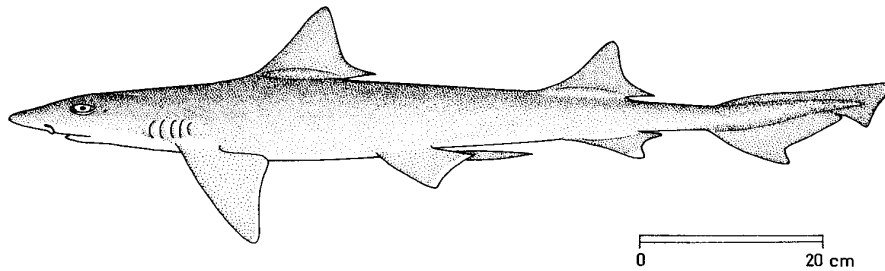
*Mustelus mustelus* Linnaeus, 1758

**lɛlɛ kabi:** Ga. **lale akabi:** Ga. **kumade:** Aɖaŋme. **blekponamu:** Ewe.

*Irvine name:* Smooth hound – *Mustelus canis* (Mitchill). Misidentification.

*Reference material:* Accra, July–Aug. 1938 (Irvine 294) – BMNH 1938.12.15:1 (1 specimen: 556 mm precaudal length); Accra, Aug. 1938 (Irvine) – BMNH Unregistered duplicate (1 specimen: 222 mm precaudal length).

*Distribution:* Recorded in the eastern Atlantic from the British Isles to South Africa and the Mediterranean.



Smooth hound, *Mustelus mustelus*. (Fig. 22.)

Grows to a length of 1.6 m but generally 100–120 cm long. The general colour is dull brownish grey above and cream beneath. A small, harmless, bottom-living shark, with an omnivorous diet. From four to twelve young are usually produced at a birth, but many more have been recorded. When born they are generally rather more than 30 cm in length.

The smooth hound is edible, and is caught by hooks off the coast of Ghana, where it is quite common. On average about 180 tonnes of *Mustelus* spp. are recorded as being caught in the region each year.

#### ANGEL SHARKS (SQUATINIDAE) [6.]

Smallish sharks, readily distinguished by the flattened body and head, with the transverse mouth placed at the end and armed with sharply pointed teeth, and by the large wing-like pectoral fins, from which they derive their name. In outward appearance they are intermediate between the sharks and the rays, but their anatomy shows them not to be rays. They occur mainly in temperate seas, but are also found in the tropics. There is only one existing genus, with about twelve species, of which probably two occur off the coast of Ghana.

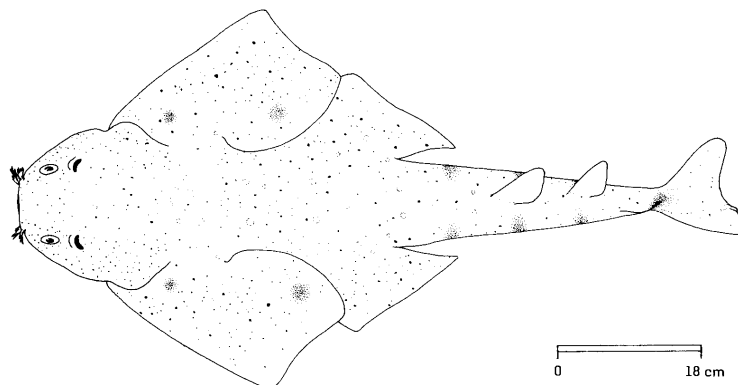
#### **Smoothback angelshark, Ange de mer ocellé** *Squatina oculata* Bonaparte, 1840

**tɔ wɪtɔ wi:** Ga, Adanɔme.

*Irvine name:* Angel shark or monkfish – *Squatina oculata* Bonap.

*Reference material:* Skin at Achimota (from Christiansborg), Aug. 1938 (Irvine). No specimen available to examine.

*Distribution:* Mediterranean and eastern Atlantic from Morocco to Angola.



Smoothback angel shark, *Squatina oculata*. (Fig. 23.)

Grows to a total length of 1.6 m but most adults 30–95 cm long. The dried skin is brownish, and is covered with small, round, white denticles, which give it a spotted appearance. In life the upper surface is greyish or brownish, with a number of small white spots, of which those on the body are distinct and more or less regularly arranged. The belly is white. This is a bottom-feeding shark, and lives mostly on

crustaceans and molluscs. It is described as 'not biting fiercely', but its grip with the jaws is most tenacious. It is viviparous, and produces as many as 20 young at a time.

It is said to be caught about November or December, but specimens are rarely landed. The Lagosians use the flesh as medicine. The Sawback angelshark, *Squatina aculeata* also occurs off Ghana and can be distinguished from *S. oculata* by the row of large thornlike denticles along the midline of the back.

#### ELECTRIC RAYS (TORPEDINIDAE) [7.]

Rays with an almost circular body and a short thick tail, with a distinct caudal fin. The skin is soft, smooth, and has no denticles. The eyes are small. On each side of the disk, between the head and the pectoral fins, is a large electric organ composed of masses of hexagonal cells containing a jelly-like substance. These rays are found in nearly all warm seas, and are of moderate or large size. They have long been known for their power of giving strong electric shocks. One genus and about 13 species are known, of which at least four occur off the coast of tropical West Africa.

### Electric ray

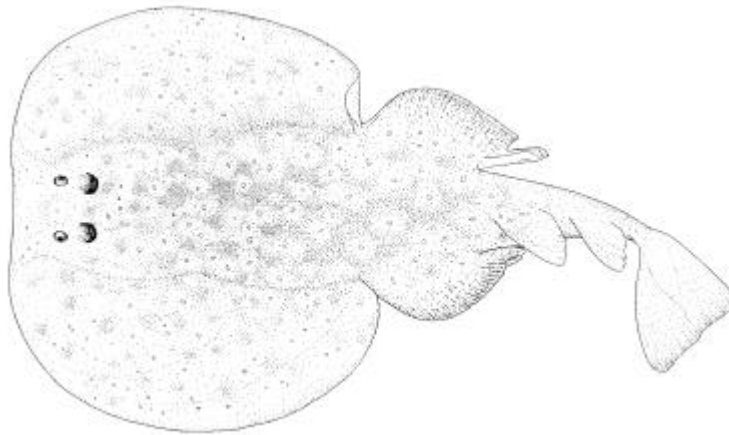
*Torpedo (Tetronarce) mackayana* Metzelaar, 1919

**dzidzi:** Ga, Adangme. **dzidzi:** Ewe. **abubunsamu:** Fante. **epusu:** Fante (Anomabu). **abubuebio:** Fante (Anomabu). ? **afimensa:** Fante (Saltpond). **nyenya:** Nzima (Axim).

*Irvine name:* Electric ray or torpedo – *Torpedo nobiliana* Bonap. Misidentification.

*Reference material:* Accra, March 1930 (Irvine 60) – BMNH 1930.8.26:1 (1 specimen: 291 mm TL); Accra, Sept. 1938 (Irvine 340). Axim, Ghana, presented by Willoughby P. Lowe – BMNH 1911.6.30:5 (1 specimen: 160 mm TL).

*Distribution:* Coast of West Africa from Senegal to Angola.



Electric ray, *Torpedo mackayana*. (Fig. 24.)

Grows to a total length of about 39 cm. The upper surface of the disk and tail is brown, irregularly marbled and spotted with paler brown and with white. The lower surface is creamy white. The electric ray feeds mainly upon other fishes and crustaceans. The electric shock may be used to stun the prey, but is also a defensive weapon. It is viviparous.

It is caught in seines. The flesh is not edible, but is used as medicine by fetish men. The Fante name *abubunsamu* means 'breaker of hands', referring to the shock it gives when held in the hands.

### GUITARFISHES (RHINOBATIDAE) [8.]

Rays with a flattened head and body, which, together with the expanded pectoral fins, give them a general rhombic shape approaching that of the true rays. The tail, however, is muscular, thick and powerful, is provided with two dorsal fins and a caudal fin, and merges imperceptibly into the trunk. These are mainly bottom-living fishes, probably feeding on molluscs and crustaceans. They are viviparous, producing a few young at a time. Practically nothing is known of their habits and they are of little economic value. Seven genera and about 45 species are known, mostly from tropical and subtropical seas, of which five appear to occur off the coast of Ghana and neighbouring waters.<sup>2</sup> The similar looking wedgefish (*Rhynchobatus luebberti*) from the family Rhinidae is included in the key.

<sup>2</sup> Irvine noted that: *Rhynchobatus luebberti* was said to range from Senegambia to Cameroon, and had been recorded from Senegal and Lagos and that *Rhinobatos rhinobatos* was a Mediterranean species, but there were several records from West Africa; he suggested correctly that both might well occur off the coast of Ghana.

*Key to the tropical West African genera and species of Rhinobatidae and Rhinidae*

1. Origin of first dorsal fin over or slightly anterior to rear of bases of pelvic fins; hind margins of pectoral fins falling short of origin of pelvics; caudal fin with a distinct lower lobe; much of back covered with numerous circular dark-rimmed white spots; lower side white, with a large transverse blackish blotch on the snout African wedgefist  
Origin of first dorsal fin well behind rear edges of pelvic fins; hind margins of pectoral fins reaching origins of pelvic fins or beyond; caudal fin without a distinct lower lobe ..... 2
2. Inner ends of anterior nasal valves greatly extended onto internasal space, where they almost meet at midline; length of nasal aperture less than distance between inner angles of nostrils; a single tentacle at posterior margin of each spiracle (on upper side of head); snout short and not pointed, its angle about 95° ..... Bloch's guitarfish, *Rhinobatos blochii*  
Inner ends of anterior nasal valves either not, or at most, extending to level of inner angles of nostrils; length of nasal aperture greater than distance between inner angles of nostrils; two tentacles at posterior margin of each spiracle; snout elongate and pointed, its angle less than 80° ..... 2
3. Anterior nasal valves not extending onto internasal space; preorbital length equal to or very little shorter than distance from rear edge of orbits to pectoral fin axils; gap between rostral ridges on snout narrow, the ridges joining or nearly joining towards tip of snout; usually a dark blotch on underside of snout ..... Blackchin guitarfish, *Rhinobatos cemiculus*  
Anterior nasal valves extending onto internasal space to about level of inner angles of nostrils; preorbital length distinctly shorter than distance from rear edge of orbits to pectoral fin axils; gap between rostral ridges on snout broad, the ridges well separated throughout their length; underside of snout plain white ... 4
4. Upper surface of body uniformly brown without any colour pattern ..... Common guitarfish, *Rhinobatos rhinobatos*  
Brown upper surface of body always variegated with light roundish spots ..... 5
5. Upper surface of body brown with numerous small, circular, bluish-white spots with blackish rims; no thorns on shoulders; thorns in mid-dorsal row blunt and flattened, often indistinct in larger specimens ..... Whitespotted guitarfish, *Rhinobatos albomaculatus*  
Upper surface of body greenish to khaki with a symmetrical pattern of large, rather few, circular faint pale spots with dark rims, their diameter almost equal to to that of iris; three thorns on each shoulder; small and pointed thorns in mid-dorsal row persistent ..... Irvine's guitarfish, *Rhinobatos irvinei*

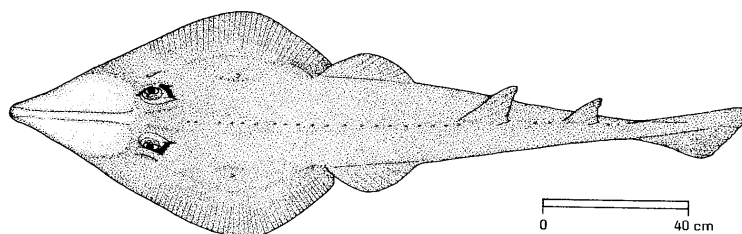
**Blackchin guitarfish, Poisson-guitare fousseux**  
*Rhinobatos cemiculus* E. Geoffroy Saint-Hilaire, 1817

**ɔsrɛ:** Ga. **ɛsine:** Fante (Anomabu). **ɛsin:** Nzima (Axim). **afla:** Ewe. **ogumu:** Ijaw.

*Irvine name:* Guitarfish – *Rhinobatus rasmus* Garman. A junior synonym.

*Reference material:* Accra, May 1930 (Irvine 79) – BMNH 1930.8.26:2 (1 specimen: 360 mm TL).

*Distribution:* Eastern Atlantic from Portugal to Angola.



Blackchin guitarfish, *Rhinobatos cemiculus*. (Fig. 25.)

Grows up to 2 m total length and common to about 1.5 m long. There is a row of backwardly directed spines down the back and a pair on each shoulder. The upper surface is khaki coloured and the lower surface white.

This fish is edible, but is not of good quality.



**Whitespotted guitarfish, Poisson-guitare à lunaires \*\***  
*Rhinobatos albomaculatus* Norman, 1930

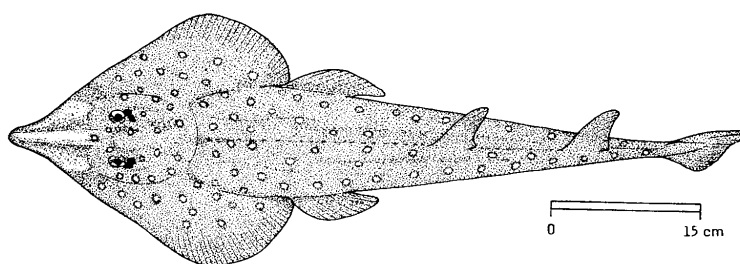
Norman JR (1930). A new ray of the genus *Rhinobatus* from the Gold Coast. *Annals and Magazine of Natural History* (Series 10), Vol. 6 (32), 226–228.

**ɔsrɛ:**Ga. **ɛsine:** Fante (Anomabu). **ɔsen:** Fante. **arane:** Nzima (Axim). **afla:** Ewe. **egbein ogumu:** Ijaw.

*Irvine name:* White-spotted guitarfish – *Rhinobatos albomaculatus* Norman.

*Reference material:* Accra, 1930 (Irvine 10), (Irvine 32) – BMNH 1930.3.24:2 (HOLOTYPE: 570 mm TL), BMNH 1930.8.26:4-5 (1 specimen: 562 mm TL), BMNH 1930.8.26:6-7 (3 embryos: 160-168 mm TL); Accra, March 1930 (Irvine 98) – BMNH 1930.8.30:1 (1 specimen: 191 mm TL); Accra, March 1938 (Irvine 290).

*Distribution:* Gulf of Guinea to Angola.



White-spotted guitarfish, *Rhinobatos albomaculatus* (from Norman). (Fig. 26.)

Attains a length of 75 cm. The row of spines down the back are blunt and flattened, and in the female are not visible without the aid of a lens. There are no spines on the shoulders. When young, this fish has spines in front of and at the sides of the eyes. The upper surface is brown, covered with numerous small, bluish white spots with blackish rims, which are more or less regularly arranged.

It is generally caught in seines and is edible. A. P. Brown states that it is caught from January to April at a depth of 8 spans (1.8 m).

**Irvine's guitarfish, Poisson-guitare d'Irvine \*\***  
*Rhinobatos irvinei* Norman, 1931

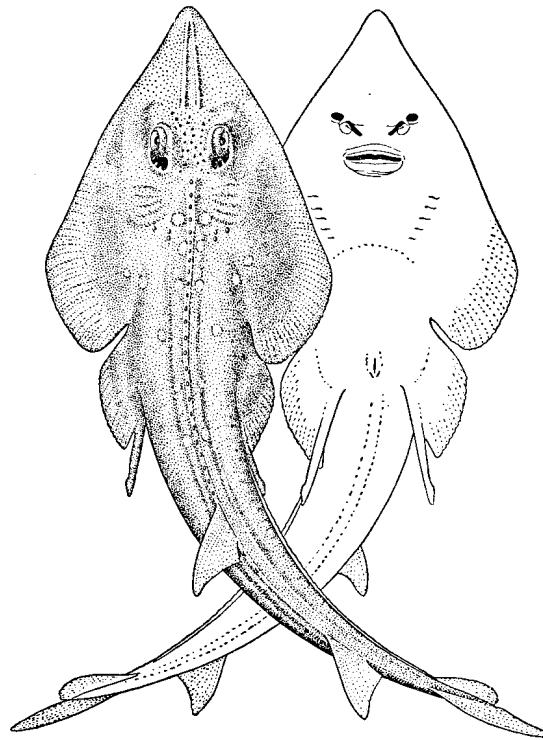
*Rhinobatos irvinei*: p. 352, fig. 1 in Norman JR (1931). Four new fishes from the Gold Coast. *Annals and Magazine of Natural History* (Series 10), Vol. 7 (40), 352–359.

**ɔsrɛ:** Ga. **yoyo:** Adaɲme. **ɛsine:** Fante (Anomabu). **ɔsen, osini:** Fante (Winnebah). **afla:** Ewe

*Irvine name:* Spotted deep-sea guitarfish – *Rhinobatos irvinei* Norman.

*Reference material:* Prampram (Irvine 87) – BMNH 1930.8.26:3 (HOLOTYPE: 573 mm TL, male); Winnebah, March 1933 (Irvine 178) – BMNH 1934.10.12:1 (1 female: 674 mm TL); Prampram, July 1938 (Irvine 271).

*Distribution:* Coast of West Africa from Mauritania to Angola.



Irvine's guitarfish, *Rhinobatos irvinei* (from Norman). (Fig. 27.)

The type was a male, about 57 cm long, from Ningo, 40 miles east of Accra. The species is said to grow considerably larger. There is a row of small spines down the middle of the back, and some smaller ones in front of the orbits and above the spiracles: there are three spines on each shoulder. The upper surface is khaki-coloured, with a few faint circular pale spots with dark edges. The lower surface is cream coloured.

This species is edible. It is caught by hooks in deep water at a long distance from land. According to A. P. Brown it is caught in nets, at no special season.

#### SAWFISHES (PRISTIDAE) [9.]

Closely related to the guitarfishes, but the snout is produced into a long, flat blade or 'saw', armed on either side with strong teeth set in sockets. Sawfishes occur on sandy shores in the tropics. There are two genera with six species, of which three occur off the coast of tropical West Africa.<sup>3</sup>

##### *Key to the tropical West African species*

1. The first dorsal fin begins about opposite to or slightly in front of the commencement of the pelvic fins; the caudal fin without a definite lower lobe..... 2  
 The first dorsal fin begins well in front of the commencement of the pelvic fins (pelvic fin origin below about mid-point of dorsal fin base); the caudal fin has a definite lower lobe; there are 16–23 teeth on each side of the 'saw' ..... Large-tooth sawfish, *Pristis microdon*
2. There are 24–32 teeth on each side of the 'saw' ..... Small-tooth sawfish, *Pristis pectinata*  
 There are 16–20 teeth on each side of the 'saw' ..... Common sawfish, *Pristis pristis*

<sup>3</sup> Irvine recorded *Pristis microdon* and noted that *P. pectinata* Latham and *P. pristis* (Linnaeus) had both been often recorded from the coast of tropical West Africa, and probably occurred on the coast of Ghana.

**Large-tooth sawfish, Poisson-scie grandent**

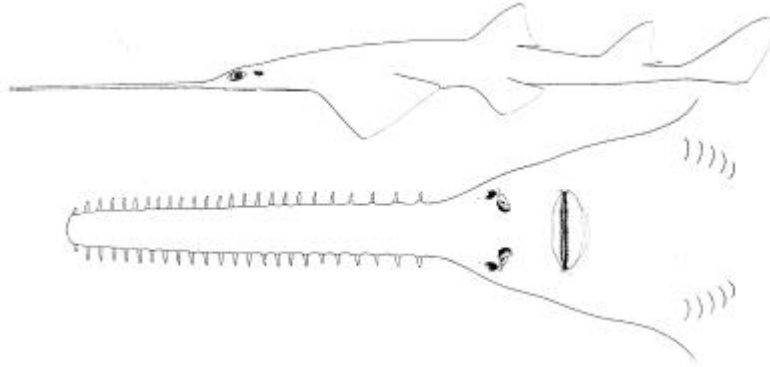
*Pristis microdon* Latham, 1794

**nyanyanke:** Ga (Accra). **nɛnyanke:** Ga. **nyanyake:** Ewe (Keta). **oki:** Ijaw.

*Irvine name:* Sawfish – *Pristis perotteti* M. & H. A junior synonym.

*Reference material:* No specimens, but ‘saws’ at Achimota. Not seen.

*Distribution:* Senegal to Angola: sometimes enters rivers.



Large-tooth sawfish, *Pristis microdon*. (Fig. 28.)

Grows to 6 m total length. The ‘saw’ is used mainly for disturbing the small animals on which it feeds, but is also used at times with strong side-strokes among a shoal of fishes, tearing off pieces of flesh which are afterwards devoured. The sawfish sometimes becomes entangled in fishermen's nets, doing considerable harm to both nets and catch. The young are produced alive.

In the Keta district the ‘saw’ is removed and used for fetish purposes, being specially coloured alternately with red, white and blue colours. It is then set up and worshipped.

A ‘saw’ bought in Accra was 119 cm in length, 33 cm wide at the base and 20 cm at the tip: there were 17 teeth on each side.

**SKATES AND RAYS (RAJIDAE) [10.]**

In the true skates and rays the head, body and large pectoral fins make up a flattened four-sided or rounded disk, which is sharply marked off from the tail, which has two dorsals and sometimes a caudal fin. The skin of the upper, surface is usually armed with a varying number of smaller or larger spines, which are most prominent on the middle line of the back and tail. The colour varies a good deal, but generally harmonizes with the sea bottom on which these fishes live. They are cosmopolitan in distribution and may live in quite deep water. There are about 18 genera and numerous species, of which only about four or five occur in coastal waters in the Gulf of Guinea area of tropical West Africa. Several other species in the family occur offshore in deep waters (over 200 m) on the continental slope. On average about 10,500 tonnes of Rajiformes (ray-like fishes) are recorded as being caught in the region each year.

**Peacock ray**

*Raja (Raja) miraletus* Linnaeus, 1758

**tantra-sɛsɛ:** Ga. **nuananɔ:** Fante. **saimuzu:** Ijaw.

*Irvine name:* Peacock ray – *Raja miraletus* Linn.

*Reference material:* Accra, Aug. 1938 (Irvine 292) – BMNH 1938.12.15:2 (1 male: 465 mm TL).

*Distribution:* Mediterranean and eastern Atlantic.

Grows to a length of 45–60 cm including the tail. The upper surface is mainly smooth, but there are some spines above the eyes and spiracles, and sometimes some more along the middle of the back, as well as on the tail. The males have a patch of backwardly pointed spines at the edges of the pectoral fins about opposite to the eyes, and some smaller ones farther back. The upper surface is brownish, rather darker down the centre of the back and on the upper part of the tail. The whole of the back is covered with small darker brown spots, which are more abundant towards the edges. On each side of the centre of the back and towards the middle of the disk is a large, round, purplish black spot, surrounded by a yellowish brown ring, and again by a single circle of small dark brown spots: behind each of these spots, and towards the edge of the body, is a small white spot surrounded by a few brown spots. The lower surface is entirely whitish.

This fish is not common, and the specimen mentioned above was caught in a net. It is edible.

It is called *tantra-sɛsɛ*, from *tantra* (the sting ray) and *sɛsɛ* (the guitarfish), both of which it resembles in some respects. The Fante name, *nuanaŋ* means ‘four eyes’, a reference to the conspicuous spots.

### STING RAYS (DASYATIDIDAE) [11.]

Generally the members of this family can be distinguished from the true skates and rays by the shape of the disk, which is usually broader than long, by the narrow and often whip-like tail, which never has more than one dorsal fin, but is provided with a serrated spine with a poison gland at the base. The hinder margins of the pelvic fins are not notched. The sting rays are found in most warm seas and form a large and varied family. In the tropics some species enter fresh water. They are mostly of moderate size and have comparatively small mouths, armed with small, blunt teeth. The spine on the tail is capable of inflicting nasty wounds, which may be very painful and difficult to heal. In life these spines are probably used both for offensive and defensive purposes. Little is known of their habits, but they are all probably bottom-living rays, feeding on other fishes, crustaceans, molluscs and so on. All hatch their eggs within the body. They are of little economic value.

Six genera and about 50 species of marine stingray are known, of which about eight species in three genera occur on the coast of tropical West Africa.

#### *Key to the tropical West African genera and species*

1. Tail (if undamaged!) distinctly longer than disc and very slender; disc oval or more or less rhombic; with or without tail spine ..... 2  
Tail about as long as disc and relatively thick; disc roundish; tail spine present ..... *Taeniura grabata*
2. Disc oval; never a spine on tail ..... *Urogymnus asperrimus*  
Disc more or less rhombic; one or more spines on tail (rarely lacking) ..... 3
3. Upper side of disc with broad brown margin, centrally with distinct pattern of sea-blue mottling on a golden-brown background; lower tailfold very short, about twice length of tail spine .....  
..... Marbled stingray, *Dasyatis marmorata*  
Upper side of disc plain coloured, without a distinct pattern; lower tailfold extending backward usually distinctly more than twice length of tail spine ..... 4
4. Upper surface of tail behind spine without longitudinal ridge (except perhaps in embryos and young) ..... 5  
Upper surface of tail behind spine with longitudinal ridge of varying length ..... 7
5. A single large, whitish tubercular pearl-like thorn in midshoulder within a patch of spinules; occasionally a second much smaller tubercle in front of the large thorn ..... Daisy stingray, *Dasyatis margarita*  
Either no thorns on body at all, or several thorns of varying size on posterior part of midbody and root of tail ..... 6
6. No large tubercles or thorns on disc, but this and tail densely and entirely covered with fine spinules; tail about 1.5 times as long as disc; disc rhombic, 1.5 times broader than long ..... *Dasyatis rudis*

Upper side of disc completely covered with close-set spinules, which increase in size towards mid-body and occur as large plate-like tubercles on posterior part of back and on root of tail; tail about 2.5 times as long as disc; disc rather subquadrangular, about as broad as long ..... *Dasyatis ukpam*

7. Longitudinal ridge on back of tail very short, only as long as spine and immediately behind spine; except in small juveniles, a large number of prominent, close-set thorns in an irregular median row from nape to tail-spine; additional thorns on head, nape/shoulder area and inner parts of wings develop with age; sides and top of tail from spine rearwards always very rough, with many thorns and thornlets ..... Roughtail stingray, *Dasyatis centroura*
- Longitudinal ridge on back of tail very long, greatly exceeding length of spine; disc and tail with only a regular row of widely spaced, small thorns from nape to root of tail and a few thorns on shoulders in large specimens, otherwise smooth ..... Common stingray, *Dasyatis pastinaca*

**Daisy stingray, Pastenague marguérite**  
*Dasyatis margarita* (Günther, 1870)

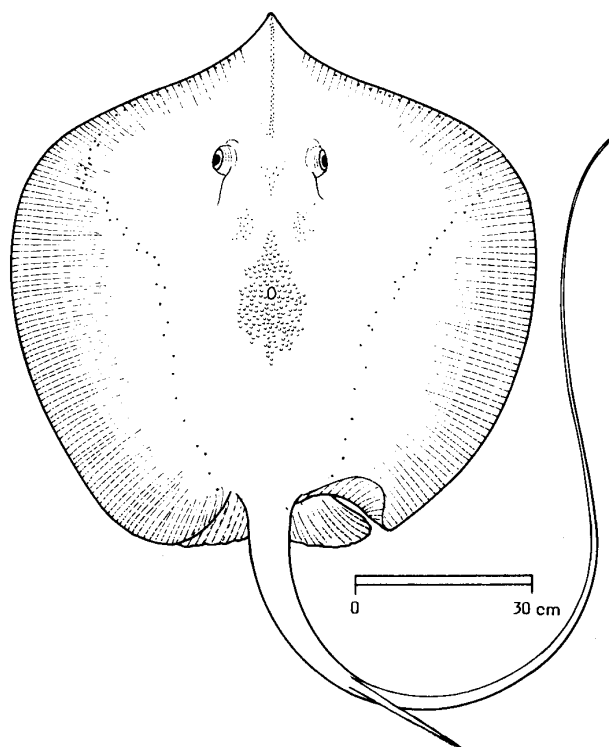
**tantra:** Ga. **tantra-kpakpa:** Ga. **damu:** Aɖaŋme (D. Benzies). **tantra** or **tantre:** Fante. **tandeɪa:** Nzima (Axim). **kudike:** Nzima. **adado:** Ewe. **ajibete:** Yoruba. **sika:** Ijaw.

*Irvine name:* Sting ray – *Trygon margarita* Günther.

*Reference material:* Accra, Jan. 1930 (Irvine 12 A); Accra, Feb. 1929 (Irvine 12 B) – BMNH 1930.3.24:3 (1 specimen: 711 mm TL, 211 mm DW); Accra, Jan. 1938 (Irvine 394).

*Distribution:* Coasts of West Africa from Senegal to Congo.

Specimens of 30 cm disc width are quite common, but it sometimes reaches 100 cm disc width (200 cm total length). The large pearl-white tubercle in the middle of the back, surrounded by a mass of smaller tubercles, is characteristic of this species. There are some other small tubercles between the eyes. The skin is otherwise smooth. The shape of the disk is nearly circular, slightly pointed at the tip of the snout. The colour is dull brown above and pale beneath. This sting ray is generally to be found on the bottom in sandy places near the shore or in the mouths of rivers.



Daisy stingray, *Dasyatis margarita*. (Fig. 29.)

It is caught from January to April or June, according to A. P. Brown, in seines, and is considered edible. The serrated spine or ‘sting’ is generally very carefully removed as soon as the fish is landed.

Wounds caused by the ‘sting’ are cured by the leaves of a plant known as *tantrabai* in Ga. The Fante word for ‘flat’ is *tetreε*, and the name *tantra* or *tantre* is said to be derived from this.

**Common stingray, Pastenague commune**  
*Dasyatis pastinaca* (Linnaeus, 1758)

**moo:** Ga. **sika:** Ijaw.

*Irvine name:* Sting ray – *Trygon pastinaca* (Linn.).

*Reference material:* Accra, Jan. 1939 (Irvine 393) – BMNH 1939.7.12:2 (1 specimen: 910 mm TL, 361 mm DW).

*Distribution:* Coast of West Africa from Morocco to Angola and the Cape Verde Islands. Also known from the Mediterranean and northwards along the coast of Europe to southern Ireland and the western Baltic as well as from South Africa.

Grows to 1.4 m disc width and 2.5 m total length. The body in this species is entirely smooth, or with denticles down the middle of the back, and the disk almost quadrangular in outline. The whole body is olive green above, becoming browner and finally reddish round the rims of the disk. There are a few pale-coloured spots at various parts of the disk. The lower surface is white, with somewhat reddish margins.

*Dasyatis* sp.

Governor Hodson reported hooking a huge specimen of a sting ray (photograph in *Crown Colonist*, December 1939), weighing 103 kg and which was only landed after a tussle of 6 hours on end. He reported that it was edible. The species *Dasyatis centroura* (Mitchill, 1815) which grows to 2 m disc width and 3 m TL also occurs in the area and could be this ray.

BUTTERFLY RAYS (GYMNURIDAE) [11.]

The butterfly rays were included in the sting ray family by Irvine but are generally considered a separate family. There are two genera and about 12 species worldwide, of which two occur off tropical West Africa. Both were recorded by Irvine.

*Key to the tropical West African species*

1. Disc at least 2 times as broad as long; preorbital length about 55–60% of distance between outer margins of eyes; single distinct tentacle at inner posterior corner of each spiracle; tail with one or two long serrated poisonous spines near base ..... Spiny butterfly ray, *Gymnura altavela*  
Disc 1.6–1.8 times as broad as long; preorbital length about 70–80% of distance between outer margins of eyes in females and about 100% in males; no spiracular tentacles; no serrated spines on tail ..... Smooth butterfly ray, *Gymnura micrura*

**Smooth butterfly ray, Raie-papillon glabre**

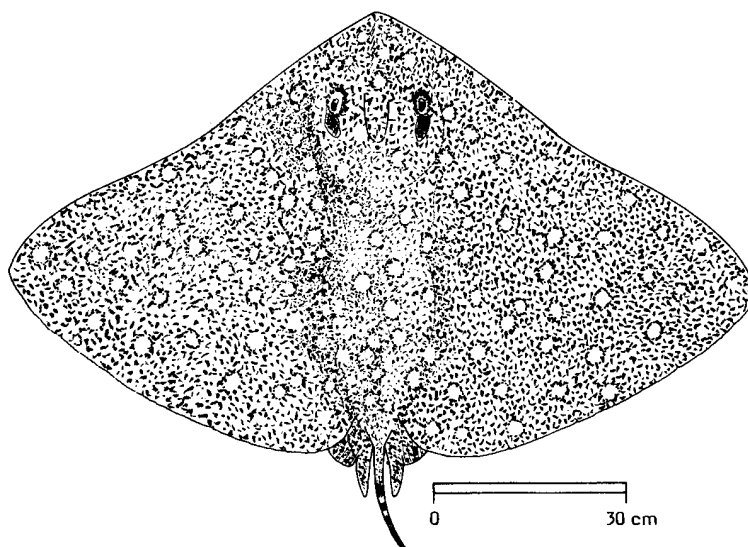
*Gymnura micrura* (Bloch and Schneider, 1801)

**Sii-kpā:** Ga. **mena ɲwa:** Ga. (?) **tantra ʃiɲiu:** Ga. **tantra-ɲiu:** Ga. **mena maa ɲo:** Ga. **mena ɲulagla:** Ga. Ma: Ga. **nuaana:** Ga (A.P.Brown). **mena ɲwanɲwã:** Aɗaɲme(Benzies). **Sii-kpā:** Aɗaɲme (Prampram). **mena momoe:** Fante (Saltpond). **pahu or pɛhu:** Fante (Anomabu). **dumɔ:** Ewe. **ababu:** Ewe.

*Irvine name:* Butterfly ray – *Pteroplatea micrura* (Schn.).

*Reference material:* Accra, Jan. 1930 (Irvine 31) – BMNH 1930.3.24:4 and BMNH 1930.8.26:9 (2 specimens: 133 mm TL, 183 mm DW; 170 mm TL, 235 mm DW); Accra, Oct. 1938 (Irvine 353) – (? Irv. 350) BMNH 1963.8.9:3 (1 specimen: 234 mm TL, 338 mm DW).

*Distribution:* Gulf of Guinea.



Smooth butterfly ray, *Gymnura micrura*. (Fig. 30.)

Specimens up to 120 cm disc width have been recorded and they are common to 60 cm disc width. The disk in the butterfly rays is much wider than long, and the tail is very short. The body is greyish brown above, with marbled markings and dull white spots. The lower surface is white, with pinkish edges. The tail is ringed with alternate light and dark bars.

This fish is generally caught in seines and is edible.

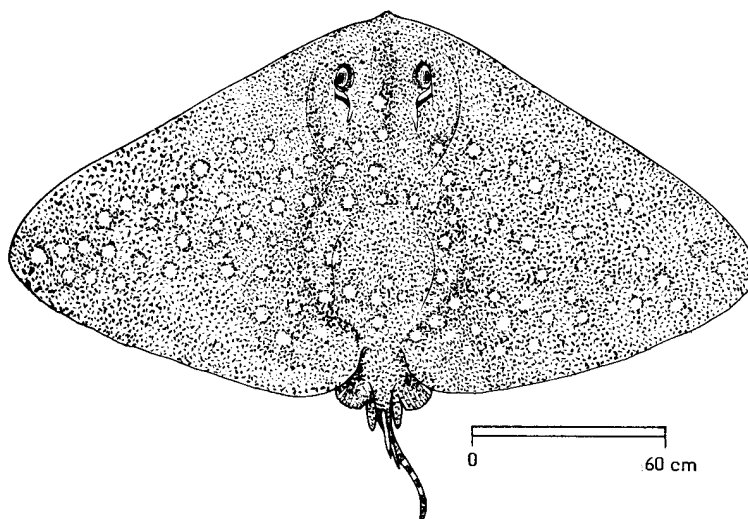
**Spiny butterfly ray, Raie-papillon épineuse**  
*Gymnura altavela* (Linnaeus, 1758)

**Sii-kpā:** Ga.

*Irvine name:* Butterfly ray – *Pteroplatea altavela* (Linn.).

*Reference material:* Accra, Oct. 1938 (Irvine 352, p.p. Nortey) BMNH 1939.7.12:3 (1 specimen: 376 mm TL, 544 mm DW).

*Distribution:* Mediterranean and eastern Atlantic from Portugal to Congo.



Spiny butterfly ray, *Gymnura altavela*. (Fig. 31.)

Attains a width 4 m across the disk but usually grows to about 2 m disc width. Distinguished from the preceding species by the presence of a short tentacle behind each spiracle (the opening behind the eye). The colour of the upper surface is olive grey, with dense brownish and whitish marbled markings



and dots. The lower surface is uniformly white. Behind the serrated spine the tail is whitish, with eight broad brown blotches with greenish brown centres.

A fragment of the tail end of a drum (Sciaenidae) was taken from the stomach of the specimen mentioned above.

#### EAGLE RAYS (MYLIOBATIDIDAE) [12.]

The pectoral fins of these rays are very muscular and the front edges are much indented, so that they have the appearance of being missing at the sides of the head. The teeth in the jaws are large and flat, and either form a pavement or are arranged in a single series. These are very large rays, and feed on clams and oysters, the shells of which they crush with their powerful jaws and dentition. There are four living genera and about 25 species (if the Cownose rays, *Rhinoptera* are considered as a subfamily of the Myliobatididae), all found in warm seas. At least four species occur off the coast of tropical West Africa, one of which was definitely recorded from Ghana by Irvine, who thought that two others might also occur.<sup>4</sup>

#### *Key to the tropical West African genera and species*

1. Anterior parts of pectoral fins forming an undivided fleshy subrostral lobe which extends below front of head; several fleshy papillae on floor of mouth ..... 2  
 Anterior parts of pectoral fins forming a fleshy subrostral lobe (barely extending below front of head), which is deeply incised in the midline thus appearing as two distinct but basally continuous lobes; no fleshy papillae on floor of mouth ..... Lusitanian cownose ray, *Rhinoptera marginata*
2. A single series of large teeth in each jaw ..... Spotted eagle ray, *Aetobatus narinari*  
 More than one, usually 7 series of teeth in each jaw, those of median series much larger than the others ..... 3
3. Rostral part of the pectoral fins (subrostral lobe) connected with main portions of fins through continuous borders along sides of head; small dorsal fin on base of tail, its origin far behind rear tips of pelvic fins ..... Common eagle ray, *Myliobatis aquila*  
 Rostral part of pectoral fins (subrostral lobe) entirely separate from main portion of fins which end at sides of head at level of rear margin of orbits; small dorsal fin on base of tail between free inner margins of pelvic fins ..... Bull ray, *Pteromylaeus bovinus*

#### **Bull ray, Aigle vachette**

*Pteromylaeus bovinus* (E. Geoffroy Saint-Hilaire, 1817)

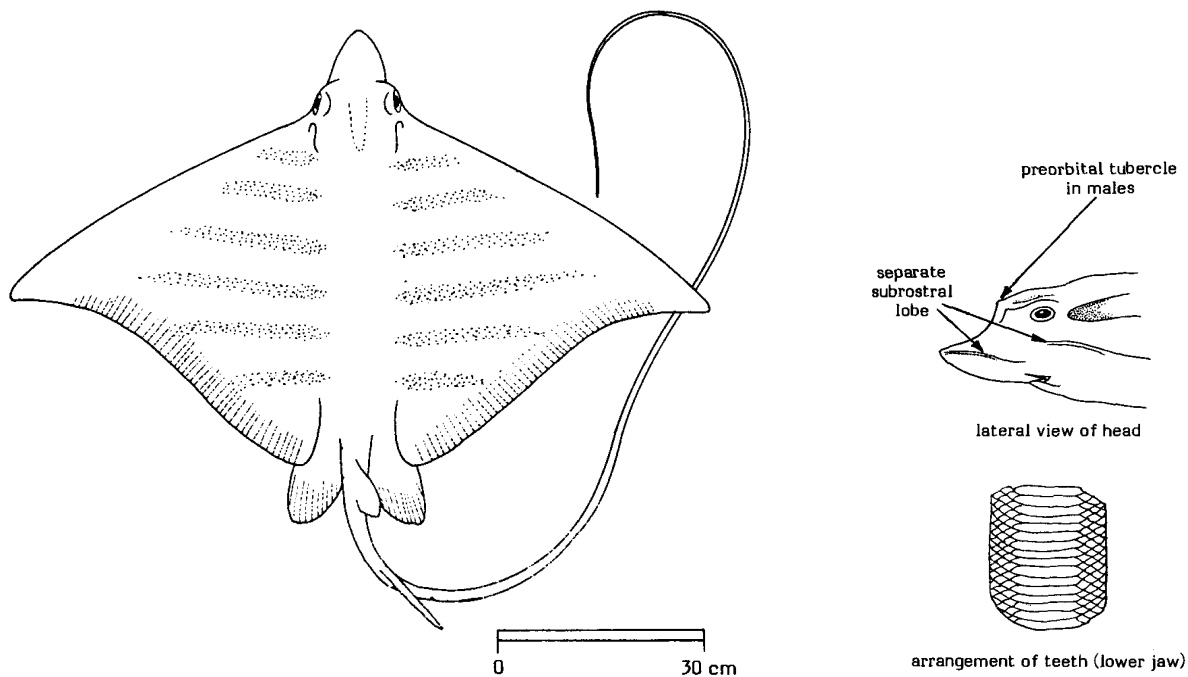
**kpotfile:** Ga. **kwesire:** Fante (Dict.). **pusuw:** Fante. **mɛnsahõma:** Nzima (Axim). **avako:** Ewe. **fume-vako** or **tõme-vako:** Ewe. **dumɔ:** Ewe.

*Irvine name:* Eagle ray or whip ray – *Myliobatis aquila* (Linn.). Misidentification, despite correct key.

*Reference material:* Ghana (Irvine 55) – BMNH 1930.8.26:8 (1 specimen: 691 mm TL, 304 mm DW).

*Distribution:* In the eastern Atlantic from Portugal to South Africa. Also recorded from the Mediterranean and SW Indian Ocean.

<sup>4</sup> Irvine listed his specimen of the Bull ray, *Pteromylaeus bovinus*, as *Myliobatis aquila* but noted that the former species had been recorded from Senegal. He also noted that the Cownose ray, *Rhinoptera peli* (now thought to be the young of *R. marginata*) was found in the Gulf of Guinea and that both species probably occurred on the coast of Ghana. He further suggested that it was possible that the spotted eagle ray, *Aetobatus narinari* (Euphrasen), with only one row of teeth in each jaw and the body covered with white spots, would also be found.



Bull ray, *Pteromylaeus bovinus*. (Fig. 32.)

Grows to about 2.6 m total length (1.5 m disc width). The disk is broader than long, and the pectoral fins are acutely pointed. The whip-like tail is about 2.5 times as long as the body, and provided with a single dorsal fin, behind which is a 'sting'. The teeth are large and flat, six-sided, and arranged like a tessellated pavement, with the larger ones in the centre of the mouth. The upper surface is khaki-coloured, the lower surface pale. Young specimens have a more ornamental colouring. This large ray feeds mainly on shellfish but also takes crustaceans. It is viviparous.

According to A. P. Brown, it is caught from January to April and from June to September. It is caught in seines when small, and by hooks in deeper water when larger. It is edible and the flesh of good quality.

The Ewe name *fume-vako* means 'sea hawk'. It seems likely that this name, as well as the English name 'eagle ray', is given to this fish because its snout is shaped like the beak of a hawk or eagle, and the two pointed pectoral fins resemble wings. The Ga name *kpotfile* is derived from *kpo* (the sea), and *tfile* (a sea bream).

#### *Stories of giant rays*

Fishermen declare that a giant ray (perhaps a sting ray or an eagle ray) has been known to come on top of a person in the sea, covering him with its immense bulk, forcing him down by drowning and then consuming parts of the body. Two cases were reported: one of a child killed in this way by a giant ray on the beach below Christiansborg Castle (and said to have been seen by Governor Guggisberg), and the other of an African Post Office official who was killed in this way by a gigantic ray on the slaughterhouse beach at Accra in 1936. Such stories have been told of the devilfish (*Manta*) in other parts of the world; all require further investigation.

## BONY FISHES (PISCES)

In the bony fishes the gill-clefts in the pharynx, instead of opening directly to the exterior by a series of gill-slits as in the sharks and rays, open into a common branchial chamber, usually covered by a bony gill-cover or operculum, which has a single external opening behind. The skeleton is composed of true bone, and an air-bladder or lung is often present.

### ANCIENT BONY FISHES (CHONDROSTEI)

The living members of this subclass belong to two very different orders, but both still exhibit certain characters which indicate that they have been derived from palaeoniscid fishes, which flourished all over the world in Palaeozoic times. The first of these orders includes the sturgeons and paddlefishes, which do not occur in Africa, the second the freshwater bichirs or polypterids and the reedfish.

### MODERN BONY FISHES (NEOPTERYGII)

The members of this subclass, which includes the great majority of existing fishes, are distinguished from the ancient bonyfishes mainly by technical characters concerned with the structure of the fins and scales. The group is divided into about thirty-eight orders.

### LADYFISHES (ELOPIDAE) [14.]

These fishes have a large mouth, placed at the end of the head, and bands of small, sharply pointed teeth in the jaws. There is a flat bone, known as the 'gular plate', between the two halves of the lower jaw. The pectoral fins are placed low down on the sides of the body, and the pelvics are situated well back and more or less below the dorsal fin. The scales are firm and do not fall off easily as in the herrings.

The family includes only a one genus and about six species, found in tropical and subtropical seas, of which two occur off the coast of tropical West Africa. Both were recorded from Ghana by Irvine.

#### *Key to the tropical West African species*

1. The lower jaw projects beyond the upper and covers the front part of the band of teeth in the upper jaw when the mouth is closed; the dorsal fin has 18–22 rays; 16–19 gill-rakers on lower limb of first gill-arch; 72–83 scales in the lateral line ..... West African ladyfish, *Elops lacerta*  
The lower jaw does not project beyond the upper, and the whole of the front part of the band of teeth in the upper jaw is exposed when the mouth is closed; the dorsal fin has 23–26 rays; 11–15 gill-rakers on lower limb of first gill-arch; 92–100 lateral-line scales ..... Senegalese ladyfish, *Elops senegalensis*

#### **West African ladyfish, Guinée du Sénégal**

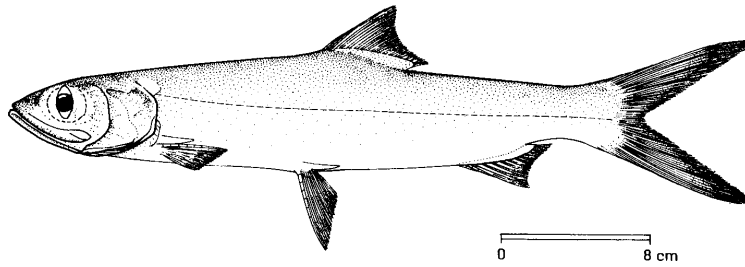
*Elops lacerta* Valenciennes, 1846

**kpole:** Ga. **ohene bandi:** Ga (A. P. Brown). (?) **laiyalɔialoo:** Ga (Labadi). **laɲma:** Adaɲme (Prampram). **laɲmao:** Adaɲme (Ada). **ahenamendzi:** Fante (Saltpond). **ahinubadzi:** Fante (Anomabu). **ahene banni:** Nzima (Axim). **gbalavi:** Ewe. **gbavi:** Ewe. **mame:** Ewe (Desewu). **ajigban:** Ilaje. **bonghen:** Ijaw.

*Irvine name:* Ten-pounder – *Elops lacerta* C. & V.

*Reference material:* Accra, Jan. 1930 (Irvine 19) – BMNH 1930.3.24:5 (1 specimen: 232 mm SL); Ada, Oct. 1938 (Irvine 362) – BMNH Unregistered duplicate (1 specimen: 158 mm SL); Sekumu Lagoon, near Accra, Nov. 1938 (Irvine 383 pt.) – BMNH Unregistered duplicate (1 specimen: 217 mm SL). Angaswi, Volta estuary, Ghana, coll. Buxton – BMNH 1949.10.20:2 (1 specimen: 109.4 mm SL).

*Distribution:* Coasts of West Africa from Mauritania to Angola: entering rivers.



West African ladyfish, *Elops lacerta*. (Fig. 33.)

Grows to a length of 75–90 cm; common to 40 cm. A beautiful silvery fish, bluish black above and pale blue beneath. The large forked tail has a black terminal spot on the upper lobe and a narrow black margin. According to A. P. Brown it is caught from January to April in *tʃani* and also in *ali* nets. ‘This fish is sometimes caught in seines and is edible. It is not very popular, however, because of its boniness; and as it is often the only fish left in the market by the time the firewood-gatherers have returned from bush, it is commonly known as *laiyalɔialoo*, the “firewood gatherers’ fish”.’ (M. B. Wilkie). Small specimens, up to 23 cm in length, occur in lagoons, and are caught by using cassava as a bait and then throwing a spiral net – *faŋya* (Nortey).

The Nzima name *ahenebanni* means ‘the son of the chief does not eat (it)’, because it is said that one chief’s son was once choked by its numerous small bones: since then chiefs’ sons do not eat it. Larger specimens seem to be less bony than small ones.

#### Senegalese ladyfish

*Elops senegalensis* Regan, 1909

For Ghanaian vernacular names, cf. *Elops lacerta* above; **ajigbon olipe**: Ilaje.

*Irvine name*: Ten-pounder – *Elops senegalensis* Regan.

*Reference material*: Sekumu Lagoon, near Accra, Nov. 1938 (Irvine 383 pt.) – no specimens found.

*Distribution*: Coasts of West Africa from Senegal to Congo: entering rivers.

Grows to a standard length of 30 cm and perhaps more. The characters distinguishing this species from the preceding one are given in the key above.

#### TARPONS (MEGALOPIDAE) [14.]

This family was included with the Ladyfishes (Elopidae) by Irvine. Two species are known of which one occurs off the coast of West Africa.

#### Atlantic tarpon, Tarpon argenté

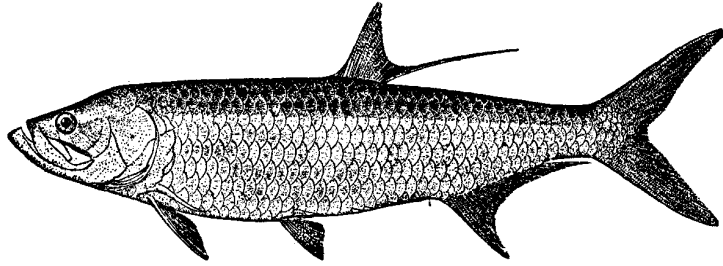
*Tarpon atlanticus* (Valenciennes, 1846)

**manufɛ**: Ga, Adaŋme. **manyofɛ**: Adaŋme. **madzofloɛ**: Ewe. **agha**: Ilaje.

*Irvine name*: Tarpon – *Megalops atlanticus* C. & V.

*Reference material*: Sekumu Lagoon, near Accra, May 1930 (Irvine 129 B) – BMNH 1932.2.27:1-2 (1 specimen only: 105 mm SL).

*Distribution*: Both sides of the tropical Atlantic.



Atlantic tarpon, *Tarpon atlanticus* (from Norman, after Goode). (Fig. 34.)

Attains to a length of 250 cm and common to 130 cm. Easily recognized by its large silvery scales (40–48 in lateral-line), each of which may be more than 5 cm in diameter in a large fish. The last ray of the dorsal fin is drawn out into a long filament, which tapers to a fine point and has a concave hinder edge. The function of this ray seems to be associated with the leaping habits of the fish. The colour is bright silvery, the back being bluish or olivaceous. The dorsal fin is yellowish and the paired fins are whitish. Very little is known of the life history or habits of the tarpon. The eggs are very numerous and ripen in the summer. Young fish occur in lagoons and estuaries, and the adults have been known to ascend rivers in pursuit of shoals of fish.

The tarpon is edible, and the largest specimens landed are sold at high prices. Young specimens, about 15 cm long, are caught in lagoons in cast-nets.

On the American coast the tarpon is a famous game fish and provides wonderful sport. It often leaps clean out of the water when hooked, and a large fish may take much skill and perseverance to land. It is this species that was much fished by Governor Hodson at Ada, and the reported lengths of three fish caught by him were 185 cm, 120 cm and 105 cm. These were hooked at the junction of the river and sea at the mouth of the Volta, at a part called Izana in Adanme. The season for tarpon here was during June and July, before the river became too full.

#### BONEFISHES (ALBULIDAE) [15.]

Silvery fishes, with a prominent snout and a somewhat pig-like mouth. The teeth in the jaws are minute, but there is a large patch of blunt teeth on the tongue, which bites against another patch on the roof of the mouth, used for crushing shellfish. Two species occur off the coast of West Africa, one of which was reported from Ghana by Irvine.

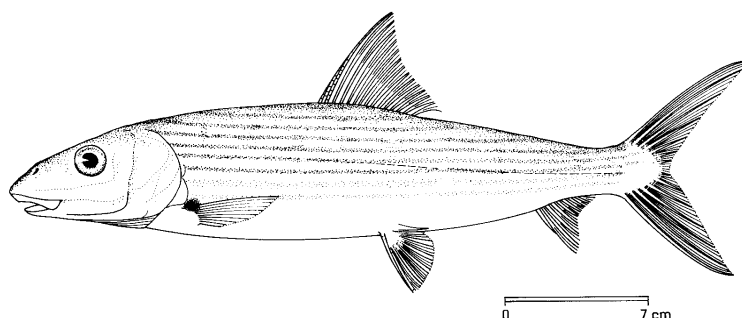
#### **Bonefish, Banane de mer** *Albula vulpes* (Linnaeus, 1758)

**kpole:** Ga. **lanma:** Adanme (Prampram). **epoedwire:** Fante (Anomabu). **aminoe:** Ewe. **igbo:** Yoruba.

*Irvine name:* Ladyfish – *Albula vulpes* (Linn.).

*Reference material:* Accra, Mar. 1930 (Irvine 67) – no specimens found.

*Distribution:* In the eastern Atlantic from Senegal to Angola. Elsewhere found in almost all warm seas.



### Bonefish, *Albula vulpes*. (Fig. 35.)

Grows to a length of 77 cm and common to 35 cm. A long silvery fish, khaki grey on the back and silvery white on the sides and belly. The bonefish appears to be mainly a bottom feeder in shallow coastal waters. The development of this species is interesting, for, like the tarpon, the young pass through a *Leptocephalus* stage similar to that found in the eels. These larvae are transparent and band-shaped, and live in the upper layers of the sea, feeding mainly upon plankton. They later undergo a transformation (metamorphosis), in which they are gradually reduced in size.

The bonefish is edible, and, as its name implies, is full of small bones. It is generally caught in seines, but also at times in deep-sea nets. According to A. P. Brown, it is caught at no special season. It also occurs in lagoons. In some parts of the world, and especially in America, it is a sporting fish valued for its game qualities. In deeper offshore waters (100–400 m) its relative the Longfin bonefish (*Pterothrissus belloci* Cadenat, 1937) is found all along the West African coast.

On average about 30 tonnes of this species have been recorded as being caught in the region each year although in 1997 and 1998 catches in the order of 1500 tonnes were reported.

### HERRINGS (CLUPEIDAE) [16.]

A large family of silvery fishes, in which the scales tend to be easily shed, and the lateral line is nearly always completely missing. The body is often compressed, and the belly has a sharp edge, which may be serrated. Nearly all the members of the family have minute teeth. They are usually found in shoals, sometimes of immense size, and are plankton feeders. Herrings are found in all tropical and temperate seas: some species ascend rivers and others are permanently resident in fresh water.

Over 50 genera and some 180 species are known, of which at least seven occur off the coast of Ghana and neighbouring countries. On average about 830,000 tonnes of clupeids are recorded as being caught in the region each year making this family the most important in terms of catch though not in terms of economic value.

#### *Key to the tropical West African genera and species*

1. Anal fin short, with less than 40 finrays, beginning behind dorsal fin base; jaws usually equal ..... 2  
Anal fin long, with more than 40 finrays, beginning underneath dorsal fin base; lower jaw projecting in front of upper jaw ..... West African ilisha, *Ilisha africana*
2. Upper jaw without median notch for reception of tip of lower jaw ..... 3  
Upper jaw with distinct median notch for reception of lower jaw ..... Bonga shad, *Ethmalosa fimbriata*
3. Two supra-maxillae in upper jaw ..... 4  
A single supra-maxilla in upper jaw (anterior supra-maxilla missing) ..... 6
4. Distinct black spot on hind edge of gill cover; no black spot at dorsal fin origin; 9 pelvic fin rays ..... Round sardinella, *Sardinella aurita*  
Hind edge of gill cover without black spot, although dark spot may be present behind gill cover; black spot at base of anterior rays of dorsal fin; 8 pelvic fin rays ..... 5
5. More than 70 gill-rakers on lower limb of first arch; upper pectoral fin rays white with black membranes between; caudal fin usually dark grey, tips almost black ..... Madeiran sardinella, *Sardinella maderensis*  
34–40 gill-rakers on lower limb of first arch; upper part of pectoral fins dusky; caudal fin pale yellow with dusky hind margin ..... Yellowtail sardinella, *Sardinella rouxi*
6. Jaw teeth small, of even lengths; primarily freshwater but found in estuaries and brackish lagoons ..... *Pellonula*  
Enlarged canine-like teeth in upper jaw (behind outer series); primarily freshwater but found in estuaries and brackish lagoons ..... *Cynothrissa*

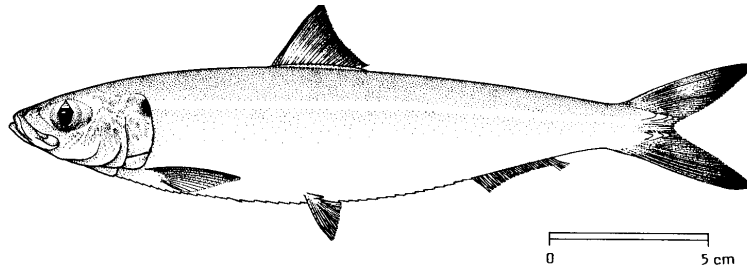
**Round sardinella, Allache**  
*Sardinella aurita* Valenciennes, 1847 <sup>6</sup>

**kaakāma:** Ga, Aɔaŋme. **maŋ:** Ga. **kaŋkāma:** Ga. **krankrama:** Fante. **ɛban:** Fante. **kokora:** Fante (small ones). **ɛmane:** Twi. **uɛtsim:** Ewe. **sawa:** Yoruba. **ozar:** Ijaw.

*Irvine name:* Sardine – *Sardinella aurita* C. & V.

*Reference material:* Accra, Jan. 1930 (Irvine 23); Teshi, June 1930 (Irvine 104) – BMNH 1930.8.26:25 (1 specimen: 188 mm SL); Prampram, Sept, 1939 (Irvine 406) – BMNH 1939.7.12:4 (1 specimen: 106.5 mm SL), BMNH Unregistered duplicate (1 specimen: 77.5 mm SL); Off shore at Tema, Ghana, coll. D. Pennack – BMNH 1973.4.26:11–13 (3 specimens: 115.5–149.6 mm SL).

*Distribution:* In the eastern Atlantic known from southern Portugal to Angola. Also found in the Mediterranean, western Atlantic and Japan.



Round sardinella, *Sardinella aurita*. (Fig. 36.)

Grows to a length of 31 cm. In addition to the characters given in the key above, this species may be distinguished from the next one by the larger and more sharply pointed head, the less flattened body, which is not so sharp along the belly, and by the larger opercular bones supporting the gill-cover. The coloration is bluish grey above, and rainbow silvery on the sides. The dorsal fin is yellowish, and the deeply forked tail dark.

This fish is said to be the sweeter of the two so-called ‘herrings’ of Ghana, and has more flesh on the back. It is reported as being commoner in the cool wet season. It is caught in ‘herring’ nets, and, according to A. P. Brown, from June to September in *ali* nets. Small specimens are called *maŋbii* in Ga, and the fry is sometimes caught in nets along with great numbers of anchovy (*Engraulis*).

On average about 360,000 tonnes of this species is caught in the region each year, making it the most important fishery species in terms of catch. Catches have risen substantially in recent years and current catch rates may not be sustainable.

**Madeiran sardinella, Grande allache**  
*Sardinella maderensis* (Lowe, 1839) <sup>5</sup>

**antɛbo:** Ga, Aɔaŋme. **maŋ:** Ga. **mã:** Adagme. **ɛban:** Fante. **ɛmaŋ:** Nzima (Axim). (The last four are general names for herrings.) **antser:** Fante (Anomabu). **adruku:** Ewe (Awuna). **deyi:** Ewe (when small). **sawa:** Yoruba. **ozar:** Ijaw.

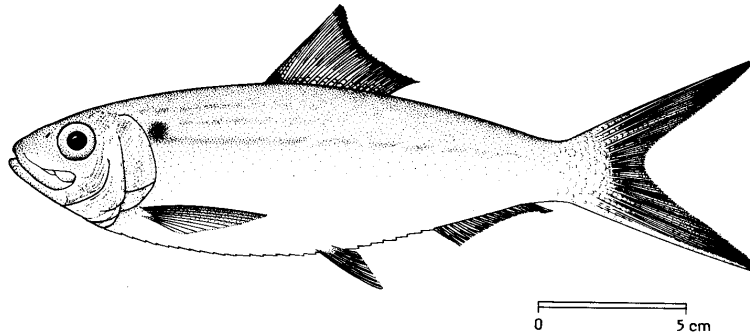
*Irvine name:* Cameroon sardine – *Sardinella cameronensis* Regan. A junior synonym.

*Reference material:* Teshi, June 1930 (Irvine 103) – BMNH 1930.8.26:24 (1 specimen: 174 mm SL).

*Distribution:* Coast of West Africa from Morocco to Angola. Also occurs in the Mediterranean.

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<sup>5</sup> Used as bait for catching *Brotula* and other fishes.



Madeiran sardinella, *Sardinella maderensis*. (Fig. 37.)

Grows to a length of 25–30 cm. The coloration is similar to that of *S. aurita*.

This fish is caught in 'herring' nets, and also in *ali* nets from June to September (A. P. Brown). It is not so highly esteemed as the other species.

On average about 105,000 tonnes of this species is caught in the region each year, making it the one of the most important fishery species in terms of catch. Catches have recently doubled and current catch rates may not be sustainable.

**Ansorge's fangtooth pellenuline**  
*Cynothrissa ansorgii* (Boulenger, 1916)

**dekedeke:** Adaṅme (Ada). **yɛdzoe:** Ewe (Keta).

*Irvine name:* Dog-toothed herring – *Cynothrissa ansorgii* (Bouleng.).

*Reference material:* In estuary of River Volta, Ada, Nov. 1938 (Irvine 370); Keta, Nov. 1938 (Irvine 381) – no specimens found.

*Distribution:* From Senegal to Angola: in rivers and estuaries.

Grows to a length of about 15 cm. Primarily a freshwater species. The upper half of the fish is said to be pale olive green in life, including the dorsal fin and the base of the caudal, and the lower half and other fins white. There is a broad silvery band along each side.

The Keta specimens were caught in seines used for taking large *Caranx hippos* (*fafa*, Ewe).

**Bonga shad, Ethmalose d'Afrique**  
*Ethmalosa fimbriata* (Bowdich, 1825)

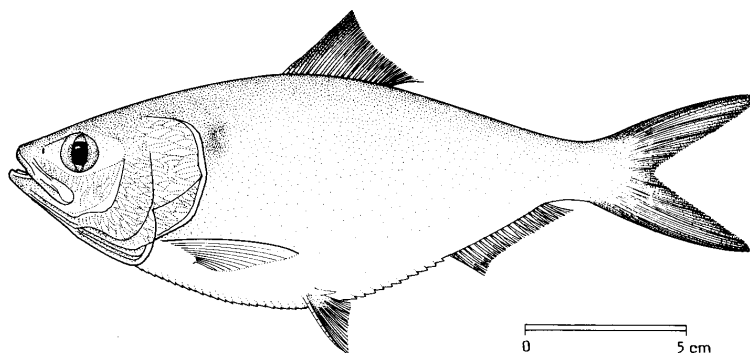
**kokole:** Ga, Adaṅme. **fole:** Adaṅme. **fia:** Adaṅme (small ones). **kwamokyi:** Fante (Anomabu). **kokore:** Fante (Winnebah). **ɛflo:** Ewe. **fafasia:** Ewe. **agbodo:** Yoruba. **kugbo:** Ijaw.

*Irvine name:* Shad – *Ethmalosa dorsalis* (C. & V.). A junior synonym.

*Reference material:* Accra, March 1930 (Irvine 69) – BMNH 1930.8.26:14 (1 specimen: 112.7 mm SL); Ningo lagoon, May 1930 (Irvine 89) – BMNH 1930.8.26:11-13 (3 specimens: 64.2–71.2 mm SL); Prampram, Sept. 1938 (Irvine 327); Keta, Nov. 1938 (Irvine 377); Accra, Aug. 1938 (Irvine 256) – BMNH Unregistered duplicate (1 specimen: 152 mm SL).

*Distribution:* Coast of West Africa from Senegal to Angola; lagoons and brackish water (Pellegrin).





Bonga shad, *Ethmalosa fimbriata*. (Fig. 38.)

Grows to a length of 30 cm. Easily distinguished from the sardines ('herrings') already described by the form of the scales, and by the distinct notch in the middle of the upper jaw. The body has a golden colour along the back, and there is a black spot on the side behind the gill-opening. The fins are mostly yellow, and there may be a blackish tip to the dorsal.

This species is caught from January to April and from June to September in nets. For seven years they were not seen (A. P. Brown). Shad are sometimes taken in seines, and small specimens of about 6 cm are taken by spiral cast-nets from the shore by small children. Small specimens are also caught in lagoons. The flesh is of good quality.

On average about 148,000 tonnes of this species is caught in the region each year, making it one of the most important fishery species in terms of catch in the region.

#### West African ilisha, Alose rasoir

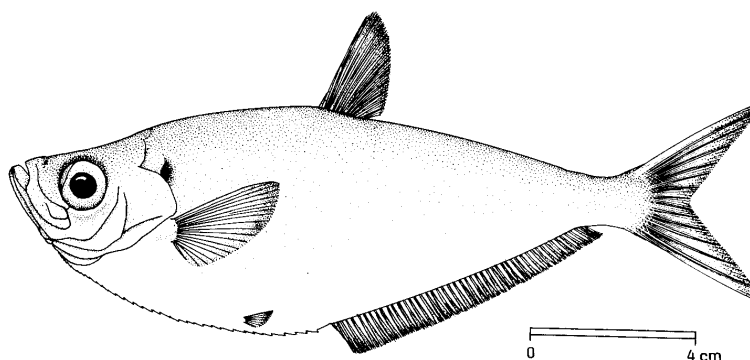
*Ilisha africana* (Bloch, 1795)

**kaɲfla:** Ga. **kamfla:** Adanɲme. **kanfena:** Fante (Saltpond). **kaɲfla:** Fante (Winnebah). **tamtemire:** Fante (Anomabu). **ɲɔɲfla:** Nzima (Axim). **kafla:** Ewe. **fanran-fanran, akumadeju:** Ilaje. **bala:** Ijaw.

*Irvine name:* Long-finned herring – *Ilisha melanota* Dersch. A junior synonym.

*Reference material:* Accra, March 1930 (Irvine 71) – BMNH 1930.8.26.15-17 (3 specimens: 96.7–114.2 mm SL).

*Distribution:* Coasts and estuaries of tropical West Africa from Senegal to Congo.



West African ilisha, *Ilisha africana*. (Fig. 39.)

Grows to a length of about 22 cm, common to 18 cm. Similar in appearance to the common young 'herrings', but the skin is silvery and there is no green coloration on the back. It may also be distinguished by its downward sloping and greatly compressed abdomen, with a row of small backwardly directed spines along the lower edge.

This fish is generally caught in seines. It is caught from April to July (A. P. Brown). It is edible and is often smoked before it is eaten.

The Ga name *kaɲfla* or *kamfla* is derived from *ka mli flɔ* (the suds in the stew), because when used in soup it becomes all frothy like soap (Mrs M. B. Wilkie).

On average about 7,800 tonnes of this species is caught in the region each year, making it an important fishery species in terms of catch.

#### ANCHOVIES (ENGRAULIDIDAE) [16.]

These were included in the Clupeidae by Irvine. There are some 16 genera and 140 species worldwide. A single species is known from the West African coast.

##### **European anchovy, Anchois commun** *Engraulis encrasicolus* (Linnaeus, 1758)

**amoni:** Ga, Adaɲme. **abɔbi:** Ewe (Keta). **ofon odo:** Ilaje.

*Irvine name:* Anchovy – *Engraulis encrasicolus* (Linn.).

*Reference material:* Prampram, Sept. 1938 (Irvine 405) – BMNH 1939.7.12:5-7 (4 specimens: 63.2–77.0 mm SL).

*Distribution:* Mediterranean and eastern Atlantic from Norway to Angola.

Grows to a length of about 12 cm and common to 6 cm. Easily distinguished from the herrings occurring on the coast of Ghana by the position of the mouth, which is overhung by the pointed snout, by the narrow jaws and wide gape, and by the shape of the gill-cover or operculum. The general colour is silvery, with the back olive grey. The tail has a blackish tinge.

This species is caught in great numbers along with the fry of *Sardinella aurita*. It is said to occur more abundantly in the Harmattan season at Accra (Nortey), when it is found in shoals and caught by *faɲya* and seines. It is put into soup and also commonly used as bait.

On average about 109,000 tonnes of this species are recorded as being caught in the region each year, making it one of the most important fishery species in terms of catch.

#### LIZARDFISHES (SYNODONTIDAE) [21.]

Smallish fishes, with somewhat lizard-like heads, and with a large mouth and bands of curved, pointed, depressible teeth. The body is not much compressed and is covered with smooth scales. There is a distinct lateral line. An adipose dorsal fin is present. The pelvic fins are placed close behind the pectorals.

They are mostly voracious carnivorous fishes, living on sandy bottoms in shallow water in most warm seas, but a few species occur in deeper water and two genera at least are oceanic. Only one species, *Trachinocephalus myops* (see below), appears to occur all along the mainland Gulf of Guinea coast of West Africa, whereas another, the Brazilian lizardfish, *Saurida brasiliensis*, is recorded from Gabon to Angola and Mauritania to Senegal.

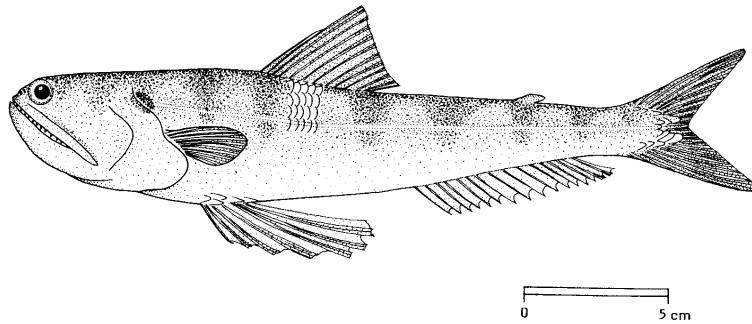
##### **Bluntnose lizardfish, Anoli serpent** *Trachinocephalus myops* (Forster, 1801)

**tutwi:** Ga. **womi-agbeli:** Adaɲme (Prampram).

*Irvine name:* Striped lizardfish – *Trachinocephalus myops* (Schn.).

*Reference material:* Winnebah, March 1933 (Irvine 166) – BMNH 1934.10.12:3 (1 specimen: 223 mm SL); Prampram, July 1938 (Irvine 277) – BMNH 1938.12.15:5 (1 specimen: 167 mm SL); Accra, Feb. 1939 (Irvine 404).

*Distribution:* Warm parts of the Atlantic, Indian and Pacific Oceans (except eastern Pacific). In eastern Atlantic found from Cape Verde Islands and Senegal to Namibia.



Bluntnose lizardfish, *Trachinocephalus myops*. (Fig. 40.)

Grows to a length of 35 cm and common to 25 cm. The snout is short. The eyes are small, set high on the head, and are separated by a deep furrow. The dorsal fin lies in the middle of the back and the adipose fin is small. The pectorals are short and the pelvics long and pointed. The coloration is grey or brown above and silvery yellow or creamy beneath; often the back has about ten dark transverse bars, and the flanks have irregular longitudinal bluish stripes edged with dark brown or yellow; there is an oblique black blotch on the shoulder girdle; the fins are pale yellowish, but the tips of the dorsal and caudal may be dusky. This fish is edible.

#### SEA CATFISHES (ARIIDAE) [25.]

A family of siluroids with smooth, silvery skins, a short dorsal fin, placed near the front end of the body and provided with a spine, followed by an adipose fin, and with the anal fin short or of moderate length. The mouth is placed at the end of the head, and is provided with three pairs of barbels. Teeth are present in the jaws and often on the roof of the mouth. The nostrils are usually close together on each side of the head, and there are no nasal barbels.

These catfishes are found near the shores and in the estuaries of all tropical and subtropical regions: some species enter rivers and a few appear to live permanently in fresh water. Of the some 14 genera and about 120 species, only three occur in the sea off tropical West Africa. These are the Smoothmouth sea catfish (*Arius heudeloti* Valenciennes, 1840), *A. latiscutatus* (discussed below) and the Guinean sea catfish (*A. parkii* Günther, 1864). On average about 22,000 tonnes of sea catfishes are recorded as being caught in the region each year.

#### **Rough-head sea catfish, Mâchoiron de Gambie**

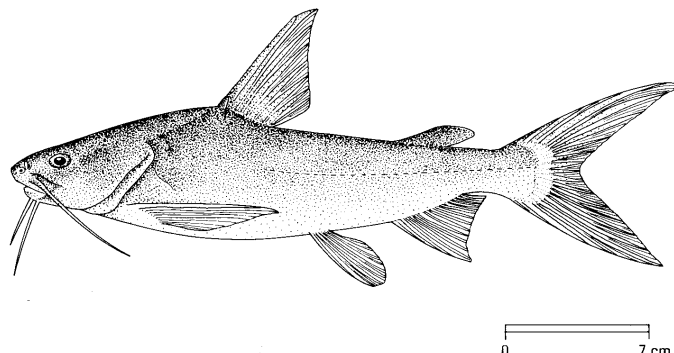
*Arius latiscutatus* Günther, 1864

**kɔkɔtɛ:** Ga, Fante, Nzima, Adayme. **kɔkɔtɛɛ:** Fante. **kugbe** or **kuge:** Yoruba. **kɔkɔtɛ:** Ewe. **arighon ajjowara:** Ilaje. **gbongu:** Ijaw.

*Irvine name:* Sea catfish - *Arius latiscutatus* Günther.

*Reference material:* Accra, Dec. 1929 (Irvine 5); Accra, Sept. 1938 (Irvine 340) – BMNH 1944.2.9:8 (1 specimen: 255 mm SL).

*Distribution:* Coast of West Africa, from Gambia to the Congo: said to enter rivers.



Rough-head sea catfish, *Arius latiscutatus*. (Fig. 41.)

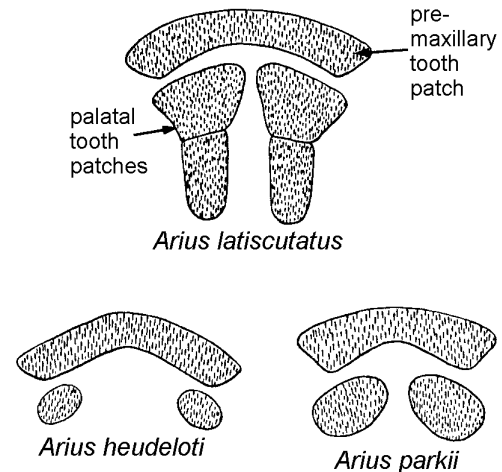
Grows to a length of 60 cm, common to 35 cm. The general coloration is steely blue above and white beneath. These fishes produce very large eggs. The saw-edged spines with which the dorsal and pectoral fins are armed are capable of inflicting severe wounds, and are generally removed by the fishermen as soon as the fish is caught.

It is edible and of good quality. Generally eaten fresh, but sometimes cut into three or four pieces and smoked. It is caught from June to September in *teŋgiraf* nets (A. P. Brown), while in March and April, according to Dr M. J. Field, it is sometimes caught with *wafja*, seines and *sule* nets. It is often caught by hooks.

*Kɔkɔte* has a 'brother' called *kpɔtɔwɔyiri* in Ga (M. B. Wilkie).

This species can be distinguished from the freshwater *Arius gigas* Boulenger, 1911 (Atimpoku, River Volta, May (Irvine 233) – BMNH 1969.3.17:8 (1 specimen: 185 mm SL) and the two other species occurring in the sea by the arrangement of the teeth on the roof of the mouth.

The diagram on the right shows the arrangement of tooth patches on the roofs of the mouths of the three catfish species that occur in the sea in the Gulf of Guinea.



MORAYS (MURAENIDAE) [31.]

A family of large eels, with thick, naked skins, and with powerful jaws armed with knife-like teeth. The pharyngeal bones are long and narrow and also armed with teeth, so that there is a second pair of 'jaws' in the throat. The gill-openings are small and nearly circular. The dorsal and anal fins are joined to the caudal and may be more or less covered with leathery skin and difficult to detect. There are never any pectoral or pelvic fins. The colour patterns of these eels are often strongly marked.

About 15 genera and roughly 200 species are known from tropical and subtropical seas, of which at least six occur along the mainland coast of tropical West Africa.

*Key to the tropical West African genera and species*

1. Teeth mostly blunt, molar like ..... Pebbletooth moray, *Echidna peli*  
Teeth sharp, some of them fang-like or shark-like ..... 2
2. Jaws arched in opposite directions so that many teeth are exposed in lateral aspect when mouth is closed; dorsal fin origin above or just behind gill opening ..... Viper moray, *Enchelycore nigricans*  
Jaws not arched in opposite directions and teeth not exposed in lateral aspect when mouth is closed; dorsal fin origin well anterior to gill opening ..... 3
3. Posterior, as well as anterior nostril with a tube ..... 4  
Only anterior nostril with a tube ..... 5
4. 121–127 vertebrae; body dark brownish-black with pale round spots as large or larger than eye (sometimes smaller on head), spots usually very close together giving a honeycomb appearance; gill opening in old black blotch ..... Honeycomb moray, *Muraena melanotis*  
151–158 vertebrae; body medium to dark greyish to brownish with large oval brownish-black blotches posterior to gill opening (of similar size to the blotch around the gill opening), irregular in size and placement, darker and more contrasting on tail; margins of fins with narrow white edge on tail; fresh specimens with bright to dirty gold coloured inside of mouth and throat ..... Stout moray, *Muraena robusta*
5. 140–148 vertebrae; body dark brown or blackish overall with scattered irregular yellowish spots and blotches; no conspicuous white spots on jaws; fins edged with black ..... Dark moray, *Lycodontis afer*

130–138 vertebrae; body medium brown overall, somewhat lighter ventrally and in throat and lower jaw regions; upper and lower jaw pores set in conspicuous white spots; longitudinal white bar on posterior half of lower jaw just above row of pores ..... Spotjaw moray, *Lycodontis mareei*

**Stout moray, Murène robuste**  
*Muraena robusta* Osorio, 1909

**ablekui:** Ga. **abereku:** Fante. **fumeda:** Ewe. **awobu:** Ijaw.

*Irvine name:* Moray or painted eel – *Muraena helena* Linn. Misidentification.

*Reference material:* Accra, July 1938 (Irvine 251) – BMNH 1938.12.15:3 (1 specimen: approx. 830 mm TL, 152 vertebrae).

*Distribution:* Eastern Atlantic from Mauritania to Angola.



Stout moray, *Muraena robusta*. (Fig. 42.)

Grows to a length of 140 cm. This species is variable in colour, but the specimen from Accra was orange-brown, with a beautiful marbled appearance of orange-brown and dark brown spots on a pale bluish grey ground. There is a characteristic dark spot on the side of the body around the gill-opening. The top of the head is brown and the lower surface a more vivid orange-red. The edges of the jaws are orange-coloured, The dorsal and anal fins both have a narrow white border.

The species is caught by hooks and is said to inflict a severe bite.

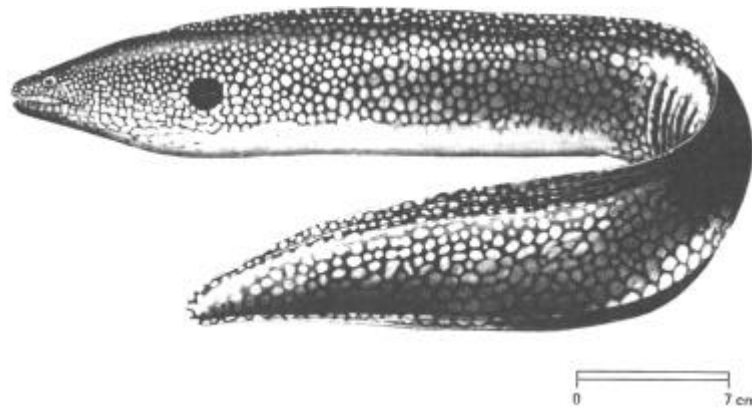
**Honeycomb moray, Murène à pois**  
*Muraena melanotis* (Kaup, 1859)

**ablekui:** Ga. **abereku:** Fante (Saltpond, Anomabu). **abereku:** Nzima (Axim). **fumeda:** Ewe. **awobu:** Ijaw.

*Irvine name:* Moray or painted eel – *Muraena melanotis* (Kaup).

*Reference material:* Accra, Jan. 1930 (Irvine 36) – specimen not found.

*Distribution:* West coast of Africa from Mauritania to Angola; also from islands of the Canaries, Cape Verde, Ascension and Gulf of Guinea.



Honeycomb moray, *Muraena melanotis*. (Fig. 43.)

Reaches a length of nearly 80 cm. This species is closely related to the preceding one, but may be distinguished by differences in colour, as shown in the key above. It is said to live among rocks, and to be capable of giving a severe bite.

It is caught with hook and line, at any time, and is not eaten by the Gas (A. P. Brown). The Kru people eat it, after removing the skin.

#### **Dark moray, Murène obscure**

*Lycodontis afer* (Bloch, 1795)

**ablekui:** Ga, Adan̄me. **abereku:** Fante (Anomabu, Saltpond). **fumeda:** Ewe. **abereku:** Nzima (Axim). **awobu:** Ijaw.

*Irvine name:* Moray or painted eel – *Gymnothorax vicinus* (Cast.). Misidentification.

*Reference material:* Accra, Jan. 1930 (Irvine 15) – BMNH 1930.3.24:6 (1 specimen: 618 mm TL); Prampram, Sept. 1938 (Irvine 320) – BMNH 1939.7.12:9 (1 specimen: approx. 753 mm TL).

*Distribution:* Found off the coast of West Africa from Mauritania to Angola and at the Cape Verde Islands.



Dark moray, *Lycodontis afer*. (Fig. 44.)

Reaches a length of 100 cm. A snake-like fish, which is flattened laterally. It is brownish grey in colour, with greenish white markings. There is a sulphur-coloured tinge along the back. The lower surface of the head is paler in colour, and there are several dark lines running along the throat. The dorsal and anal fins have dark margins. This eel occurs in rock-pools near the shore and can inflict a bad bite.

It is caught at any time in deep water with hooks. It is generally eaten only by the Kru people, but sometimes the Gas dry it before eating.

M. B. Wilkie suggests that the correct name is *ablekui*, meaning 'grains of corn', because of the markings.

A small fish was taken from the stomach of the specimen from Prampram.

**Pebbletooth moray, Murène serpent**  
*Echidna peli* (Kaup, 1856)

**gogoyi:** Yoruba.

*Irvine name:* Moray or painted eel – *Echidna peli* (Kaup).

*Reference material:* Sakumɔ Lagoon, Accra (Irvine 201, *p.p.* J. Lester) – no specimen found.

*Distribution:* West Africa from Mauritania to Angola, also from the islands of Cape Verde and the Gulf of Guinea.

Grows to a maximum length of 90 cm. Easily distinguished from the other morays of Ghana by the molar-like teeth. The general colour is dusky or brownish. The inside of the mouth is pale.

## SHORTFACED EELS (HETERENCHELYIDAE)

At least five species of heterenchelyid eels are known from the tropical eastern Atlantic, of which two, in the genus *Pythonichthys* and two in the genus *Panturichthys* are reported to occur in the Gulf of Guinea. These eels grow to 0.5–1.5 m in length but are rarely caught and reported. A single specimen, which Irvine did not mention in his book, was found in the Natural History Museum collections in London.

### *Panturichthys isognathus* Poll, 1953

*Irvine name:* Species omitted from book. Specimen in collections originally labelled as *Pythonichthys microphthalmus* (Regan, 1912) but later reidentified as a *Panturichthys* species by A. Ben-Tuvia.

*Reference material:* Accra, Ghana, from stomach of Blue shark (*Prionace glauca*), Jan. 1938, coll. V.J. Foote – BMNH 1938.12.15:4 (1 specimen: 300 mm SL, 148 vertebrae).

*Distribution:* Known from the coast of West Africa from Ghana to Angola.

Grows to a total length of at least 32.5 cm and found on seabed at depths of 40–150 m. This specimen, which is in poor condition having being in a shark stomach, appears to be only the second adult example of this species reported. The dentition very closely matches that of *Panturichthys isognathus* illustrated by Blache (1968: fig. 20) and the number of vertebrae (148) is close to that of the holotype (141). *Panturichthys longus*, which also occurs in the Gulf of Guinea has 209–227 vertebrae, whilst *P. mauritanicus*, which is known from Morocco to Guinea, has 164–176 vertebrae.

## CONGER EELS (CONGRIDAE) [32.]

Eels, with smooth, naked skins, distinguished from the morays by having well-developed pectoral fins and, rather wider gill-openings. The dorsal and anal fins are united with the caudal. The coloration is more or less uniform.

About 32 genera and roughly 150 species are found in tropical and temperate seas, chiefly where the bottom is sandy or rocky. Two to five species in the congrid subfamilies (Bathymyrinae, Congrinae and Heterocongrinae) probably occur in shallow water (< 100 m deep) off the coast of Ghana and neighbouring countries from Senegal to Congo or Angola. Several others occur in deepwater (200–800 m depth) offshore. Irvine reported a single species, the European conger, *Conger conger* (Linnaeus, 1758), from Ghana but it has not been reliably recorded further south than Senegal (north of Dakar). His specimen (Irvine 270) could not be located and he most likely collected the Guinean conger, *Paraconger notialis*, or possibly the smaller Balears conger, *Ariosoma balearicum*. Other congeners recorded from tropical West African inshore waters are *Uroconger syringinus* Ginsburg, 1954 (Cameroon to Congo); *Paruroconger drachi* Blache and Bauchot, 1976 (Congo) and *Heteroconger longissimus* Günther, 1870 (Senegal). On average about 500 tonnes of conger eels are recorded as being caught in the region each year.

### **Guinean conger, Congre de Guinée (?)**

*Paraconger notialis* Kanazawa, 1961

or

### **Balears conger, Congre de Baléares (?)**

*Ariosoma balearicum* (Delaroche, 1809)

*Irvine name:* Conger eel – *Conger conger* (Linn.). Misidentification.

*Reference material:* Prampram, July 1938 (Irvine 270) – no specimen found.

*Distribution:* *Paraconger notialis*: coast of West Africa from Senegal to Angola. *Ariosoma balearicum*: Mediterranean and coast of West Africa from Morocco to the Congo.



The Guinean conger reaches a length of 63 cm whereas the Balears conger grows to 35 cm long. The general colour is pale khaki, slightly silvery on the flanks, and whitish or silvery below. The dorsal and anal fins have a narrow black margin posteriorly in both species.

Congers feed mainly at night, and their diet consists of crustaceans, cuttlefish, worms, fishes of all kinds, including their own species, as well as garbage. As in other, eels, the larvae are transparent and leaf-like, and, after being hatched in the open ocean, drift towards the coasts, where they undergo a metamorphosis.

The flesh is of high quality and delicacy, although somewhat gelatinous.

#### SNAKE EELS (OPHICHTHIDAE) [33.]

Eels mostly of moderate size (30–100 cm TL), easily recognized by the tail, which is devoid of any caudal fin and projects beyond the ends of the dorsal and anal fins. The nostrils on each side are situated in the upper lip.

About 52 genera and 250 species are known from tropical and subtropical seas, some inhabiting coral reefs like the morays but most burrowing in sand or mud in shallow waters. At least sixteen species occur in shallow waters on the coast of mainland West Africa. Other species are recorded from deep waters off shore (200–500 m depth).

#### *Key to the tropical West African genera and species*

1. Vertical fins continuous posteriorly with a caudal fin around tip of tail ..... 2  
     Tip of tail without external fin, tail tip hard and pointed ..... 4
2. Posterior nostril on side of head in front of eye ..... *Pseudomyrophis atlanticus*  
     Posterior nostril labial, bisecting upper lip and partly inside, partly outside mouth ..... 3
3. Dorsal fin origin above posterior part of pectoral fin; two supra-orbital pores on snout; no infraorbital pore behind eye ..... Painted eel, *Echelus myrus*  
     Dorsal fin origin far behind pectoral fins; three supra-orbital pores present on snout; one infraorbital pore present behind eye ..... *Myrophis plumbeus*
4. Pectoral fins present ..... 5  
     Pectoral fins absent (except for minute fins, usually only visible with magnification, in some species of *Bascanichthys*) ..... 10
5. Teeth low, rounded, molar-like ..... Saddled snake eel, *Pisodonophis semicinctus*  
     Teeth pointed ..... 6
6. Snout very long and attenuate, its length greater than pectoral fin and more than 25% head length; jaws incapable of closing completely in adults ..... Serpent eel, *Ophisurus serpens*  
     Snout length less than that of pectoral fin and less than 25% head length; jaws can close completely ..... 7
7. Eye in front of midpoint of upper jaw ..... 8  
     Eye above or slightly behind midpoint of upper jaw ..... Spotted snake eel, *Ophichthus ophis*
8. Three preopercular pores present on side head to rear of corner of mouth; blackish-brown spots on body ..... Spoon-nose eel, *Echiophis creutzbergi*  
     Two preopercular pores present on side of head to rear of corner of mouth; body without spots ..... 9
9. 154–158 vertebrae; usually found at depths < 40 m ..... African spoon-nose eel, *Mystriophis rostellatus*  
     136–144 vertebrae; usually found at depths of 90–300 m ..... *Mystriophis crosnieri*
10. Dorsal and anal fins entirely lacking ..... *Apterichtus monodi*  
     Dorsal and anal fins present ..... 11
11. Dorsal fin origin above or behind gill opening ..... 12  
     Dorsal fin origin on head well anterior to gill opening ..... 14

12. Anterior nostrils non-tubular simple openings on snout; anterior end of premaxillary dentition well posterior to them ..... *Hemerorhinus opici*  
Anterior nostrils tubular, anterior end of premaxillary dentition lying between them ..... 13

13. Predorsal distance 11.5–16.9% TL; 149–162 vertebrae; 57–64 preanal lateral line pores, 6 in front of rear of gill opening ..... *Dalophis boulengeri*  
 Predorsal distance 7.2–9.8% TL; 184–191 vertebrae; 73–80 preanal lateral line pores, 9–10 in front of rear of gill opening ..... *Dalophis cephalopeltis*
14. Colour pattern plain, showing little contrast, without bold stripes or spots; gill opening subvertical or slightly forwardly inclined (top anterior to bottom); head less than 6.7% total length ..... 15  
 Colour pattern showing strong contrast, usually with stripes or spots; gill opening strongly posteriorly inclined (bottom anterior to top); head more than 6.7% total length ..... *Callechelys leucoptera*
15. Preanal distance 60.0–64.2% TL; around 225–226 vertebrae; 135–140 preanal lateral line pores, 12–13 in front of gill opening ..... *Bascanichthys ceciliae*  
 Preanal distance 54.2–55.4% TL; around 189–190 vertebrae; 99–103 minute preanal lateral line pores, about 11 in front of gill opening ..... *Bascanichthys congoensis*

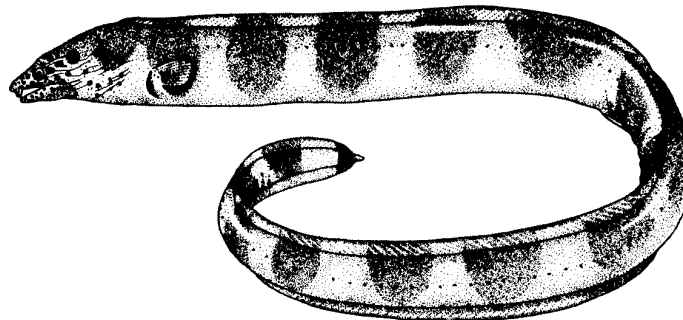
**Saddled snake eel, *Serpenton sellé***  
*Pisodonophis semicinctus* (Richardson, 1848)

**onũfĩ:** Ga. **᠒᠑᠘᠒-onufu:** Ga. **lawe:** Ga. **wom-sin᠑:** Adayme (Prampram). **wofino:** Adayme (D. Benzies). **εpo-w᠗:** Fante. **εpo-boatin:** Fante. **fumeda:** Ewe. **able ᠘okui:** Ewe. **binikiriwei:** Ijaw.

*Irvine name:* Striped snake eel – *Ophichthus semicinctus* (Rich.).

*Reference material:* Accra, Jan. 1930 (Irvine 11) – BMNH 1930.3.24:7-10 (4 specimens: 504–675 mm TL); Accra, 1934 (Irvine 300, *p.p.* Woodward); Accra, Jan. 1939 (Irvine 398).

*Distribution:* Coast of West Africa from Morocco to Angola. Also in the Mediterranean.



Saddled snake eel, *Pisodonophis semicinctus*. (Fig. 45.)

Grows to a maximum total length of around 65 cm. This eel is whitish in colour, with broad brown saddles across the back. The head is entirely covered with brown spots. Lives at depths of 10–30 m.

This species feeds on small fish. In Ghana specimens of prawns and the remains of molluscs were found in its stomach. The molluscs were the sand-living species, wedge shell (*Donax rugosus*), ‘olive shell’ (*Olivancillaria pallida*) and *Tivela* sp. *Pisodonophis* can give a severe bite, is said to be poisonous, and is therefore greatly feared. When thrown on the wet sand, it can bury itself rapidly tail first, or sometimes head first, working its way beneath the sand rapidly towards the sea. In dry sand it finds it almost impossible to bury itself. After capture, it takes a long time to die. It is sometimes caught in seines, or at any time with lines, and is not eaten by the Gas (A. P. Brown). It is eaten by the Krus.

The Adayme name *wom-sin᠑* means ‘sea snake’, and the Fante name *εpo-w᠗* and the Ewe name *fumeda* have the same meaning.

*Dalophis cephalopeltis* (Schlegel, in Bleeker, 1863)

*Irvine name:* Snake eel – *Sphagebranchus cephalopeltis* Bleek.

*Reference material:* Near mouth of River Densu, 1936 (Irvine 211, p.p. Mr Lester) – BMNH 1937.2.6:4 (1 specimen: 347 mm TL, 185 vertebrae).

*Distribution:* Coast of West Africa from Liberia to Pointe Noire, Congo.

Grows to a maximum total length of around 55 cm. Benthic, burrowing in sand or mud in shallow water in and near estuaries.

#### NEEDLEFISHES (BELONIDAE) [34.]

These fishes have a long, slender body, covered with small scales. Both jaws are prolonged into a slender beak, and are armed with sharp, unequal, needle-like teeth. The fins are all supported by soft rays. The dorsal and anal are more or less opposite to one another and placed on the hinder part of the body. The pectoral fins are high up on the sides of the body and the pelvics are well back.

Needlefishes are found near the coasts in all warm seas, and generally swim near the surface. They are capable of moving very rapidly, sometimes leaping into the air, and the larger species are said to be dangerous to fishermen at times. In spite of the fact that the bones are sometimes green in colour, they are excellent food fishes, and some attain to a length of more than 1.3 m. Some species enter rivers and a few are found permanently in fresh water.

Some 10 genera and about 32 species are known, of which four may occur on the coast of Ghana, although only one of these (*Ablennes hians*) was reported by Irvine. The other species which may be expected along the West African mainland coast are: the Senegal needlefish, *Strongylura senegalensis* (Valenciennes, 1846); the Agujon needlefish, *Tylosurus acus rafale* Collette and Parin, 1970; and the Hound needlefish, *Tylosurus crocodilus crocodilus* (Peron and LeSueur, 1822). On average about 1000 tonnes of needlefishes are caught in the region each year.

#### Flat needlefish, Orphie plate

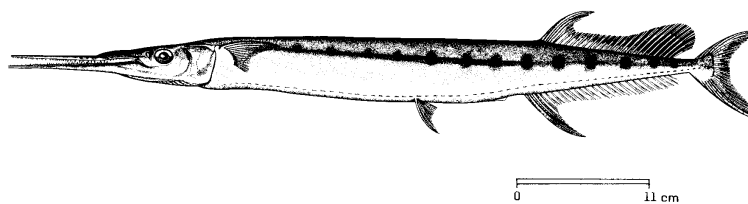
*Ablennes hians* (Valenciennes, 1846)

**sẽnsẽ-pue:** Ga. **sẽnsẽ:** Ga. **legelege:** Ga. **sensẽ:** Adaŋme (Prampram). **kõnsuanu:** Fante. **kõnsuano:** Fante (Winnebah). **konsuano:** Nzima (Axim). **adayi:** Ewe. **odouwodou:** Ijaw.

*Irvine name:* Flat garfish – *Ablennes hians* (C. & V.).

*Reference material:* Accra, Nov. 1930 (Irvine 117) – BMNH 1932.2.27:3 (1 specimen: 685 mm SL, 524 mm BL).

*Distribution:* In the eastern Atlantic known for the Cape Verde Islands and Dakar to southern Angola. Elsewhere found in all tropical and subtropical seas.



Flat needlefish, *Ablennes hians*. (Fig. 46.)

Grows to a total length of about 100 cm. Distinguished from most other garfishes by its flat, ribbon-shaped body. The scales are very small and the fish has the appearance of being scaleless. It is silvery, with beautiful rainbow reflections when freshly caught. Just behind the dorsal fin there are three large dark spots on the upper surface, and from the anal fin towards the tail there are several indistinct greyish lines. The dorsal, caudal and pelvic fins are all dark.

This fish is generally caught with hooks and is edible. In the Keta district, before the season for *fafa* (Ewe) (*Caranx hippos*) starts in October, large quantities of garfish are taken in seines.

The Ga name *legelege* means 'long', referring to the long and narrow body.

## HALFBEAKS (HEMIRAMPHIDAE) [35.]

A family of fishes standing rather midway between the needlefishes and the flyingfishes. The scales are rather large, and the mouth is small, with tiny compressed teeth. The upper jaw is short, flat and triangular in shape; the lower is produced in front of the mouth into a slender pointed 'beak', which begins to grow out in the very young fish.

These fishes live near the coasts in tropical seas, swimming in schools near the surface and feeding mainly on floating seagrass, crustaceans and small fishes. They move very swiftly, and may be capable of leaping from the water and sailing through the air for short distances like the flying-fishes. Some species enter rivers, and others live exclusively in fresh or brackish water.

Some 12 genera and about 85 species are known, of which three are found in coastal waters off the tropical West African mainland. A further two species are found in offshore waters. On average about 300 tonnes of halfbeaks are recorded as being caught in the region each year.

### *Key to the tropical West African genera and species*

1. Caudal fin deeply forked; scales absent on snout; preorbital ridge absent; anal fin rays 10–14 (usually 11–13, rarely 14) ..... 2  
 Caudal fin slightly forked; scales present on snout; preorbital ridge well developed; anal fin rays 13–17 (usually 15 or 16, rarely 13) ..... African halfbeak, *Hyporhamphus picarti*
2. Pectoral fins long, about 18.9–22.2% SL, reaching beyond anterior margin of nasal pit when folded forwards; in fresh specimens upper lobe of caudal fin bluish-violet with red tip, lower lobe bluish; anal fin rays 10–13 (usually 11 or 12) ..... Balao halfbeak, *Hemiramphus balao*  
 Pectoral fins short, about 15.6–18.9% SL, not reaching to nasal pit when folded forwards; in fresh specimens entire upper lobe of caudal fin yellowish orange, lower lobe dusky; anal fin rays 12–14 (usually 13) Ballyhoo halfbeak, *Her*

### **Ballyhoo halfbeak, Demi-bec de Brésil**

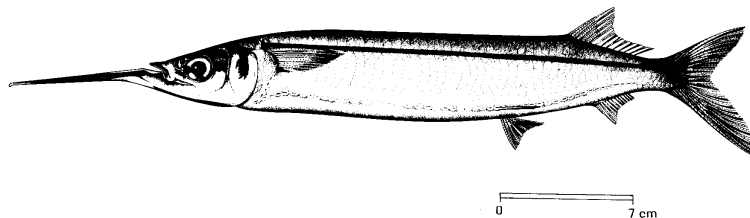
*Hemiramphus brasiliensis* (Linnaeus, 1758)

**sẽnsẽ:** Ga. **sensẽni:** Ga. **agbana:** Adaŋme. **sesẽ:** Fante. **ɔsese:** Fante. **asẽ:** Nzima (Axim). **dayi-nuɖeke** or **dayi-dɔɖeke:** Ewe. **dzodzodru:** Ewe (Vuvor). **gbintolu:** Ijaw.

*Irvine name:* Half-beak – *Hemiramphus brasiliensis* (Linnaeus) and *Hyporhamphus calabaricus* (Günth.) as his specimen of this species is also *H. brasiliensis* (see under *Hyporhamphus picarti*).

*Reference material:* Keta, Nov. 1938 (Irvine 376) – BMNH 1939.7.12:8 (1 specimen: 211 mm SL, 137 mm BL); Accra, March 1930 (Irvine 59, listed as *Hyporhamphus calabaricus*) – BMNH 1930.8.26:18 (1 specimen: 220 mm SL, 143 mm BL).

*Distribution:* In the eastern Atlantic known from Cape Verde Islands and Senegal to Angola. Also known in the western Atlantic from Massachusetts to Rio de Janeiro.



Ballyhoo halfbeak, *Hemiramphus brasiliensis*. (Fig. 47.)

Grows to a total length of at least 40.5 cm. The coloration is dark bluish green above, silvery whitish beneath. The scales are silvery. The beak is almost black with a fleshy red tip. Entire upper lobe of caudal fin yellowish orange.

This fish occurs in shoals during June and July and is then common in the markets. It is sometimes caught in herring nets. According to A. P. Brown, it is taken from June to September, and at other times, in *fanɔya*, *paŋiŋ* and other nets.

The Ewe name *adayi-nuɔke* is derived from *adayi* (*da*, snake; *yi*, white), *nu* (mouth), and, *ɔke* (one) (i.e. 'a white snake having only one [portion of a] mouth').

**Balao halfbeak, Demi-bec balaou**  
*Hemiramphus balao* LeSueur, 1823

(For vernacular names, cf. *Hemiramphus brasiliensis* above).

*Irvine name*: Not listed in book although specimen found.

*Reference material*: (Irvine 269) – BMNH 1963.10.18:1 (1 specimen: 297 mm SL, 173 mm BL).

*Distribution*: In the eastern Atlantic known from the Canary Islands and also from Ivory Coast southwards to Angola. Also known in the western Atlantic from New York to Brazil.

Grows to a total length of at least 40 cm. The coloration is dark bluish above, paler blue on the sides, and whitish beneath. The scales are silvery. The beak is almost black with fleshy red tip. Upper lobe of caudal fin bluish-violet with red tip, lower lobe bluish. Irvine's colour description for his *Hyporhamphus calabaricus* perhaps best fits the Balao halfbeak

**African halfbeak, Demi-bec africain**  
*Hyporhamphus picarti* (Valenciennes, 1846)

(For vernacular names, cf. *Hemiramphus brasiliensis* above).

*Irvine name*: Half-beak – *Hyporhamphus calabaricus* (Günth.). A junior synonym.

*Reference material*: The material listed by Irvine under this name from Accra, March 1930 (Irvine 59) – BMNH 1930.8.26:18 is a specimen of *Hemiramphus brasiliensis* (see above). However, this species is present off the coast of Ghana and so we list it.

*Distribution*: In the eastern Atlantic known from Morocco to Angola. Also known from the southern shores of the Mediterranean.

Grows to a total length of about 18 cm. The coloration is greenish above, silvery white below. There are three distinct narrow black lines along the middle of the back from the head to the dorsal fin. The beak has a fleshy red tip and the caudal fin is pale but dark-edged. Irvine's colour description for his *Hyporhamphus calabaricus* and suggestion that it grows to 35 cm, suggest that he was perhaps confusing it with *Hemiramphus balao*.

FLYINGFISHES (EXOCOETIDAE) [36.]

Fishes with the pectoral fins greatly enlarged and serving as organs of flight. The pelvic fins may also be enlarged, and the lower lobe of the caudal fin is always longer than the upper. The scales are fairly large as in the half-beaks. The mouth is small, with neither of the jaws prolonged, and the teeth are minute.

They are primarily fishes of tropical seas, although they may wander into more temperate regions. They are 'gliders' rather than true flyers, leaving the water with a rush, 'taxi-ing' along the surface very rapidly with the aid of the lower lobe of the caudal fin, and finally 'planing' through the air supported by the pectoral fins for considerable distances. Currents of air sometimes carry the fishes to some height, and they not infrequently land on the decks of ships, especially at night. During the daytime they usually fly away from an approaching ship. Their powers of flight are used largely to escape the attentions of large tunnies, albacores and other enemies.

About seven genera and 52 species are known, of which seven would be expected to occur off the mainland coast of tropical West Africa. On average about 800 tonnes of flyingfishes are recorded as being caught in the region each year.

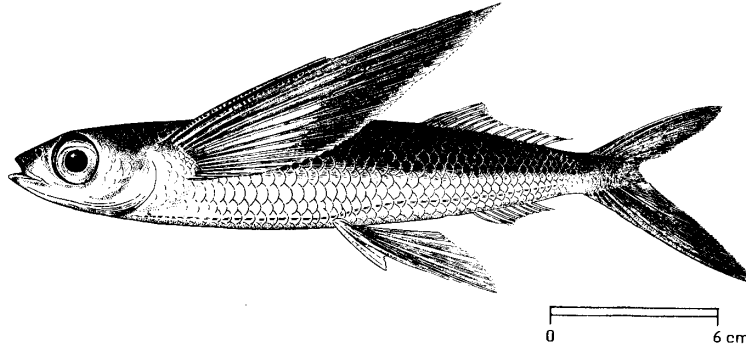
**Atlantic flyingfish, *Exocet atlantique***  
*Cheilopogon melanurus* (Valenciennes, 1846)

**flikilɔ:** Ga. **gbela:** Adaŋme. **apegya baaku:** Fante (Anomabu). **po-anoma:** Fante. **panpensire:** Fante (Saltpond). **ntetere:** Nzima (Axim). **dzodzodru:** Ewe. **alamisoro:** Yoruba. **bini ofoni:** Ijaw.

*Irvine name:* Flyingfish – *Cypsilurus lutkeni* (Jord. & Everm.). A junior synonym.

*Reference material:* Accra, Jan. 1930 (Irvine 37) – BMNH 1930.3.24:11 (1 specimen: 236 mm SL); Accra, Jan. 1939 (Irvine 389).

*Distribution:* In the eastern Atlantic known from Senegal to Nigeria. Also occurs in the western central Atlantic.



Atlantic flyingfish, *Cheilopogon melanurus*. (Fig. 48.)

Grows to a standard length of about 26 cm. This is one of the flyingfishes in which the pelvic fins are enlarged as well as the pectorals. The coloration is silvery blue, becoming paler beneath. The species lives in shoals in the open ocean, mainly in nearshore surface waters. The eggs are provided with sticky filaments, by which they adhere to floating weed.

The flyingfish is caught in *ali* and other nets, at no special time (A. P. Brown), and is edible.

The Ga name *flikilɔ* means ‘flying-fish’ or ‘flier’ (M.J.F.). The Fante name *apegya baaku* is derived from *apegya* (to lift by oneself), and *baaku* (one), referring to the ability of the fish to lift itself out of the water. The Fante name *po-anoma* means ‘sea bird’. The Ewe name *dzodzodru* is derived from *dzodzo* (to fly), and *dru* (the noise it makes during flight).

CORNETFISHES (FISTULARIIDAE) [38.]

A family of tube-mouths (i.e. fishes with a small mouth at the end of a tube-like snout) with a slender, naked body, sometimes with some bony plates sunk into the skin. The dorsal and anal fins are opposite to one another and situated in the hinder part of the body, and have no spines. The pelvic fins are well back. The caudal fin has the middle rays produced into a long filament.

These are shore fishes, widely distributed in warm seas, where they are found mainly in shallow water near the surface. They reach a length of 1.8 m. Only four species are known, of which two occur along the coast of tropical West Africa. In addition to the Bluespotted cornetfish, *Fistularia tabacaria* reported by Irvine, there is also the Red cornetfish, *F. petimba* Lacepède, 1803.

**Bluespotted cornetfish, Cornette à taches bleues**  
*Fistularia tabacaria* Linnaeus, 1758

**ɲɔɲ-baa:** Ga. **abadi odouwodou:** Ijaw.

*Irvine name:* Flute-mouth or tobacco-pipe fish – *Fistularia tabacaria* Linn.

*Reference material:* Accra, 1936 (Irvine 207); Teshi, Feb. 1936 (A. P. Brown 6) – BMNH 1937.2.6:1 (1 specimen: 587 mm SL, 829 mm TL).



*Distribution:* In the eastern Atlantic known from Cape Blanc to Angola (including the Cape Verde Islands and islands of the Gulf of Guinea). Also occurs in the western central Atlantic.

Reaches a length of 180 cm and common to 100 cm. General coloration brownish above, paler beneath, with a number of oblong pale blue spots, usually arranged in series.

These fishes are said to live near the open shore, but are often driven into, the open sea.

*Fistularia tabacaria* can be distinguished from *F. petimba* as follows. *F. petimba* has a row of elongate bony plates embedded in the skin along the midline of the back anterior to the dorsal fin which are absent in *F. tabacaria*. *F. petimba* has ossifications on the posterior lateral-line which end in sharp spines but in *F. tabacaria* these are without spines. *F. petimba* lacks blue spots along the back and sides.

The Ga name  $\eta\text{f}\text{ɔ}\eta$ -*baa* means 'sea crocodile'.

#### PIPEFISHES AND SEA HORSES (SYNGNATHIDAE) [39.]

The members of this family differ from the other tube-mouths in having the body enclosed in a series of bony rings. The gill-openings are reduced to small pores, and the gills themselves are composed of small rounded tufts instead of the usual filaments.

This is a large family, the members of which are mostly marine and live among seaweeds in warm seas. A few live in fresh water. They are remarkable for their powers of changing colour to harmonize with the weeds among which they lurk. They feed mainly upon small crustaceans. The methods of reproduction are remarkable. The eggs are carried by the male in a pouch or groove in the abdomen, and even after the fry are hatched they may return to the pouch if danger threatens. The pipefishes are long and slender, with the head in line with the main axis of the body, while the sea horses have a curious form, with the head set at an angle to the curved neck. The tail is prehensile and is used for anchoring the fish to the stems of seaweed, or to other objects.

At least three species of pipefish and two species of sea-horse appear to occur off Ghana and neighbouring West African countries.<sup>6</sup> Sea-horses in particular are very cryptic species and hence difficult to find, so it is not surprising that Irvine only recorded a single species.

? *Hippocampus punctulatus* Guichenot, 1853

$\eta\text{kud}\text{ɔ}\eta\text{kud}\text{ɔ}$ : Ga (Labadi, A.P. Brown).  $\text{k}\text{ɔ}\eta\text{o}$ : Ga (Tema, A.P. Brown).  $\eta\text{f}\text{ɔ}\eta\text{o}\text{k}\text{p}\text{ɔ}\eta\text{ɔ}$ : Ga.  $\text{t}\text{f}\text{it}\text{f}\text{is}\text{is}\text{o}\text{p}\text{o}$ : Ga (Nortey).

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<sup>6</sup> Duckworth reports pipefishes from Lagos lagoon.

*Irvine name:* Sea horse – *Hippocampus deani* Duméril. We tentatively place Irvine’s specimen in *H. punctulatus* on the basis that *H. deanei* of Duméril is a junior synonym. Irvine’s text shows that he recognised that *H. deanei* was a synonym of *H. punctulatus* but he did not give Guichenot’s name priority.

*Reference material:* Labadi, Jan. 1936 (A. P. Brown 2); Accra, Sept. 1938 (Irvine 345). No specimens found.

*Distribution:* In the eastern Atlantic known from Cape Blanc to Angola (including the Cape Verde Islands and islands of the Gulf of Guinea). Also occurs in the western central Atlantic.

Rarely exceeds a total length of 28 cm. The coloration is purplish, speckled with brown.

The Labadi specimen was caught in a *teɲgiraf* net, and the one from Accra was taken over a mile from the shore in floating brown seaweeds. When attached to seaweeds by their prehensile tails, they are sometimes brought into canoes in nets. This fish is not edible and is mainly a curiosity.

The Ga name *ɲɔɲokpɔɲɔ* means ‘sea horse’.



(Sea horse, *Hippocampus punctulatus*. Fig. 49.)

#### SQUIRRELFISHES AND SOLDIERFISHES (HOLOCENTRIDAE) [40.]

These fishes probably derive their name from the long front part of the dorsal fin, which is composed of strong spines, as well as from their colour, which is generally red, relieved by stripes of silver or gold. The scales are rough and spiny, and there are often strong spines on the head, especially on the gill-covers. The eyes are always large.

These are shore fishes of tropical regions, and are abundant in the neighbourhood of coral reefs. Some eight genera and about 65 species are known, of which only one or two occur on the coast of mainland West Africa.

##### **Red squirrelfish, Marignan rouge**

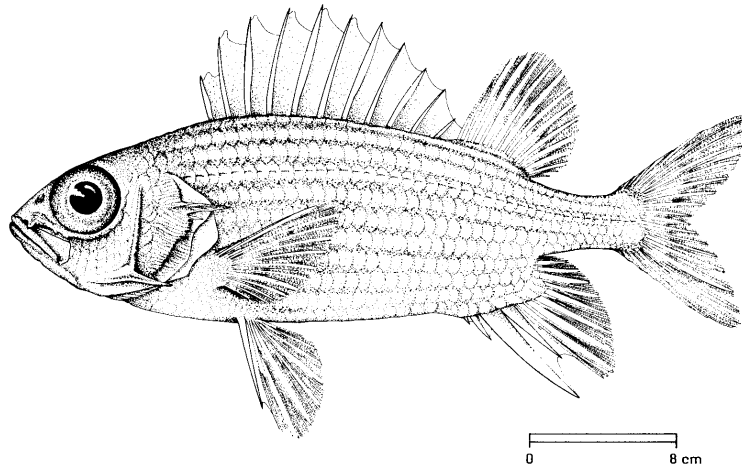
*Sargocentron hastatus* (Valenciennes, 1829)

**ofɛtɛ, opete:** Ga. (?) **hawui:** Ga. **wɔɲɲa-dua:** Adaɲme (Prampram). **ɛni-awotu, epo-edwire, epo-wansanɲ:** Fante (Winnebah). (?) **hawui:** Ewe. **olipe ghahighahi:** Ilaje.

*Irvine name:* Soldierfish or squirrelfish – *Holocentrus hastatus* C. & V.

*Reference material:* Locality? (Irvine 119); Winnebah, March 1933 (Irvine 173) – BMNH 1934.10.12:8 (1 specimen: 201 mm SL); Accra, 1936 (Irvine 205) – BMNH Unregistered duplicate (1 specimen: 171 mm SL); Prampram, Sept. 1938 (Irvine 323), Irvine (no number or locality).

*Distribution:* Along the coast of tropical West Africa from Senegal to Angola, including the Cape Verde Islands.



Red squirrelfish, *Sargocentron hastatus*. (Fig. 50.)

Grows to a standard length of at least 46 cm. The colour is bright red, with longitudinal whitish stripes. The dorsal fin is also bright red, with a white stripe along the spinous part near the body and white tips to the membranes between the spines. The membranes between the first two spines have each a large black marking in the centre. The tail is red, except at the tip. Inhabits rocky and coral reef areas from about 80 m to 200 m depth.

This fish is caught with hooks from June to September (A. P. Brown). The flesh is edible, but coarse, and is usually dried before it is used as food.

#### GROUPERS, SEABASSES, HINDS, CREOLEFISHES, COMBERS, SEAPERCHES AND SOAPFISHES (SERRANIDAE) [41.]

A large and diverse family of spiny-rayed perch-like fishes. The spinous part of the dorsal fin is usually well developed, and the soft portion about equal to the anal fin, which nearly always has three spines. The caudal fin usually has 17 principal rays, of which 15 are branched. The pelvic fins each have a spine and five (occasionally four) soft-rays, and there is no scaly process in the axil. The jaws are usually strong, and the teeth small and sharp. Teeth are usually present on the roof of the mouth.

Carnivorous fishes, living at the bottom near the coasts of all warm seas. A few species are found in brackish or even in fresh water, but all spawn in the sea. Most of the larger forms are important food fishes.

This is one of the largest families of marine fishes, and includes about 62 genera and 450 species, of which about 18 occur off the mainland coast of tropical West Africa. On average about 16,500 tonnes of serranids are recorded as being caught in the region each year.

##### *Key to the tropical West African genera and species (including Anthiinae, Grammistinae)*

1. Dorsal fin with 3 or 4 spines; anal fin without spines ..... 2  
    Dorsal fin with 7–12 spines; anal fin with 3 spines ..... 3
2. Dorsal fin with 3 spines and 23–25 soft rays; anal fin with 15 soft rays; body grey or brownish grey, lighter below; pale spots about the size of pupil or smaller on body, less numerous on dorsal fin, many of these spots merging; grows to 32 cm ..... Greater soapfish, *Rypticus saponaceus*  
    Body pale olive green to pale brown-red, head and belly white to pale cream, with dark red-brown to black spots (smaller than pupil) on body and head; grows to about 13 cm .....  
    ..... Spotted soapfish, *Rypticus subbifrenatus*
3. Lateral line running close to base of dorsal fin, separated by only 2 or 3 scale rows; dorsal fin with 10 spines and 15 soft rays, third dorsal spine elongate; anal fin with 3 spines and 7 soft rays; pelvic fins very long, reaching past posterior end of anal fin base; 36–39 lateral line scales; caudal fin deeply forked ..... Swallowtail seaperch, *Anthias anthias*

	Lateral line not running close to dorsal fin, separated by 5 or more scale rows .....	4
4.	Body orbicular, compressed; body depth 47–56% SL; gill cover with 2 flat spines posteriorly; 13–14 soft rays in anal fin .....	<i>Centrarchops chapini</i>
	Body more elongate, not compressed; body depth 26–37% SL; gill cover with 3 spines posteriorly; 7–11 soft rays in anal fin .....	5
5.	Dorsal fin spines 10; no scaly flap of skin at upper end of pectoral fin base; soft dorsal and anal fins mostly naked .....	6
	Dorsal fin spines usually 9 or 11 (rarely 10 or 12); scaly flap of skin present at upper end of pectoral fin base; soft dorsal and anal fins mostly covered with scales .....	8
6.	Dorsal fin with 10–11 soft rays; about 7 dark bars on lower half of sides of body below lateral line .....	African comber, <i>Serranus africanus</i>
	Dorsal fin with 12 soft rays or more .....	7
7.	Dorsal fin with 13–15 soft rays; 72–78 scales in lateral line; sides with two or three (often bluish) longitudinal stripes; sometimes 8 or 9 dark vertical bars across back; head with oblique orange stripes .....	Comber, <i>Serranus cabrilla</i>
	Dorsal fin with 12–13 soft rays; 45–48 scales in lateral line; body pale brown with 5 or 6 indistinct dusky vertical bars on sides that end in dark blotches below lateral line; 2 or 3 indistinct narrow dark bars running from eye obliquely backwards across the gill cover .....	Ghanaian comber, <i>Serranus accraensis</i>
8.	Dorsal fin spines 9 .....	9
	Dorsal fin spines 11 or 12 (rarely 10) .....	10
9.	Dorsal fin soft rays 14 or 15; anal fin with 8 soft rays; 8–9 gill-rakers on lower limb of first gill arch; body colour dark brown, with vertical dark bands on posterior part becoming indistinct anteriorly; sides of head with a reticulated pattern of hexagonal reddish spots separated by dark lines .....	Niger hind, <i>Cephalopholis nigri</i>
	Dorsal fin soft rays 15 or 16; anal fin with 9 or 10 soft rays; 11–13 gill-rakers on lower limb of first gill arch; body colour reddish-orange, everywhere covered with distinct small blue spots with dark edges; ground colour of juveniles brown or olive .....	African hind, <i>Cephalopholis taeniops</i>

10. Strong horizontal bony ridge across gill cover slightly above eye level; scales very rough; 11–13 soft dorsal fin rays ..... Wreckfish, *Polyprion americanus*  
 No horizontal bony ridge across gill cover; scales smooth or slightly rough; 14–17 soft dorsal fin rays ..... 11
11. Anal fin rays 10 or 11 ..... Comb grouper, *Mycteroperca rubra*  
 Anal fin rays 7 or 8 ..... 12
12. Dorsal fin rays 15–17; caudal fin truncate to concave (convex in specimens <15 cm SL); body depth 29–36% SL; no dark spots or dark bars on body; juveniles with 3–5 dark longitudinal stripes on dorsal part of body Goldblotch gro  
 Dorsal fin rays 13–18; body without dark stripes ..... 13
13. Dorsal fin rays 13 or 14; anal fin rays 8; caudal fin truncate; body dark reddish brown to greyish violet; juveniles with 2 oblique dark lines running down and backwards from eye .....  
 ..... Dogtooth grouper, *Epinephelus caninus*  
 Dorsal fin rays 14–18; anal fin rays 7–9; caudal fin rounded, convex or truncate ..... 14
14. Body depth 28–36% SL; head and/or body with dark spots (may be faint or absent in fish >40 cm SL); dark spots either indistinct or confined to anterior part of body ..... 15  
 Body depth 31–42% SL; no dark spots on head and body ..... 16
15. Two oblique black-edged pale blue or white stripes across cheek and operculum; no dark spots on head; 15–17 gill-rakers on lower limb of first gill arch; interorbital width subequal to eye diameter of fish of 18–25 cm SL; preopercle with 3–6 large spines at angle ..... White grouper, *Epinephelus aeneus*  
 Head with dark spots (in juveniles) but no blue stripes; 13–15 gill-rakers on lower limb of first gill arch; interorbital width distinctly greater than eye diameter of fish of 18–25 cm SL; preopercle rounded, finely serrate ..... Jewfish, *Epinephelus itajara*
16. Anal fin rays 9; pectoral fin rays 19–21; body depth 37–42% SL; pelvic fin length subequal to pectoral fin length, pelvic fin tips reaching to or beyond anus in fish of 13–30 cm SL .....  
 ..... Haifa grouper, *Epinephelus haifensis*  
 Anal fin rays 8; pectoral fin rays 17–19; body depth 31–38% SL; pelvic fin length distinctly less than pectoral fin length, pelvic fin tips falling well short of anus ..... 17
17. Colour generally brownish; juveniles with 3 or 4 broad, oblique dark bars on dorsal part of body and another on dorsal half of caudal peduncle; caudal fin truncate (slightly convex in small juveniles); ventral edge of subopercle and interopercle serrate; 120–129 scales in lateral series .....  
 ..... Dungat grouper, *Epinephelus goreensis*  
 Body dark brown or greyish dorsally, often golden yellow ventrally; irregular white or pale grey blotches usually visible on head and body; median fins dark brown, lower margin of anal fin and rear margin of caudal fin with a narrow white edge; margin of spinous dorsal fin and base of paired fins often golden-yellow; caudal fin rounded (truncate with rounded corners in some fish >40 cm SL); subopercle and interopercle smooth; 98–116 scales in lateral series ..... Dusky grouper, *Epinephelus marginatus*

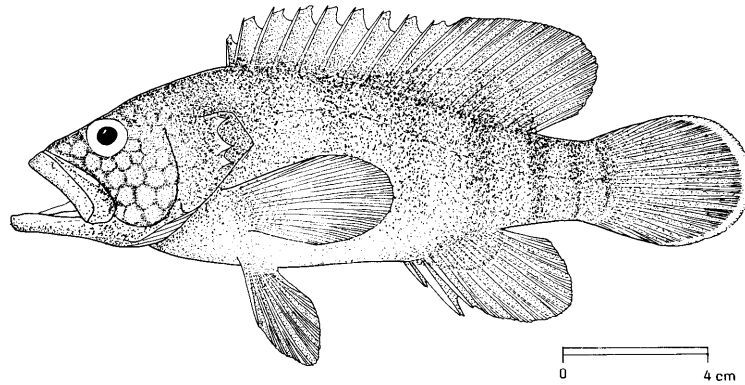
**Niger hind, Mérrou du Niger**  
*Cephalopholis nigri* (Günther, 1859)

**wewei** or **weiwei**: Ga. **duade**: Ga. **yoyowei**, **weiwei**: Ga (A.P.Brown). **odeweiwei**: Adaŋme. (?)  
**pode**: Fante (Anomabu). (?) **ɛfie**: Fante (Saltpond). **soasoankyi**: Fante (Winnebah). **sorokyi**: Nzima (Axim). **tonotsi**, **srē**: Ewe.

*Irvine name*: Orange-spotted sea perch – *Petrometopon nigri* (Günth.).

*Reference material*: Accra, Jan. 1930 (Irvine 34) – BMNH 1930.3.24:12 (1 specimen: 90.0 mm SL); Winnebah, March 1930 (Irvine 172) – BMNH 1934.10.12:10 (1 specimen: 188 mm SL). Accra, Feb. 1939 (Irvine 403) – BMNH 1939.7.12:11 (1 specimen: 172 mm SL), BMNH 1969.2.17:23 (1 specimen: 108.6 mm SL).

*Distribution*: Coast of West Africa from Senegal to the Congo.



Niger hind, *Cephalopholis nigri*. (Fig. 51.)

Reaches a length of about 30 cm. The colour of this fish is dark brown above, with olive green sides, covered with orange-red spots, and a pinkish or salmon belly. There are five or six broad vertical bars. The fins are of a darker brown colour than the body. The anal fin is covered with orange spots, and the pectoral fins are green above, with orange-pink edges.

This species is said to be found among rocks in deep water. It is caught from June to September, and at other times, with lines (A. P. Brown). It is edible.

The Ga name *duade* means 'Cassava'. The meaning of the Adangme name *odeweiwei* is 'small *odee*'.

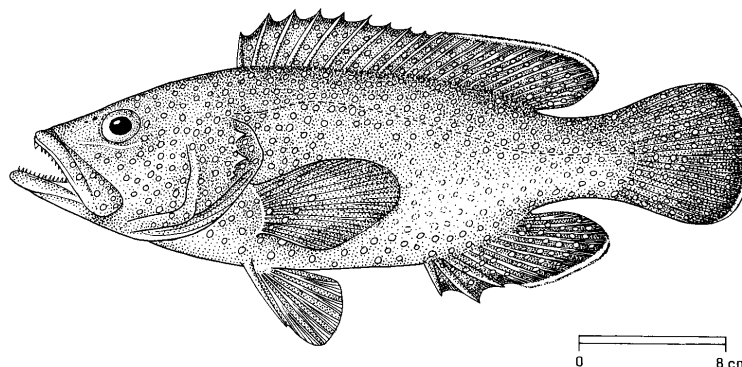
**African hind, Mérou africain**  
*Cephalopholis taeniops* (Valenciennes, 1828)

**odame:** Ga. **kɔkɔɛ:** Adangme. **afiye:** Ga (M.J. Field). **esui:** Fante (Anomabu). **sorekyi:** Nzima (Axim). **akplotsu:** Ewe.

*Irvine name:* Spotted grouper – *Cephalopholis taeniops* (C. & V.).

*Reference material:* Prampram, 35 miles east of Accra, May 1930 (Irvine 82) – BMNH 1930.8.26:26 (1 specimen: 218 mm SL); Kpone, Sept. 1936 (*p.p.* M.J. Field); Prampram, July 1938 (Irvine 280)

*Distribution:* Coast of West Africa from West Sahara to Angola, including islands of Cape Verde and the Gulf of Guinea.



African hind, *Cephalopholis taeniops*. (Fig. 52.)

Grows to a length of about 70 cm. In life this fish is bright red, and has dark spots with blue lines round them. The dorsal fin and most of the anal are covered with blue spots. The caudal fin is also covered with blue spots and has a dark margin.

This species is found in deep water, but also occurs in lagoons. It is caught from June to September with lines (A. P. Brown), and is said to be more abundant in August. It is edible, but in lagoons it is regarded as sacred and consequently thrown back.

The Ewe name *akplɔtsu* is derived from *akplɔ* (spear), and *tsu* (*tsue*) (teeth), i.e. ‘spear teeth’, on account of the very sharp teeth.

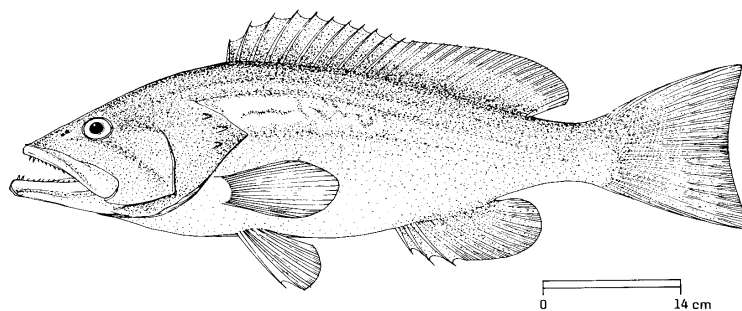
**Goldblotch grouper, Mérou badèche**  
*Epinephelus costae* (Steindachner, 1878)

**odɛɛ:** Ga. **kpāmlā:** Ga.

*Irvine name:* Sea perch or grouper – *Epinephelus alexandrinus* (C. & V.). Misidentification; holotype of *Serranus Alexandrinus* Valenciennes, 1828 was recently found to be a specimen of *Epinephelus fasciatus* (Forsskål, 1775).

*Reference material:* Accra, June 1931 (Irvine 142); Accra, May 1938 (Irvine 249) BMNH 1938.12.15:6 (1 specimen: 445 mm SL); Accra, Jan. 1939 (Irvine 402) – BMNH 1939.7.12:10 (1 specimen: 258 mm SL).

*Distribution:* Mediterranean and coast of West Africa from Morocco to Angola.



Goldblotch grouper, *Epinephelus costae*. (Fig. 53.)

Grows to a length of about 140 cm, common to 70 cm.

The dark horizontal lines along the back and the oblique lines on the sides of the head are the most characteristic features of the coloration of this species. The general colour is greyish brown, darker on the head than on the body. The fins are all dark brown or blackish brown.

This is a deep-water fish, and, when landed on the beach, it can usually be easily distinguished by its large protruding eyes and by the reddish inverted stomach which generally protrudes into the mouth. It is caught with hooks and is edible.

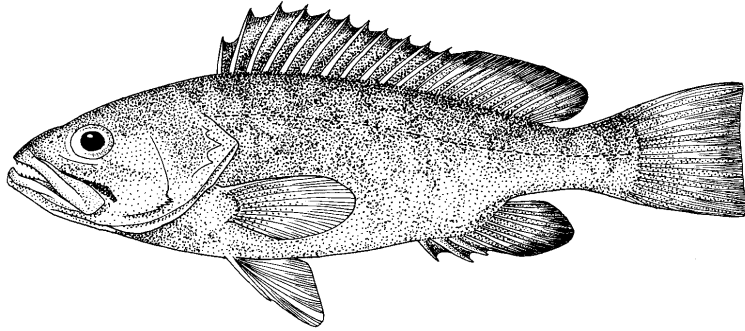
**Dungat grouper, Mérou de Gorée**  
*Epinephelus goreensis* (Valenciennes, 1830)

**Sɔi-weiwei:** Ga. (?) **Sɔi:** Ga. **odɛɛ:** Ga. **wɔŋkuo, fie-yu:** Adaŋme (Prarnpram). **fie-yumu:** Adaŋme. (?) **ɛsoe:** Fante and Nzima (Axim.) **ani-honton:** Fante (Anomabu). **buadzi:** Fante (Anomabu).

*Irvine name:* Sea perch or grouper – *Epinephelus goreensis* (C. & V.).

*Reference material:* Accra, April (?) 1930 (Irvine 43) – BMNH 1930.8.26:23 (1 specimen: 270 mm SL); Prampram, May 1930 (Irvine 83); Accra, July 1938 (Irvine 284) – BMNH 1938.12.15:9 (Specimen not found in BMNH collections).

*Distribution:* Coasts of West Africa from Senegal to Angola.



Dungat grouper, *Epinephelus goreensis*. (Fig. 54.)

Grows to a length of 60 cm or more. It is not always easy to distinguish this fish from the preceding species, especially as the coloration changes somewhat with age in both. The most characteristic feature is a black moustache-like mark usually present above the maxillary bone. The general colour is dark greyish brown, slightly paler on the lower surface, but the transverse dark bands are by no means a constant feature and may be lost altogether in the adult fish. The dorsal, anal and pectoral fins all have yellowish margins, and the caudal fin is wholly dark.

Like the previous species, the eyes, which have golden yellow rims, protrude greatly after death, and the stomach is inverted into the mouth.

It is edible, and, the flesh being of good quality, is a general favourite. It is caught by hooks, generally from June to September. The flesh is white and firm and is eaten especially during the *hɔmɔwɔ* season by the Gas. On average about 90 tonnes of this species are recorded as being caught in the region each year.

The Fante name *ani-honton* means 'protruding eyes', and is derived from *eynia* (eyes), and *honton* (protruding).

#### White grouper, Mèrou blanc

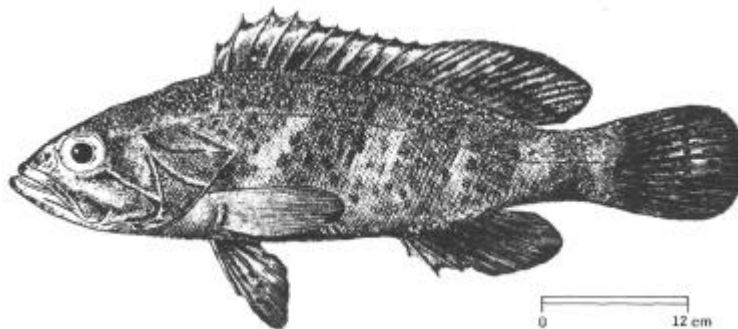
*Epinephelus aeneus* (Geoffroy Saint-Hilaire, 1809)

**Sɔi:** Ga. **kplɔkɔtɔdindaɲ:** Ga. **kplɔkɔtinta:** Adaɲme (Prampram). **supin:** Fante (Anomabu). **ɔfi:** Fante (Winnebah).

*Irvine name:* Sea perch or grouper – *Epinephelus aeneus* (Geoffr.).

*Reference material:* Botiano Lagoon, near Accra, March 1930 (Irvine 73); Accra, June 1931 (Irvine 140; Accra, May 1938 (Irvine 250) – BMNH 1938.12.15:7 (1 specimen: 294 mm SL).

*Distribution:* Coast of West Africa from Morocco to Angola. Also occurs in the Mediterranean and along the Atlantic coasts of southern Spain and Portugal.



White grouper, *Epinephelus aeneus*. (Fig. 55.)

Grows to a length of 115 cm and common to 60 cm. This species is closely related to the two preceding ones, and may easily be confused with *E. costae*. In that species, however, the caudal fin is



square-cut or even a little concave in the hinder margin, whereas in this fish the fin is always distinctly rounded. The general colour is dark grey above, becoming paler grey below and quite whitish on the belly. There are dark spots on the flanks, especially towards the tail, and the pale blue stripes on the gill-covers are characteristic. The soft portion of the dorsal fin is covered with dark spots on its lower part and with alternate dark and light vertical bars on its upper part. The anal fin is dark grey, with a pale margin. The eyes, which are smaller, do not protrude so much after death as in the last two species, nor does the stomach appear to protrude into the mouth.

This fish is caught by hooks and is edible. Young specimens, dull khaki grey in colour, occur in lagoons, where they are caught by spiral cast-nets and used for food. On average about 2,250 tonnes of this species are recorded as being caught in the region each year.

**Dusky grouper, Mérou noir**  
*Epinephelus marginatus* (Lowe, 1834)

**Sɔi-kpamla:** Ga. **fiẽ:** Adaŋme.

*Irvine name:* Giant grouper – *Epinephelus gigas* (Brünn.). Species described by Brünnich not clear (*nomen dubium*) as no type specimen.

*Reference material:* Accra, July 1938 (Irvine 283) – BMNH 1938.12.15:8 (1 specimen: 278 mm SL).

*Distribution:* Mediterranean and eastern Atlantic from southern British Isles to South Africa. Also known from Brazil.

Attains to a length of 150 cm, common to 90 cm. The skin of this species is rather soapy, from which the Ga name *Sɔi-kpamla* is derived. The colour is dark greyish brown, slightly paler on the lower surface. On the side of the body behind the gill-cover is a characteristic large golden yellow blotch. Often recorded under the name *Epinephelus guaza*.

It is caught by hooks, and is edible. On average about 575 tonnes of this species are recorded as being caught in the region each year.

**Sea perch or grouper - *Epinephelus* (?) sp.**

**boano:** Ga. **afiba:** Ewe.

A specimen, over 210 cm in length, seen outside Salaga Market, but not collected.

The coloration was uniformly brownish grey, but the lower surface of the head was sulphur yellow. The anal fin had a dark margin. The tail was rounded and dark. The scales were very large (some were collected) and were removed from the fish with a hoe.

This fish was caught in a seine (*tʃani*) net between October and December (Nortey). This was the third specimen seen caught in such nets – another large specimen was seen at Teshi two or three years before. It obviously lives near the shore, but, according to Nortey, is found in deeper water at other seasons of the year.

Its flesh is whitish and looks like pork, with much fat. It is said to feed on many different kinds of fish and is highly regarded, and is said to be the son of *bonso* (Ga), the whale, which is the king of all fishes.

This could not be identified with certainty from the description given, but it appears likely that it was a sea perch of some kind and probably a species of *Epinephelus*. [We are not able to improve on Irvine's identification].

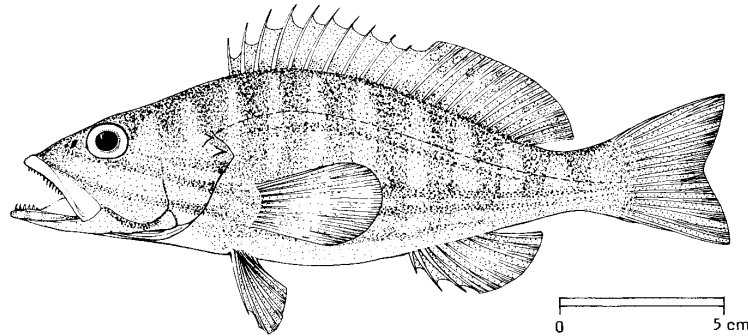
**Comber, Serran chèvre**  
*Serranus cabrilla* (Linnaeus, 1758)

**ayisa:** Ga, (?) Adaŋme. **nsawa:** Ga (A. P. Brown). (?) **sika:** Fante (Anomabu).

*Irvine name:* Cabrilla or comber – *Serranus cabrilla* (Linn.)

*Reference material:* Accra, March 1930 (Irvine 42) – BMNH 1930.8.26:27 (1 specimen: 227 mm SL); Accra, June 1930 (Irvine 105); Accra, May 1938 (Irvine 253) – BMNH 1938.12.15:10 (1 specimen: 187 mm SL).

*Distribution:* Mediterranean and eastern Atlantic from British Isles to Angola; Red Sea.



Comber, *Serranus cabrilla*. (Fig. 56.)

Grows to a length of 40 cm, common to 25 cm. The general coloration is khaki grey above, golden yellow on the sides, and white beneath. There are four or five dark stripes, probably red in life, running horizontally across the gill-covers, and continued, less conspicuously, along the body. The fins are mostly yellowish. In its reproductive organs this fish is said to be hermaphrodite and capable of self-fertilization.

It is found in fairly deep water. It is edible and is generally caught by hooks, although, according to A.P. Brown, it is taken, at no special season, in fanja nets.

**Ghanaian comber, *Serranus ghanéen* \*\***

*Serranus accraensis* (Norman, 1931)

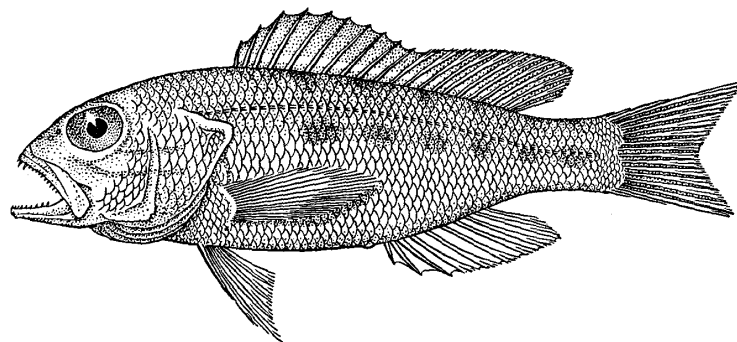
*Neanthias accraensis*: p. 354, fig. 2 in Norman JR (1931). Four new fishes from the Gold Coast. *Annals and Magazine of Natural History* (Series 10), Vol. 7 (40), 352–359.

**anifi:** Ga. **putumpuli:** Ga. **duade:** (additional name given under discussion of Irvine 66) Ga.

*Irvine name:* Accra sea perch – *Neanthias accraensis* Norman. The HOLOTYPE specimen (Irvine 66) was reported separately in the book as: Sea perch – *Anthias* (?) sp.

*Reference material:* Accra, March 1930 (Irvine 66) – BMNH 1930.8.26:28 (HOLOTYPE: 117.7 mm SL); Accra, May 1938 (Irvine 263); Accra, July 1938 (Irvine 312) – BMNH 1938.12.15:11-12 (2 specimens: 97.1, 102.6 mm SL); Accra, Oct. 1938 (Irvine 349, *p.p.* Mr Nortey).

*Distribution:* Coast of tropical West Africa off Ghana.



Ghanaian comber, *Serranus accraensis*. (Fig. 57.)

A small species, scarcely exceeding 15 cm in length. This fish is not unlike the preceding, but may be readily distinguished by the larger eye, much larger scales, and less numerous soft-rays in the dorsal fin. The scales are spinulose only on their hinder edges, and the margins are finely ciliated. The colour is greyish or pale brownish above and silvery beneath, with 5 or 6 indistinct olive-green broad vertical bars, which end below the lateral line in blotches of a darker shade. There are two characteristic blue or greenish yellow stripes running from below the eye backwards across the gill-cover. The dorsal fin has a pale band near its base and a dusky margin; the hinder portion has a pale olive green tinge with an orange margin. The anal fin is pale yellowish. The caudal fin is greenish yellow, with the tips of the lobes darker.

This fish is caught along with *Boops boops* in deep water. It is taken by *ali* and *toga* nets, as well as by hooks 3.5 cm long and baited with small ‘herrings’ (*maŋ*, Ga). There seems to be no definite season.

Irvine reported “Specimens of this species were recently taken by the *Discovery* Expedition off the coast of French Congo”.

*Discussion under Sea perch – Anthias (?) sp. (Irvine 66, HOLOTYPE specimen):*

“A small fish, up to 15 cm in length. The tail is slightly forked. The back is khaki grey, the sides silvery, and the belly white. There are yellow stripes across the head and gill-covers, The soft part of the dorsal fin has yellow spots and the tip is salmon-coloured.

It is caught by hooks and is edible. It is not greatly prized, however, hence its Ga name, *duade*, i.e. ‘Cassava’.

It is possible that this fish represents a species hitherto unknown to science, but it is impossible to be sure of this in the absence of further specimens.”

Irvine was correct in thinking that this fish was a new species and Norman described it as *Neanthias accraensis* in 1931.

### Swallowtail seaperch, Barbier hirondelle

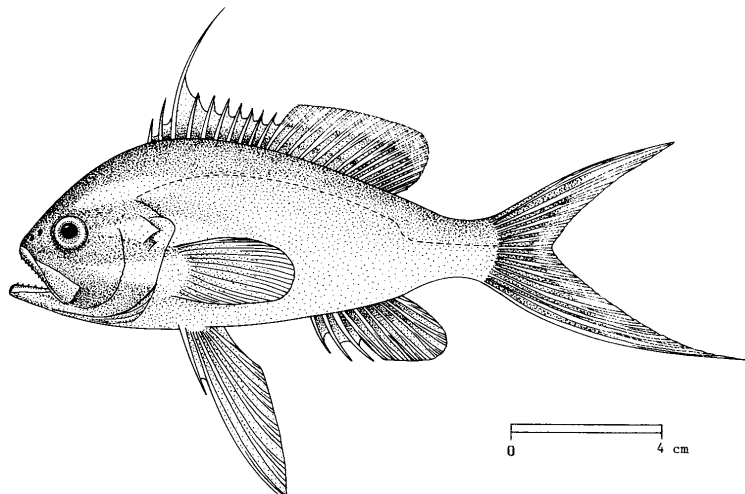
*Anthias anthias* (Linnaeus, 1758)

**tɛmlɪkpɔɔ:** Ga. **odame:** Ga. **sankumade:** Ga. **bɔle:** Ga (no. 126).

*Irvine name:* Sea perch – *Anthias anthias* (Linn.)

*Reference material:* Accra, Nov. 1930 (Irvine 126) – BMNH 1932.2.27:4 (1 specimen: 171 mm SL); Accra, Sept. 1938 (Irvine 335) – BMNH Unregistered duplicate (1 specimen: 166 mm SL), BMNH Unregistered duplicate (1 specimen: 157 mm SL).

*Distribution:* Mediterranean and eastern Atlantic.



Swallowtail seaperch, *Anthias anthias*. (Fig. 58.)

A small fish, common to 20 cm long, but grows to about 27 cm total length. Easily recognized by its crescentic caudal fin, often with filamentous tips to the lobes, by the very long pelvic fins, and by the small membranous appendages surmounting the spines of the dorsal fin. The lateral line slopes upwards from the upper angle of the gill-opening, then runs parallel with the back for the greater part of its length, curves downwards again near the tail, and finally runs along the middle of the caudal peduncle. The general coloration is a delicate pinkish red, sometimes with golden or iridescent markings. There is a short red stripe running in front of the eye, and two yellow bars across the gill-cover, one running from in front of the eye diagonally under the eye and backward to the edge of the head, the other, which is less distinct, from behind the eye to the edge of the head. The appendages on the dorsal fin are red, the soft portion of the fin yellow. The anal fin is pinkish red at its base and yellow towards the edge. The pectoral fins are yellow and the caudal fin orange-yellow.

It is caught by hooks in deep water and is edible.

SOAPFISHES (GRAMMISTINAE) [41.]

The soapfishes have been classed as a separate family Grammistidae in many recent texts but are now considered as a subfamily (or tribe) within the Serranidae. They were included in the Serranidae by Irvine. Two species are known from the mainland coast of tropical West Africa. The Greater soapfish (discussed below) is quite common but the second smaller species, *Rypticus subbifrenatus*, is rarely observed.

**Greater soapfish, Grand savon**

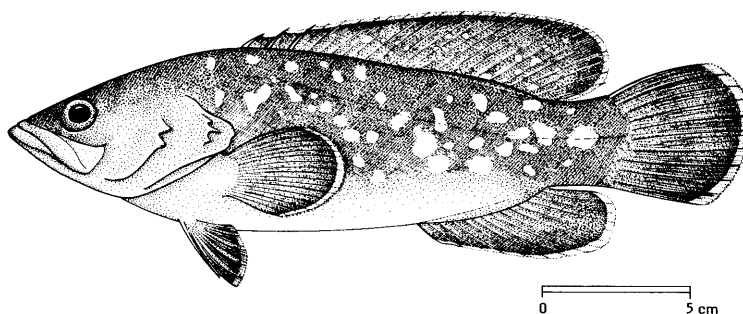
*Rypticus saponaceus* (Bloch & Schneider, 1801)

**kpāmlā:** Ga. **won-dzale:** Adan̄me (Prampram). **agbamana, agbamla:** Adan̄me. **sonsoɛkyi:** Fante (Anomabu). **ɛposamina:** Fante (Winnebah). **lɛsi:** Ewe. **bleye:** Ewe. **oko:** Yoruba.

*Irvine name:* Soapfish – *Rypticus saponaceus* (Schn.).

*Reference material:* Winnebah (Irvine 171) – BMNH 1934.10.12:9 (1 specimen: 161 mm SL); Prampram, July 1938 (Irvine 278); (Irvine 51) – BMNH 1930.8.30:2 (1 specimen: 177 mm SL).

*Distribution:* Both sides of the tropical Atlantic and on the tropical central Atlantic islands. Occurs from Senegal to the Congo and in the Cape Verde Islands in the eastern Atlantic.



Greater soapfish, *Rypticus saponaceus*. (Fig. 59.)

Grows to a length of 32 cm, common to 25 cm. This fish can be distinguished from all the other members of the family by the small number of spines (3) in the dorsal fin and the absence of spines in the anal fin. The skin is covered with a ‘soapy’ slippery substance, from which it derives its vernacular name. It is generally dark brown in colour.

It is caught from June to September with hooks and lines, and, according to A.P. Brown, if the skin is rubbed it lathers. It is edible.

The Fante name *ɛposamina* and the Adan̄me name *won̄dzale* both mean ‘sea soap’.

## BIGEYES AND GLASSEYES (PRIACANTHIDAE) [42.]

Similar in some ways to the serranids, but distinguished by the small and very rough scales, the presence of only 16 principal rays in the caudal fin, of which 14 are branched, and by the very oblique mouth.

Four genera and about 18 species are found in tropical and subtropical seas, of which two occur off the coast of West Africa. In addition to the Atlantic bigeye (*Priacanthus arenatus*) reported by Irvine from Ghana, the related Glasseye (*P. cruentatus* Lacepède, 1802) is also present in the region. On average about 15 tonnes of priacanthids are recorded as being caught in the region each year.

### Atlantic bigeye, Beauclaire soleil

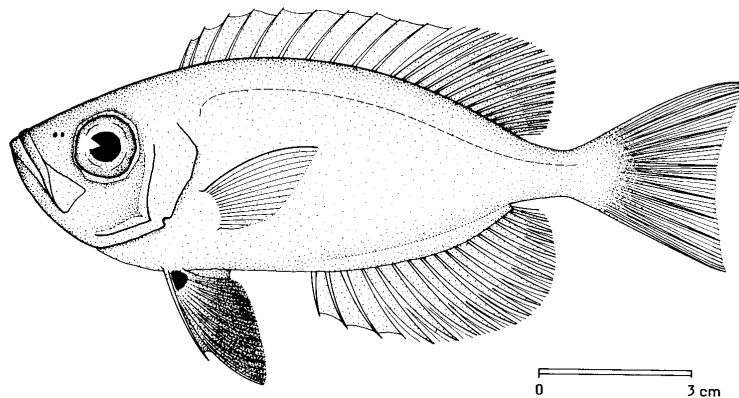
*Priacanthus arenatus* (Cuvier, in Cuvier & Valenciennes, 1829)

**odame:** Ga. **won̄a:** Adaŋme. **ani-honton:** Fante (Anomabu).

*Irvine name:* Big-eye – *Priacanthus arenatus* C. & V.

*Reference material:* Prampram, 35 miles east of Accra, May 1930 (Irvine 81) – BMNH 1930.8.26:29 (1 specimen: 218 mm SL); Christiansborg, Accra, July 1938 (Irvine 311) – BMNH Unregistered duplicate (1 specimen: 129.8 mm SL).

*Distribution:* Coast of West Africa from Western Sahara to Namibia. Also occurs in the tropical and subtropical western Atlantic.



Big-eye, *Priacanthus arenatus*. (Fig. 60.)

Grows to a length of 40 cm, common to 35 cm. The eye is very large. The teeth are very small and pointed. The colour is pinkish red, with numerous silvery scales, but without spots. The fins are all pale brownish. The related *P. cruentatus* can be distinguished by a well-developed spine at the corner of the preopercle, which reaches to, or close to, the border of the opercle, and small spots on soft portions of dorsal and anal fins and on caudal fin. Also *P. cruentatus* has 16–20 gill-rakers on the lower limb of the first gill arch whereas *P. arenatus* has 21–23.

It is edible and is caught by hooks in deep water.

## TILEFISHES (MALACANTHIDAE) [43.]

Listed under the Blanquillos (Latilidae) by Irvine and more recently by others in the Branchiostegidae. Now this group is generally combined with the Sand tilefishes, Malacanthinae in the family Malacanthidae. Fishes with a long dorsal fin, with a few slender spines in front. The profile of the head is strongly arched. The cleft of the mouth is nearly horizontal and near its corner, on each side of the upper jaw, may be one or two strong blunt teeth.

Five genera and about 40 species are known from tropical and temperate seas, of which one is found on the coast of West Africa.

**Zebra tilefish, Tile zèbre \*\***  
*Branchiostegus semifasciatus* (Norman, 1931)

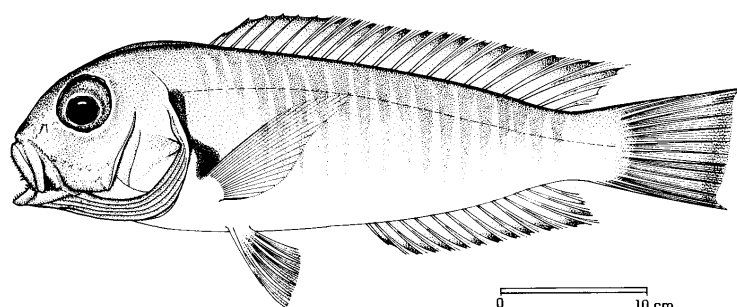
*Latilus semifasciatus*: p. 356, fig. 3 in Norman JR (1931). Four new fishes from the Gold Coast. *Annals and Magazine of Natural History* (Series 10), Vol. 7 (40), 352–359.

**ofo krɔbo**: Ga. **ɔtwitwa krɔbo**: Ga (from Fante). **opokrɔbo**: Adangme (Prampram). **kyihu**: Fante (Anomabu). **ɛtwitwɛkrɔbo**: Fante.

*Irvine name*: Blanquillo – *Latilus semifasciatus* Norman.

*Reference material*: Accra, Feb. 1930 (Irvine 44) – BMNH 1930.8.26:44 (HOLOTYPE: 246 mm SL); Accra, BMNH 1938.12.15:14-15 (2 specimens: 214, 228 mm SL).

*Distribution*: Coast of West Africa from Morocco to Angola.



Zebra tilefish, *Branchiostegus semifasciatus*. (Fig. 61.)

Grows to a standard length of 70 cm, common to 45 cm. The body is pale bluish grey on the sides, darker above and paler beneath, with a number of indistinct narrow, grey, vertical stripes on the upper parts of the sides. There is a lustrous blue shade along the back at the base of the dorsal fin in life, and a large black spot above the base of the pectoral fin. There is a median black line in front of the dorsal fin, which is continued along the base of the fin on either side, where it appears as a series of dark blotches, one at the base of each ray, and ends as a broad black patch just behind the fin. The dorsal and anal fins are dusky towards their edges, and there is a narrow dark line along the upper edge of the caudal fin.

The Zebra tilefish is edible, and is caught from June to September with lines (A.P. Brown). On average about 15 tonnes of this species appears to be caught in the region each year.

A specimen of this species was taken by the *Discovery* Expedition off the coast of Angola.

Its stripes account for its vernacular names, and refer to the whitish parallel stripes made on the body and arms with the scented gum (*krɔbo*).

BLUEFISHES (POMATOMIDAE) [44.]

Fishes somewhat similar to serranids, but the separate dorsal fin is composed of a few slender spines, and the soft dorsal and anal fins are long, with pointed lobes in front, and densely covered with scales. The teeth are strong and sharp-edged.

Only two genera and about three species are known, widely distributed in most warm seas.

**Bluefish, Tassergal**  
*Pomatomus saltatrix* (Linnaeus, 1766)

**agbamade**: Adangme (Prampram).

*Irvine name*: Bluefish – *Pomatomus saltatrix* (Linn.).

*Reference material*: Prampram, Sept. 1938 (Irvine 326). No specimen found.

*Distribution:* In the eastern Atlantic found from Madeira, Canary Islands and Morocco southwards to South Africa. Also occurs in the Mediterranean and warm seas of the western Atlantic and Indo-West Pacific.

Grows to a length of 110 cm and common to 60 cm. Bluish or greenish blue above, becoming silvery beneath.

An extremely voracious fish, feeding in shoals on squids and other fishes. It goes on killing and maiming its victims long after having eaten its fill. It is an excellent food fish. It is caught in spiral cast-nets by children, who called them *sensene* (Adaḡme) (name probably wrong). On average about 2,400 tonnes of this species are recorded as being caught in the region each year.

JACKS, SCADS, POMPANOS, RUNNERS, BUMPERS,  
LEERFISH, ETC. (CARANGIDAE) [45.]

A large and varied family of fishes, with a spinous dorsal fin which is shorter than that of the sea perches, and supported by slender or short spines, and with longer soft dorsal and anal fins. The first two spines of the anal fin are detached from the remainder of the fin. The caudal fin is widely forked and placed at the end of a slender caudal peduncle, which is often strengthened by a prominent hard keel. The body is usually compressed, and the coloration more or less silvery, with the back metallic blue or green. The teeth, if developed, are nearly always small and pointed.

These fishes swim in shoals at no great distance from the coast, and are found very largely in tropical seas. They are mostly carnivorous, feeding on small fishes and other marine animals.

About 32 genera and 140 species are known, of which at least 22 species occur on the mainland coast of tropical West Africa. Some 12 of these were reported by Irvine from Ghana. On average about 40,000 tonnes of carangids are recorded as being caught in the region each year.

*Key to the tropical West African genera and species*

1. Posterior straight part of lateral line with enlarged hardened scutes; pectoral fins long and sickle-shaped, in most genera longer than head (but about equal to head length in *Selar* and *Trachurus*, and shorter than head in all *Decapterus*, except *D. rhonchus* where they are equal to head length) ..... 2  
 No scutes in lateral line (only pored scales, not enlarged); pectoral fins relatively short, always shorter than head length (usually 50–90% head length) ..... 15
2. Body relatively deep, maximum body depth 28–65% fork length; in adults pectoral fins relatively long and falcate, longer than head ..... 3  
 Body elongate, maximum body depth only 20–26% fork length; pectoral fins relatively short, equal or shorter than head length ..... 11
3. Body superficially naked, the scales minute and embedded where present ..... 4  
 Small scales present over most or all of body ..... 6
4. Pelvic fins relatively long, longer than upper jaw; in smaller fish, anterior soft rays of dorsal and anal fins filamentous ..... 5  
 Pelvic fins short, about 25–33% length of upper jaw; anterior soft rays of dorsal and anal fins never filamentous ..... African lockdown, *Selene dorsalis*
5. Body depth about 35–50% fork length, becoming less deep bodied with age; 13–17 gill-rakers on lower limb of first gill arch; dorsal fin with 18–19 soft rays ..... African pompano, *Alectis ciliaris*  
 Body depth about 55–77% fork length, becoming less deep bodied with age; 25–28 gill-rakers on lower limb of first gill arch; dorsal fin with 20–22 soft rays ..... Alexandria pompano, *Alectis alexandrinus*
6. Tongue, roof and floor of mouth white, the rest dark; anal fin spines reduced or reabsorbed .....  
 ..... Cottonmouth jack, *Uraspis secunda*  
 Lining of mouth not distinctly white and dark; anal fin spines normal and movable ..... 7
7. Scutes in straight lateral line relatively small (maximum height about half pupil diameter) and 5–15 in number; upper caudal fin lobe longer than lower lobe ..... Atlantic bumper, *Chloroscombrus chrysurus*  
 Scutes in straight lateral line larger (maximum height at least equal to pupil diameter) and 25–56 in number; both caudal fin lobes about equal in length ..... 8
8. Upper jaw with an outer row of moderate to strong subequal canines and an inner band of finer teeth; two keels present on either side of caudal base; vomerine teeth present ..... 9  
 Upper jaw with a single row of minute teeth; no caudal keels present; no vomerine teeth .....  
 ..... Two-colour jack, *Hemicaranx bicolor*



9. Chest completely scaled; posterior straight part of lateral line with 46–56 scutes; soft lobe of dorsal fin 13–16% fork length; 22–25 soft rays in dorsal fin; 25–28 gill-rakers on lower limb of first arch ..... Blue runner, *Caranx chrysos*  
Chest naked, or naked except for a small median patch of scales in front of pelvic fins; 45 or less scutes in the posterior straight part of lateral line ..... 10
10. Chest naked except for a small median patch of scales in front of pelvic fins; posterior straight part of lateral line with 23–27 scutes; soft lobe of dorsal fin 17.5–23% fork length; 19–22 soft rays in dorsal fin; 15–17 gill-rakers on lower limb of first arch ..... Crevalle jack, *Caranx hippos*  
Chest naked; posterior straight part of lateral line with 40–45 scutes; soft lobe of dorsal fin elongate, 29–47% fork length; 20–21 soft rays in dorsal fin; 27–29 gill-rakers on lower limb of first arch ..... Senegal jack, *Caranx senegallus*
11. Pored scales in curved lateral line scute-like, expanded dorso-ventrally (may be obscured by over-growth of smaller scales in large fish); dorsal accessory lateral line normally extends posteriorly at least to below first dorsal fin spine, usually much farther posteriorly ..... 12  
No enlarged scute-like scales in curved lateral line; dorsal accessory lateral line terminating near end of head or beneath origin of dorsal fin ..... 13
12. Dorsal accessory lateral line long, terminating below soft rays 19–27 of dorsal fin; 49–56 gill-rakers on lower limb of first gill arch; maximum height of scales in curved lateral line 4.8–5.2% SL ..... Cape horse mackerel, *Trachurus capensis*  
Dorsal accessory lateral line short, terminating below 1<sup>st</sup> to 6<sup>th</sup> spines of dorsal fin; 37–45 gill-rakers on lower limb of first gill arch; maximum height of scales in curved lateral line 2.0–2.9% SL ..... Cunene horse mackerel, *Trachurus trecae*
13. Terminal ray of dorsal and anal fins closely positioned to adjacent ray and completely attached by interradial membrane; shoulder girdle margin (under rear of gill-cover) with a deep furrow, a large papilla immediately above and a smaller papilla near upper edge ..... Bigeye scad, *Selar crumenophthalmus*  
Terminal ray of dorsal and anl fins noticeably separated from adjacent ray, and with interradial membrane absent or only basally attached (forming small finlet); shoulder girdle margin (under gill-cover) *either* with 2 slight papillae and a shallow groove above and below the pair (the lower groove and papilla the larger) *or* with a smooth margin ..... 14
14. Shoulder girdle margin (under gill-cover) with 2 slight papillae and a shallow groove above and below the pair, the lower papilla and groove the larger; lobe of second dorsal fin without black blotch; scutes in straight part of lateral line 30–38; total scales and scutes in lateral line 87–99; gill-rakers on first gill arch (including rudiments) 11–13 + 32–37 ..... Round scad, *Decapterus punctatus*  
Shoulder girdle margin (under gill-cover) smooth, without papillae; lobe of second dorsal fin with black blotch; scutes in straight part of lateral line 24–32; total scales and scutes in lateral line 75–86; gill-rakers on first gill arch (including rudiments) 14–18 + 36–40 ..... False scad, “*Decapterus*” *rhonchus*
15. Grooves running across caudal peduncle dorsally and ventrally; bases of soft dorsal and anal fins unequal in length, anal fin base shorter and only about 45–70% of dorsal fin base length ..... 16  
No grooves running across caudal peduncle dorsally and ventrally; base of soft anal fin as long as, or only slightly shorter than base of soft dorsal fin ..... 18
16. Terminal two-rayed finlet present in dorsal and anal fins ..... Rainbow runner, *Elagatis bipinnulata*  
No finlets in dorsal and anal fins ..... 17
17. 4–5 spines in first dorsal fin; 15–17 soft rays in anal fin; a well developed cutaneous keel laterally on caudal peduncle ..... Pilot fish, *Naucrates ductor*  
7–8 spines in first dorsal fin (anterior spines may become completely embedded in large specimens); 18–22 soft rays in anal fin; cutaneous keel on caudal peduncle absent or only slightly developed ..... Guinean amberjack, *Seriola carpenteri*
18. Lateral line very irregular and sinuous, describing a convex curve above and concave curve behind pectoral fin; teeth in both jaws in a broad band anteriorly, becoming narrow posteriorly; upper jaw extending backwards beyond posterior margin of eye; small supramaxilla present ..... Leerfish, *Lichia amia*

- Lateral line only slightly irregular, weakly to moderately convex curve above pectoral fin, becoming straight posteriorly; teeth, if present, in a narrow band in both jaws; upper jaw not extending backwards to posterior margin of eye; supramaxilla absent..... 19
19. 3 to 6 dark blotches on sides of body ..... 20  
 No dark blotches on sides of body ..... 21
20. 3 to 5 dark blotches on sides (none behind lobe of second dorsal fin); 23–27 soft rays in dorsal fin; 22–25 soft rays in anal fin; second dorsal lobe shorter than head, its height 12–15% fork length; gill-rakers on first gill arch 10–19 + 22–32; body depth 29–38% fork length ..... Pompano, *Trachinotus ovatus*  
 4 to 6 (usually 5) dark blotches on sides (2 to 3 behind lobe of second dorsal fin); 20–23 soft rays in dorsal fin; 18–21 soft rays in anal fin; second dorsal lobe longer than head, its height 31–56% fork length; gill-rakers on first gill arch 6–8 + 11–13; body depth 38–56% fork length ..... Longfin pompano, *Trachinotus goreensis*
21. Second dorsal lobe usually longer than head (at sizes >10 cm fork length), its height 23–40% fork length; 20–21 soft rays in dorsal fin; 17–20 soft rays in anal fin; gill-rakers on first gill arch 5–8 + 9–11; body depth 37–59% fork length; tongue with narrow median band of teeth in young ..... Galloon pompano, *Trachinotus maxillosus*  
 Second dorsal lobe shorter than head, its height 18–26% fork length; 19–21 soft rays in dorsal fin; 16–18 soft rays in anal fin; gill-rakers on first gill arch 5–7 + 9–13; body depth 40–56% fork length; no teeth on tongue at any size ..... Terai pompano, *Trachinotus teraia*

### False scad, Comète coussut

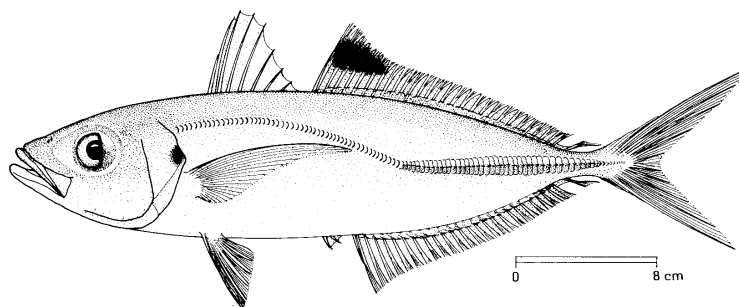
“*Decapterus*” *rhonchus* (Geoffroy Saint-Hilaire, 1817)

**emule:** Ga. **amazonj:** Adaņme (Prampram). **amazoku:** Adaņme (?). (?) **ebandzi:** Fante (Anomabu). **tsiyi:** Ewe. **monkere:** Yoruba. **seikara:** Ijaw.

*Irvine name:* Mackerel scad - *Decapterus rhonchus* (Geoffr.).

*Reference material:* Accra, Jan. 1930 (Irvine 38) – BMNH 1930.3.24:16-17 (3 specimens: 79.1–92.9 mm SL); no locality or date (Irvine 156) – BMNH 1934.10.10:15 (1 specimen: 308 mm FL); Prampram, Sept. 1938 (Irvine 317).

*Distribution:* Coast of West Africa from Morocco to southern Angola. Also occurs in the Mediterranean.



False scad, *Decapterus rhonchus*. (Fig. 62.)

Grows to a maximum total length of about 60 cm, common to 35 cm fork length. The scutes on the hinder part of the lateral line are well developed. The colour is generally silvery, with rainbow shades, bluish above, paler on the flanks, and white beneath. There is a black spot on the binder part of the gill-cover. There is a greenish yellow line along the centre of the body.

The fish is edible and of good quality. It is generally caught in seines, and, according to A.P. Brown, is most abundant between June and September.

On average about 3,300 tonnes of this species are caught in the region each year, making it quite an important fishery species in terms of catch.

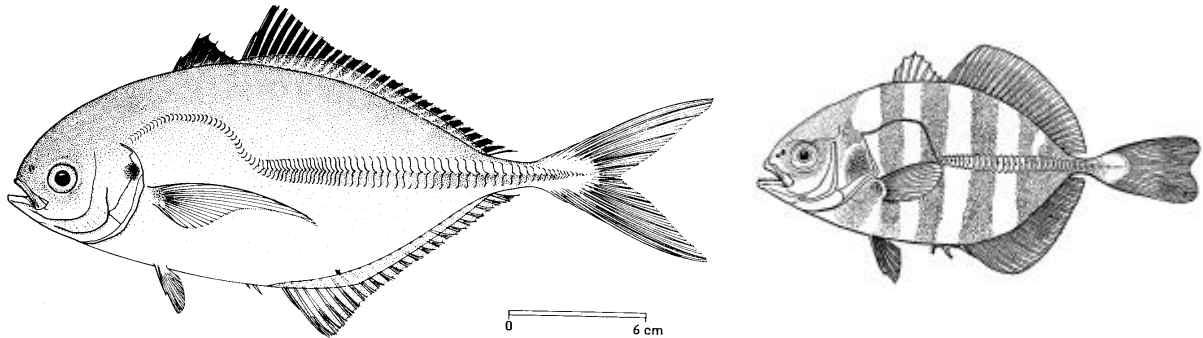
**Two-colour jack, *Carangue bicolor***  
*Hemicaranx bicolor* (Günther, 1860)

**kokole asɔ:** Ga, Adaŋme. **fante adesen:** Ga (A.P. Brown). **andanoku:** Fante (Anomabu). **mɔmɔdwewa, ɛkɔabulu:** Fante (Saltpond). **kpɛtome-fiayi:** Ewe (Vuvor). **labulukun:** Ilaje. **kidogho:** Ijaw.

*Irvine name:* Horse mackerel – *Hemicaranx bicolor* (Günth.).

*Reference material:* Accra, Jan 1930 (Irvine 29) – BMNH 1930.8.26:47-48 (2 specimen: 44.5, 47.5 mm SL); Accra, Sept. 1938 (Irvine 344)

*Distribution:* Coast of tropical West Africa from at least Sierra Leone to Angola.



Two-colour jack, *Hemicaranx bicolor*. (Adult, young). (Fig. 63.)

Grows to a total length of about 70 cm and common to 25 cm fork length. The scutes are well developed on more than half of the hinder portion of the lateral line. In the specimens mentioned above the body is dull grey in colour, with a greenish tinge, especially on the upper surface, and there are five broad vertical blackish bars. Such a striped coloration is characteristic of some other members of the family when young, and it is likely that the adult of this species is uniformly coloured. There is a large black spot on the hinder part of the gill-cover. The dorsal, anal and pelvic fins are all blackish. The caudal fin is yellow.

This jack is edible, but is not greatly sought after as food. It is caught in seines, 20–30 at a time, from September to December.

The derivation of the Ewe name *kpɛtomefiayi* is *fiayi* (the name of the fish), *kpɛ* (stone), and *tome* (inside), because it is said to live in stones.

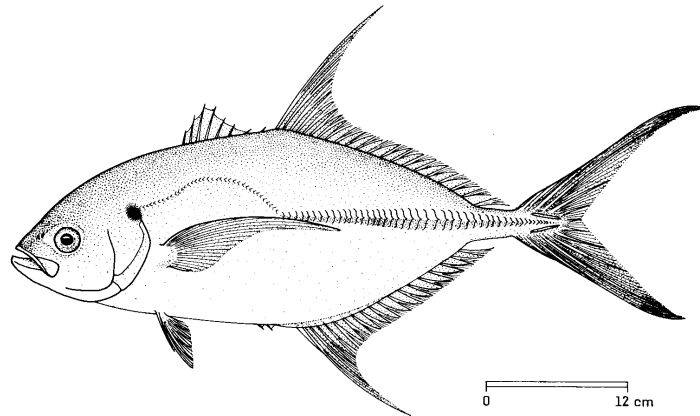
**Senegal jack, *Carangue de Sénégal***  
*Caranx senegallus* Cuvier, 1833

**antuanu:** Ga. **antsowanu:** Fante (Anornabu). **fiayi:** Ewe. **kote:** Yoruba. **agasa:** Ilaje. **kidogho:** Ijaw.

*Irvine name:* African horse mackerel – *Caranx africanus* Steind. A junior synonym.

*Reference material:* Accra, May 1930 (Irvine 94) – BMNH 1930.8.26:53-54 (2 specimens: 93.8, 104.9 mm FL).

*Distribution:* Coast of tropical West Africa.



Senegal jack, *Caranx senegallus*. (Fig. 64.)

Grows to a length of about 25–30 cm. The general coloration is silvery, with rainbow reflections when freshly caught. The scutes on the hinder half of the lateral line are prominent. The caudal fin is deeply forked and the tips of the narrow lobes are black.

The fish is edible, and is caught in seines. According to A.P. Brown, it is taken at no special time in seines, *watfa* and other nets.

#### Crevalle jack, *Carangue crevalle*

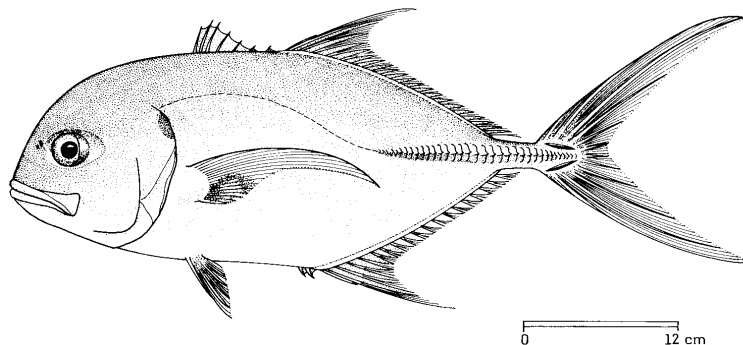
*Caranx hippos* (Linnaeus, 1766)

**gba:** Ga. **antuanu**, **gba:** Adaņme (Prampram). **εpae**, **ɔpaa:** Fante. **kɔtorɔ** or **kɔtolɔ:** Nzima (Axim). **fāfā:** Ewe (when large); **glamata:** Ewe (when small). **agasa:** Yoruba, Ilaje. **kidogho:** Ijaw.

*Irvine name:* Jack or horse mackerel – *Caranx hippos* (Linn.).

*Reference material:* Accra, March 1930 (Irvine 53) – BMNH 1930.8.26:49-50 (2 specimens: 91.5, 139.1 mm SL); Amedica, River Volta, May 1938 (Irvine 237); Prampram, Sept. 1938 (Irvine 316); mouth of Ancobra River, Jan. 1939 (Akpabla A 9). BMNH 1939.7.12:12 (Specimen not found in the BMNH collections).

*Distribution:* Most tropical and subtropical seas.



Crevalle jack, *Caranx hippos*. (Fig. 65.)

Grows to a length of 60 cm or more. The scutes on the hinder part of the lateral line are well developed. The colour is silvery, bluish above and paler on the flanks and belly. The large, deeply forked caudal fin is yellow.

This fish is often found in small shoals near the shore. It sometimes makes a croaking sound when landed. Johnson (1941) writes that Anlo fishermen say that the *afafa* fish (probably this species) goes far up the river to spawn. It is edible and of good quality, sometimes being split and dried in the sun. Near Accra it is commonly caught from January to April in seines. A specially large and strong seine-net is used at Keta, where the season is from October to December, and as many as from 1000 to

2000 fish are sometimes taken at a single haul, which includes comparatively few other fishes. These fish are split, dried or smoked, and then sent up country.

This species is called *fāfā* in Ewe when large, and *glamata*<sup>7</sup> when small.

On average about 3,700 tonnes of this species are caught in the region each year, making it quite an important fishery species in terms of catch.

### **Blue runner, Carangue coubali**

*Caranx crysos* (Mitchill, 1815)

**antuanu:** Ga. **ɔsaa duotwɛ:** Ga (said to be derived from Twi). (?) **esiadziaetwire:** Fante (Anomabu). **fiayi:** Ewe (Vuvor). **kote:** Yoruba.

*Irvine name:* Jack or horse mackerel – *Caranx crysos* (Mitch.)

*Reference material:* Accra, March 1930 (Irvine 95); mouth of Ancobra River, Jan. 1939 (Akpabla A 16) – BMNH 1939.7.12:14 (1 specimen: 134 mm FL).

*Distribution:* Coast of West Africa from Senegal to Angola. Also found in the Mediterranean and western Atlantic.

Grows to a fork length of at least 55 cm, common to 35 cm FL. Very like the preceding species, but differs in having the breast completely covered with small scales. The colour is bluish above and pale beneath.

Large specimens are sometimes taken on hooks, but generally both large and small fish are caught in seines. According to A.P. Brown, it is caught from January to April in seines. It is edible.

### **Alexandria pompano, Cordonnier bossu**

*Alectis alexandrinus* (Geoffroy Saint-Hilaire, 1817)

**anteyaa:** Ga. **antewa anɔ:** Ga (A. P. Brown). **fɔŋfɔŋ:** Ga (Teshi, Labadi; A. P. Brown). **fwɔŋfwɔ:** Adaŋme (D. Benzie). **anteyaa, nkramba-nkramba:** Fante (Anomabu). **antseyaa:** Fante (Anomabu). (?) **tantemireakɔmfɔ:** Fante (Saltpond). **gbadzegbadze:** Ewe (when small). **fɔfɔe:** Ewe. **ŋgogba:** Ewe (Vuvor). **andeyaa:** Nzima (Axim). **kote:** Yoruba. **owere:** Ilaje. **tebe-everunza:** Ijaw.

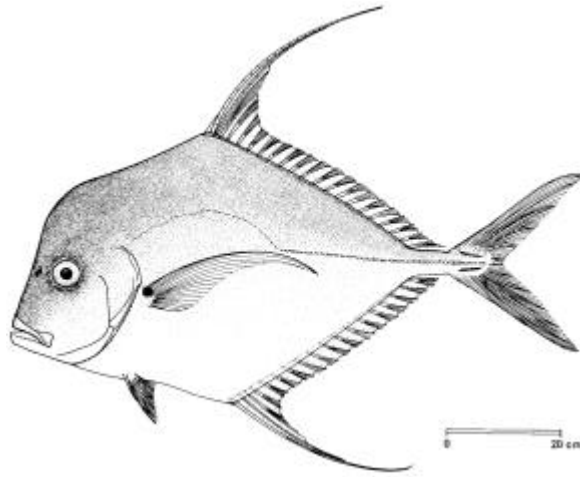
*Irvine name:* Thread-fin horse mackerel – *Scyris alexandrinus* (Geoffr.).

*Reference material:* Accra, Jan. 1930 (Irvine 21) – BMNH 1930.3.24:18-19 (2 specimens: 75.5, 80.6 mm SL); Accra, May 1938 (Irvine 258); Keta, Nov. 1938 (Irvine 375) – BMNH 1939.7.12:13 (1 specimen: 170 mm SL).

*Distribution:* Mediterranean and coast of West Africa from Morocco to southern Angola.

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<sup>7</sup> Meaning 'crooked head', from *glama* (crooked) and *ta* (head).



Alexandria pompano, *Alectis alexandrinus*. (Fig. 65.)

Grows to a fork length of at least 70 cm. Easily distinguished from the foregoing species by its shape, which is literally higher than long, by the very much flattened body, the high 'forehead', and the thread-like extensions of the dorsal and anal fins. The pelvic fins are also long and filamentous in the young. The coloration is silvery, with beautiful iridescent shades. The tail is orange-coloured.

The fish is edible, the flesh being white and of good quality. When small, it is caught in seines, When larger in nets such as the watja net, while large specimens over 60 cm in length are often taken by hooks in deep water. It is caught from January to April and from June to September in seines and with lines (A.P. Brown).

#### African lookdown, Musso africain

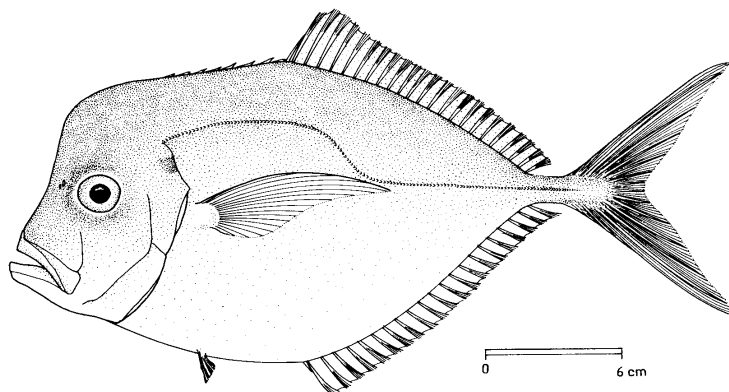
*Selene dorsalis* (Gill, 1862)

**antele-wa:** Ga. **wawa:** Adanme (D. Benzies). **ansoradzi:** Fante (Anomabu). **tantemire-ansor-adzi:** Fante (Anomabu). **nhwehwema:** Fante. **afafam-nkwansē-ase:** Fante; **ntantamide:** Fante (Winnebah). **gbadzegbadze:** Ewe (small ones). **ngogba:** Ewe (larger ones). **ndandemire:** Nzima (Axim). **atipako:** Yoruba. **obuko, aforighogbonko:** Ilaje.

*Irvine name:* Moonfish – *Vomer setapinnis* (Mitch.). Misidentification.

*Reference material:* Accra, Jan. 1930 (Irvine 22) – BMNH Unregistered duplicate (2 specimens: 68.5, 75.0 mm SL);

*Distribution:* In the eastern Atlantic recorded from Cape Verde Islands and coast of West Africa from Senegal to Namibia. Also reported from Madeira and Portugal.



African lookdown, *Selene dorsalis*. (Fig. 67.)

Grows to a total length of 36 cm and common to 24 cm fork length. Not unlike the preceding species in general appearance, but without the long filamentous rays at the front parts of the dorsal and anal fins.

The scutes at the hinder part of the lateral line are very feeble and scarcely apparent. The general colour is silvery.

This fish is edible, and is often smoked. When young, it is caught in seines, particularly from July to November, and is also taken in *ali* and *watfa* nets at night (M.J. Field). When older it may be taken by hooks in deep water.

The Fante name *nhwehwema* means 'little mirrors', and is applied to small specimens which are almost round and very silvery. Another Fante name *ansoradzi* means 'it cannot carry anything (in its head)', a reference to its narrow and flat head; and another *afafam-nkwansẽ-ase* means 'it sticks to the bottom of the pot' (when cooked), from *afafam* (it sticks), *nkwansẽ* (pot), and *ase* (under or bottom). The Ewe name *gbadze-gbadze* means 'flat'.

On average about 2,100 tonnes of this species are caught in the region each year, making it quite an important fishery species in terms of catch.

### Atlantic bumper, Sapater

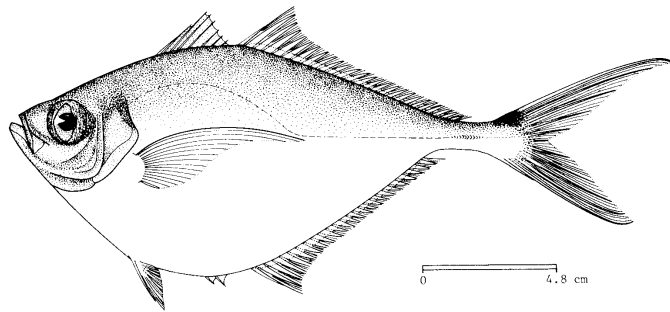
*Chloroscombrus chrysurus* (Linnaeus, 1776)

**antele** or **andele**: Ga. **tantemile**: Fante (Anomabu). **tantemine**: Fante (Saltpond). **tantemire**: Fante (Winnebah). **gbagbadzake**: Ewe. **dzodzoe**: Ewe (Vuvor). **adan**: Yoruba. **kokote**: Ilaje.

*Irvine name*: Bumper – *Chloroscombrus chrysurus* (Linn.).

*Reference material*: Accra, Jan. 1930 (Irvine 27) – BMNH 1930.3.24:21-24 (6 specimens: 55.5–66.5 mm SL); Accra, 1935 (Irvine 307); mouth of River Ancobra, Jan. 1939 (Akpabla A 14) – BMNH 1939.7.12:15 (1 specimen: 193 mm SL).

*Distribution*: Coast of West Africa from Mauritania to Angola. Also occurs in subtropical and tropical western Atlantic.



Atlantic bumper, *Chloroscombrus chrysurus*. (Fig. 68.)

Grows to a total length of about 30 cm, common to 20 cm fork length. Readily distinguished by the shape of the body, in which the lower profile is more arched than the upper, and by the small oblique mouth. It is silvery, with many rainbow reflections when fresh. There is a characteristic black spot on the upper part of the tail, near the body.

The fish is edible, and when small is dried in the sun before being eaten. It is caught from January to April in *ali* and *watŋa* nets (A. P. Brown).

The Ewe name *gbagbadzake* is derived from *gbagba* (flat), and *dzake* (the name of the fish).

On average about 6,100 tonnes of this species are caught in the region each year, making it an important fishery species in terms of catch.

### Leerfish, Liche

*Lichia amia* (Linnaeus, 1758)

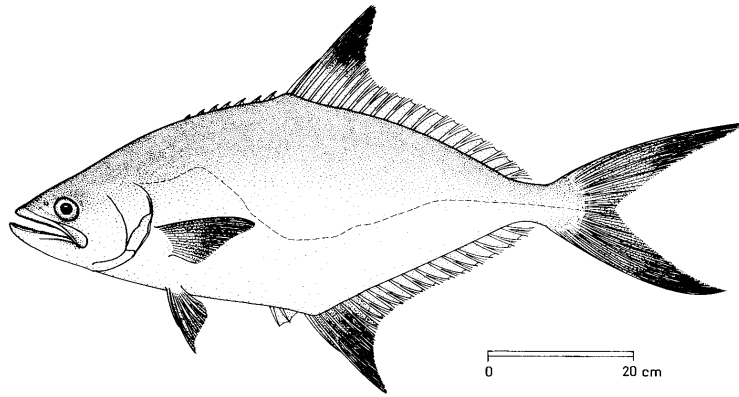
**agbamadzi**: Ga. **agbamadi**: Ga (A. P. Brown). **vemaŋu**: Ewe (Vuvor). **owere**: Ilaje.

*Irvine name*: Leerfish – *Lichia amia* (Linn.).

*Reference material*: Accra, May 1930 (Irvine 96) – BMNH 1930.8.30:7 (1 specimen: 201 mm SL).

*Distribution*: Mediterranean and eastern Atlantic from Morocco to Angola.





Leerfish, *Lichia amia*. (Fig. 69.)

Grows to at least 180 cm total length, common to 100 cm. Distinguished by the curiously wavy lateral line, which is straight only in the hinder part of the body. There are no scutes on the caudal region. The body is smooth and rather leathery skinned, greyish blue above and white beneath.

The fish is edible. Small specimens are caught in seines, but it is not a common fish. It is caught from January to April with lines (A.P. Brown). On average about 1,700 tonnes of this species are caught in the region each year, making it quite an important fishery species.

The Ga name *agbamadzi* is probably derived from *madzi* (herrings (?)).

### **Pompano, Palomine**

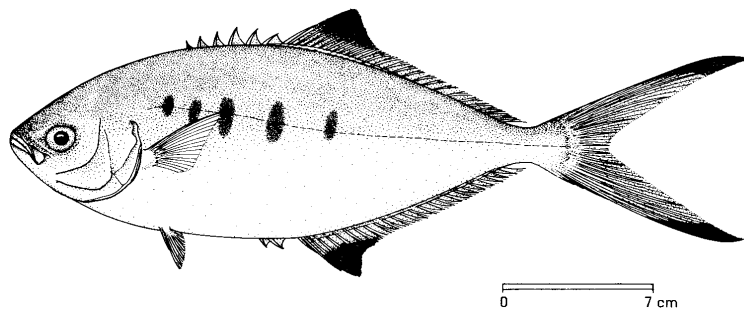
*Trachinotus ovatus* (Linnaeus, 1758)

**lilɛɛ**: Ga. **lɛlɛi**: Adangme. **kwamuakyi**: Fante (Anomabu). **nkamokyi**: Fante. **dogomaɖumi**: Ewe. **kɔnugble yi**: Ewe. **asiabi**: Ewe. **owere**: Yoruba. **embe**: Ijaw.

*Irvine name*: Palometa – *Trachinotus glaucus* (Linn.). Misidentification.

*Reference material*: Accra, Jan. 1929 (Irvine 8) ? – BMNH 1934.10.12:15 (1 specimen: 88.2 mm SL). BMNH Unregistered duplicate (1 specimen: 135 mm SL).

*Distribution*: Mediterranean and warmer parts of the Atlantic; marine and estuarine.



Pompano, *Trachinotus ovatus*. (Fig. 70.)

Grows to a total length of about 70 cm, common to 35 cm. Not unlike the preceding species, but with a smaller mouth, a more deeply forked caudal fin with slender lobes, and a nearly straight lateral line. It is slimy to the touch, and the scales are not apparent, the skin being covered with minute wrinkles. The colour is bluish above, silvery on the flanks, and white beneath. The soft-dorsal, the anal, and the lobes of the caudal are tipped with black.

This fish is common in shallow water near the shore, where it is taken in seines. According to A. P. Brown, it is caught from January to April in seines, *fanyaa* and other nets, and according to Nortey also in the season September to December. It may also be taken with hooks. It is baked and eaten.

The Ewe name *kɔnugbleɣi* is derived from *kɔnu* (surf), *gble* (rough) and *ɣi* (season), i.e. occurring when sea is rough and there is much surf.

The Ga name *lilɛɛ* ('tongue') refers to the shape of the fish.

**Terai pompano, Pompaneau né-bé**  
*Trachinotus teraia* Cuvier, 1832

**kobi:** Aɔaŋme, Ewe. **embe:** Ijaw.

*Irvine name:* Pampano – *Trachinotus falcatus* (Linn.). Misidentification.

*Reference material:* South of Amedica, Volta River (Irvine 243) – BMNH 1938.12.15:27 (1 specimen: 104 mm SL).

*Distribution:* Known from the Cape Verde Islands southward to Gabon.

Reaches a total length of 68 cm. This species is very closely related to the following one, and is distinguished mainly by the number of soft-rays in the dorsal (19–21) and anal (16–18) fins.

It is edible and is caught in mullet nets near the shore.

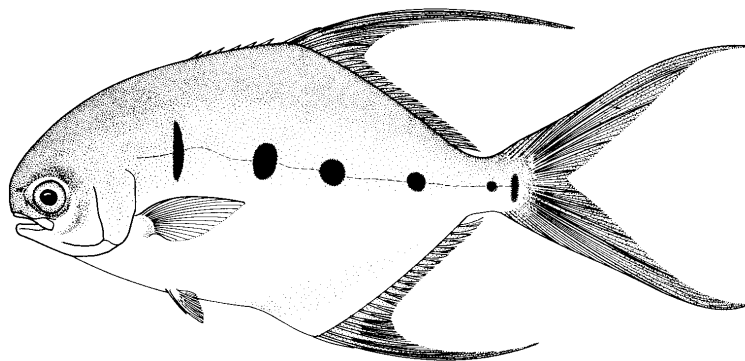
**Longfin pompano, Pompaneau tacheté**  
*Trachinotus goreensis* Cuvier, 1832

**kokobli:** Ga. **alaŋmri:** Ga (when small). **kokobli:** Adaijme. **tansire:** Fante (Anomabu and Saltpond). **tansera, tansere:** Fante. **kobi:** Ewe (Vuvor). **kobi-gble:** Ewe (Akpabla). **owere:** Yoruba, Ilaje. **embe:** Ijaw.

*Irvine name:* Pampano – *Trachinotus goreensis* C. & V.

*Reference material:* Accra, Jan. 1929 (Irvine 9) – BMNH 1930.3.24:20 (1 specimen: 135 mm SL); Accra, March 1930 (Irvine 63) – BMNH 1930.8.26:55-57 (3 specimens: 65.2–124.2 mm SL); Prampram, Sept. 1938 (Irvine 325) – BMNH 1939.7.12:16 (1 specimen: 97.4 mm SL); mouth of Ancobra River, Jan. 1939 (Akpabla A 13).

*Distribution:* Coast of tropical West Africa from Senegal to the Gulf of Guinea.



Longfin pompano, *Trachinotus goreensis*. (Fig. 71.)

Grows to a fork length of 26 cm at least. This fish has a silvery skin, with the scales small and scarcely apparent, and the colour is greyish blue above and paler beneath. The extent to which the front part of the soft-dorsal and of the anal fin is produced into a lobe changes with age, and this has led to the species being given more than one name – *goreensis* for young specimens and *myrias* for larger ones.

Smaller specimens are sometimes caught in spiral hand-nets along the shore, but, generally, both small and large specimens are caught in seines, at various times of the year. It is said to feed on the wedge shell *Donax rugosus* (*asege*, Ga), and the flesh is edible and of good quality.

When small, it is called *alaɲmri* by the Gas. According to M.B. Wilkie, *alaɲmri* is an Addah name, the Ga name being *kokobli*. The Ewe name *kobi-gble* means ‘small *kobi*’.

The following fish (*samaɲfo*, Ga) which was seen at Christiansborg in July 1938, but not collected, has not been identified, but may well belong to the family Carangidae. It was a black fish, whitish on the belly, with a sulphur-yellow tinge. It was 120 cm long, and was said to be edible. The scales were small, with sharp points, and the lateral line nearly straight. The lower jaw protruded somewhat beyond the upper. The teeth were very small and short, needle-like, and arranged in several rows. The tongue was large and white. The eyes were of medium size and the gill-openings large. The first dorsal fin was composed of eight spines, fitting into a groove, the second had two lobes, of which the front one was the longer. The pectoral fins were large and sickle-shaped, and the pelvic fins small.

**Bigeye scad, Selar coulisou**  
*Selar crumenophthalmus* (Bloch, 1793)

*Irvine name:* Not mentioned in Irvine’s book although he collected specimens.

*Reference material:* Accra, Jan. 1930 (Irvine 28) – BMNH 1930.8.26:51-52 (2 specimens: 138, 142 mm FL).

*Distribution:* In the eastern Atlantic recorded from the Cape Verde Islands and along the coast of West Africa from southern Senegal to Angola. Elsewhere, worldwide in tropical and subtropical seas.

Grows to at least 27 cm standard length.

DOLPHINFISHES (CORYPHAENIDAE) [46.]

Speedy, fish-eating oceanic fishes, with a long tapering body, deeply forked tail, and long dorsal fin, which is without true spines. The shape of the head changes with age, but in adult males it is deep, with a nearly vertical cutting edge in front. The mouth is rather large, with the lower jaw a little protruding, and the small pointed teeth are in bands.

Only one genus and two closely similar species are recognized in this family. Both species probably occur along the West African coast and Irvine recorded one species (see below) from Ghana. The other species is the Pompano dolphinfish, *Coryphaena equiselis* Linnaeus, 1758.

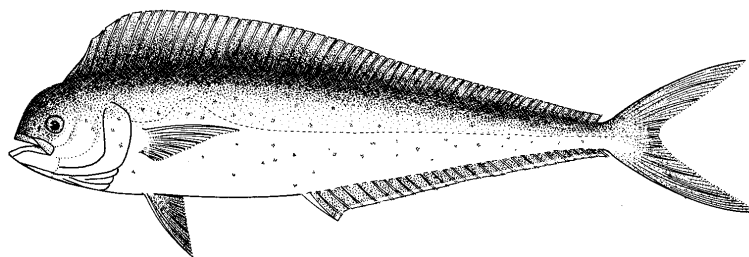
**Common dolphinfish, Coryphène commune**  
*Coryphaena hippurus* Linnaeus, 1758

**abaɲkpodzurowa:** Ga. **akpei:** Ga (D. Benzies). **apem:** Ga. **apem kpodzowa:** Ga (A.P. Brown). **apeiɲ:** Ga (Teshi; A.P. Brown). **amaɲkpodzowa:** Ga (A. P. Brown). **abɔɲkwa:** Ga (Labadi; A.P. Brown). **agbaku:** Adaɲme. **abubondwire:** Fante (Anomabu). **derefi:** Fante (Anomabu). **taɲflesi,** **ya:** Ewe. **feɲle,** **bleo:** Ewe.

*Irvine name:* Dolphinfish – *Coryphaena hippurus* Linn.

*Reference material:* Accra, April 1930 (Irvine 47) – BMNH 1930.8.26:80 (1 specimen: 424 mm SL); Accra, Jan. 1939 (Irvine 392) – BMNH 1939.7.12:17 (1 specimen: 276 mm SL).

*Distribution:* Cosmopolitan in warm seas.



Common dolphinfish, *Coryphaena hippurus*. (Fig. 72.)

Grows to a length of about 200 cm, common to 110 cm. The coloration of this fish, when alive, is remarkably vivid, being gleaming blue, with golden reflections and deep blue spots. These soon fade, however, and the fish becomes bluish grey above and paler beneath, with khaki colouring in places. The dorsal fin is bright blue.

This fish is capable of great speed in the water, and is known to pursue the shoals of flying-fish near the surface. It is an excellent food fish, and is caught from June to September, and at other times, with hooks (A.P. Brown). The flesh, which is of good quality, is also used as bait to catch large sea perches (*Sɔi*, Ga, and *kpamla*, Ga).

The Ga name *abanƙpodzurowa* is derived from *aban* (a deep hole in a rocky place) (in which they are found), and *ƙpodzurowa* (strong and smooth) (?). The Fante name *abubondwire* is derived from *abubo* (to break), and *ndwire* (nets), because large specimens are liable to break the fishing nets.

## SNAPPERS (LUTJANIDAE) [48.]

Carnivorous fishes, with strong mouths, armed with sharp teeth in the jaws and often on the roof of the mouth and on the tongue. The maxillary bone slips into a sheath when the mouth is closed. There is a pointed scaly process in the axil of each pelvic fin.

They are mostly large and voracious fishes, found in nearly all warm seas. They are good food fishes, but seldom of fine grain, the flesh being white but not flaky. About 17 genera and 105 species are known, of which six occur on the mainland coast of tropical West Africa. On average about 4,800 tonnes of snappers are caught in the region each year.

### *Key to the tropical West African genera and species*

1. Caudal fin deeply forked; no scales on dorsal and anal fins; scales small, about 65 in lateral line ..... African forktail snapper, *Apsilus fuscus*,  
Caudal fin truncate or slightly emarginate; scales on dorsal and anal fins; scales moderate in size, some 50 or less in lateral line ..... 2
2. 16 well formed gill-rakers (excluding rudiments) on first gill arch; 5 scale rows on cheek; vomerine teeth in a triangular patch with a pronounced posterior extension medially; snout short, its length much less than eye diameter; preorbital bone narrow, its width less than 50% eye diameter; longitudinal scale rows above lateral line running parallel to lateral line; 4½ to 5 scale rows above lateral line, below middle of spinous dorsal fin Golden African  
7 or 8 well formed gill-rakers (excluding rudiments) on first gill arch ..... 3
3. 5 or 6 scale rows on cheek; longitudinal scale rows above lateral line running parallel to lateral line ..... 4  
8–10 scale rows on cheek; longitudinal scale rows above lateral line slanting obliquely upwards and backwards towards dorsal profile ..... 5
4. 4 scale rows above lateral line, below middle of spinous dorsal fin; vomerine teeth in a triangular patch sometimes with a short median posterior extension; no subocular band ..... African red snapper, *Lutjanus agennes*  
5–7 scale rows above lateral line, below middle of spinous dorsal fin; vomerine teeth in a triangular patch with a pronounced posterior extension medially; horizontal blue subocular band running from middle of upper jaw to angle of gill cover usually present ..... Gorean snapper, *Lutjanus goreensis*
5. 4½ to 5 scale rows above lateral line, below middle of spinous dorsal fin; vomerine teeth in a ^-shaped patch; maximum body depth about 30–36% SL; pelvic and anal fins tan to medium brown ..... African brown snapper, *Lutjanus dentatus*  
6 scale rows above lateral line, below middle of spinous dorsal fin; vomerine teeth in a triangular patch sometimes with a short median posterior extension; maximum body depth about 35–43% SL; pelvic and anal fins very dark brown to blackish ..... Guinea snapper, *Lutjanus endecacanthus*

### **African brown snapper, Vivaneau brun (d’Afrique)**

*Lutjanus dentatus* (Duméril, 1858)

**tā:** Adaņme (Prampram). **ikekere:** Yoruba. **oweitomi:** Ijaw.

*Irvine name:* Brown snapper – *Lutjanus eutactus* Bleek. A junior synonym (type-locality: Ashantee).

*Reference material:* Ningoo Lagoon, May 1930 (Irvine 91). No specimens found.

*Distribution:* Coast of tropical West Africa from Sierra Leone to Angola.

Specimens from lagoons are 10–15 cm long, but the fish grows to 70 cm and is common to 50 cm. The colour is dull brownish grey above, paler beneath.

This fish is edible, and young specimens are caught in spiral hand-nets in the lagoons. It is said to enter the sea later and to grow to a length of 70 cm.

**African red snapper, Vivaneau africain rouge**

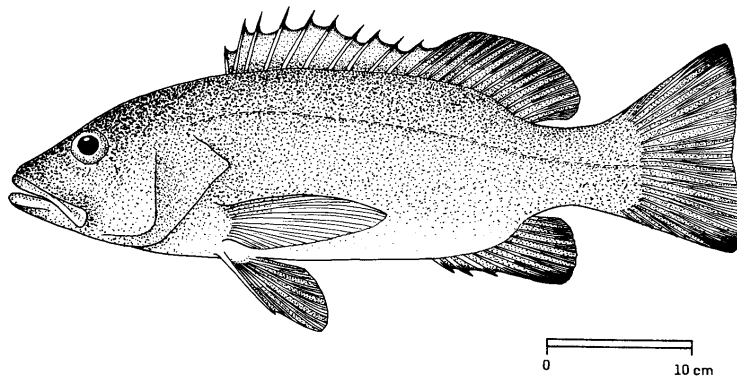
*Lutjanus agennes* Bleeker, 1863

**ɲfi:** Ga (A. P. Brown). **tā:** Adaŋme (Prampram). **offien:** Fante (Anomabu). **ikɛkɛrɛ:** Yoruba. **dasitomi:** Ijaw.

*Irvine name:* Grey snapper – *Lutjanus agennes* Bleek. Also *Lutjanus modestus* Bleek. (misidentification) as Irvine's specimen (Irvine 276) listed under the latter name (see next species) appears to be *L. agennes*.

*Reference material:* Ningo, May 1930 (Irvine 97) – BMNH 1930.8.26:32 (1 specimen: 109 mm SL). Prampram, July 1938 (Irvine 276) – BMNH 1938.12.15:20 (1 specimen: 272 mm SL).

*Distribution:* Coast of tropical West Africa from Senegal to Angola.



African red snapper, *Lutjanus agennes* (after Bleeker). (Fig. 73.)

Grows to a length of 75 cm and common to 50 cm. Uniformly dark grey on the back and sides, and pale beneath, with a slightly pink shade.

It is edible, and is caught from June to September with hooks, being the commonest fish caught in this manner.

**Guinea snapper, Vivaneau de Guinée**

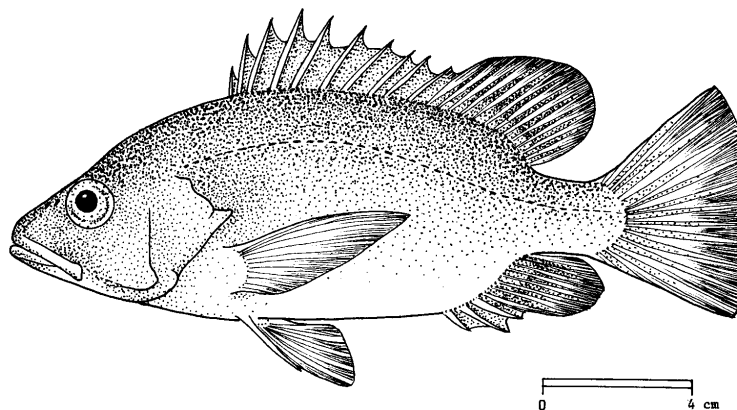
*Lutjanus endecacanthus* Bleeker, 1863

**tā:** Adaŋme. **ikɛkɛrɛ:** Yoruba. **tomi:** Ijaw.

*Irvine name:* Red snapper – *Lutjanus modestus* Bleek. A junior synonym.

*Reference material:* The cited material: Prampram, July 1938 (Irvine 276), is actually a specimen of *L. agennes* (see above).

*Distribution:* Coast of tropical West Africa from Ivory Coast to Angola.



Guinea snapper, *Lutjanus endecacanthus*. (Fig. 74.)

Grows to a length of 20 cm or more. This species is uniformly red on body and fins, being darker red above and paler beneath, and with a slightly darker head. The type locality for Bleeker's *Lutjanus endecacanthus* and *L. modestus* is "Ashantee, Guinea".

It is caught by hooks and is edible.

**Golden African snapper, Vivaneau doré**

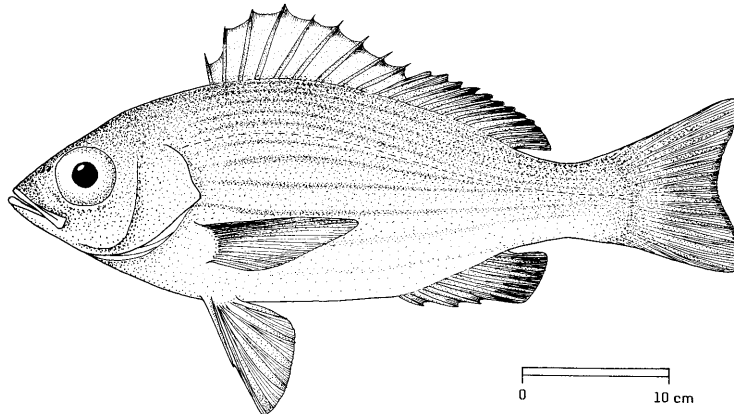
*Lutjanus fulgens* (Valenciennes, 1830)

(?) **tā:** Aɖaŋme. **akpɔlo:** Ga. **kpolo:** Aɖaŋme. **tɔyili:** Aɖaŋme (from Ewe). (?) **εsoe:** Nzima (Axim). **ikεkεre:** Yoruba. **abadi tomi:** Ijaw.

*Irvine name:* Snapper – *Lutjanus maltzani* (Steind.). A junior synonym.

*Reference material:* Prampram, May 1930 (Irvine 86) – BMNH 1930.8.26:33 (1 specimen: 144 mm SL); Accra, Nov. 1930 (Irvine 118) – BMNH 1932.2.27:6 (1 specimen: 203 mm SL); Winnebah (Irvine 174) – BMNH 1934.10.12:11 (1 specimen: 172 mm SL).

*Distribution:* Coast of tropical West Africa from Senegal to Angola.



Golden African snapper, *Lutjanus fulgens*. (Fig. 75.)

Grows to a length of 60 cm. The body is wholly red in colour, pinkish on the flanks and pink on the belly. There is a dark patch of orange-red colour between the eyes on the top of the head. Sometimes orange-coloured stripes run along the body from the back of the head to the tail. The dorsal fin has a narrow black margin, which is more marked in the spinous portion. The caudal fin is bright red, becoming pale towards the margin, which is black.

This fish is edible, and is generally caught from June to September with lines (A.P. Brown). The Ga name *tāŋ* means 'ugly'.

**Gorean snapper, Vivaneau de Goré**

*Lutjanus goreensis* (Valenciennes, 1830)

(?) **tā:** Aɖaŋme (Prampram). **ikεkεre:** Yoruba. **tomi avorobau:** Ijaw.

*Irvine name:* Lagoon snapper – *Lutjanus guineensis* Bleek. A junior synonym (type-locality: Ashantee).

*Reference material:* Ningo Lagoon (Irvine 92) – BMNH 1930.8.26:34 (1 specimen: 59.1 mm SL).

*Distribution:* Coast of tropical West Africa from Senegal to Angola.

Generally 7–10 cm long in lagoons, but grows to 60 cm or more. General colour khaki brown, with orange fins. The blue line across the head below the eye is characteristic.

It is edible, and young specimens are caught in lagoons by spiral hand-nets.

*Lutjanus endecacanthus* Bleeker is similar to the above, but the body appears to be more elongate and there is no blue line below the eye.

**African forktail snapper, Vivaneau fourche (d’Afrique)**

*Apsilus fuscus* Valenciennes, 1830

**grabasaŋ-doku:** Adanme (Prampram). **ikεkεre:** Yoruba.

*Irvine name:* *Apsilus fuscus* C. & V.

*Reference material:* Prampram, Sept. 1938 (Irvine 313) – BMNH 1939.7.12:21 (1 specimen: 272 mm SL), BMNH 1939.7.12:22 (1 specimen: 113.5 mm SL).

*Distribution:* Coast of West Africa from Mauritania to Angola. Also Cape Verde Islands and islands of the Gulf of Guinea.

Grows to a length of 75 cm. The colour is brownish olive, above, purplish blue on the flanks and cheeks, and paler beneath. The dorsal fin is olive yellow, the pectorals have a greenish yellow tinge, and the pelvics are more or less white. The caudal fin is olive yellow.

This fish is edible, and is caught with hooks.

**MOJARRAS (GERREIDAE) [49.]**

Irvine placed the mojarras in the Leiognathidae. Rather deep-bodied silvery fishes, with small mouths that can be drawn forward to a remarkable extent. There is a characteristic scaly sheath at the base of the dorsal and anal fins. The caudal fin is forked.

Eight genera and about 40 species are known from tropical seas Two species are known from the mainland coast of tropical West Africa and one was recorded from Ghana by Irvine.

**Flagfin mojarra, Blanche drapeau**

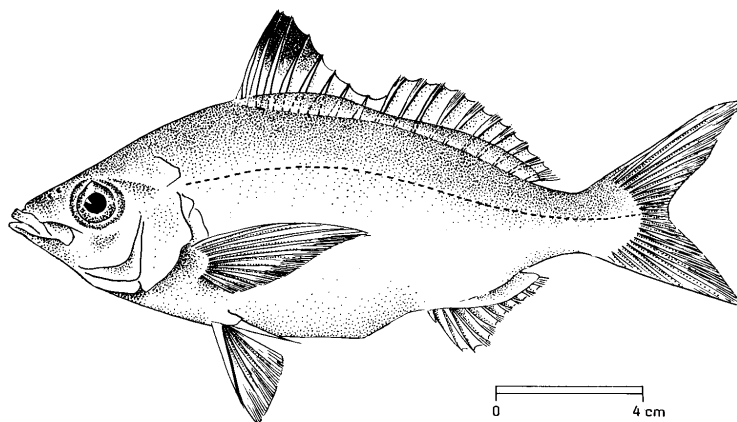
*Eucinostomus melanopterus* (Bleeker, 1863)

**anklote, ankronte:** Ga. **akplεte:** Adanme. **sope:** Fante. **kokofiofio:** Fante (Anomabu). **edzi:** Ewe. **inume:** Yoruba.

*Irvine name:* Mojarra – *Gerres melanopterus* Bleek.

*Reference material:* Ningo Lagoon (Irvine 58) – BMNH 1930.8.26:79 (1 specimen: 111.8 mm SL), (Irvine 90); Keta, Nov. 1938 (Irvine 379) – BMNH 1939.7.12:23 (1 specimen: 126 mm SL).

*Distribution:* Coast of tropical West Africa from Senegal to Angola.



Flagfin mojarra, *Eucinostomus melanopterus*. (Fig. 76.)

Grows to a length of 23 cm. A silvery fish, with a black tip to the spinous part of the dorsal fin. Fishermen say that it lives near the shore and eats seaweed.



It is edible, and is caught from January to April and from June to September in *toga* nets (A. P. Brown). Small specimens are taken in lagoons with spiral hand-nets.

Irvine noted that the Guinean striped mojarra, *Gerres nigri* Günther, 1859 (= *G. octactis* Bleeker, 1863) had been recorded from 'Guinea' and from the Ivory Coast, and probably occurred on the coast of Ghana. This species is believed to be present along the coast of West Africa from Senegal to the Congo. It may be distinguished from *E. melanopterus* by the enlarged second anal spine which is similar in length to the third anal spine and its having 7 rather than 8 anal rays.

#### GRUNTS (HAEMULIDAE) [50.]

Placed in Pomadasidae [sic], which is a junior synonym of Haemulidae, by Irvine. Fishes of rather small size, similar in appearance to the snappers, from which they usually differ in having no teeth on the roof of the mouth. Many of them are valued as food. On average about 45,000 tonnes of grunts are caught in the region each year.

About 17 genera and 150 species are known, mostly from tropical seas. Ten have been recorded from the mainland coast of tropical West Africa, of which five were reported by Irvine from Ghana. Irvine placed *Parakulhia macrophthalmus* with this family and although recent authors have tended to place it in the separate family Kuhlidae (Daras), we have kept it under the Haemulidae as recent work suggests it is indeed a haemulid. Trials of the key below, which is based on characters used to separate species in Fischer, Bianchi and Scott (1981), suggest that the distribution of characters between some of the species of eastern Atlantic *Pomadasy*s is not well understood and it may be difficult to unambiguously identify some of these species.

#### *Key to the tropical West African genera and species*

1. Anal fin with 3 spines and 16 soft rays; teeth in villiform bands in jaws; roof of mouth with villiform teeth on vomer, palatines toothless ..... Dara, *Parakulhia macrophthalmus*,  
Anal fin with 3 spines and 6–13 soft rays; teeth conical, in narrow bands in each jaw, the outer series enlarged, but no strong canines; roof of mouth toothless; chin with 2 to 6 pores anteriorly ..... 2
2. No median groove behind pores on chin ..... 3  
Median groove present behind pores on chin ..... 4
3. Lips thick; dorsal fin with 16–19 soft rays ..... 5  
Lips thin to moderate; dorsal fin with 13 spines and 14–15 soft rays ..... 6
4. Dorsal fin with 10–12 spines and 15–17 soft rays; 11–17 gill-rakers on lower limb of first gill arch; eye small to moderate, 18–25% (adults) to 25–33% (juveniles) of head length; snout length at least equal to eye diameter and up to 2.25 times eye diameter ..... 7  
Dorsal fin with 12 spines and 11–13 soft rays; 18–22 gill-rakers on lower limb of first gill arch; eye large, 29% (adults) to 40% (juveniles) of head length; snout length shorter than eye diameter .....  
..... Bigeye grunt, *Brachydeuterus auritus*
5. Chin with 4 pores; snout equal to, or slightly longer than eye diameter; dorsal fin with 16 soft rays; anal fin with 7 soft rays; 15–18 (usually 16) gill-rakers on first gill arch; about 46 lateral-line scales .....  
..... Biglip grunt, *Plectorhinchus macrolepis*  
Chin with 6 pores, the two smallest anteriorly; snout 1.3–1.8 times eye diameter; dorsal fin with 17–19 soft rays; anal fin with 8 or 9 soft rays; 19–20 gill-rakers on first gill arch; 54–57 lateral-line scales .....  
..... Rubberlip grunt, *Plectorhinchus mediterraneus*
6. Gill-rakers on lower limb of first gill arch 20–22; body uniform violet brown colour; snout with a prominent swelling on tip, snout length equal to or less than eye diameter .....  
..... Guinea grunt, *Parapristipoma humile*  
Gill-rakers on lower limb of first gill arch 22–23; body violet brown with 4 longitudinal blue stripes along back and sides, beginning on head; snout without a prominent swelling on tip, usually snout length is greater than eye diameter except in large specimens ..... African striped grunt, *Parapristipoma octolineatum*
7. Anal fin with 8–10 soft rays; body usually with spots or stripes ..... 8

Anal fin with 12–13 soft rays; body without spots or stripes; dorsal fin with 12 spines and 16 soft rays; 12–14 gill-rakers on first gill arch; 47–53 scales in lateral line ..... Bastard grunt, *Pomadasyus incisus*

8. Back and sides with irregular pattern of spots; no yellow blotch on snout ..... 9  
 Back and sides with small dark spots arranged in sinuous oblique or horizontal lines; golden yellow blotch on snout in fresh specimens; chin with 3 pores (a pair of small pores preceding a large median pore) followed by a median groove; eye small, its diameter 18.5–20% of head length; anal fin with 10 soft rays; dorsal fin with 12 spines and 15 soft rays; 14–15 gill-rakers on lower limb of first gill arch; about 55 scales in lateral line ..... Pignout grunt, *Pomadasys rogeri*
9. Maxilla very broad, its length/width ratio 2 or less; eye rather small, its diameter about 20% of head length in adults and 33% HL in juveniles; anal fin with 8 or 9 soft rays, second anal spine longer than longest soft-rays; dorsal fin with 11–12 spines and 15–17 soft rays; 11–15 gill-rakers on lower limb of first gill arch; about 45 scales in lateral line ..... Sompat grunt, *Pomadasys jubelini*  
 Maxilla elongated and sickle-shaped, its length/width ratio 3 to 4; eye rather large, its diameter 25% of head length in adults; anal fin with 9 or 10 soft rays, second anal spine shorter than longest soft-rays; dorsal fin with 10–12 spines and 16–17 (rarely 15) soft rays; 15–17 gill-rakers on lower limb of first gill arch; dark blotch present at upper angle of opercle ..... Parrot grunt, *Pomadasys peroteti*

**Bastard grunt, Grondeur métis**  
*Pomadasys incisus* (Bowdich, 1825)

**takpetakpe:** Ga. **takpotakpo:** Ga (A. P. Brown). **sope, sofe:** Ga. **sofɛ:** Ga (A. P. Brown). **eso-  
mbawa:** Fante (Anomabu). **akplɔtsu:** Ewe. **egeleu:** Ijaw.

*Irvine name:* Roncador – *Pomadasys incisus* (Bowdich).

*Reference material:* Accra, Jan. 1930 (Irvine 30); Accra, March 1930 (?) (Irvine 57) – BMNH 1930.8.26:31 (1 specimen: 119 mm SL); Accra, Sept. 1938 (Irvine 342) – BMNH 1939.7.12:18 (1 specimen: 180 mm SL).

*Distribution:* Western Mediterranean and eastern Atlantic from Morocco to Angola including the offshore islands.

Grows to a length of 30 cm or more. The coloration is silvery, with the back khaki grey. There is a black spot on the hinder part of the gill-cover.

The roncador is edible, and is caught more than a mile from the shore, at a depth of 4 m., with hooks 3.5 cm long, baited with herrings (*man*, Ga).

One fish is sometimes impaled on a hook and thrown back into the water to attract the others! Large numbers are caught, mainly between September and December. Brown states that it is caught between January and April in *toga* nets. It is generally caught in seines and is edible.

This is the species formerly recorded as *Pristipoma bennettii* Lowe, but the name given above has priority.

The Ga name *sope* may be derived from Fante.

**Pignout grunt, Grondeur nez de cochon**  
*Pomadasys rogeri* (Cuvier, 1830)

**kuɔkuɔ:** Ga. **kwɔkwɔ:** Adangme (D.Benzies). **kokoe:** Fante. **fume-ha:** Ewe. **tɔha:** Ewe. **akplɔtsu:** Ewe (when small). **igbakɛɛ:** Yoruba. **igbankɛɛ:** Ilaje. **egeleu:** Ijaw.

*Irvine name:* Burro – *Pomadasys jubelini* (C. & V.).

*Reference material:* Accra, April (?) 1930 (Irvine 48) – BMNH 1930.8.26:30 (1 specimen: 150 mm SL); mouth of River Ancobra, Jan. 1939 (Akpabla A 19 pt.) – BMNH Unregistered duplicate (1 specimen: 123.2 mm SL); locality? (Irvine 195) – BMNH Unregistered duplicate (1 specimen: 218.7 mm SL).

*Distribution:* Coast of tropical West Africa from Senegal to Angola.

Grows to a length of 60 cm and common to 40 cm. All the specimens listed by Irvine under *P. jubelini*, which could be located, appear to be *P. rogeri*. The latter species is stated to have about 55 lateral-line scales whereas *P. jubelini* is reported to have about 45 (Fischer, Bianchi and Scott, 1981). This character and the arrangement of chin pores (a pair of small pores preceding a larger median one) place the specimens in *P. rogeri* rather than *P. jubelini*.

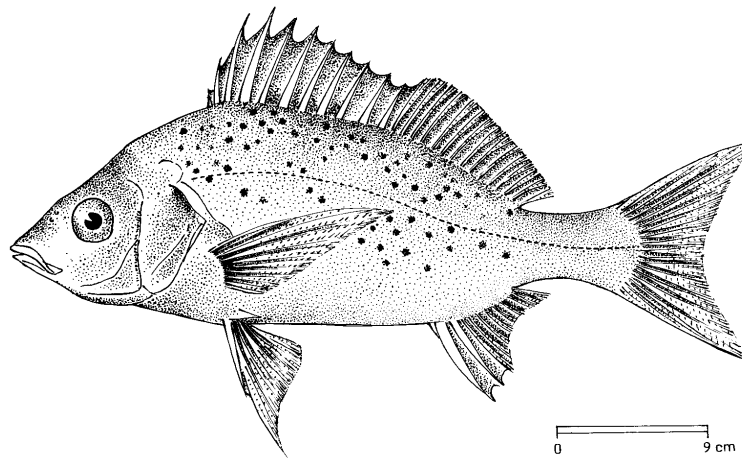
**Sompat grunt, Grondeur sompat**  
*Pomadasys jubelini* (Cuvier, 1830)

**kuɔkuɔ:** Ga. **kwɔkwɔ:** Adaŋme (D.Benzies). **kokoe:** Fante. **ɟume-ha:** Ewe. **tɔha:** Ewe. **akplɔtsu:** Ewe (when small). **kɛkɛrɛ:** Yoruba. **igbakɛrɛ:** Yoruba. **igbankɛrɛ:** Ilaje. **egeleu:** Ijaw.

*Irvine name:* Burro – *Pomadasys jubelini* (C. & V.).

*Reference material:* Ada, estuary of River Volta, Nov. 1938 (Irvine 372). Specimen not found. Other specimens listed under *P. jubelini* appear to be *P. rogeri*.

*Distribution:* Coast of tropical West Africa from Mauritania to Angola: entering rivers.



Sompat grunt, *Pomadasys jubelini*. (Fig. 77.)

Grows to a length of 60 cm and common to 45 cm. Silvery in colour, with a bluish grey back, and with series of small black spots on the back which follow the oblique rows of scales. There is a characteristic large black spot on the hinder part of the gill-cover. There is usually a series of round blackish spots at the base of the dorsal fin between the rays, sometimes with a second series higher up.

This species is, edible, and small specimens are often smoked. It is caught from June to September in seines and other nets (A. P. Brown), and is also caught in *watɕa* and *toga* nets and sometimes by hooks baited with herrings (Northey). Specimens up to 45 cm in length are frequently caught in seines during September and October (Northey).

The Ga name *kuɔkuɔ* is given to this fish because it makes a noise like a hen when landed (more likely a frog – see Toad-fish) (M. J. Field). The Ewe name *fumeha* or ‘sea pig’ also refers to the grunting noise made when the fish is taken out of water. The Ewe name *tɔha* is derived from *tɔ* (water or sea), and *ha* (pig).

On average about 950 tonnes of this species are caught in the region each year, making it a significant fishery species.

**Parrot grunt, Grondeur perroquet**  
*Pomadasys peroteti* (Cuvier, 1830)

**igbakɛrɛ:** Yoruba. **igbankɛrɛ:** Ilaje. **egeleu:** Ijaw.

*Irvine name:* Burro – *Pomadasys peroteti* (C. & V.) Misidentification.

*Reference material:* Mouth of River Ancobra, Jan. 1939 (Akpabla A 19 pt.) – BMNH 1939.7.12:19 (1 specimen: 128.5 mm SL).

*Distribution:* Coast of tropical West Africa from Senegal to Angola, entering estuaries.

Grows to a length of about 23 cm. The general colour is silvery, with the upper parts greyish. There is a large black spot on the hinder edge of the gill-cover.

### **Bigeye grunt, Lippu pelon**

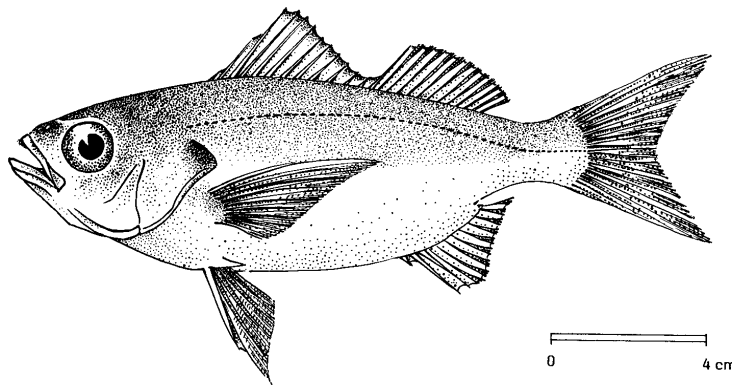
*Brachydeuterus auritus* Valenciennes, 1831

**boboe** or **boe**: Ga. **boi** or **moi**: Ga (M. J. Field). **eboe**: Fante. (?) **ahin-mbadzi**: Fante (Anomabu). **kyerewaye**: Fante (Saltpond). (?) **enumse**: Fantt (Anomabu). **hawui**: Ewe. **ikekere**: Yoruba. **agbipe**: Ilaje.

*Irvine name:* Burrito – *Brachydeuterus auritus* (C. & V.).

*Reference material:* Loc.? (Irvine 52) – BMNH 1930.8.26:36-38 (4 specimens: 54.2–90.9 mm SL); Prampram, May 1930 (Irvine 93) – BMNH 1930.8.26:39-40 (2 specimens: 115.2, 129.4 mm SL); Loc.? (Irvine 157) – BMNH 1934.10.10:13-14 (2 specimens: 123.3, 139.4 mm SL).

*Distribution:* Coast of tropical West Africa from Mauritania to Angola: entering estuaries.



Bigeye grunt, *Brachydeuterus auritus*. (Fig. 78.)

Grows to a length of 30 cm, common to 23 cm. The colour is dark grey, covered with silvery scales, and with a yellowish or brownish red tinge along the back, and white beneath. There is a black spot on the hinder part of the gill-cover. There is a rather indistinct row of round dark spots on the base of the dorsal fin. The caudal fin has a rather deep concave margin, and is grey with a yellowish tinge.

This species is caught in large numbers in seines, and great numbers of very small fish are often wasted. According to A. P. Brown it is taken from June to September in seines. It is also caught on hooks at times. It is edible and is generally smoked or dried before being sold.

The Gas believe this fish to be the 'Whale's wife' (*bonso*, the whale) and it occurs in African legends.

On average about 23,000 tonnes of this species is caught in the region each year, making it an important fishery species in terms of catch.

### **Dara, Croco à gros yeux**

*Parakuhlia macrophthalmus* (Osorio, 1894)

**takpetakpe**: Ga. **igbo**: Yoruba.

*Irvine name:* *Parakuhlia boulengeri* Pellegr. A junior synonym.

*Reference material:* Accra, Sept. 1938 (Irvine 343) – BMNH 1939.7.12:20 (1 specimen: 94.4 mm SL).

*Distribution:* Coast of tropical West Africa from Guinea to Angola.

Grows to a length of 20 cm and common to 15 cm. The mouth is of moderate size, and is provided with very small teeth arranged in several rows in the jaws; there are a few teeth on the front part of the vomer, but none on the palatine bones. The coloration is probably uniformly silvery in life, and the fins yellow.

This fish is caught in large quantities about a mile or more from the shore by hooks baited with herrings (*man*, Ga), from September to December. It is edible.

This species has been placed in the family Kuhliidae (Daras) by several recent authors but is now thought to be a haemulid.

#### CROAKERS, DRUMS, MEAGRES AND WEAKFISHES (SCIAENIDAE) [51.]

A large and varied family of fishes, closely related to the snappers, but differing in that the spinous dorsal fin is short and the soft portion is much longer than the anal fin, which has only one or two spines. The scaly process in the axil of each pelvic fin is present or absent. The lateral line is complete, and is usually continued as far as the hinder edge of the caudal fin, which is never forked. The teeth in the jaws are generally sharply pointed, and there are none on the roof of the mouth. The air-bladder is curiously modified, and in many species can be used as a resonating chamber for the production of sound, a fact which gives these fishes the names of croakers or drums.

Most of them are silvery fishes of sandy shores and estuaries in warm seas, but some enter rivers and a few are permanently resident in fresh water. They do not frequent places where the bottom is rocky and do not descend to any great depth. They are nearly all carnivorous. Many members of the family are of considerable economic importance, and are known in Ghana as 'Cassava fishes'. On average about 67,000 tonnes of sciaenids are caught in the region each year, making them very important demersal fishery species.

About 70 genera and 270 species are known, of which eight were recorded from Ghana by Irvine. Some fourteen species occur along the Gulf of Guinea coast of West Africa.

#### *Key to the tropical West African genera and species*

1. Tip of lower jaw with a small, rigid barbel perforated by a pore at its tip ..... 14  
Lower jaw without barbel ..... 2
2. Mouth rather small, inferior, nearly horizontal, lower jaw never projecting beyond upper jaw; teeth in jaws villiform, in bands, one or more rows may be slightly enlarged, but never canine-like ..... 3  
Mouth large, terminal, strongly oblique; lower jaw often projecting beyond upper jaw; large canine-like teeth often present in jaws ..... 5
3. Back slightly arched; body elongate, somewhat rounded in cross-section; snout conspicuously blunt; eye small, contained 7.2–8.4 times in head length; caudal fin pointed; pectoral fins jet black, tip of pelvic and anal fins jet black; anterior portion of dorsal fin with 7 or 8 spines; posterior part of dorsal fin with 25–27 soft rays ..... Cameroon croaker, *Pseudotolithus moori*  
Back strongly arched; body compressed; snout conical; eye moderately large, contained 4.6–5.4 times in head length; caudal fin truncate to slightly rounded or S-shaped but never pointed; pectoral fins never jet black; anterior portion of dorsal fin with 9 or more spines ..... 4
4. Anterior portion of dorsal fin low, with 9 spines, tip of longest spine not reaching base of first soft ray when depressed; posterior portion of dorsal fin long with 35–39 soft rays; swimbladder with many tubular appendages on main chamber ..... Guinea croaker, *Pseudotolithus epipecus*  
Anterior portion of dorsal fin high, with 10–12 spines, tip of longest spine reaching beyond base of first soft ray when depressed; posterior portion of dorsal fin short, with 23–25 soft rays; swimbladder simple, carrot-shaped, without appendages ..... Brown meagre, *Sciaena umbra*

5. Body short and robust, its depth contained less than 3.6 times in total length; total number of gill-rakers on first gill arch 23 or more; lower jaw with 4 minute pores ..... Boe drum, *Pteroscion peli*
- Body elongate or fusiform, its depth contained more than 4 times in total length; total number of gill-rakers on first gill arch 22 or less ..... 6

6. Second anal fin spine very long and sturdy, about equal in length to first anal soft ray and less than 2 times in head length; 6 anal soft rays; anterior portion of the dorsal fin with 10 spines, posterior part with 29–34 soft rays ..... Bobo croaker, *Pseudotolithus elongatus*
- Second anal fin spine short and thin, less than 66% of length of first soft ray and more than 3 times in head length; 7 or more anal soft rays ..... 7
7. 9 soft rays in anal fin; second anal fin spine more than 5 times in head length ..... 8
- Usually 7 (rarely 6 or 8) soft rays in anal fin; second anal fin spine less than 5 times in head length ..... 9
8. Caudal fin emarginate; interorbital width more than twice the eye diameter; gill-rakers rudimentary; swimbladder with a pair of short, unbranched, horn-like appendages anteriorly ..... African weakfish, *Atractoscion aequidens*
- Caudal fin rhomboidal; interorbital width less than eye diameter; gill-rakers long and slender; swimbladder with a pair of branched tube-like appendages folded back along length ..... Blackmouth croaker, *Pentheroscion mbizi*
9. Eye rather large, its diameter contained 3.6 to 3.8 times in head length; mouth darkish; inside of gill cover jet black; swimbladder with two anterior appendages, each divided into one anterior short, and two posterior long tubes ..... Angola croaker, *Miracorvina angolensis*
- Eye rather small, its diameter contained 4.1 or more times in head length; mouth pale to yellowish-orange; inside of gill cover slightly dark but never jet black; swimbladder *either* with many pairs of branched appendages *or* with a single pair of anterior appendages divided into numerous long tubes ..... 10
10. No upper pores on snout; gill-rakers longer than gill filaments at angle of gill arch; swimbladder with one pair of anterior appendages divided into numerous long, tube-like branches ..... 11
- 3 or 5 upper pores present on tip of snout; gill-rakers usually shorter than gill filaments at angle of gill arch; swimbladder with 25 to 42 pairs of branched appendages ..... 13
11. Body very long, oval in cross-section; nape slightly concave; mouth strongly oblique, its tip clearly above lower margin of eye; 9 spines in anterior portion of dorsal fin; eye small, 7.2–8.4 in head length ..... Longneck croaker, *Pseudotolithus typus*
- Body moderately elongate, compressed; nape slightly arched; mouth oblique, its tip below lower margin of eye; 10 spines in anterior portion of dorsal fin; eye moderately large, 4.1–6.9 times in head length ..... 12
12. Pectoral fins long, 25–28% of SL, their tips reaching to or beyond pelvic fin tips, when appressed; interorbital width greater than eye diameter; 28–33 soft rays in posterior part of dorsal fin ..... Cassava croaker, *Pseudotolithus senegalensis*
- Pectoral fins short, 18–20% of SL, their tips not reaching to pelvic fin tips, when appressed; interorbital width less than eye diameter; 25–27 soft rays in posterior portion of dorsal fin; pronounced dark oblique lines on back and upper sides of body; 2 or 3 dark bands on dorsal fin running parallel to body ..... Law croaker, *Pseudotolithus brachygnathus*
13. Eye diameter less than interorbital width, contained 5.7–7.1 times in head length; swimbladder with 36–42 pairs of branched appendages ..... Meagre, *Argyrosomus regius*
- Eye diameter equal to or greater than interorbital width, contained 5.1–5.5 times in head length; swimbladder with 25–35 pairs of branched appendages ..... Southern meagre, *Argyrosomus hololepidotus*
14. Posterior margin of gill cover light-coloured, without dark pigmentation; second anal fin spine relatively short, contained 3–3.2 times in head length (about 50% of length of first soft ray); posterior part of dorsal fin with 23–26 soft rays; eye rather small, its diameter contained 5.2–6.5 times in head length; gill-rakers short and stout, 11–13 on first arch (plus 1 or 2 tubercles at either end) ..... Fusca drum, *Umbrina ronchus*
- Posterior margin of gill cover dark brown to jet black; second anal fin spine usually less than 3 times in head length ..... 15
15. Posterior margin of gill cover dark brown; second anal fin spine long, contained 2.0–2.6 times in head length (more than 66% of length of first soft ray); posterior part of dorsal fin with 25–29 soft rays; eye rather large, its diameter contained 3.6–4.7 times in head length; gill-rakers short and stout, 14–17 on first arch (plus 1 or 2 tubercles at either end) ..... Canary drum, *Umbrina canariensis*



Membranes on posterior margin of gill cover jet black; second anal fin spine length contained 2.4–3.1 times in head length (50–66% of length of first soft ray); posterior part of dorsal fin with 22–23 soft rays; eye rather small, its diameter contained 4.4–6.3 times in head length; gill-rakers short and stout, 11–13 on first arch (plus 1 or 2 tubercles at either end)..... Shi drum, *Umbrina cirrosa*

### Cassava croaker, *Otolithe sénégalais*

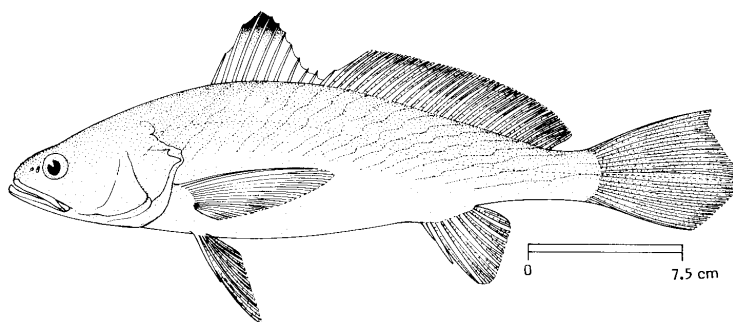
*Pseudotolithus (Pseudotolithus) senegalensis* (Valenciennes, 1833)

**ɲkaŋ** or **ekaŋ**: Ga. **duadetɔ**: Ga. **ɲkaŋtia**: Ga (A. P. Brown). **ɲkaŋpu**: Ga. **miɛ**, **miɛ**: Adaŋme. **ɛkan**: Fante. **akan**, **ɛkaŋ**, **ɛkanye**: Nzima (Axim). **(a)dzɔke**: Ewe. **ɲɔtsã**: Ewe. **awoo**, **apo**: Yoruba. **gbu**: Ijaw.

*Irvine names*: Weakfish or croaker – *Cynoscion senegalla* (C. & V.) and Large-mouthed weakfish – *Cynoscion macrognathus* (Bleek.). Misidentifications.

*Reference material*: Accra, Jan. 1930 (Irvine 35) – BMNH 1930.8.26:35 (1 specimen: 165 mm SL); Accra, Nov. 1930 (Irvine 122) – BMNH 1930.3.24:15 (1 specimen: 378 mm SL, listed under *Cynoscion macrognathus*); Accra, May 1938 (Irvine 260).

*Distribution*: Coast of West Africa from Western Sahara to Angola (rare north of Senegal).



Cassava croaker, *Pseudotolithus senegalensis*. (Fig. 79.)

Grows to a length of 100 cm, common to 50 cm. The colour is pale brownish blue above and whitish beneath. The back has a number of darker diagonal stripes placed close together. The fins are all more or less yellowish, and are without definite markings.

The fish feeds on prawns and on the fry of the long-finned herring. It is caught in seines, and also in *ali*, *toga* and *bleɲtoga* nets: it may also be taken on hooks baited with pieces of ‘herring’. Brown states that it is more abundant between January and April, but others say that it may be caught at any time of the year. It is edible, but the flesh is coarse – hence the market name of ‘Cassava-fish’ (*duadetɔ*, Ga). In the Nzima country it is eaten by the common people but not by the chiefs, who eat mackerel instead. It is sometimes cut into pieces and dried in the sun, and may also be salted.

On average about 2,500 tonnes of this species are caught in the region each year, making it an important fishery species.

### Longneck croaker, *Otolithe nanka*

*Pseudotolithus (Pseudotolithus) typus* Bleeker, 1863

*Irvine name*: Not listed but the specimen (Irvine 259) is referred to in notes to the previous species as follows: “A specimen from Accra, taken in May 1938 (Irvine 259), was identified at the British Museum as *Cynoscion nebulosus* (C. & V.). It is doubtful, however, whether this American species occurs in West Africa, and the specimen in question probably belonged either to this species [*P. senegalensis*] or to the succeeding one [*P. brachygnathus*].” Irvine was right in rejecting the British Museum identification but wrong in linking it to either of the other two species.

*Reference material*: Accra, May 1938 (Irvine 259) – BMNH 1939.7.12:42 (1 specimen: 201 mm SL).

*Distribution*: Coast of West Africa from Morocco to Angola (scarce north of Cape Verde).

Grows to length of 100 cm and common to 50 cm.

**Law croaker, Otolithe gabo**

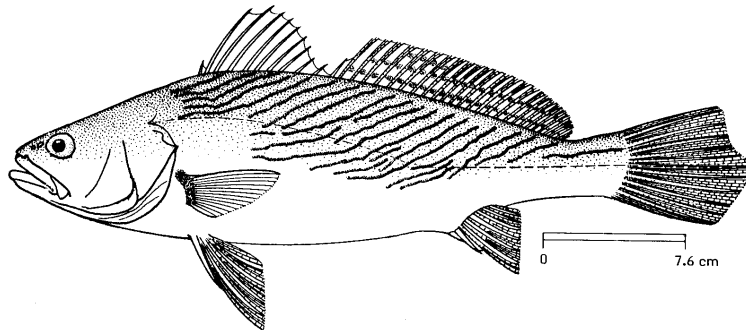
*Pseudotolithus (Pseudotolithus) brachygnathus* Bleeker, 1863

**᠒᠔᠑᠑᠗**: Ewe. **᠒᠕᠕᠒᠕᠕᠕᠕**: Ga. **kampu**: Fante (Winnebah). **awoo, apo**: Yoruba. **awo didun**: Ilaje. **polo**: Ijaw.

*Irvine names*: Small-mouthed weakfish – *Cynoscion brachygnathus* (Bleek.) and Large-mouthed weakfish – *Cynoscion macrognathus* (Bleek.). Norman and Irvine possibly originally classified smaller specimens of this species as *Cynoscion brachygnathus* and larger ones as *C. macrognathus*.

*Reference material*: Keta, Nov. 1938 (Irvine 382); Accra, May 1938 (Irvine 262). No specimens found (Irvine 122, which he listed under *Cynoscion macrognathus*, appears to be a specimen of *Pseudotolithus senegalensis*, see above).

*Distribution*: Coast of tropical West Africa from Senegal to Angola: entering hypersaline lagoons.



Law croaker, *Pseudotolithus brachygnathus*. (Fig. 80.)

Grows to a length of 230 cm and common to 50 cm. A pale grey fish. The dark spots at the base of the dorsal fin are characteristic. The colour is pale grey, with oblique darker stripes on the upper part of the side. The fins are all more or less greenish yellow.

The fish is edible and is caught in nets. On average about 630 tonnes of this species are caught in the region each year, making it quite an important fishery species.

**Boe drum, Courbine pélin**

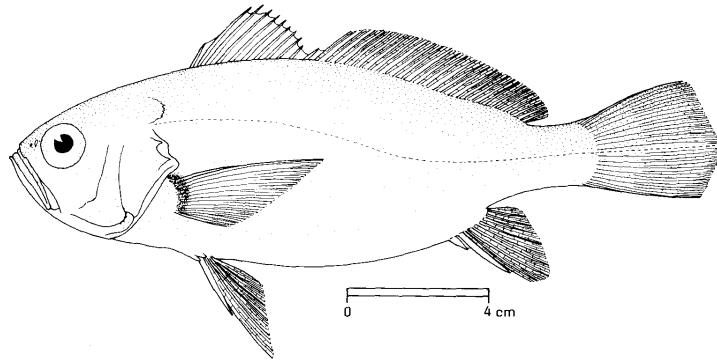
*Pteroscion peli* (Bleeker, 1863)

**boe-akua**: Ga, Fante. **egboe-akua**: Nzima (Axim). **fē**: Ewe (Vuvor). **awoo, apo**: Yoruba.

*Irvine name*: *Larimus peli* Bleek.

*Reference material*: Accra, March 1930 (Irvine 68) – BMNH 1930.8.26:41-43 (3 specimens: 80.1–102.1 mm SL).

*Distribution*: Coast of tropical West Africa from Senegal to Angola.



Boe drum, *Pteroscion peli*. (Fig. 81.)

Grows to a length of 32 cm, common to 20 cm. This fish is pale above, with a khaki shade along the back, and whitish on the sides and beneath. There is a diffuse dusky blotch on the gill-cover. The fins are tinged with yellow.

This fish is edible and is caught in great numbers in large seines. Many are dried or smoked before sale. Sometimes it is caught with hooks baited with 'herring'. According to A.P. Brown it is taken from June to September in *toga* and seines, but Nortey states that it occurs from September to January. On average about 1000 tonnes of this species are caught in the region each year, making it quite an important fishery species.

It is called *boe-akua* (*akua* being a girl's name), because it is not so dark as *boboe* (*Brachydeuterus auritus*), which the fishermen suppose to be the male. It is very similar to *boe* (Ga), but has a smaller eye and is lighter in colour.

### **Bobo croaker, *Otolithe bobo***

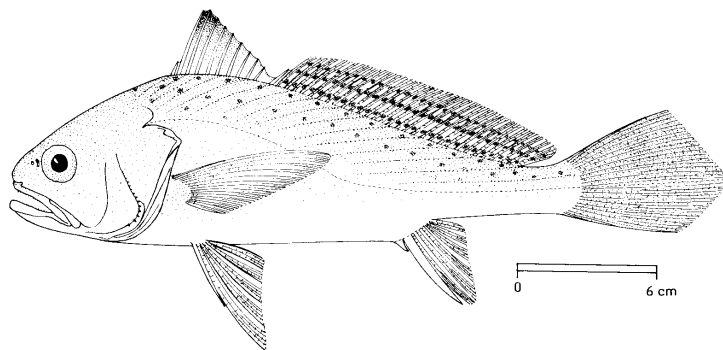
*Pseudotolithus (Fonticulus) elongatus* (Bowdich, 1825)

**ɲkanle:** Ga. **dale:** Ga (A. P. Brown). **afē:** Adangme. **awoo, apo:** Yoruba. **awoo didun:** Ilaje. **ona:** Ijaw.

*Irvine name:* Meagre – *Sciaena nigrita* (C. & V.). A junior synonym.

*Reference material:* Accra, Nov. 1930 (Irvine 123) – BMNH 1932.2.27:8 (1 specimen: 270 mm SL); Accra, May 1938 (Irvine 261); Labadi, Jan. 1936 (A.P. Brown 5).

*Distribution:* Coast of tropical West Africa from Senegal to Angola: entering estuaries.



Bobo croaker, *Pseudotolithus elongatus*. (Fig. 82.)

Grows to a length of 45 cm, common to 30 cm. The colour is pale brownish blue above, whitish beneath. There are two black lines along the soft dorsal fin, one near the body and one along the centre of the fin. The other fins are mostly pale brownish.

This fish is sometimes caught in deep-sea nets. It is said to be the sweetest of the drums.

On average about 10,500 tonnes of this species are caught in the region each year, making it an important fishery species in terms of catch.

### Guinea croaker, *Otolithe guinéen*

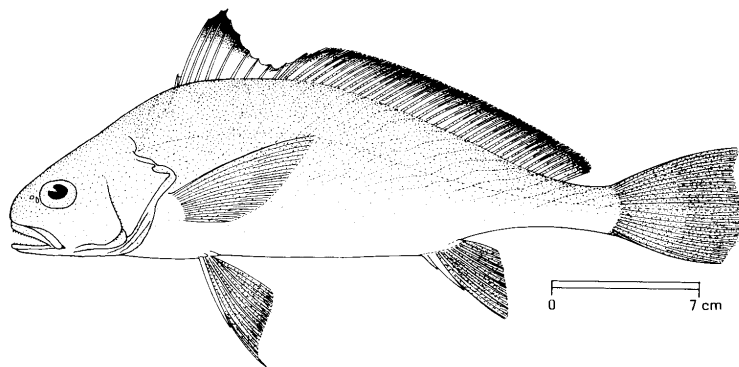
*Pseudotolithus (Pinnacorvina) epipercus* Bleeker, 1863

**ɲkaɲbli:** Ga. **nkānmil, ɛkanbil:** Fante. **ɲɔtsā:** Ewe. **awoo, apo:** Yoruba. **awo didun:** Ilaje. **polo:** Ijaw.

*Irvine name:* Meagre – *Sciaena epipercus* (Bleek.).

*Reference material:* Anomabu, June 1930 (Irvine 108) – BMNH 1930.8.30:4 (1 specimen: 258 mm SL); Accra, Jan. 1939 (Irvine 391) – BMNH 1939.7.12:24 (1 specimen: 201 mm SL); mouth of River Ancobra, Jan. 1939 (Akpabla A 20) – BMNH 1939.7.12:41 (1 specimen: 164 mm SL). All three specimens are stored in a single jar.

*Distribution:* Coast of tropical West Africa from Guinea to Angola.



Guinea croaker, *Pseudotolithus epipercus*. (Fig. 83.)

Grows to a length of 60 cm and common to 35 cm. The colour is bronze in life, but turns bluish grey later, with some dark stripes across the body following the rows of scales. All the fins, except the pectorals, are more or less dark.

The fish is caught in seines and is edible. A small specimen, taken in a salt pond at Anomabu in June 1930 (Irvine 108), was too juvenile and dried up to be identified with certainty, but may pertain to this species.

### Shi drum, Ombrine cotière (?)

*Umbrina cirrosa* (Linnaeus, 1758)

**ɲkaɲbli:** Ga. **legbete:** Adanme (D. Benzies). **ɛkanbir:** Fante. **kpeɲkpa, ɲɔtsā:** Ewe. (?) **akpo:** Yoruba.

*Irvine name:* Drum – *Umbrina cirrosa* (Linn.).

*Reference material:* Accra, Jan. 1930 (Irvine 33); ? Ningo Lagoon, May 1930 (Irvine 106). No specimens found.

*Distribution:* Mediterranean and eastern Atlantic from Bay of Biscay to Senegal. [This species is **not** reliably recorded south of Senegal].

Grows to a length of 70 cm, common to 40 cm. The colour is brownish above, becoming paler beneath, with a silvery tinge on the belly. There may be some rather irregular dark streaks following the rows of scales on the upper parts of the sides. The fins are mostly pale. It is unclear which species this refers to as none of Irvine's specimens could be located. The three species of *Umbrina* occurring in the Gulf of Guinea are the next species *U. canariensis*, the Fusca drum, *U. ronchus* Valenciennes, 1843 and Steindachner's drum, *U. steindachneri* Cadenat, 1951. Irvine's description of the fins being mostly

pale does not fit these species very well. His specimens may have been *U. steindachneri*, which is reported to be common in Ghana, or *U. ronchus*.

Frequently caught in seines and is edible. According to A.P. Brown, it is taken from January to April in *bleɲtoga* and seines. On average about 60 tonnes of this species are caught each year, primarily in the northern part of region.

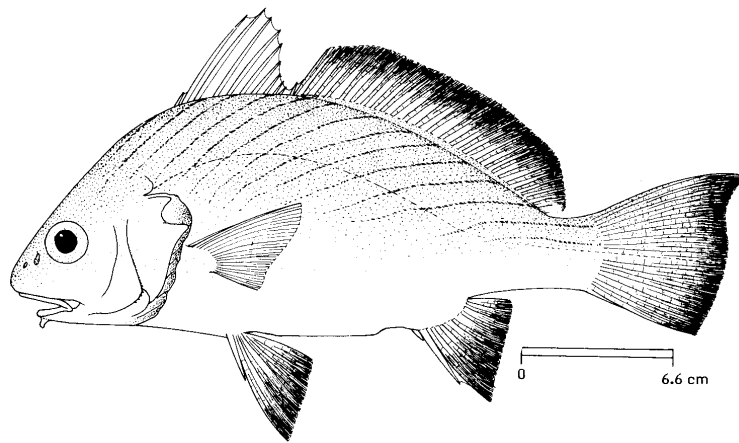
**Canary drum, Ombrine bronze**  
*Umbrina canariensis* Valenciennes, 1843

**ɲkaɲmri, ɲkaɲbli:** Ga. **katɟa:** Aɗaɲme (D. Benzies). **ɛkambir, ɛkaɲmi:** Fante. **kpetome-ɲɔtsā:** Ewe. **awoo, apo:** Yoruba. **okorongbo:** Ijaw.

*Irvine name:* Drum – *Umbrina canariensis* Val.

*Reference material:* Accra, Feb. 1930 (Irvine 54) – BMNH 1930.8.30.5 (1 specimen: 163 mm SL), BMNH 1930.3.24:14 (1 specimen: 152 mm SL).

*Distribution:* Coast of tropical West Africa from Morocco to Angola. Also found in the western Mediterranean and along coast of Europe northwards to the Bay of Biscay.



Canary drum, *Umbrina canariensis*. (Fig. 84.)

Grows to a length of 63 cm and common to 40 cm. The colour is yellowish brown above and silvery beneath, with wavy silvery stripes with dark borders, extending the length of the body.

Sometimes caught in seines and is edible. Taken from January to April in *bleɲtoga* and seines (A.P. Brown).

M.B. Wilkie suggests that the Ga name of this fish should be *ɲkaɲpu*. The meaning of the Ewe name *kpetome-ɲɔtsā* is ‘living among stones’.

Irvine noted that “The classification of the drums is very confused, and there is some doubt whether the species from Ghana have been correctly named”. There are two other drums, the Fusca drum (*Umbrina ronchus* Valenciennes, 1843) and Steindachner’s drum (*U. steindachneri* Cadenat, 1951), which also occur on the coast of Ghana and neighbouring countries. *FishBase* indicates that Steindachner’s drum has 29–31 soft dorsal rays whereas the Fusca drum has only 23–26, compared to 25–29 soft rays in the dorsal fin of the Canary drum. Irvine mentioned another species “distinguished [from the Canary drum] by the more numerous rays in the soft portion of the dorsal fin” which he considered might well occur in Ghana and which he identified as *U. ronchus*. However, on the basis of the fin counts above is more likely to have been *U. steindachneri*, which is reported by local fish workers to be common in Ghana. Further work is required to allow the drums to be reliably identified.

A family of small fishes, generally red or yellow in colour, with two short and well-separated dorsal fins and a pair of barbels on the chin, which are used for probing the sand or mud in search of food.

There are six genera and about 55 species in all warm seas. Only one is known on the mainland coast of tropical West Africa.

### West African goatfish, Rouget-barbet du Sénégal

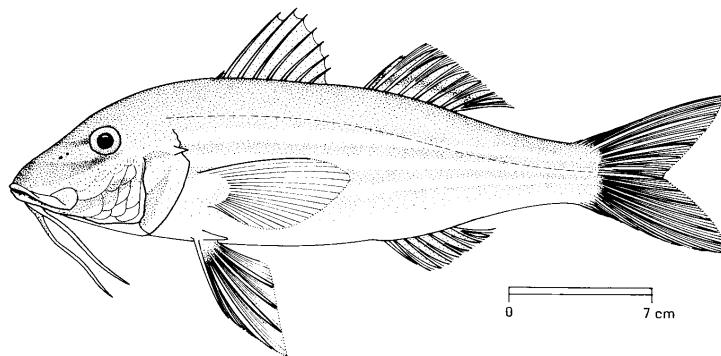
*Pseudupeneus prayensis* (Cuvier, 1829)

**blɔfo tʃukwe:** Ga. **kokodudu:** Fante (Anomabu). **sumpuna:** Fante (Saltpond). (?) **wirwirew-kwesi-asam:** Fante (Anomabu). **ɛpo-aponkyi:** Fante (Winnebah). (?) **pampensire,** (?) **sankumade,** (?) **kɔkɔdudu,** (?) **kwakudade:** Fante (Winnebah). **gekoe, sadzi:** Ewe.

*Irvine name:* Red mullet or goatfish – *Upeneus prayensis* C. & V.

*Reference material:* Accra, Feb. 1930 (Irvine 50) – BMNH 1930.8.26:45 (1 specimen: 157 mm SL); Winnebah, March 1933 (Irvine 170) – BMNH 1934.10.12:13 (1 specimen: 197 mm SL), BMNH Unregistered duplicate (1 specimen: 140 mm SL); Keta, Nov. 1938 (Irvine 378, dried specimens from market) – BMNH Unregistered duplicate (1 specimen: 113 mm SL). Accra, BMNH 1939.7.12:25 (1 specimen: 119.5 mm SL).

*Distribution:* Coast of tropical West Africa from Mauritania to southern Angola including offshore islands.



West African goatfish, *Pseudupeneus prayensis*. (Fig. 85.)

Grows to a length of 55 cm, common to 35 cm. Dark red in colour, paler beneath. All the fins are red. The barbels are white.

The fish is edible, and is caught from June to September in *ali* and *toga* nets (A.P. Brown). It is sometimes dried before being sold in the markets.

The Ewe name *gekoe* literally means ‘a fish with a beard’. The Fante name *ɛpo-aponkyi* means ‘sea goat’, so called because of its ‘beard’.

On average about 400 tonnes of this species are caught in the region each year, making it a significant fishery species.

### EMPERORS (LETHRINIDAE) [53.]

A family of fishes closely related to the snappers and sparid sea breams. The gill-membranes are broadly united with one another, but are free from the isthmus. The teeth at the front of the jaws are pointed, and some of them are canine-like; those at the sides are conical or blunt, and arranged in a single row. There are no teeth on the roof of the mouth. The head is naked, except for scales on the nape and on the gill-covers.

Five genera and about 40 species are known from tropical seas. With the exception of one species found on the coast of West Africa, all come from the Indo-Pacific region.

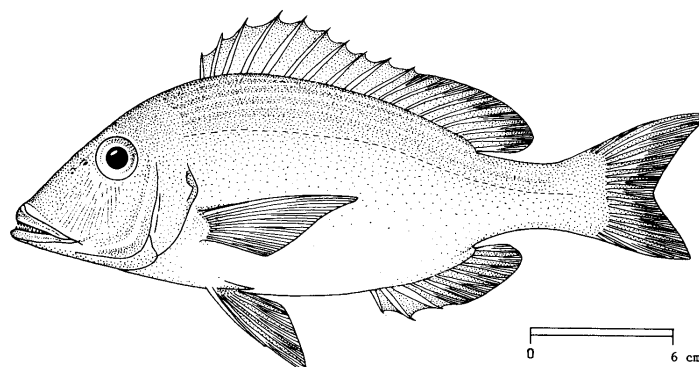
**Atlantic emperor, Empéreur atlantique**  
*Lethrinus atlanticus* Valenciennes, 1830

**afikple:** Ga. **saklote:** Ga (when large). **saflole (?)**: Ga. **sakwete:** Ga, (Labadi; A.P. Brown). **owie:** Fante (Winnebah).

*Irvine name:* Sea bream – *Lethrinus atlanticus* C. & V.

*Reference material:* Accra, 1930 (Irvine 45); Winnebah, 1933 (Irvine 175) – BMNH 1934.10.12:12 (1 specimen: 216 mm SL).

*Distribution:* Coast of tropical West Africa from Senegal to Gabon including Cape Verde Islands and the islands of the Gulf of Guinea.



Atlantic emperor, *Lethrinus atlanticus*. (Fig. 86.)

Grows to a length of about 50 cm. The colour is khaki above, brownish green on the flanks, and white on the belly. The head is darker than the remainder of the body and the acutely pointed mouth is pink along its edges. The fins are reddish, the margins of the dorsal, anal and caudal being of a darker red.

This fish is caught close inshore from June to September with hooks, and is edible. In recent years the fishery for this species appears to have expanded and now about 250 tonnes on average of this species are caught in the region each year.

SEA BREAMS (SPARIDAE) [54.]

A large and important family of fishes related to the snappers. The body is oblong or ovate, usually well compressed and with an elevated back. The mouth is generally rather small, but the teeth are strong. As a general rule there are either cutting teeth at the front of the jaws or molar teeth at the sides. There are no teeth on the roof of the mouth. The spinous and soft portions of the dorsal fin are nearly equally developed. There are three anal spines.

They are mostly shore fishes of tropical and subtropical regions, but some species live in somewhat deeper water. Their food varies a good deal, but shellfish and crustaceans predominate. The numerous genera are distinguished mainly by the form of the teeth. The sea breams are important food fishes. On average about 50,000 tonnes of sea breams are caught in the region each year.

About 30 genera and 100 species are known, of which seven have been recorded from Ghana.

*Key to the tropical West African genera and species*

1. Lateral teeth cutting or pointed ..... 2  
Lateral teeth molar-like ..... 12
2. Each jaw with 4–8 strong canines (sometimes fang-like) anteriorly ..... 3  
Each jaw with numerous incisors or at least 10 conical teeth anteriorly ..... 9
3. First and second spines of dorsal fin very short, following spines more or less filamentous and decreasing in length from the third or fourth; dark blotch or spot at posterior end of dorsal fin base ..... 4

- Dorsal fin spines increasing in length from first to fourth or fifth, equal in length thereafter; no spot or blotch present at posterior end of dorsal fin base ..... 6
4. A large, dark red blotch covering bases of last dorsal rays ..... 5  
 A small black spot on back just behind dorsal fin ..... Pink dentex, *Dentex gibbosus*
5. 10–13 gill-rakers on lower limb of first gill arch ..... Canary dentex, *Dentex canariensis*  
 14–16 gill-rakers on lower limb of first gill arch ..... Barnard dentex, *Dentex barnardi*
6. Less than 15 gill-rakers on lower limb of first gill arch; upper and lower canines equally developed ..... 7  
 17–20 gill-rakers on lower limb of first gill arch; upper canines clearly bigger than lower canines ..... Large-eye dentex, *Dentex macrophthalmus*
7. Caudal fin uniformly reddish ..... 8  
 Fork of caudal fin margined with dark red; longest dorsal fin spine 44–51% of head length; 9–12 gill-rakers on lower limb of first gill arch ..... Morocco dentex, *Dentex maroccanus*
8. 9–10 gill-rakers on lower limb of first arch; dorsal profile of head more or less straight; suborbital space wide (17–21% of head length); interorbital space narrow (21–25% of head length); longest dorsal fin spine 33–44% of head length ..... Angola dentex, *Dentex angolensis*  
 12–14 gill-rakers on lower limb of first gill arch; dorsal profile of head distinctly convex; suborbital space narrow (12–14% of head length); interorbital space wide (27–32% of head length) ..... Congo dentex, *Dentex congoensis*
9. A single row of incisors in both jaws ..... 10  
 Several rows of teeth in each jaw ..... 11
10. Dorsal fin with 11 or 12 spines; body oblong; gill-rakers on lower limb of first gill arch 12–14; upper jaw incisors notched at cutting edges, those in lower jaw with a depression on their outer surface and ending in a single triangular point ..... Salema, *Sarpa salpa*  
 Dorsal fin with 13–15 spines; body fusiform; gill-rakers on lower limb of first gill arch 16–20; cutting edges of incisors in upper jaw with 4, those in lower jaw with 5 points ..... Bogue, *Boops boops*
11. Each jaw with an outer row of 8–10 median incisors followed by small, slightly inward-curving conical teeth; anteriorly, incisors have 2 or more rows of small granular teeth behind them; large black blotch margined with white on caudal peduncle; anal fin with 12–14 soft rays; gill-rakers on first gill arch 12 (upper) + 20 (lower) ..... Saddled seabream, *Oblada melanura*  
 Each jaw with 4–6 rows of pointed teeth, those in outer row largest, especially anteriorly; no blotch on caudal peduncle; anal fin with 9–11 soft rays; gill-rakers on first arch 8–9 (upper) + 14–16 (lower) ..... Black seabream, *Spondylisoma cantharus*
12. Anterior teeth incisor-like; 8 conspicuously forward-pointing, reddish brown coloured incisor-like teeth in both jaws, followed by 1 or 2 rows of small rudimentary molars (tending to disappear in adults); 6 or 7 pairs of alternately very dark and lighter vertical bars on sides (may disappear after death); large dark, nearly annular bar on caudal peduncle ..... Sharpnose seabream, *Diplodus puntazzo*  
 Anterior teeth not incisor-like ..... 13
13. Each jaw with 4–6 strong canine-like teeth anteriorly ..... 14  
 Each jaw with numerous small and pointed teeth (at least anteriorly) ..... 16
14. First 2 dorsal spines very short, third to fifth long and filamentous in young ..... 15  
 First 2 dorsal fin spines not much shorter than the following spines, none of the latter filamentous ..... Southern common seabream, *Pagrus africanus*
15. Pelvic fins reddish with first soft ray not filamentous; hind margin of gill cover blackish; 4–5 dark vertical bars on sides, especially visible in young ..... Red-banded seabream, *Pagrus auriga*  
 Pelvic fins whitish-grey with first soft ray filamentous; no black margin to gill cover; no dark vertical bars on sides, but large dark blue spots on back and sides ..... Blue-spotted seabream, *Pagrus caeruleostictus*



16. Posterior nostril slit-like; 14–15 dark brown to grey vertical bars on sides; anterior teeth small, set in bands, followed by 3–6 rows of molar-like teeth in upper jaw, and 2–4 rows in lower jaw ..... Striped seabream, *Lithognathus mormyrus*  
 ..... Posterior nostril circular or oval; no permanent vertical bars on sides (exceptionally faint pink vertical bars corresponding to a fright pattern may be present); outer row of pointed teeth with inner band of of slightly smaller, cardiform teeth anteriorly in jaws with 2 rows of molar-like teeth posteriorly; anal fin with 10 soft rays; base of anal fin longer than distance from snout to posterior margin of eye; scales on top of head reaching forward to or beyond a line passing through anterior eye margins; inside of mouth whitish  
 ..... Red pandora, *Pagellus bellottii*

**Pink dentex, Gros denté rose**  
*Dentex gibbosus* (Rafinesque, 1810)

**anontia:** Adanme (Prampram).

*Irvine name:* Sea bream – *Dentex filusus*. A junior synonym.

*Reference material:* Prampram, July 1938 (Irvine 273) – BMNH 1938.12.15:16-17 (2 specimens: 255, 272 mm SL).

*Distribution:* Coast of West Africa from Morocco to Angola. Also occurs off Portugal and in the Mediterranean.

Grows to a length of 100 cm, common to 60 cm. There are four canine teeth at the front of the upper and lower jaws. The colour is uniformly pinkish red. The forked tail is red, with a narrow black margin.

This sea bream is an excellent food fish and is caught with hooks. Placed in subgenus *Cheimerius* by some authors.

**Angola dentex, Denté angolais**  
*Dentex angolensis* Poll and Maul, 1953

*Irvine name:* Sea bream – *Dentex macrophthalmus* (Blocher) [sic] (in part). Misidentification.

*Reference material:* Accra, Nov. 1930 (Irvine 129 A) – BMNH 1932.2.27:7 (1 specimen: 176 mm SL, redet. *D. maroccanus*).

*Distribution:* Coast of West Africa from Morocco to Angola.

Grows to a length of 35 cm and common to 24 cm. One of the specimens listed by Irvine under *D. macrophthalmus* appears to be this species but may possibly be *D. maroccanus*. The characters separating these two species require further clarification.

On average about 600 tonnes of this species are caught in the region each year, making it a significant fishery species.

**Congo dentex, Denté congolais**  
*Dentex congoensis* Poll, 1954

*Irvine name:* Sea bream – *Dentex macrophthalmus* (Blocher) [sic] (in part) and Sea bream – *Dentex cunninghami* Regan (in part). Misidentifications.

*Reference material:* Accra (Irvine 39) – BMNH 1930.3.24:13 (1 specimen: 116 mm SL); Accra, June 1930 (Irvine 115) – BMNH 1930.8.26:81-82 (2 specimens: 96.1, 122.0 mm SL), BMNH Unregistered duplicate (1 specimen: 134 mm SL).

*Distribution:* Coast of tropical West Africa from Senegal to Angola.

Grows to a length of 30 cm and common to 20 cm. Specimens listed by Irvine under both *D. cunninghami* (a junior synonym of *Dentex canariensis*) and *D. macrophthalmus* appear to be this species.

On average about 190 tonnes of this species are caught in the region each year, making it a significant fishery species.

**Canary dentex, Denté à tache rouge**  
*Dentex canariensis* Steindachner, 1881

**afiti:** Ga.

*Irvine name:* Sea bream – *Dentex cunninghami* Regan. Misidentification. Bauchot and Hureau, in Quéro *et al.* (1990), consider *Dentex cunninghamii* Regan, 1905 as a synonym of *Pagellus bellottii* Steindachner, 1882 but also indicated that Irvine used the name wrongly for *Dentex canariensis*. The only specimens found (Irvine 115) appear to be *D. congoensis* (see above).

*Reference material:* Accra, Nov. 1930 (Irvine 128). No specimens found.

*Distribution:* Coast of tropical West Africa from Morocco to Angola. Absent from the offshore islands, including the Canaries.

Grows to a length of 100 cm, common to 35 cm. The canine teeth are rather weak, and there are usually three or four on each side in the upper jaw and five or six on each side in the lower jaw. The colour is bright red, fading to pale pinkish white beneath. The scales are said to be silvery.

Caught in large quantities with hooks. It is edible.

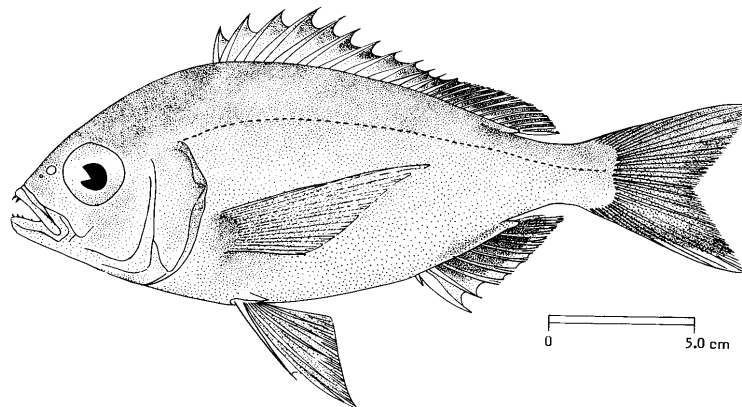
**Large-eye dentex, Denté à gros yeux**  
*Dentex macrophthalmus* (Bloch, 1791)

**tjile:** Ga. **yeke** or **afiti:** Ga. **yyiwa:** Ga (?). **anuhanta:** Ga (A. P. Brown).

*Irvine name:* Sea bream – *Dentex macrophthalmus* (Blocher) [sic].

*Reference material:* Accra, October 1938 (Irvine 348, *p.p.* Mr Nortey) – BMNH Unregistered duplicate (1 damaged specimen: 114 mm SL, not identifiable).

*Distribution:* Mediterranean and eastern Atlantic.



Large-eye dentex, *Dentex macrophthalmus*. (Fig. 87.)

Said to grow to a length of 90 cm. There are several large and protruding canine teeth at the front of both jaws. The coloration is reddish, becoming paler beneath, with traces of paler yellowish lines running along the body. The fins are all red.

This fish is caught with hooks in deep water and is edible. Generally it is taken in large quantities. According to Nortey, it occurs with another sea bream (*afiti*, Ga), and they are both caught at a depth of 115 m. The hooks used are 3.5 cm long, and the bait is 'herring' (*matj*, Ga). Nortey states that the season is from October to February, but according to A. P. Brown it is caught from January to April and from June to September. Dr M. J. Field states that fishing opens when the *hɔmɔwɔ* begins, and

that this fish, as well as *oda* (a sea perch), are extensively used in the *hɔmɔwɔ* feasts. It shrinks on smoking, and is therefore eaten in the fresh state.

On average about 900 tonnes of this species are caught in the region each year, making it a significant fishery species.

### **Red pandora, Pageot à tache rouge**

*Pagellus bellottii* Steindachner, 1882

**S wif wiwa:** Ga. **yiwa:** Ga. **wiriwiriwa:** Fante.

*Irvine name:* Sea bream – *Pagellus erythrinus* (Linn.). Misidentification.

*Reference material:* Kormantin, May 1930 (Irvine 99) – BMNH 1930.8.26:83 (1 specimen: 165 mm SL). ? Prampram, July 1938 (Irvine 275) – BMNH 1938.12.15:19 (1 specimen: 164 mm SL), BMNH Unregistered duplicate (1 specimen: 150 mm SL).

*Distribution:* Coast of West Africa from Morocco to Angola. Also recorded from the southwestern Mediterranean.

Grows to a length of 42 cm and common to 25 cm. The coloration is red on the back and flanks, and pinkish white beneath. There are bluish stripes along the length of the body. The tail is reddish.

This fish is caught from June to September with lines, and is edible. On average about 7000 tonnes of this species are caught in the region each year, making it an important fishery species.

Irvine noted “A specimen from Prampram, July 1938 (Irvine 275), was identified by the British Museum authorities as *Pagellus* sp. This seemed to be different from *P. erythrinus*, and somewhat resembled *Dentex cuninghami*.” Irvine was correct in this as *Dentex cuninghamii* Regan, 1905 is a junior synonym of *Pagellus bellottii* Steindachner.

### **Bogue**

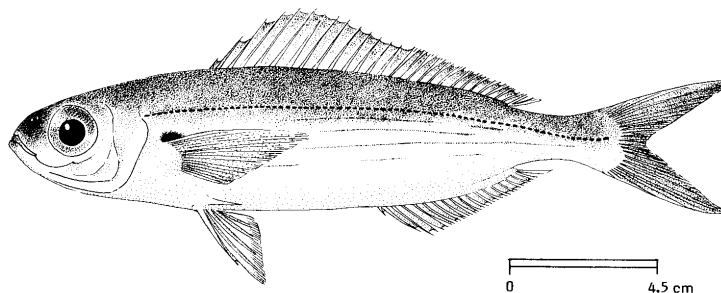
*Boops boops* (Linnaeus, 1758)

**moliko-otɔ, likio-otɔ:** Ga. **otoe:** Ga. **siesie:** Adanme. **labi:** Adanme (Prampram).

*Irvine name:* Bogue – *Boops boops* (Linn.).

*Reference material:* Accra, May 1938 (Irvine 264); Prampram, Sept. 1938 (Irvine 314) – BMNH Unregistered duplicate (1 specimen: 141 mm SL); Accra, Oct. 1938 (Irvine 347); Labadi, Jan. or June? 1936 (A.P. Brown 3).

*Distribution:* Mediterranean and eastern Atlantic from Norway to Angola.



Bogue, *Boops boops*. (Fig. 88.)

Grows to a length of 36 cm, common to 20 cm. The body is more slender than in the other sea breams, and the lateral line is conspicuous, high, and runs nearly straight. The colour is bluish grey or greyish khaki above, paler beneath, with olive green stripes running along the body. The tail is pale olive green.

The bogue is edible, but is said to have a bitter taste. It is caught at no particular season, and generally in large numbers, at a depth of 115 m. Hooks 3.5 cm long are used, and baited with ‘herring’ (*maŋ*),

or, according to A. P. Brown, with *tsile* (sea bream). Bogue are used as bait for catching large sharks, four or five of them being fixed at a time on a single hook.

On average about 50 tonnes of this species are caught in the region each year.

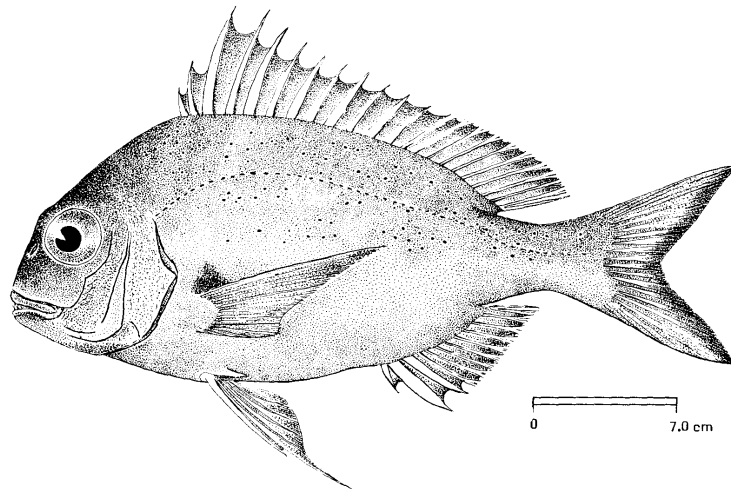
**Southern common sea bream, Pagne des tropiques**  
*Pagrus africanus* Akazaki, 1962

**tsile:** Ga.

*Irvine name:* Common sea bream – *Pagrus pagrus* (Linn.). Misidentification.

*Reference material:* Loc.?, Nov. (?) 1930 (Irvine 127) – BMNH 1932.2.27:9 (1 specimen: 214 mm SL); Accra (?), Jan. 1939 (Irvine 400) – BMNH 1939.7.12:26 (1 specimen: 248 mm SL).

*Distribution:* West African coast from Senegal to Angola.



Southern common sea bream, *Pagrus africanus*. (Fig. 89.)

Grows to a length of 75 cm, common to 35 cm. The general colour is a deep pinkish red, with large, silvery scales. The large, forked tail is yellowish towards the margin.

This species is edible and the flesh of good quality. It is one of the main fish eaten during the *hɔmɔwɔ* Festival in Accra, and all but the very tip of the tail is consumed. It is caught from June to September with lines (A. P. Brown). On average about 2000 tonnes of *Pagrus*, much of which is probably this species, are caught in the region each year.

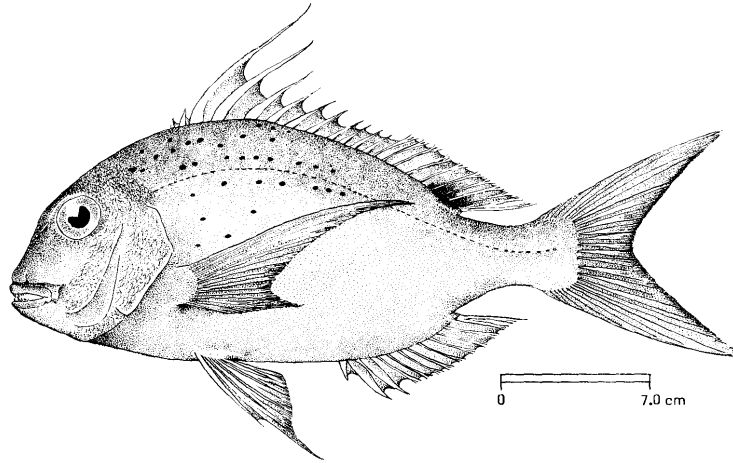
**Bluespotted sea bream, Pagne à points bleus**  
*Pagrus caeruleostictus* (Valenciennes, 1830)

**Sikafika, aplata:** Ga. **Sikafika:** Adaɲme (Prampram). **agbidi:** Adaɲme (Prampram). **anotia:** Ga (A.P. Brown). **sika:** Fante (Anomabu). **wiriwiriwa:** Fante. **sika-sika:** Fante (Winnebah). **mpakyiwa:** Nzima. (Axim). **sikasika:** Ewe.

*Irvine name:* Golden-headed sea bream – *Pagrus ehrenbergi* C. & V. A junior synonym.

*Reference material:* Accra(?), March 1930 (Irvine 46) – BMNH 1930.8.26:46 (1 specimen: 148 mm SL); Prampram, July 1938 (Irvine 274) – BMNH 1938.12.15:18 (1 specimen: 181 mm SL); Accra, Jan. 1939 (Irvine 401) – BMNH 1939.7.12:27 (1 specimen: 290 mm SL).

*Distribution:* Coast of West Africa from Morocco to Angola, including the Canary Islands. Also occurs in the Mediterranean and northwards to Portugal.



Bluespotted sea bream, *Pagrus caeruleostictus*. (Fig. 90.)

Grows to a length of 72 cm and common to 50 cm. The colour is reddish, with iridescent hues. The head is a vivid gold colour, especially in the region between the eyes and the mouth. There are some sky-blue spots scattered along the back and upper parts of the flanks. The fins are reddish, and the tail has a narrow black margin.

This fish is generally caught by hooks in deep water, but small specimens are sometimes taken in seines. According to A.P. Brown, it is caught from June to September. It is edible, and an excellent food fish and it is often smoked before being sold. In the intestine of specimen no. 274 were found 10–20 molluscs – wedge shells (*Donax pulchella*). The name *Sikaſika*, meaning ‘money’, is given to this fish because of its beautiful glistening scales. When less than 15 cm long, the Gas call it *wiyuwa*, a name probably derived from Fante.

#### PICARELS (CENTRACANTHIDAE) [55.]

Rather small fishes, with compressed silvery bodies, and with small or moderate mouths, which can be drawn forward to a remarkable extent. The teeth are small and pointed, or are absent altogether. The picarels were listed under the family name Maenidae by Irvine.

They are mostly shore fishes, and confined largely to the Mediterranean and eastern Atlantic. Two genera and about eight species are known, of which two occur on the mainland coast of tropical West Africa. On average about 5 tonnes of *Spicara* are caught in the region each year.

*Key to the tropical West African species*

1. Dorsal fin deeply notched, usually with 10 soft-rays; anal fin with 7–10 soft-rays; 48–50 lateral-line scales; 19–20 gill-rakers on lower limb of first gill arch ..... Bigeye picarel, *Spicara alta*

Dorsal fin unnotched, with 15–17 soft-rays; anal fin with 15–16 soft-rays; a well developed scaly sheath covering basal half of soft dorsal and anal fins; 64–74 lateral-line scales; 14–16 gill-rakers on lower limb of first gill arch; black saddle-like blotch covering dorsal two-thirds of caudal peduncle ..... Blacktail picarel, *Spicara nigricauda*

**Bigeye picarel, Picarel à gros yeux**  
*Spicara alta* (Osorio, 1917)

**odabletɔɛ:** Ga. **derbo-akassa:** Ijaw.

*Irvine name:* *Spicara* sp.<sup>8</sup>

*Reference material:* Accra, May 1938 (Irvine 265) – BMNH 1938.12.15:13 (1 specimen: 113.5 mm SL).

*Distribution:* Coast of West Africa from Senegal to southern Angola.

Grows to a length of about 30 cm, common to 20 cm. The head is acute, and the eye large. The head is almost flattened on top and in front of the eye, and the ridges along both sides of the top of the head almost form a right angle with the side of the head. The lower jaw protrudes slightly in front of the upper jaw. The dorsal fin is continuous. The tail is forked. The colour is pinkish, with beautiful silvery scales.

*Spicara alta* is edible and is caught with hooks.

Irvine thought that this fish might eventually prove to represent a species new to science, but it appears to be a species described by the famous Portuguese ichthyologist, Balthazar Osorio in 1917.

**Blacktail picarel, Picarel queue noire \*\***  
*Spicara nigricauda* (Norman, 1931)

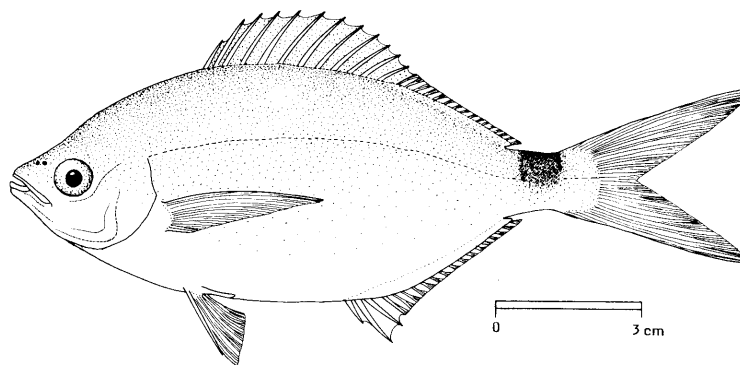
*Coleosmaris nigricauda:* p. 359, fig. 4 in Norman JR (1931). Four new fishes from the Gold Coast. *Annals and Magazine of Natural History* (Series 10), Vol. 7 (40), 352–359.

(?) **alabli:** Ga. **alajmli:** Ga (A. P. Brown). **derbo-akassa:** Ijaw.

*Irvine name:* *Coleosmaris nigricauda* Norman.

*Reference material:* Accra, June 1930 (Irvine 101) – BMNH 1930.8.26:63-64 (2 SYNTYPES: 123.0, 128.3 mm SL of *Coleosmaris nigricauda* Norman, 1931).

*Distribution:* Coast of West Africa from Ghana to Angola.



Blacktail picarel, *Spicara nigricauda*. (Fig. 91.)

<sup>8</sup> Irvine noted that the generic name *Spicara* Rafinesque should replace *Marsis* Barnard (= *Smaris* Cuv.).

Grows to a length of 20 cm or more. The body is rather deep and flattened laterally. The head is small and the mouth sharply pointed. The scales are silvery and have faint 'feathered' markings upon them. The lateral line is strongly marked and nearly straight. The dorsal fin is undivided, and the spines are long and sharply pointed. The pectoral fins are long and narrow, and slightly curved. The colour is dark grey above and white beneath. There is a distinct black blotch on either side of the caudal peduncle. The caudal fin is yellowish.

The fish is edible, and is caught from January to April in faṅya nets.

Smaller specimens are taken in nets, larger ones by hooks. The name *alanṃli* (*alanṃri*) is also applied to Longfin pompano, *Trachinotus goreensis*.

#### MOONIES (MONODACTYLIDAE) [56.]

Small fishes, with a very deep body, much flattened from side to side. The dorsal and anal fins are long and covered with scales, the dorsal having 5–8 graduated spines, the anal fin three spines. The pelvic fins are present in juveniles but absent or vestigial in adults.

These are coastal fishes of Africa, southern Asia and Australasia, sometimes entering rivers. Two genera and about five species are known, of which one has been recorded from Ghana and the tropical West African coast.

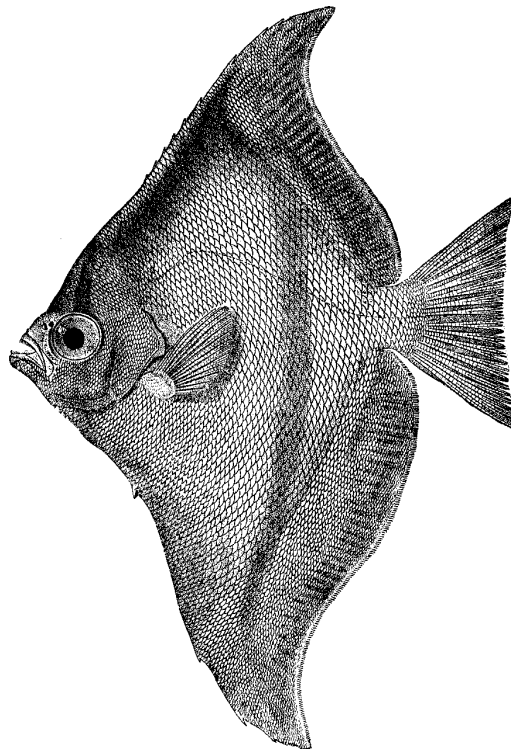
#### **African moony, Breton african** *Monodactylus sebae* (Cuvier, 1829)

**kpekplemite:** Adaṅme, Ewe. **akaraba:** Yoruba, Ilaje. **ofon:** Ijaw

*Irvine name:* *Psettus sebae* C. & V.

*Reference material:* Onikan Pond, Lagos, Nigeria, coll. F.R. Irvine – BMNH 1949.3.17:31 (1 specimen: 38.6 mm SL).

*Distribution:* Coast of tropical West Africa from Cape Verde to Angola: entering rivers.



African moony, *Monodactylus sebae* (from Boulenger after Day). (Fig. 92.)

Grows to a length of 20 cm and common to 15 cm. The body is of a very deep and quite abnormal shape, being considerably deeper than long. Only the tips of the seven or eight dorsal and the three anal spines project through the skin. The pelvic fins are vestigial. The scales are very small and ctenoid. The coloration is more or less silvery, either uniform or with traces of three dark vertical bands, which are always present in young fish.

According to Rochbrune it is not eaten by Africans.

#### SPADEFISHES (EPHIPPIDAE) [57.]

Fishes with a deep compressed body, and with the soft parts of the dorsal and anal fins densely covered with scales. The gill-membranes are broadly attached to the isthmus. The mouth is small and placed at the end of the head, and is not, or only very slightly, capable of being pulled forward. The jaws are provided with bands of brush-like teeth, and there are no teeth on the palate.

These are shore fishes of most warm seas, some of which are valued as food. Some seven genera and about 20 species are known, of which two occur on the mainland coast of tropical West Africa. On average about 550 tonnes of spadefishes are caught in the region each year.

#### *Key to the tropical West African genera and species*

1. Dorsal fin with nine spines and 18–20 soft-rays, third to fifth or sixth spines are slender and much prolonged; second anal spine is approximately the same length as the third; the body is without vertical bars ..... African spadefish *Ephippus goreensis*  
Dorsal fin with nine spines and usually 21 soft-rays, the third spine much stouter and longer than the others; second anal spine stout and much longer than the third; about 50 lateral-line scales; six broad almost vertical dark bars on the upper half of the body ..... Lippe's spadefish, *Chaetodipterus lippei*

#### **African spadefish, Chèvre de mer** *Ephippus goreensis* Cuvier, 1831

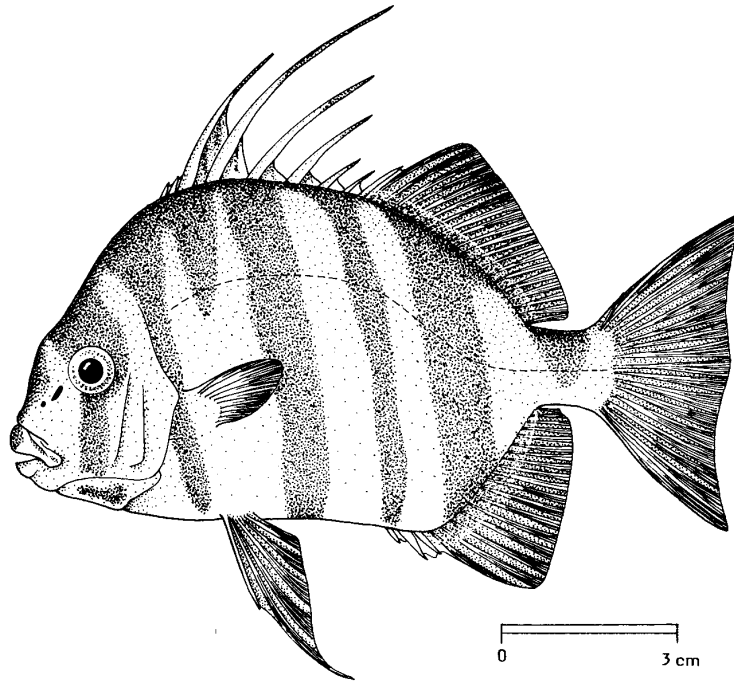
**pompatowa:** Fante. **epiya malokun:** Ilaje. **gopele biniokoti:** Ijaw

*Irvine name:* Spadefish – *Ephippus goreensis* C. & V.

*Reference material:* Anomabu, June 1930 (Irvine 107) – BMNH 1930.8.30:3 (1 specimen: 190 mm SL).

*Distribution:* Coast of tropical West Africa from Cape Verde to Gabon.





African spadefish, *Ehippus goreensis*. (Fig. 93.)

Grows to a length of 25 cm and common to 18 cm. The general colour is pale bluish grey on back and sides and almost white beneath.

It is edible and of good quality.

#### **Lippe's spadefish**

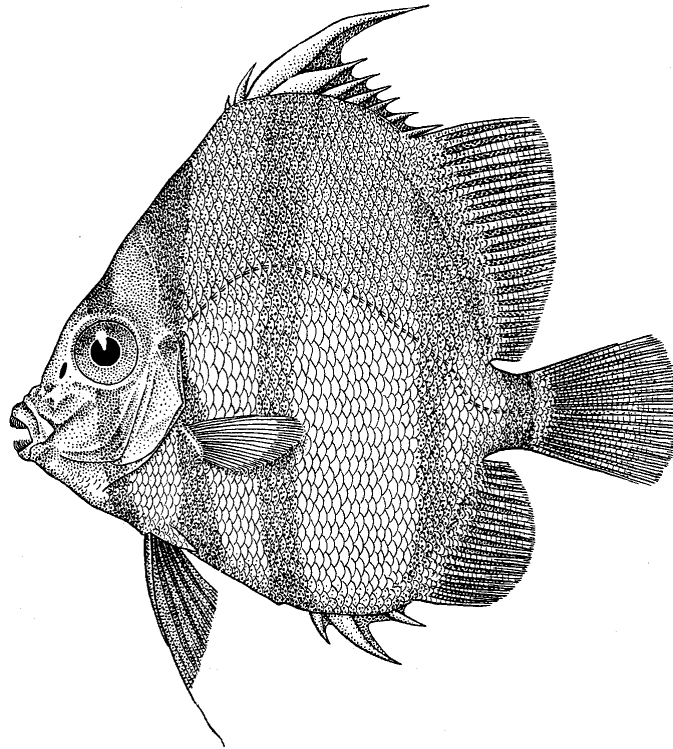
*Chaetodipterus lippei* Steindachner, 1895

**adibi:** Ga. **bini okoti:** Ijaw

*Irvine name:* Spadefish – *Chaetodipterus lippei* Steind.

*Reference material:* Accra (Irvine 132) – BMNH 1932.2.27:10 (1 specimen: 88 mm SL); Winnebah (Irvine 180) – BMNH 1934.10.12:14 (1 specimen: 88.9 mm SL); Teshi, March 1936 (Irvine 208).

*Distribution:* Coast of tropical West Africa from Senegal to Angola.



Lippe's spadefish, *Chaetodipterus lippei*. (Fig. 94.)

Grows to a length of about 31 cm. The general colour is pale silvery grey. There are six broad almost vertical dark bars on the upper half of the body, the first of which runs through the region of the eye.

This fish is edible, and said to be of good quality. It is sometimes caught in *togaworam* nets (Ga), and has been seen in large shoals in March and April.

#### SICKLEFISHES (DREPANIDAE) [58.]

Similar looking to the preceding family, but the mouth is capable of being drawn forward, and the hinder part of the maxillary bone is exposed.

There is only one genus known, with perhaps two species from tropical seas. One species occurs on the mainland coast of tropical West Africa.

#### **African sicklefish, Forgeron ailé**

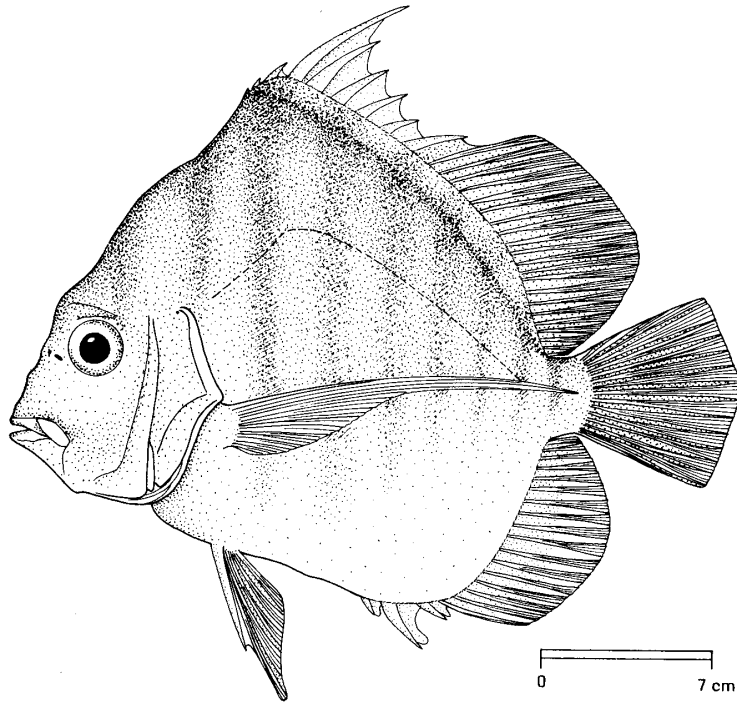
*Drepane africana* Osorio, 1892

**okposansa:** Ga. **kpɛkpɛletɛ:** Adan̄me (D. Benzies). **ɛposansaa:** Fante. **pompatowa:** Fante (Anomabu). **apompatowa:** Fante (Winnebah) **ɛlende:** Nzima (Axim). **dū, gbagbadza:** Ewe. **arugogosi:** Yoruba. **akaraba:** Ilaje. **biniokoti:** Ijaw

*Irvine name:* Spadefish – *Drepane punctata* (Linn.). Misidentification.

*Reference material:* Accra, March 1930 (Irvine 49) – BMNH 1930.8.26:61-62 (2 specimens: 68.6, 84.1 mm SL).

*Distribution:* West African coast between about Cap Vert and Angola.



African sicklefish, *Drepane africana*. (Fig. 95.)

Grows to a length of 40 cm and common to 30 cm. Readily distinguished from spade-fishes of the family Ehippidae by the very long and sickle-shaped pectoral fins, which extend almost the whole length of the body. The caudal fin is more or less pointed in the young and rounded in the adult. The colour is silvery, with about eight almost vertical broad dark grey stripes on the upper parts of the sides.

This fish is edible and of good quality. It is generally caught in seines. According to A.P. Brown, it is taken in the seasons July to November and January to April. Shoals were caught in seines at Teshi in April 1936. It is said that the shoals are sometimes so heavy that it is impossible to draw the nets in.

The meaning of the Fante name *pompatowa* is 'sea hawk', and the Ewe name *gbagbladza* is 'cockroach' (meaning unknown). According to Dr M.J. Field, the Ga name *okposansa* means 'dove-hawk'.

On average about 1,300 tonnes of this species are caught in the region each year, making it quite an important fishery species.

#### BUTTERFLYFISHES (CHAETODONTIDAE) [59.]

A large and varied family of small fishes, with deep, compressed bodies, covered with scales of small or moderate size, which are nearly smooth. The lateral line is present and parallel with the dorsal outline. The mouth is small and provided with bands of small brush-like teeth in each jaw. The palate is toothless. The soft portions of the dorsal and anal fins are densely scaled. They are brightly coloured, and many show fantastic patterns of spots, stripes and bands of all kinds.

They are carnivorous fishes of all tropical seas, inhabiting reefs and rocky places, and are noted for their quick movements. The young are very different from the adults. Several genera and numerous species are known, but only three have been recorded from tropical West Africa. Irvine recorded one from Ghana but misidentified it (see below). The other two, less common, species are the Marcella butterflyfish (*Chaetodon marcellae* Poll, 1950) and Hoefler's butterflyfish (*C. hoefleri* Steindachner, 1883). The former is found at depths of 35–55 m from Cape Verde Islands and Senegal to the Congo; the latter is rare and has been recorded at depths of 10–20 m and is known from Mauritania to Angola.

#### **Robust butterflyfish**

*Chaetodon robustus* Günther, 1860

*Irvine name:* Striped butterfly-fish – *Chaetodon striatus* Linn. Misidentification.

*Reference material:* None. *C. striatus* is a western Atlantic species which does not occur off West Africa. Irvine most likely was referring to this species as it is the most common in Ghana. Irvine notes that he did not collect *C. striatus* and his colour description (which is correct for *C. striatus*, but does not fit any of the three tropical West African butterflyfish) must have been taken from a book – “The body has five blackish brown cross-bars: the first runs through and is narrower than, the eye; the second runs from the second, third and fourth dorsal spines; the third from the last five dorsal spines; the fourth which joins the third above runs down as far as the root of the tail; and the fifth runs across the middle of the tail and is continued on to the soft portions of the dorsal and anal fins, which are yellow at their margins. The pelvic fins are black. Young specimens have a distinct round, black, white-edged spot near the upper end of the fourth band.”

*Distribution:* Coast of West Africa from the Cape Verde Islands and Senegal to Angola. Very common from Liberia to Nigeria.

Grows to a length of about 17 cm. Common on rocky reefs from 1–50 m depth.

Irvine also noted that “Fowler has recorded another species (*Chaetodon hoeferi* Steind.), from Ashanti”.

#### DAMSELFISHES (POMACENTRIDAE) [61.]

These are small, deep-bodied fishes, covered with spiny-edged (ctenoid) scales. The lateral line is absent on the hinder part of the body. They differ from all the families of perch-like fishes so far considered (except the Cichlidae) in having only a single nostril on each side of the head. The mouth is small, and the jaws are armed with pointed or incisor-like teeth.

These are mostly brightly coloured fishes, and most of the species live in and about coral reefs. About 28 genera and some 320 species are known, of which eight probably occur on the coast of Ghana and other Gulf of Guinea countries. Three were reported by Irvine. The others which are probably present are: *Abudefduf hoeferi* (Steindachner, 1881), *Chromis limbata* (Valenciennes, 1833), *C. multilineata* (Guichenot, 1853), *Microspathodon frontatus* Emery, 1970 and *Stegastes imbricatus* Jenyns, 1842 (Edwards, 1986).

#### *Key to the tropical West African genera and species*

1. Teeth in upper jaw conical or incisor-like, but never flexible or brushlike; no notch in preorbital bone bordering the upper jaw ..... 2  
Teeth in upper jaw flexible, brushlike; pronounced notch in preorbital bone bordering the upper jaw; preorbital very broad, much deeper than eye diameter; dorsal fin with 12 spines and 16–17 soft rays; pectoral fin with 22–25 rays ..... Guinean damselfish, *Microspathodon frontatus*
2. Margin of suborbital and preopercle smooth (preopercle may have minute serrations); dorsal fin with 12–14 spines and 10–14 soft rays ..... 3  
Margin of suborbital and preopercle with distinct serrations; dorsal fin with 12 spines and 14–17 (usually 16, very rarely 14) soft rays; anal fin with 13–15 (usually 14) soft rays; pectoral fin with 20–21 rays; 15–19 gill-rakers on first gill arch; 19–20 lateral line scales ..... Cape Verde gregory, *Stegastes imbricatus*
3. Teeth conical in 2–4 rows; upper and lower edges of caudal base with 2–3 procurrent spines; dorsal fin usually with 12 or 14 spines ..... 4  
Teeth incisor-like in a single row; upper and lower edges of caudal fin base without any spines; dorsal fin with 13 spines ..... 6
4. Dorsal fin with 14 spines and 11–12 soft rays; anal fin usually with 11 soft rays (rarely 10, occasionally 12) . 5  
Dorsal fin with 12 (rarely 13) spines and 12 (rarely 11 or 13) soft rays; anal fin with 12 (rarely 11) soft rays Brown chromis, *Chromis*
5. Greatest body depth usually less than 45% SL (40.3–44.7% SL); pectoral rays 20 (occasionally 19 or 21); 23–25 gill-rakers on lower limb of first gill arch ..... Striped chromis, *Chromis cadenati*

- Greatest body depth usually more than 45% SL (45.8–52.5% SL); pectoral rays 19 (occasionally 18 or 20); 20–22 gill-rakers on lower limb of first gill arch ..... Bandtail chromis, *Chromis limbata*
6. Dorsal fin with 11–13 soft rays; anal fin with 10–11 soft rays ..... 7  
Dorsal fin with 14 soft rays; anal fin with 13 soft rays ..... African sergeant, *Abudefduf hoefleri*
7. Dorsal fin with 11–12 soft rays; 18–21 gill-rakers on first gill arch; suborbital edge not visible, usually covered by scales ..... Night sergeant, *Abudefduf taurus*  
Dorsal fin with 12–13 soft rays; 23–31 gill-rakers on first gill arch; suborbital edge visible ..... Sergeant major, *Abudefduf saxatilis*

### **Cadenat's chromis**

*Chromis cadenati* Whitley, 1951

**won-kpaku:** Adaņme (Prampram).

*Irvine name:* Damsel-fish or castaneta – *Chromis chromis* (Linn.). Misidentification.

*Reference material:* Prampram, Sept. 1938 (Irvine 319) – BMNH 1939.7.12:29-30 (2 specimens: 139.2, 162 mm SL), BMNH 1975.5.29:29 (1 specimen: 133.8 mm SL).

*Distribution:* Coast of West Africa from Senegal to Ghana.

Grows to a standard length of 16.5 cm. The back is olive green in colour, the flanks a beautiful violet, and the belly a paler violet. There are dark stripes running along the body, two khaki ones at the top and five violet ones beneath them. The dorsal fin is greenish yellow, with a dark margin. The anal fin is olive green, the pectorals khaki green, with a dark spot where they join the body, and the pelvics greenish yellow. The caudal fin is also greenish yellow.

The specimen mentioned above was caught by a hook in deep water, but the species is not commonly taken.

The Adaņme name *won-kpaku* is derived from *won* (the sea), and *kpaku* (a freshwater fish which it resembles) (? a cichlid).

### **Sergeant-major**

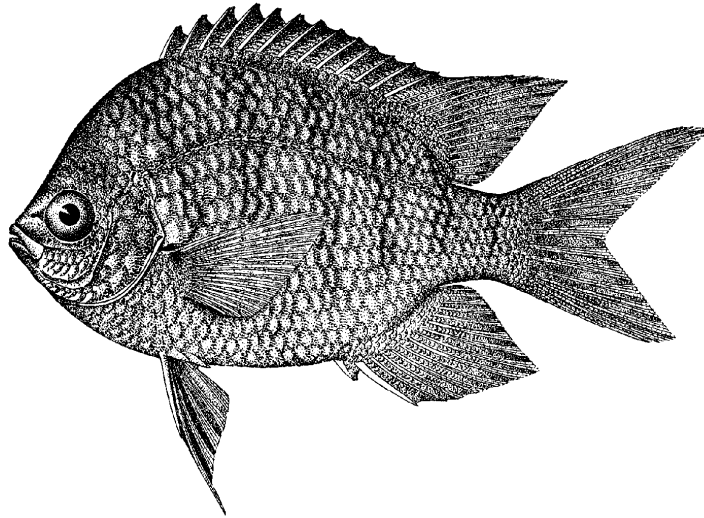
*Abudefduf saxatilis* (Linnaeus, 1758)

**obliki:** Ga. **ņfɔņ-didεε:** Ga. **oblitfi:** Adaņme (Prampram). **buruku:** Fante (Anomabu). **pema:** Nzima (Axim). **fumekpa:** Ewe.

*Irvine name:* Sergeant-major – *Glyphisodon saxatilis* (Linn.).

*Reference material:* Accra (?), March 1930 (Irvine 74) – BMNH 1930.8.26:59 (1 specimen: 103.2 mm SL); Accra, May 1938 (Irvine 255).

*Distribution:* Both sides of the tropical Atlantic.



Sergeant-major, *Abudefduf saxatilis*. (Fig. 96.)

Grows to a standard length of 15 cm. The general coloration is greenish, paler beneath. The back and sides have five broad, dark cross-bands, which are usually darker above the lateral line. The fins are all brownish, and the axils of the pectoral fins are darker.

This fish is edible. It lives on sewage and waste matter of towns. It is taken with hooks among rocks in shallow water, and, according to A.P. Brown, is caught at no special season in *fanya* nets.

The Ewe name *fumekpa* is derived from *fume* (the sea), and *kpa* (the common lagoon cichlid) (*akpa*, Ewe), because the fish somewhat resembles that freshwater fish. This resemblance also accounts for the Ga name  $\eta\text{f}\text{o}\eta\text{-didee}$ , i.e. 'sea cichlid'.

#### Night sergeant

*Abudefduf taurus* (Müller and Troschel, 1848)

**won-kpaku:** Adanme (Prampram).

*Irvine name:* Damsel-fish – *Glyphisodon hoefleri* Steind. Misidentification.

*Reference material:* Prampram, Sept. 1938 (Irvine 330) – BMNH 1939.7.12:28 (1 specimen: 82.7 mm SL).

*Distribution:* Coast of tropical West Africa from Senegal to Angola and the Cape Verde Islands. Also occurs in the western tropical Atlantic.

Grows to a standard length of 17 cm. The general colour is greenish grey, with traces of very faint broad vertical stripes on the body.

This damsel-fish is caught from the shore in spiral nets by children.

#### WRASSES (LABRIDAE) [62.]

Fishes with oblong or elongate bodies, covered with smooth scales. The lateral line is continuous or interrupted, and often angulated. There are two nostrils on each side of the head. The mouth is capable of being drawn forward, the lips are thick, and the teeth are generally conical, usually with canines at the front of the jaws. As in the damselfishes, the lower pharyngeal bones in the throat are united to form a triangular plate, armed with strong teeth. The dorsal fin is continuous, and the spinous portion is usually long.

Wrasses are found in tropical and temperate seas, living near the coasts in rocky or weedy places, or in the pools of coral reefs. Their diet consists mainly of shellfish and other invertebrates. Many of them are brightly coloured, and sexual differences are often marked. Some are of value as food fishes.

At least 60 genera and roughly 500 species are known, of which about five occur on the mainland coast of tropical West Africa and four were recorded from Ghana by Irvine.

*Key to the tropical West African genera and species*

1. Less than 10 spines in dorsal fin; lateral line abruptly curved or interrupted below soft portion of dorsal fin ..... 2  
 More than 10 spines in dorsal fin; lateral line smoothly curved throughout its length ..... 4
2. Lateral line continuous ..... 3  
 Lateral line interrupted under rear of soft dorsal fin ..... Pearly razorfish, *Xyrichtys novacula*
3. Dorsal fin with 8 spines; 26–31 pored lateral-line scales ..... Ornate wrasse, *Thalassoma pavo*  
 Dorsal fin with 9 spines; 73–80 pored lateral-line scales ..... Guinean rainbow wrasse, *Coris atlantica*
4. Dorsal fin with 19–21 spines; anal fin with 4–6 spines; 39–45 pored lateral-line scales .....  
 ..... Scale-rayed wrasse, *Acantholabrus palloni*  
 Dorsal fin with 11–14 spines; anal fin with 3 spines; 33–34 pored lateral-line scales .....  
 ..... Blackbar hogfish, *Bodianus speciosus*

**Ornate wrasse, Girelle paon**  
*Thalassoma pavo* (Linnaeus, 1758)

*Irvine name:* Peacock or swallow-tailed wrasse – *Thalassoma pavo* (Linn.).

*Reference material:* None.

*Distribution:* Mediterranean and eastern Atlantic from Portugal southwards to Gabon.

Grows to a standard length of 25 cm, usually 15–20 cm long. The upper and lower lobes of the caudal fin are produced into pointed processes. The colours are bright and somewhat variable, but the body is generally greenish or reddish, with a red vertical streak on each scale. There is a broad oblique dark band running across the body under the pectoral fin. The head usually has irregular green bands. There is generally a large black blotch at the extremity of each pectoral fin, and a small black spot above the axil. There is a broad dark band running along the dorsal fin, and the basal part of the anal fin is dark. Each caudal lobe has a median blackish streak.

This species has been recorded from the ‘Guinea coast’ by Bleeker and from various parts of the coast of tropical West Africa. Irvine notes that it will almost certainly be found eventually on the coast of Ghana.

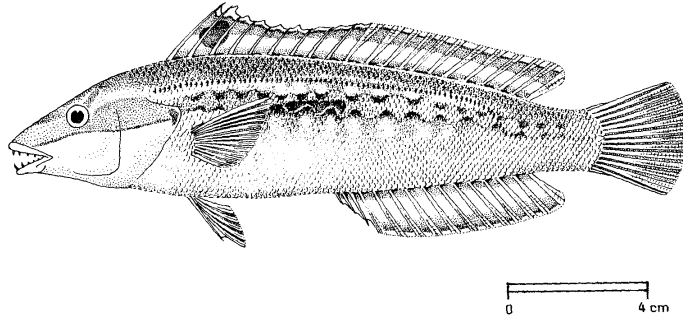
**Guinean rainbow wrasse, Girelle guinéen**  
*Coris atlantica* (Günther, 1862)

**kwami oseɛ:** Ga (A.P. Brown), Aɔaŋme. **mpadza, seŋ:** Aɔaŋme. **edu:** Fante (Anomabu).

*Irvine name:* Rainbow wrasse – *Coris julis* (Linn.). Probably a misidentification.

*Reference material:* Prampram, June 1930 (Irvine 88); Prampram, July 1938 (Irvine 279). No specimens found.

*Distribution:* Coast of West Africa from the Cape Verde Islands to Congo. Guillemaud *et al.* (2000) in a molecular study show the West African populations of *Coris* to be clearly distinct from *Coris julis* populations in the Mediterranean, Azores and European waters northwards to the British Isles.



Guinean rainbow wrasse, *Coris atlantica*. (Fig. 97.)

Grows to a length of 25 cm. The colours of this species are brilliant and somewhat variable, besides differing in the male and female. The specimens from Prampram were bluish violet above, with red markings just behind the gill-openings, and with a broad green stripe on top of the head. The sides were pale blue, with orange markings. The dorsal fin was yellow near the body, dark blue above this, and orange red at the margin. The anal fin was bright red. The pectoral fins were pinkish red and the pelvics pale blue. The rounded caudal fin was striped with orange red and blue. The male has a black spot on the first three dorsal spines.

This fish is caught from June to September with lines (A.P. Brown), and is edible. It is taken in deep water in rocky places.

**Pearly razorfish, Donzelle lame**  
*Xyrichtys novacula* (Linnaeus, 1758)

**eputankufer:** Fante (Winnebah). **kosasema:** Ahanta (Sekondi).

*Irvine name:* Red wrasse or razor-fish – *Xyrichtys novacula* (Linn.).

*Reference material:* Winnebah, March 1933 (Irvine 167) – BMNH 1934.10.12:16 (1 specimen: 149 mm SL), BMNH Unregistered duplicate (1 specimen: 155 mm SL).

*Distribution:* Mediterranean and coast of West Africa from Morocco to Gabon including the offshore islands. Also recorded in the western tropical Atlantic.

Grows to a length of 25 cm. Easily recognized by its thin compressed head and body, and by the curious profile of the head. The colour is bright red. The gill-covers are paler red, and have several darker red, slightly wavy, vertical stripes.

This fish is edible. The derivation of the Fante name *eputankufer* is from *eput* (the sea), and *tankufer* (broken pieces of iron pot used for medicine, because the flat body and sharp edge of the head are of that shape).

**Blackbar hogfish, Pourceau dos noir**  
*Bodianus speciosus* (Bowdich, 1825)

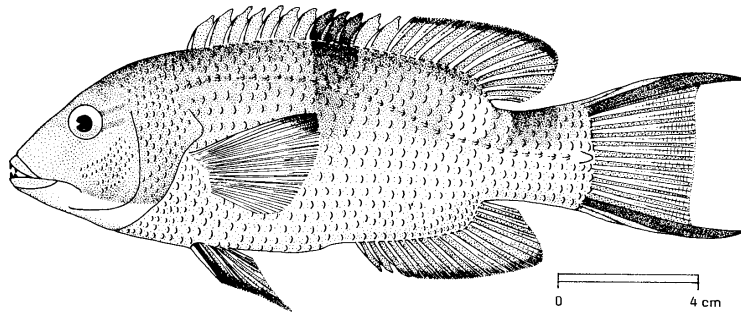
**ogene:** Adanme (Prampram). **akati:** Adanme. (?) **agbaku:** Adanme. **isui:** Fante (Anomabu).

*Irvine name:* Hogfish – *Bodianus tredecimspinosus* (Günth.). A junior synonym.

*Reference material:* Prampram, 35 miles east of Accra, May 1930 (Irvine 85) – BMNH 1930.8.30:8 (1 specimen: 178 mm SL); Prampram, July 1938 (Irvine 268).

*Distribution:* Coast of tropical West Africa from Guinea to Cameroon and around the Cape Verde Islands.





Blackbar hogfish, *Bodianus speciosus*. (Fig. 98.)

Grows to a maximum length of about 48 cm. The colour is reddish, with a more brownish red shade above. There is a broad vertical black band in the cent of the back, There is usually a large whitish blotch immediately behind the band and below the soft part of the dorsal fin. The fins are all reddish.

The hogfish is edible, and is caught from June to September with line (A.P. Brown). It is taken in deep water.

#### PARROTFISHES (SCARIDAE) [63.]

A family of plump, oval fishes, with large smooth scales, closely related to the wrasses. The jaws are each armed with sharp-edged plates, resembling the beak of a parrot, and formed by the union of numerous series of small teeth. The colours are usually brilliant, but the sexes are, for the most part, similarly coloured.

These are shore fishes of warm seas, abundant in the tropics, and especially in the coral reefs. They subsist mainly on a herbivorous diet, feeding on seaweed, which they bite off with the jaw-plates and chew with the pavement like teeth in the throat.

Some nine genera and about 85 species are known. Three species are known from the Gulf of Guinea coast of West Africa of which Irvine recorded one and collected two off Ghana. The two species collected by Irvine are listed below; the third is the Emerald parrotfish, *Nicholsina usta* (Valenciennes, 1839).

#### **Redfin parrotfish, Perroquet basto**

*Sparisoma rubripinne* (Valenciennes, 1839)

**sankumale:** Ga. **yuyuruwa:** Ga. **sakyimade:** Fante. **eha:** Ewe.

*Irvine name:* Parrot wrasse – *Callyodon hoefleri* (Steind.). Irvine's specimen 56, listed under *Callyodon* (= *Scarus*) *hoefleri* is a *Sparisoma* and appears to be *Sparisoma rubripinne*.

*Reference material:* Accra, March 1930 (Irvine 56) – BMNH 1930.8.26:60 (1 specimen: 173 mm SL). Accra, March 1935 (Irvine 302), specimen not found.

*Distribution:* Coast of tropical West Africa from Senegal to the Gulf of Guinea and Cape Verde Islands. Also occurs in the tropical western Atlantic.

Grows to a maximum length of 45 cm and common to 25 cm. Irvine's colour notes for *Callyodon hoefleri* (= *Scarus hoefleri*) appear to fit *S. rubripinne* more closely: "The colour is mottled brown above and on the sides, and pinkish beneath. The anal fin is red, the pectoral fins orange-coloured, and the pelvics red."

This fish lives in deep water among rocks. It is edible and very sweet.

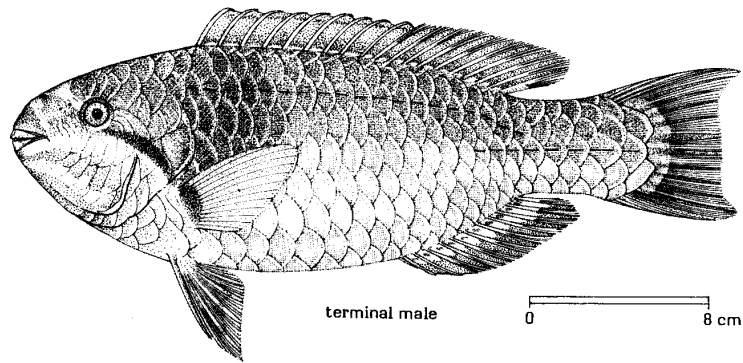
#### **Guinean parrotfish, Perroquet de Guinée**

*Scarus hoefleri* (Steindachner, 1882)

*Irvine name:* Specimen below was not listed in Irvine's book.

*Reference material:* Labadi, 1936, coll. K.W. Todd – BMNH 1938.12.15:21 (1 specimen: 345 mm SL).

*Distribution:* Coast of tropical West Africa from Senegal to the Congo.



Guinean parrotfish, *Scarus hoefleri*. (Fig. 99.)

Grows to a length of 60 cm and common to 40 cm.

## WEEVERFISHES (TRACHINIDAE) [64.]

A family of fishes with elongate, compressed bodies, covered with small smooth scales. The mouth is oblique, and there are bands of small pointed teeth in the jaws and on the roof of the mouth. There is a strong spine on each gill-cover, which is associated with a poison gland. The dorsal and anal fins are both long, and the soft-dorsal is preceded by a short spinous fin, the spines of which are grooved or channelled for the transmission of poison. The pelvic fins are placed in front of the pectorals.

These fishes, which are found in the Mediterranean, Black Sea and eastern Atlantic, live on the bottom, usually in shallow water, often lying more or less buried in the sand. They feed mainly upon small fishes and crustaceans. The poison spines are capable of inflicting a very painful wound, and in extreme cases fishermen have died from heart failure following a 'sting' from one of these fishes. The treatment, however, is very simple, and the injection of a few minims of a 5% solution of permanganate of potash (Condy's fluid) into the wound provides immediate relief and prevents inflammation.

Only two genera are known, with comparatively few species, of which six occur on the coast of the Gulf of Guinea and two were recorded from Ghana by Irvine.

### *Key to the tropical West African genera and species*

1. Soft rays of second dorsal and anal fins similar in length ..... 2  
Soft rays of second dorsal fin twice the length of anal rays ..... 5
2. 6–10 gill-rakers on lower limb of first gill arch ..... 3  
14 gill-rakers on lower limb of first gill arch; dorsal fin with 29–30 soft rays; anal fin with 29–30 soft rays; about 75–77 scales in lateral line ..... Guinean weever, *Trachinus armatus*
3. 6–7 gill-rakers on lower limb of first gill arch; dorsal fin with 25–29 soft rays (usually 25); anal fin with 25–27 soft rays; about 69 scales in lateral line ..... Starry weever, *Trachinus radiatus*  
10 gill-rakers on lower limb of first gill arch ..... 4
4. 12–14 nearly parallel oblique lines (sloping backwards and upwards) on body; dorsal fin with 26 soft rays; anal fin with 27–28 soft rays; about 61–62 scales in lateral line ..... Striped weever, *Trachinus lineolatus*  
1–3 longitudinal rows of more or less rounded to quadrangular dark spots or blotches on sides of body; dorsal fin with 28 soft rays; anal fin with 29–30 soft rays; about 79–80 scales in lateral line ..... Spotted weever, *Trachinus araneus*
5. About 82 scales in lateral line; a few irregular brown spots on body; fresh specimens with yellow band running from opercular spine to caudal fin (more or less parallel to lateral line) with a series of yellow spots below on body and above on dorsal fin membranes; dorsal fin with 27–28 long soft rays; anal fin with 29–30 short soft rays; eye diameter 27–29% of head length ..... Cape Verde weever, *Trachinus pellegrini*  
About 73 scales in lateral line; dark lines forming an irregular network on sides of body below lateral line; dorsal fin with 27 long soft rays; anal fin with 27–29 short soft rays; eye diameter about 25% of head length Sailfin weever

### **Sailfin weever, Vive peigne** *Trachinus collignoni* Roux, 1957

*Irvine name:* Weever – *Trachinus lineolatus* Fisch. Misidentification.

*Reference material:* Accra, 1936 (Irvine 210) – BMNH 1937.2.6:3 (1 specimen: 167 mm SL).

*Distribution:* Coast of tropical West Africa from Ghana to the Congo.

A small species, reaching a length of 15 cm. The colour of the specimen from Accra was said to be khaki brown.

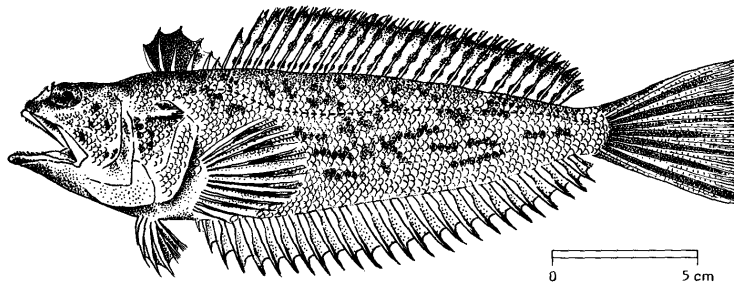
**Starry weever, Vive à tête rayonnée**  
*Trachinus radiatus* Cuvier, 1829

**lomole:** Ga. **obo:** Fante (Anomabu). **abobɔr:** Fante.

*Irvine name:* Weever – *Trachinus radiatus* C. & V.

*Reference material:* Teshi, May 1930 (Irvine 100) – BMNH 1930.8.30:6 (1 specimen: 282 mm SL); Winnebah, March 1933 (Irvine 177) – BMNH 1934.10.12:18 (1 specimen: 204 mm SL); Prampram, July 1938 (Irvine 267).

*Distribution:* Coast of West Africa from Morocco to Angola including the Canary Islands. Also occurs in the Mediterranean and on the coast of southern Portugal.



Starry weever, *Trachinus radiatus*. (Fig. 100.)

Grows to a length of 40 cm, common to 25 cm. The coloration of this species is somewhat variable. In general it is brownish, the colour being caused by a great number of small brown spots, close together. On the lower parts of the sides, the spots are fewer and paler (yellowish brown), and on the belly there are no spots. Between the brown spots on the flanks and on the head are most beautiful shades of pale blue and green. There is an intense black blotch on the spinous dorsal fin, and the soft part is spotted with brown. The caudal fin is covered with yellowish brown spots.

This is a deep-water fish, and the specimen from Teshi was caught by hooks. It is edible, although the fishermen assert that it is not. The Fante name *abobɔr* is from *bobɔr* (to dig through), because of its poisonous spine. The English name weever comes from an Anglo-Saxon word meaning viper.

**DUCKBILLS (PERCOPHIDAE) [64a.]**

Placed in the family Bembropsidae by Irvine. Now considered a subfamily within the Percophidae.

*Bembrops* Steindachner

The fishes of the subfamily Bembropinae live on the sea bottom in rather deep water, in the Indian, Pacific, and Atlantic Oceans. The head is broad and flat, with large eyes close together on the top. The mouth is large, with a prominent lower jaw; the upper jaw has a small flap of skin at its hind end. The pelvic fins are close together in front of the pectorals, on the throat. There are, two dorsal fins, the first consisting of six slender spines, the second of 13–18 soft-rays. The anal fin has 15–20 soft rays.

Two species of *Bembrops* have been recorded off West Africa, namely, *Bembrops greyi* Poll, 1959 and *B. heterurus* (Ribeiro, 1915). The specimens described by Cadenat in 1937 as *B. caudimaculata*, from the Gulf of Guinea are now considered to be *B. heterurus*. A specimen 22 cm long from Ghanaian waters was reported by Irvine. It was sent to the British Museum by Miss V. J. Foote, who stated that it was landed at Prampram by fishermen who had taken their canoes out of sight of land. Irvine considered that it might be an undescribed species. Unfortunately, the specimen could not be located at the Natural History Museum in London.

## STARGAZERS (URANOSCOPIDAE) [65.]

A family of fishes with box-shaped head, with a flat upper surface, and with the eyes placed on top of it. The mouth is large and nearly vertical in position. The body is less elongate than in the weevers, and the dorsal and anal fins are shorter. There is a pair of well-developed electric organs on the head just behind the eyes.

Found on the coasts of tropical and subtropical seas, generally where the bottom is sandy. Some eight genera and about 50 species are known, of which three species probably occur along the Gulf of Guinea coast, one of which was recorded by Irvine from the coast of Ghana. The other two species which may be expected are the Longspine stargazer (*Uranoscopus albesca* Regan, 1915) and the West African stargazer (*U. cadenati* Poll, 1959).

### Whitespotted stargazer, *Uranoscope à points blancs*

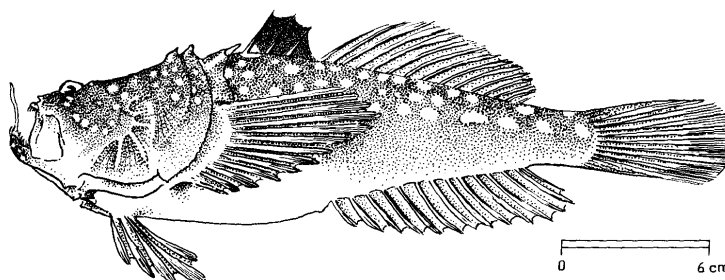
*Uranoscopus polli* Cadenat, 1953

ᵠᵠᵠ: Fante (Anomabu). kpotokui: Ewe.

*Irvine name:* Star-gazer – *Uranoscopus scaber* Linn. Misidentification.

*Reference material:* Anomabu, June 1930 (Irvine 111) – BMNH 1930.8.26:58 (1 specimen: 191 mm SL).

*Distribution:* Coast of West Africa from at least Ghana to Angola.



Whitespotted stargazer, *Uranoscopus polli*. (Fig. 101.)

Grows to a length of about 35 cm. The coloration is brown above and white beneath, with large white spots on the back and small spots of the same shade on the head. The spinous dorsal fin is black and the soft dorsal brown with white spots. The pelvic fins are brown.

This fish is caught in nets out at sea and is edible.

## SURGEONFISHES (ACANTHURIDAE) [66.]

Irvine used the older family name Teuthididae. Fishes with rather deep, compressed body, covered with very small scales, and with a characteristic erectile, lancet-like spine on either side of the caudal peduncle. The mouth is small, and is not capable of being drawn forward. There is a single row of cutting teeth in each jaw. The eye is small and placed high on the side of the head. The spinous part of the dorsal fin is shorter than the soft, and is continuous with the latter. The pelvic fins are placed below the pectorals.

Herbivorous fishes of tropical seas. The tail-spine, when erected, is capable of inflicting severe gashes when the tail is lashed from side to side. Some of the larger species are esteemed as food.

Six genera and about 72 species are known, of which one has been recorded from the mainland coast of West Africa.

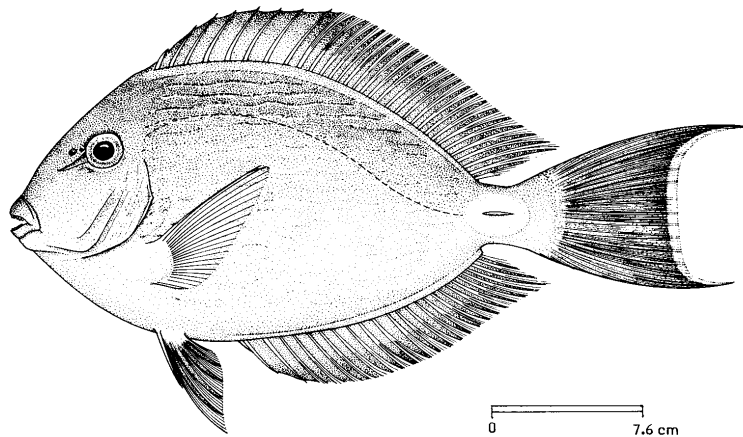
**Monrovia doctorfish, Chirurgien chas-chas**  
*Acanthurus monroviae* Steindachner, 1876

**fante adesã:** Ga, Adanme. (?) **awule:** Ga. **adesã mfantsi, alata mfantsi:** Fante (Anomabu). **adesã-mpɛkyuwa:** Nzima (Axim). **dokita:** Yoruba. **labulukun:** Ilaje.

*Irvine name:* Surgeon-fish – *Teuthis monroviae* (Steind.).

*Reference material:* Ningo, May 1930 (Irvine 80) – BMNH 1930.8.26:69-70 (2 specimens: 93.2, 253 mm SL); Accra., 1935 (Irvine 303–det. Ach. F.R.I. 1938); Accra, May 1938 (Irvine 257) – BMNH 1938.12.15:25 (1 specimen: 92.5 mm SL).

*Distribution:* Cape Verde Islands and coast of West Africa from Morocco to Angola over hard substrates.



Monrovia doctorfish, *Acanthurus monroviae*. (Fig. 102.)

Grows to a length of 45 cm, common to 38 cm. The colour is dark chocolate brown, with a yellow spot round the caudal spine. The fins are blackish brown, and the pectorals have a yellow coloration in the centre.

This fish is caught at no special time in *fanya* nets (A.P. Brown) and is edible.

Irvine noted that “No. 257 was determined at the British Museum as *Teuthis hepatus* (Linn.)”. Linnaeus’s name was based on three different species and is now recognised for the Indo-Pacific species *Paracanthurus hepatus*. The Atlantic species *Acanthurus chirurgus* (Bloch, 1787) was also among the three species lumped together by Linnaeus but *A.monroviae* was not.

**HAIRTAILS, CUTLASSFISHES, FROSTFISHES AND  
SCABBARDFISHES (TRICHIURIDAE) [67.]**

Silvery ribbon-shaped fishes, with elongate, compressed, naked body, which tapers to a slender point behind. The mouth is wide, and the powerful jaws are armed with strong, compressed, pointed teeth. A single long dorsal fin runs along the whole of the back. The anal fin has numerous spines, but these are minute or hidden beneath the skin. There is no caudal fin, and the pelvics are reduced to a pair of scales or are altogether absent. The lateral line is well marked.

Predacious fishes, swimming near the surface in tropical and subtropical seas. They feed mainly upon other fishes. Some of the species reach a large size and are used as food.

Nine genera and 32 species are known, of which four occur off the mainland coast of tropical West Africa and one was reported by Irvine off the coast of Ghana.

### Largehead hairtail, Poisson sabre commun

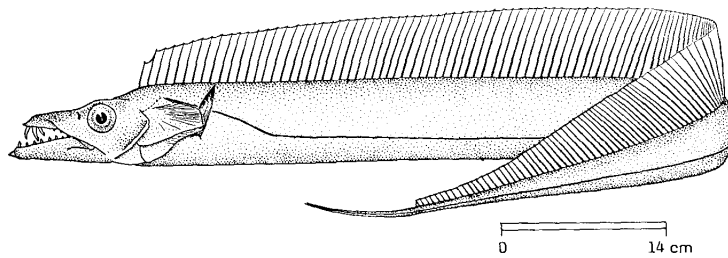
*Trichiurus lepturus* Linnaeus, 1758

**ɲwaɲwadzɔɲ:** Ga. **wawadzɔɲ:** Ga. **ɲʒɔɲ-onufu:** Ga. **wawagyan:** Fante. **wawanyan:** Fante. **ablaka:** Fante (Saltpond). **abraka:** Fante. **nwonwonyɔɲ:** Nzima (Axim). **anipaye:** Ewe. **oje:** Yoruba. **doje:** Ilaje. **bini ogidi, bini opia:** Ijaw.

*Irvine name:* Hair-tail or ribbon fish – *Trichiurus lepturus* Linn.

*Reference material:* Accra, Jan. 1930 (Irvine 25). Specimen not found.

*Distribution:* Off coast of West Africa from Morocco to Namibia. Elsewhere found in tropical and temperate waters of most oceans.



Largehead hairtail, *Trichiurus lepturus*. (Fig. 103.)

Grows to a length of 150 cm, common to 100 cm. The body is covered with a delicate silvery skin, and the silvery coating seems to come off when handled. The lateral line starts near the upper edge of the gill-cover, bends downwards, and then runs along the lower part of the body and parallel with it to the tail. The lower jaw protrudes beyond the upper. The strongest teeth are at the front of the upper jaw. Three prawns were found in the stomach of one specimen.

The hair-tail is edible, and, according to A.P. Brown, is caught from January to April in nets. It is often taken in a certain part of the sea near the shore called *bɛlɛɲ* in Ga. It is caught mainly in a net known as *oduma* in Ga.

The Ga name *ɲwaɲwadzɔɲ* is derived from *ɲwaɲwa* (silvery or shiny), and *dzɔɲ* (imitation), because the silvery substance comes off in the hands. The other Ga name means 'sea snake'.

About 30,000 tonnes of this species are caught in the region each year, making it an important fishery species.

### MACKERELS AND TUNAS. (SCOMBRIDAE) [68.]

Swiftly swimming fishes, with a pointed head, spindle-shaped body, and a powerful caudal fin with pointed lobes, placed at the end of a narrow caudal peduncle. The scales are usually small and thin, and are more or less embedded in the skin to reduce friction in the water. The spinous dorsal fin is composed of slender spines, and can be depressed into a groove in the back. Both the soft dorsal and the anal fins are followed by a series of isolated and much-branched separate little rays known as finlets. The muscles are powerful, and the flesh rich and oily. The skeleton is light and strong. The coloration is generally more or less silvery, with the back metallic blue or blue-green.

These are active, predacious fishes, mostly swimming near the surface of the sea, in tropical and temperate parts of the world. Many of them grow to a large size, and nearly all are valued as food. Some are popular as sporting fishes.

Fifteen genera and about 50 species are recognized, of which about eleven have been recorded from the Gulf of Guinea and seven were recorded by Irvine from Ghana. On average about 450,000 tonnes of scombrids are caught in the region each year, making this family one of the most important fishery groups.

*Key to the tropical West African genera and species*

1. Two small keels (above and below midline) on either side of caudal peduncle; 5 dorsal and 5 anal finlets ..... Chub mackerel, *Scomber japonicus*  
Two small keels and a large median keel (anteriorly) between them on either side of caudal peduncle; 7–10 dorsal and 7–10 anal finlets ..... 2
2. Teeth in jaws strong, compressed, almost triangular or knife-like; corselet of scales obscure ..... 3  
Teeth in jaws slender, conical, hardly compressed; corselet of scales well developed ..... 4
3. Snout length approximately 50% of head length; no gill-rakers; first dorsal fin with 21–27 spines; posterior end of maxilla concealed under preorbital bone ..... Wahoo, *Acanthocybium solandri*  
Snout length much less than 50% of head length; at least 6 gill-rakers present on first gill arch; first dorsal fin with 14–19 spines; posterior end of maxilla exposed ..... West African Spanish mackerel, *Scomberomorus tritor*
4. Upper surface of tongue without cartilaginous longitudinal ridges; rear of upper jaw reaching to hind margin of eye or beyond; first dorsal fin with 20–23 spines ..... Atlantic bonito, *Sarda sarda*  
Upper surface of tongue with 2 longitudinal ridges; upper jaw not reaching to hind margin of eye ..... 5
5. First and second dorsal fins widely separated, the space between them equal to length of first dorsal fin base; first dorsal fin with 9–11 spines ..... 6  
First and second dorsal fins barely separated, the space between them equal to eye diameter at most; first dorsal fin with 12–16 spines ..... 7
6. Corselet of scales well developed but narrow in its posterior part, no more than 5 scales wide under second dorsal fin origin; pectoral fins short, but reaching posteriorly past vertical line from anterior margin of scaleless area above corselet; pattern of 15 or more narrow, oblique to nearly horizontal, dark wavy lines in the scaleless area above lateral line ..... Frigate tuna, *Auxis thazard*  
Corselet of scales well developed in its posterior part, and 6–20 scales wide under second dorsal fin origin; pectoral fins short, not reaching posteriorly past vertical line from anterior margin of scaleless area above corselet; pattern of 15 or more fairly broad, nearly vertical dark bars in the scaleless area above lateral line ..... Bullet tuna, *Auxis rochei*
7. Three to five prominent dark longitudinal stipes on belly; 53–63 gill-rakers on first gill arch ..... Skipjack tuna, *Katsuwonus pelamis*  
No dark longitudinal stripes on belly; 19–45 gill-rakers on first gill arch ..... 8
8. Body naked behind corselet of enlarged and thickened scales; black spots usually present on sides between pectoral and pelvic fins; 26–27 pectoral fin rays ..... Little tunny, *Euthynnus alletteratus*  
Body covered with very small scales behind corselet; no black spots on sides between pectoral and pelvic fins; 30–36 pectoral fin rays ..... 9
9. Ventral surface of liver without striations; right lobe of liver much longer than left or central lobes; total gill-rakers on first arch 26–34, usually 27 or more; second dorsal and anal fins elongate and sickle shaped in larger specimens (> 120 cm fork length), their height more than 20% fork length ..... Yellowfin tuna, *Thunnus albacares*  
Ventral surface of liver with prominent striations; centre lobe longer than, or at least equal in length to, left and right lobes; second dorsal and anal fins short ..... 10
10. Caudal fin with narrow white posterior margin; anal finlets dark; pectoral fins remarkably long (over 30% of fork length in fish longer than 50 cm), reaching backwards well beyond end of second dorsal fin base (usually up to second dorsal finlet); maximum body depth at, or only slightly anterior to, second dorsal fin ..... Albacore, *Thunnus alalunga*  
Caudal fin without narrow white posterior margin; anal finlets bright yellow edged with black; pectoral fins moderately long (22–31% of fork length in fish over 110 cm FL), not reaching backwards to end of second dorsal fin base (except in small individuals where very long); maximum body depth near middle of first dorsal fin base ..... Bigeye tuna, *Thunnus obesus*



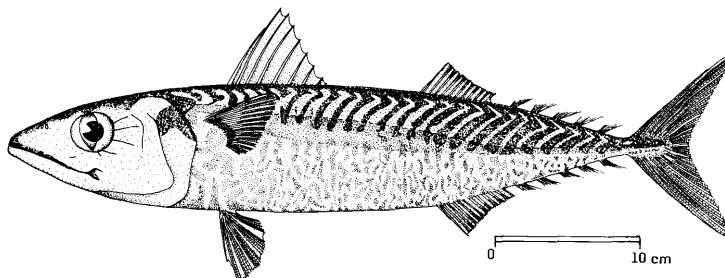
**Chub mackerel, Maquereau espagnol**  
*Scomber japonicus* Houttuyn, 1780

**saman or samarj**: Ga, Adan̄me. **daa**: Fante. **ɛdaya**: Fante (Saltpond). **adzaɖu**: Ewe. **ɛla**: Nzima (Axim). **sikosiwoi**: Ijaw.

*Irvine name*: Chub mackerel or Spanish mackerel – *Scomber colias* Gmelin. A junior synonym.

*Reference material*: Prampram, May 1930 (Irvine 84) – BMNH 1930.8.26:71 (1 specimen: 195 mm SL); Prampram, Sept. 1938 (Irvine 315).

*Distribution*: A cosmopolitan species found in temperate and subtropical waters of the Atlantic, Indian and Pacific oceans and adjacent seas.



Chub mackerel, *Scomber japonicus*. (Fig. 104.)

Grows to a length of 50 cm, common to 30 cm. The body is robust and almost cylindrical. The dorsal fin has nine or ten spines and five or six finlets. The coloration of the back is blue-black, with characteristic blue-grey striped ‘mackerel’ markings on the upper parts of the sides, and with pale grey spots on the flanks. The belly is white. The forked tail is yellowish.

This fish is caught far out at sea in nets or by hooks (?). A. P. Brown states that it is taken from June to September in *ali* nets and with lines. It is edible, and it is also much used as bait for catching other deep-sea fish.

The Ga name *samarj* probably means ‘a spirit’. The Nzima name *ɛla* perhaps refers to the frigate mackerel – ‘full of blood’.

On average about 130,000 tonnes of this species is caught in the region each year, making it a very important fishery species in terms of catch.

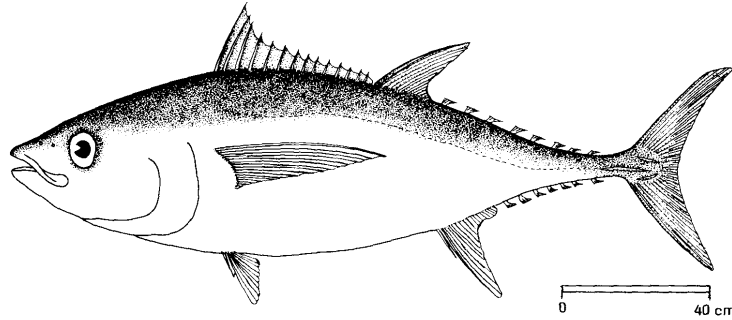
**Bigeye tuna, Thon obèse**  
*Thunnus obesus* (Lowe, 1839)

**ɔdaa**: Ga. **sikosiwoi**: Ijaw.

*Irvine name*: Little tunny – *Parathunnus obesus* (Lowe).

*Reference material*: Accra, July 1938 (Irvine 282, head and tail only) – BMNH 1938.12.15:22 (1 specimen: ca 210 cm HL).

*Distribution*: Pantropical species.



Bigeye tuna, *Thunnus obesus*. (Fig. 105.)

Reaches a fork length of 197 cm; common to 180 cm. There are 14 spines in the dorsal fin and 8 or 10 finlets. The coloration is bluish above, becoming silvery beneath, with purplish blue shades on the sides of the head. The soft dorsal and anal fins are blackish towards their margins and the finlets are distinctly yellow.

This is a food fish of excellent quality, and is caught by hooks in deep water, small bogue (*Boops boops*) – *likio-oto*, Ga – being used as bait. Many specimens are caught from April onwards, and the season continues until September, when this fish, as well as *Sɔi*, Ga (*Epinephelus?* – sea perch) and *tʃile*, Ga (sea bream) are used in the *hɔmɔwɔ* festival. Canoes with catches of 23, 24 or 25 fishes each were seen at Prampram in September 1938. Catches of 100–150 fish or even more are said to have been caught in the past at this locality. The fish are cut into large pieces (including the head, which is sliced longitudinally) and soaked. Part of the intestines are cut open, and have a ridged appearance like tripe. The fish contains much blood, but if hung up overnight, head downwards, much can be drained away. If fishermen would remove the guts of this fish when caught it would probably keep much better.

The Bigeye tuna is said to feed upon threadfins, sea breams and jack (*Caranx hippos*). On average about 70,000 tonnes of this species are caught in the region each year, making it a very important fishery species.

Two related tunas, the Yellowfin tuna, *Thunnus albacares* (Bonnaterre, 1788), and Albacore, *T. alalunga* (Bonnaterre, 1788), also occur in the Gulf of Guinea but were not recorded by Irvine. On average about 110,000 tonnes of Yellowfin tuna and 3,000 tonnes of Albacore are caught per year in the region.

Dr William Beebe, who did some work on the food of another species of *Thunnus* in Bermuda and the West Indies, reported squids as forming an important article of their diet, some of them being pelagic forms, and others luminous forms from greater depths. Certain other invertebrates, and also fishes, including some abyssal forms, were found in their stomachs.

### Atlantic bonito, Bonito à dos rayé

*Sarda sarda* (Bloch, 1793)

**sikosiwoi:** Ijaw.

*Irvine name:* Belted bonito or pelamid – *Sarda sarda* (Bloch.) and one specimen (A.P. Brown 1) mistakenly listed under *Scomberomorus tritor*.

*Reference material:* Accra, Jan. 1939 (Irvine 397) – BMNH 1939.7.12:31 (1 specimen: 322 mm FL); Labadi, 27 Jan. 1936 (A. P. Brown 1; head and tail only) – BMNH 1937.2.6:5 (1 head: 106 mm HL).

*Distribution:* In the eastern Atlantic known from Norway to South Africa including the Mediterranean and Black Seas. Also known from the western Atlantic from Massachusetts to northern Argentina.

Grows to a fork length of 85 cm; common to 50 cm. There are 20–23 spines in the dorsal fin and 7–9 finlets. The coloration is a rich bluish grey or bluish black on the back shading into brilliant silvery on the

flanks and belly. There are six or more characteristic dark blue stripes running backwards and slightly upwards on the upper parts of the sides. In young specimens dark cross-bars are present on the sides. The dorsal and caudal fins are dusky or slaty, the spinous part of the former being dark at the margin. The other fins are pale.

This is only a moderately good food fish. However, about 3,500 tonnes of this species are caught in the region each year, making it a quite an important fishery species. The fishery appears to have expanded greatly in the last few years.

**Little tunny, Thonine commune**  
*Euthynnus alletteratus* (Rafinesque, 1810)

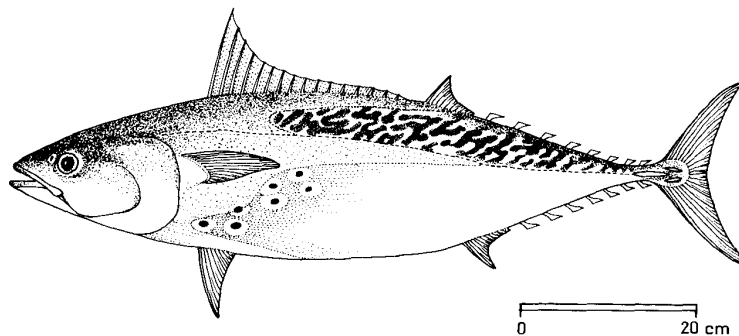
*Euthynnus alletteratus auroлитoralis*: p. 626, fig. 2b in Fraser-Brunner A (1949). On the fishes of the genus *Euthynnus*. *Annals and Magazine of Natural History* (Series 12), Vol. 2 (20), 622–627.

**odaabi:** Ga. **okpoku:** Ga. **sikosiwoi:** Ijaw.

*Irvine name:* False albacore or little tunny – *Euthynnus alleteratus* (Rafin.). One specimen (A.P. Brown 4) also misidentified as Frigate mackerel – *Auxis rochei* (Risso).

*Reference material:* Accra, Sept. 1938 (Irvine 338); Accra, Jan. 1939 (Irvine 390) – BMNH 1939.7.12:32 (1 specimen: 290 mm SL, 311 mm FL; HOLOTYPE of *Euthynnus alletteratus auroлитoralis* Fraser-Brunner, 1949); Labadi, Jan. 1935 (A.P. Brown 4) – BMNH 1937.2.6:2 (1 specimen: 300 mm SL, 321 mm FL; PARATYPE of *Euthynnus alletteratus auroлитoralis* Fraser-Brunner, 1949; listed under *Auxis rochei* by Irvine). Fraser-Brunner's subspecific designation, which separates West African ('southern' populations) of the species from 'northern' ones from the Mediterranean and North Atlantic (south to Senegal and Brazil), does not appear to have been recognised by later workers. The characters he used to separate the two subspecies were vague and the number of specimens examined very small (only the two specimens above for the 'southern' *auroлитoralis* subspecies).

*Distribution:* Coast of West Africa from Mauritania and Cape Verde Islands to Angola. Also known from the Mediterranean Sea and the western Atlantic.



Little tunny, *Euthynnus alletteratus*. (Fig. 106.)

Grows to a fork length of 100 cm; common to 85 cm. The dorsal fin has 14–16 spines and there are 7–8 finlets. The colour is steel blue above, becoming paler and more silvery on the flanks and belly. There may be some obliquely placed wavy stripes on the sides above the lateral line. The upper fins are all dusky, the lower, ones pale.

This fish is edible. On average about 3,000 tonnes of this species is caught in the region each year, making it an important fishery species. Catches have declined greatly since the early 1990s.

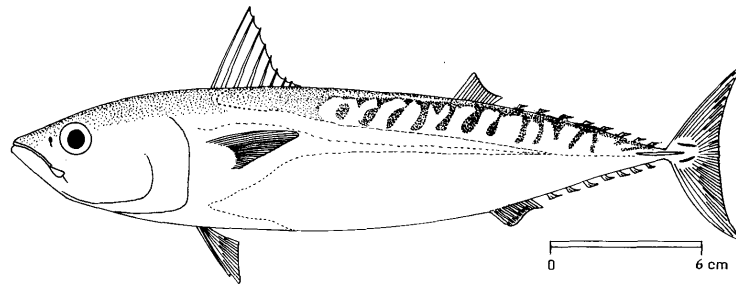
**Bullet tuna, Bonitou**  
*Auxis rochei* (Risso, 1810)

**okpoku:** Ga. **odaabi:** Ga (Nungwa). **pokupoku:** Fante (Winnebuh). **sikosiwoi:** Ijaw.

*Irvine name:* Frigate mackerel – *Auxis thazard* (Lacep.). Misidentification.

*Reference material:* Accra, June 1931 (Irvine 139) – BMNH 1932.27:17 (1 specimen: 296 mm FL).

*Distribution:* Cosmopolitan in warm seas.



Bullet tuna, *Auxis rochei*. (Fig. 107.)

Grows to a fork length of 40 cm; common to 35 cm. There are 10 or 11 spines in the dorsal fin and 8 finlets. The coloration is blue or bluish grey on the back, sometimes with darker streaks and blotches, and silvery white on the flanks and belly.

The frigate mackerels are edible and are caught by hooks in deep water. On average about 2,500 tonnes of *Auxis* spp. are caught in the region each year, making it a significant fishery species. The two species of *Auxis* (*A. rochei* and *A. thazard*) are not too difficult to tell apart (see key above) if you have fresh material in good condition but old museum material can be difficult to determine.

#### West African Spanish mackerel, Thazard blanc

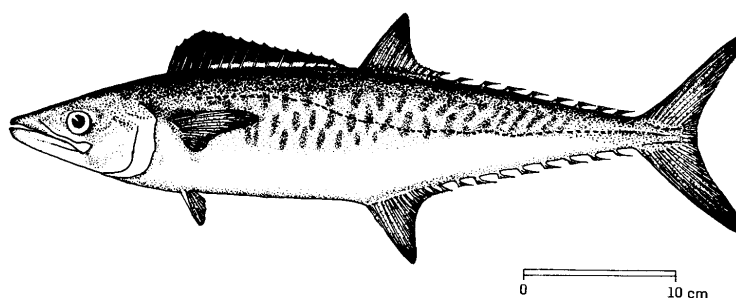
*Scomberomorus tritor* (Cuvier, 1831)

**saflo:** Ga, Aɖaŋme. **ɲwēi saflo:** Ga (Labadi; A.P. Brown). **kpikpiti:** Aɖaŋme (W.K. Bunner). **yaye:** Aɖaŋme (D. Benzies). **safur:** Fante. **safol:** Nzima (Axim). **adzaɖu, dzaɖu:** Ewe. **ayo:** Ilaje. **sikosiwoi:** Ijaw.

*Irvine name:* Spanish mackerel or kingfish – *Scomberomorus tritor* (C. & V.). Material listed under this species as: Labadi (A.P. Brown 1, head and tail only) is *Sarda sarda* (see above).

*Reference material:* Accra, Jan. 1930 (Irvine 16) – BMNH 1930.3.24:41 (1 specimen: 266 mm FL); Accra, 1935 (Irvine 304–det. Ach. F.R.I. 1938); Prampram, Sept. 1938 (Irvine 318).

*Distribution:* Coast of West Africa from the Canary Islands and Dakar to Angola. Enters estuaries.



West African Spanish mackerel, *Scomberomorus tritor*. (Fig.108.)

Grows to a fork length of 98 cm; common to 50 cm. General coloration slaty blue, darker blue on the back, paler on the flanks, and whitish on the belly. A series of short vertical greenish grey stripes on the sides. The spinous part of the dorsal, fin is black, the soft part greenish black. The anal fin and the finlets behind both dorsal and anal fins are greyish. The pectoral fins are dark grey and the caudal fin greenish black. Young threadfins (*Galeoides decadactylus*) and also young long-finned herrings (*Ilisha africana*) were found in the stomachs of Ghanaian specimens.

The fish is edible and is caught in numbers in seine nets, as well as in *ali* and *watɕa* nets. Brown states that it is generally caught from January to April and June to September, mainly in *watɕa* nets. The tail is sometimes eaten to cure sea-sickness.

According to M.B. Wilkie, *saflo* has a 'brother' called *samanflo* (= 'spirit's mackerel'?).

On average about 1,400 tonnes of this species are caught in the region each year, making it quite an important fishery species in terms of catch.

#### BILLFISHES, SPEARFISHES, MARLINS AND SAILFISHES (ISTIOPHORIDAE) [69.]

A family of large mackerel-like fishes of the open seas, distinguished by having the snout drawn out to form a pointed 'spear' which projects beyond the mouth. The elongate body is flattened from side to side, and is covered with scales, which take the form of elongate scutes. The caudal peduncle has two fleshy keels. The pelvic fins are present, and are placed below the pectorals. Sometimes considered a subfamily of the Xiphiidae.

Three genera and about 11 species are known, of which one occurs in inshore waters along the mainland coast of tropical West Africa and was recorded from Ghana by Irvine. Three or four other istiophorid species are likely to occur in offshore waters.

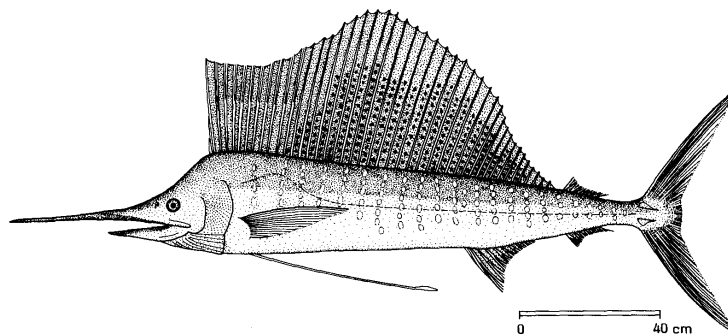
#### Atlantic sailfish, Voilier de l'Atlantique *Istiophorus albicans* (Latreille, 1804)

**onyankle:** Ga. **adziɛɛ-kwesi:** Adaɲme (Prampram; so called after man who first caught it). (?)  
**fetiso:** Fante (?) (cf. below). **ayo odo:** Ilaje. **abadi gbintolu:** Ijaw.

*Irvine name:* American sailfish – *Istiophorus americanus* C. & V. A junior synonym.

*Reference material:* Specimens were seen by Irvine in 1936 (January), and at the same time three lorry loads, each fish estimated to be about 1.5 m in length, were seen by Mr A.P. Brown at Labadi.

*Distribution:* Tropical and subtropical Atlantic.



Atlantic sailfish, *Istiophorus albicans*. (Fig. 109.)

Grows to a total length of about 3 m and common to 2.5 m long. This species may be readily distinguished by the enormous sail-like dorsal fin, which is blue in colour and ornamented with round darker blotches. The whole of this fin, as well as the front part of the anal and the slender pelvics, fold away into deep grooves in the body. The general colour of the fish in life is bluish black above, and silvery white on the sides and beneath. The anal fin is whitish, with the front lobe dusky, and the pelvics are black. The deeply forked caudal fin is greyish.

The sailfish is caught by hooks and is said to be difficult to haul into a canoe.

Although specimens were not examined or collected, there can be little doubt that the sailfish occurring on the coast of Ghana should be referred to Cuvier and Valenciennes's species [a junior synonym of *I. albicans*]. These authors state that it occurs on the Atlantic coast of Africa as well as on the

American side, and mention a specimen 2.1 m in length taken off Commendo (Commendah?), Ghana (?). This was said to be known to the Africans as 'Fetisso'.

On average about 1,100 tonnes of this species are caught in the region each year, making it an important fishery species in terms of value.

#### SWORDFISHES (XIPHIIDAE) [70.]

Very similar in appearance to the spearfishes and sailfishes, but, instead of being a rounded spear, the drawn-out rostrum forms a flattened sword. The body is, entirely devoid of scales in the adult fish, and the pelvic fins are absent.

There is only one genus known, and a single species, which is widely distributed in warm seas.

##### **Swordfish, Espadón**

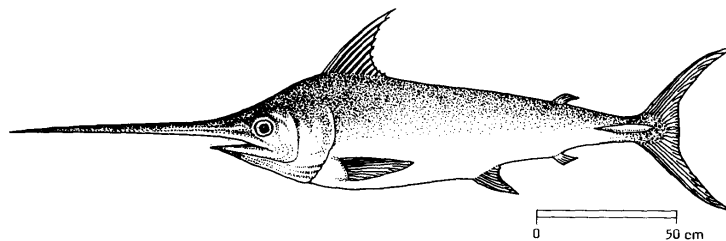
*Xiphias gladius* Linnaeus, 1758

**onyankle:** Ga. **akwesi-nyafĩ** 5: Adanme (Prampram). **gbintolu:** Ijaw.

*Irvine name:* Swordfish – *Xiphias gladius* Linn.

*Reference material:* No specimens obtained.

*Distribution:* Cosmopolitan in warm seas.



Swordfish, *Xiphias gladius*. (Fig. 110.)

Grows to a length of 4.5 m and common to 2.2 m long. The general coloration is purplish black above, becoming paler on the sides and whitish beneath. The fins are mostly dark bluish.

This is a speedy pelagic fish of the open ocean, a very powerful swimmer, which feeds mainly upon other fishes, squids and cuttlefishes. There are many stories and some reliable evidence of ferocious attacks by these fishes on whales, as well as on canoes and ships. In a number of cases the 'swords' have been left behind in the bottoms of vessels, having been broken off in attempts by the fishes to free themselves after making attacks on the boats, presumably mistaking them for whales.

The life history of this species is most interesting; the young swordfish is quite unlike the adult, the body being covered with small rough warts arranged in regular rows. At first both jaws are of equal length, but gradually the upper grows out beyond the lower and assumes the characteristic sword-like form.

In some parts of the world swordfishes are the object of extensive fisheries, individual fishes being singled out and harpooned in the same way as whales.

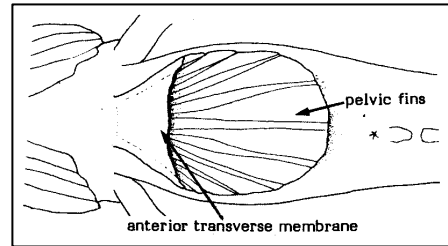
There is no doubt that this species is to be found off Ghana. Specimens up to 1.5 m in length were described as having been caught at Prampram, and it is said to be sometimes taken in seines near Kpone. One specimen to the east of Accra, between the years 1934 and 1937, was reported in the local papers to have transfixed a man through the head and killed him.

On average about 4300 tonnes of this species are caught in the region each year, making it an important fishery species in terms of value.

#### GOBIES (GOBIIDAE) [72.]

A family of fishes, mostly of small size, in which the two pelvic fins are generally united to form a cup-like sucking disk (see right), which is used for holding on to rocks. The spinous dorsal fin is short and composed of a few slender and flexible spines, and the soft dorsal is longer and similar to the anal. The caudal fin is typically rounded.

A few gobies occur in deep water and a few are found at the surface, but the vast majority live in rock-pools between tide-marks. Many of the species enter estuaries and even ascend rivers, and a number are permanently resident in fresh water. The diet is mainly carnivorous, including small fishes, crustaceans, worms, etc. Few of them are large enough to be of value as food.



Over 210 genera and almost 1,900 species are known from tropical and temperate seas, of which at least 23 occur on the mainland coast of tropical West Africa and five were recorded from Ghana by Irvine. Irvine included the mudskipper *Periophthalmus* in the Gobiidae, where it is now generally considered to belong, although it has often been placed in its own family Periophthalmidae. We consider it under the Gobiidae.

*Key to the tropical West African genera and species*

1. Eyes protruding and close together on top of head, almost entirely raised above dorsal profile of head, with a lower eyelid fold; two separate dorsal fins, first dorsal fin high with 11 long flexible spines; pectoral fins with long muscular bases; pelvic fins connected only between bases; mud-skipping on estuarine flats at low tide ..... *Periophthalmus papilio*  
 Eyes on sides of head or slightly raised above dorsal profile to, at most, mid-pupil level, without lower eyelid fold; dorsal fins separate or continuous; where separate, first dorsal fin usually with 6–7 flexible spines; pectoral fins without long muscular bases; pelvic fins typically united to form a disc but may be connected only between bases (in *Wheelerigobius*) ..... 2
2. Dorsal fins continuous; eyes small, eye diameter not more than 10% of head length; dorsal branched rays 15–21; on sand and mud, in brackish and inshore waters; grow to 36 cm ..... *Gobioides*  
 Dorsal fins separate; eye diameter greater than 10% of head length; branched rays of second dorsal fin 8–15; grow to 27 cm ..... 3
3. Pelvic fins almost separate, connected by a low membrane between their bases; uppermost and lowermost scales of caudal fin base with more or less elongate lateral ctenii; small marine species ..... *Wheelerigobius*  
 Pelvic fins united for at least half the fin length, usually forming a disc with an anterior transverse membrane; scales at base of caudal fin without elongate lateral ctenii ..... 4
4. Papillae on cheek in vertical as well as longitudinal rows; no longitudinal row along lower edge of eye ..... 5  
 Papillae on cheek in longitudinal rows only, including a row running at least around rear lower edge of eye ..... 13
5. Lower longitudinal row of cheek papillae (at level of lower jaw) extending posteriorly beyond last lower vertical row of cheek papillae ..... 6  
 Lower longitudinal row of cheek papillae (at level of lower jaw) ending at or anterior to last lower vertical row of cheek papillae ..... 8
6. Scales present on cheek; tongue bilobed; mouth inferior; 30–32 scales in lateral series; on sand, in or near reefs and rocks; grows to 6.5 cm ..... *Gnatholepis*  
 No scales on cheek; tongue rounded; mouth oblique; caudal fin pointed ..... 7
7. Upper longitudinal row of cheek papillae (about half way between bottom of eye and jaw angle) extending forwards to above 4<sup>th</sup> vertical row of cheek papillae (counting backwards); nape naked; about 35 scales in lateral series; second dorsal fin with one spine and 11 soft rays; anal fin with one spine and 12 soft rays; grows to 6 cm ..... *Ctenogobius lepturus*  
 Upper longitudinal row of cheek papillae (about half way between bottom of eye and jaw angle) extending forwards to 2<sup>nd</sup> vertical row of cheek papillae (counting backwards) forming a T-junction; scales present in front of first dorsal fin; about 60–63 scales in lateral series; second dorsal fin with 1 spine and 13 soft rays; anal fin with 1 spine and 14 soft rays; grows to 12 cm ..... *Gobionellus occidentalis*
8. Posterior margin of gill chamber with fleshy processes; mouth inferior, lower jaw shorter than upper; cheek naked; 60–70 scales in lateral series; brackish and freshwater; grows to 26.5 cm ..... *Chonophorus lateristriga*  
 Posterior margin of gill chamber smooth, without fleshy processes; mouth usually oblique, or if horizontal, cheek scaled ..... 9
9. Chin with paired barbels or fleshy lobes; inshore marine to freshwaters; grows to 13 cm ..... *Nematogobius*  
 Chin without processes ..... 10
10. Cheek with 3 vertical rows of papillae running from eye margin in front of upper longitudinal row of papillae; the latter joins a 4<sup>th</sup> vertical row at its anterior end; nape and cheek scaled; 29–33 scales in lateral series; body with dark vertical stripes (6 behind pectoral fin base); inshore marine, among rocks and in rock pools; grows to 4 cm ..... *Gorogobius nigricinctus*  
 Cheek with 4 vertical rows of papillae in front of upper longitudinal row of papillae; 2 lower vertical rows of papillae below upper longitudinal row; 32–67 scales in lateral series; body sometimes with narrow dark vertical bars ..... 11



11. Nape naked; uppermost pectoral rays not free from membranes; offshore sand and mud to sublittoral rock faces; grows to 11 cm ..... *Thorogobius angolensis*  
Nape scaled; uppermost pectoral rays more or less free from membranes ..... 12
12. Cheek with 3 vertical or oblique rows of papillae from eye margin to above longitudinal row of papillae below rear of eye; cheek scaled; at least in upper rear corner; intertidal; grows to 7–9 cm .....  
.....*Mauligobius nigri*  
Cheek with 2 vertical or oblique rows of papillae from eye margin to above longitudinal row of papillae below rear of eye; cheek rarely scaled; inshore, intertidal and estuarine; typically grow to 18 cm ..... *Gobius*
13. Longitudinal row of papillae on mid-cheek long, extending forwards to below at least middle or anterior part of pupil (if below middle, no head canals present); caudal fin pointed ..... 14  
Longitudinal row of papillae on mid-cheek shorter, extending forwards to below rear part of eye, or, if below middle of eye, head canals and free pectoral rays present ..... 15
14. Head canals present; no interorbital papillae; 30–35 scales in lateral series; body with series of short dark vertical marks below lateral midline; intertidal, brackish and freshwaters; grows to 15 cm .....  
..... *Porogobius schlegelii*  
No head canals; rows of interorbital papillae present; 25–28 scales in lateral series; offshore on mud or sand at 50–135 m depth ..... *Lesueurigobius koumansii*
15. Uppermost pectoral rays free from membrane; cheek with groove; 33–45 scales in lateral series; sublittoral, intertidal and estuarine; grows to 15 cm ..... *Bathygobius*  
Uppermost pectoral rays within fin membrane; cheek lacking groove; 23–27 scales in lateral series; brackish to freshwater; grows to 6 cm ..... *Yongeichthys thomasi*

**Frillfin goby (AFS)**

*Bathygobius soporator* (Valenciennes, 1837)

**akɔnɔ:** Adayme. **gbɔvilolo:** Ewe.

*Irvine name:* Goby or mapo – *Bathygobius soporator* (C. & V.).

*Reference material:* Ada, estuary of River Volta, Nov. 1938 (Irvine 365); mouth of River Ancobra, Jan. 1939 (Akpabla A 21). No specimens found.

*Distribution:* Shores of both sides of the tropical Atlantic: entering brackish water.

Grows to a length of about 15 cm but usually much smaller. Colour brownish, with dark streaks along the series of scales, and with irregular dark blotches or with dark cross-bands; the fins are brown, and the dorsal and caudal may be ornamented with small darker spots. *Bathygobius casamancus* (Rochebrune, 1880) is also present in the region.

**Schlegel's goby**

*Porogobius schlegelii* (Günther, 1861)

*Irvine name:* Schlegel's goby – *Acentrogobius schlegelii* (Günth.).

*Reference material:* No specimens collected by Irvine.

*Distribution:* Coast of tropical West Africa from Cape Verde Islands and Guinea-Bissau to Congo: entering rivers.

Grows to a length of about 15 cm. The general coloration is olive, and the back is darker. The fins are purplish. There is a dark curved purple line on each side of the head, running from the angle of the mouth to the upper border of the gill-cover. The base of the pectoral fin has a more or less distinct yellow spot margined with dark, and the anal fin has a black longitudinal streak. A series of pale spots may be present on the dorsal fins, and the caudal fin is sometimes ornamented with small pale spots.

The type of the species in the Leiden Museum, Holland, came from Boutry, Ghana.

### **Brown goby**

*Chonophorus lateristriga* (Duméril, 1858)

*Irvine name:* Brown goby – *Awaous guineensis* (Peters). A junior synonym.

*Reference material:* None.

*Distribution:* Brackish and freshwaters; lagoons, estuaries from Senegal to Angola.

### **African goby**

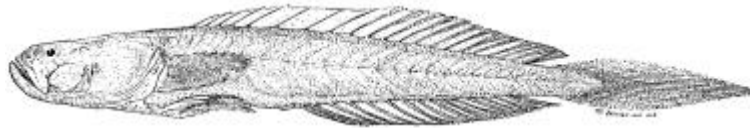
*Gobioides africanus* (Giltay, 1935)

**amã:** Ga.

*Irvine name:* Barreto – *Gobioides ansorgii* Bouleng. Misidentification.

*Reference material:* Accra, Nov. 1938 (Irvine 356) – BMNH 1939.7.12:33 (1 specimen: 132.3 mm SL).

*Distribution:* Coast of West Africa from Senegal to Congo: entering estuaries.



African goby, *Gobioides africanus* (from Giltay, 1935). (Fig. 112.)

Grows to a total length of about 15 cm. Characterised by its long body, oblique mouth, small eyes, and by the complete or nearly complete absence of scales. The coloration is greyish blue on the back and yellowish or creamy white below. The fins are greyish and the anal fin is whitish. *Gobioides ansorgii* Boulenger, 1909 is also present in the region and can be distinguished by its more elongate body. It has 19–21 soft dorsal rays compared to about 15 soft dorsal rays in *G. africanus*.

The specimen was believed to be a young example of *Brotula barbata*, as evidenced by the Ga name given to this fish.

### **Atlantic mudskipper, Sauteur de vase atlantique**

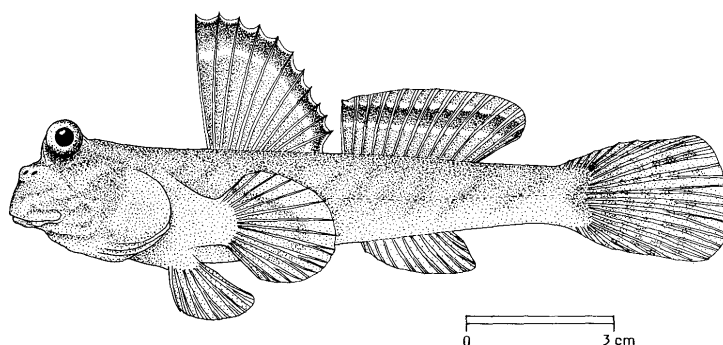
*Periophthalmus papilio* Bloch and Schneider, 1801

**putungpuli:** Ga. **lomole:** Ga. **adi:** Adanme (Addah). **(a)soetsi:** Fante (Cape Coast to Sekondi). **pitsir:** Fante. **mprabedi:** Fante. **sori-sori:** Fante (Anomabu). **sosobedzi:** Fante (Saltpond). **sakrobonto:** Nzima (Axim). **atramedjekakpui:** Ewe. **mbume:** Efik.

*Irvine name:* Mud-skipper – *Periophthalmus koelreuteri* (Pallas). Misidentification.

*Reference material:* Botiano Lagoon, near Accra, March 1930 (Irvine 72) – BMNH 1930.8.26:72-74 (3 specimens: 133.0–136.2 mm SL); no locality, 1931 (Plumptre) ?– BMNH 1934.10.12:19 (1 specimen: 98.2 mm SL).

*Distribution:* Coasts, lagoons and estuaries of tropical West Africa from Senegal to Angola including the Gulf of Guinea islands.



Atlantic mudskipper *Periophthalmus papilio*. (Fig. 111.)

Grows to a length of 25 cm. The general colour is of a khaki shade when young, and dull greyish when older, and the body is covered with pale blue stripes. The two dorsal fins and the caudal are bright blue, with pale blue stripes, and the anal is whitish.

This little fish is renowned for its habit of leaving the water and walking or skipping about on the sand or mud in search of food, using the stout pectoral fins after the manner of limbs. With its sickle-shaped pectoral fins it can skim along the surface of the water for considerable distances at great speed, and can also walk up the mud banks and climb on to the prop roots of the red mangrove (*Rhizophora racemosa*). After first curling its tail round it is able to jump. It is said to feed on a small lagoon crab known in Ga as *tʃitʃikuntu*, and also on the small breathing roots of the white mangrove (*Avicennia germinans*). While out of the water, the large gill-chambers are kept filled with air, so that the fish can breathe for a considerable time in its unusual habitat. The prominent, erectile eyes can be turned in all directions, an obvious advantage to a fish moving about out of the water. These fishes are quarrelsome and frighten each other by raising the dorsal fin.

The mud-skipper is not usually eaten by Man.

The Ewe name *atramedəkakpui* is derived from *atra*, red mangrove; *me*, among; *dəkakpui*, young man.

#### LABRISOMIDS (LABRISOMIDAE) [73.]

Small fishes, rather perch-like in appearance, with the body covered with scales. The dorsal fin has the spinous portion longer than the soft, or the whole fin is composed of spines. The mouth is capable of being drawn forward, and is armed with conical teeth. They may be distinguished from the perchlike fishes by the position of the pelvic fins, which are placed in front of the pectorals, and by the fact that the pelvics have fewer than five soft-rays.

They are mostly carnivorous fishes, living near the shore in tropical seas. Some 16 genera and about 100 species are known, of which one has been recorded from the mainland coast of tropical West Africa.

#### Hairy blenny

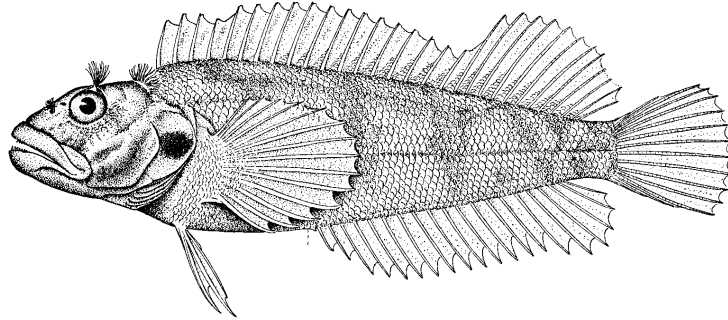
*Labrisomus nuchipinnis* (Quoy and Gaimard, 1824)

**abɛɛɛ:** Ga. **blɔkutʃo:** Adaŋme. **amoaboa:** Fante.

*Irvine name:* Hairy blenny – *Labrisomus nuchipinnis* (Quoy & Gaim.).

*Reference material:* Anomabu, near Cape Coast, June 1930 (Irvine 110) – BMNH 1930.8.26:75 (1 specimen: 85.0 mm SL), BMNH 1932.2.27:21-22 (2 specimens: 87.5, 97.6 mm SL); Prampram, Sept. 1938 (Irvine 329) – BMNH 1939.7.12:34 (1 specimen: 68.3 mm SL).

*Distribution:* Coasts on both sides of the tropical Atlantic.



Hairy blenny, *Labrisomus nuchipinnis*. (Fig. 113.)

Reaches a total length of 21 cm and common to 10–15 cm TL. The dorsal fin usually has 18 spines and 12 soft-rays. The general colour is dark brown or grey, often mottled with darker colour, and with four or five broad dark cross-bars on the body. The lower parts of the opercular region are pale green in colour, with brown marbled markings, and there is a large black spot on the hinder part of the gill-cover. The fins are often speckled or finely spotted with brown.

This fish is said to be edible, and is caught in spiral hand-nets by children on the shore.

#### COMBTOOTH BLENNIES (BLENNIIDAE)

Not listed by Irvine but a specimen of one species collected by him was found in the Natural History Museum collections. Another nine species of combtooth blennies may be expected off the mainland coast of tropical West Africa.

##### **Molly miller**

*Scartella cristata* (Linnaeus, 1758)

*Irvine name:* Not mentioned in his book.

*Reference material:* Elmina, nr. Accra, Ghana – BMNH 1935.5.20:1 (1 specimen: 48.5 mm SL).

*Distribution:* Eastern Atlantic from the Bay of Biscay to the Congo and in the Mediterranean. Also occurs in the tropical western Atlantic.

Grows to a length of 10 cm.

#### CUSK EELS AND BROTULAS (OPHIDIIDAE) [74.]

Placed in the family Brotulidae by Irvine. A family of fishes with elongate, gradually tapering bodies, which are usually covered with very small smooth scales. There are no spinous fin-rays, and the dorsal and anal fins, each of which has many rays, are united with the caudal fin to form a single continuous fringing fin round the body. The pelvic fins are each reduced to two filamentous or thread-like rays, bound together basally, and placed well in advance of the pectorals.

Almost 50 genera and about 210 species are known, mainly from the depths of the sea (continental slope, bathyal and abyssal depths), but the family also includes some forms from coastal waters of tropical seas, as well as one or two freshwater forms from the caves of Cuba. Only one species is likely to be found in inshore waters in the Gulf of Guinea and this was recorded by Irvine from Ghana.

##### **Bearded brotula, Brotula barbée**

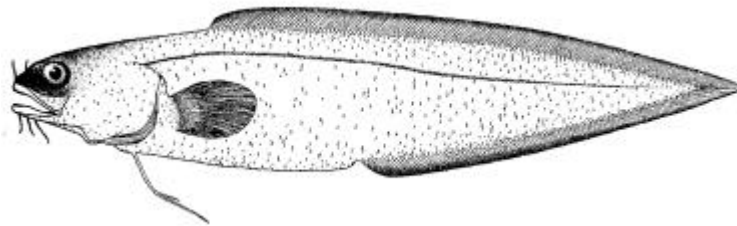
*Brotula barbata* (Bloch, 1801)

**amã:** Ga. **bõle:** Ga. **abobori:** Fante (Anomabu). **agɛ:** Ewe.

*Irvine name:* Brotula – *Brotula barbata* (Schneid.).

*Reference material:* Accra, Feb. 1930 (Irvine 41) – BMNH 1930.8.26:76 (1 specimen: 390 mm SL).

*Distribution:* Coast of tropical West Africa from southern Senegal to Angola. Also known from the tropical western Atlantic.



Bearded brotula, *Brotula barbata*. (Fig. 114.)

Grows to a length of 75 cm. Each jaw is provided with three barbels on each side. The fins in large specimens are more or less hidden beneath thick skin. The colour is brownish khaki. The fins have blackish margins.

Brotula is edible, and is caught from June to September, and at other times, with lines (A. P. Brown). Taken in *watŋa*, *toga* and *ali* nets and also by hooks, 3.5 cm long, baited with *maŋ* (herring) (Nortey).

This species is often miscalled 'haddock'. The Ga name *amã* is said to mean 'fool', because it is so easy to catch. M.B. Wilkie states that the word *amã* does *not* mean 'fool', and she also queries the name for this fish, and suggests that the proper Ga name should be either *omlẽge* or *bõle*.

On average about 450 tonnes of this species are caught in the region each year, making it a significant fishery species.

#### BUTTERFISHES AND FIATOLAS (STROMATEIDAE) [75.]

Similar in appearance to perch-like fishes, but distinguished by the fact that the gullet is large and muscular, and has small teeth on the inside. The mouth, is small, and has a single row of very small teeth in each jaw. The spinous dorsal fin, if this is developed, is formed of short or slender spines, and both the soft dorsal and the anal fin are long.

Many of these fishes are pelagic in habit, and feed on small crustaceans and other minute animals. Three genera and about 13 species are known, of which one occurs on the coast of the Gulf of Guinea.

#### **Butterfish, Fiatole**

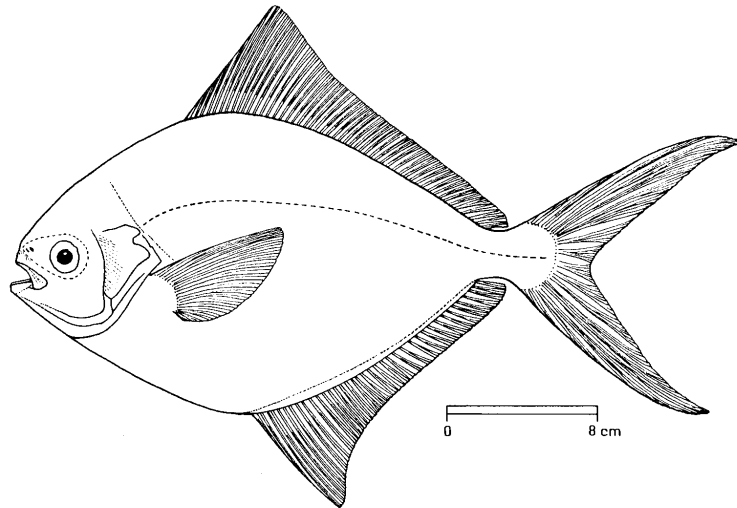
*Stromateus fiatola* Linnaeus, 1758

**kokole as ɔ:** Ga. **mamaniwa:** Fante. **kpetome-tsiyi:** Ewe. **nyeraba-kɔmele:** Nzima (fetish).

*Irvine name:* Butterfish – *Stromateus fiatola* Linn.

*Reference material:* Accra, May 1938 (Irvine 78) – BMNH 1930.8.26:68 (1 specimen: 281 mm SL).

*Distribution:* Mediterranean and eastern Atlantic from Morocco to South Africa.



Butterfish, *Stromateus fiatola*. (Fig. 115.)

Grows to a length of 50 cm and common to 40 cm. The body is covered with tiny scales. The pelvic fins are present in the young fish, but disappear with age. The colour is silvery grey, with large yellow spots along the back and three or four yellow stripes along the body from the gill-openings to the tail. The large forked tail is grey.

The butterfish is edible and considered to be of excellent quality. It is caught from June to September in seines (A.P. Brown).

The Ewe name *kpetome-tsiyi* is derived from *kpe* (a stone), *tome* (inside), because small 'stones', special toothed outgrowths of the oesophagus, are found inside it. It may refer either to otoliths universally present in bony fishes, or to special toothed outgrowths of the oesophagus, which are structures peculiar to the Stromateidae. *Tsiyi*, the name of the fish, also means 'surf'.

On average about 400 tonnes of this species are caught in the region each year, making it a significant fishery species.

## BARRACUDAS (SPHYRAENIDAE) [78.]

Large pike-like fishes, with elongate bodies, pointed heads, and powerful jaws, armed with strong, sharp-edged, pointed teeth. There is a small spinous dorsal fin with five strong spines, which is well separated from the short soft dorsal, which lies near the hinder end of the body and above the anal. The pectorals are situated rather low down on the body, and the pelvics are placed below the hinder parts of the pectorals. The caudal fin is more or less forked. Scales are small and smooth, and the lateral line distinct and straight.

These are voracious fishes, feeding on other kinds of fishes. They are very bold, and are much feared by bathers, who have sometimes been attacked without warning. The powerful jaws and teeth of these fishes are capable of inflicting terrible and often fatal injuries. Species of *Sphyraena* may enter mouths of rivers and even lagoons.

There is only one genus (*Sphyraena*) with about 20 species. Four species occur in the Gulf of Guinea and two or three were reported from Ghana by Irvine. On average about 6,000 tonnes of barracuda are caught in the region each year.

### *Key to tropical West African species*

1. Pectoral fins short, tips reaching well-short of pelvic fin origins when appressed to sides of body; origin of first dorsal fin above, or slightly anterior to pelvic fin origins; 120–150 pored lateral-line scales ..... European barracuda, *Sphyraena sphyraena*  
Tips of pectoral fins reaching to, or extending beyond pelvic fin origins when appressed to sides of body; origin of first dorsal fin posterior (at least slightly) to pelvic fin origins ..... 2
2. Less than 90 pored lateral-line scales ..... Great barracuda, *Sphyraena barracuda*  
More than 100 pored lateral-line scales ..... 3
3. 102–119 pored lateral-line scales; tips of first rays of appressed second dorsal and anal fins not reaching ends of last rays ..... Guachanche barracuda, *Sphyraena guachancho*  
122–140 (usually 125–132) pored lateral-line scales; tips of first rays of appressed second dorsal and anal fins reaching to ends of last rays ..... Guinean barracuda, *Sphyraena afra*

### **European barracuda, Bécune européenne**

*Sphyraena sphyraena* (Linnaeus, 1758)

**dzuelei:** Ga. **duadeε, duεlei:** Ga. **εηερε:** Nzima (Evalue). **kuta:** Yoruba. **dorou:** Ijaw.

*Irvine name:* Barracuda or barracouta – *Sphyraena sphyraena* (Linn.).

*Reference material:* Winnebah, March 1933 (Irvine 181) – BMNH 1934.10.12:20 (1 specimen: ca 350 mm SL); Accra, Sept. 1938 (Irvine 339) – BMNH Unregistered duplicate (1 specimen: 304 mm SL).

*Distribution:* Madeira, Canaries, Cape Verde Islands and coast of West Africa from Morocco to Angola. Also occurs in the Mediterranean and northwards to the Bay of Biscay, and in the western Atlantic.

Grows to a length of 165 cm and common to 60 cm long. The colour is silvery grey. The flanks are not yellowish as in the next species, but had several broad blackish chevroned markings.

The fish is edible, but there may be a danger from eating it at certain seasons, as there has been a report of food-poisoning after eating barracuda in Freetown, Sierra Leone. It is caught on hooks.

A barracuda seen by Irvine, which was 180 cm in length, was likely to have been the Guinean barracuda (*Sphyraena afra* Peters, 1844), but could have been the Great barracuda, *S. barracuda* (Walbaum, 1792), which is uncommon in the area.

### Guachanche barracuda, *Bécune guachanche*

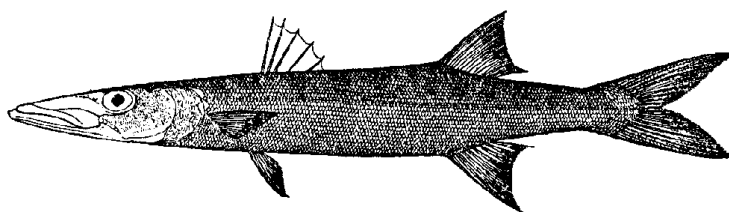
*Sphyraena guachancho* Cuvier, 1829

**odoe:** Ga. **nfii:** Ga. **namɔlo:** Adaŋme. **bielɛ:** Adaŋme. **odue, edoe:** Fante. **dwiredɛɛ:** Fante (Anomabu). **nkwantsin:** Fante (Winnebah). **eloẽ:** Nzima (Axim). **lidzi:** Ewe (Awuna). **kuta:** Yoruba. **ijakɛɛ okun:** Ilaje. **dorou:** Ijaw.

*Irvine name:* Barracuda or barracouta – *Sphyraena guachancho* C. & V.

*Reference material:* Accra, Jan. 1930 (Irvine 18); Accra, Sept. 1938 (Irvine 339); Accra, Jan. 1938 (Irvine 395) – BMNH Unregistered duplicate (1 specimen: 145 mm SL; in very poor condition and not determinable with certainty); Accra, Jan. 1939 (Irvine 396) – BMNH 1939.7.12:38 (1 specimen: 293 mm SL).

*Distribution:* Both sides of the tropical Atlantic. On the coast of West Africa known from Senegal to Angola.



Guachanche barracuda, *Sphyraena guachancho*. (Fig. 116.)

Grows to a length of 71 cm and common to 50 cm. The colour is bluish grey above and much paler beneath, with yellowish flanks. The sides of the head are silvery iridescent, and the hinder parts of the, gill-covers are very silvery. The caudal fin has a dark margin. Common in the area.

This fish is edible and is caught in seines when small and with hooks (?) when large. According to A.P. Brown, it is taken from January to April and from June to September in seines. It also occurs in brackish water, e.g. near Ada, and even in fresh water. It is savage and can give a severe bite.<sup>9</sup> When small it is called *odoe* in Ga and *odue* in Fante. When large it is called *nfii* in Ga and *dwiredɛɛ* in Fante.

*Sphyraena* sp.

Accra, 1935 (Irvine 306–det. Ach. F.R.I. 1938). Specimen not found.

### GREY MULLET (MUGILIDAE) [79.]

Fishes with rather elongate and usually silvery bodies, often with dark longitudinal stripes, and with a broad, scaly head. The smooth scales on the body are large or of moderate size and there is no lateral line. The mouth is small and the teeth either minute or absent. The spinous dorsal fin, composed of a few stiff spines, is well separated from the soft dorsal, which is more or less above the anal. The pectoral fins are high up on the sides, and the pelvics are placed more or less behind them. Each pelvic fin has a spine and five soft-rays.

These are coastal fishes of all tropical and temperate seas, especially abundant in bays and estuaries. Many of the species enter fresh water, and a few are confined to this habitat. Many of them swim in large shoals, especially when young. They feed very largely on decomposed animal, and vegetable matter contained in mud, but may also eat small shellfish or scrape the green seaweeds off stones or the piles of piers. The numerous gill-rakers provide a straining apparatus for separating the food from

<sup>9</sup> Dr Dixie reports the case of a fisherman at Elmina in 1928 having lost both hands after being bitten by a barracuda in the lagoon.



the mud, and the stomach is muscular and resembles the gizzard of a fowl. As in other mud-eating fishes, the intestine is lengthy and is closely coiled.

Nearly all the members of this family are valued as food. About 17 genera and about 70–80 species are known, of which six occur on the mainland coast of tropical West Africa and were recorded by Irvine from Ghana. On average about 10,000 tonnes of grey mullets are caught in the region each year.

*Key to the tropical West African genera and species*

1. Maxilla pad not visible below corner of mouth when mouth closed; adipose tissue on head extending over most of pupil; pectoral axillary scale well developed, usually more than 30% of pectoral fin length ..... 2  
 Maxilla pad visible below corner of mouth when mouth closed; adipose tissue on head forming a rim around eye; pectoral axillary scale absent or rudimentary ..... 4
2. 14–15 transverse scale rows between first dorsal fin origin and origin of pelvic fin; pectoral fin length 66.5–74% of head length; pectoral axillary scale 33–36% of pectoral fin length; 1–6 rows of fine teeth in upper lip, 1–4 rows in lower lip, outer row in both lips unicuspid, inner rows usually bicuspid; anal fin with 8 soft rays Flathead grey  
 11–12 transverse scale rows between first dorsal fin origin and origin of pelvic fin; pectoral fin length 70–84% of head length; without bicuspid teeth in lips ..... 3
3. Anal fin with 8 soft rays; pectoral fin length 70–77% of head length; pectoral axillary scale 31.5–33% of pectoral fin length; one row of slightly curved bristle-like teeth in both lips (second row at base of lower lip in smaller fish) ..... Banana mullet, *Mugil bananensis*  
 Anal fin with 9 soft rays; pectoral fin length 77–84% of head length; pectoral axillary scale 30–37% of pectoral fin length; 2–3 rows of teeth in upper lip, outer row long, curved, unicuspid, well-spaced, inner teeth much finer; teeth in lower lip similar ..... Curema mullet, *Mugil curema*
4. Anal fin with 11 soft rays; 6–8 rows of teeth in upper lip, outermost row unicuspid, inner rows bicuspid; usually only one (occasionally 2 or 3) mucous canals in dorsal scales preceding first dorsal fin; 35–37 scales in lateral series; pectoral fin length 90–93% of head length ..... Sicklefim mullet, *Liza falcipinnis*  
 Anal fin with 9 soft rays (rarely 8); 3 or less rows of teeth on upper lip ..... 5
5. 34–39 scales in lateral series; 1–3 rows of sparse short straight teeth in upper lip; 5–8 mucous canals in dorsal scales preceding first dorsal fin; pectoral fin length 90–96% of head length ..... Grooved mullet, *Liza dumerili*  
 25–29 scales in lateral series; 1–2 rows of scattered short teeth in upper lip; usually only one (occasionally 2 or 3) mucous canals in dorsal scales preceding first dorsal fin; pectoral fin length 84–95% of head length ..... Largescale mullet, *Liza grandisquamis*

**Flathead grey mullet, Mulet cabot**

*Mugil cephalus* Linnaeus, 1758

**naata:** Fante. **atoko:** Yoruba. **abraka:** Ijaw. **mumu:** Ga.

*Irvine name:* Grey mullet – *Mugil cephalus* Linn. and Golden grey mullet – *Mugil auratus* Risso. The latter (Irvine 130) is a misidentification. *Liza aurata* is recorded in the eastern Atlantic from the British Isles as far south as Senegal but does not appear to occur in the Gulf of Guinea.

*Reference material:* Lagoons near Accra (?), 1930 (Irvine 114); Keta, Nov. 1938 (Irvine 374 pt.) – BMNH 1939.7.12:36 (1 specimen: 375 mm SL); Sakumɔ Lagoon, Accra, May 1931 (Irvine 130) – BMNH 1932.2.27:19-20 (2 specimens: 91.0, 91.4 mm SL; listed under *Mugil auratus* by Irvine).

*Distribution:* Most warm seas: entering fresh water.

Grows to a length of 120 cm and common to 50 cm. Bluish grey above and paler beneath, with dark streaks along the series of scales. There is a more or less distinct dark spot at the base of each pectoral fin.

Occurs in lagoons and is edible.

**Banana mullet, Mulet banane**  
*Mugil bananensis* (Pellegrin, 1928)

**atoko:** Yoruba. **itoko agbokulu:** Ilaje. **apalagia:** Ijaw.

*Irvine name:* Lagoon grey mullet – *Mugil hoefleri* Steind. Misidentification. Irvine also listed a specimen (Irvine 374 pt.) under Grey mullet – *Myxus* sp.

*Reference material:* Botianò Lagoon, near Accra, March 1930 (Irvine 70) – BMNH 1930.8.26:67 (1 specimen: 99.6 mm SL); Keta, Nov. 1938 (Irvine 374 pt.) – BMNH 1939.7.12:37 (1 specimen: 96.1 mm SL).

*Distribution:* Coast of tropical West Africa from Senegal to Angola.

Grows to a length of 26 cm and common to 20 cm.

Found in shallow coastal and brackish lagoon waters and is edible.

**Thinlip grey mullet, Mulet porc (?)**  
*Liza ramada* (Risso, 1826)

*Irvine name:* Grey mullet – *Mugil capito* Cuv. A junior synonym.

*Reference material:* No specimens collected.

*Distribution:* Mediterranean and eastern Atlantic from Scandinavia to Cape Verde: entering freshwater. Unlikely to occur in Ghana.

Grows to a length of 70 cm, common to 35 cm. Grey or greyish olive above, with dark streaks along the series of scales, and silvery white beneath. The fins are greyish. There is often a very small dark spot where the pectoral fin joins the body.

Irvine notes: “This species has not been collected, and may not actually occur in Ghana, but young specimens recorded by Fowler from Ashanti as *Liza ramada* (Risso) may belong here”.

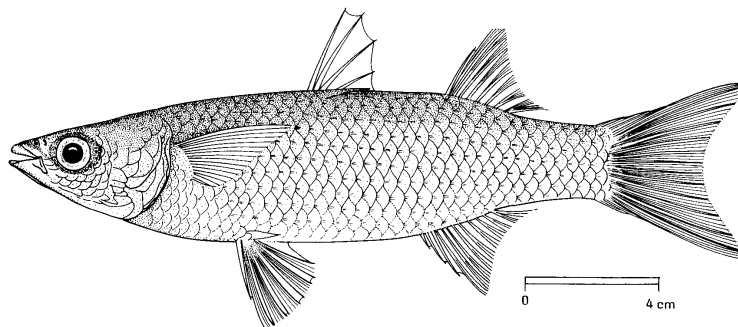
**Grooved mullet, Mulet bouri**  
*Liza dumerilii* (Steindachner, 1870)

**atumu-tfulo:** Ga. **laga:** Adanme (Ningo). (?) **anjadeawa:** Adanmc (Prampram). **nnataa:** Fante (Anomabu). **atoko:** Yoruba. **itoko olipe:** Ilaje. **itoko:** Ijaw.

*Irvine name:* Lagoon grey mullet – *Mugil hoefleri* Steind. A junior synonym.

*Reference material:* None. Specimen listed under this species appears to be a *Mugil bananensis* (see above).

*Distribution:* Coast of West Africa from Mauritania to South Africa. Neritic.



Grooved mullet, *Liza dumerilii*. (Fig. 117.)

Grows to a length of 28 cm and common to 18 cm. Dull grey above and silvery on the sides and beneath, with some rather indistinct dark streaks along the back. There is a black spot where the pectoral fin joins the body.

This mullet is edible, and is caught in small spiral hand nets. The Ga name *atumu-tfulɔ* is probably derived from *tumu* (rubbish heap), and *tfulɔ* (servant).

**Sicklefin mullet, Mulet à grandes nageoires**

*Liza falcipinnis* (Valenciennes, 1836)

**tafla:** Ga. **mumu:** Ga. **laga:** Adangme. **asentiwe:** Adangme. **nnaata:** Fante. **akpɔɔ, akpɔloɛ:** Ewe. **asenti:** Ewe. **atoko:** Yoruba. **itoko olipe:** Ilaje. **bomu izeghe:** Ijaw.

*Irvine name:* Grey mullet – *Mugil falcipinnis* C. & V.

*Reference material:* Anamabu, June 1930 (Irvine 112) – BMNH 1932.2.27:18 (1 specimen: 170 mm SL); south of Amedica, River Volta, May 1938 (Irvine 220), near Akuse, River Volta, May 1938 (Irvine 221) – BMNH 1938.12.15:54-55 (2 specimens (220 and 221): 143, 158 mm SL respectively); Prampram, Sept. 1938 (Irvine 331) – BMNH 1969.3.17:21-22 in part (1 specimen: 72.8 mm SL); Ada, estuary of River Volta, Nov. 1938 (Irvine 367); Keta, Nov. 1938 (Irvine 380) – BMNH 1939.7.12:35 (1 specimen: 176 mm SL); Fana, Sekumu Lagoon, near Accra, Nov. 1938 (Irvine 384) – BMNH 1969.3.17:21-22 in part (1 specimen: 84.7 mm SL).

*Distribution:* Coast of tropical West Africa from Senegal to Angola: entering fresh water.

Grows to a length of 33 cm, common to 25 cm. The front parts of the soft dorsal and anal fins are somewhat produced and sharply pointed, and the outer edges of the fins are distinctly concave, giving them a sickle-like appearance. The general colour is silvery, with the back brown or bluish grey and the belly whitish. The soft dorsal fin is slightly black at the tip, and the pectoral and anal fins are white. The caudal fin has a narrow black margin. There is a black spot where the pectoral fin joins the body.

This species is edible, and is caught, sometimes by children, with spiral hand-nets. No. 220, from the River Volta, was caught by two men with a mullet-net. It fed in shallow water at the sides of the river. Mud was found in the intestines. Small specimens (no. 380) were caught in seines at Keta. No. 384 was caught in lagoons with *faɲya* spiral-net by throwing pieces of cassava as bait.

A head of a grey mullet (no. 346), collected at Keta in September 1938, may perhaps belong here.

**Largescaled mullet, Mulet écailleux**

*Liza grandisquamis* (Valenciennes, 1836)

**atoko:** Yoruba. **itoko olipe:** Ilaje. **ngarakuro:** Ijaw.

*Irvine name:* Large-scaled grey mullet – *Mugil grandisquamis* C. & V.

*Reference material:* None.

*Distribution:* Coast of tropical West Africa from Senegal to Cameroon: entering rivers.

Grows to a length of at least 35 cm, common to 25 cm. The colour is golden, with the back greyish brown. The soft dorsal and the caudal fin have blackish margins.

This species was not collected, but Bleeker and Fowler have both recorded specimens from ‘Ashanti’.

**THREADFINS (POLYNEMIDAE) [80.]**

A family of fishes probably related to the grey mullets, distinguished by having the lower portion of each pectoral fin detached to form more or less long filaments, which are used as feelers. The body is robust, the scales large or of moderate size, and the lateral line distinct. The teeth in the jaws are feeble. The spinous and soft portions of the dorsal fin are well separated, and the former consists of a small number of spines. The pectoral fins are inserted low down on the side, and the pelvic fins, each of which has a spine and five soft-rays, are placed more or less behind them.

These are fishes of sandy shores of tropical countries, some of which enter rivers. Some of the species reach a large size and are valued as food fishes, while the air-bladders of some provide isinglass.

About seven genera and 35 species are known, of which three occur off Ghana and neighbouring countries in West Africa. All three species are important to local fisheries. On average about 24,000 tonnes of threadfins are caught in the region each year, making them very important to demersal fisheries.

*Key to the tropical West African genera and species*

1. Anal fin about twice as long as soft dorsal, with 28–30 soft-rays; margin of preopercle smooth; five very long pectoral filaments, exceeding body length ..... Royal threadfin, *Pentanemus quinquarius*  
 Anal fin about as long as the soft dorsal, or even shorter, with 11–12 soft-rays; margin of preopercle more or less toothed; pectoral filaments relatively short, not reaching anal fin origin ..... 2
2. Maxillary bone distinctly expanded posteriorly; four or five detached pectoral filaments, which are only slightly longer than the upper pectoral fin rays; 68–75 lateral-line scales ..... African threadfin, *Polydactylus quadrifilis*  
 Maxillary bone scarcely expanded posteriorly; nine or ten detached pectoral filaments, which do not reach behind tip of pectoral fin when appressed to body; 45–46 lateral-line scales ..... Lesser African threadfin, *Galeoides decadactylus*

**Royal threadfin, Capitaine royale**

*Pentanemus quinquarius* (Linnaeus, 1758)

**agblaanqmotʃɛŋ:** Ga. **ʃukweianyɛ:** Ga. **ankasa-ankasa:** Fante. **abɔdwe-abɔdwe:** Fante. **ankasa-ankasa:** Nzima (Axim). **gefia:** Ewe. **gɛlɛonu:** Ewe, Adaŋme (Atitsogbe). **onirungbon:** Yoruba. **oluroro, ilagba:** Ilaje. **akarakatika:** Ijaw.

*Irvine name:* Thread-fin – *Pentanemus quinquarius* (Linn.).

*Reference material:* Accra, Jan. 1930 (Irvine 26) – BMNH 1930.3.24:40 and BMNH 1930.8.26:65-66 (3 specimens: 94.0–109.1 mm SL); mouth of River Ancobra, Jan. 1939 (Akpabla A 17) – BMNH Unregistered duplicate (1 specimen: 132.5 mm SL).

*Distribution:* Coast of West Africa from Senegal to Angola: entering rivers.

Grows to a length of 35 cm, common to 25 cm. The back is grey or olive, and the general coloration silvery. The fins are yellow.

This species is edible, and is generally caught in seines. A.P. Brown states that it is taken from January to April and July to September in seine nets. Nortey states that it is caught in seines, *ali* and *toga* nets, and sometimes also with hooks baited with kenki: he gives the season as from October to February. According to Atitsogbe, it also occurs in fresh water.

The Ga name *agblaanqmotʃɛŋ* means ‘you must not pull an old man’s beard’. It is sometimes called *ʃukweianyɛ* in Ga, i.e. *ʃukwe* (mother), because it has a beard (*ʃukwe* – threadfin no. 14). The Fante names *abɔdwe-abɔdwe* and *ankasa-ankasa* both mean ‘beard’ and the Yoruba name *onirungbon* means ‘the bearded one’. The Ewe name *gefia* means ‘Chief or king of the beards’ (*ge*, beard; and *fia*, king or chief). The name *gɛlɛonu* is derived from *ge*, beard, *lɛ*, is present and *onu*, at its mouth. The English name threadfin is, of course, derived from the pectoral filaments. Prawns were found in the stomachs of Ghanaian specimens.

On average about 3,600 tonnes of this species are caught in the region each year, making it an important fishery species.

**Giant African threadfin, Gros capitaine**

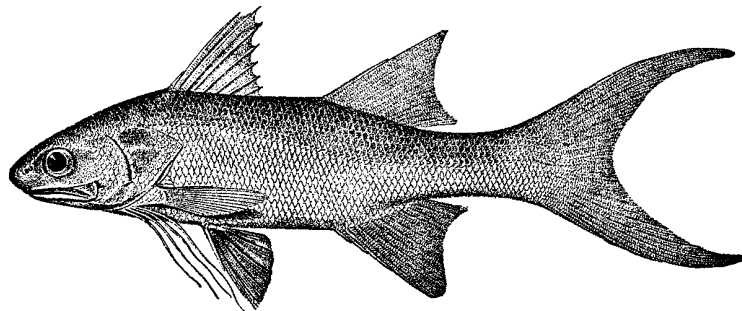
*Polydactylus quadrifilis* (Cuvier, 1829)

**Sikɔ, sikɔ:** Adaŋme, Ewe. **efun:** Yoruba. **ofon:** Ilaje. **nda:** Ijaw.

*Irvine name:* Threadfin – *Polydactylus quadrifilis* (C. & V.).

*Reference material:* Amedica, River Volta, May 1938 (Irvine 239) – BMNH 1938.12.15:56 (1 specimen: 163 mm SL).

*Distribution:* Coast of tropical West Africa from Senegal to Angola: entering rivers.



Great African threadfin, *Polydactylus quadrifilis*. (Fig. 118.)

Grows to a length of 200 cm; common to 150 cm. Grey or purplish grey above, white beneath. There is a dark spot on the gill-cover. The fins are yellow or grey.

This fish is said to be a bottom-feeder. It is edible and is caught with hooks. On average about 4,300 tonnes of this species are caught in the region each year, making it an important fishery species.

#### **Lesser African threadfin, Petit capitaine**

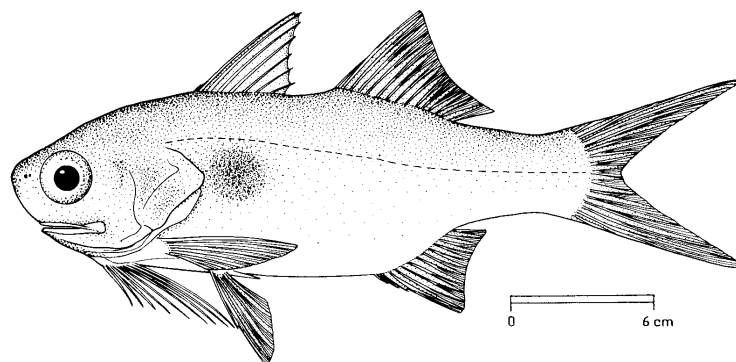
*Galeoides decadactylus* (Bloch, 1795)

**tʃukwe:** Ga. **sikɔ:** Adanme (M. B. Wilkie). **sukue:** Fante. **sukwe:** Nzima (Axim). **nukpɔtse:** Ewe. **nukpatse:** Ewe (Akpabla). **okpukpu:** Yoruba. **opupu:** Yoruba (Williams). **ofon odo:** Ilaje. **nda gbudu:** Ijaw.

*Irvine name:* Threadfin – *Galeoides decadactylus* (Bloch.).

*Reference material:* Accra, Jan. 1930 (Irvine 24) – BMNH 1930.3.24:39 (1 specimen: 116 mm SL); Prampram, July 1938 (Irvine 266); mouth of River Ancobra, Jan. 1939 (Akpabla A 18) – BMNH Unregistered duplicate (1 specimen: 172 mm SL).

*Distribution:* Coast of West Africa from Canary Islands to Angola: entering estuaries.



Lesser African threadfin, *Galeoides decadactylus*. (Fig. 119.)

Grows to a length of 45 cm and common to 30 cm. Greenish grey above, with some more or less distinct darker yellowish stripes running along the series of scales, silvery white on the flanks and beneath. There is a round dark spot on the side above the pectoral fin. On the lower side of the tip of the gristly and semi-transparent snout there is a black marking. The pectoral fins are dark.

This species is said to occur in lagoons as well as on the coast, and is certainly found also in fresh water. One specimen had some prawns in its stomach. It is generally caught in seines when small, and also in *toga* nets when larger. It is often dried and made into ‘stink fish’ and is either eaten in that state or when fresh. A.P. Brown states that it is taken from July to October.

The derivation of the Ewe name *nukpatse* is *nu* (mouth), and *kpitse* (sharp), probably because of the shape of the snout (Akpabla).

On average about 12,300 tonnes of this species is caught in the region each year, making it a very important fishery species.

### SCORPIONFISHES (SCORPAENIDAE) [81.]

A family of fishes very similar to the sea perches, but with a bony stay across the cheek. The body is robust and covered with scales. The head is usually more or less heavily armoured with spines and protuberances. The spinous dorsal fin is longer than the soft, and both dorsal and anal spines are strong.

These are carnivorous, bottom-living fishes, frequenting rocky shores all over the world. Many of them are valued as food. Some are viviparous.

About 56 genera and 390 species are known, of which about nine species occur in shallow (< 200 m deep) waters along the mainland coast of tropical West Africa and four were recorded by Irvine from the coast of Ghana. Several other species occur in deepwater offshore. On average about 2,200 tonnes of scorpionfishes are caught in the region each year.

#### *Key to the tropical West African genera and species*

1. Dorsal fin with 13 spines or more; roof of mouth without palatine teeth ..... 2  
Dorsal fin usually with 12 spines ..... 3
2. Suborbital ridge with 4 spinous points and one or two spines below main ridge; dorsal fin with 13–14 spines and 9–10 soft rays ..... *Scorpaenodes elongatus*  
Suborbital ridge with 2 spinous points, one under eye and one at end of ridge; no spines below main ridge; dorsal fin with 13 spines and 8–9 soft rays ..... *Scorpaenodes africanus*
3. Lateral line a continuous channel roofed by thin scales; supraocular and postocular spines absent (except in juveniles); scales tiny and cycloid; anal fin with 5 soft rays; pectoral fin with 20–25 rays .....  
..... Deepwater scorpionfish, *Setarches guentheri*  
Lateral line of tubed scales; supraocular and postocular spines present; scales on body ctenoid or if cycloid less than 80 vertical scale rows ..... 4
4. All pectoral rays unbranched; interorbital width 3.1–5.5% SL; total gill-rakers on first gill arch (including flat rudiments) 17–22 ..... 5  
Some pectoral rays branched, except in juveniles; interorbital width 4.1–9.0% SL; total gill-rakers on first gill arch (including flat rudiments) 13–18 ..... 6
5. Second anal spine long, about 1.5 (1.2–1.6) times orbit diameter; second and third dorsal fin spines usually notably elongate in specimens greater than about 130–150 mm SL; caudal fin of preserved specimens spotted, especially along dorsal edge of fin (sometimes faded); pectoral rays usually 17 (16–18) .....  
..... Accra scorpionfish, *Pontinus accraensis*  
Second anal spine about equal to orbit diameter (orbit diameter 0.9–1.2 into length of second anal spine); no dorsal fin spines notably elongate; caudal fin of preserved specimens entirely clear, or dusky distally in large specimens; pectoral rays usually 18 (17–18)..... *Pontinus leda*
6. Occipital pit absent; chest naked; pectoral fin rays 18–20 (usually 19); membranes between anterior spines of dorsal fin deeply cleft ..... Norman's scorpionfish, *Scorpaena normani*  
Occipital pit present ..... 7
7. Scales cycloid; pectoral fin base and chest scaled ..... *Scorpaena laevis*  
Scales ctenoid; pectoral fin base and chest naked ..... 8
8. Anterior mandibular pores united into a single opening (behind two chin pores), usually easy to locate; dorsal fin usually with 9 soft rays; preorbital bone with 3 spinous points over maxillary, posterior one pointing slightly to rear ..... *Scorpaena angolensis*

- Anterior mandibular pores separate (behind two chin pores), sometimes difficult to locate ..... 9
9. Spinous dorsal fin without a black spot; pectoral rays 18–20 (usually 19) ..... *Scorpaena elongata*  
 Spinous dorsal fin with large black spot around seventh to eighth spines; pectoral rays 17–19 (usually 18)  
 ..... *Scorpaena stephanica*

**Accra scorpionfish \*\***

*Pontinus accraensis* Norman, 1935

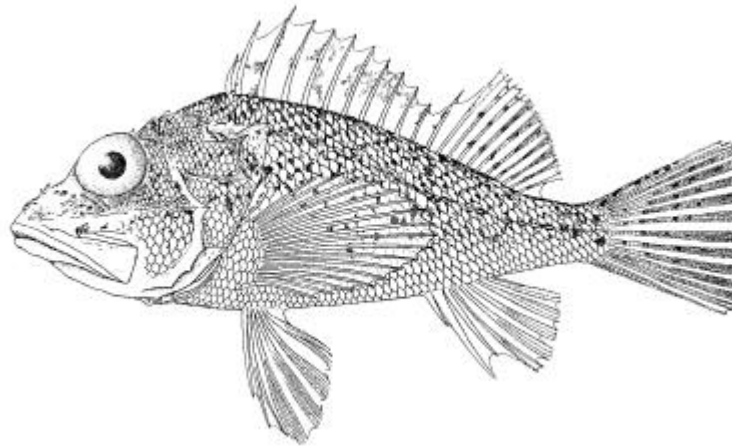
*Pontinus accraensis*: p. 23 in Norman JR (1935). Coast fishes. Part I. The South Atlantic. *Discovery Reports*, Vol. 12, 1–58.

**fɛ̃**: Ga. **fiɛ**: Aɗaŋme (Benzies). **akuɔnyumu**: Aɗaŋme (Benzies). **ka akɔwɛ**: Aɗaŋme (Benzies).  
**ɛfiɛn**: Fante (Saltpond). **ofien**: Fante (Anomabu). **ɛfiɛn**: Fante. **oko**: Yoruba. **adadi ogumu**: Ijaw.

*Irvine name*: Spinehead or scorpaenid – *Pontinus accraensis* Norman.

*Reference material*: Accra, Feb. 1930 (Irvine 40) – BMNH 1930.3.24:42 (HOLOTYPE: 173 mm SL).

*Distribution*: Mauritania, Senegal, throughout Gulf of Guinea to Angola.



Accra scorpionfish, *Pontinus accraensis*. (Not illustrated in Irvine’s book)

Maximum size of specimens is 18.5 cm but Irvine indicated that it is said to grow to a length of 60–90 cm. The general colour is red, and the upper parts of the sides are spotted with darker marks, the spots tending to form irregular rows along the body. There is another row of spots along the lateral line. The soft dorsal fin and the caudal are ornamented with small dark pots. The remaining fins are uniformly coloured.

This fish is edible and is caught by hooks. It was originally identified as *Pontinus kuhlii* (Bowdich, 1825), a species found in rather deep water off the coast of Portugal, Madeira, the Canaries, Cape Verde Islands, etc., but was afterwards recognized as a distinct species, of which the specimen from Accra is the type. Another specimen taken at Accra in 1935 (Irvine 308) may belong to this genus.

**Red scorpionfish, Racasse rouge (?)**

*Scorpaena scrofa* Linnaeus, 1758

*Irvine name*: Scorpionfish – *Scorpaena scrofa* Linn.

*Reference material*: Accra, July 1938 (Irvine 310); ‘Gold Coast’ (Irvine). No specimens found.

*Distribution*: Mediterranean and eastern Atlantic from British Isles to Senegal and Cape Verde Islands. Unlikely to occur in Ghana.

Grows to a total length of 50 cm. The coloration is very variable, but is generally reddish, reddish brown, or yellowish, and the head, body and fins are all marbled and spotted with darker brown. There is often a large black blotch on the hinder part of the spinous dorsal fin. The fish is edible.

### Scorpionfish

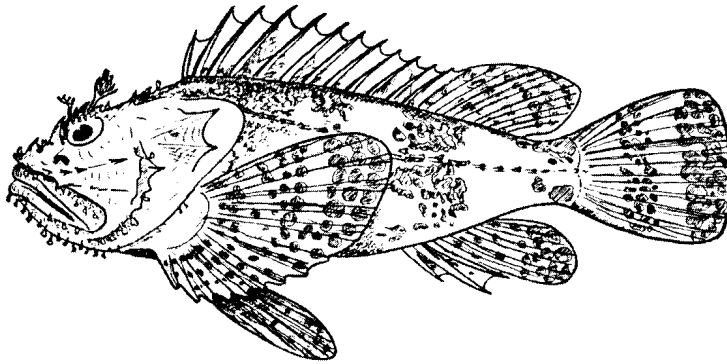
*Scorpaena laevis* Troschel, 1866

**amɔbapa:** Ga. **ɲmasaki:** Ga. **abɔbɔre** or **abɔbɔre-pa:** Fante (Anomabu). **womkweke:** Adangme (Prampram).

*Irvine name:* Scorpionfish – *Scorpaena laevis* Trosch. Also listed a second specimen (Irvine 65) as: Scorpionfish – *Scorpaena senegalensis* Steind. The latter name is a junior synonym of *S. laevis*.

*Reference material:* Prampram, July 1938 (Irvine 272) – BMNH 1938.12.15:24 (1 specimen: 136.1 mm SL); Accra, March 1930 (Irvine 65) – BMNH 1930.8.30:9 (1 specimen: 204 mm SL).

*Distribution:* Coast of West Africa from Mauritania to Congo including the Cape Verde Islands. Also reported from the Azores and Madeira.



Scorpionfish, *Scorpaena laevis*. (Fig. 120.)

Grows to a standard length of 35 cm. The colour is reddish brown above and on the sides, and reddish beneath. There are a number of irregular darker markings all over the fish, of which those on the fins tend to form more or less distinct bars. On the inner surface of each pectoral fin are some large dark brown or black spots.

For his description for *S. senegalensis* Irvine writes: “Grows to a length of about 37 cm. The coloration is brownish red marbled with darker above, and bright red beneath. There is a large black blotch between the 7<sup>th</sup> and 9<sup>th</sup> dorsal spines, and the soft dorsal fin is spotted. The anal fin is mottled, and the caudal is beautifully spotted with brown and white on a red background. The pectoral fins are red, mottled with brown and greenish white, and the pelvic fins are bright red”.

The fish is edible and is generally caught with hooks.

### GURNARDS (TRIGLIDAE) [82.]

A family related to the scorpionfishes, but distinguished especially by the big head and by the large pectoral fins, the three lowest rays of which are detached to form long and slender finger-like processes, which are used for walking about on the bottom as well as for searching in the sand or mud for food.

About 10 genera and 70 species are known, mostly from warm seas, of which five species occur on the mainland coast of tropical West Africa and one was recorded from Ghana by Irvine.

### Gabon gurnard, Grondin du Gabon

*Chelidonichthys gabonensis* (Poll and Roux, 1955)

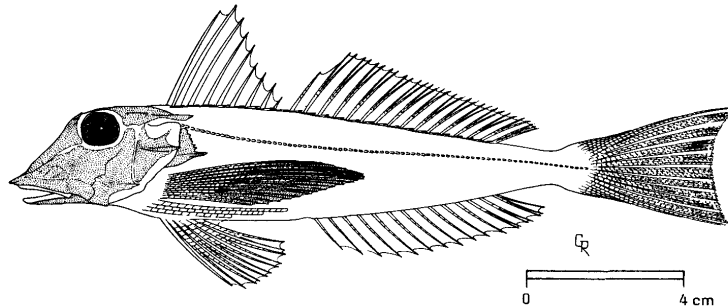
**abɛdɛɛ:** Ga. **kukuyaya:** Fante. **daŋkwaŋsire:** Fante.



*Irvine name:* Gurnard or tubfish – *Trigla hirundo* Linn. Misidentification.

*Reference material:* Accra, Nov. (?) 1930 (Irvine 125) – BMNH 1932.2.27:24-25 (2 specimens: 149, 150 mm SL).

*Distribution:* Coast of West Africa from Cape Verde to Angola.



Gabon gurnard, *Chelidonichthys gabonensis*. (Fig. 121.)

Reaches a length of about 32 cm; common to 20 cm. The general colour is red above and on the sides and white beneath. The pectoral fins are dark blue, and the pelvics white.

This fish is edible and is caught by hooks in deep water.

#### FLYING GURNARDS (DACTYLOPTERIDAE) [83.]

Another family of mail-cheeked fishes, in which the head is heavily armoured with bone, and each gill-cover has a very long, sharp spine. The body is covered with firm keeled scales. The rounded pectoral fins are even more enlarged than those of the true flyingfishes, and enable these fishes to make short flights through the air. The pelvic fins can be directed downwards and enable these fishes to walk on the sea bottom as if on stilts.

There are two genera and about seven species, all from tropical seas, of which one is found on the coast of the Gulf of Guinea.

#### **Flying gurnard, Poule de mer**

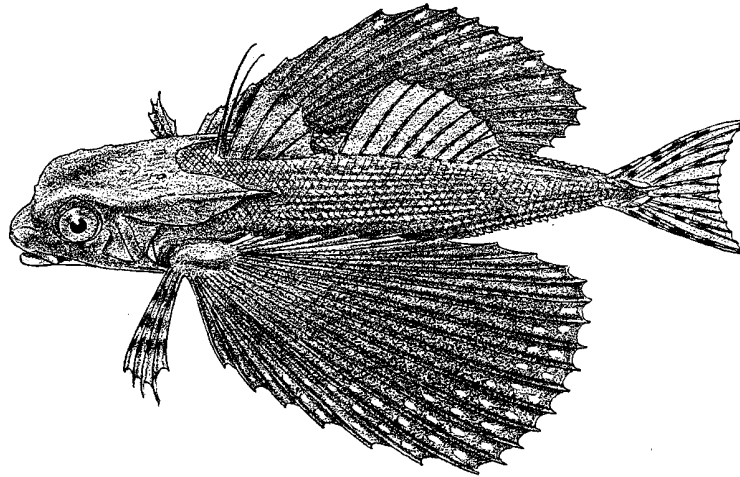
*Dactylopterus volitans* (Linnaeus, 1758)

'Flying robin' – **kpatakpatanyakū**, **tʃeŋtʃeɬe**: Ga. **flikilo**, **prompo**: Ga. **ɔpɛtɛbiaku**, **ŋkɔpuŋkɔpu**: Fante (Winnebah). **pampesire**: Fante (Winnebah). **pampesire**: Ahanta (Sekondi).

*Irvine name:* Flying gurnard – *Cephalacanthus volitans* (Linn.).

*Reference material:* Winnebah, March 1933 (Irvine 165) – BMNH 1934.10.12:22 (1 specimen: 240 mm SL); Accra, May 1938 (Irvine 252) – BMNH 1938.12.15:23 (1 specimen: 260 mm SL); 'Gold Coast' (Irvine).

*Distribution:* Both sides of the tropical Atlantic.



Flying gurnard, *Dactylopterus volitans* (from Norman). (Fig. 122.)

Grows to a length of about 30 cm. The colour is dull reddish, becoming pale pink beneath, with some blue spots down the back. The dorsal fin is covered with brown spots. The pectorals are blue, with brown and pale green spots and the pelvics have yellowish tips.

The fish feeds on prawns and other crustaceans. The power of flight is described as slight and it is said to fly after fishing canoes. It is edible, and is caught by hooks from deep-sea canoes.

The derivations of the vernacular names are as follows: *tʃɛŋtʃɛtʃɛ* Ga: supposed to represent its noise when caught; *ηκῶρυηκῶρυ*, Fante: supposed to represent its noise when caught in a net; *ῶπετεbiaku*, Fante, from *ῶπετε* (the vulture), and *biako* (one) (not quite clear).

#### SPINY TURBOTS (PSETTODIDAE) [84.]

A family of primitive flatfishes, in which the dorsal fin does not extend forward on to the head, and the front rays are spinous. Each pelvic fin is composed of a spine and five soft-rays. There is a supplemental bone above the maxillary, and teeth are present on the palatine bones on the roof of the mouth. The eyes may be on the right or the left side of the head.

A single genus and two species are known from West Africa, of which one occurs on the coast of Ghana and other Gulf of Guinea countries.

#### **Spottail spiny turbot, Turbot épineux tacheté**

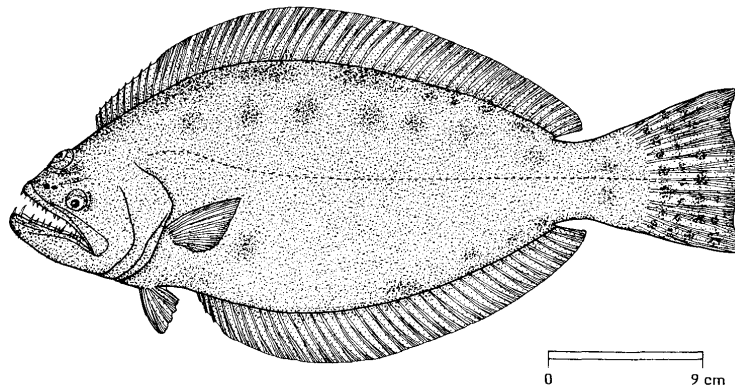
*Psettodes belcheri* Bennett, 1831

**anasɛ̃**: Ga, Adanɔme. **anese**: Ga (A. P. Brown). **anɔmsre**: Adanɔrne (Prampram). **balue**: Adanɔrne (Prampram-Bunner). **balue-luɔutʃɛ**: Adanɔrne (Prampram). **enimesɛ̃**: Fante (Saltpond). **enumsɛ̃**: Fante (Winnebuh). **enmisiin**: Fante (Anomabu). **nimesɛ̃**: Nzima (Axim). **asifome**: Ewe. **adza menyɪ**: Ewe. **abo eleyin**: Yoruba. **abolibo ghana, abo eleyin**: Ilaje.

*Irvine name*: *Psettodes belcheri* Bennett.

*Reference material*: Accra, Jan. 1930 (Irvine 38) BMNH 1930.3.24:43 (1 specimen: xxx.x mm SL).

*Distribution*: Coast of tropical West Africa from Sierra Leone to Angola.



Spottail spiny turbot, *Psettodes belcheri*. (Fig. 123.)

Grows to a length of 60 cm and common to 45 cm. This fish is distinguished from all the other flatfishes by having spines in the dorsal and pelvic fins, and by the fact that the upper eye, which is separated from its fellow by a flat space, lies on the dorsal surface of the head. The mouth is large and symmetrical, and the lower jaw projects beyond the upper. Some of the teeth have barbed tips. The coloration of the 'upper' side is brown or black, sometimes with irregular darker spots or blotches, and sometimes with small scattered white spots. The blind side is white. Both eyes may be *either* on the left or right side.

*Psettodes* is edible and of good quality. Small specimens are generally caught in seines, and larger ones by hooks in deeper water. According to A.P. Brown it is taken from June to September in *teṅgiraf* nets. The Ewe name *asifome* means 'the palm of the hand'.

#### LEFTEYE FLOUNDERS (BOTHIDAE) [85.]

A family of flatfishes in which the dorsal fin extends forward on the head at least to above the eyes, and all its rays are soft and flexible. The pelvic fins are without spines. There is no supplemental bone above the maxillary and no teeth on the roof of the mouth. The lower jaw is generally prominent. The eyes and colour are always on the *left* side of the fish.

This is a large family, including 20 genera and about 115 species of carnivorous fishes from most of the seas of the world. Nine species occur in the Gulf of Guinea (although two of these tend to occur only in waters over 100 m deep) and two were reported by Irvine from the coast of Ghana.

#### *Key to the tropical West African genera and species*

1. Pelvic fin bases unequal in length, that on eyed side much longer, the first rays inserted notably anterior to fin of blind side ..... 2  
 Pelvic fin bases about equal in length (both short), that on eyed side not inserted anterior to fin of blind side ..... 6
2. Mouth very large, maxilla more than 50% of head length, extending backwards well beyond hind margin of lower eye ..... Pelican flounder, *Chascanopsetta lugubris*  
 Mouth moderate to small, maxilla less than 50% of head length, not extending backwards to hind margin of lower eye ..... 3
3. Eyes separated by a flat concave space; interorbital width large (nearly equal to, or greater than eye diameter), wider in males; lower eye well in advance of upper eye; body depth generally greater than 50% of total length ..... 4  
 Eyes separated by a bony ridge or narrow concave space; interorbital width much less than eye diameter, similar in both sexes; lower eye only slightly in advance of upper eye; body depth less than 50% of total length ..... 5

4. Body depth 50–56% SL; maxilla 30–34% of head length; no notch in head profile above and in front of lower eye; 77–84 scales in lateral line; interorbital space not exceeding eye diameter in either sex ..... Guinean flounder, *Bothus guibei*  
 Body depth 55–62% SL; maxilla 27–31% of head length; a noticeable notch in head profile above and in front of lower eye; 80–92 scales in lateral line; interorbital space about 60% of eye diameter in females and immature specimens but much greater than eye diameter in mature males ..... Wide-eyed flounder, *Bothus podas*
5. Eyes separated by a scaled, concave space which is 30–40% eye diameter; 10–13 gill-rakers on lower limb of first gill arch; dorsal fin with 96–100 rays, anterior rays slightly elongate (50–65% of head length) and free from membrane in both sexes; 62–66 scales in lateral line; no markings on pelvic fins ..... Cape scaldfish, *Arnoglossus capensis*  
 Eyes separated by a bony ridge; 8–10 gill-rakers on lower limb of first gill arch; dorsal fin with 95–106 rays, the anterior 2<sup>nd</sup>–5<sup>th</sup> or 6<sup>th</sup> rays elongate (about as long as head) and thickened in males; immature males and females with anterior dorsal fin rays not or only slightly elongate; 58–63 scales in lateral line; a black spot on posterior part of pelvic fin on eyed side in males, less distinct, greyish, in females ..... Imperial scaldfish, *Arnoglossus imperialis*
6. Lateral line of eyed side describing a high arch over pectoral fin; no pectoral fin on blind side ..... 7  
 Lateral line of eyed side nearly straight throughout its length; pectoral fin present on blind side ..... 8
7. Body depth 36–42% SL; eye diameter 20–25% of head length; maxilla about equal to eye diameter ..... Mertens' moonflounder, *Monolene mertensi*  
 Body depth 30–36% SL; eye diameter 33–44% of head length; maxilla shorter than eye diameter ..... Smallmouth moonflounder, *Monolene microstoma*

8. Gill-rakers short and stout, 7–8 on lower limb of first gill arch; dorsal fin with 83–92 rays; anal fin with 64–74 rays; males with wide interorbital space and elongate upper pectoral fin rays; maxilla reaching backwards to below centre of eye; two rows of teeth in upper jaw, one row in lower jaw ..... Channel flounder, *Syacium micrurum*
- Gill-rakers moderately long and slender, 14–17 on lower limb of first gill arch; dorsal fin with 82–87 rays; anal fin with 62–65 rays; interorbital space narrow in both sexes; maxilla reaching backwards beyond a vertical through centre of eye; one row of teeth in both jaws ..... Smooth flounder, *Citharichthys stampflii*

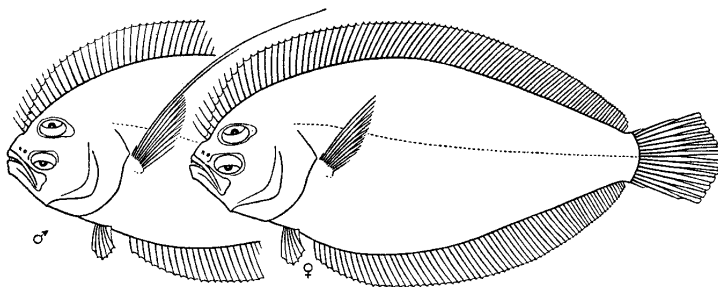
**Channel flounder, Fausse limande paté**  
*Syacium micrurum* Ranzani, 1840

**spa:** Ga. (?) **kombatokota:** Ga. **balue-nɔkɔ̃lɔ:** Adaŋme (Prampram). **futufutu:** Fante. **asifome:** Ewe. **abolibo:** Ilaje. **bumupali:** Ijaw.

*Irvine name:* *Syacium micrurum* Ranzani.

*Reference material:* Accra, Nov. 1930 (Irvine 121 A); Winnebah, March 1933 (Irvine 176) – BMNH 1934.10.12:21 (1 specimen: 240 mm SL); Keta, 1933 (Akpabla A 6).

*Distribution:* Coast of West Africa from Mauritania to Angola.



Channel flounder, *Syacium micrurum* (from Norman). (Fig. 124.)

Grows to a maximum length of 40 cm. The coloration of the ‘upper’ surface is dull greenish brown, that of the blind ‘lower’ side creamy. The dorsal, anal and caudal fins are usually spotted and speckled with dark brown, and there may be some irregular dusky cross-bars on the pectoral fins.

This fish is edible, and is caught in bottom nets and also by hooks. A.P. Brown states that it is taken from June to September in *teŋgiraf* nets.

The Ewe name *asifome* means ‘the palm of the hand’.

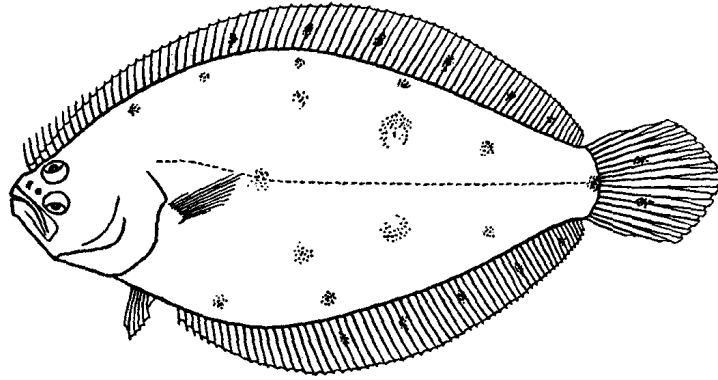
**Smooth flounder, Perpeire lisse**  
*Citharichthys stampflii* (Steindachner, 1894)

**balue:** Adaŋme. **afɔfome:** Ewe. **bumupali:** Ijaw.

*Irvine names:* *Citharichthys stampflii* (Steind.).

*Reference material:* Estuary of the River Volta (Ada), Nov. 1938 (Irvine 364 pt.). No specimens found.

*Distribution:* Coast of tropical West Africa from Senegambia to Angola: entering fresh water.



*Citharichthys stampflii* (from Norman). (Fig. 125.)

Grows to a length of 15 cm. The coloration is brown on the 'upper' side and white on the blind side, usually with some darker spots and blotches, and often with a series of conspicuous spots along the edges of the body. There is a dark blotch at the base of the caudal fin. Both dorsal and anal fins usually have a row of small dark spots, and there is a pair of similar spots on the middle of the caudal fin.

#### SOLES (SOLEIDAE) [86.]

A family of flatfishes distinguished from the preceding families in having the mouth more twisted towards the blind ('lower') side of the head, and the lower jaw shorter than the upper. The eyes and colour are always on the *right* side of the head.

Soles are found in most tropical and temperate seas, usually close to the shore in sandy places. They feed mainly at night, spending the day on the bottom buried in the sand.

About 20 genera and 90 species are known, of which at least five occur in inshore waters in the Gulf of Guinea, but only one was recorded from the coast of Ghana by Irvine. On average about 10,000 tonnes of soles appear to be caught in the region each year.

#### **Portuguese sole, Sole-ruardon commune**

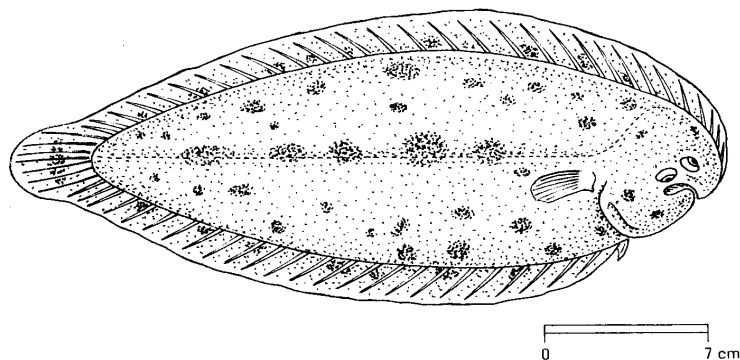
*Synaptura lusitanica* Capello, 1868

**didɛɛ-baa:** Ga. **balue:** Adanme (Prampram). **afɔfome:** Ewe.

*Irvine names:* Sole – *Synaptura lusitanica* Capello.

*Reference material:* Accra, Oct. 1930 (Irvine 120) – BMNH 1932.2.27:23 (1 specimen: 298.3 mm SL).

*Distribution:* Coast of West Africa from Morocco to Congo. Also occurs in the Mediterranean and northwards to Portugal.



Portuguese sole, *Synaptura lusitanica*. (Fig. 126.)

Grows to a length of 35 cm. The small mouth is much curved and twisted, and the very short, rasp-like teeth are found only in the jaws on the blind side of the head. The pectoral fins are very small. The long dorsal and anal fins are united with the caudal to form one fin fringing the body. The colour is greenish grey on the 'upper' surface and white beneath. The pectoral fin of the right side is brown, that of the left side white.

This fish is edible, but is not so frequently found as the tongue sole. It is caught from June to September in *teṅgiraf* nets (A.P. Brown).

The Ewe name *afɔfome* means 'the sole of the foot', because of the shape and general appearance of the fish.

#### TONGUEFISHES AND TONGUESOLES (CYNOGLOSSIDAE) [87.]

A family of flatfishes easily distinguished from the true soles by having the eyes and colour on the *left* side.

Three genera and about 110 species are known, of which seven occur in inshore waters off the mainland coast of tropical West Africa and one was recorded (under two different names) from Ghana by Irvine. One or two other species occur in deepwaters (> 200 m depth) offshore. On average about 5,000 tonnes of tonguesoles are caught in the region each year.

##### *Key to the tropical West African genera and species*

1. Pelvic fin connected with anal fin; lateral line(s) present on eyed side; snout hooked; mouth inferior ..... 2  
Pelvic fin free from anal fin; no lateral line on eyed side; snout not hooked; mouth anterior ..... 6
2. 2 lateral lines on eyed side; no lateral line on blind side ..... 3  
2 or 3 lateral lines on eyed side; one lateral line on blind side ..... 4
3. 12 caudal fin rays; 119–125 dorsal fin rays; 96–99 anal fin rays; midlateral line on eyed side with 84–91 scales; 14–16 scales between middle and upper lateral lines ..... Nigerian tonguesole, *Cynoglossus browni*  
10 caudal fin rays; 109–115 dorsal fin rays; 87–88 anal fin rays; midlateral line on eyed side with 68–72 scales; 11–12 scales between middle and upper lateral lines ..... Ghanaian tonguesole, *Cynoglossus cadenati*
4. Scales cycloid (smooth) on both sides; angle of mouth nearer to branchial opening than tip of snout; 2 lateral lines on eyed side; 12–14 scales between middle and upper lateral lines ..... Guinean tonguesole, *Cynoglossus monodi*  
Scales ctenoid on at least anterior part of eyed side, may be cycloid posteriorly; angle of mouth nearer to tip of snout than branchial opening; 2 or 3 lateral lines on eyed side ..... 5
5. Scales ctenoid on anterior part of eyed side, cycloid posteriorly and on blind side; 3 lateral lines on eyed side; 10–13 scales between middle and upper lateral lines ..... Canary tonguesole, *Cynoglossus canariensis*  
Scales ctenoid on eyed side, cycloid on blind side; 2 or sometimes 3 lateral lines on eyed side; 17–18 scales between middle and upper lateral lines ..... Senegalese tonguesole, *Cynoglossus senegalensis*
6. Small ctenoid scales absent from blind side dorsal and anal fin rays; blind side without pepper-dot pigmentation; eye relatively large, 12–15% of head length; peritoneum black; 72–91 scales in longitudinal series ..... East Atlantic tonguefish, *Symphurus nigrescens*  
Small ctenoid scales present on blind side dorsal and anal fin rays; blind side with pepper-dot pigmentation; eye relatively small, usually 7–9% of head length; peritoneum unpigmented or lightly spotted; 95–105 scales in longitudinal series ..... Guinean tonguefish, *Symphurus normani*

##### **Senegalese tonguesole, Sole-langue sénégalaise**

*Cynoglossus senegalensis* (Kaup, 1858)

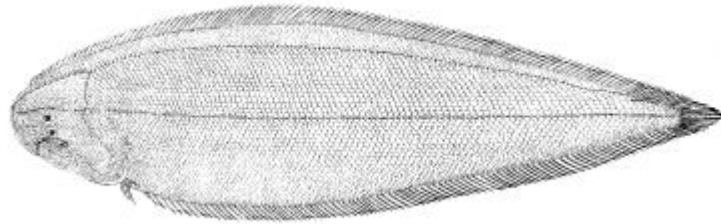
**didɛɛ-baa, didɛi-baa:** Ga. **didɛ-iba, balue:** Adaṅme (Benzies). **aberewawa:** Fante (Anomabu). **abrawan:** Fante (Dict. – 'a species of sole'). **aberewawɛŋ:** Fante (Winnebah). **afɔnkwãnsɛm:**

Fante (Anomabu). **aberewa nhon**: Fante. **ablewa**: Nzima (Axim). **afɔfome**: Ewe. **abo**: Yoruba. **pomuna**: Ijaw.

*Irvine names*: Tongue sole – *Cynoglossus goreensis* Steind. (a junior synonym) and *Cynoglossus senegalensis* (Kaup).

*Reference material*: Accra, Jan. 1930 (Irvine 17) – BMNH 1930.3.24:44 (1 specimen: 316 mm SL); Estuary of the River Volta (Ada), Nov. 1938 (Irvine 364 pt.) – BMNH 1939.7.12:39 (1 specimen: 245 mm SL).

*Distribution*: Coast of tropical West Africa from Senegal to Angola.



Senegalese tonguesole, *Cynoglossus senegalensis*. (Fig. 127.)

Grows to a length of 38 cm and common to 25 cm. The coloration of the left side is brownish grey to brown, that of the right side is white.

This fish feeds on seaweeds, particularly the green seaweed known as ‘sea lettuce’ (*Ulva*). It is much liked as food and is sold chiefly in the fresh state. A.P. Brown states that it is caught from June to September in *teŋgiraf* nets. According to Dr M.J. Field, it is caught from July to September in *soluya* and *teŋgirafiibibii* nets, which are left in the sea for a week and visited daily.

The Fante name *aberewa nhon* means ‘the skin of an old woman’ because it is dark brown and rough. The Fante name *afɔmkwānsēm* means ‘to stick on (the bottom of) the pot’ (i.e. when cooked) (*nwānsēm*, pot; *afɔm*, to stick). The Ewe name *afɔfome* means ‘the sole of the foot’ because of its shape and colour.

#### REMORAS AND SHARKSUCKERS (ECHENEIDIDAE) [88.]

A family of perch-like fishes in which the spinous dorsal fin is transformed into an oval, laminated sucking disk, which is placed on the flat upper surface of the head. When this disk is applied to the rough skin of a shark, or to another large fish or turtle, the transverse plates are slightly raised and a series of vacuum chambers created, by means of which adhesion is effected.

The remoras feed mainly upon larger fishes, which they chase in the water, and they merely attach themselves to larger fishes or marine animals to obtain transport from one feeding ground to another. Fishermen in various parts of the world make use of this habit to catch turtles and other animals, keeping buckets in their canoes containing captive remoras with a long line attached to a ring in the tail. The remora is released and when it is firmly attached to a turtle both are played carefully until the latter is drawn within reach of the boat.

Four genera and eight species are known from tropical seas, of which seven may be encountered in the Gulf of Guinea. One was reported by Irvine from the coast of Ghana.

#### Live sharksucker

*Echeneis naucrates* Linnaeus, 1758

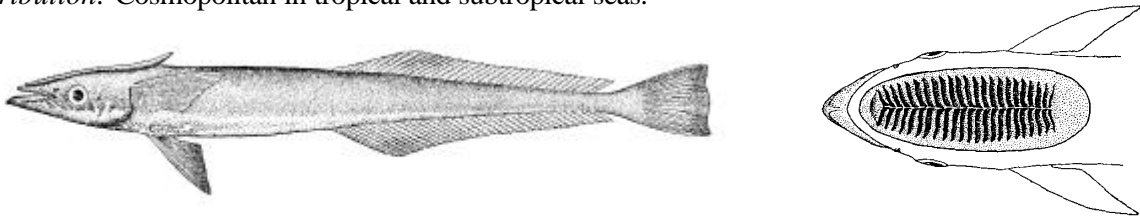
**fiādā**: Ga. **moble**: Ga (Labadi; A. P. Brown). **fiado**: Fante (Saltpond, Anomabu). **asifomi**: Fante, (Anomabu). **nfiado**: Ahanta (Sekondi). **fiado**: Nzima (Axim). **le vule vui**: Ewe.

*Irvine names*: Sucking-fish or shark-sucker – *Echeneis naucrates* Linn.



*Reference material:* Accra, Jan. 1930 (Irvine 7) – BMNH 1930.8.26:77 (1 specimen: 410 mm SL); Accra, Jan. 1935 (Irvine 309); Accra, Nov. 1938 (Irvine 355).

*Distribution:* Cosmopolitan in tropical and subtropical seas.



Live shark-sucker, *Echeneis naucrates*. (Fig. 128.)

Grows to a length of 90 cm. The body is comparatively slender, and the long soft-dorsal and anal fins occupy the hinder half of the body. The lower jaw protrudes well beyond the upper, so that the mouth opens on the upper surface. There are bands of tiny pointed teeth in the jaws, on the roof of the mouth, and usually on the tongue. There are 20 or more transverse plates or lamellae in the adhesive disk, each of which represents a much modified fin-ray. The pectoral and pelvic fins are about equal in size, the latter being placed directly below the former. The hinder edge of the caudal fin is more or less square-cut in the adult, but the middle rays are produced into a point in the young. The colour is blackish grey, the belly being almost as dark as the back, and there is usually a dusky band running along the side from the snout to the tail, sometimes with white edges. The soft-dorsal and anal fins are generally edged with white in front. The caudal fin is black, with outer angles white. The pectorals and pelvics are blackish.

This fish is edible, and is generally caught by hooks. A.P. Brown states that it is taken from June to September and at other times, and, according to Nortey, it is also caught in *ali*, *watɔa* and *toga* nets at no special season. It is able to attach itself to wreckage and to canoes as well as to fish, turtles and other animals, darting out from its shelter from time to time to feed. When attached to sharks the remora benefits by obtaining the remnants of its host's meals.

The Ewe name *levulevui* is derived from *le* (to hold), *vu* (a boat *le* (to, hold), *vui* (repetition of 'boat'), i.e. 'a fish which holds canoes', so called because it attaches itself to canoes. There is an old myth, dating from classical times, that the shark-sucker is able to impede or stop the progress of a vessel, and both the Greek name *Echeneis* and the Latin name *Remora* mean 'shipholder'.

#### TRIGGERFISHES (BALISTIDAE) [89.]

Fishes with a comparatively deep and compressed body, covered with large bony scales set edge to edge and regularly arranged. The mouth is small and the jaws are armed with relatively few large incisor-like teeth. The gill-opening on each side is represented by a small slit just in front of the pectoral fin. The first dorsal fin is composed of three spines, the first of which is much stronger than the others, and, when it is erect, this can be 'locked' by a small knob at the base of the second. If attempts are made to fold back this large spine by external pressure it generally breaks off short, but by depressing the third spine with the finger the first is automatically folded down with it - hence the vernacular name of 'triggerfish'. The soft-dorsal fin is long, or at least of moderate length, and is opposite to the anal. There are no pelvic fins, and these are replaced by a small thick spine at the end of a long movable pelvic bone.

These are mainly tropical fishes and are found close inshore, being especially abundant in the neighbourhood of coral reefs. The powerful teeth enable them to bore holes through the shells of molluscs and to devour the animals inside.

Some 11 genera and about 40 species are known, of which four are likely to be found in the Gulf of Guinea and two were recorded by Irvine from Ghana. On average about 75 tonnes of triggerfishes are reported to be caught in the region each year.

*Key to the tropical West African genera and species*

1. Scales above pectoral fin base and just behind gill slit much enlarged and partially separated, forming a flexible tympanum ..... 2  
Scales above pectoral fin base and just behind gill slit not enlarged and not especially well separated, not forming a flexible tympanum ..... Rough triggerfish, *Canthidermis maculatus*
2. Body covered in a regular pattern of large round blue or dark spots; dorsal and anal fins also with spots; first 3–4 rays in the second dorsal fin, elongate, filamentous and free of membrane distally in adult specimens ..... Bluespotted triggerfish, *Balistes punctatus*  
Body not covered in a regular pattern of large round blue or dark spots; anterior rays of the second dorsal fin may be elongate but never filamentous and free of membrane ..... 3
3. No blue lines on cheek ..... Grey triggerfish, *Balistes capriscus*  
Two blue lines on cheek running from above mouth to near pectoral origin; bluish lines radiating from eye ..... Queen triggerfish, *Balistes vetula*

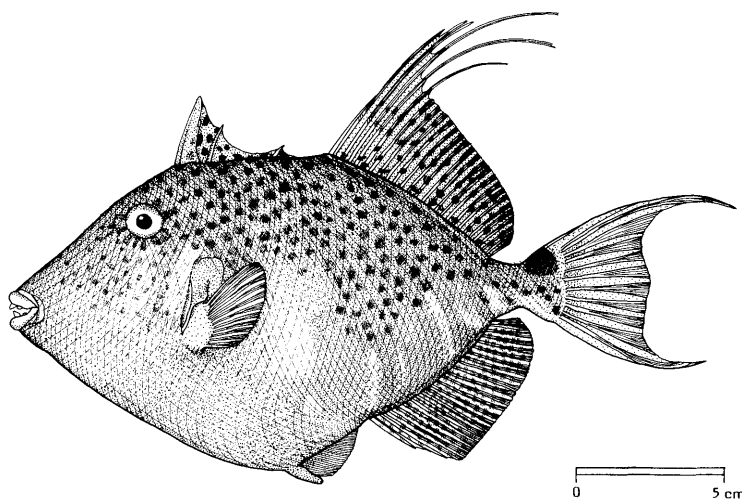
**Bluespotted triggerfish, Baliste à taches bleues**  
*Balistes punctatus* Gmelin, 1788

**awule kapenta:** Ga. (?) **tsetfɛŋku:** Ga. **tsetfekutʃeku:** Ga (Accra). **awuleŋ tsetʃeku:** Ga (Wilkie). **awule:** Adaŋme. **toa, towa or tuwa:** Adaŋme. **ewure-paku:** Fante (Anomabu). **kyekyeku:** Fante. **ewure:** Fante. **ewure kyekyeku:** Fante. **awule kyekyeku:** Fante. **awule:** Fante. **awule kapenta:** Fante. **ɛwure:** Ahanta (Sekondi). **kyekyeku:** Nzima (Axim). **fume ha:** Ewe. **agbo:** Ewe. **akpaŋgbã:** Ewe. **akpaŋgbadzoɔke:** Ewe.

*Irvine name:* Triggerfish – *Balistes forcipatus* Gmelin. Misidentification.

*Reference material:* Accra, Jan. 1930 (Irvine 13) – BMNH 1930.3.24:45 (1 specimen: 261 mm SL), BMNH 1930.8.26:78 (1 specimen: 170 mm SL); Accra, Jan. 1939 (Irvine 399) – (?) BMNH Unregistered duplicate (1 specimen: 200 mm SL).

*Distribution:* Both sides of the tropical Atlantic.



Bluespotted triggerfish, *Balistes punctatus*. (Fig. 129.)

Grows to a length of at least 45 cm (possibly 60 cm) and common to 20 cm. The colour is bluish grey, spotted with brown, the spots being more marked near the upper edge of the body. There is a large orange marking behind each pectoral fin and a black spot in front of the caudal fin. The soft dorsal fin and sometimes the anal fin is spotted with a darker colour.

This fish is said to be edible, but is not liked by the Gas in the fresh state, being generally salted first. According to A.P. Brown, it is not eaten by the Gas. Some of the species of this family are known to be poisonous as food.

This triggerfish is generally taken from June to September with lines, but may be caught in seines.

The Ga name *awule kapenta* means 'Mrs (?) Carpenter', because the fins are like knives, chisels, etc. The Ewe name *akpaɲgbadzodeke* is derived from *akpaɲgba* (the fish's name), *dzo* (a horn), and *dɛke* (one), i.e. 'a fish with one horn'. The Ewe name *fume ha* means 'sea pig', and the name *akpaɲgba* means 'an antelope', and *agbo* means 'a ram', probably because of its 'horn'.

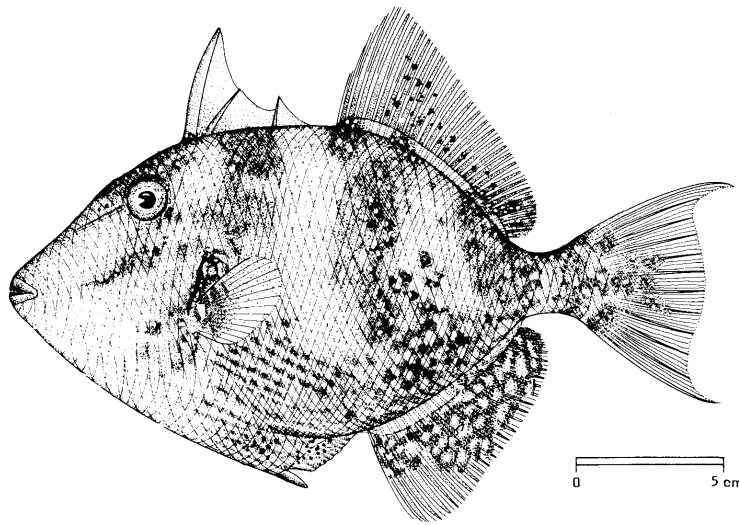
**Grey triggerfish, *Baliste cabri***  
*Balistes capriscus* Gmelin, 1788

(For vernacular names cf. *Balistes punctatus*) also **abadi lepam**: Ijaw.

*Irvine name*: Triggerfish – *Balistes capriscus*.

*Reference material*: Accra, 1931 (Irvine 140) – BMNH 1932.2.27:26 (1 specimen: 275 mm SL).

*Distribution*: Both sides of the tropical Atlantic.



Grey triggerfish, *Balistes capriscus*. (Fig. 130.)

Grows to a length of at least 45 cm (may reach 60 cm); common to 20 cm. The colour varies a good deal, but is generally brownish, with or without a few blue spots on the body. There is often a narrow whitish line from the chin to the lower corner of the mouth. The fins are brownish, sometimes spotted or streaked with pale blue. In some years, substantial numbers of this species are caught in the region, with a reported catch of about 50 tonnes in 1996.

**TRUNKFISHES (OSTRACIIDAE) [90.]**

A curious family of fishes, with the head and body enclosed in a rigid bony box, made up of six-sided plates, from which the mouth protrudes at one end and the short naked tail at the other. The mouth is small, and each jaw has a single row of long narrow teeth. There is no spinous dorsal fin, and short soft dorsal and anal fins are opposite to one another. The caudal fin is always rounded behind. There are no pelvic fins.

These are smallish fishes, moving sluggishly, and found on the shores of most tropical seas. Seven genera and about 20 species are known, of which two occur in the Gulf of Guinea and one was reported by Irvine. The Guinea cowfish (*Acanthostracion guineensis* Bleeker, 1865) appears to occur from Senegal to the Gulf of Guinea.

**Island cowfish**  
*Acanthostracion notacanthus* (Bleeker, 1862)

(?) **tʃetʃe kwaoli**: Ga.

*Irvine name:* Cowfish – *Acanthostracion quadricornis* (Linn.). Misidentification.

*Reference material:* Labadi, 1934 (M.J. Field 12) – BMNH 1938.12.15:26 (1 specimen: 135.1 mm SL). Label suggests October 1936 as date of collection.

*Distribution:* Established populations are known from the Azores, St Helena and Ascension. Tyler (1965) suggests that this specimen is likely to have been a stray.

Attains to a standard length of at least 25 cm. The pair of spines projecting forward above each eye give this fish its name. A further pair of spines projects backwards from the lower edge opposite to the dorsal fin. The general coloration is pale brown, with some rather large bluish grey spots.

Specimens of this species are occasionally caught in nets, but, being inedible, are thrown overboard again. In some parts of the world, however, they are regarded as excellent foodfishes, often being baked or roasted in their own ‘shells’.

### PUFFERFISHES (TETRAODONTIDAE) [91.]

Mostly short-bodied thickish fishes, with no spinous dorsal fin and no pelvic fins. By inflating a sac-like process of the gullet, either with air or water, they are able to blow themselves out like a balloon and to assume an almost spherical shape. The skin is naked, but is generally studded with small spines. The teeth are united in both jaws to form strong sharp-edged plates, which are divided by a suture down the middle, and which resemble the beak of a parrot.

Some 19 genera and about 120 species are known from tropical and subtropical seas, some of which enter rivers and a few are resident permanently in fresh water. As a rule these fishes are not edible, and some of the species are known to be highly poisonous.

Six species are known from Gulf of Guinea (although one is only likely to occur well offshore); two of these were recorded by Irvine from Ghana (one under two different names) as well as a freshwater species. Sporadic catches of up to around 125 tonnes per year of pufferfishes have been reported from the region.

#### *Key to the tropical West African genera and species*

1. No lateral line; back with keel between eyes and dorsal fin; snout elongated, nostrils minute; dorsal fin with 9–10 soft rays; anal fin with 8–9 soft rays; blue lines radiate from eye; upper and lower caudal fin rays black Sharpnose puffer ..... 2  
Lateral line present; back not keeled; snout obtuse or conic, nostrils readily visible ..... 2
2. Nasal papilla not a simple tube, but expanded to 2 lateral and 1 posterior flap; in specimens more than 22.5 cm long, irregularly shaped plates (bases of prickles and dermal spines) encase dorsal and lateral body surface between pectoral and dorsal fins in a bony corselet; dorsal fin with 10 soft rays; anal fin usually with 9 soft rays; upper flanks and back brown with discrete white spots which are about 25–33% of eye diameter across ..... Prickly puffer, *Ehippion guttifer*  
Nasal papilla a simple tube perforated by a pair of openings; medial portions of body never encased in a bony corselet of irregularly shaped plates ..... 3
3. Dorsal fin with 13–15 soft rays; caudal fin distinctly lunate; two lateral lines along body ..... 4  
Dorsal fin with 7–9 soft rays; caudal fin rounded, truncate or with dorsal and ventral rays only slightly produced; only one lateral line along body ..... 5
4. Caudal fin distinctly concave, its upper and lower lobes about equal in length ..... Smooth puffer, *Lagocephalus laevigatus*  
Caudal fin distinctly concave, its lower lobe distinctly longer than upper lobe ..... Oceanic puffer, *Lagocephalus lagocephalus*
5. Body dark green to yellowish-brown with black spots dorsally; a row of 12–14 round, black spots (about same size as pupil) on lower side of head and body; anal fin with 7–8 soft rays ..... African bandtail puffer, *Sphoeroides marmoratus*

Body brownish dorsally becoming pale underneath; no distinct row of round, black spots on lower side of head and body; anal fin with 8–9 soft rays ..... Blunthead puffer, *Sphoeroides pachygaster*

### Smooth puffer, Compère lisse

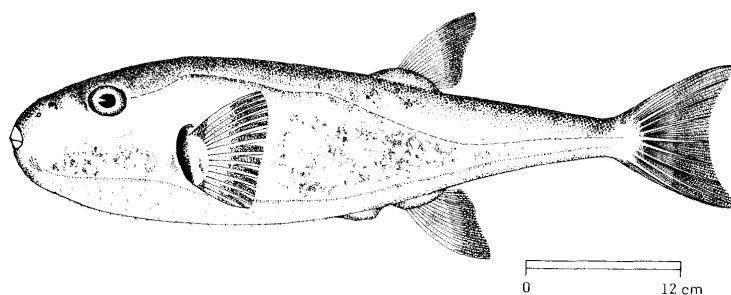
*Lagocephalus laevigatus* (Linnaeus, 1766)

**awuleŋ**: Ga. **awule**: Adayme (Benzies). **ɛwule**: Fante (Winnebah). **awule**: Fante. **ewure**: Fante. **ɛwude**: Fante (Winnebah, Anomabu). **poewur**: Fante. **kubi**: Ga (Christiansborg). **okpo**: Ga (Labadi). **awule-kupa**: Ga (Nortey). **eku** or **ewule**: Nzima (Axim). **aged**: Ewe. **fovunalawoe**: Ewe. **opolo okun**: Yoruba. **obubu**: Ilaje.

*Irvine name*: Smooth puffer or globe-fish – *Lagocephalus laevigatus* (Linn.).

*Reference material*: Accra, Jan. 1930 (Irvine 20) – BMNH 1930.3.24:46-47 (2 specimens: 81.8, 101.5 mm SL); Winnebah, March.1933 (Irvine 169).

*Distribution*: Both sides of the tropical and subtropical Atlantic. On coast of West Africa from Morocco to Angola including offshore islands.



Smooth puffer, *Lagocephalus laevigatus*. (Fig. 131.)

Grows to a length of 100 cm and common to 60 cm. The surface of the body is mostly smooth but the belly is provided with small, white, soft, three-rooted spines. The lateral line system on the upper part of the head and sides of the body is well developed and conspicuous. The general colour is greenish grey, the back being darker olive green, the flanks yellowish green, and the belly white with a distinct silvery tinge. The dorsal and caudal fins are greenish or olive brown, and the tips of the caudal lobes may be whitish. The anal fin is white.

This fish feeds on crabs, portions of which were found in the stomach of the specimen from Winnebah. It is commonly caught in seines, and sometimes by *fanya* nets near the shore, or, when larger, with hooks in deeper water. It is not generally eaten, except sometimes by the Awunas (Ewes) and sometimes by other tribes (e.g. Fantes).

Like other members of the family it is able to inflate its bell with air and so increase its size to alarming proportions in order to frighten its enemies. Small boys often inflate it and throw it back into the sea, where it will float belly-upwards on the surface.

The Ewe name *agede* means ‘a drummer’ and *fovunalawoe* means ‘a fish that drums for other fish’. The fish is sometimes called *awule-kapinta* in Accra, because it is said to cut the lead weights on nets (Nortey).

*Tetraodon lineatus* Linnaeus, 1758

*Irvine name*: Fresh-water puffer or globe-fish – *Tetraodon fahaka* L. A junior synonym.

This species is confined to fresh water.

### Prickly puffer, Compère à points blancs

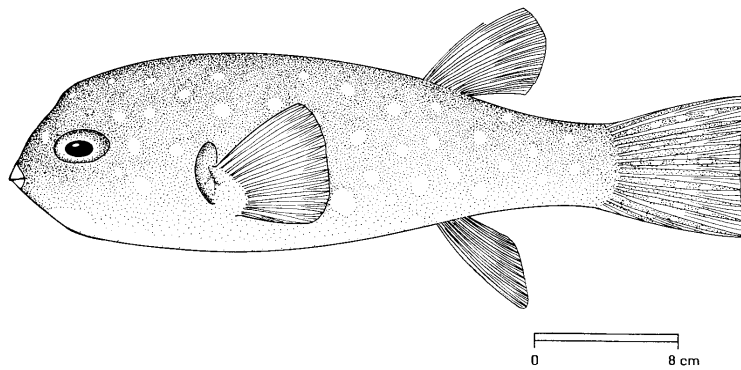
*Ephippion guttifer* (Bennett, 1831)

(For vernacular names cf. *Lagocephalus* above.)

*Irvine name:* Puffer or globe-fish – *Ehippion guttifer* (Bennett) and also as *Tetraodon pustulatus* Murray. The latter is a misidentification.

*Reference material:* Accra (Irvine 131) – BMNH 1932.2.27:27 (1 specimen: 114 mm SL); Accra, Nov. 1938 (Irvine 354) – BMNH 1939.7.12:40 (1 specimen: 74.1 mm SL; listed under *Tetraodon pustulatus*).

*Distribution:* Coast of West Africa from Morocco to Angola, including offshore islands: entering estuaries.



Prickly puffer, *Ehippion guttifer*. (Fig. 132.)

Grows to a length of 80 cm and common to 40 cm. The colour is a rich brown above with white spots (about a third to a fourth of eye diameter in size), fading laterally to the unpigmented belly. The fins are all more or less pale brownish with white spots on the tail fin.

When caught these fish take a long time to die. They remain inflated with water for several minutes, after which they expel water through the gill openings gradually until the body reaches its normal size. This species is sometimes caught by hooks, but more often in seine nets, and at no definite season. It is not eaten as a rule, and the head is believed to be poisonous. It is said to be eaten by the Fantes and also by the Krus of Liberia, but not by the Gas. These last remarks also apply to *Lagocephalus*.

#### PORCUPINEFISHES, SPINY PUFFERS AND BURRFISHES (DIODONTIDAE) [92.]

A family very closely related to the puffers (Tetraodontidae), but differing in having undivided tooth-plates in the jaws, with broad crushing surfaces within the cutting edges. The spines with which the skin is armed are generally stronger and more prominent, and in some forms are very long, two-rooted and capable of being erected, and in others stout, three-rooted and incapable of being moved. Like the puffers, these fishes can inflate their bodies until they assume an almost spherical shape.

They feed very largely on corals and shellfish, and are found in most tropical seas. Six genera and about 19 species are known, of which five occur on the coasts of the Gulf of Guinea (although one species is a pelagic oceanic one and so is only likely to be found well offshore). One species was recorded by Irvine from Ghana.

#### **Porcupinefish, Porc-épique boubou**

*Diodon hystrix* Linnaeus, 1758

*Irvine name:* Porcupine-fish – *Diodon hystrix* Linn.

*Reference material:* Beraku, April 1930 (Irvine 124, *p.p.* M. J. Field). No specimens found.

*Distribution:* Circumglobal in tropical seas.

Grows to a length of 65 cm; common to 25 cm. The body is covered with long, stiff, two-rooted, erectile spines. The general colour is pale brownish, becoming whitish beneath, and all the upper parts and sides, as well as the fins, are covered with small round black or brown spots.

The specimen collected by Dr M.J. Field at Beraku was a dried skin and skeleton, 30–37 cm in length.







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## APPENDIX 1

### Pronunciation of the International Phonetic Alphabet (IPA) symbols used

Symbol and sound	Example words
a = a as in	far, half (southern Eng.), <i>pas</i> (Fr.)
b = b as in	<b>big</b> (Eng.), <i>battre</i> (Fr.)
tʃ = ch as in	<b>church, chin</b> (Eng.)
d = d as in	<b>dig</b> (Eng.), <i>débat</i> (Fr.)
ɖ = retroflex d	d said with tip of tongue pressed against the front of the hard palate
dz = ts sound as in	<i>mezzo</i> (Ital.)
e = e as in	<b>e</b> gg (Eng.), <i>thé</i> (Fr.)
ɛ = e as in	pe <b>n</b> (northern Eng.), <i>mettre</i> (Fr.)
f = f as in	<b>fat</b> (Eng.), <i>faim</i> (Fr.)
ɸ = bi-labial f	breathed f (intermediate between f and h)
g = g as in	<b>go</b> (Eng.), <i>gonfler</i> (Fr.)
ɣ = g as in	<i>luego</i> (Spanish), <i>wagen</i> (German)
h = h as in	<b>have, hut</b> (Eng.),
i = i as in	<b>inn</b> (Eng.), <i>si</i> (Fr.)
j = j as in	<b>jump, jam</b> (Eng.)
k = c or k as in	<b>come, keel</b> (Eng.), <i>cave, kiosque</i> (Fr.)
l = l as in	<b>lamb</b> (Eng.), <i>lait</i> (Fr.)
m = m as in	<b>met</b> (Eng.), <i>mer</i> (Fr.)
n = n as in	<b>net</b> (Eng.), <i>non</i> (Fr.)
ŋ = ng as in	<b>sing</b> (Eng.)
ny = sound as in	<i>agneau</i> (Fr.), <i>campagna</i> (Ital.)
ɔ = o as in	<b>odd</b> (Eng.), <i>porte</i> (Fr.)
o = o sound as in	<b>moat</b> (Eng.), <i>beau</i> (fr.)
p = p as in	<b>pick</b> (Eng.), <i>poule</i> (Fr.)
r = r (rolled) as in	<b>red</b> (Eng.), <i>robe</i> (Fr.)
ɹ = r as in	<b>dry</b> (southern English, unrolled)
s = s as in	<b>see</b> (Eng.), <i>son</i> (Fr.)
ʃ = sh sound as in	<b>shop</b> (Eng.), <i>chambre</i> (Fr.)
t = t as in	<b>tip</b> (Eng.), <i>tête</i> (Fr.)
u = u as in	<i>gut</i> (German), <i>subito</i> (Italian)
v = v as in	<b>very</b> (Eng.), <i>verbe</i> (Fr.)
ʋ = bi-labial v	voiced v (intermediate between v and w)
w = w as in	<b>wet, will</b> (Eng.)
y = y as in	<b>yes</b> (Eng.), <i>yeux</i> (Fr.)

<i>z = z as in</i>	<i>zeal (Eng.), zéro (Fr.)</i>
<i>ã, ê, ê, ï, õ, ù,</i>	nasalised vowels

## APPENDIX 2

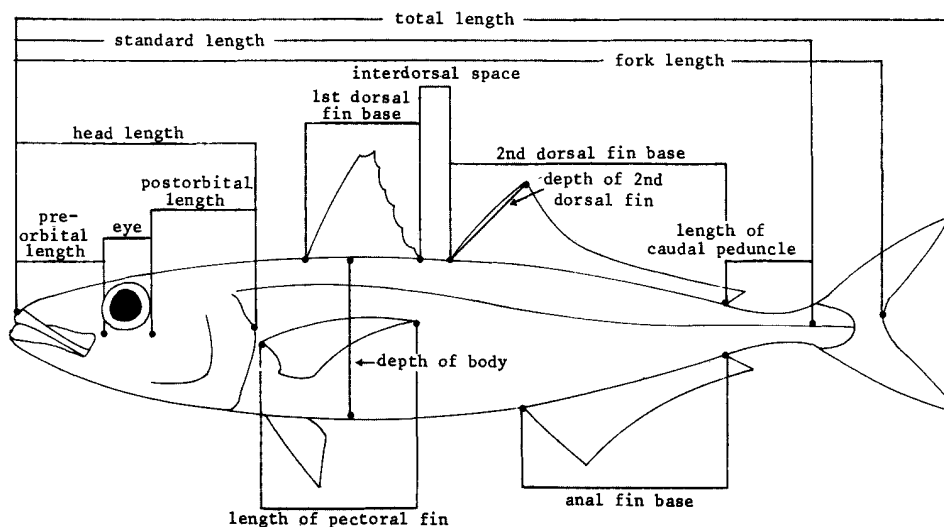
### Identifying fishes

Many fishes are very distinctive and can be identified at a glance once one is reasonably familiar with a fauna. Others are much more difficult to tell apart from closely related species and may require detailed study before they can be identified. This detailed study generally involves comparing counts of various anatomical structures (e.g. fin spines, scales, etc.) and proportional measurements of the specimen in question with those documented for species which it resembles. Proportional measurements are measurements expressed in relation to some other (usually larger) measurement in order to allow measurements of fish of different sizes to be compared. For example, the length of a fish's head expressed as, say a percentage of the fish's total length may be fairly constant for a species regardless of an individual's size and allow a relatively short headed species to be distinguished from one with a comparatively long head.

The purpose of this appendix is to introduce the reader to the technical terms used in fish identification and the methods used to derive the counts and measurements of the fishes. Anyone unfamiliar with the methods of ichthyology (fish study) who wishes to use the keys in the text seriously would be advised to read this appendix first. Alternatively users may just wish to refer back as needed to look up unfamiliar terms; to aid this, technical terms are printed in boldface so that they stand out from the page. The *Glossary* at the end of the book also explains certain technical terms.

### Length measurements

Depending on the types of fish various measurements of length are used. Fishermen usually express the length of fishes caught as the maximum horizontal length or **total length**. On a marlin this would be the horizontal distance measured from the tip of the bill to the hindmost tip of the **caudal fin** (tail fin). Ichthyologists often use another measure of length called **standard length** which is the straight-line measurement from the tip of the upper jaw (with jaw not protracted) to the base of the caudal fin (Figure 1). The exact position of the base of the caudal fin, where the backbone ends and the caudal fin supports (rays) start, is often difficult to ascertain. For small fishes it can sometimes be seen if a bright light is shone through the tail base; for larger ones if the caudal fin is waggled from side to side, the position of the wrinkle usually indicates where the fin supports meet the end of the backbone and thus the point to which standard length should be measured. The reason that ichthyologists use standard length is firstly that the tips of tail fins are easily broken and often missing in specimens preserved in museums, and secondly that caudal fin lengths can be very variable.



**Figure 1.** The principal measurements used in the identification of bony fishes. (FAO)





In some fishes such as the jacks (Carangidae) or tunas (Scombridae) which may have respectively enlarged bony scales called **scutes** or lateral keels along the side of the tail, it can be very difficult or even impossible to measure standard length externally. In such fishes a straight line measurement from the tip of the upper jaw to the end of the middle rays of the tail fin, termed **fork length**, is taken. In other fishes the upper jaw, lower jaw or both jaws may be prolonged into a long, sometimes fragile, beak or bill which may get broken. Where both jaws are prolonged and fragile, such as in the needlefishes (Belonidae), **body length** is measured and is the distance between the rear of the gill-opening and the base of the caudal fin. In billfishes (Istiophoridae) where just the upper jaw is prolonged, body length is usually taken as the distance between the tip of the lower jaw and the end of the middle rays of the tail fin.

The important thing about these key reference lengths on which proportional measurements are generally based is that they are reproducible and measurable on all specimens.

### **Proportional measurements**

Various “proportional measurements” can be important in distinguishing between different species of fish; which particular measurements these are, varies from family to family. Fish are usually measured with calipers which can cope with lengths up to 15-20 cm, with measuring boards or tapes being used to obtain lengths of longer structures. These measurements are usually expressed as percentages of other measurements (hence the term proportional measurement). Larger measurements are generally expressed as percentages of standard length (SL) or, for fish such as eels, of total length (TL). Smaller measurements, such as eye diameter, are generally expressed as a percentage of **head length** (distance between the tip of the upper jaw and posterior edge of the gill cover). **Eye diameter** is the greatest diameter of the eye socket rather than the eyeball itself. The term tip of snout is used synonymously with tip of upper jaw.

For eels in particular the **preanal length** is a useful measurement; this is taken as the horizontal distance from the tip of the upper jaw to the anterior of the anal fin, which usually has its origin immediately behind the anus. In some cases the measurement from the snout tip to the middle of the anus is used. **Snout length** and **predorsal length** are taken as the horizontal distances between the tip of the snout and respectively the anterior margin of the eye socket and start of the dorsal fin. **Body depth** is taken as the maximum vertical height of the body (not including the fins). This measurement can be very variable depending on whether fishes have recently fed or are about to breed and are heavy with roe. **Interorbital width** is measured across the fish's forehead and is the least distance between the eyes. The area of the tail between the end of the dorsal and anal fins and start of the caudal fin is called the **caudal peduncle**. The length of the caudal peduncle is the horizontal distance between the hind end of the base of the anal fin and the base of the caudal fin. Lengths of the bases of fins are taken as straight line measurements and ignore the curve of the body. Some of the most commonly used measurements of bony fishes are illustrated in Figure 1.

Some proportional measurements can change quite markedly with age. For example, in the priacanthid, *Cookeolus japonicus*, the length of the pelvic fins is about 50% of the standard length in young individuals but only about 30% SL in large specimens. Such characters may be difficult to use in comparisons with similar species.

### **Counts**

Fish are on the whole blessed with a wide range of characters which can be counted (so-called **meristic** characters). These include scales, fin spines and soft rays, lateral-line pores, gill-rakers, etc. These characters often serve to distinguish species and many, e.g. fin spines, can be counted quite easily but others like gill-rakers may require considerable care to obtain accurated counts. Figures 2 and 3 illustrate the general external morphology of bony fishes and sharks respectively and the names of major structures.

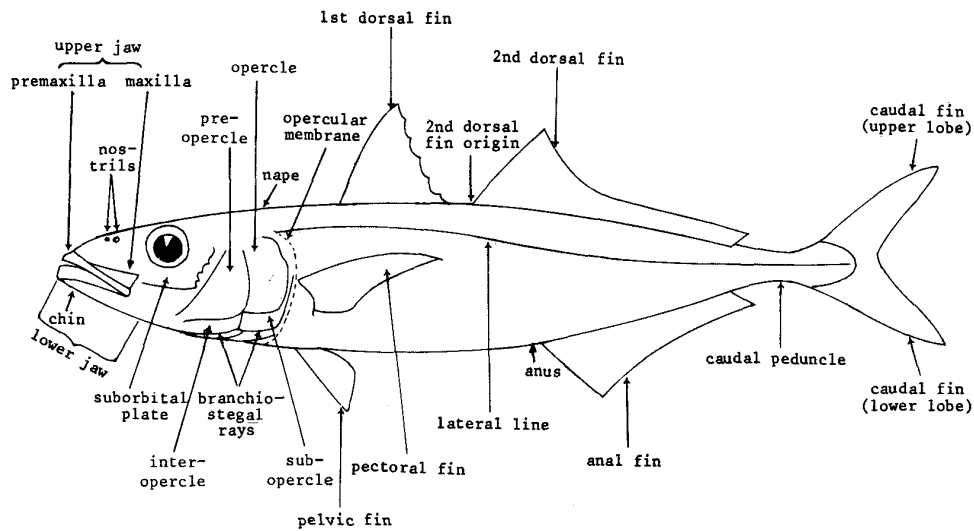


Figure 2. General external morphology of a bony fish. (FAO)

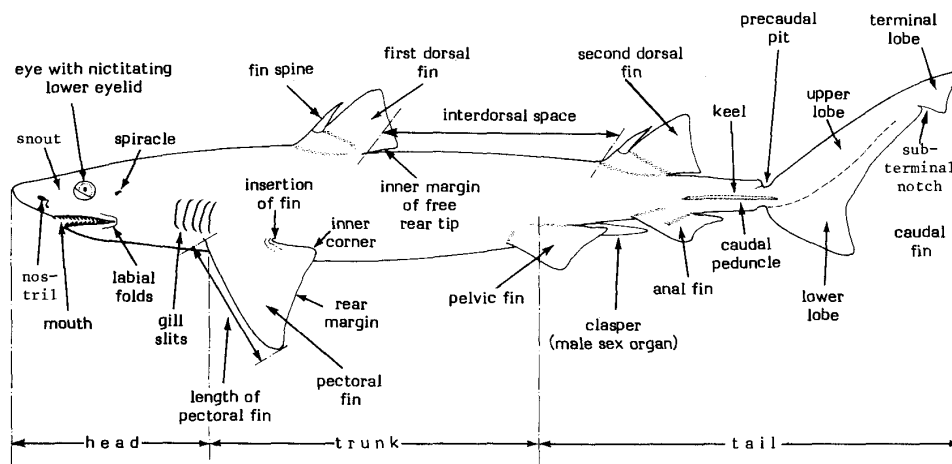


Figure 3. General external morphology of a shark. (FAO)

The fins of bony fishes (**Osteichthyes**, from the Greek *osteon* = bone and *ichthys* = fish) are supported by skeletal elements called **rays**. There are two distinct types of ray, spines and soft rays. **Spines** are usually strong and rigid with sharp tips; they are single elements and neither segmented nor branched. In some fishes like blennies spines are soft and flexible but can still be recognised as spines because they are neither segmented nor branched. **Soft rays** are segmented, usually flexible and often branched and are composed of two lateral elements closely joined in the mid-line. The segmentation of the soft rays can generally be seen clearly if a light is shone through the fin. Most of the more evolutionary advanced fishes tend to have both spines and soft rays in their fins (Figure 4) whilst more primitive ones have only soft rays. Conventionally, counts of spines are written in Roman numerals (I, II, III, IV, V, etc.) whilst those of soft rays are written in normal Arabic numerals. A comma is used to separate spine and soft-ray counts taken from a single fin. A plus sign between fin ray counts indicates the presence of more than one fin (where not explicitly stated) or several isolated spines not joined by fin membranes (as in frogfishes). Dashes are used to

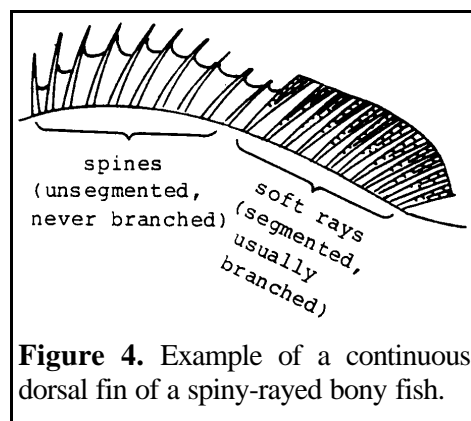


Figure 4. Example of a continuous dorsal fin of a spiny-rayed bony fish.

indicate the range of counts for each type of ray.

Thus: Dorsal fin rays IV–V+I,25–29 indicates that there are two dorsal fins, the first with four or five spines, the second with one spine and 25 to 29 soft rays. This “fin-formula” can be further abbreviated to just: D IV–V + I,25–29. For anal, pectoral and pelvic (ventral) fins the letters A, P (or P<sub>1</sub>), and V (or P<sub>2</sub>) are used respectively to denote to which fins the fin-ray counts refer.

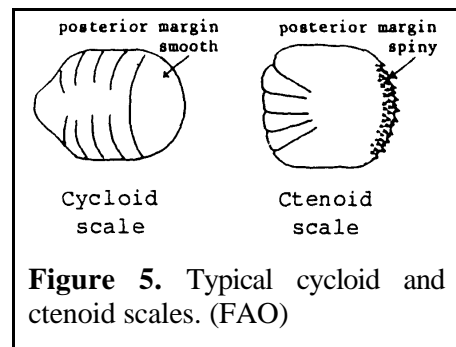
The dorsal, anal and caudal fins are called collectively the **median** fins as they lie on the median (middle) vertical plane of the fish. On each side of the body behind the gill-opening (or several gill-slits in sharks) are usually found paired **pectoral fins**. The **pelvic fins** (sometimes called ventral fins) are paired fins which in sharks and more primitive bony fish lie posteriorly, just in front of or not far in front of the anus or vent. In more advanced bony fish they have migrated anteriorly and usually lie approximately below the pectoral fins or even in front of these (for instance, in many flatfishes). Counts of rays in pectoral fins include the short splint-like uppermost ray except when very rudimentary and more or less undetectable.

When counting spines, care should be taken to include the often very small initial spines that are often present in both dorsal and anal fins. Also in large fish, particularly jacks (Carangidae), initial spines may become embedded and covered by flesh. Where this can create problems it should be noted in keys. Another problem, which is commonly encountered, is deciding whether the last two soft rays of a dorsal or anal fin are really one two-branched ray or two separate rays. If the two rays share the same basal element they are counted as a single ray, if they each have their own basal support, however close together they are, they are counted as two separate rays.

The scales of most bony fishes are either cycloid or ctenoid.

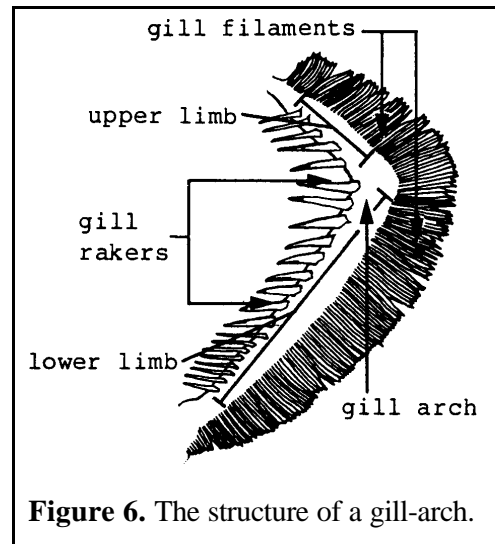
**Cycloid** scales are smooth whilst **ctenoid** scales have tiny tooth-like projections on part of their exposed surface and along their rear margins and are thus have a rough texture (Figure 5). This is very evident if a fish is stroked from the tail towards the head. Some fishes such as moray eels and blennies are without scales.

The lateral-line sensory system of fishes communicates with the outside world through pores. In scaleless conger eels (Congridae) the pores are readily counted and provide an important diagnostic character. In scaled fishes the pores may exit through scales which are termed **lateral-line scales** and can be distinguished by the tubes or pits in them. These lateral-line scales usually lie in a single curved line along the side of the body and are counted from just behind the upper end of the gill opening to the base of the caudal fin. Often a few pored scales extend onto the proximal part of the caudal fin (the part nearest the body); these are not generally included in counts. In some fishes the lateral-line is not continuous but in two distinct parts, usually an anterior curved part situated on the upper half of each side and a posterior straight part running along the midline of each side.



**Figure 5.** Typical cycloid and ctenoid scales. (FAO)

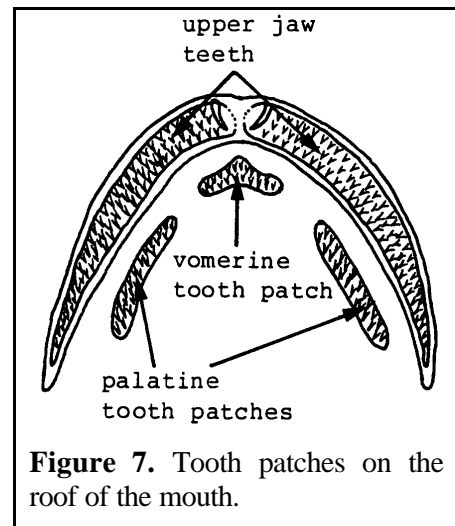
The gills of fishes are supported on a series of bony gill arches (normally four pairs in bony fishes). On the outer (posterior) edges of the gill arches are the fragile soft gill filaments through which gas exchange occurs and on the inner (anterior) edges are the **gill-rakers**. The gill-rakers can serve as a sieve to filter out microscopic planktonic organisms, which would otherwise pass out through the gill opening with the respired water. Thus in plankton feeding fish in particular the gill-rakers tend to be numerous and long while big predatory fish like marlins and swordfish have no gill-rakers at all. The gill-rakers are always counted on the first (outermost) gill arch and often this will need to be carefully dissected out to obtain an accurate count. Often the gill arch has an obvious angle and in such cases the gill-rakers above and below the angle are usually counted separately. Those above the angle are termed **upper-limb gill-rakers** (Figure 6) and those below the angle, including any gill-raker actually at the angle, are termed **lower-limb gill-rakers**. Where both are counted the upper-limb count is written first followed by a plus and the lower-limb count. Where there is no obvious angle the total gill-raker count is taken. At either end of the gill arch the gill-rakers may be reduced to short **rudiments**; these are included in counts unless otherwise stated.



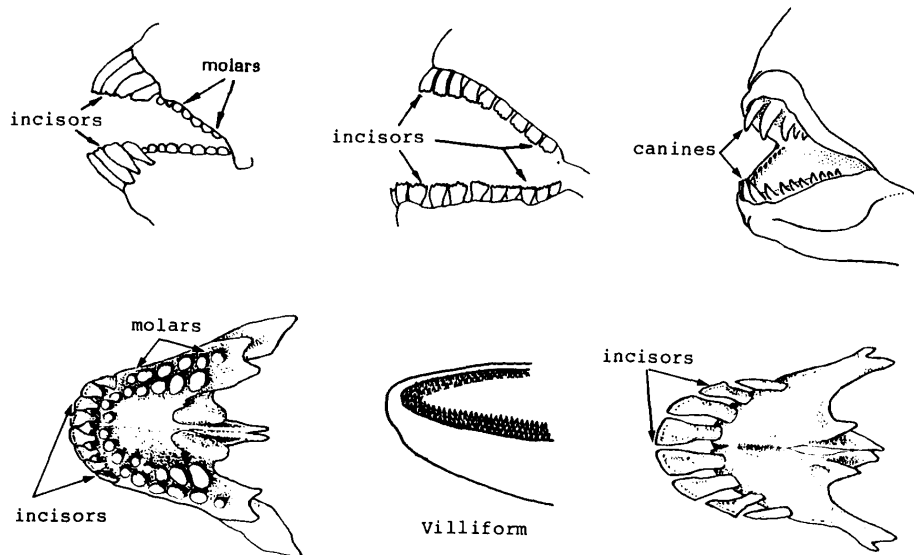
**Figure 6.** The structure of a gill-arch.

The arrangement and types of teeth is another useful character in the identification of fishes and is especially important in sharks. Bony fish can have teeth not only in their jaws but also on the roof of the mouth and on the tongue. Teeth on the roof of the mouth are found either on a bone in the middle of the front of the roof called the **vomer**, or on paired bones lying on either side of the roof of the mouth called the **palatines** (Figure 7).

Fish teeth vary greatly in size, shape and number. Short pointed teeth are called **conical**, very small close-set slender conical teeth in bands are called **villiform**, large sharp-pointed (often somewhat recurved) teeth are called **canines** or **caniniform**, flattened chisel-like teeth like incisors are called **incisiform**, and broad low rounded crushing teeth like molars are called **molariform** (Figure 8). Shark teeth tend to be described in terms of the lengths of the cusps, the type of serrations and number of rows of teeth.

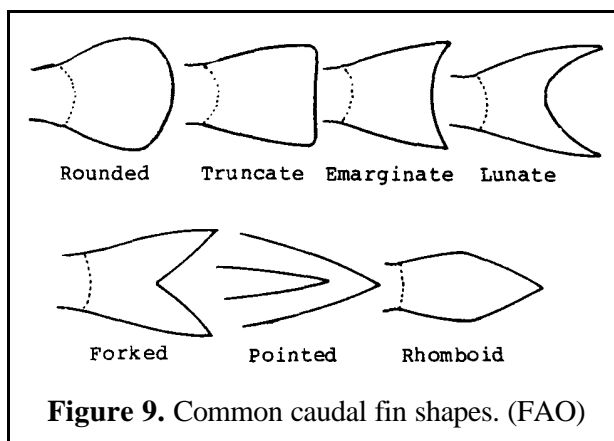


**Figure 7.** Tooth patches on the roof of the mouth.



**Figure 8.** Common types of teeth.

The shape of the caudal fin is sometimes a diagnostic character and Figure 9 shows a variety of common caudal fin shapes and the names used to describe these.



**Figure 9.** Common caudal fin shapes. (FAO)



## GLOSSARY

**Nets:** Mr AP Brown, who provided details of fishing gears in use in Ghana in the 1930s in Irvine's book, measured the mesh as the distance from one knot to the next, i.e. the length of one side of the square which forms the complete mesh. This is different from standard practice today and this should be borne in mind when reading descriptions of nets, which are taken from Brown's chapter on *The Fishing Industry of the Labadi District*.

**Adipose eyelid:** transparent fatty tissue covering or partially covering the eye of some bony fishes; performs protective and streamlining functions.

**Adipose fin:** small fleshy fin without supporting rays; found on the back behind the dorsal fin of some primitive bony fishes such as lizardfishes (Synodontidae).

**Ali:** a drift-net. Mesh 2 cm; depth 440 meshes; length 210–300 m; twine thin. Shot in 10–100 m depth, in fact whenever *Sardinella* are seen. When shot blind it was usually in the dark in 20–25 m. The net was generally drawn after 1 or 2 hours. It might be shot several times, or might catch more than a canoe-full of fish in one shot [in 1930s].

**Amphi-atlantic:** occurring on both sides of the Atlantic Ocean.

**Axil:** inside angle where paired fins fold against the body; usually used to refer to angle where pectoral fin folds against side of body; like armpit of man.

**Barbel:** elongate slender tentacle-like structure on chin of some fishes such as goatfishes, beardfishes and some morid cods; has a sensory function.

**Benthic:** referring to the benthos, that is the fauna and flora of the seabed.

**Blegtoga:** a bottom net (wall-net). Mesh 3.6 cm; depth 50 meshes; length 75 m; made with thicker twine than the *toga* net (q.v.). Shot in 4–6 m water by day or night and drawn after an hour. The number of times it was shot depended on the size of the catch. If the catch was large or there was none, it was shot only once. Used chiefly during Harmattan [in 1930s].

**Canine teeth:** prominent strong sharp-pointed teeth, like those of dogs.

**Caudal fin:** tail fin; tail by itself usually refers to that part of the fish behind the anus.

**Caudal peduncle:** the part of the body between the rear ends of the bases of the dorsal and anal fins and the base of the caudal fin.

**Claspers:** modified parts of the pelvic fins of male sharks and rays which are used in sperm transfer.

**Compressed:** laterally flattened; used to describe body shape.

**Conical teeth:** short cone-shaped teeth.

**Continental shelf:** shallow, gently-sloping seabed around edges of continents to a depth of about 200 m.

**Continental slope:** steeply sloping seabed on oceanic side of continental shelf; usually begins at about 200 m depth.

**Ctenoid scales:** scales of bony fishes that have tooth-like projections along their posterior exposed part and feel rough to the touch.

**Cycloid scales:** scales of bony fishes that have a smooth exposed part without any tooth-like projections.

**Demersal:** living on the seabed.

**Distal:** outward from the point of attachment (away from the centre of the body).

**Emarginate:** with a slightly concave margin; usually used to describe caudal fin shapes.

**Embedded:** structures covered by skin and/or flesh; usually used of small anterior fin spines (e.g. in jacks) or of scales.

**Endemic:** native to an area and restricted to it.

**Falcate:** curved like a sickle.

**Family:** a group of related genera. Family names end in “-idea”, for example, Scombridae for the mackerel and tuna family. When family names are used as adjectives then the “-ae” is omitted; thus a mackerel is a scombrid fish.



**Fanya:** a cast net with a 15 cm mesh and a radius of 3 m. Mostly used in lagoons and from shore [in 1930s].

**Finlet:** small single-rayed fin behind main dorsal and anal fins.

**Forked:** inwardly angular caudal fin.

**Fusiform:** spindle-shaped; used to describe fish body shapes.

**Genus:** a group of closely related species; the first part of the scientific name of a plant or animal which is always written with an initial capital letter e.g. *Thunnus*. The plural is genera.

**Gill arch:** the curved bony support for the gill-rakers and gill filaments. There are normally four gill arches.

**Gill filaments:** the surfaces over which gas exchange occurs in fishes.

**Gill opening:** the opening on the head of fishes through which water that has passed over the gills is expelled. Bony fishes have a single opening but sharks and rays (cartilaginous fish) have 5 to 7 gill slits.

**Gill-rakers:** stiff projections of the anterior edge of the gill arch, which can act to retain small food organisms and protect the delicate gill filaments. Well developed in plankton feeding fish and may be rudimentary or absent in some larger carnivorous fish.

**Holotype:** a single specimen designated as the "type" (i.e. "namebearer") of a new species usually by the author of the original description.

**Incisiform teeth:** chisel-like flattened teeth similar to those at the front of sheep mouths or the front four teeth of man.

**Interorbital space:** the area on the top of the head between the eyes; the least width between the orbits.

**Keel:** a lateral ridge on the side of the caudal peduncle or base of the caudal fin; generally found in fast-swimming fish such as tunas, billfishes and some jacks.

**Lateral line:** sensory organ consisting of a canal running along the side of the body beneath the skin and communicating with the outside world via pores through scales or the skin.

**Lateral-line scales:** the pored scales of the lateral-line between the upper end of the gill opening and base of the caudal fin.

**Lunate:** sickle-shaped; used to describe a caudal fin that is deeply concave with narrow lobes.

**Maxilla:** bone of the upper jaw behind the premaxilla.

**Median fins:** dorsal, anal and caudal fins.

**Molariform teeth:** low broad rounded teeth, like molars of man.

**Morphology:** study of form and structure.

**Neritic:** inhabiting coastal waters.

**Opercle:** the large bone which forms the upper posterior part of the gill cover.

**Operculum:** gill cover; consists of four bones: opercle, preopercle, interopercle and subopercle.

**Orbit:** eye-socket.

**Origin:** the beginning; often used to refer to the anterior ends of the bases of the dorsal and anal fins.

**Paired fins:** the pectoral and pelvic fins.

**Palatines:** paired lateral bones on either side of the roof of the mouth, which may bear teeth.

**Pelagic:** living in the open sea as opposed to living inshore (neritic) or on the sea bottom (benthic); oceanic.

**Preopercle:** an angular bone that forms the posterior and lower part of the cheek region.

**Proximal:** towards the centre of the body; opposite of distal.

**Ray:** supporting element of a fin; includes both spines and soft rays.

**Relict species:** remnants of a formerly widespread fauna and flora, now only surviving in certain isolated areas or habitats.

**Reticulate:** resembling a network.

**Rhomboid:** wedge-shaped; used to describe a caudal fin the middle rays of which are longest and the borders of which are more or less straight.

**Rudiment:** term often used to describe small nodular gill-rakers at ends of gill arches.

**Scute:** an external bony plate or enlarged scale, often with a posteriorly directed spine. Often seen on posterior part of lateral-lines of jacks. Also used for bony plates making up carapaces of turtles.

**Serrated:** with a saw-like edge.

**Snout:** region of the head in front of the eye.

**Soft ray:** segmented ray, flexible and often branched.

**Species:** fundamental unit of classification of plants and animals; the second part of a scientific name is the specific name and always begins with a small letter. Species are referred to by two-part names e.g. *Thunnus albacares* for the Yellowfin tuna.

**Spine:** unsegmented bony process consisting of a single element, often sharp and pointed. Fin spines are never branched, unlike soft rays.

**Spiracle:** an oval opening between the eye and first gill slit of sharks and rays.

**Standard length:** horizontal length of fish measured from front of upper lip (tip of snout) to the base of the caudal fin (posterior end of vertebral column).

**Synonym:** an invalid scientific name; usually the first scientific name proposed (after 1758 for animals) for a species is considered valid and subsequent names are invalid synonyms.

**Tengiraf:** a bottom net (wall-net). Mesh 3.6 cm; depth 40 meshes; length 540 m; very fine twine. Shot in 8–20 m of water in the afternoon and drawn the next morning. Used almost entirely from June–September (occasionally in April). At other times of year the risk of damage by large fish was considered too great [in 1930s].

**Toga (or *ali toga*):** a bottom net (wall-net). Mesh 2 cm; depth 90 meshes; length 300–450 m. Shot in 10–12 m of water in the early morning before it gets light. Left for 2 hours and then drawn. Usually shot only once. Reported to catch most in October, but was used throughout the year [in 1930s].

**Total length:** maximum horizontal length of fish measured from front of whichever jaw is longest to most posterior part of tail fin.

**Trammel net:** vertically set fishing net made up of three layers, consisting of two coarse mesh outer nets with a finer mesh net sandwiched in between.

**Truncate:** square-ended; used to describe caudal fins with more or less straight posterior borders.

**Tjani:** a seine net. Wings: 2 cm mesh; depth 230 meshes; length 60 m. Bag: 1.5 cm mesh; depth 250 meshes. Mouth 5.4 m wide. Sinkers made of lead and floats of pieces of old canoe. Bag buoyed with two calabashes [in 1930s].

**Villiform teeth:** small teeth in close-set bands, usually used for slender teeth.

**Vomer:** median bone towards the front of the roof of the mouth that often bears teeth.

**Watsa:** a drift-net. Mesh 3.6 cm; depth 240 meshes; length 210 m; twine thicker than in *ali* net (q.v.). Shot in same way as *ali* net but in 8–10 m of water. Frequently shot without fish actually been seen, but when conditions thought to be good; caught mostly West African Spanish mackerel (*Scomberomorus tritor*) [in 1930s].