

BONY FISHES

Using mostly secondary literature, we estimate there are around 410 species in 137 families of bony fishes that occur in marine waters of Namibia. These include the species of primary commercial importance, such as hakes, pilchard, and horse mackerel, and many other species that are exploited as bycatch in the bottom trawl and purse-seine fisheries. We include 195 species in 63 families in the "Guide to Species" as being of present or potential interest to fisheries. In order that researchers can also identify, at least to family level, the other species of bony fishes that may also be encountered in fisheries, we include identification clues to all 137 families that are reported from Namibia in the "Guide to Orders and Families." This includes many deep water and rare forms that may never be important in fisheries, but that may be important as ecological indicators while managing marine resources. We recommend that this preliminary family guide be consulted before attempting to determine the species, since many important characters listed in the family guide are not repeated in the "Guide to Species." A check list of bony fishes is included in the Appendix to serve as a working list from which researchers can more accurately assess and study the bony fish resources of Namibia.

TECHNICAL TERMS AND MEASUREMENTS

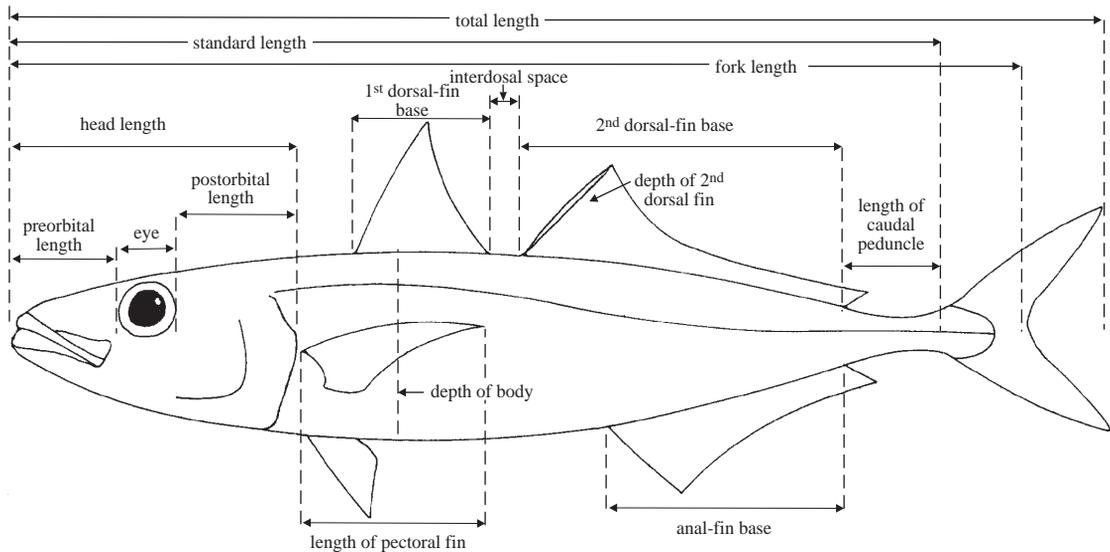


Fig. 1 Common external measurements

Note: although all measurements are shown vertical and horizontal, all distances are measured as the straight line, shortest distance between the 2 anatomical points

General Nomenclature of the External Morphology

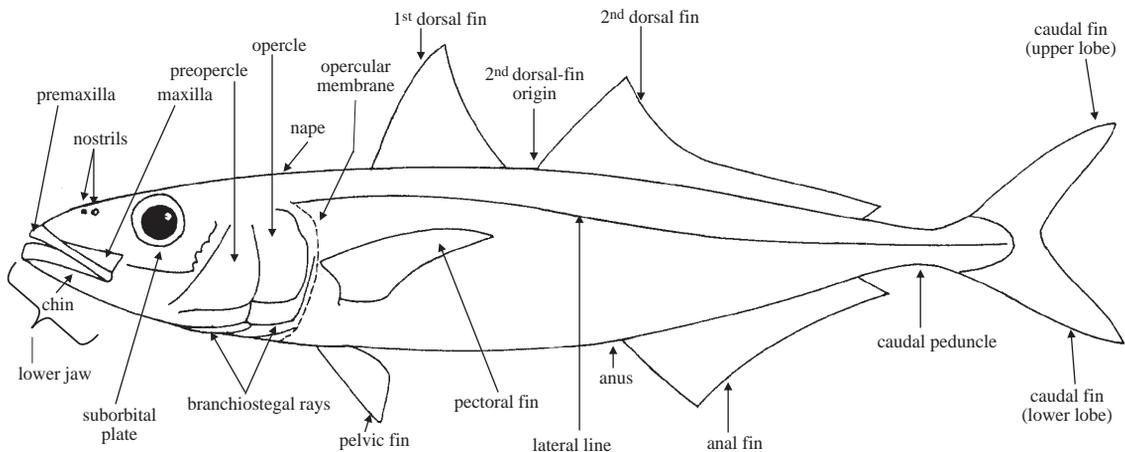


Fig. 2 Common external features



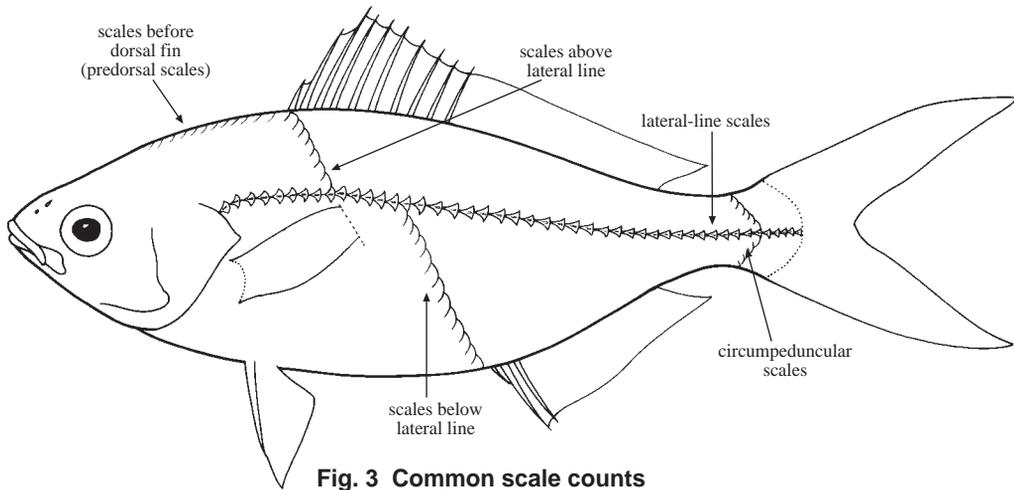


Fig. 3 Common scale counts

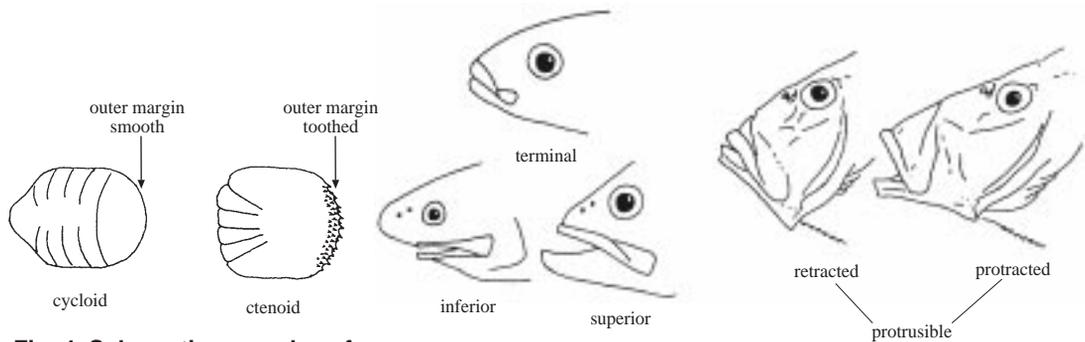


Fig. 4 Schematic examples of typical scales

Fig. 5 Mouth position and protrusibility

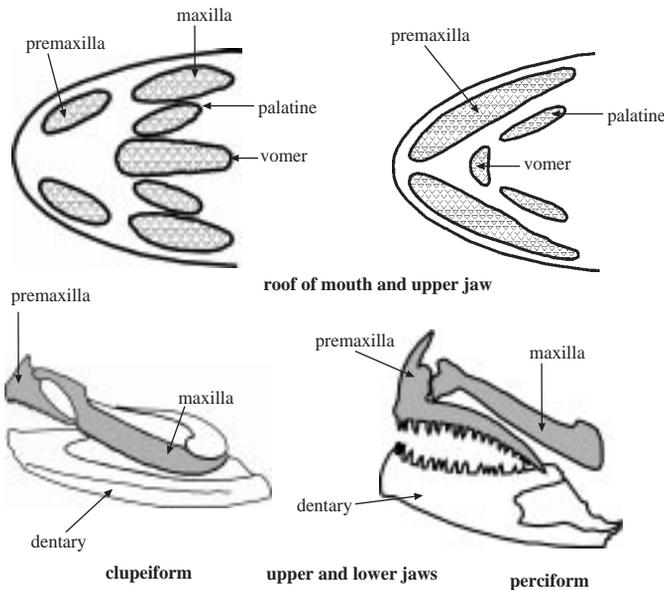


Fig. 6 Teeth-bearing bones in the roof of the mouth and upper jaw, and alternative positions of premaxilla and maxilla in ancestral (clupeiform) versus derived (perciform) fishes

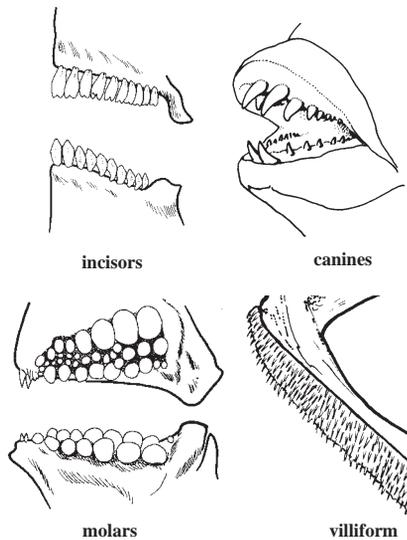


Fig. 7 Common types of teeth

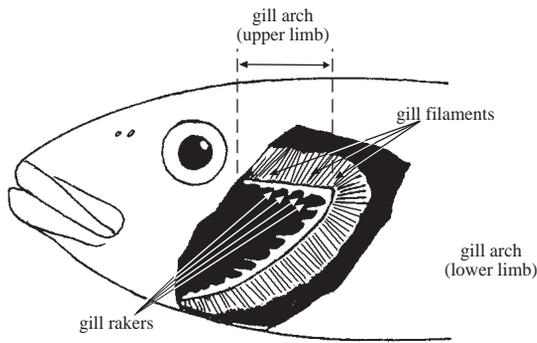


Fig. 8 Position of 1st left gill arch with gill cover removed

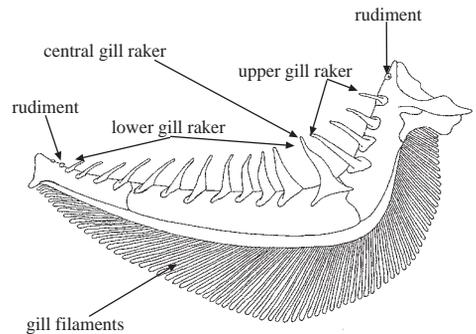


Fig. 9 Structures of 1st left gill

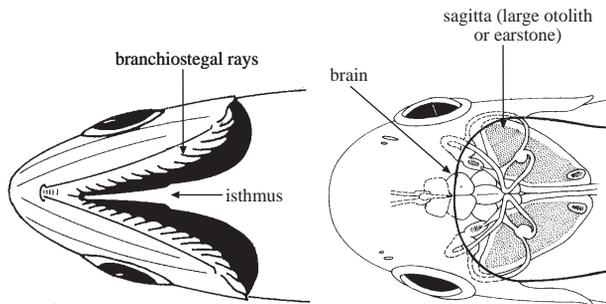


Fig. 10 Structures on ventral side of head

Fig. 11 Position of sagittal otolith inside head (dorsal view)

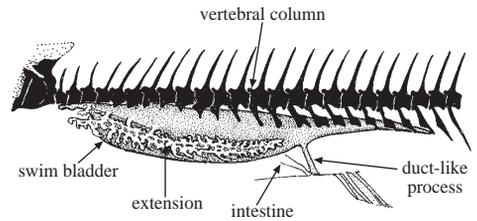


Fig. 12 Position of swimbladder inside body cavity

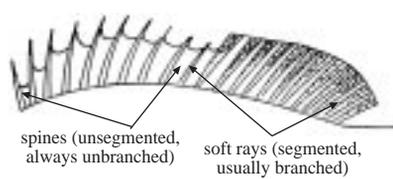


Fig. 13 Example of a continuous dorsal fin of a spiny-rayed fish

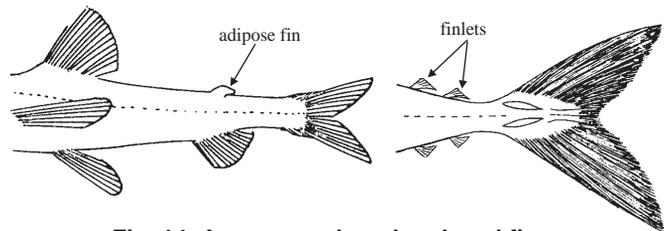


Fig. 14 Accessory dorsal and anal fins: adipose fin and finlets

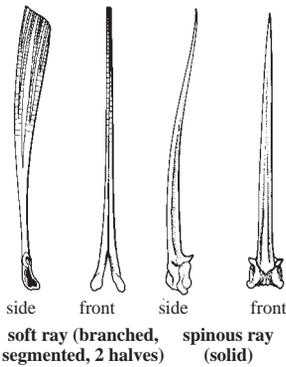


Fig. 15 Construction of fin rays

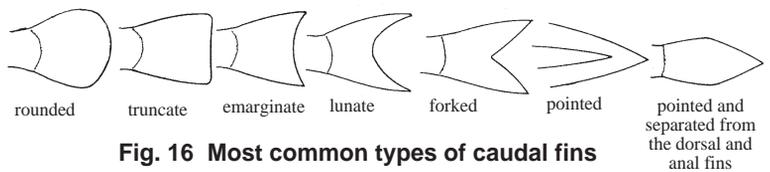


Fig. 16 Most common types of caudal fins



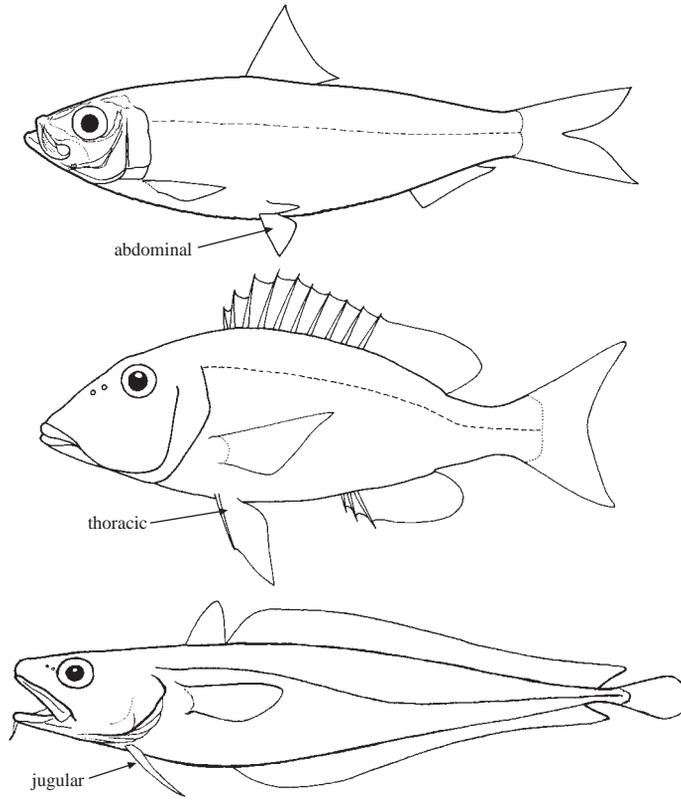


Fig. 17 Positions of pelvic fins

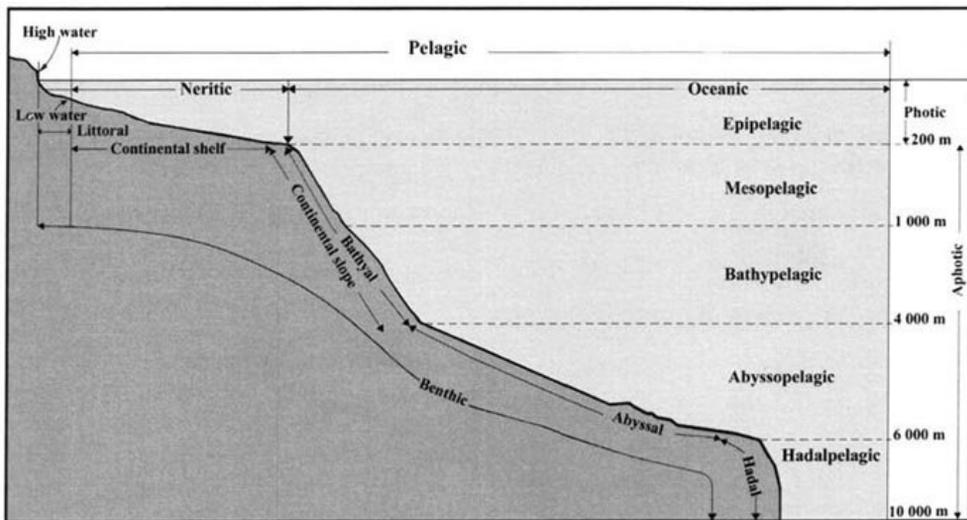


Fig. 18 Marine habitat divisions

TECHNICAL TERMS

Abdomen - The belly; ventral area between breast and anus.

Abysal - Region of the ocean floor between the depths of 4 000 and 6 000 m (Fig. 18).

Abysopelagic - Pelagic zone between the depths of 4 000 and 6 000 m (Fig. 18).

Acute - Pointed or sharp.

Adipose eyelid - Transparent fleshy tissue covering part or all of the eye in some fishes.

Adipose fin - Small, fleshy fin without rays or spines on the dorsal midline between the dorsal and caudal fins of some fishes (Fig. 14).

Air bladder - See swim bladder.

Anadromous - Living mostly in seawater and migrating to freshwater to spawn.

Anal fin - Unpaired median fin supported by rays on the tail behind the anus (Fig. 2).

Anterior - Pertaining to the front portion.

Antrorse - Turned forward.

Anus - Posterior opening of the intestine through which wastes are excreted; vent (Fig. 1).

Attenuate - Elongate; extended or drawn out.

Axil - Angular area between pectoral fin and body, equivalent to arm-pit.

Axillary scale - An elongate or modified scale at the insertion of the pelvic or pectoral fins in some fishes.

Band - Usually refers to an oblique or irregular marking.

Bar - Elongate nearly straight vertical marking.

Barbel - Elongate fleshy tentacle-like sensory projection, usually about the mouth or head.

Base of fin - Part of the fin that attaches to the body (Fig. 1).

Bathyl zone - Region of the ocean floor from the edge of the continental shelf (at around 200 m) down to a depth of about 4 000 m (Fig. 18).

Bathypelagic - Pelagic zone between the depths of about 1 000 and 4 000 m (Fig. 18).

Benthic - Referring to the ocean bottom; benthic species are closely associated with and often attached to the ocean bottom (Fig. 18).

Benthopelagic - Inhabiting waters above but near the bottom or, spending part of the time on the bottom and part of the time further up in the pelagic zone.

Branchiostegal membranes - Membranes on the ventral interior surface of the gill cover supported by branchiostegal rays.

Branchiostegal rays, branchiostegals - Bony rays supporting the membranes inside the lower part of the gill cover (Fig. 10).

Breast - Ventral surface of body between the isthmus and pectoral or pelvic fins.

Canine - Slender conical tooth, often enlarged and elongate (Fig. 7).

Carapace - A hardened encasing covering all or part of the body.

Cardiform - Small short conical outgrowths in a close-set patch or band; usually refers to a band of close-set small conical teeth.

Catadromous - Living in freshwater and migrating to the sea to spawn.

Caudal fin - The tail fin (Fig 1).

Caudal peduncle - Posterior part of body between the rear parts of the dorsal and anal fins, and the caudal fin (Fig. 1).

Cheek - Side of head below and slightly behind the eye.

Cirrus - Small, fleshy protuberance.

Compressed - Flattened laterally; a body shape much deeper than wide.

Continental rise - The gentle slope at the base of the continental slope.

Continental shelf - The flattened edge of the continental land mass between the coast and the continental slope (generally, the continental subtidal zone down to a depth of about 200 m) (Fig. 18).

Continental slope - The sloping edge of the continental land mass, generally beginning at a depth of around 200 m.

Crenulate - Scalloped or wavy edge.

Ctenoid scale - Scale with a spiny posterior margin (Fig. 4).

Cycloid scale - Scales with smooth posterior margin, without spines on posterior margin (Fig. 4).

Deciduous - Easily shed or rubbed off; refers to scales.

Demersal - Free living close to the sea bottom.

Denticle - Small tooth-like structures.

Depressed - Flattened from top to bottom; body shape much wider than deep.

Distal - Near outer edge; far end from point of attachment or centre of body.

Dorsal - Back or upper body.

Dorsal fin - Median fin supported by spines and/or rays; sometimes separated into 2 or more fins with the anterior most fin designated the first (Fig. 2).

Edentulous - Without teeth.

Emarginate - Margin slightly concave; usually pertains to a caudal fin shape (Fig. 16).

Entire - Smooth or straight margin.



- Estuary** - Partly enclosed body of seawater that is measurably diluted with fresh water.
- Falcate** - Sickle-shaped.
- Finlets** - Small separate dorsal and anal fins (Fig. 14).
- Forked** - Branched; caudal fin shape with distinct upper and lower lobes and the posterior margin of each lobe relatively straight or gently curved (Fig. 16).
- Furcate** - Forked.
- Fusiform** - Spindle-shaped; body shape that is cylindrical and tapering at both ends.
- Gas bladder** - See swim bladder.
- Gill** - Organ for exchange of dissolved gasses between water and the blood stream; gill tissues are supported by a gill arch in fishes (Figs 8, 9).
- Gill arch** - Bony angular skeleton that supports the gill filaments and gill rakers (Figs 8, 9).
- Gill filaments** - Principal site of gas exchange in the gill (Fig. 9).
- Gill membrane** - Membranes along the posterior and ventral margin of the gill cover.
- Gill rakers** - Bony projections along the front edge of the gill arch that help prevent food from escaping through the gill opening (Figs. 8, 9).
- Gular plate** - Bony plate covering the underside of the head as exemplified in elopiform fishes.
- Hadal zone** - Region of the ocean floor between the depths of 6 000 and 10 300 m (Fig. 18).
- Herbivore** - Feeding on plants.
- Illicium** - Modified isolated first ray of the dorsal fin that forms the 'fishing gear' (rod and lure) in anglerfishes.
- Incisor** - Flattened chisel-shaped tooth (Fig. 7).
- Inferior** - Mouth position on underside of head with snout projecting in front of mouth (Fig. 5).
- Insertion** - The anterior or posterior point of attachment of a fin to the body.
- Interdorsal** - The space on the back between the bases of the first and second dorsal fins (Fig. 1).
- Interopercle** - The lower anterior bone of the gill cover (Fig. 2).
- Interorbital** - The space on top of the head between the eyes.
- Intertidal** - The area of the shore covered at high tide and exposed at low tide.
- Isthmus** - The part of the underside of the head separating the gill openings (Fig. 10).
- Jugular** - Pertaining to the throat region; pelvic fins are jugular when positioned on the underside of the head in front of the pectoral fins (Fig. 17).
- Lanceolate** - Spear- or lance-shaped.
- Lateral** - The side or toward the side.
- Lateral line** - A vibration sensory canal along the side of the body with a series of pores that communicate to the outside of the body, often through specialized pored lateral-line scales (Figs 2, 3).
- Littoral** - The intertidal area of the shore.
- Lunate** - Crescent-shaped; caudal-fin shape that is deeply emarginate with narrow lobes (Fig. 16).
- Mandible** - Lower jaw.
- Maxilla** - The bone in the upper jaw behind the premaxilla. In ancestral fishes the maxilla is the principal bone of the upper jaw that bears teeth; in derived fishes it generally does not bear teeth and serves more to support the premaxilla (Fig. 6).
- Median** - The middle or toward the midline.
- Median fins** - Fins that lie on the midline; the dorsal, anal, and caudal fins.
- Melanophore** - Cell carrying black or greyish pigments.
- Mesopelagic** - Pelagic zone between the depths of about 200 and 1 000 m (Fig. 18).
- Molar** - A low, blunt, rounded tooth for crushing and grinding (Fig. 7).
- Nape** - The dorsal part of the body just behind the occiput or hard dorsal region of the skull (Fig. 2).
- Neritic** - Nearshore; the zone of water above the continental shelves.
- Occiput** - Upper back part of the head or skull.
- Ocellus** - A round eye-like spot or marking with a marginal ring.
- Opercle** - The large posterior upper bone of the gill cover (Fig. 2).
- Operculum** - The gill cover composed of the preopercle, opercle, interopercle, and subopercle.
- Orbital** - Referring to the eye, particularly the bones surrounding the eye.
- Origin** - The anterior point of attachment of fins to the body (anterior insertion) (Fig. 2).
- Otolith** - A small bone or earstone in the inner ear of fishes (Fig. 11).
- Paired fin** - Fins found on both sides of the body; the pectoral and pelvic fins (Fig. 2).
- Palate** - Roof of the mouth.
- Palatine** - Paired bones on each side of the palate, behind and lateral to the vomer, often bearing teeth (Fig. 6).
- Papilla** - A small fleshy projection.
- Pectoral fins** - Paired fins on the sides behind the gill cover (Fig. 2).
- Pelagic** - The division of the marine environment composed of all the ocean's water; living in the open seas or oceans (Fig. 18).
- Pelvic fins** - Paired fins in front of the anus (Fig. 2), sometimes called the ventral fins. Ancestral fishes generally have the pelvic fins in the abdominal position while derived fishes generally have the pelvic fins in the thoracic or jugular position (Fig. 17).

Peritoneum - The membrane that lines the body cavity, covers the heart, and forms mesenteries.

Pharyngeal teeth - Teeth on the elements of the last gill arch or pharyngeal arch.

Photophore - Light-emitting organ or luminous spot.

Posterior - Pertaining to the rear portion.

Premaxilla - Anterior bone in the upper jaw (see **maxilla**) (Fig. 6).

Preopercle - The upper anterior bone of the gill cover (Fig. 2).

Preorbital - Referring to the region before the eye; a suborbital bone in front and below the eye.

Principal caudal-fin ray - The branched and unbranched caudal-fin rays that reach the rear margin of the fin.

Procurent caudal-fin ray - Small ray at the insertions of the fin that do not reach the rear margin.

Proximal - Part nearest the centre of the body.

Pseudobranchium - A small patch of gill-like filaments on the upper inner surface of the gill cover.

Ray - Supporting element of fins (Fig. 15). Ray is sometimes used as a collective term to designate both soft rays (see below) and spines (see below). It is also sometimes used to designate exclusively, soft rays.

Rounded - A caudal-fin shape with the terminal border smoothly convex (Fig. 16).

Rudiment - A poorly developed structure, usually small and minimally functional at best. These include small unbranched soft rays and small gill rakers at the ends of a gill arch.

Scute - A modified scale that can be enlarged, hardened, ridged, keeled, or spiny.

Serrate - With saw-like teeth along a margin.

Setae - Bristles or hardened hair-like projections.

Soft dorsal fin - The portion of the dorsal fin supported by soft rays (Fig. 13).

Soft ray - A fin support element that is composed of 2 halves (paired laterally), segmented, and usually flexible and branched (Fig. 15). Rarely, soft rays can be pointed and stiff and appear to be a spine.

Spine - A fin support element that is unpaired laterally, unsegmented, unbranched and usually stiff and pointed (Fig. 15); also refers to slender sharply pointed bony processes not associated with fins.

Spinous dorsal fin - The anterior portion of the dorsal fin that is supported by spines (Fig. 13).

Spinule - A small spine.

Standard length - The distance from the anteriormost point on the fish to the posterior end of the vertebral column that is generally equivalent to the end of the hypural plates (and recognized externally by the crease between the tail and caudal fin when the caudal fin is bent laterally); sometimes abbreviated as SL (Fig. 1).

Stripe - Generally refers to a horizontal nearly straight side marking.

Subopercle - The lower rear bone in the gill cover (Fig. 2).

Subtidal - The ocean floor below the low tide mark.

Superior - Above or on the upper surface; a mouth position with the snout behind the anterior opening of the mouth (Fig. 5).

Swim bladder - A gas-filled sac lying under the backbone in the abdominal cavity, used in buoyancy; also referred to as air bladder or gas bladder (Fig. 12).

Symphysis - The articulation between 2 bones; often refers to the anterior juncture between the 2 halves of either jaw.

Terminal - Pertaining to at the end, or situated at the end; a mouth position with the opening of the mouth even with the tip of the snout (Fig. 5).

Thoracic - Referring to the breast region; pelvic fins are thoracic in position when directly below the pectoral fins (Fig. 17).

Truncate - Terminating abruptly in a square end; a caudal-fin shape with a vertically straight terminal border (Fig. 16).

Vent - See anus.

Ventral - The bottom, lower surface, or abdominal part of the body.

Ventral fins - See **pelvic fins**.

Vertical fins - The median fins; the dorsal, caudal, and anal fins.

Vestige - Small or underdeveloped structure, as in a rudiment.

Villiform - Many small slender outgrowths, usually in a close-set patch or carpet; often refers to slender teeth forming velvety bands (Fig. 7).

Vomer - An unpaired median bone on the roof of the mouth (Fig. 6).

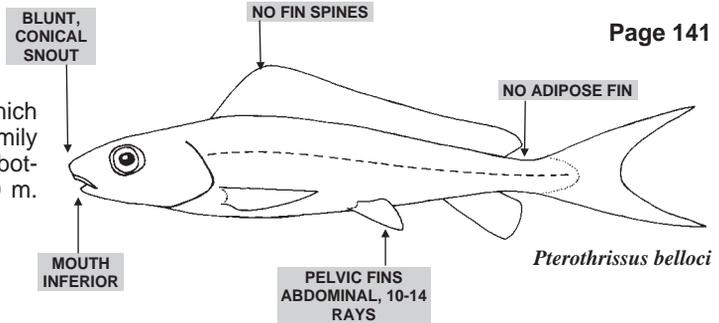


Order **ALBULIFORMES - Bonfishes**
 Pelvic fins abdominal, with 10 to 14 rays; no fin spines; dorsal adipose fin absent; mouth inferior, below blunt conical snout. One family and species in Namibia.

ALBULIDAE

Bonfishes

One species reported from Namibia which is sometimes put in the separate family Pterothrissidae. Demersal on muddy bottoms between depths of 50 and 500 m. Size to about 35 cm standard length.

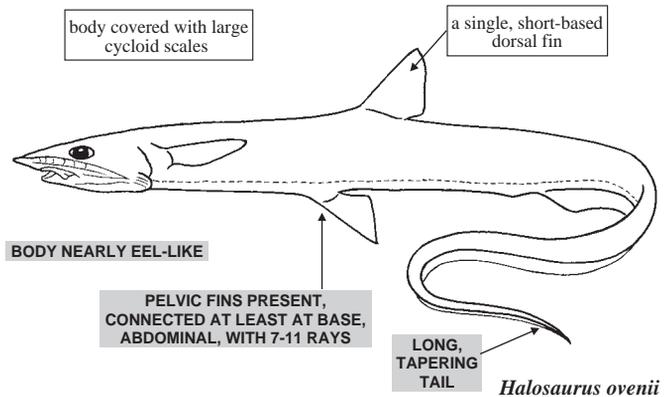


Order **NOTACANTHIFORMES - Halosaurs and Spiny Eels**
 Body nearly eel-like, with long, tapering tail; pelvic fins present, connected at least at base, abdominal, with 7 to 11 rays. Two species in 2 families reported from Namibia.

HALOSAURIDAE

Halosaurs

One species reported from Namibia, not included in the "Guide to Species." Benthopelagic in deeper waters, from depths of over 400 to 1 700 m. Sometimes caught in trawls. Size to about 60 cm.

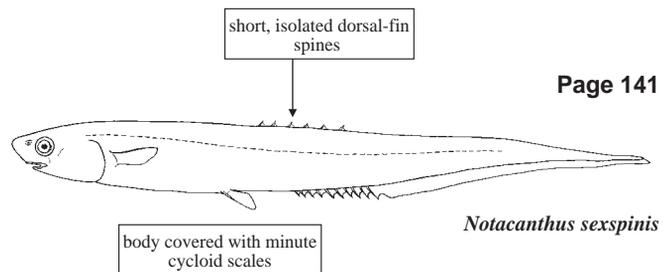


Halosaurus ovenii

NOTACANTHIDAE

Spiny eels

One species reported from Namibia. Demersal at depths between 360 and 1 100 m. Size to 60 cm.



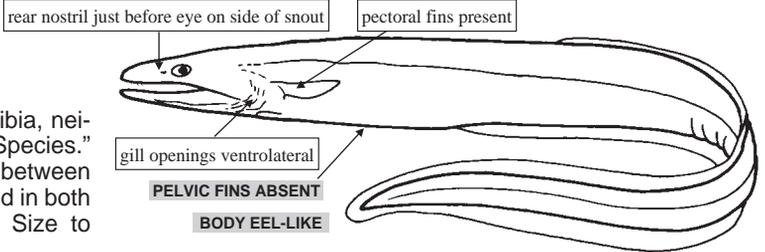
Notacanthus sexspinis

Order **ANGUILLIFORMES - Eels**
 Body eel-like; pelvic fins absent. Seven families of eels known from Namibia.

SYNAPHOBRANCHIDAE

Cutthroat eels

Two species reported from Namibia, neither included in the "Guide to Species." Demersal, commonly in depths between 800 and 2 000 m but also reported in both deeper and shallower depths. Size to nearly 1 m.

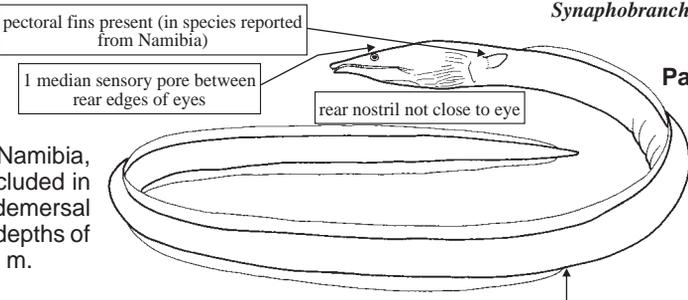


Synaphobranchus kaupi

OPHICHTHIDAE

Snake eels

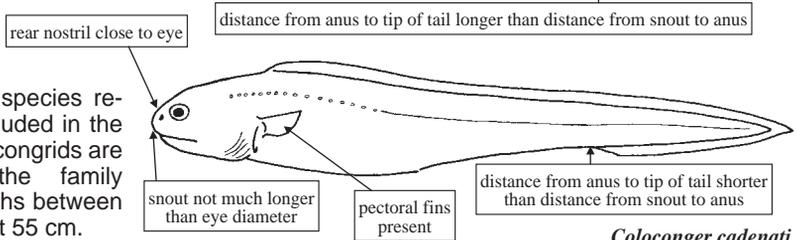
Five genera and 5 species from Namibia, 2 are commonly reported and included in the "Guide to Species." Usually demersal in shallow water but 1 species to depths of 500 m. Maximum size to over 2 m.



COLOCONGRIDAE

Coloconger eels

Only a few specimens of 1 species reported from Namibia; not included in the "Guide to Species." The colococongrids are sometimes included in the family Congridae. Demersal in depths between 270 and 600 m. Size to about 55 cm.

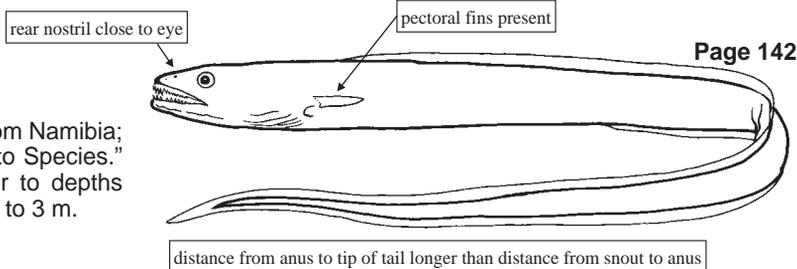


Coloconger cadenati

CONGRIDAE

Conger eels

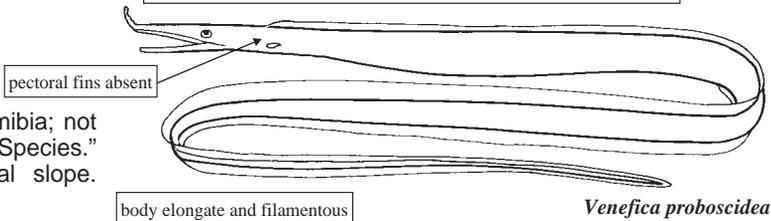
Four genera and 4 species from Namibia; 2 are included in the "Guide to Species." Demersal from shallow water to depths over 1 300 m. Maximum size to 3 m.



NETTASTOMATIDAE

Duckbill eels

One species reported from Namibia; not included in the "Guide to Species." Demersal on lower continental slope. Size to 1 m total length.

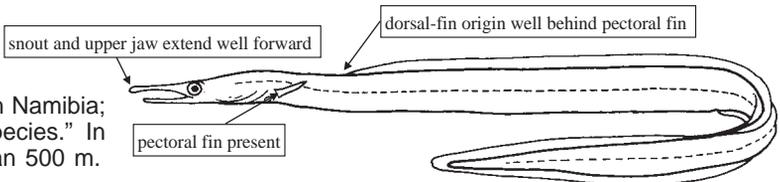


Venefica proboscidea

DERICHTHYIDAE

Long neck eels

A single species found so far in Namibia; not included in the "Guide to Species." In midwater at depths deeper than 500 m. To 40 cm total length.



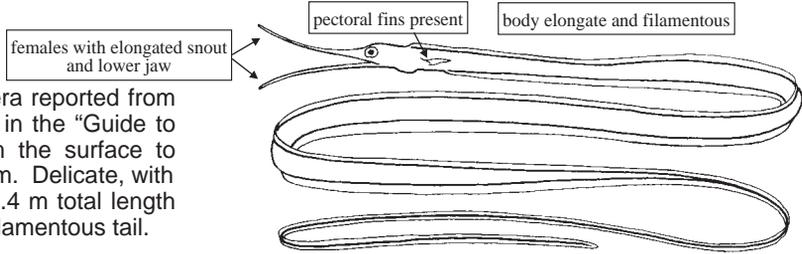
Nessorhamphus ingolfianus



NEMICHTHYIDAE

Snipe eels

Three species in 2 genera reported from Namibia, none included in the "Guide to Species." Pelagic from the surface to depths of around 2 000 m. Delicate, with maximum size to over 1.4 m total length but much consists of a filamentous tail.



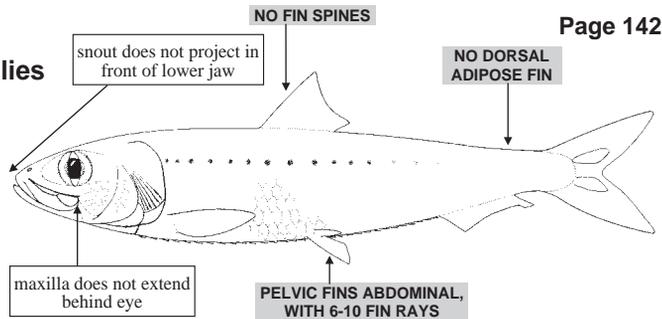
Nemichthys scolopaceus

Order **CLUPEIFORMES - Herrings and allies**
Pelvic fins abdominal; with 6 to 10 fin rays; no fin spines; no dorsal adipose fin. Two families in Namibia.

CLUPEIDAE

Herrings, sardines, pilchards, and allies

Five species in 3 genera reported from Namibia; 1 species questionable from Namibia and not included in the "Guide to Species." Pelagic, to depths of around 350 m. Maximum size to about 30 cm standard length.

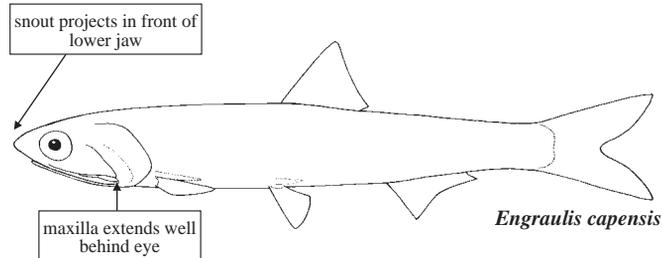


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ENGRAULIDAE

Anchovies

Most probably, only 1 species in Namibia. Pelagic, to depths of 350 m. Maximum size to 17 cm standard length.



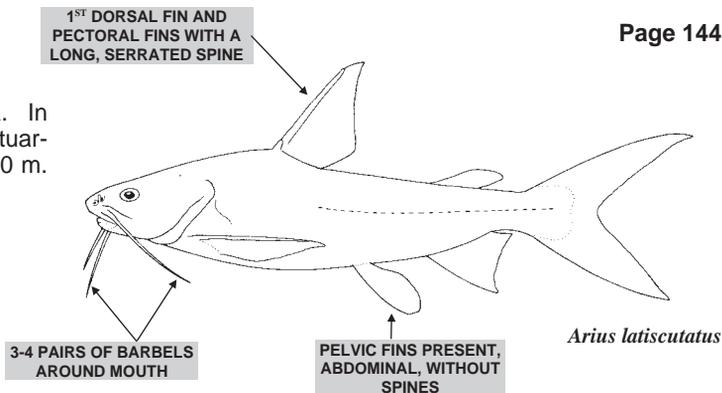
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Order **SILURIFORMES - Catfishes**
Pelvic fins present, abdominal, without spines; first dorsal fin and pectoral fins with a long, serrated spine; 3 or 4 pairs of barbels around mouth. Only 2 species in 1 family reported from Namibia.

ARIDAE

Sea catfishes

Two species reported from Namibia. In shallow coastal waters, including estuaries and rivers, to depths of around 70 m. Maximum size to 55 cm total length.



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Arius latiscutatus

Order **SALMONIFORMES - Smelts and allies**

Pelvic fins abdominal; no fin spines; dorsal adipose fin usually present; maxillae and premaxillae toothless; luminescent organs present in some, not always conspicuous. The salmoniform fishes of Namibia are deep-sea species of little importance to fisheries; none are included in the "Guide to Species." At least 4 families reported from Namibia but others may also eventually be found.

ALEPOCEPHALIDAE

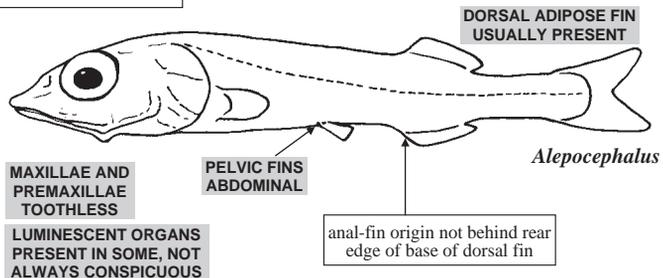
no tube behind shoulder girdle; no sac of luminous fluid under skin

NO FIN SPINES

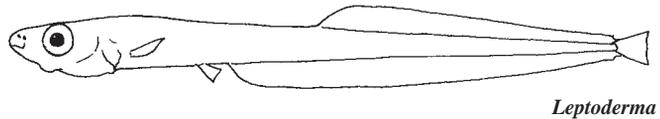
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Slickheads

So far, 11 species in 9 genera reported from Namibia. Usually benthopelagic in depths below 1 000 m. Maximum size to around 60 cm standard length. One slickhead, *Bajacalifornia megalops*, is commonly caught as bycatch in the orange roughy fishery and included in the "Guide to Species."



Alepocephalus

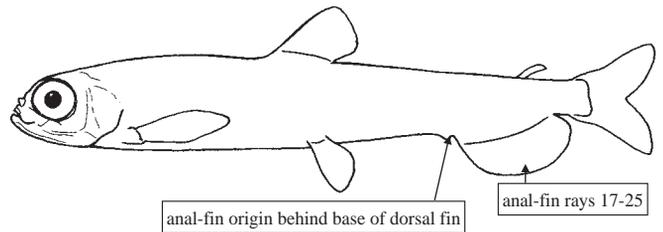


Leptoderma

BATHYLAGIDAE

Deepsea smelts

One species reported from Namibia. Benthopelagic in depths between 540 and 630 m. Size to around 17 cm total length.

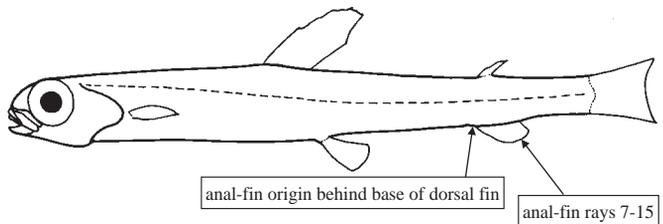


Bathylagus glacialis

MICROSTOMATIDAE

Microstomatid smelts

Two species reported from Namibia. Some members of this family referred to the Argentinidae by some authors.

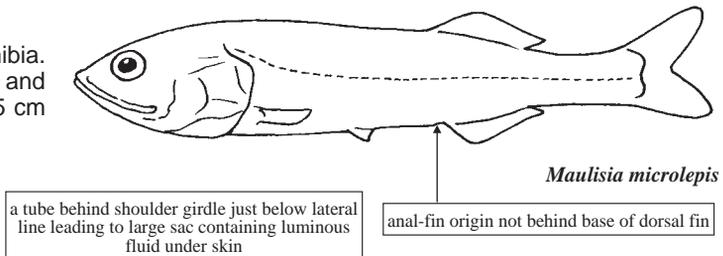


Nansenia

PLATYROCTIDAE

Tube shoulders

One species reported from Namibia. Benthopelagic in depths between 500 and 2 000 m. Maximum size to about 25 cm standard length.



Maulisia microlepis

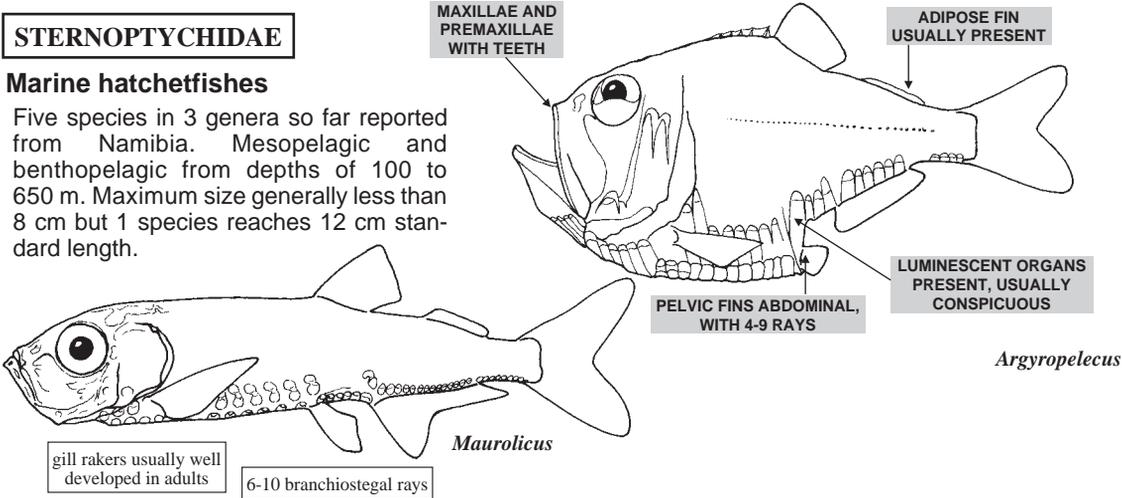


Order **STOMIIFORMES - Bristlemouths and allies**
 Pelvic fins abdominal, with 4 to 9 rays; adipose fin usually present; maxillae and premaxillae with teeth; luminescent organs present, usually conspicuous. These are mesopelagic and bathypelagic fishes presently of little importance to fisheries, but some are important in the food chain; 8 families reported from Namibia, none are included in the "Guide to Species."

STERNOPTYCHIDAE

Marine hatchetfishes

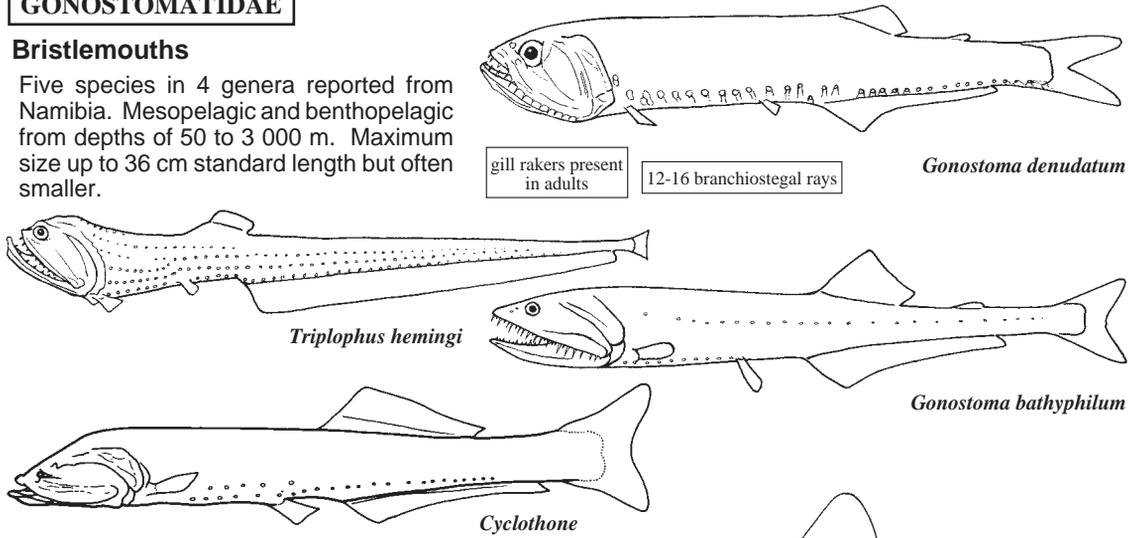
Five species in 3 genera so far reported from Namibia. Mesopelagic and bathypelagic from depths of 100 to 650 m. Maximum size generally less than 8 cm but 1 species reaches 12 cm standard length.



GONOSTOMATIDAE

Bristlemouths

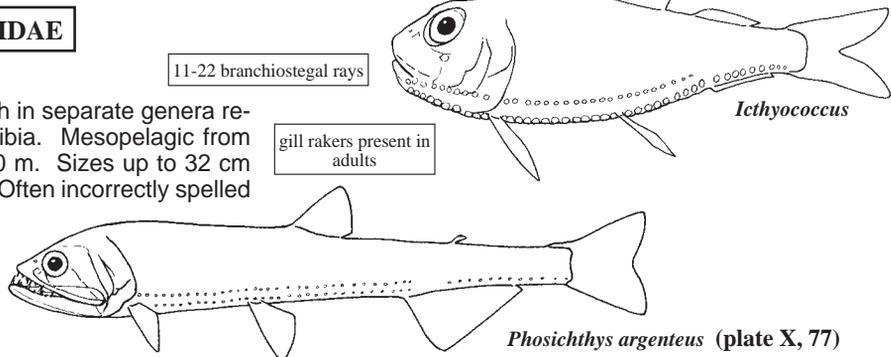
Five species in 4 genera reported from Namibia. Mesopelagic and bathypelagic from depths of 50 to 3 000 m. Maximum size up to 36 cm standard length but often smaller.



PHOSICHTHYIDAE

Lightfishes

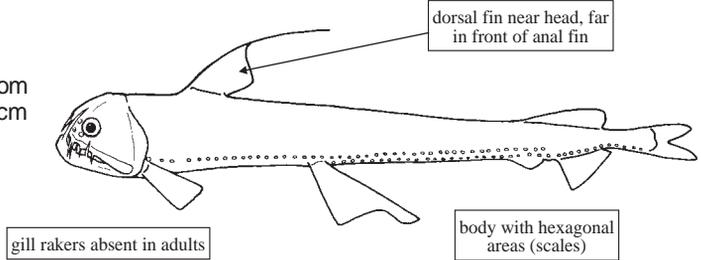
Four species each in separate genera reported from Namibia. Mesopelagic from 200 to over 1 000 m. Sizes up to 32 cm standard length. Often incorrectly spelled Photichthyidae.



CHAULIODONTIDAE

Viperfishes

Two species in 1 genus reported from Namibia. Mesopelagic. Size to 30 cm standard length.

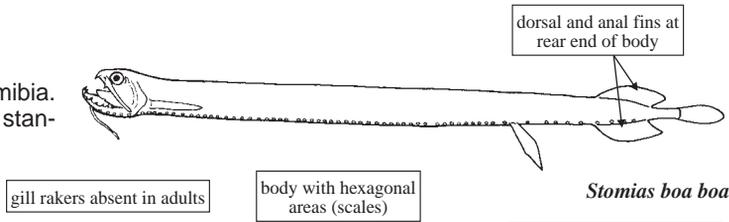


Chauliodus

STOMIIDAE

Scaly dragonfishes

One species reported from Namibia. Mesopelagic. Size to about 32 cm standard length.

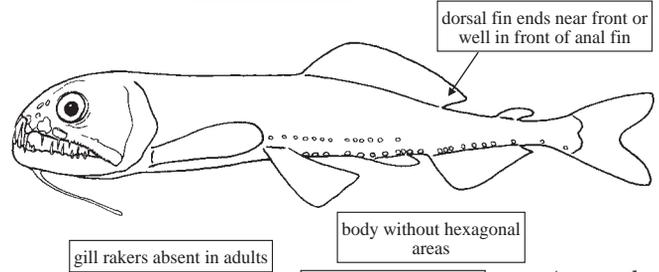


Stomias boa boa

ASTRONESTHIDAE

Snaggletooths

Seven species in 3 genera possibly from Namibia. Mesopelagic. Size to 36 cm standard length.

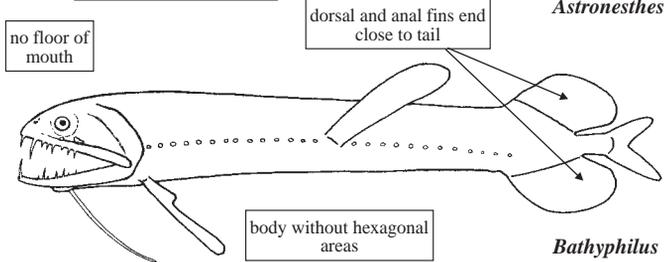


Astronesthes

MELANOSTOMIIDAE

Scaleless black dragonfishes

Eleven species in 5 genera possibly from Namibia. Mesopelagic. Maximum size to about 40 cm total length but generally much smaller.

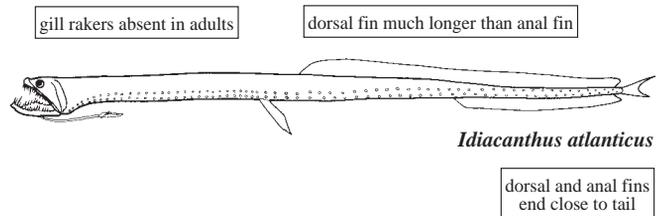


Bathyphilus

IDIACANTHIDAE

Sawtailfishes

A single species confirmed from Namibia. Mesopelagic. To 43 cm.

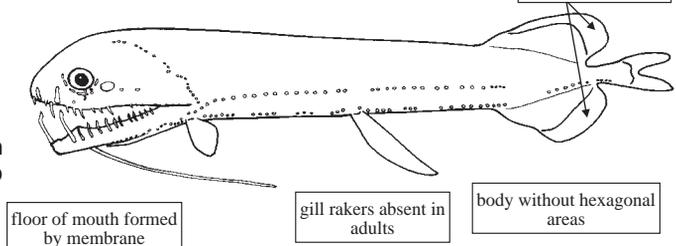


Idiacanthus atlanticus

MALACOSTEIDAE

Loosejaws

One unidentified species possibly in Namibia. Mesopelagic. Maximum size to around 15 cm standard length.

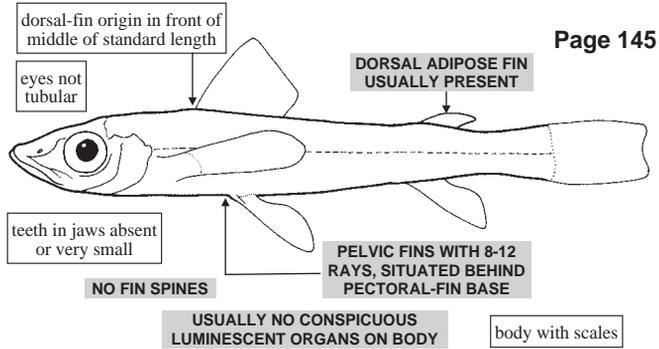


Order **AULOPIFORMES - Greeneyes, Lizardfishes, and allies**
 Pelvic fins with 8 to 12 rays, situated behind pectoral-fin base; no fin spines; dorsal adipose fin usually present; usually no conspicuous luminescent organs on body. Members of 7 families reported from Namibia, 2 of these families contain species that are common in fisheries and they are included in the "Guide to Species."

CHLOROPHTHALMIDAE

Greeneyes

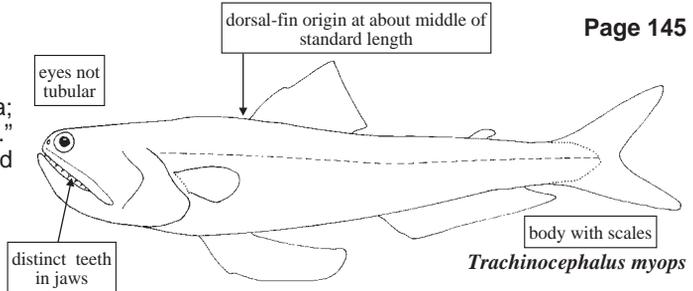
Possibly 5 species in 3 genera reported from Namibia; 2 species are commonly caught in trawls and are included in the "Guide to Species." Demersal on upper and lower continental slope. Size to around 40 cm standard length.



SYNODONTIDAE

Lizardfishes

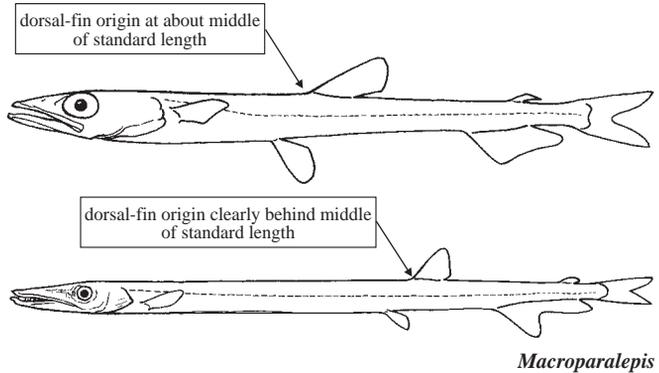
A single species reported from Namibia; included in the "Guide to Species." Demersal to depths of 200 m. To around 35 cm standard length.



NOTOSUDIDAE

Wavyfishes

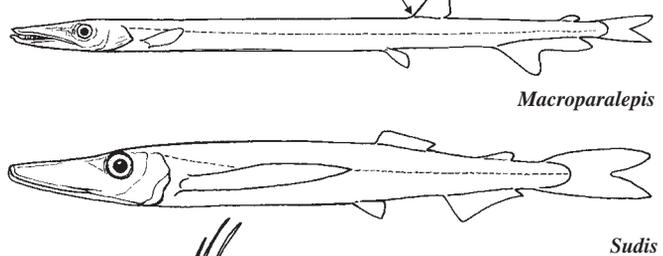
Two species from Namibia, neither included in "Guide to Species." Mesopelagic and benthopelagic. To about 27 cm standard length.



PARALEPIDIDAE

Barracudinas

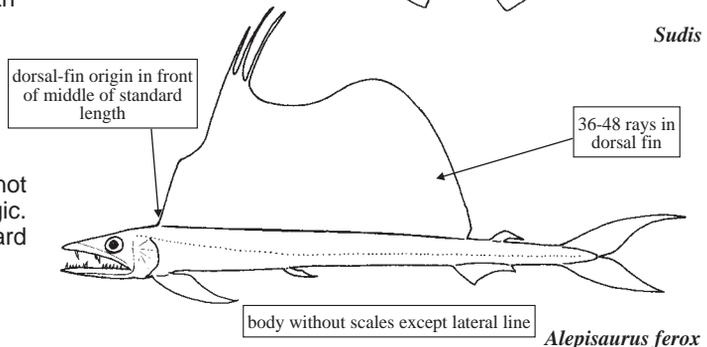
Four species in 4 genera reported or expected from Namibia; none included in "Guide to Species." Epi- to mesopelagic in depths between 10 and 2 000 m. Maximum size to over 50 cm standard length



ALEPISAUROIDAE

Lancetfishes

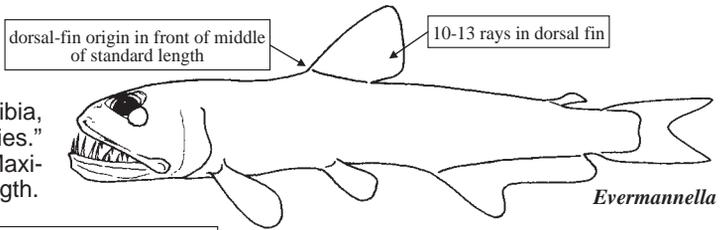
One species reported from Namibia, not included in "Guide to Species." Pelagic. Maximum size to around 1.5 m standard length.



EVERMANNELLIDAE

Sabertooth fishes

Two species in 2 genera from Namibia, neither included in the "Guide to Species." Mesopelagic from 400 to 1 000 m. Maximum size around 12 cm standard length.

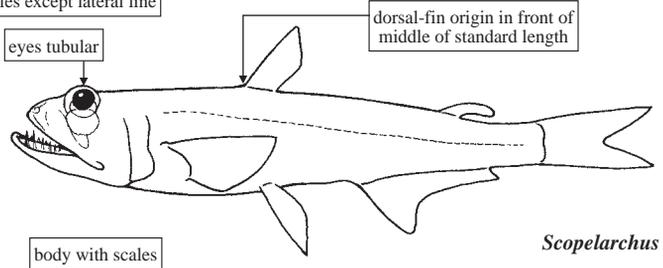


body without scales except lateral line

SCOPELARCHIDAE

Pearleyes

Three species in 2 genera expected from Namibia, none included in the "Guide to Species." Meso- to bathypelagic. Maximum size around 12 cm standard length.



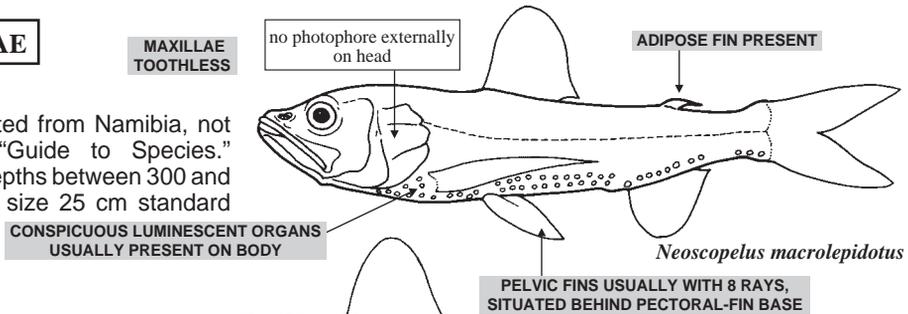
Order **MYCTOPHIFORMES - Blackchins and Lanternfishes**

Pelvic fins usually with 8 rays, situated behind pectoral-fin base; adipose fin present; conspicuous luminescent organs usually present on body; maxillae toothless. Deep sea and bathypelagic species, often abundant and an important source of food for fishes but presently of no importance in fisheries, although they are of commercial importance in other areas. Two families reported, 5 species are common and included in the "Guide to Species."

NEOSCOPELIDAE

Blackchins

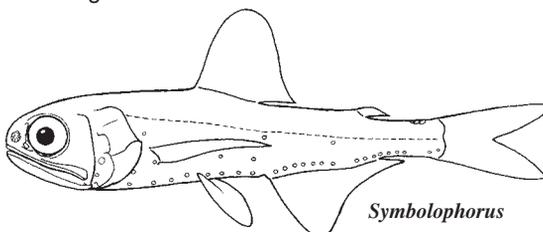
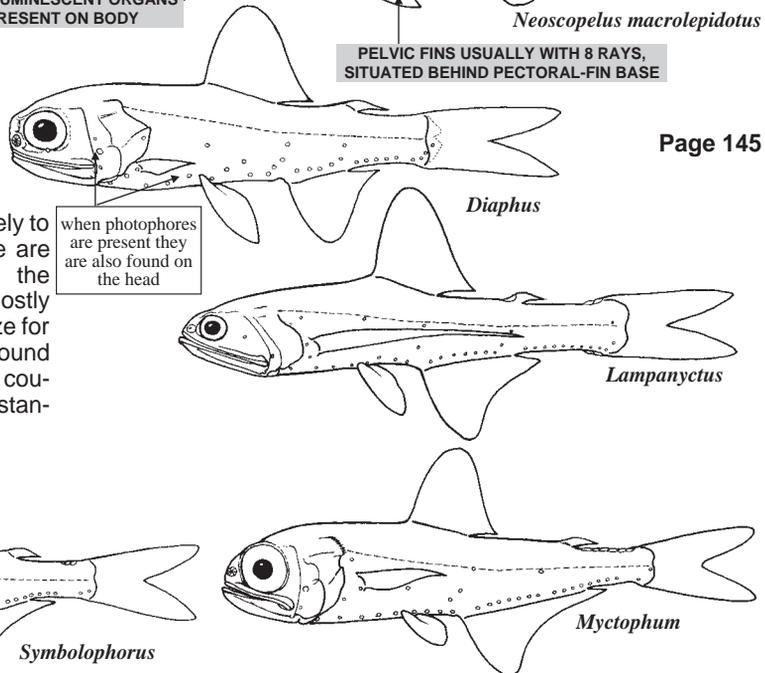
One species reported from Namibia, not included in the "Guide to Species." Bathypelagic at depths between 300 and 800 m. Maximum size 25 cm standard length.



MYCTOPHIDAE

Lanternfishes

Forty-nine species reported or likely to be found off Namibia, 5 of these are common and are included in the "Guide to Species." Mostly mesopelagic fishes. Maximum size for most species is less than or around 10 cm standard length although a couple of species reach 20 to 25 cm standard length.

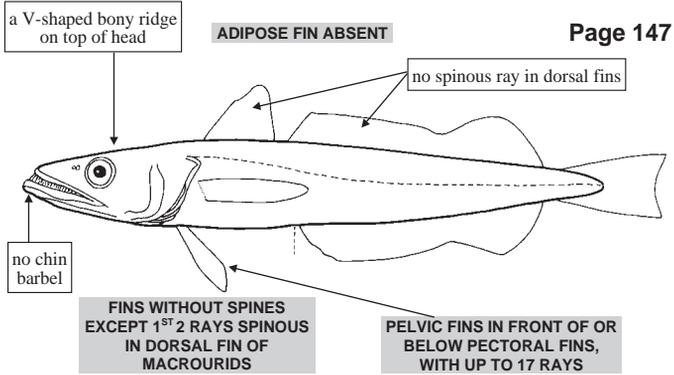


Order **GADIFORMES - Hakes, Cods, and allies**
 Pelvic fins situated in front of or below pectoral fins, with up to 17 rays; fins without spines except first 2 rays spinous in dorsal fin of macrourids; adipose fin absent. Three families reported from Namibia.

MERLUCCIIDAE

Hakes

Three species of *Merluccius* reported from Namibia; 2 of these species are the most important in trawl fisheries of Namibia, the third (*Merluccius polli*) infrequently caught in the northern part of Namibia. Benthopelagic between depths of about 50 and 900 m. Maximum size to 1.2 m total length.

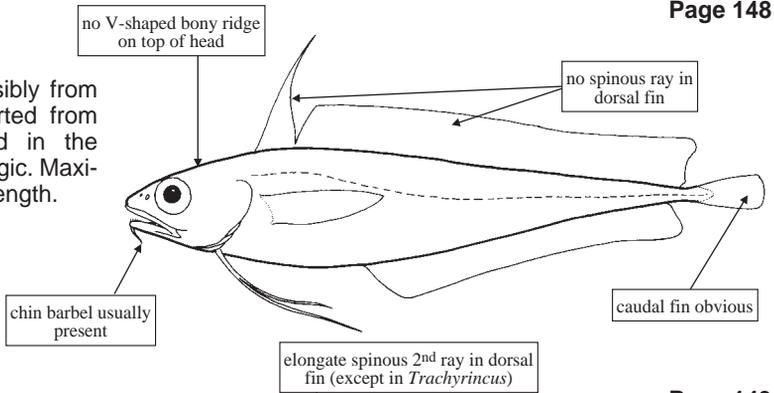


Page 147

MORIDAE

Moras

Six genera and 6 species possibly from Namibia, 3 of which are reported from several sources and included in the "Guide to Species." Benthopelagic. Maximum size to about 60 cm total length.

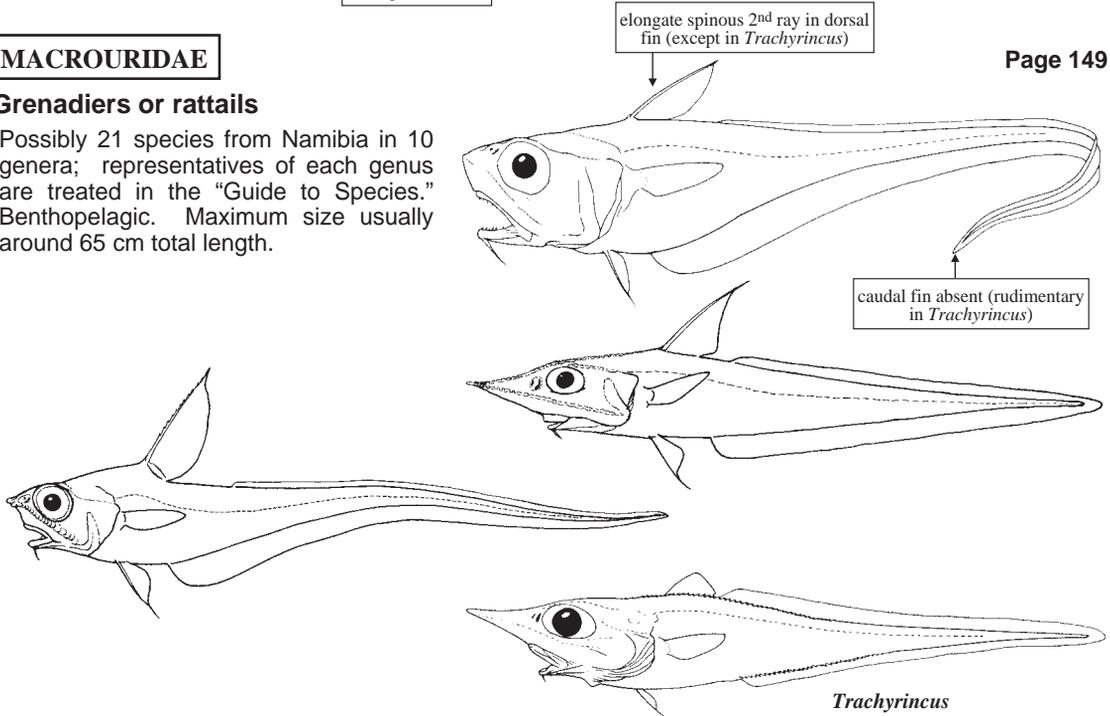


Page 148

MACROURIDAE

Grenadiers or rattails

Possibly 21 species from Namibia in 10 genera; representatives of each genus are treated in the "Guide to Species." Benthopelagic. Maximum size usually around 65 cm total length.



Page 149

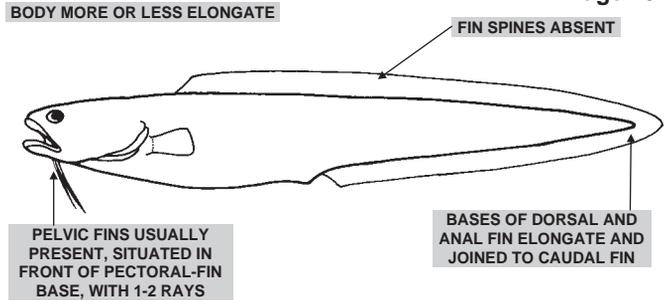
Order **OPHIDIIFORMES - Cusk Eels and allies**
 Pelvic fins usually present, situated in front of pectoral-fin base, with 1 or 2 rays; fin spines absent; body more or less elongate; bases of dorsal and anal fin elongate and joined to caudal fin. One family reported from Namibia.

OPHIDIIDAE

Page 152

Cusk eels or brotulas

Eight species in 7 genera reported from Namibia, several found in very deep water; 5 species treated in the "Guide to Species." Demersal, most species are found in depths between 200 and almost 3 000 m. Maximum size to 160 cm total length.



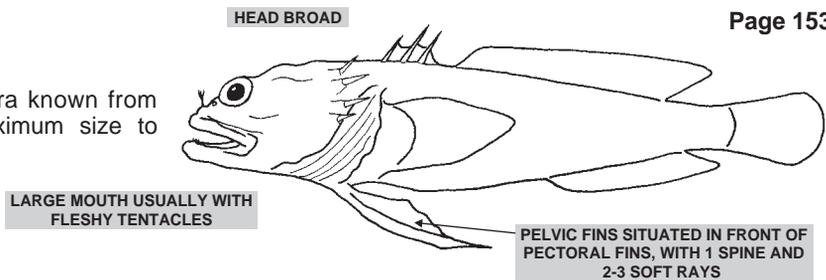
Order **BATRACHOIDIFORMES - Toadfishes**
 Pelvic fins situated in front of pectoral fins, with 1 spine and 2 or 3 soft rays; head broad; large mouth usually with fleshy tentacles. One family found in Namibia.

BATRACHOIDIDAE

Page 153

Toadfishes

Three species in 2 genera known from Namibia. Demersal. Maximum size to 35 cm total length.



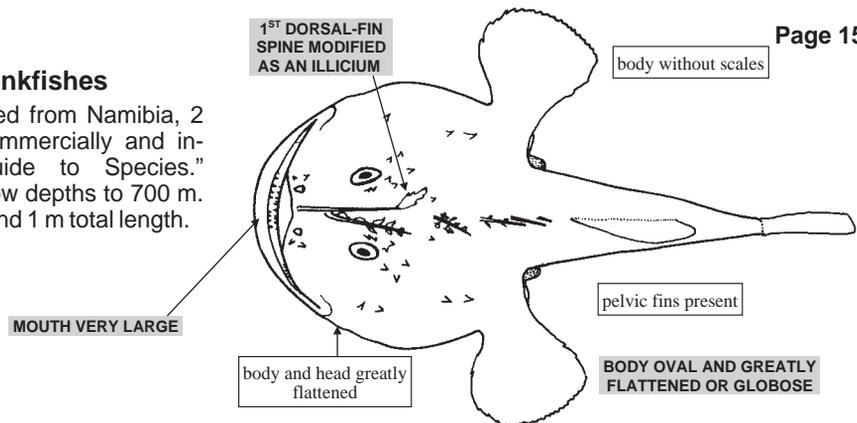
Order **LOPHIIFORMES - Anglerfishes**
 First dorsal-fin spine modified as an illicium; body oval and greatly flattened or globose; mouth very large. Eight families possibly from Namibia but most are deep-water fishes of little commercial importance; only Lophiidae are important and often caught in trawls and included in the "Guide to Species."

LOPHIIDAE

Page 154

Goosefishes or monkfishes

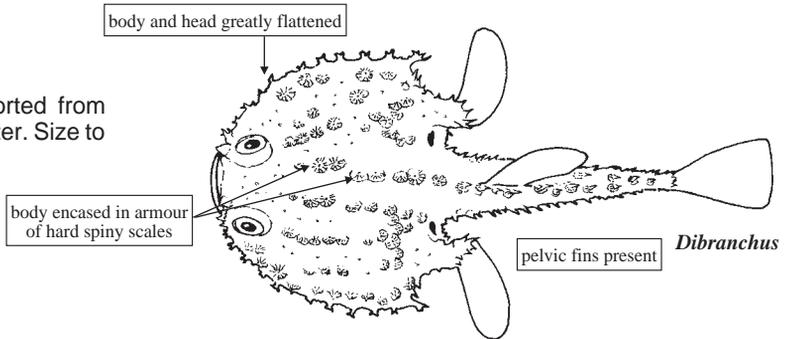
Three species reported from Namibia, 2 species important commercially and included in the "Guide to Species." Demersal, from shallow depths to 700 m. Maximum size to around 1 m total length.



OGCOEPHALIDAE

Batfishes

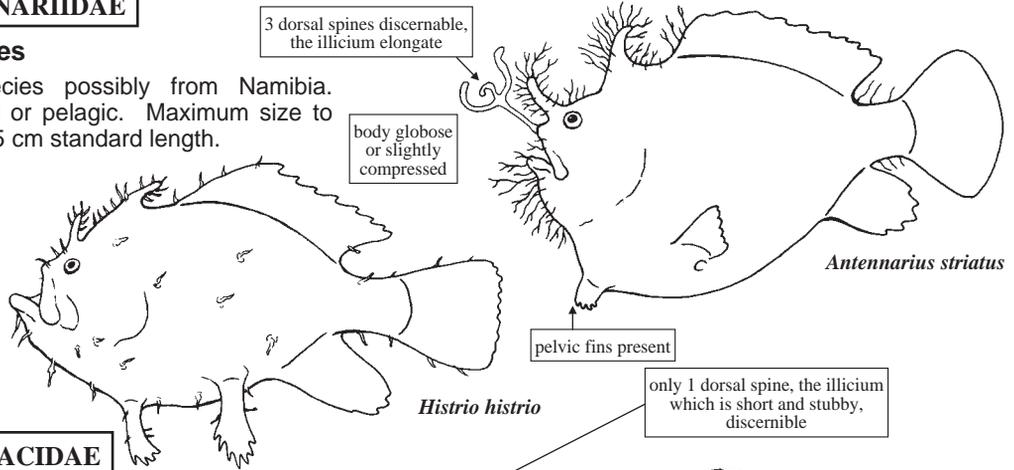
Two species in 2 genera reported from Namibia. Demersal in deep water. Size to about 14 cm standard length.



ANTENNARIIDAE

Frogfishes

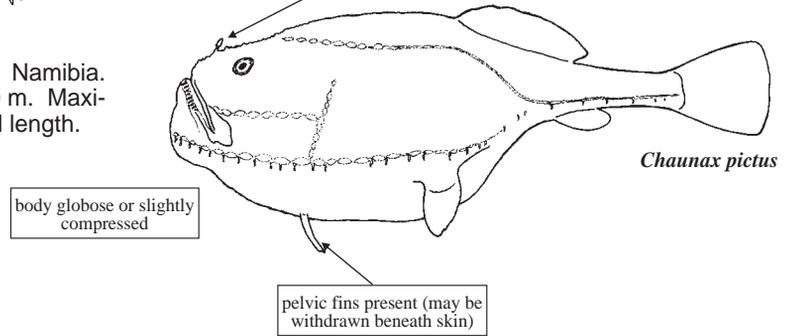
Two species possibly from Namibia. Demersal or pelagic. Maximum size to around 15 cm standard length.



CHAUNACIDAE

Sea toads

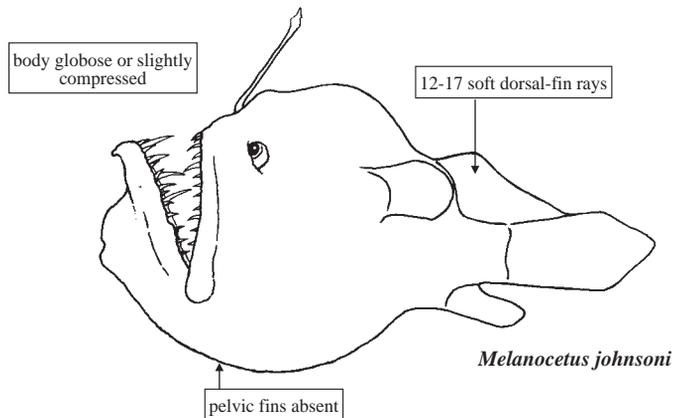
One species reported from Namibia. Demersal below a depth of 200 m. Maximum size to around 24 cm total length.



MELANOCETIDAE

Devil anglers

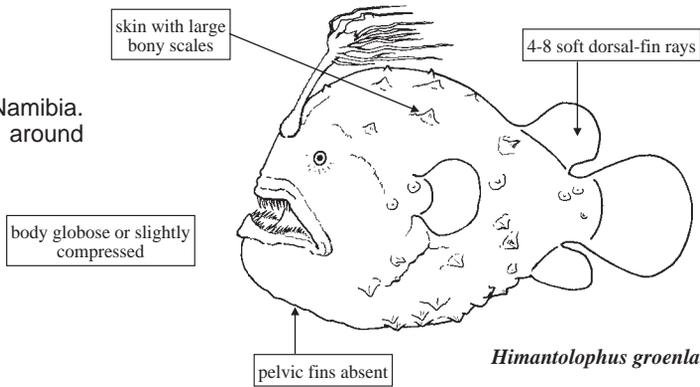
One species reported from Namibia. Mesopelagic in depths between 500 and 1 500 m. Maximum size observed less than 12 cm total length.



HIMANTOLOPHIDAE

Football fishes

A single species reported from Namibia. Mesopelagic. Maximum size around 50 cm total length.

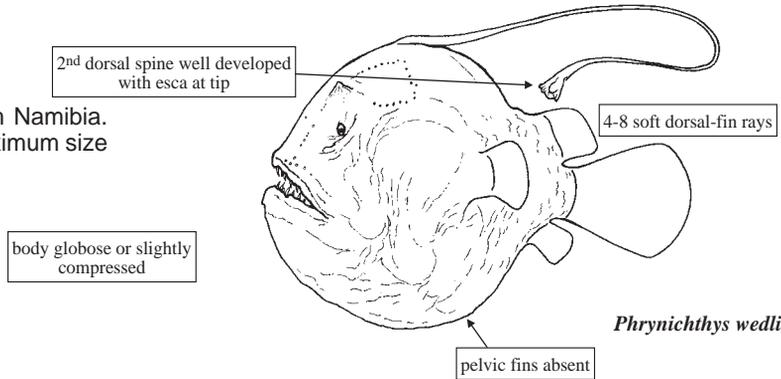


Himantolophus groenlandicus

DICERATIIDAE

Horned anglers

A single species reported from Namibia. Meso- and benthopelagic. Maximum size to around 18 cm total length.

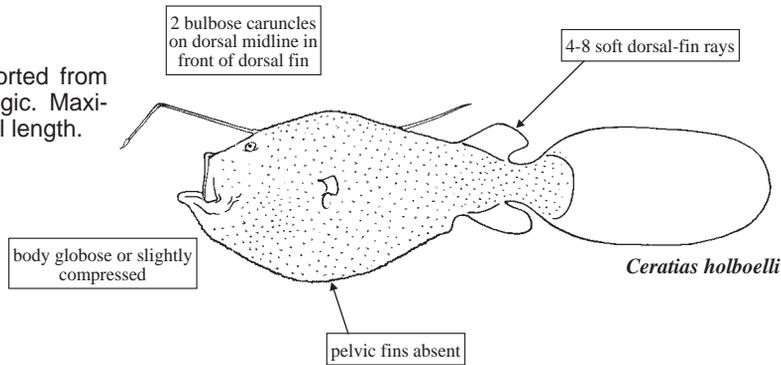


Phrynichthys wedli

CERATIIDAE

Seadevils

Two species in 2 genera reported from Namibia. Meso- and bathypelagic. Maximum size to around 77 cm total length.

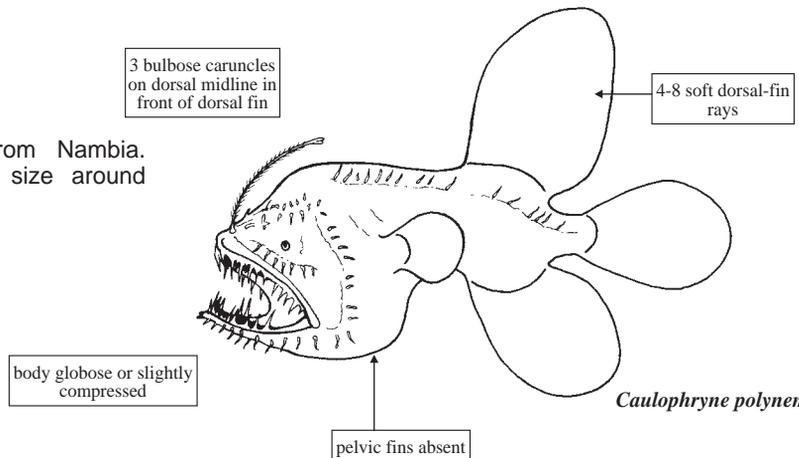


Ceratias holboelli

CAULOPHRYNIDAE

Caulophrynids

One species reported from Namibia. Bathypelagic. Maximum size around 14 cm total length.



Caulophryne polynema

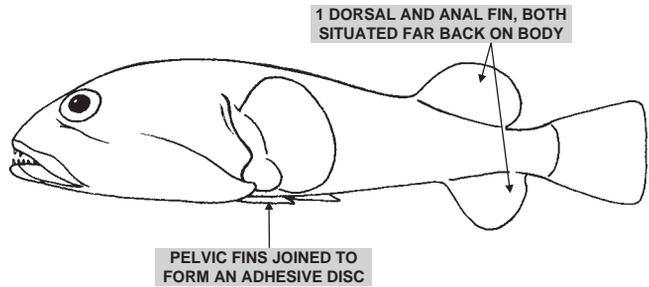


Order **GOBIESOCIFORMES - Clingfishes**
 For the species found in Namibia: Pelvic fins joined to form an adhesive disc on ventral surface of body at juncture of head and body; a single dorsal and anal fin, both situated far back on body. Only 1 species, *Chorisochismus dentex*, reported from Namibia; not included in the "Guide to Species."

GOBIESOCIDAE

Clingfishes

Thus far, only a few specimens collected in Namibia. Shallow water. To 30 cm total length.

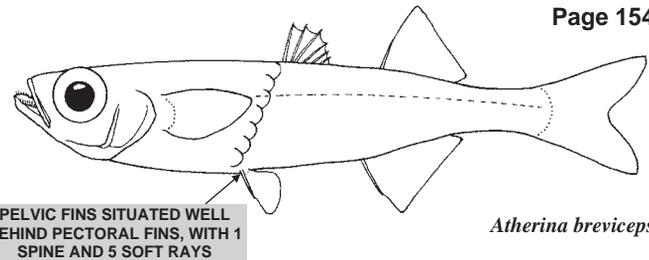


Order **ATHERINIFORMES - Silversides and allies**
 For those families found in Namibia: Pelvic fins situated well behind pectoral fins, with 1 spine and 5 rays. One species reported from Namibia, included in the "Guide to Species."

ATHERINIDAE

Silversides and allies

One species reported from Namibia. In bays and estuaries. Maximum size to 11 cm total length.



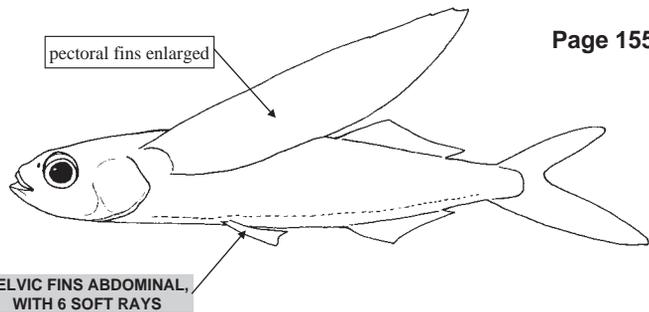
Page 154

Order **BELONIFORMES - Flyingfishes, Sauries, and allies**
 Pelvic fins abdominal, with 6 soft rays. Two families reported from Namibia.

EXOCOETIDAE

Flyingfishes

Two species in 2 genera possibly from Namibia; both included in "Guide to Species." Epipelagic. To 25 cm standard length.



Page 155

SCOMBERESOCIDAE

Sauries

Two species in 2 genera possibly from Namibia; both included in "Guide to Species." Epipelagic. To around 50 cm total length.



Page 155

Order **LAMPRIFORMES - Opahs and allies**

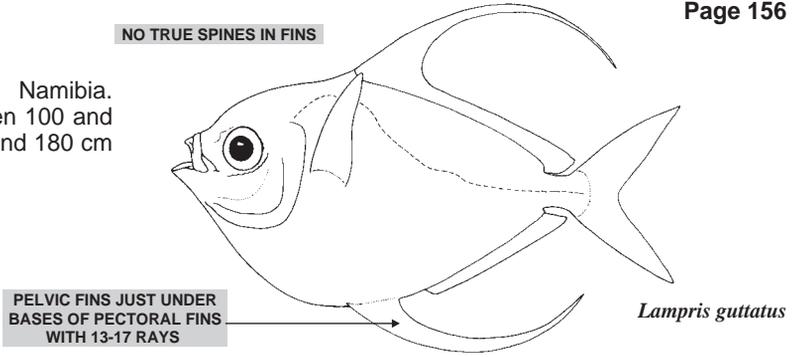
A diverse group of often strange-looking fishes. In Namibia members differentiated by: no true spines in fins; pelvic fins just under bases of pectoral fins with 13 to 17 rays, or pelvic fins under or in front of pectoral-fin bases with a single ray followed by 3 rudimentary rays, or anal fin absent. At least 4 families possibly in Namibia.

LAMPRIDAE

Page 156

Opahs

One species reported from Namibia. Mesopelagic in depths between 100 and 400 m. Maximum size to around 180 cm total length.

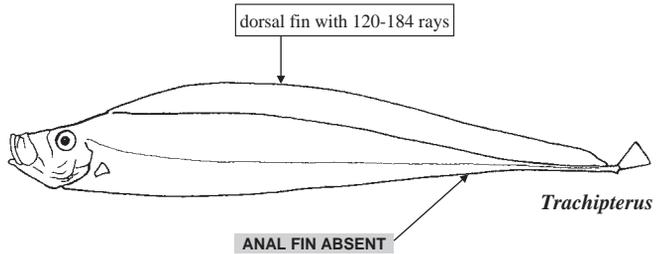


TRACHIPTERIDAE

Page 156

Ribbonfishes

Two species in 2 genera from Namibia. Mesopelagic. Maximum size to 213 cm total length.

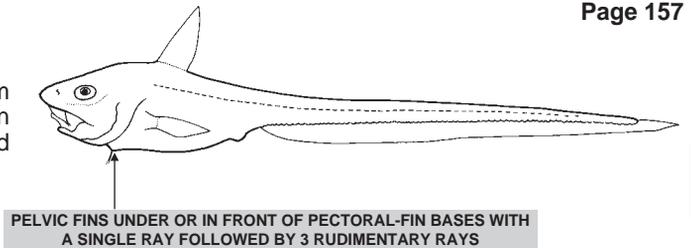


ATELEOPODIDAE

Page 157

Ateleopodids

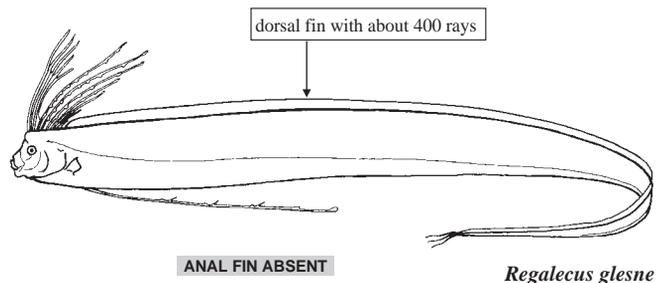
Two species in 2 genera reported from Namibia. Demersal in depths between 200 and 700 m. Maximum size to around 2 m total length.



REGALECIDAE

Oarfishes

At least 1 species found in Namibia, although rare and not included in the "Guide to Species." Mesopelagic. Maximum size to 8 m total length.

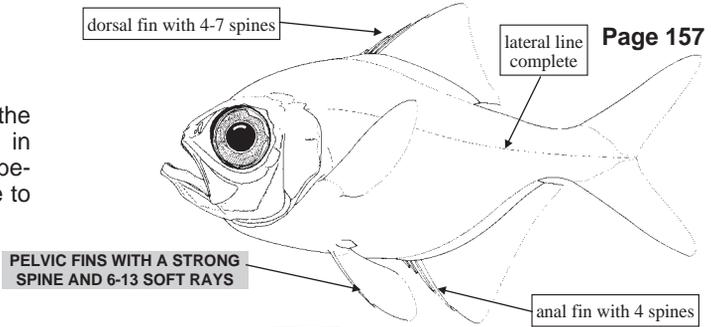


Order **BERYCIFORMES - Alfonsinos and allies**
 For these families found in Namibia: pelvic fins with only 5 soft rays or, a strong spine and 6 to 13 soft rays. At least 5 families expected in Namibia; 2 families contain species that are typically very deep-water inhabitants and these families are not included in the "Guide to Species."

BERYCIDAE

Alfonsinos

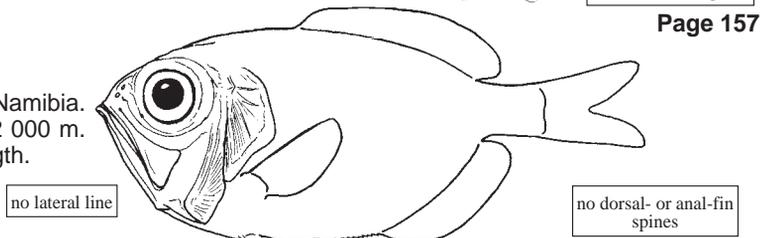
One species, considered one of the "redfishes" and commonly caught in trawls in Namibia. Demersal in depths between 200 and 700 m. Maximum size to 45 cm total length.



DIRETMIDAE

Spinyfins

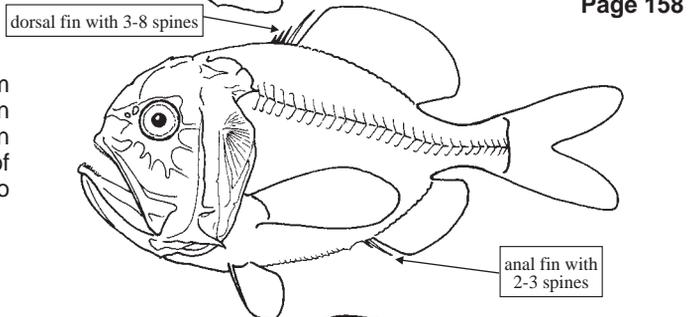
A single species expected in Namibia. Pelagic from shallow depths to 2 000 m. Maximum size to 40 cm total length.



TRACHICHTHYIDAE

Slimeheads

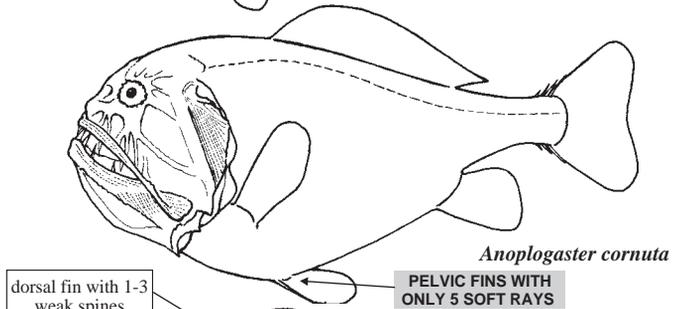
Five species in 2 genera reported from Namibia. The orange roughly included in this family is now an important fishery in Namibia. Benthopelagic from depths of 50 to 1 000 m. Maximum size up to around 70 cm total length.



ANOPLOGASTERIDAE

Fangtooth

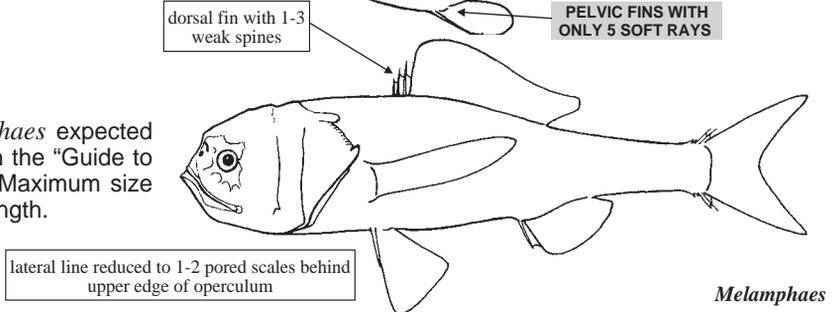
One species expected in Namibia, not included in the "Guide to Species." Mesoto bathypelagic in depths between 50 and 2 000 m. Maximum size to about 15 cm standard length.



MELAMPHAIDAE

Big scales

Three species of *Melamphaes* expected in Namibia, not included in the "Guide to Species." Bathypelagic. Maximum size less than 5 cm standard length.

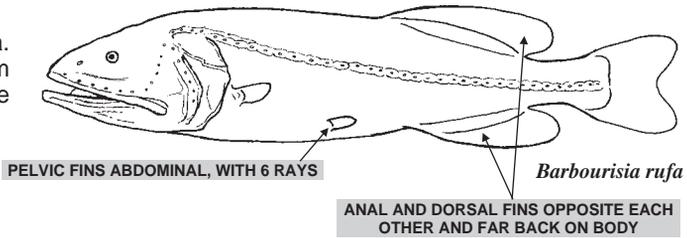


Order **CETOMIMIFORMES - Whalefishes**
 Body whale-shaped; very large mouth; no fin spines; anal and dorsal fin opposite each other and far back on body; pelvic fins absent or abdominal (in species reported from Namibia, pelvic fins are abdominal, with 6 rays). One species reported from Namibia, rare, not included in the "Guide to Species."

BARBOURISIIDAE (plate IV, 25) **VERY LARGE MOUTH** **NO FIN SPINES** **BODY WHALE-SHAPED**

Velvet whalefishes

One species reported from Namibia. Meso-, bathy- and benthopelagic from depths of 300 to 2 000 m. Maximum size to around 33 cm total length.

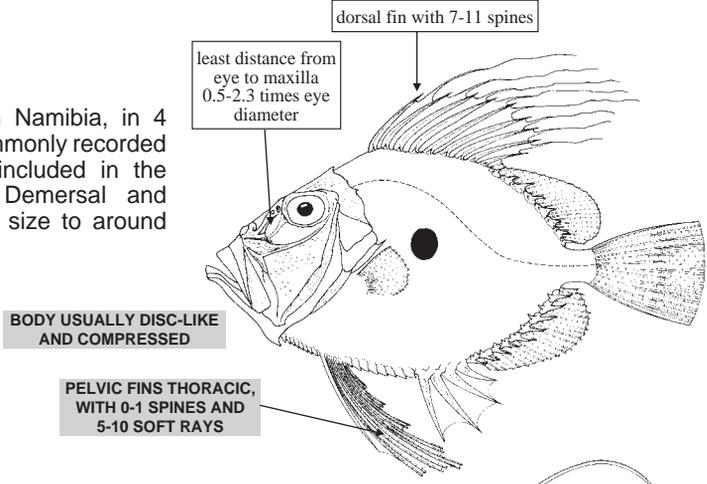


Order **ZEIFORMES - Dories and allies**
 Body usually disc-like and compressed; pelvic fins thoracic, with 0 to 1 spines and 5 to 10 soft rays. Four families found in Namibia.

ZEIDAE

Dories

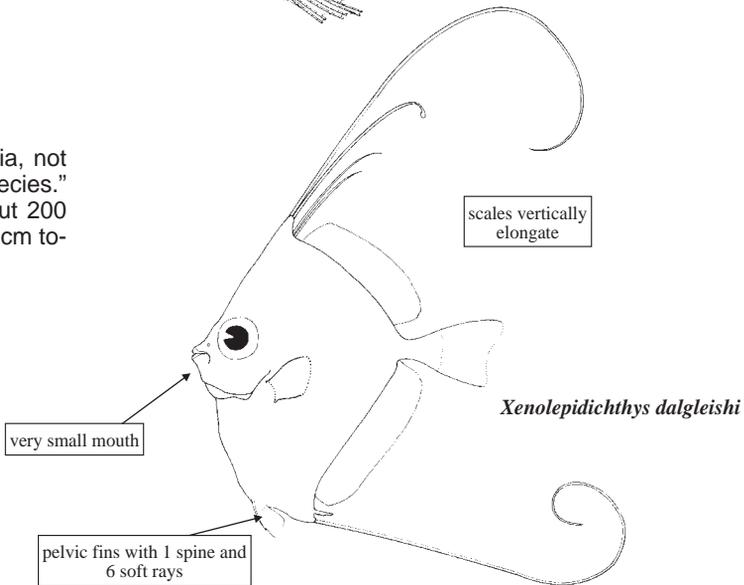
Possibly 5 species from Namibia, in 4 genera; 2 species not commonly recorded from Namibia and not included in the "Guide to Species." Demersal and mesopelagic. Maximum size to around 90 cm total length.



GRAMMICOLEPIDIDAE

Diamond dories

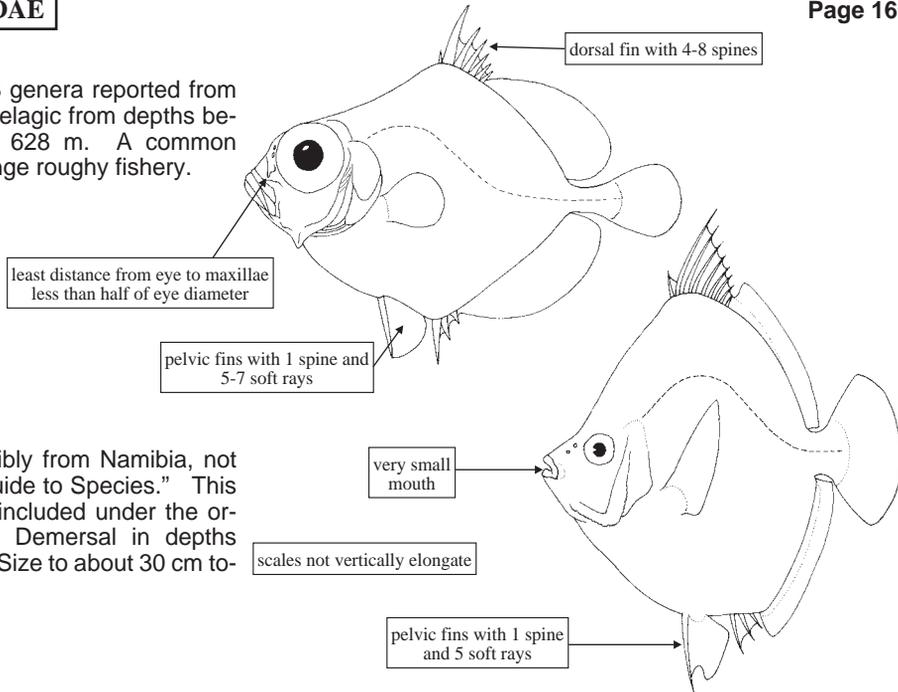
One species reported from Namibia, not included in the "Guide to Species." Benthopelagic from depths of about 200 to 400 m. Maximum size about 15 cm total length.



OREOSOMATIDAE

Oreos

Three species in 3 genera reported from Namibia. Benthopelagic from depths between 400 and 1 628 m. A common bycatch in the orange roughy fishery.



CAPROIDAE

Boarfishes

One species possibly from Namibia, not included in the "Guide to Species." This family sometimes included under the order Perciformes. Demersal in depths from 50 to 400 m. Size to about 30 cm total length.

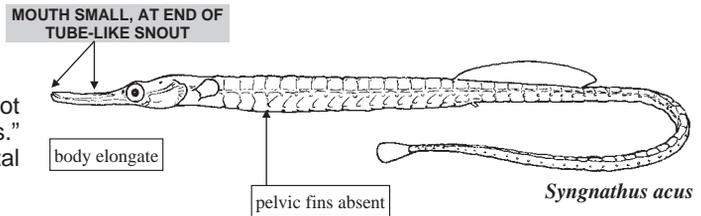
Antigonia capros

Order **SYNGNATHIFORMES - Pipefishes and allies**
 Mouth small, at end of tube-like snout; pelvic fins, if present, abdominal. Three families in Namibia.

SYNGNATHIDAE

Pipefishes

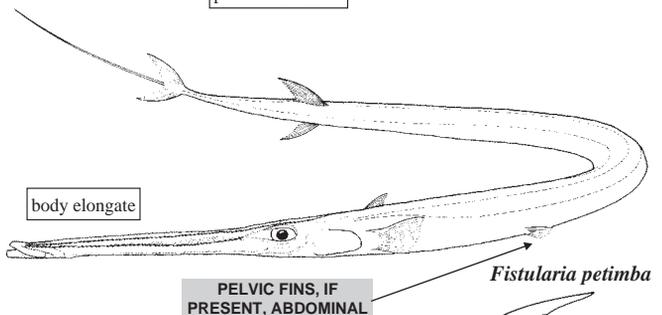
One species reported from Namibia; not included in the "Guide to Species." Neritic. Maximum size about 30 cm total length.



FISTULARIIDAE

Cornetfishes

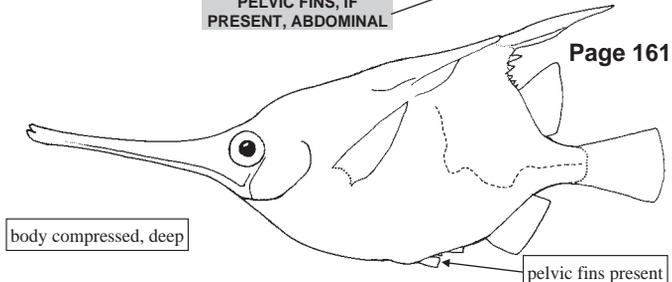
One species reported from Namibia; not included in the "Guide to Species." Neritic. Maximum size to 1.5 m.



MACRORAMPHOSIDAE

Snipefishes

Two species in 2 genera possibly from Namibia. Demersal. Maximum size to around 30 cm total length.

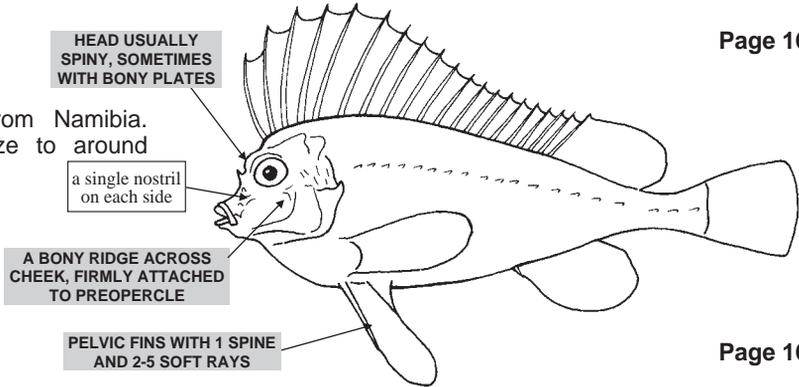


Order **SCORPAENIFORMES - Scorpionfishes**
 Pelvic fins with 1 spine and 2 to 5 soft rays; a bony ridge across cheek, firmly attached to preopercle; head usually spiny, sometimes with bony plates. Six families found in Namibia.

CONGIOPODIDAE

Horsefishes

Two species reported from Namibia. Demersal. Maximum size to around 76 cm total length.

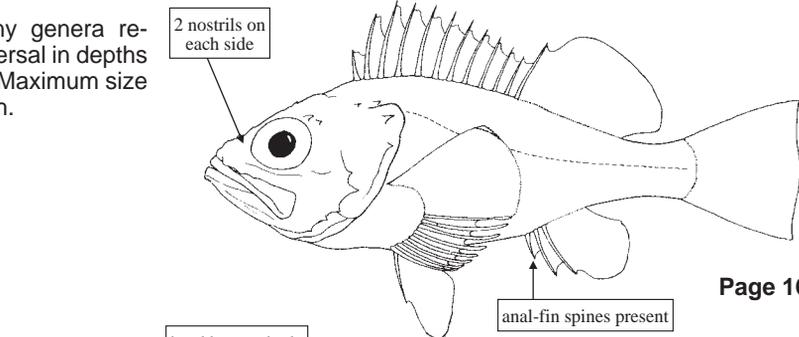


Page 161

SCORPAENIDAE

Scorpionfishes

Seven species in as many genera reported from Namibia. Demersal in depths from 100 to over 1 000 m. Maximum size to around 50 cm total length.

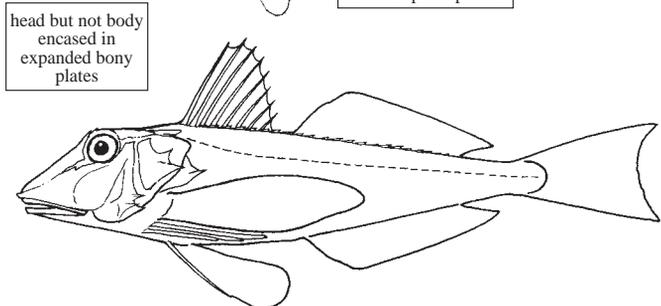


Page 162

TRIGLIDAE

Searobins or gurnards

Possibly 4 species in 2 genera from Namibia. Demersal from shallow depths to 400 m. Maximum size around 75 cm total length.

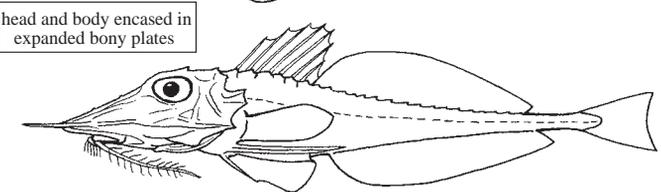


Page 163

PERISTEDIIDAE

Armoured searobins

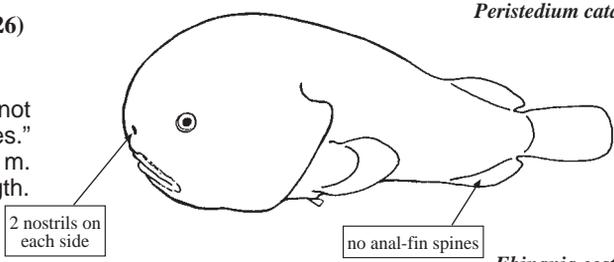
One species reported from Namibia; not included in the "Guide to Species." Demersal in depths from 70 to 600 m. Maximum size 25 cm total length.



PSYCHROLUTIDAE (plate IV, 26)

Fatheads

One species reported from Namibia; not included in the "Guide to Species." Demersal in depths from 318 to 600 m. Maximum size around 27 cm total length.



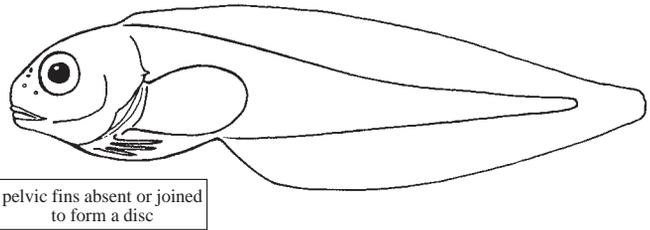
Peristedium cataphractum

Ebinania costaecanarie

LIPARIDAE

Snailfishes

Possibly 3 species from Namibia; none included in the "Guide to Species." Demersal from depths between 300 and over 1 100 m. Maximum size to around 50 cm standard length.



pelvic fins absent or joined to form a disc

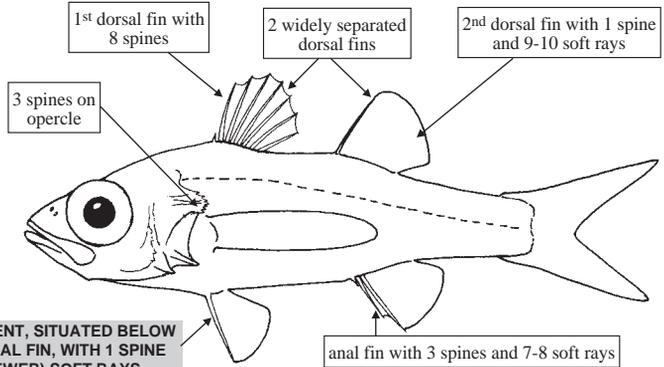
Order PERCIFORMES - Perch-like Fishes

Pelvic fins, when present, situated below or in front of pectoral fin, with 1 spine and 5 (sometimes fewer) rays. At least 44 families reported from Namibia.

HOWELLIDAE

Howellas

One species, reported from a single specimen in the extreme southern part of Namibia. Sometimes included in the family Percichthyidae (which is now restricted to freshwater species), Acropomatidae, or Moronidae; not included in the "Guide to Species." Found in depths between 500 and 900 m. Size to about 9 cm total length.



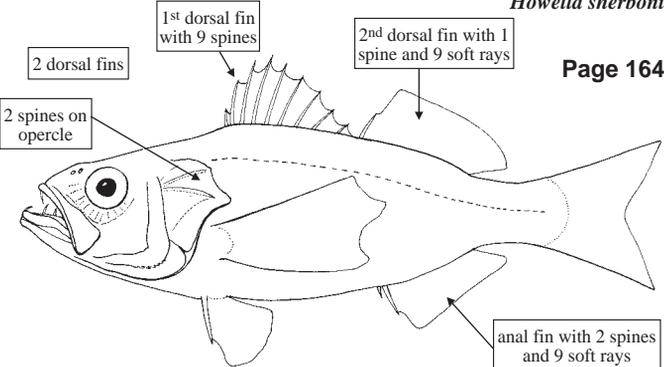
PELVIC FINS, WHEN PRESENT, SITUATED BELOW OR IN FRONT OF PECTORAL FIN, WITH 1 SPINE AND 5 (SOMETIMES FEWER) SOFT RAYS

Howella sherboni

ACROPOMATIDAE

Lanternbellies

A single species reported from Namibia. Bathypelagic from depths between 50 and 450 m. To about 16 cm total length.



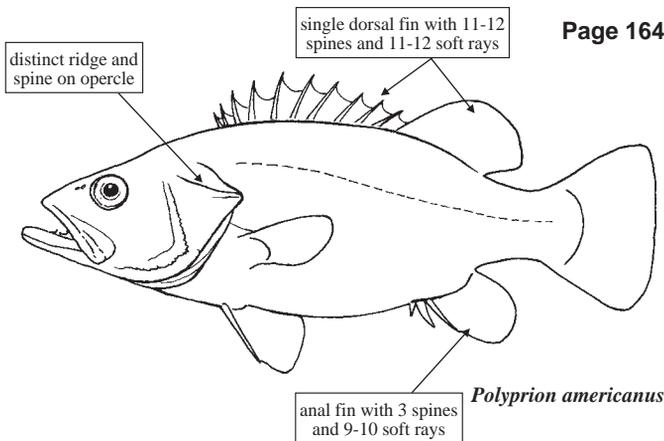
Page 164

Synagrops microlepis

POLYPRIONIDAE

Wreckfishes

A single species known to occur in Namibia; sometimes this species is included in the family Serranidae or Acropomatidae. Usually demersal at depths between 40 and 350 m. Size to 2 m.



Page 164

Polyprion americanus

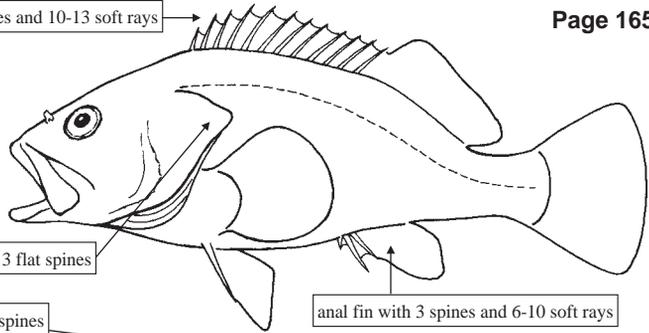
SERRANIDAE

single dorsal fin with 7-12 spines and 10-13 soft rays

Page 165

Groupers and seabasses

Possibly 4 species in as many genera occurring in Namibia. Demersal from shallow depths to 300 m. Maximum size to 1.2 m total length.



CALLANTHIDAE

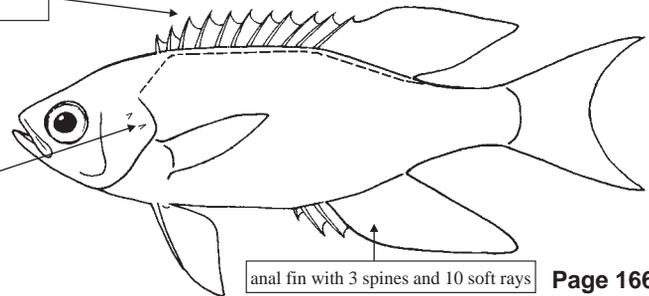
Goldies

A single, apparently rare, species in Namibia; not included in the "Guide to Species." Demersal. To 25 cm total length.

single dorsal fin with 11 spines and 10-11 soft rays

opercle with 1-2 spines

anal fin with 3 spines and 10 soft rays



EPIGONIDAE

Deepwater cardinalfishes

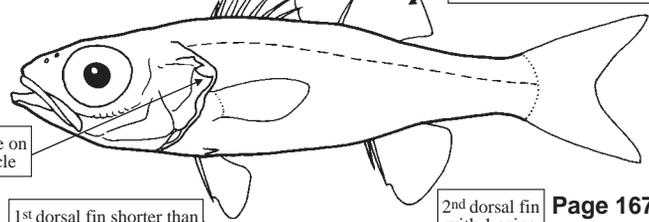
Four species reported from Namibia and another also possibly occurring there. Demersal and benthopelagic in depths between 75 and 1 200 m. Maximum size to about 60 cm total length.

1st dorsal fin with 7-8 spines

2 dorsal fins

2nd dorsal fin with 1 spine and 9-10 soft rays

1 spine on opercle



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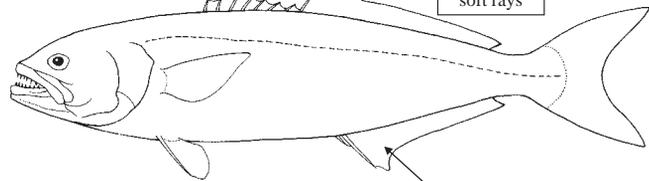
POMATOMIDAE

Bluefish

One species worldwide, also reported from Namibia. Pelagic in depths between 2 and 200 m. Size to 1.1 m total length.

1st dorsal fin shorter than second, with 7-8 spines

2nd dorsal fin with 1 spine and 23-28 soft rays



Page 167

RACHYCENTRIDAE

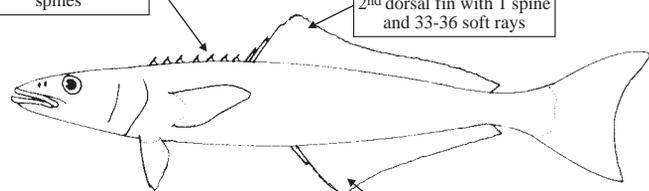
Cobias

One species worldwide, also from Namibia. Pelagic. Maximum size to 2 m.

1st dorsal fin composed of 7-9 short isolated spines

anal fin with 2 spines and 23-28 soft rays

2nd dorsal fin with 1 spine and 33-36 soft rays



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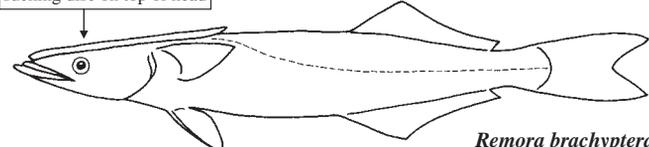
ECHENEIDAE

Remoras

Typically warm water, at least 1 species, *Remora brachyptera* occurs in Namibia; not included in "Guide to Species." Found attached to larger bony fishes, sharks, marine mammals, and turtles. Maximum size to about 60 cm total length.

sucking disc on top of head

anal fin with 2-3 spines and 22-28 soft rays



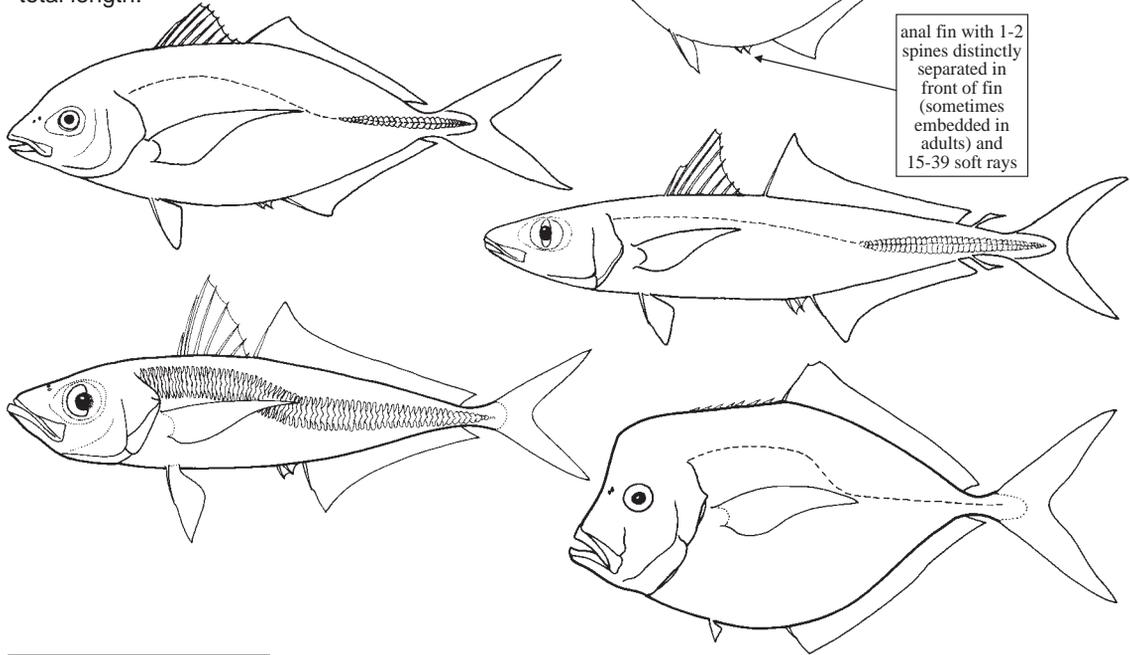
Remora brachyptera



CARANGIDAE

Horse mackerels, scads, moonfish, jacks, and amberjacks

Possibly 11 species and 8 genera represented in Namibia, some not included in "Guide to Species." Pelagic and benthopelagic. Largest species to 1.8 m total length.

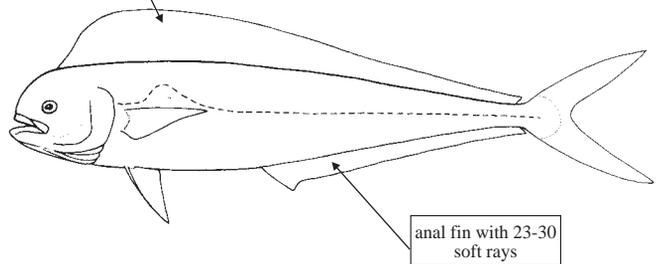


CORYPHAENIDAE

Dolphinfish

Two species may occur in Namibia. Pelagic. Maximum size to around 2 m.

single dorsal fin with 52-67 soft rays



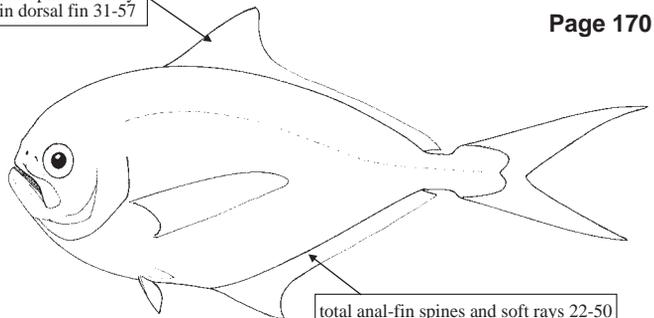
anal fin with 23-30 soft rays

BRAMIDAE

Pomfrets

Possibly 4 species in Namibia, occurrence of 1 species not confirmed and not included in the "Guide to Species." Pelagic to mesopelagic from shallow depths to 400 m. Maximum size to around 1 m total length.

total spines and rays in dorsal fin 31-57

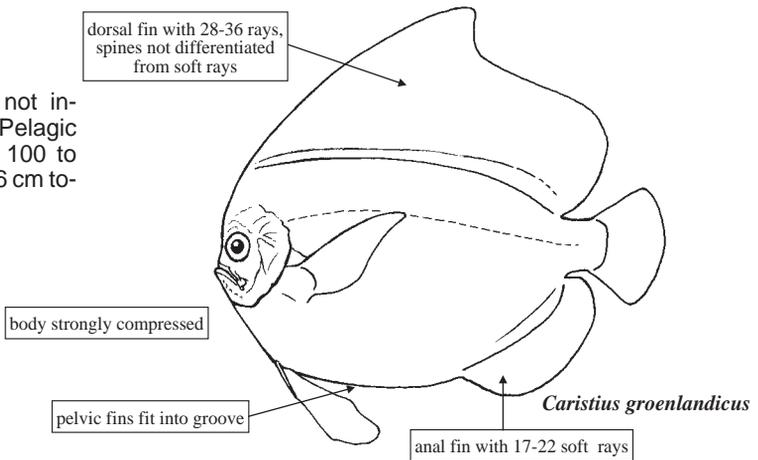


total anal-fin spines and soft rays 22-50

CARISTIIDAE

Manefishes

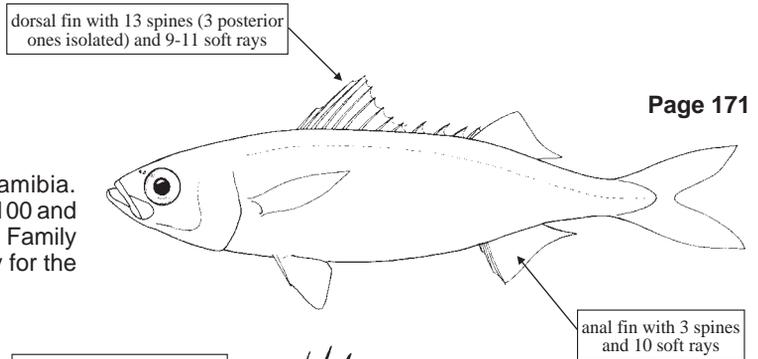
One species found in Namibia, not included in the "Guide to Species." Pelagic and mesopelagic from depths of 100 to 200 m. Maximum size to around 26 cm total length.



EMMELICHTHYIDAE

Rovers

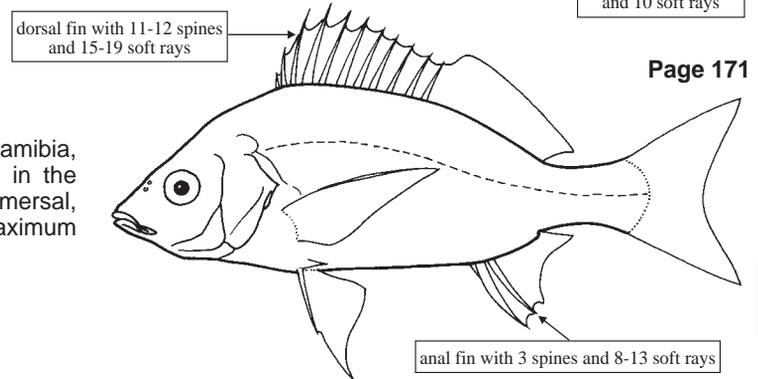
One species is confirmed in Namibia. Benthopelagic between depths of 100 and 200 m. Size to 50 cm total length. Family characteristics given here are only for the species found in Namibia.



HAEMULIDAE

Grunts

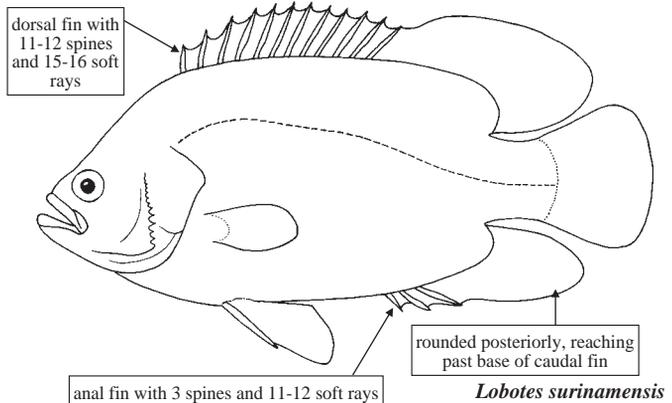
Three species in 2 genera from Namibia, 2 species rare and not included in the "Guide to Species." Neritic and demersal, from shallow depths to 100 m. Maximum size to 60 cm total length.



LOBOTIDAE

Tripletails

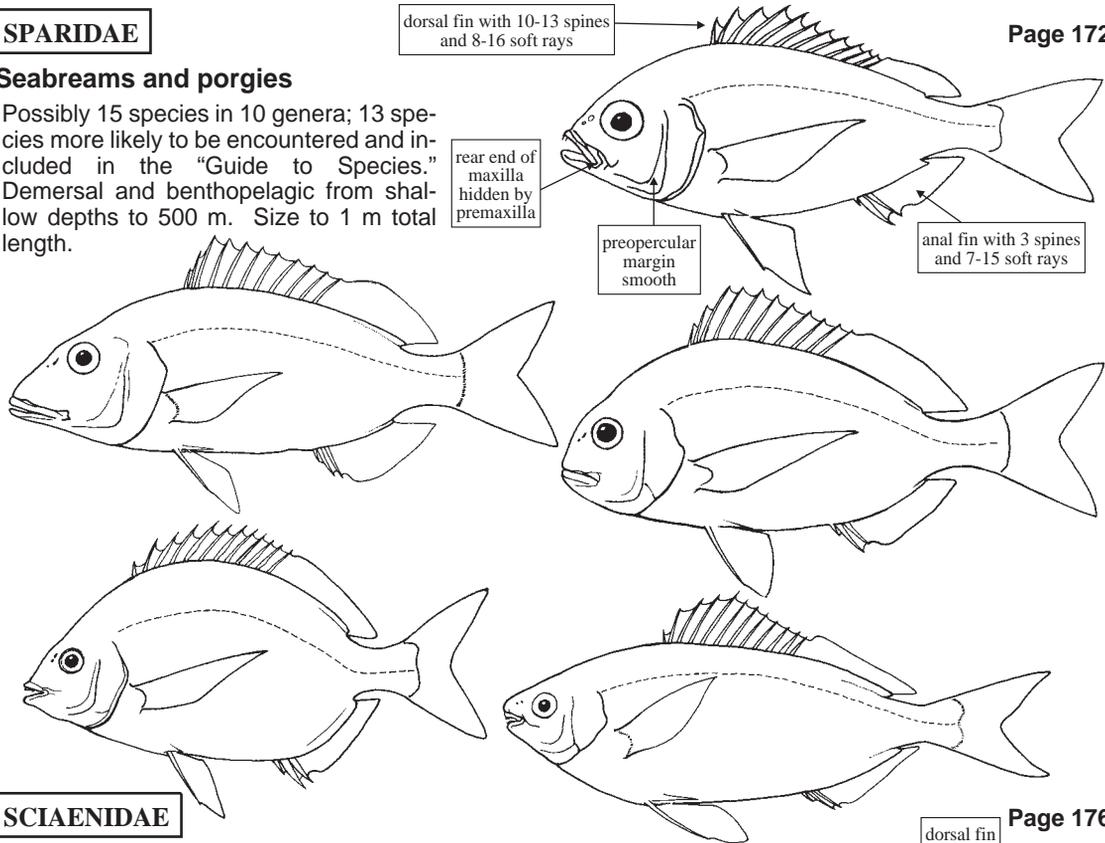
One species of this family occurring in the region but not yet confirmed from Namibia and therefore not included in the "Guide to Species." Neritic. To 1 m total length.



SPARIDAE

Seabreams and porgies

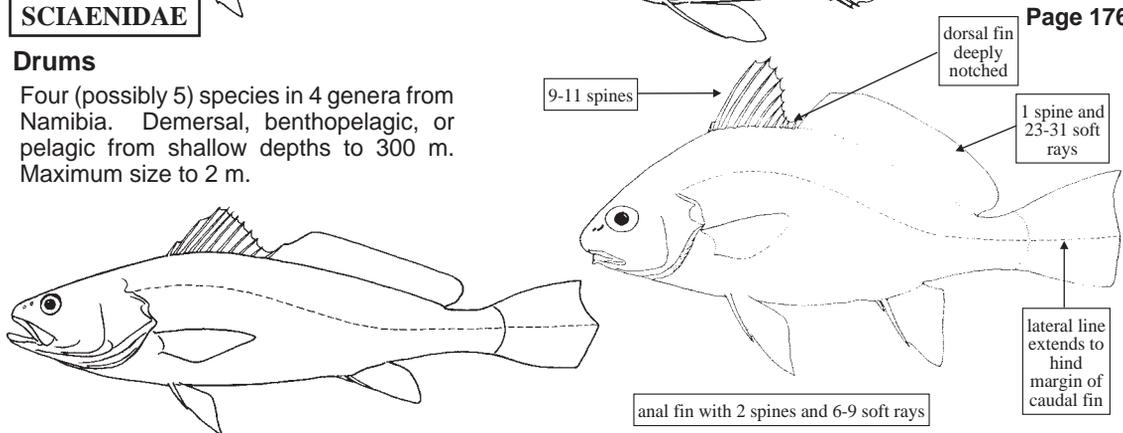
Possibly 15 species in 10 genera; 13 species more likely to be encountered and included in the "Guide to Species." Demersal and benthopelagic from shallow depths to 500 m. Size to 1 m total length.



SCIAENIDAE

Drums

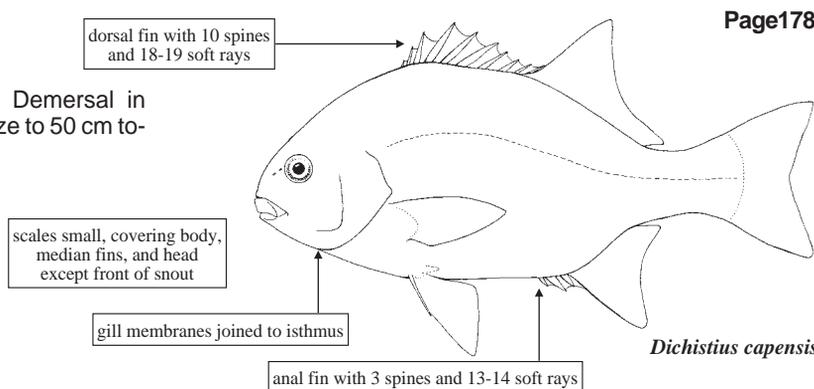
Four (possibly 5) species in 4 genera from Namibia. Demersal, benthopelagic, or pelagic from shallow depths to 300 m. Maximum size to 2 m.



DICHISTIIDAE

Galjoens

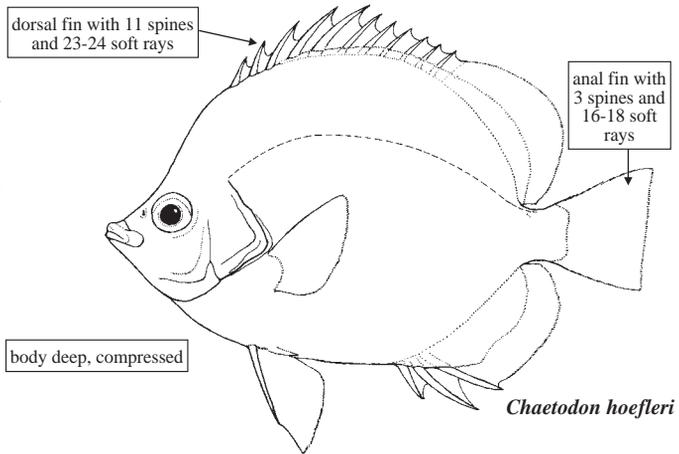
One species in Namibia. Demersal in shallow water. Maximum size to 50 cm total length.



CHAETODONTIDAE

Butterflyfishes

One species in southern Angola and may turn up in Namibia; not included in "Guide to Species." Associated with shallow, hard substrate. Maximum size to 20 cm total length.

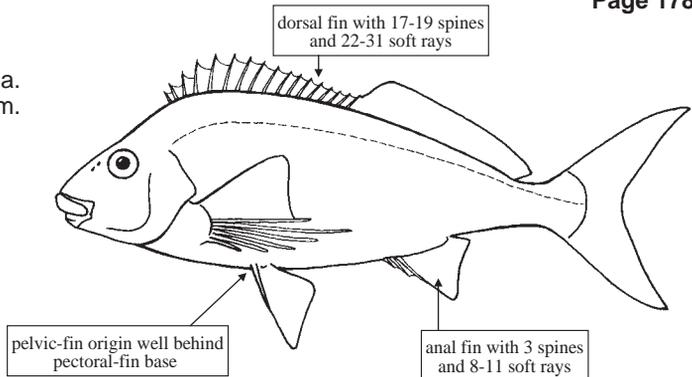


Page 178

CHEILODACTYLIDAE

Fingerfins

Three species reported from Namibia. Demersal from shallow depths to 240 m. Maximum size to 1 m total length.

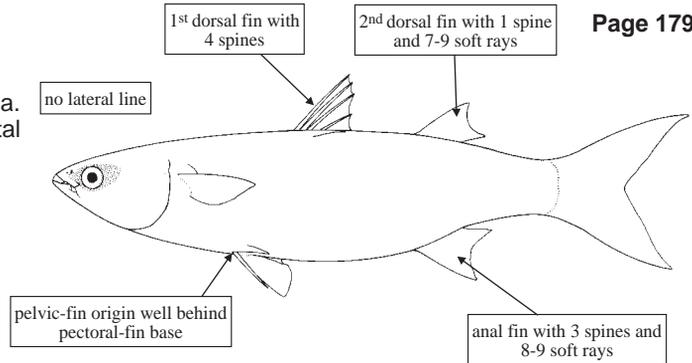


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MUGILIDAE

Mulletts

Possibly 3 species in 2 genera in Namibia. Neritic. Maximum size to 120 cm total length.

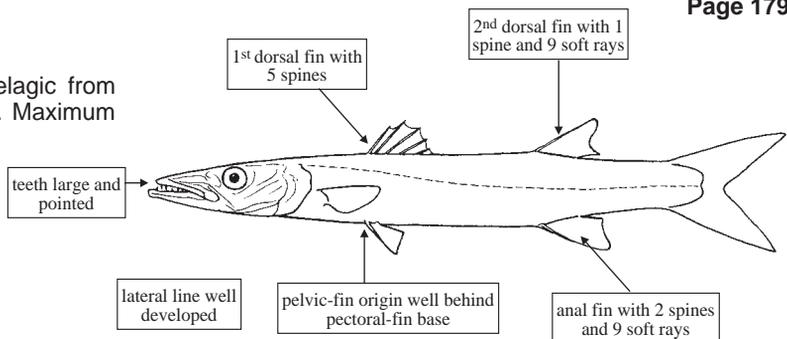


Page 179

SPHYRAENIDAE

Barracudas

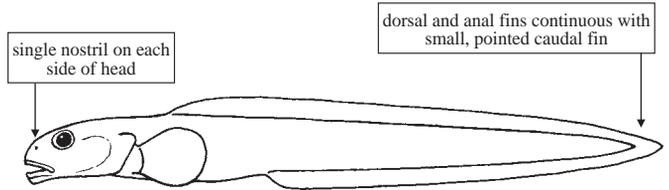
One species in Namibia. Pelagic from shallow depths to around 75 m. Maximum size to over 2 m total length.



ZOARCIDAE

Eelpouts

One species in Namibia, not included in the "Guide to Species"; sometimes placed in a separate order, the Zoarciformes. Demersal in depths between 630 and 1 920 m. Maximum size to 45 cm total length.

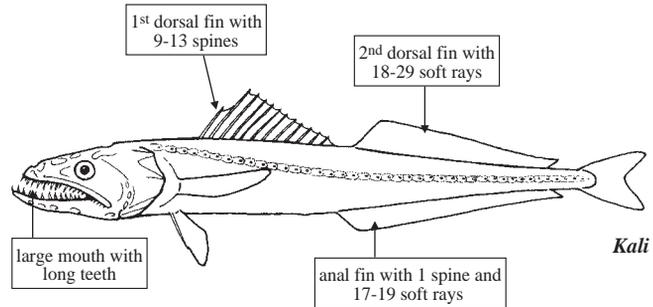


Lycodes atlanticus

CHIASMODONTIDAE

Swallowers

Three species possibly from Namibia, none included in "Guide to Species." Bathypelagic in depths over 1 500 m. Maximum size to about 26 cm total length.

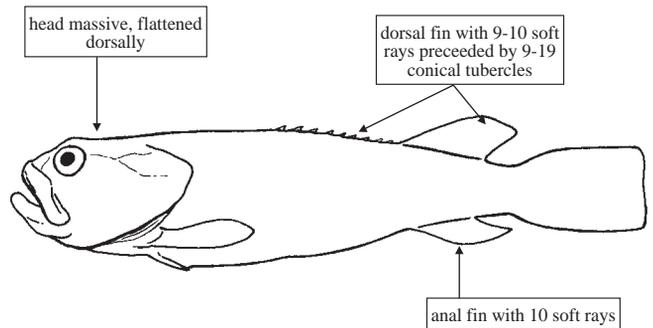


Kali

URANOSCOPIDAE

Stargazers

Two specimens of 1 species reported from extreme southern Namibia; not included in "Guide to Species." Demersal. Maximum size to 33 cm total length.

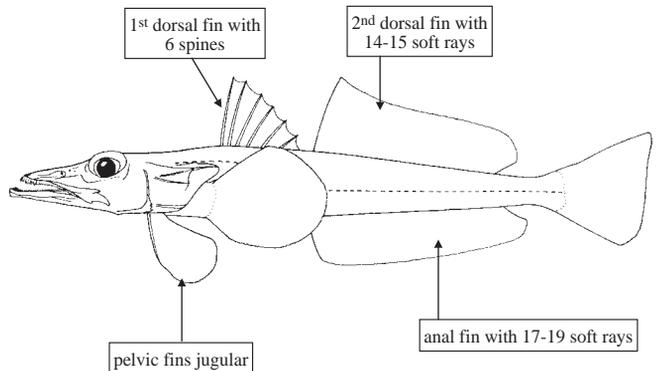


Pleuroscopus pseudodorsalis

PERCOPHIDAE

Duckbills

A single species reported from only a few specimens in the extreme northern waters of Namibia; not included in the "Guide to Species." Demersal in depths between 50 and 400 m. Maximum size to 23 cm total length.

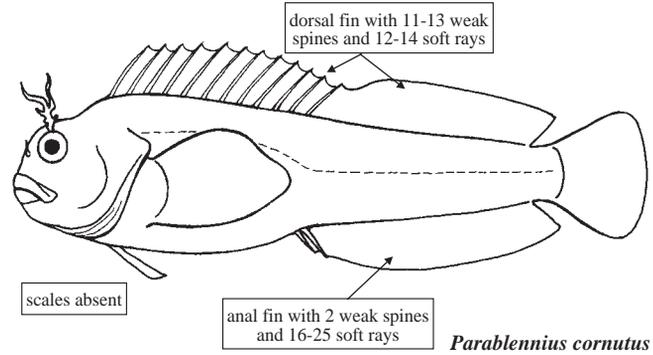


Bembrops heterurus

BLENNIIDAE

Blennies

Three species in 2 genera reported from Namibia; none included in "Guide to Species." Demersal from intertidal zone to a depth of 25 m. Maximum size to about 15 cm standard length.

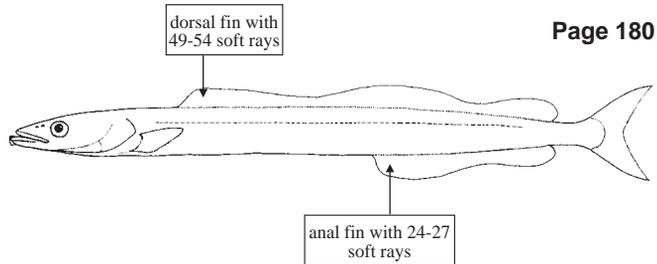


Parablennius cornutus

AMMODYTIDAE

Sandlances

One species reported from Namibia. Demersal in shallow sandy areas. Maximum size to 17 cm total length.



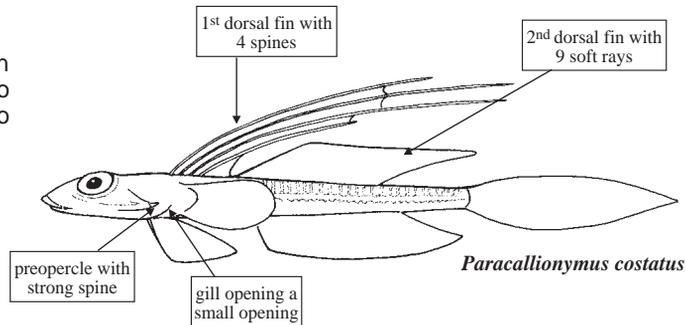
Gymnammodytes capensis

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CALLIONYMIDAE

Dragonets

One species reported from Namibia, often caught in trawls; included in the "Guide to Species." Demersal. Maximum size to 15 cm total length.



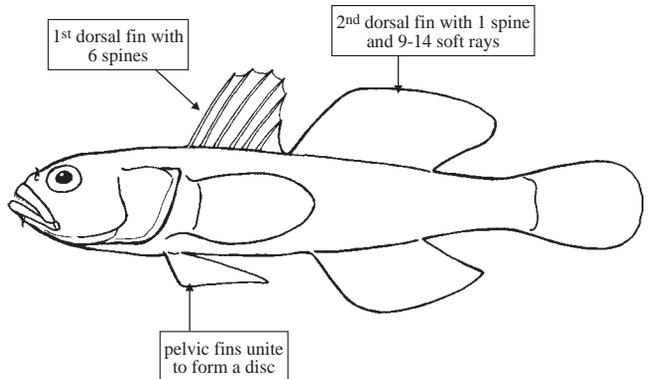
Paracallionymus costatus

Page 180

GOBIIDAE

Gobies

Five species reported from Namibia, only 1 of which is commonly encountered in fisheries and included in the "Guide to Species." Demersal in shallow depths to 340 m. Maximum size to 17 cm total length.



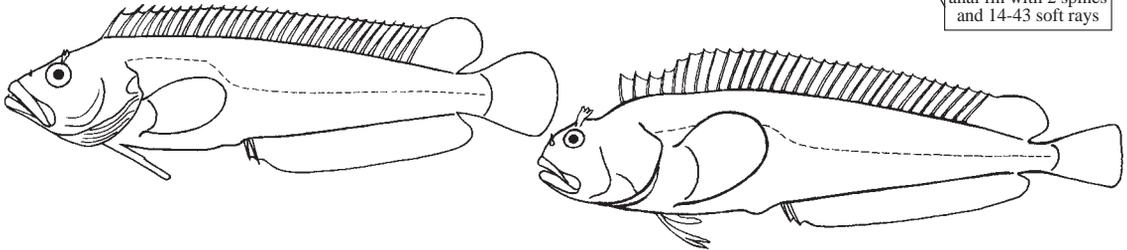
Page 180



CLINIDAE

Clinids

Eleven species in 5 genera reported from Namibia, none included in "Guide to Species." Shallow demersal species. Largest species attain 30 cm total length.



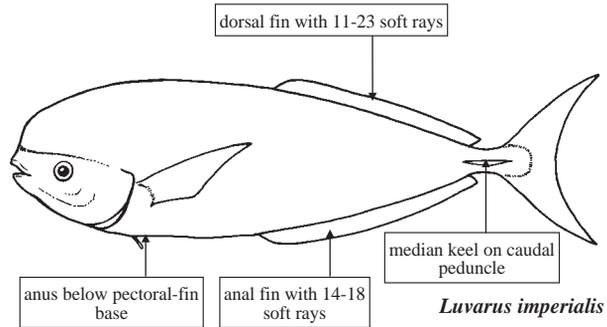
dorsal fin with 24-50 spines and 0-14 soft rays

anal fin with 2 spines and 14-43 soft rays

LUVARIDAE

Louvar

A single species worldwide, also expected from Namibia; not included in the "Guide to Species." Epipelagic. Size to 1.9 m total length.



dorsal fin with 11-23 soft rays

anus below pectoral-fin base

anal fin with 14-18 soft rays

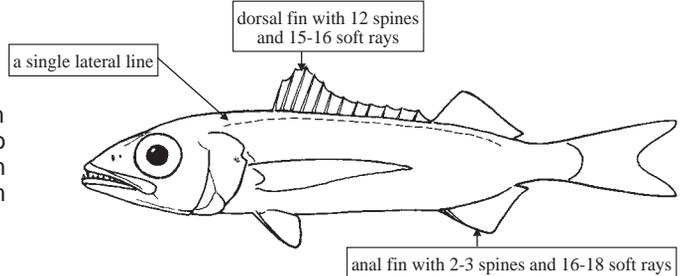
median keel on caudal peduncle

Luvarus imperialis

SCOMBROLABRACIDAE

Black mackerel

A single species, also may occur in Namibia; not included in the "Guide to Species." Mesopelagic in depths from 100 to 1 000 m. Maximum size to 30 cm total length.



a single lateral line

dorsal fin with 12 spines and 15-16 soft rays

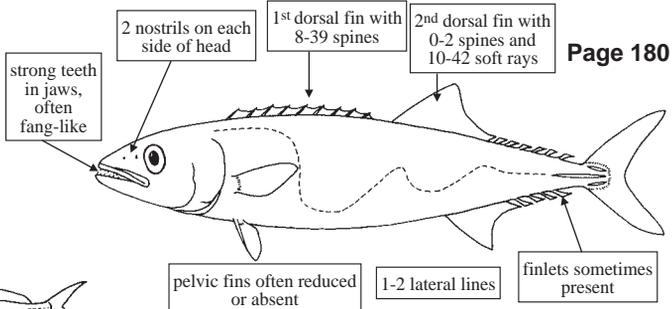
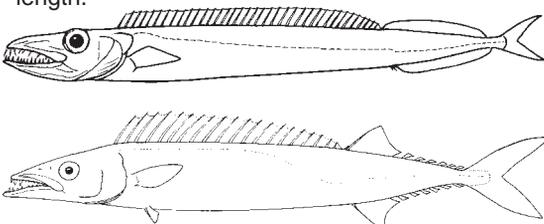
anal fin with 2-3 spines and 16-18 soft rays

Scombrlabrax heterolepis

GEMPYLIDAE

Snake mackerels

Possibly 10 species in 10 genera may occur in Namibia, 9 included in the "Guide to Species." Epipelagic, mesopelagic and benthopelagic, from shallow depths to over 1 000 m. Maximum size to 2 m total length.



strong teeth in jaws, often fang-like

2 nostrils on each side of head

1st dorsal fin with 8-39 spines

2nd dorsal fin with 0-2 spines and 10-42 soft rays

pelvic fins often reduced or absent

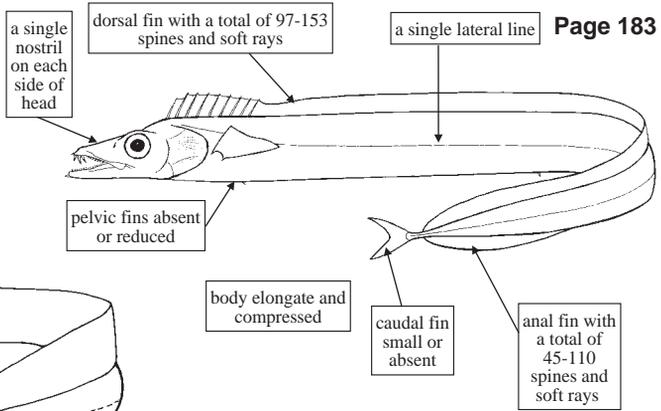
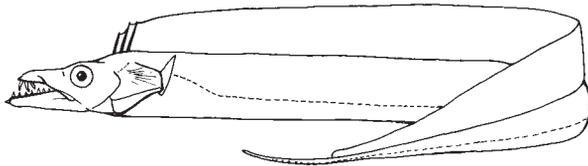
1-2 lateral lines

finlets sometimes present

TRICHIURIDAE

Cutlassfishes

Five species in 4 genera possibly from Namibia. Benthopelagic in shallow depths to 2 000 m. Maximum size to about 2 m standard length.

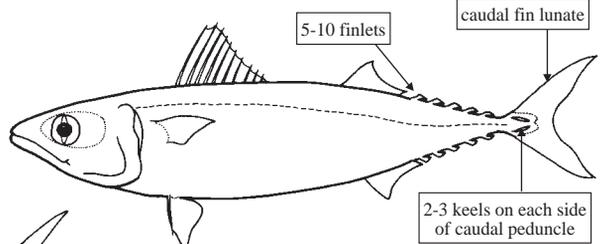
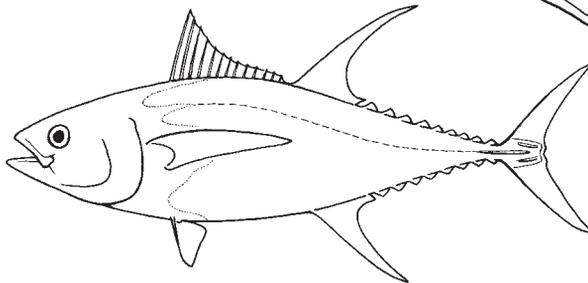


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SCOMBRIDAE

Tunas, mackerels, and bonitos

Seven species in 5 genera reported from Namibia. Epipelagic or benthopelagic. Maximum size to 2 m standard length.

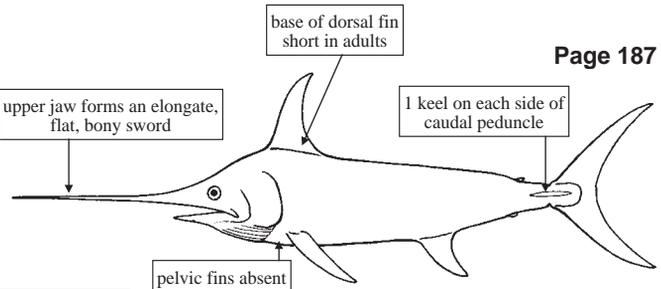


Page 184

XIPHIIDAE

Swordfish

A single species worldwide, also reported from Namibia. Epipelagic. Maximum size to 4.5 m total length.

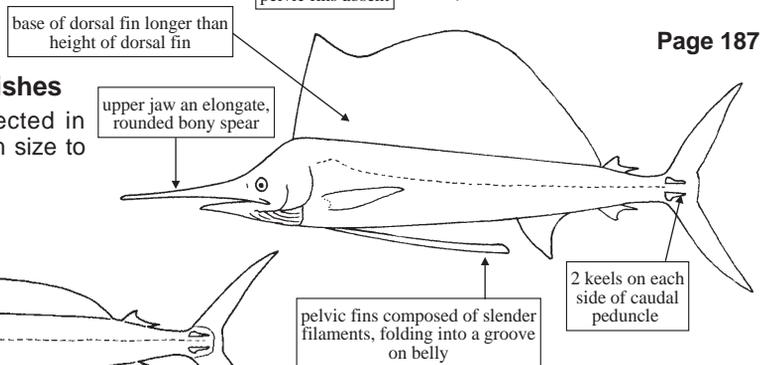
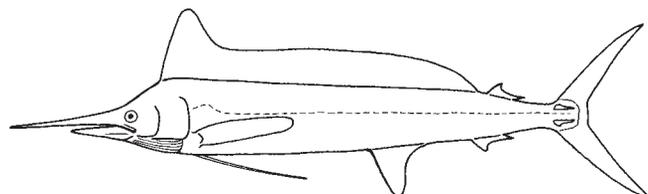


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ISTIOPHORIDAE

Sailfish, marlins, and spearfishes

Four species in 3 genera expected in Namibia. Epipelagic. Maximum size to 4 m total length.



Page 187

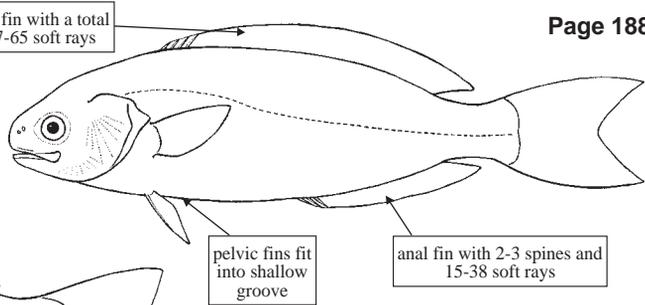
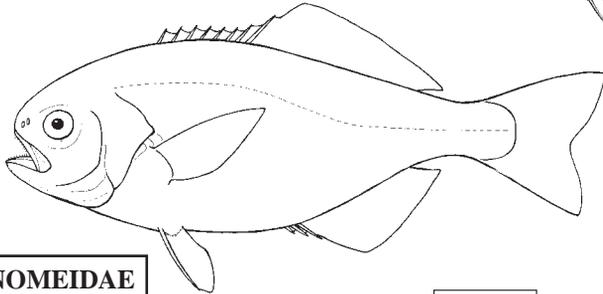


CENTROLOPHIDAE

Page 188

Ruffs, barrelfish, and blackfishes

Five species in 3 genera from Namibia. Epipelagic, mesopelagic and bentho-pelagic down to a depth of 500 m. Maximum size to 1.2 m.



dorsal fin with a total of 27-65 soft rays

pelvic fins fit into shallow groove

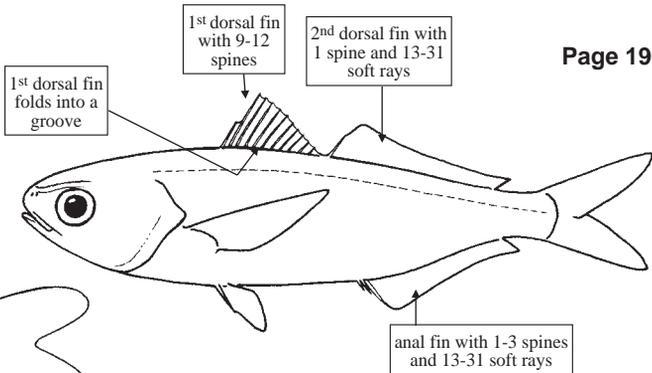
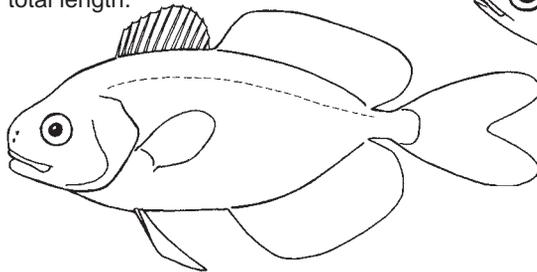
anal fin with 2-3 spines and 15-38 soft rays

NOMEIDAE

Page 190

Driftfishes

Six species in 2 genera likely to be found in Namibia. Epipelagic, mesopelagic, and demersal. Maximum size to around 1 m total length.



1st dorsal fin folds into a groove

1st dorsal fin with 9-12 spines

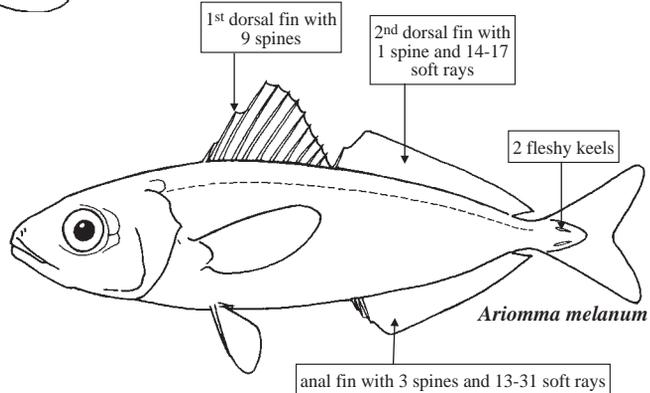
2nd dorsal fin with 1 spine and 13-31 soft rays

anal fin with 1-3 spines and 13-31 soft rays

ARIOMMATIDAE

Ariommatids

Possibly 1 species may be found in Namibia; not included in the "Guide to Species." Benthopelagic from depths between 200 and 600 m. Maximum size to 25 cm total length.



1st dorsal fin with 9 spines

2nd dorsal fin with 1 spine and 14-17 soft rays

2 fleshy keels

Ariomma melanum

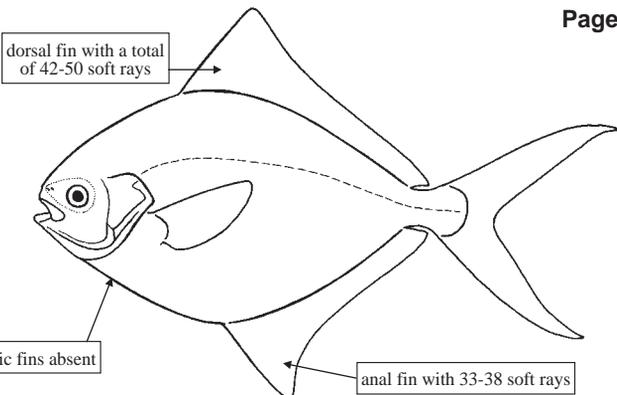
anal fin with 3 spines and 13-31 soft rays

STROMATEIDAE

Page 191

Butterfishes

One species known from Namibia. Pelagic from depths between 10 and 70 m. Maximum size about 50 cm total length.



dorsal fin with a total of 42-50 soft rays

pelvic fins absent

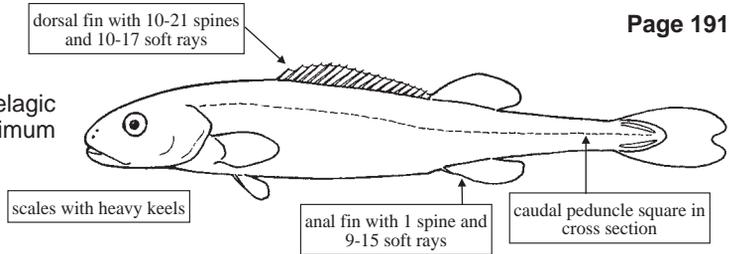
anal fin with 33-38 soft rays

TETRAGONURIDAE

Page 191

Squaretails

Two species found in Namibia. Pelagic from shallow depths to 800 m. Maximum size about 70 cm total length.



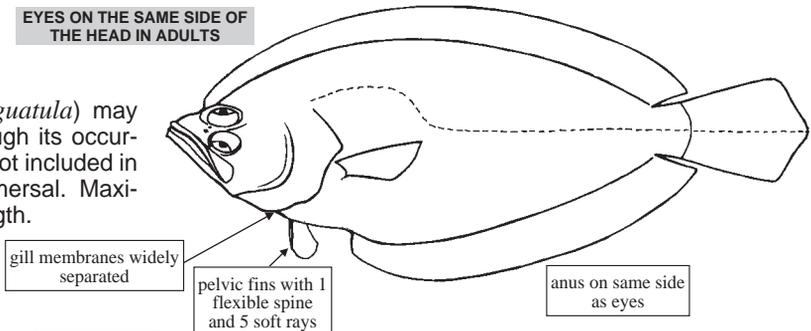
Order **PLEURONECTIFORMES - Flatfish**
 In adults, both eyes on the same side of the head. Four families reported from Namibia.

CITHARIDAE

EYES ON THE SAME SIDE OF THE HEAD IN ADULTS

Citharids

One species (*Citharus linguatula*) may be found in Namibia, although its occurrence is not yet confirmed; not included in the "Guide to Species." Demersal. Maximum size to 25 cm total length.

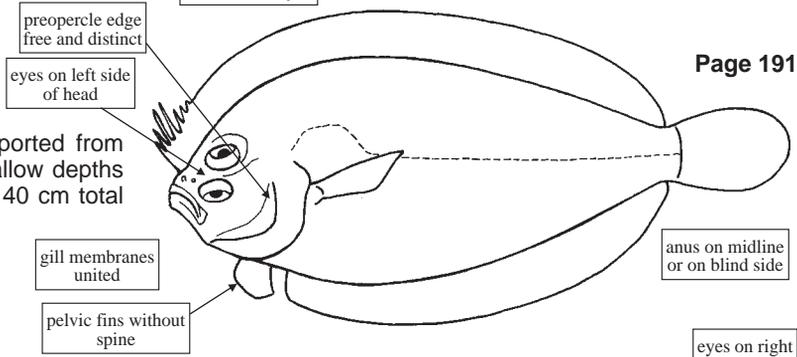


BOTHIDAE

Page 191

Lefteye flounders

Five species in 4 genera reported from Namibia. Demersal, from shallow depths to 650 m. Maximum size to 40 cm total length.

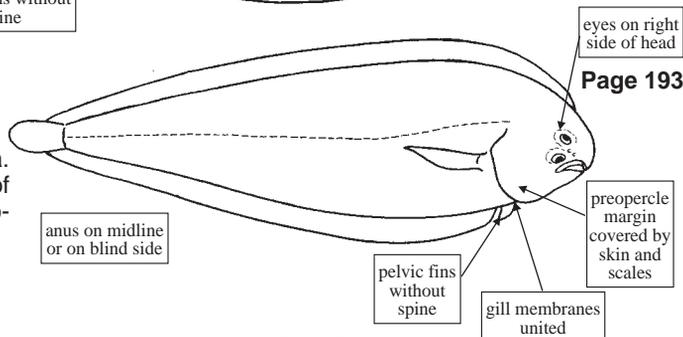


SOLEIDAE

Page 193

Soles

Possibly 6 species in 4 genera in Namibia. Demersal, from near surface to a depth of 460 m. Maximum size to about 75 cm total length.

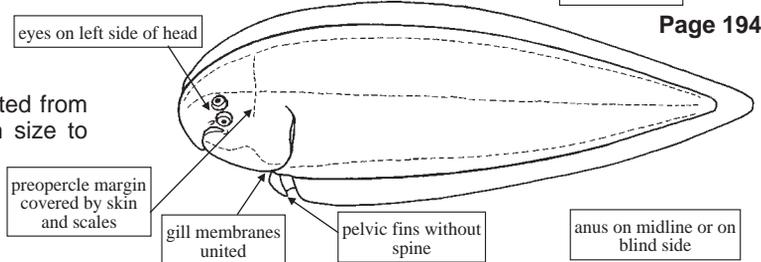


CYNOGLOSSIDAE

Page 194

Tonguefishes

Three species in 2 genera reported from Namibia. Demersal. Maximum size to about 70 cm total length.

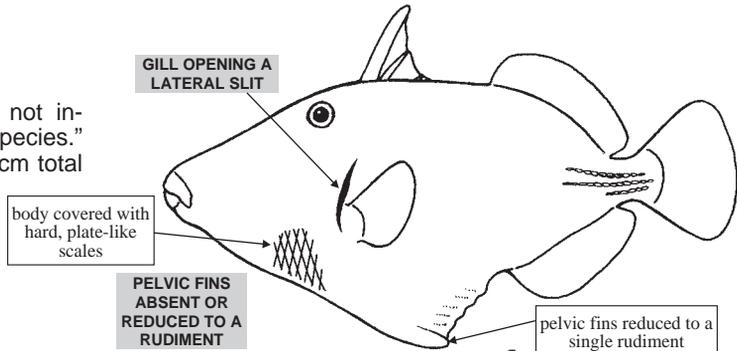


Order **TETRAODONTIFORMES - Tetraodontiform Fishes**
 Pelvic fins absent or reduced to a rudiment; gill opening a lateral slit. Five families reported from Namibia.

BALISTIDAE

Triggerfishes

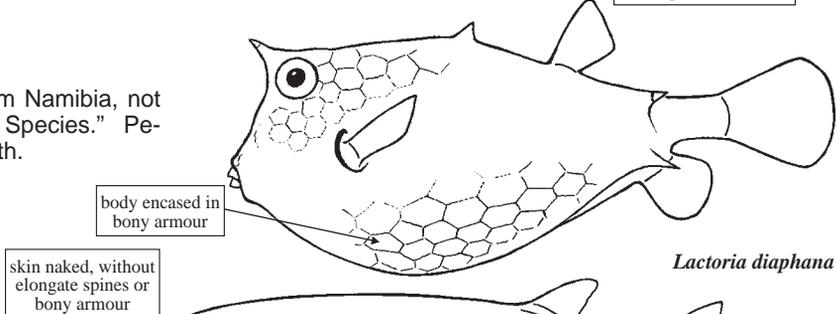
Possibly 1 species in Namibia, not included in the "Guide to Species." Demersal. Maximum size to 30 cm total length.



OSTRACIIDAE

Cowfishes

One species reported from Namibia, not included in the "Guide to Species." Pelagic. To 25 cm total length.

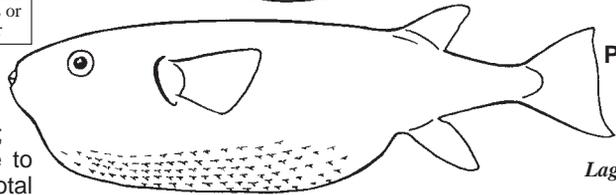


Lactoria diaphana

TETRAODONTIDAE

Puffers

Three species possibly from Namibia; 1 species not included in the "Guide to Species." Pelagic. To 100 cm total length.



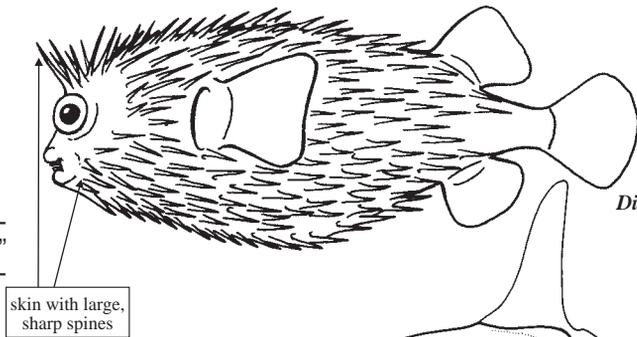
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Lagocephalus

DIODONTIDAE

Porcupinefishes or spiny puffers

Possibly 3 species in Namibia, none included in the "Guide to Species." Epipelagic and neritic. To about 60 cm total length.

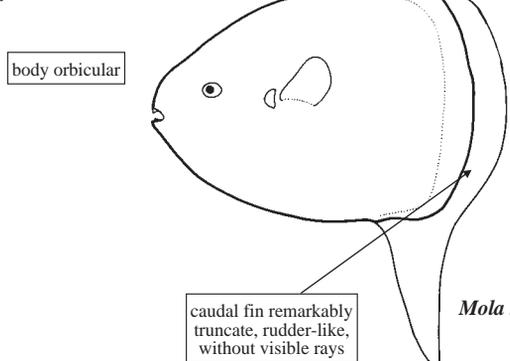


Diodon

MOLIDAE

Molas or ocean sunfishes

At least 1 species known from Namibia. Epipelagic and oceanic. Attains 3 m total length.



Mola mola