

# A BEGINNERS GUIDE COMMON MARINE FISH



## A FIELD GUIDE

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The author would appreciate any comments and additions for inclusion in future editions.

Judy Mann (Lang)

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## PREFACE

This booklet has been written to introduce people to the fascinating world of marine fish. Teachers, divers, scholars, fishermen, in fact, anyone interested in the sea will hopefully find this booklet interesting and informative. Fish are a vital component of the marine environment and provide many people with their nutritional requirements as well as being an important source of pleasure and recreation. Due to the aquatic environment in which they live, fish are “invisible” to most people. In this booklet we hope to stimulate interest in, and concern for, our marine fish.

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## WHAT ARE FISH?

*Fish are aquatic, cold blooded vertebrates that breathe by means of gills and use fins for locomotion.*

Fish are divided into two main groups **BONY FISH**, e.g. the hakes, tuna, sole and trout, which have a skeleton made of true bone, and the **CARTILAGINOUS FISH**, e.g. the sharks and rays, whose skeleton is composed of cartilage. In this booklet we will only look at marine bony fish.

## INTRODUCTION

Fossil records show that fish have been around for over 360 million years. During this incredibly long period they have achieved a great diversity and have become adapted to live in nearly all aquatic habitats. There are over 20 000 fish species worldwide and this makes them the vertebrate group with the largest number of different species. In South Africa, we have over 2 200 marine fish species in our waters. About 13% of these fish are endemic, which means that they are not found anywhere else in the world.

Bony fish are found in all sorts of different shapes and sizes. Some are tiny, like the gobies, which may only grow up to one centimetre in length while the huge game fish, such as marlin, may grow to over three metres in length.

## WHERE ARE FISH FOUND?

The oceans cover three quarters of the planet’s surface and fish are found in just about all areas of the sea. Open ocean fish can be associated with either the depths of the oceans (the *abyssal zone* (down to 6 000m deep)), or the surface water. Fish common in the coastal zone closer to land can live on *coral reefs*, *offshore rocky reefs* or *sandy bottoms* and *inshore sandy* or *rocky shores* or *estuaries*. Estuaries and intertidal rock pools are often very important nursery areas for the juveniles of certain fish species. Some fish are adapted to live near the sea bottom (demersal), while others remain higher up in the water column (pelagic) or right near the water surface (epipelagic)

## GENERAL FISH BIOLOGY

### BODY SHAPE AND COLOUR

The body of a fish consists of a head, trunk and a tail. It is often quite difficult to work out where the one region ends and the next starts (Figure 1). Although most fish confirm to this general pattern, many have adaptations to suit them to particular habitats, and fish, therefore, exhibit a tremendous variety of shapes. Some are flattened from side to side (compressed), like the butterfly fish, some are long and thin (elongate), like the eels, while still others are strong and streamlined like the tuna. Some of the most interesting changes in shape can be seen in those fish which live on the sea floor. They have become flattened from top to bottom (depressed), like the soles and flounders.

Extraordinary changes in shape are found in the porcupine fish (round) and box fish (box shaped) (Figure 1).

Fish are found in a wide range of different colours. The colour of a fish can often give you a clue as to where it lives. Fish which live near the surface of the ocean are often silver in colour, usually with a darker blue or green upper surface, to blend in with the colour of the ocean when seen from above and a lighter underbody, to blend with the light sea surface when seen from below. This form of colouration is known as counter-shading. Fish adapted to live near the bottom are camouflaged to match the colour and pattern of the sand or reef, so that they are almost impossible to see unless they move. Fish that live amongst coral reefs are often brightly coloured, partly to blend in with the colourful reef but also because colour plays an important role in the complex social behaviour of many of these fish. Some fish undergo quite remarkable colour changes as they grow older. For example, the juveniles of some angelfish are so different from the adults that they were once considered to be different species!

#### DID YOU KNOW?

That some fish species can change their sex during their lifetime!!

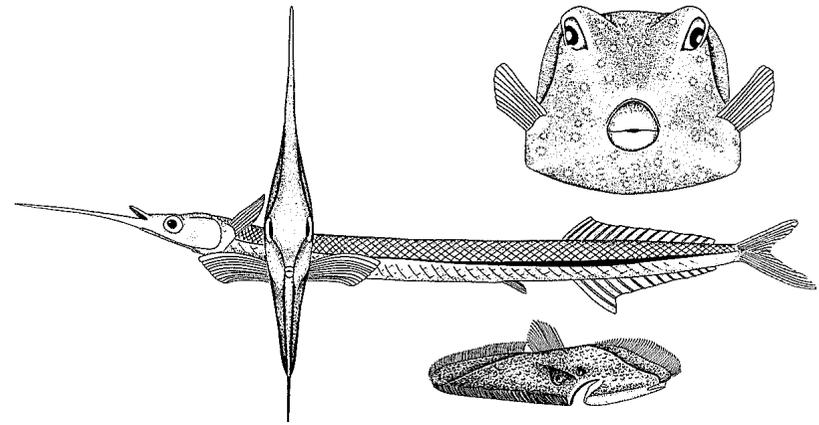


Figure 1 A range of different fish shapes

### BODY COVERING

Most fish are covered with bony scales which overlap backwards and form a protective covering. Some fish, such as the eels, do not have scales on their bodies. In all fish the body is covered with a layer of mucous which allows water to move smoothly over the skin surface. The scales and mucous also protect the fish from infections.

### LOCOMOTION

Most fish use their body, tail and fins to swim. The torpedo shape of many fish helps to make the body more streamlined for movement through the water.

Look at the fins of a bony fish (Figure 2) – there are 5 types of fins. Two pairs of paired fins – the pectoral fins, which jut out from the sides of the body just behind the gill slits, and the pelvic fins which are situated on the underside of the body below the pectorals. The three unpaired fins are the anal fin, found on the underside of the body towards the rear end of the fish, the dorsal fin, found on top of the body and the tail fin is called the caudal fin.

Fish use these fins to move and, depending on the type of fish, they are used in different ways. Generally, the body and the caudal fin are moved from side to side and this pushes the body forward through the water. The other fins are

used to stabilize the body, with the anal fin acting as a rudder, the pectoral and pelvic fins preventing the fish from pitching up and down, while the dorsal fin prevents the fish from rolling from side to side in the water.

The shape of the caudal fin, together with the shape of the body of the fish, often gives a clue as to its swimming ability. Faster, pelagic fish, such as kingfish and tuna, have forked tails which are adapted for fast movement. Slower moving fish such as the barbel and rockcods have rounded or blunt tails. Although it is difficult to work out the speed of a fish, in some yellowfin tuna bursts of speed of up to 74km/hr have been recorded. In fact, when speeding, the tail of some tuna may beat at an incredible rate of 10 beats per second! Some fish use their fins in slightly different ways. The wrasses, for example, use their pectoral fins to propel themselves through the water and almost look as though they are flying, while the triggerfish uses waves of its dorsal and anal fins for locomotion. Eels move their whole bodies when they swim, similar to a snake slithering across the grass, while the box fish uses all its fins to propel itself.

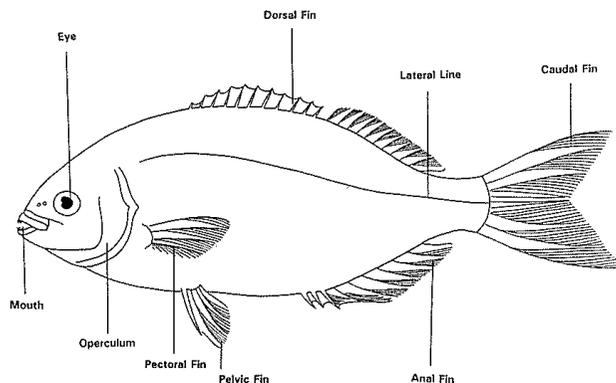


Figure 2 The external anatomy of a fish

## SENSORY SYSTEM

Fish have the same five senses as humans. They can see, hear, smell, taste and touch. However, as they live in water, they also have a sixth sense which allows them to detect vibrations and pressure changes in the water. If you look carefully at a fish you will be able to see a thin line running the length of its body – this is the lateral line. The lateral line consists of a series of sense organs in the skin. These sense organs help the fish to monitor flow and vibrations in the water. This helps the fish to avoid obstructions such as rocks. Most fish have very good vision but, depending on where they live, some fish species will have better eyesight than others. For example, fish which live in very deep water, where it is usually very dark, often have large eyes to let in as much light as possible. Fish, such as the kingfish, which live in clean, tropical water, hunt their prey by sight and have good eyesight. In contrast, the kob, which feeds in turbid waters, relies on other senses, such as smell and the lateral line, to locate its prey. Fish are also able to hear, and can smell and taste in the water.

## BUOYANCY CONTROL

Fish are able to maintain a neutral buoyancy in the water with the aid of a swimbladder (gas or air bladder). The swimbladder is found in the abdominal cavity beneath the spine and is an airtight sac lined with a mesh of tiny blood vessels that can increase or decrease the amount of air in the swimbladder. The amount of gas is precisely regulated to give the fish just the right amount of buoyancy it needs to remain at any required level in the water column.

## RESPIRATION

Like any animal, a fish needs oxygen to sustain life and the way it breathes is not very different to that of air-breathing animals. Fish remove oxygen dissolved in the water by taking water in through their mouths, passing it over the gills and out through openings on the sides of the head (Figure 3). The gills are lined with blood vessels close to the surface and are covered by a thin skin. This allows oxygen to move easily into the blood stream, while carbon dioxide can pass out of the blood and into the water. The gills are divided into feathery structures known as the gill filaments. These filaments increase the surface area of the gills for the absorption of oxygen from the water. The gills are found in the gill chambers and are protected by a bony shield, the operculum or gill cover. Water moves over the gills as the fish swims through

the water with its mouth open. Alternatively, water can be actively pumped over the gills by opening and closing the mouth and operculum.

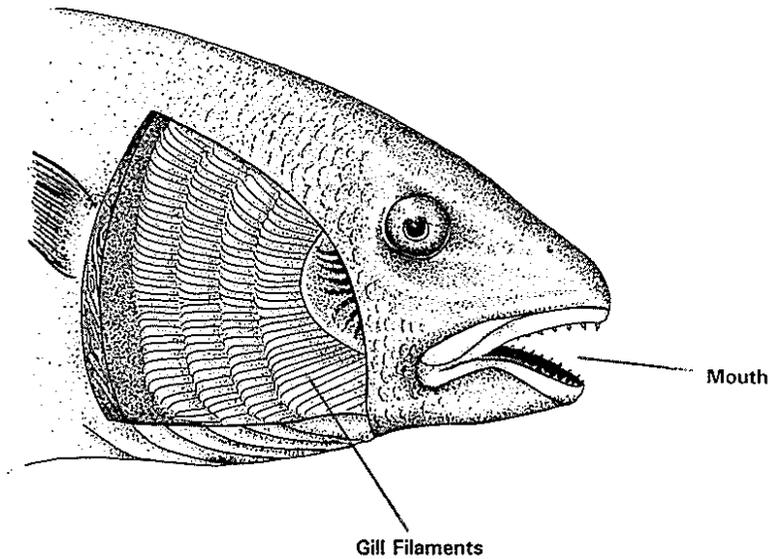


Figure 3 The respiratory mechanism in a fish.

## FEEDING

There are many different feeding methods found in fish. Herbivores graze on seaweed, carnivores feed on smaller fish and /or invertebrates, and omnivores will feed on both plant and animal matter. You can often get a good clue as to how a fish feeds by looking closely at the position of its mouth and at the size and shape of its teeth. The butterfly fish, for example, has its mouth situated at the tip of its snout where it is used to pick food items from between crevices in the rocks and corals (Figure 4). Fish which feed on algae usually have fine, bristle-like teeth to graze the algae from the rocks. Some fish have very powerful jaws with strong, rounded teeth for crushing mussels and other shellfish. Parrot fish have very specialised teeth which are joined into a beaklike jaw, rather like a parrot's beak. They use their powerful jaws to bite off coral so that the fish can reach the algae which live within the corals. Many fish which prey on other fish (piscivorous) have sharp canine teeth for piercing and/or gripping the food. Some fish, such as pilchards, feed on the

tiny floating plants and animals in the sea (plankton) and usually have no teeth. Instead, they have specially adapted gill rakers, which help to sieve out the plankton from the water.

Some fish have developed clever methods to capture their prey. A few fish which live in the dark abyssal zone use light organs to attract their prey. Anglerfish wave a 'lure' or 'bait' (filament) above their heads to attract their prey. Once they are close enough, the anglerfish lunges forwards and engulfs the prey with its large mouth.

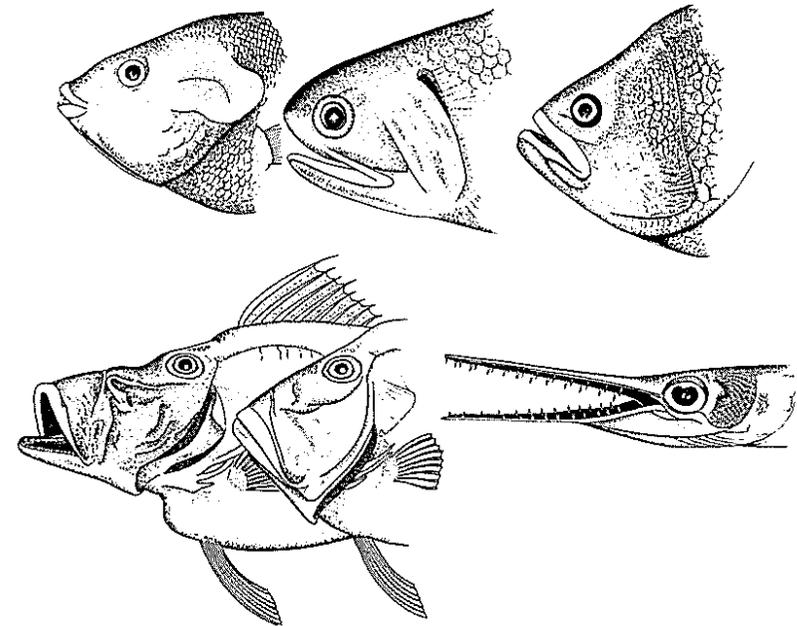


Figure 4 Some of the more typical mouth shapes found in fish.

## DEFENCE

In the eat or be eaten world of the ocean most fish have some adaptation to avoid being eaten. In some species their colouration aids in camouflage – for example the bottom dwelling soles or the silvery surface dwellers. In some of the butterfly fish a dark spot near the tail (false eye spot) and a dark band

through the real eye help to confuse predators. Many fish use disruptive colouration to break up the outline of their bodies. Disruptive colouration is found in fish with dark bars or bands across their bodies. These bands make it more difficult for a predator to spot the fish.

Some fish have fins or scales modified for protection. The triggerfish uses its strong dorsal spine, which it can lock into an upright position, as a form of defence and also as an anchoring device when in narrow crevices. The surgeon fish has a special scalpel or knife-like spine near the base of the tail. This is usually folded into a groove, but it can be erected to serve as a form of defence. The stonefish –one of the most poisonous fish in the oceans, has very strong dorsal spines which it can use to inject a poison into an unwary predator.

Many species of fish have found that there is safety in numbers and the schooling behaviour of some fish is another way to gain protection against enemies. In a school each individual fish has a better chance of survival than a single fish on its own.

## REPRODUCTION

Most marine fish have external fertilization. The female lays her eggs in the water and the male then fertilizes them (spawning). Most fish lay many thousands of eggs at a time and, usually, these eggs are not cared for and many die or are eaten before they hatch. Sometimes the male or female looks after the eggs and larvae until they can defend themselves (parental care). Development from the egg to the adult is often through a number of different stages, the number of stages depending on the type of fish.

The sea horse has an interesting mode of reproduction. In this fish, the female deposits her eggs in a brood pouch in the male, she then swims off, leaving the male to deliver the young. In some fish the male keeps the eggs in his mouth until they are ready to hatch. During this time he does not feed, to make sure that he does not eat his own young!

Certain fish can change sex at some stage of their lives. Some of our reef fish, for example, start life as females but change to become males with age. The advantage of this is that small females will be protected by the larger males and that females only mate with large males. A disadvantage is that fishermen prefer to catch larger fish, so it is usually the larger males which are caught

first. This changes the ratio of males to females, which can later the number of fertilized eggs produced.

## GROWTH

As fish are cold blooded, their growth depends, to a large extent, on the temperature of their surroundings and the availability of food. Growth is usually fast in young fish and slows down as the fish ages. Age is worked out by examining the growth zones which are laid down in the hard structures such as the bones, spines, scales and otoliths of the fish. The otoliths, or ear bones, are found in the ear capsules of all fish, and are basically responsible for balance and for hearing in fish. Rings are usually formed annually in the otoliths, similar to the growth zones found in a tree trunk. These rings can be counted to determine the age of the fish and also how fast it grows. Some of the fish caught along the South African coast grow very slowly and can reach ages of up to 45 years (e.g. the black musselcracker). Other fish grow very fast and may reach 140cm in just 5 years (e.g. the yellowfin tuna). It is important for scientists, who are trying to ensure the wise use of marine fish, to know how fast a fish species grows. Slow growing fish reach sexual maturity very slowly and cannot reproduce as quickly as a faster growing fish. These fish are, therefore, not able to replace the fish lost through fishing and are very vulnerable to overfishing. In fact this is exactly what happened to the 'Seventy four' (*P. undulosus*). This fish was once the most important fish in the KwaZulu-Natal lineboat fishery, but is now virtually extinct along our coastline. Because of overfishing, the species could not reproduce fast enough to replace all the fish lost through fishing.

## MIGRATION

Many fish live in quite restricted home ranges and do not move very far. Other fish are very mobile and can move huge distances to avoid unfavourable conditions or to follow food sources. Many migrations are linked to reproduction and some fish use ocean currents to help them move to the spawning (breeding) grounds or to help in the dispersal (scattering) of the eggs and larvae. Some deep water fish undertake vertical migrations of hundreds of metres each day. They move up to the surface to feed on the

plankton at night, when there are fewer surface predators, such as birds, about and descend to the depths during the day.

An example of a fish migration is the annual sardine 'run' which occurs along the KwaZulu-Natal coast between June and July each year. During winter, in KwaZulu-Natal, the usual warm water along the coastline is replaced by cooler water. The fish follow the movement of cool water close to the coastline during winter and are, therefore, found close to the shoreline.

## **FISH CONSERVATION**

### **FISH HARVESTING**

Fish have been caught by people around the coast of South Africa for hundreds of years. We have a large fishing industry which is most active off the west and south coast of South Africa, while smaller scale fisheries operate along the east coast. The large commercial industries use big ships to catch large amounts of fish, which are then processed in factories. Different types of fish are caught in different ways. For example, the fish which live near the sea floor (eg. the soles) are harvested by means of trawl nets, while those fish found near the sea surface are caught with seine nets (eg. the tunas).

Recreational fishermen also catch large quantities of fish using a rod and line, either from the sea shore or on boats. Many thousands of people rely on the fishing industry, both commercial and recreational, for their survival and this is one reason why our fish stocks should be conserved for the future. The range of fish exploited by man has increased with increasing population pressure and improved technology. Fewer and fewer fish are being harvested by more and more people with increasingly sophisticated equipment.

Although our fisheries are renewable, they are limited and can only supply a certain amount (maximum yield). If we repeatedly remove more than the maximum yield, the fishery will collapse. To the detriment of both the people and the environment.

### **FISH RESEARCH AND CONSERVATION**

Fish are an important source of food and recreation for millions of people. Some species found along the South African coast have been over-fished to such an extent that there are no longer many of these fish around. We need to make sure that this does not happen to our other popular fish. To ensure that our marine fish are not over-fished, scientists must monitor (observe) the

abundance (numbers) in fish populations. Through monitoring, scientists can work out changes in the numbers of fish of a particular species and determine if that species needs protection. They can then work out the best way to protect the fish, so that there will always be enough for the fishermen to catch in the future. Fish are not only threatened by fishermen. Pollution in our oceans is also responsible for killing many thousands of fish annually.

#### **DID YOU KNOW?**

That over 630 thousand tonnes of fish are harvested annually in South African waters.

#### **DID YOU KNOW?**

That pollution is a serious threat to the survival of much marine life, including many fish species.

### **WHAT YOU CAN DO**

*Make sure that you and your family understand and obey the regulations concerning the number and size of fish which you can catch.*

*Place your litter (fishing line, bait packets, tin cans etc) in refuse bins.*

*Recycle as much of your waste as possible.*

*Report dumping of waste and the illegal discharge of effluent into the sea to the relevant authorities.*

*Learn as much as you can about the threats to our marine fish and teach others.*

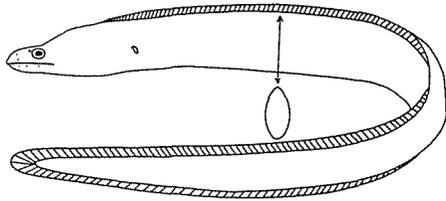
*Support organisations dedicated to the conservation of our environment.*

#### **DID YOU KNOW?**

That over 81 million tonnes of fish were caught during 1986 in the world's fisheries. (Imagine 81 million one ton bakkies!!)

## WHAT FISH IS THAT ??

This section will introduce you to some of the more common or interesting fish families found along the South African coast. Although each family is often represented by a number of different species, in this guide we will concentrate on a few of the more common families of marine fish.

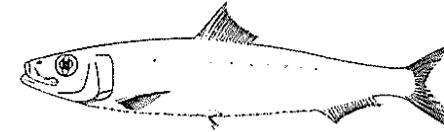


### **FAMILY: MURAENIDAE**

#### **MORAY EELS**

Moray eels are long, slender fish which do not have scales and pelvic fins. Their gill openings are simple holes and are not covered by an operculum. These tropical, warm water fish usually hide in caves and crevices, and use their well developed sense of smell and large teeth to capture their prey, usually octopus, small fish and some crustaceans. These fish do not deserve their mean reputation and are generally harmless, but they can inflict a nasty bite if disturbed. An interesting relationship has developed between the rock lobster (crayfish) and the moray eel. Some eels shelter in caves with rock lobsters in order to snatch a bite of octopus, which often preys on rock lobsters. The eels protect the lobsters while gaining a free meal themselves.

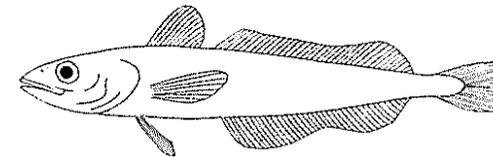
**IMPORTANT:** Eels are not snakes – true sea snakes are reptiles which have lungs for respiration, have a flattened, paddle-like tail and are highly venomous.



### **FAMILY: CLUPEIDAE**

#### **SARDINES (PILCHARDS) AND HERRINGS**

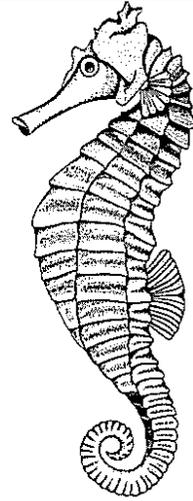
The sardines and herrings are small, open ocean fish, usually found in huge shoals in the upper layers of the ocean. They are very fast growing fish and do not usually live for very long. Most filter feed on plankton and they, in turn, are eaten by many larger marine animals – fish, birds, dolphins and whales. People also eat pilchards, which were harvested in huge quantities off the west coast of South Africa (usually bought in a tin in supermarkets).



### **FAMILY: MERLUCCIIDAE**

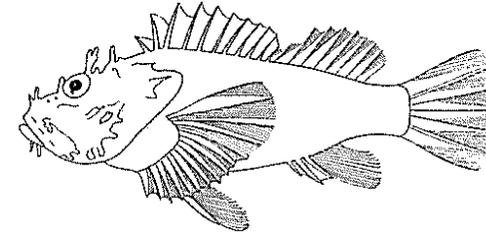
#### **HAKE**

Hake are very important in the commercial trawl fisheries of the Cape. Thousands of tonnes of hake are harvested each year. These fish usually remain on the sea bottom during the day, but often move up to midwater at night to feed. Juvenile hake feed on crustaceans and small fish while the adults feed on fish, sometimes even eating their own juveniles. Hake is the most commonly bought fish in supermarkets, where it is sometimes called stockfish or, when smoked, haddock.



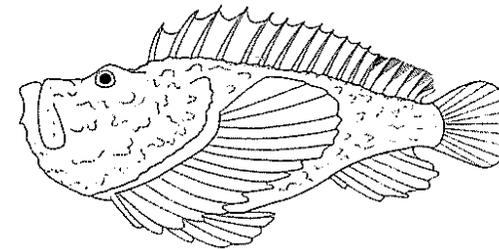
### **FAMILY: SYNGNATHIDAE SEAHORSES AND PIPEFISH**

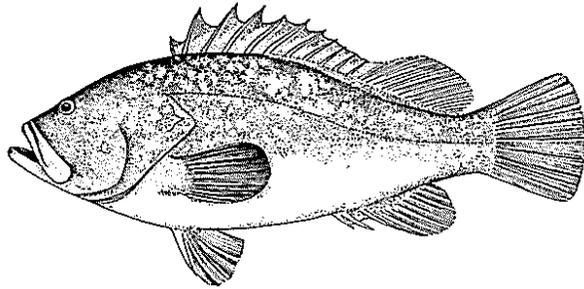
The seahorse and pipefish are some of the most unusual fish found along our coastline. Their bodies are protected by special scales which form a series of rings around the body. The mouth is usually found at the end of the long snout and the tail can be used to hold on to seaweed. Seahorses are commonly found in the Knysna estuary, where they eat small invertebrates. They have a very interesting method of reproduction. The female seahorse deposits her eggs in the male's pouch and promptly swims off, with no more concern for her offspring. The male broods the young until they are ready to hatch. He then gives birth to his offspring, which immediately swim off on their own. The razorfish is closely related to the sea horse and its compressed body is also protected by bony plates. The ventral edge (lower edge) of the fish is very sharp, hence its name. IT is often found swimming, head down, amongst seaweed, perfectly camouflaged in the weeds, as it pecks at tiny crustaceans.



### **FAMILY: SCORPAENIDAE SCORPIONFISH**

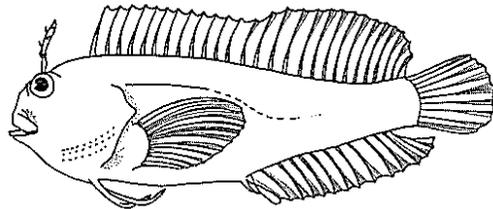
The scorpionfish, firefish and the stonefish are all members of this family. They all have poisonous dorsal spines. The stonefish is particularly venomous. This solitary fish has poison glands below the dorsal spines, when pressure is placed on these spines they release a poison which is injected into the victim. These wounds can be fatal and should be medically treated. The best way to break down the poison is to place an extremely hot compress (bandage) on the affected area. This helps to break down the powerful protein venom. In addition to their powerful venom, these fish are also very well camouflaged and hardly move. Their bodies are covered with little growths, warts and lumps, which all help them to blend into their surroundings. They lie in wait for their prey, which they then engulf with their large mouth. The stonefish, which is often confused with the less venomous scorpionfish, is not often found as far south as Durban.





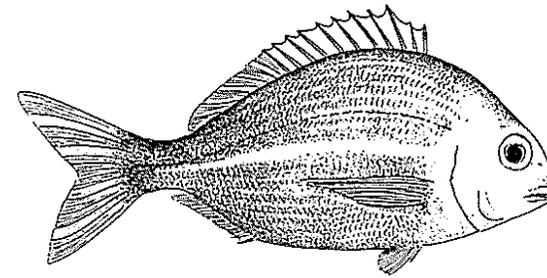
**FAMILY: SERRANIDAE**  
**ROCKCODS**

This is a very diverse family varying in both size and shape. Many of the rockcods are able to change sex. The sea Goldies, for example, live in harems with one dominant male and many females. When the male dies the dominant female changes sex and becomes the male. Rockcods usually ambush their prey and feed on a variety of fish, crustaceans, and octopus, cuttlefish and squid. Males are often solitary and usually protect their own territories on the reef. They are often caught by fishermen, but because they grow very slowly and live in one area, they are very vulnerable to over-fishing. Some rockcods, such as the brindle bass, can reach sizes of up to 2m in length.



**FAMILY BLENNIIDAE**  
**BLENNIES**

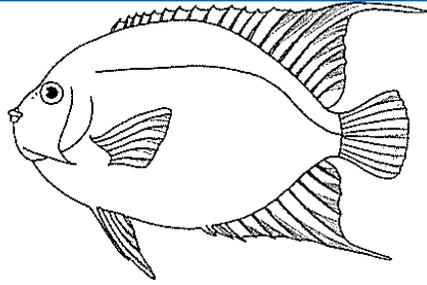
These well camouflaged little fish are common in tidal rock pools along the whole coast of South Africa. They have no scales on their bodies and often have a crest or tentacles on their head. The pelvic fins are situated quite far forward on the body, usually in front of the pectoral fins. Blennies are known to hop from pool to pool in the intertidal region in search of food. They cannot stay out of water for long, as they must return to the water to breathe.



**FAMILY: SPARIDAE**  
**SEABREAMS**

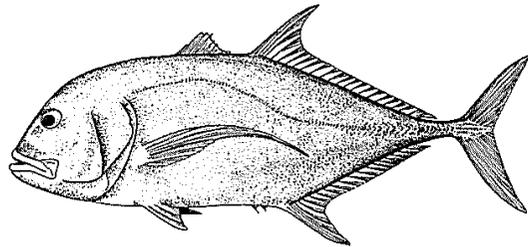
This group includes some of the most important fish caught by fishermen and has been extensively studied. Most seabreams are either red or silver in colour and have a typical “fish” shape. Over 60% of the seabreams found off our coast are endemic to southern Africa and are not found anywhere else. Seabreams are found in many different habitats ranging from estuaries and off sandy shores, to along coastal reefs as well as on deeper reefs down to 100m. Scientists have worked out that many of the seabreams grow to quite incredible ages. For example, a 350mm blacktail (*D. sargus*) may be 15 years old, while other species such as the red steenbras and black musselcracker (*C. nasutus*), may reach over 30 years of age.

Many of the seabreams are under intense fishing pressure and have strict regulations including closed seasons (no one may catch the particular fish species during its closed season, often while the fish is breeding), bag limits (only a certain number of fish may be caught per person per day) and size limits (only fish above a particular size can be kept) – all designed to protect the fish and to ensure that fishermen are able to continue to catch these fish in the future. One of the most interesting things about many seabreams is their ability to change sex. The slinger (*C. puniceus*) changes from a female to a male as it ages, while the Natal stumpnose (*R.sarba*) changes sex from male to female. Juvenile seabreams are often found in intertidal rock pools, which they use as a nursery area.



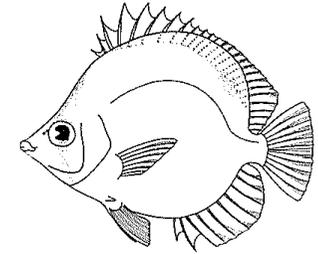
**FAMILY: POMACANTHIDAE**  
**ANGELFISH**

The angelfish are some of the most beautifully coloured and patterned fish. They can be identified by the large spine, which projects backwards from each gill cover. These fish sometimes undergo remarkable colour changes as they age. The juveniles are often found in rock pools or shall subtidal areas, while adults are found on shall offshore reefs. They have bristle-like teeth which they use to nibble algae, sponges and small invertebrates from the reef. Many members of this family form pair bonds for life while other species have a dominant male in a harem system (one male with many females).



**FAMILY: CARANGIDAE**  
**KINGFISH**

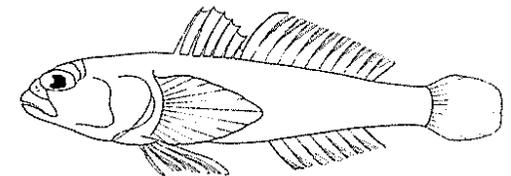
The kingfish are mostly fast predators which feed on smaller fish, although a few species do feed on plankton. Most are silvery in colour, have tiny scales covering their bodies and a very visible lateral line. Many species have scutes (enlarged scales bearing spines or ridges) along the lateral line near the base of the tail. Kingfish are found worldwide in habitats ranging from estuaries and coastal shallows to the open ocean. Kingfish are usually found singly or in shoals and are popular fish for anglers.



**FAMILY: CHAETODONTIDAE**  
**BUTTERFLY FISH**

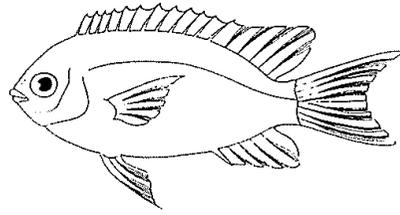
The butterfly fish are some of the most spectacular fish found along our reefs. These fish have very compressed, disc shaped bodies which are adapted to dart easily in and out of rocky or coral reefs. Butterfly fish eat coral polyps, small invertebrates, plankton or algae and some species even have a long snout to help them to get at food deep inside cracks in the reefs.

Their colour patterns are very varied and appear to be adapted to confuse predators. The dark band across the eye in most species tends to disguise the position of the eye while the 'false eye spot', near the tail, attracts a predator to a less vulnerable region of the body. In other species the stripes on the body break up the outline of the fish and disguise the vulnerable eye area, thereby protecting the fish.



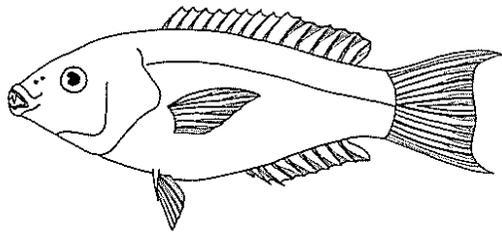
**FAMILY: GOBIIDAE**  
**GOBIES**

Gobies are the most diverse group of fish in South Africa. There are over 100 different species found in our waters and, as most of them are small and dull in colour, they are almost impossible to tell apart. Gobies are often found in tidal pools where their dull colours make them difficult to spot. An interesting member of this family is the mudskipper. This fish, found in estuaries and mangrove swamps, is able to move around on land by using its fleshy pectoral fins. It is able to keep water within the gill chambers for short periods of time. It can, therefore, capture its food both on land and in the water.



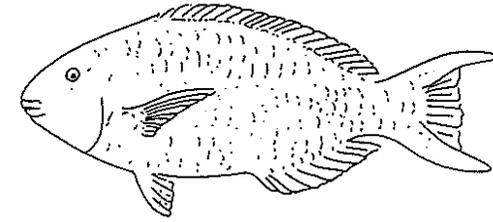
**FAMILY: POMACENTRIDAE**  
**DAMSELFISH**

The damselfish are commonly found on coral and rocky reefs. Many of the damselfish are very territorial and will defend their 'home ranges'. An interesting representative of this family is the clown- or anemone fish. This fish lives amongst the tentacles of sea anemones. These tentacles are able to fire powerful stinging cells to paralyse small fish which come too close. The anemone fish remains unharmed by the cells and uses the anemone's tentacles as a safe place to escape predators. The mucous on the surface of the fish is in some way able to prevent the discharge of the stinging cells. Juvenile damselfish are common in tidal pools in summer. These fish are often caught by aquarists.



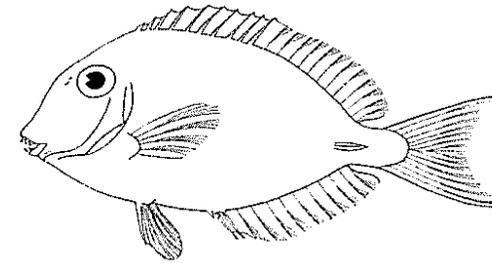
**FAMILY: LABRIDAE**  
**WRASSES**

The wrasses usually have long bodies, weak caudal fins and use their pectoral fins to swim. Many of the wrasses are brightly coloured, undergo sex change from female to male and alter their colour as they age. An interesting member of the wrasses family is the cleaner wrasse. This wrasse helps other fish by removing parasites, fungus and mucous from the skin. These wrasses set up 'cleaning stations' and their customers appear to queue up, waiting to be cleaned. Another fish, the sabre-toothed blennie copies both the colouration and swimming style of the cleaner wrasses so well that other fish are fooled and approach the blennie to be cleaned. The crafty blennie then takes a nip out of the unsuspecting fish with its large teeth!!



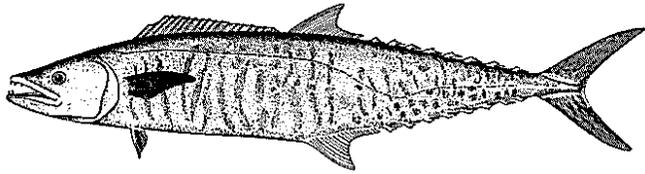
**FAMILY: SCARIDAE**  
**PARROTFISH**

The parrotfish are brightly coloured reef fish which all have a beak-like jaw formed by fused teeth. They use their powerful jaws to scrape algae and bite corals during feeding. The algae living within the corals is then removed in the fish's stomach and the crushed coral is passed out of the fish. Much of the coral sand found around coral reefs has passed through a parrot fish! Some parrotfish make a mucous cocoon in which they sleep at night. It is thought that this cocoon is for protection. They then bite their way out of the cocoon in the morning. These fish are often eaten in the tropics but sometimes carry tropical fish poisoning (ciguatera).



**FAMILY: ACANTHURIDAE**  
**SURGEONFISH**

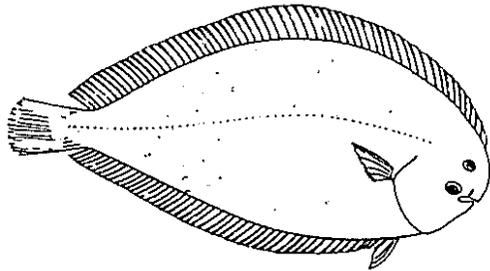
The surgeonfish have compressed bodies and all have a sharp spine on either side of the body near the base of the tail. The spines are usually folded into a groove but, when the fish is threatened, the spines are lifted and used to slash at the attacker. Most fish in this family are herbivorous and graze on algae while a few feed on plankton or on detritus. Most live in warm tropical waters and are often found on coral or rocky reefs.



### **FAMILY: SCOMBRIDAE**

#### **TUNAS**

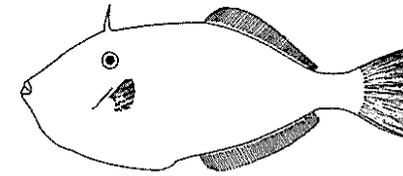
The tunas, mackerel and bonitos are all swift open ocean predators. They are found worldwide and usually migrate over wide areas. They are torpedo shaped and their dorsal and anal fins can usually fold down and fit into grooves along the body. This helps to streamline the body for fast movement through the water. They usually form large schools and prey on plankton, fish, crustaceans and squid. Their flesh is very tasty and they are very popular with fishermen.



### **FAMILY: SOLEIDAE**

#### **SOLES**

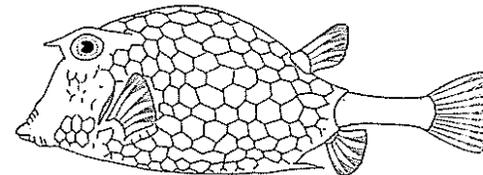
Soles have flattened bodies with both eyes on the same side of the head. They lie on one side of their bodies throughout their whole life with their upper surface camouflaged to blend in with the sand while their underside is white. These fish are often only seen when they move. During their larval phases these fish are just like other fish with one eye on either side of the head. However, as they grow, the one eye moves over the head until both eyes are situated on the same side. They are important in the commercial trawl fishery and are a popular delicacy in restaurants.



### **FAMILY: BALISTIDAE**

#### **TRIGGERFISH**

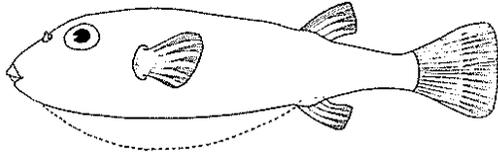
The triggerfish are robust, rounded fish with prominent, powerful front teeth and an erectile first dorsal spine. This stout spine can be locked into an upright position and is used for defence, as well as to wedge the fish into rock crevices. Although some eat algae and plankton, most triggerfish are carnivorous and prey upon sea urchins, coral and shellfish— all of which are easily crushed by their strong teeth. In some triggerfish, the fertilised eggs are deposited in burrows, which are then aggressively guarded by the male until the eggs hatch. The larvae and juveniles are often found swimming with floating objects at sea.



### **FAMILY: OSTRACIIDAE**

#### **BOXFISH**

The box and cow fish are some of the strangest marine fish. Their bodies are enclosed in bony plates which are joined together to create a form of protective armour. Because of their armour they cannot swim very fast but can out manoeuvre many fish as they spin their fins in different directions. Some boxfish give off a poisonous substance, which can kill other fish in the immediate vicinity.



## **FAMILY: TETRAODONTIDAE**

### **BLAASOPS**

The blaspops or puffer fish are able to blow up their bodies by swallowing water (or air). This increases their size and makes them look bigger and more dangerous to potential predators. Although the flesh of these fish is very toxic, they are considered to be a delicacy in the Far East, where chefs study for years to learn how to prepare the flesh to make it edible. In spite of this, a few people die each year after eating puffer fish!

## **GLOSSARY**

algae	seaweeds
aquarists	people who keep fish in aquariums
camouflage	adapted to a particular environment so as to be difficult to detect
carnivorous	will only eat animal matter
commercial	for financial gain, to make money
habitat	the place or area in which a particular animal is usually found
herbivorous	will only eat plant matter
intertidal	the area between the high and low water mark
invertebrates	animals without backbones
omnivorous	will eat both plant and animal matter
organism	any living thing, animal, plant, bacteria or fungus
pelagic	living in the open water, primarily at or near the surface
reef	an outcrop of coral or rocks offshore. May be artificial or natural
species	a particular type of organism, members look similar and have the ability to interbreed
symbiosis	two different species that live together in direct contact
turbidity	the amount of suspended particulate matter in the water
vertebrates	animals with backbones eg. turtles, fish, whales

## **FOR MORE INFORMATION**

The following books are available from most local libraries and will give you further information on fish:

VAN DER ELST, R.P. 1990. *Everyone's guide to sea fishes of Southern Africa*. Struik Publishers, Cape Town, 112pp.  
All the information you need for a project on fish will be in this book. Very easy to read.

PAYNE, A.I.L., CRAWFORD, R.J.M & VAN DALSEN, A.P. 1992. *Secrets of the Sea*. Vlaeberg Publishers, Cape Town.

*Secrets of the Sea* is very easy to read and gives a simple introduction to the life in our oceans. The interaction between man and the sea is stressed in this book.

More detailed information can be found in:

BRANCH, G.M., GRIFFITHS, C.L., BRANCH, M.L & BECKLEY, L.E. 1994. *Two Oceans, A Guide to the Marine Life of Southern Africa*. David Phillips Publishers, Claremont. 353pp.

PAYNE, A.I.L., CRAWFORD, R.J.M. & VANDALSEN, A.P. 1989. *Oceans of Life off Southern Africa*. Vlaeberg Publishers, Cape Town. 380pp.

VAN DER ELST, R.P. 1988. *A Guide to the Common Sea Fishes of Southern Africa* (2<sup>nd</sup> ed). Struik Publishers, Cape Town. 398pp.

## **OTHER SHARE-NET MARINE BOOKLETS**

Hands On: The East Coast Rocky Shores  
Hands On: The East Coast Sandy Shores  
Hands On: The East Coast Estuaries and Mangroves  
Hands On: The East Coast Reefs  
A Beginners Guide: Seaweeds (Algae)

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