



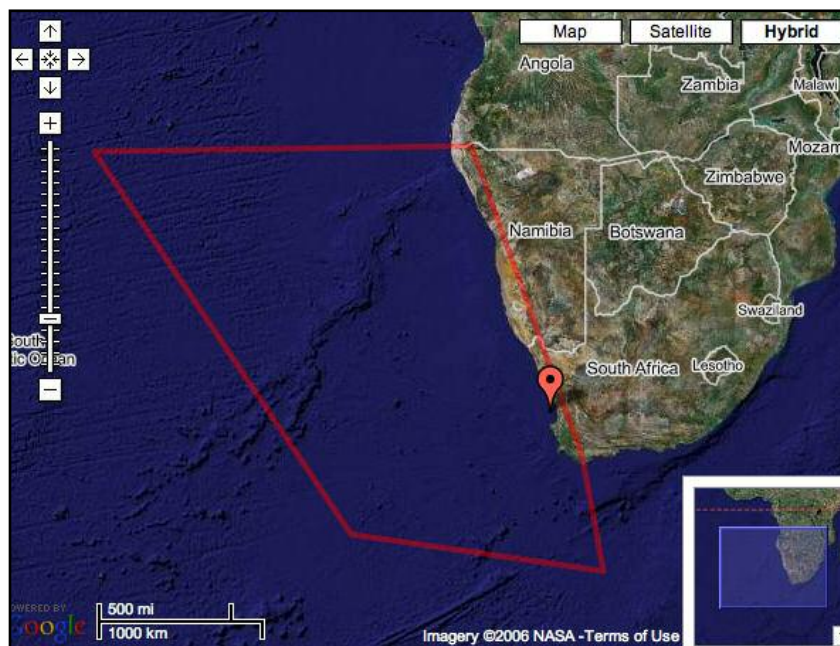
EARTHDIVE

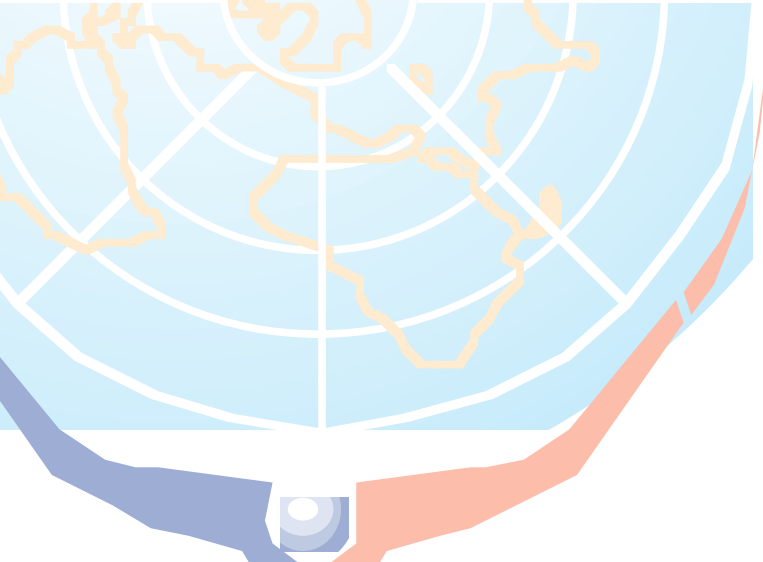
“The health of our oceans is intrinsically linked to the future of life on this planet”

PRE-DIVE BRIEFING PACK

Eco-Region 7a

South West Africa - Cold Temperate - Benguela Current





Contents

1.0 General Information

- 1.1 Introduction
- 1.2 How to record data in the Global Dive Log

2.0 The South Africa - Cold Temperate - Benguela Current Eco-Region

3.0 Indicator Species

- 3.1 All Lobsters, especially the West Coast Rock Lobster (*Jasus lalandii*)
- 3.2 Mussels (*Mytilus galloprovincialis*, *Perna perna* and *Semimytilus algosus*)
- 3.3 Sea Urchin (*Parechinus angulosus*)
- 3.4 All Rockfish of the families *Blennidae* & *Clinidae*
- 3.5 Cape White Seabream (*Diplodus sargus capensis*)

4.0 Anthropogenic Pressures

5.0 eCord

6.0 Appendices

- Post Dive Recording Sheet - Indicators
- Post Dive Recording Sheet - Anthropogenic Pressures





1.0 General Information

This booklet is a **pre-dive briefing pack** for the **South Africa - Cold Temperate - Benguela Current** eco-region. Please feel free to print it and take it with you as an 'aide memoir' for your dive. It contains all the information you need to contribute to the **EARTHDIVE** Global Dive Log.

1.1 Introduction

The **EARTHDIVE Global Dive Log** is a pioneering methodology that has been developed in partnership with **UNEP-WCMC** and marine scientists from around the world. These marine scientists helped establish thirty **EARTHDIVE** eco-regions - areas of water that share a relatively similar climate and contain a common assembly of natural habitats and species. They then identified key indicator species for each region - an important set of marine animals whose numbers and changing population can tell us a lot about the changing state of our oceans.

You can help observe and record sightings of these marine animals during a dive or snorkel trip and enter observations into the **Global Dive Log**. You can also record evidence of key anthropogenic pressures - changes in the marine environment brought about by human activity such as pollution and overfishing. Any data you enter onto the **EARTHDIVE** website can be viewed by you and other visitors.

The **EARTHDIVE** eco-regions span all of the world's oceans - not just those areas with warm water and coral reefs. Whether you are diving in Scotland or Saint Lucia, Connecticut or Cocos, Denmark or Dominica, your data collection is equally valid and valuable. So you don't have to wait for the next exotic dive trip - home waters are just as important!

Each eco-region also has its own types of megafauna, from dolphins to whale sharks, from whales to polar bears (if you like really cold water) and provision is also made in the Global Dive Log to record sightings of these exciting animals.

Collecting this valuable information for **EARTHDIVE** helps create a **Global Dive Log** - a valuable research tool.

This briefing pack lists the indicator species and anthropogenic pressures for the **Mediterranean** eco-region.

Thank you for recording scientific information for **EARTHDIVE**.

1.2 How to record your observations into the Global Dive Log

When recording scientific information for **EARTHDIVE**, divers are recommended to follow our 7 Point Plan. You will find the use of a slate or some other method of taking notes underwater, such as a laminated fish identification card, invaluable. Always try to transfer your data to the **EARTHDIVE** website as soon as possible following your dive. Let dive buddies and dive leaders know what you are measuring, as they may be able to help with some post-dive questions on identification.

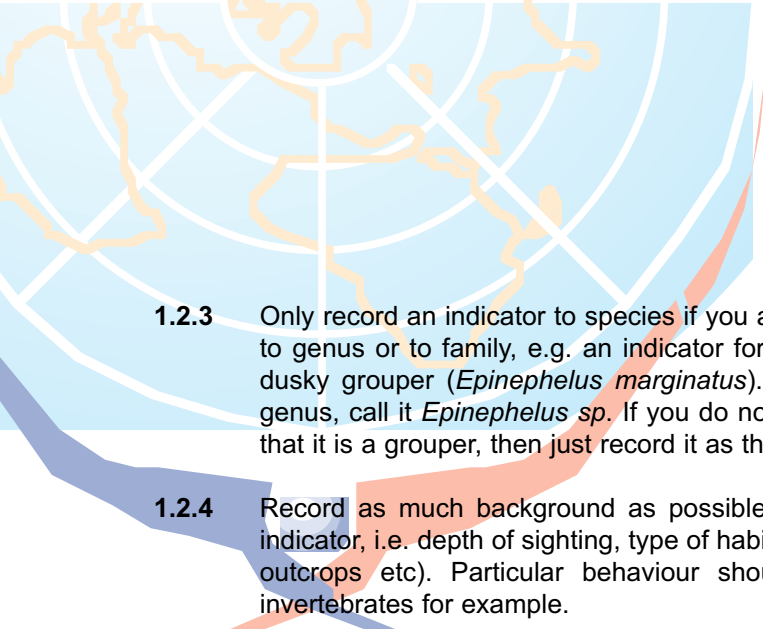
1.2.1 Try and ensure that the time of the underwater recording session is accurately noted. The length of the session can be all of the dive or just a period during the dive e.g. 10 minutes. You may even spend periods of time recording different indicators. For example there may be a dense aggregation of drums, which you count for 10 or 15 minutes. On the other hand you may look for other species such as groupers for most of the dive. Whatever your choice, the data is important so try to add the recording time in the notes for each indicator.

1.2.2 When possible always record **actual** counts of indicator species. If this is too difficult on the dive then enter your data into the abundance scale in the Global Dive Log as an estimate.



EARTHDIVE



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- 1.2.3 Only record an indicator to species if you are 100% certain that it is that species. Otherwise record to genus or to family, e.g. an indicator for the sub-tropical Atlantic Coast of South America is the dusky grouper (*Epinephelus marginatus*). If you are uncertain of the species but recognise the genus, call it *Epinephelus sp.* If you do not have time to recognise it, or do not know it apart from that it is a grouper, then just record it as that - it's just as important!
 - 1.2.4 Record as much background as possible in the notes section of the Global Dive Log for each indicator, i.e. depth of sighting, type of habitat (lower reef slope, kelp bed, sand with scattered rocky outcrops etc). Particular behaviour should also be noted - spawning behaviour in fish or invertebrates for example.
 - 1.2.5 When recording always fin slowly and evenly with minimal sudden movements. Moving rapidly will disturb resident fish causing them to hide from view more quickly. By moving slowly and evenly you have more chance of seeing indicator species and recording their presence/absence more accurately. Always look carefully for particular indicators such as lobsters, which are often under overhangs or in crevices.
 - 1.2.6 On your way to and from your dive site, record any observations you have made regarding the listed anthropogenic pressures for this eco-region.
 - 1.2.7 Following your dive, make notes from your slate or memory and keep them in a safe place. Add any further comments within 24 hours before you lose some of the detail from your memory.

Thank you

2.0 The South Africa - Cold Temperate - Benguela Current Eco Region

This region comprises the Atlantic coast of the Republic of South Africa, from the southwestern tip of the Cape through to and including all of the coast of Namibia.

The region is largely defined by the Benguela Current. This cold water current flows north towards the equator, until it meets the warmer Angolan current flowing south. It is bounded in the south at the Cape where it meets the warmer Agulhas current flowing east from the Indian Ocean.



The Benguela Current system is one of four major current systems at the eastern boundaries of the world's oceans. These are characterised by upwelling of nutrient rich water, are important centres of plankton production and are rich in fish such as sardine anchovy, hake and horse mackerel. They are highly productive. In common with other coastal upwelling areas,

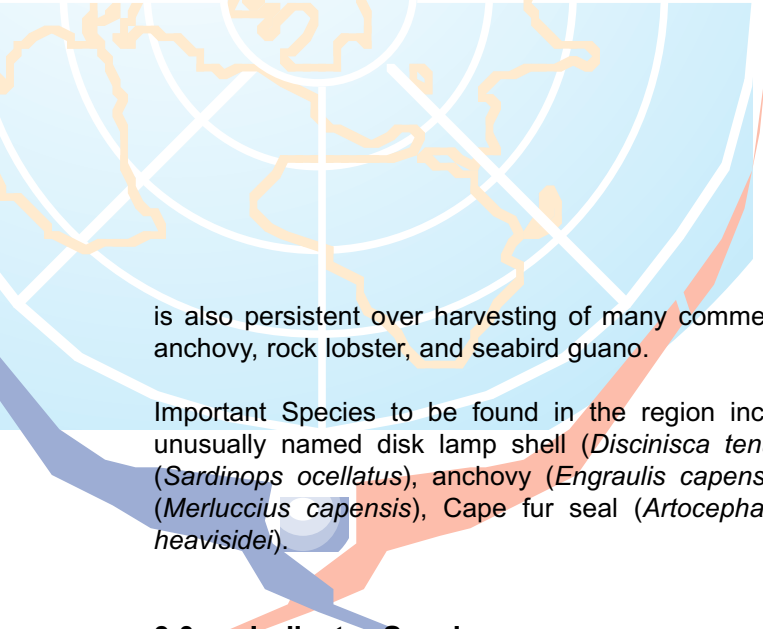
the Benguela ecosystem is subject to seasonal, annual and decadal natural variation. This natural variation is further compounded by the impact of fishing, resulting in large fluctuations in the abundance of some fish stocks with associated collapses, recoveries and rapid switches in species dominance.

Being bordered at both the northern and southern ends by warm water systems makes Benguela Current somewhat unique among the eastern-boundary upwelling systems.

Much of the coast is pristine, except for pockets of urban development and hotspots. Some coastal habitats are affected by pollution from industries, poorly planned coastal developments and near-shore activities.

Harmful algal blooms are a conspicuous feature and appear to be increasing. There





is also persistent over harvesting of many commercially valuable species and products such as pilchard, anchovy, rock lobster, and seabird guano.

Important Species to be found in the region include the African penguin (*Spheniscus demersus*), the unusually named disk lamp shell (*Disciniscus tenuis*), west coast rock lobster (*Jasus lalandii*), pilchard (*Sardinops ocellatus*), anchovy (*Engraulis capensis*), Cape horse mackerel (*Trachurus capensis*), Hake (*Merluccius capensis*), Cape fur seal (*Arctocephalus pusillus*) and Benguela dolphin (*Cephalorhynchus heavisidei*).

3.0 Indicator Species

What to look for and record in the **South Africa - Cold Temperate - Benguela Current** eco-region:

All Lobsters, especially the West Coast Rock Lobster (*Jasus lalandii*)
Low numbers are indicators of overfishing



Mussels (*Mytilus galloprovincialis*, *Perna perna* and *Semimytilus algosus*)
Invasive alien (Mytilus galloprovincialis) and Endemic species (Perna perna and Semimytilus algosus)



Sea urchin (*Parechinus angulosus*)
High numbers are indicative of overfishing of predator species and also Low numbers are indicative of overfishing



All Rockfish of the families *Blennidae* & *Clinidae*
Low numbers are indicative of overfishing



Cape White Seabream (*Diplodus sargus capensis*)
Low numbers are indicative of overfishing



The International Union for Conservation of Nature and Natural Resources (IUCN) provides a listing of species that are at risk of global extinction. The 'IUCN Red List Categories and Criteria' are intended to be an easily and widely understood system and can be found at <http://www.redlist.org> The general aim of the system is to provide an explicit, objective framework for the classification of the broadest range of species according to their extinction risk. If any of the indicator species for this Eco-Region have been classified as Critically Endangered, Endangered or Vulnerable on the list, then we have included that information below.

3.1 All lobsters, especially the West Coast Rock Lobster (*Jasus lalandii*)

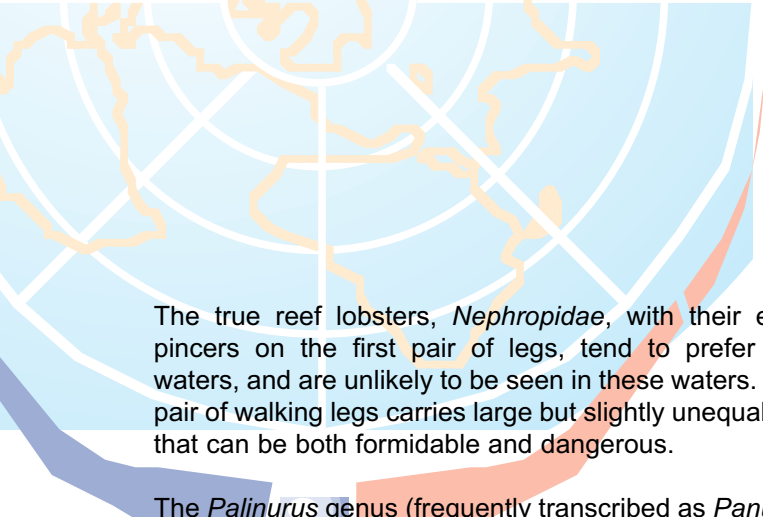


Lobsters, like shrimps and crabs, are decapods – literally meaning 10 legs - and can be found in all of the world's tropical and sub-tropical seas as well as more temperate waters. They are predatory, nocturnal animals with a vividly decorated coat. They are often numerous locally; they linger in crevices (with their long antennae sticking out) during the day and hunt small benthic organisms at night, but they also feed on organic detritus whenever they happen across it. As with all crustaceans, the lobster moults or sheds its shell to grow.

Up until the end of the 19th century lobster was so plentiful that it was often used as fish bait. Sadly, with lobster's ever-increasing popularity those days are now gone forever. Lobsters have recently suffered a dramatic demographic decline; intensive fishing has annihilated entire populations, especially where tourism abounds.

The lobster families that you may encounter are the spiny rock lobsters, *Palinuridae*, the slipper lobsters, *Scyllaridae* and the true reef lobsters, *Nephropidae*.





The true reef lobsters, *Nephropidae*, with their enlarged pincers on the first pair of legs, tend to prefer warmer waters, and are unlikely to be seen in these waters. The first pair of walking legs carries large but slightly unequal pincers that can be both formidable and dangerous.

The *Palinurus* genus (frequently transcribed as *Panulirus*) is represented by numerous species in all of the world's tropical and sub-tropical seas as well as more temperate waters. It is a predatory, nocturnal animal with a vividly decorated coat. South Africa's commercial rock lobster fishery is based on two species, the **south coast lobster** *Palinurus gilchristi* and the **west coast lobster** *Jasus lalandii*.



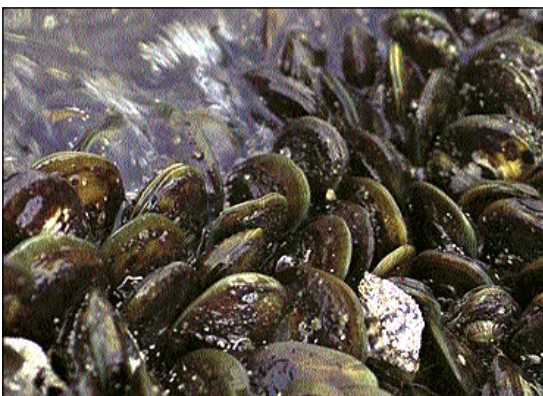
The south coast lobster tends to be found in deeper waters, around 100m. The west coast lobster is an inshore species that is caught commercially by traps and hoopnets deployed from small vessels, and is also harvested by recreational divers. It occurs predominantly along the Atlantic seaboard, where the waters are cooled by the Benguela Current, but is also occasionally found on the Cape south coast to as far north as East London. In the East London area, the west coast lobster distribution gives way to that of the inshore **east coast lobster** (*Panulirus homarus*), a species which prefers warmer waters. We would particularly like information on west coast lobster, but please record sightings of all lobster species, if possible.

Because of the popularity of rock lobsters, west coast lobsters, which are generally more abundant than their east coast relatives, support an important commercial fishery. Over the last decade, annual harvests have varied between 2000 and 4000 tonnes, but in the 1950s catches were as high as 10 000 tonnes per year. These large volumes have steadily eroded the supply of animals of legal size.

West and east coast rock lobsters have very different biological characteristics. The West coast lobster grows more slowly, moults only once each year, taking approximately 6-9 years to reach the legal size limit of 80mm carapace length. East coast lobsters are much faster growing, reaching their minimum legal size of 57mm carapace length after just 3 years.

Unsurprisingly, low numbers are indicative of overfishing.

3.2 Mussels (*Mytilus galloprovincialis*, *Perna perna* and *Semimytilus algosus*)



Perna Perna

Mussels are fast becoming South Africa's biggest source of income from marine products and the industry is gaining a considerable export market. Mussels are marine molluscs of the class Pelecypoda, which means hatchet-foot. They are bivalves, having a shell consisting of two valves, or movable pieces, hinged by an elastic ligament.

Within the shell there is a fleshy layer of tissue called the mantle with a cavity (the mantle cavity) between the mantle and the body wall proper. The mantle secretes the layers of the shell, including the inner nacreous, or pearly, layer. Nacreous layers can also be formed around a foreign body in reaction to irritation. A muscular hatchet-shaped foot projects from

the front end of the mollusc, between the valves. This foot is used for burrowing, and in some bivalves (e.g., razor clams), to swim. Bivalves differ in their habits: some, such as the oysters and marine mussels, have a reduced foot and are permanently



attached to a substratum. Most of the body consists of the reproductive organ - orange in females and white in males. During reproduction they shed enormous numbers of egg and sperm into the water.

In addition to being an important food source for ourselves, bivalves, which include clams, cockles, oysters, and scallops, as well as mussels, are also an important part of the diet of gastropods, fish, and shore birds. The fertile waters of the Benguela Current, with its high concentrations of plankton, make the region an excellent natural breeding-ground for mussels.



Mytilus galloprovincialis

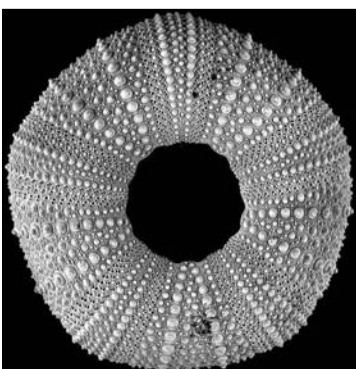
The Mediterranean blue mussel, *Mytilus galloprovincialis*, grows up to 7.6 cm and is common along the Atlantic coast. It was introduced to the west coast of South Africa from Europe in the late 1970's to be raised commercially. It has now become invasive and is the dominant intertidal mussel species throughout the ecoregion, where it has displaced the indigenous mussel, *Aulacomya ater*. In comparison with the indigenous mussel species, the Mediterranean blue mussel displays several characteristics of an aggressive invasive alien: it grows rapidly at differing water temperatures; it is highly reproductive; it is resistant to desiccation and it is resistant to parasites. It is demonstrably out-competes native species for primary space in the region. In addition, its reported ability to grow rapidly in the warmer waters of Port Elizabeth suggest that this invader has the potential to become invasive on the south and east coasts of South Africa as well.

The brown mussel, *Perna perna* is the dominant mussel species on the south and east coasts of South Africa. It is virtually absent on the central and southern parts of the west coast, where Mediterranean blue mussel is dominant, and it reappears as the dominant species in northern Namibia. However these two species are similar in habit, therefore any interaction between them intertidally is likely to be more evenly balanced than that between Mediterranean blue and *Aulacomya*.

The brown mussel is a relatively elongate, low-shelled bivalve, easily recognised by its brown colour. The shell is thin around the edges and thickens posteriorly. The maximum shell size is influenced by vertical distribution. In intertidal zones, the mussel reaches a maximum size of 90mm. And, a maximum size of 120mm is reached at lower depths.

Another member of the same family, *Semimytilus algosus*, is widely distributed from Africa to Conception, Chile, where it is known as the chorito or green chorito. Beds of these mussels provide an important habitat for a range of organisms, particularly polychaetes (marine worms). This edible bivalve is somewhat angular, with dark brown colouration.

3.3 Sea urchin (*Parechinus angulosus*)

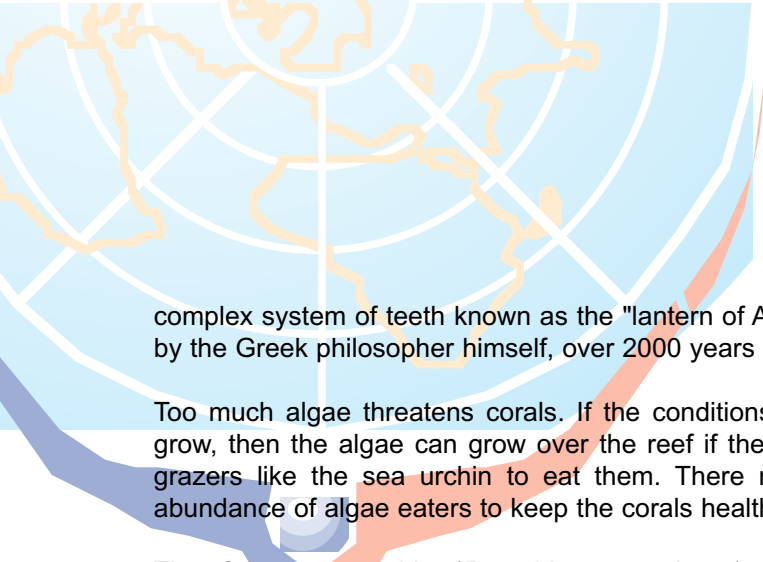


Pumpkin Shell

Sea urchins are often used as indicator organisms in public aquariums to determine whether the system is functioning properly. These organisms are extremely sensitive to water conditions and are first to show signs of stress, seen when their spines are laid down or are shed. Sea urchins are highly sensitive to air and direct sunlight, and often use bits of shell and pebbles as sunshade 'umbrellas'.

Sea urchins (echinoderms) are a group of marine invertebrates that can be found in almost every major marine habitat from the poles to the equator and from the inter-tidal zone to depths of more than 5,000 metres. There are around 800 extant species and the group has a long and detailed fossil record stretching back many millions of years. All echinoderms have tube-feet and these play a very important role in feeding and respiration. Echinoderms move by means of spines and climb and cling on to hard substrata by means of their tube-feet. The spines also offer the primary means of defence. Sea urchins feed in a variety of ways. They have a powerful internal jaw and graze on algae or sedentary organisms, thanks to a





complex system of teeth known as the "lantern of Aristotle", first described by the Greek philosopher himself, over 2000 years ago.

Too much algae threatens corals. If the conditions are right for algae to grow, then the algae can grow over the reef if there aren't enough algae grazers like the sea urchin to eat them. There needs to be a healthy abundance of algae eaters to keep the corals healthy.

The Cape sea urchin (*Parechinus angulosus*) is common along the southern African coast. Unlike many tropical urchins, which have lethal spines, the Cape sea urchin's spines are not poisonous. They are grazing herbivores, scraping algae off the rocks with their beak-like mouths in the middle of the underside. Five double rows of tube feet radiate from the anus down the sides of the shell, which together with their spines, allow them to move. These animals are found in a variety of colours and inhabit the inter-tidal zone. Their greenish skeleton, or test, is often found washed ashore and is referred to locally as pumpkin shell.



Parechinus angulosus

Warning! Some sea urchins are covered with sharp venom-filled spines that can easily penetrate and break off into the skin – even through a wetsuit. The DAN (Divers Alert Network) website contains useful information on how to handle the unfortunate effects of accidental brushes with these and other poisonous marine organisms. Check out www.diversalertnetwork.org for any information that you need.

3.4 All Rockfish of the families *Blenniidae* & *Clinidae*

The family of combtooth blennies, *Blenniidae* is primarily marine, although they are occasionally found in brackish and freshwater. Blennies are diurnal, shallow-water species, and are for the most part found in the tropical and subtropical seas, distributed worldwide, being found in the Pacific, Atlantic, and Indian Oceans, in the Red and Mediterranean Seas, and in the Caribbean. This preference for warmer waters means that of well over 300 species worldwide, only a few will be found in the cooler waters of the Benguela Current.



Blenniidae

Blenniids are small, naked-bodied (scaleless) fishes, usually with blunt heads. The pelvic fins are before the pectoral fins and have one short embedded spine and between two and four soft rays. In most species the adults have a benthic (bottom-dwelling) existence, and lack swim-bladders, the sac that fish have within their abdomen which is gas filled and is used to control buoyancy. (A natural BCD!)



Clinidae

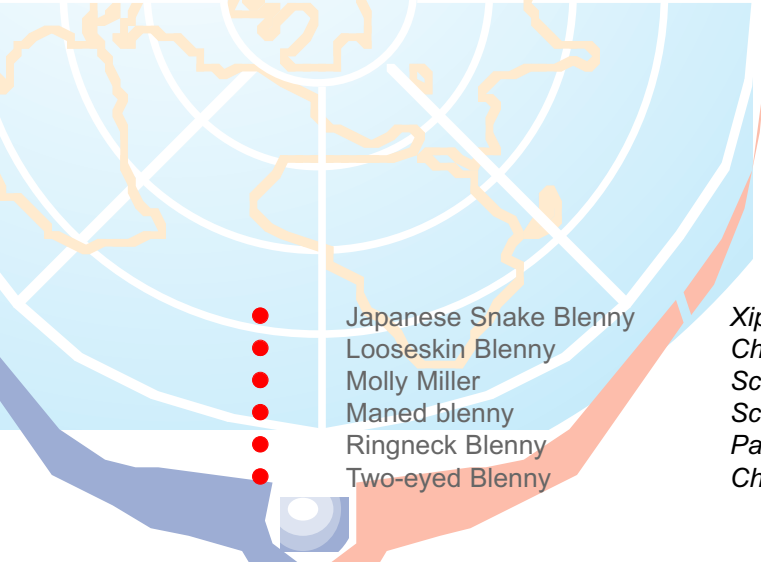
The Japanese Snake Blenny (*Xiphasia matsubarae*) is a rare species that inhabits relatively deep waters but rises to the surface at night. It lives in a tube in fine sand or mud and rises to the surface at night where it falls prey to pelagic fishes. Its common name well describes its 30cm long snake-like body.

The Hairtail Blenny (*Xiphasia setifer*) is easily distinguished from other blennies by an extremely elongate body. Found in tube-like burrows in sand or mud, it feeds at night on a mixed diet of algae and benthic invertebrates.

Some of the species that you may encounter in this eco-region are listed below, with their maximum adult length also shown:

- Hairtail Blenny *Xiphasia setifer* 53cm
- Horned Blenny *Parablennius cornutus* 15cm





●	Japanese Snake Blenny	<i>Xiphasia matsubarae</i>	30cm
●	Looseskin Blenny	<i>Chalaroderma capito</i>	20cm
●	Molly Miller	<i>Scartella cristata</i>	12cm
●	Maned blenny	<i>Scartella emarginata</i>	10cm
●	Ringneck Blenny	<i>Parablennius pilicornis</i>	12cm
●	Two-eyed Blenny	<i>Chalaroderma ocellata</i>	7cm

The fishes contained in the family **Clinidae** or weedfishes are found in the Atlantic, Indian, and Pacific Oceans, principally in temperate waters in both southern and northern hemispheres. Unlike the blennies, they will not be found in brackish or freshwater, but are usually found in marine weedy areas. The colour of many of the species is dependent on the type of weed that it inhabits.

Clinids are carnivorous, usually have a pointed nose, and have a long, multiple-spined dorsal fin. They usually have fringed tentacles. They have small, cycloid, almost inconspicuous scales.

Also known as klipfish, there are almost 40 different species to be found in the Southeast Atlantic, with adult sizes varying from 5cm, as in the deepwater klipfish (*Pavoclinus profundus*) up to 50cm for the robust klipfish (*Clinus robustus*). The colour of the robust klipfish ranges from reddish, green or green-brown with crossbars, the fins are barred or spotted.

The west coast klipfish (*Clinus heterodon*) is found at the inter-tidal zone, and can be found in rock-pools. It has dark irregular crossbars, speckled with white and dark blue. The tips of the anal and pelvic fins red, the tips of the dorsal fin white and there is a blue-margined ocellus on shoulder. (An ocellus is an eye-like marking with a ring of one color surrounding a spot of another; a common color pattern in fish, aiming to confuse predators).

3.5 Cape White Seabream (*Diplodus sargus capensis*)



Seabream or porgies are members of the Sparidae family of carnivorous bony fishes.

Porgies are carnivores of hard-shelled benthic (bottom dwelling) invertebrates. Many species have been found to be hermaphroditic; some have male and female gonads simultaneously. Others change gender as they get larger.

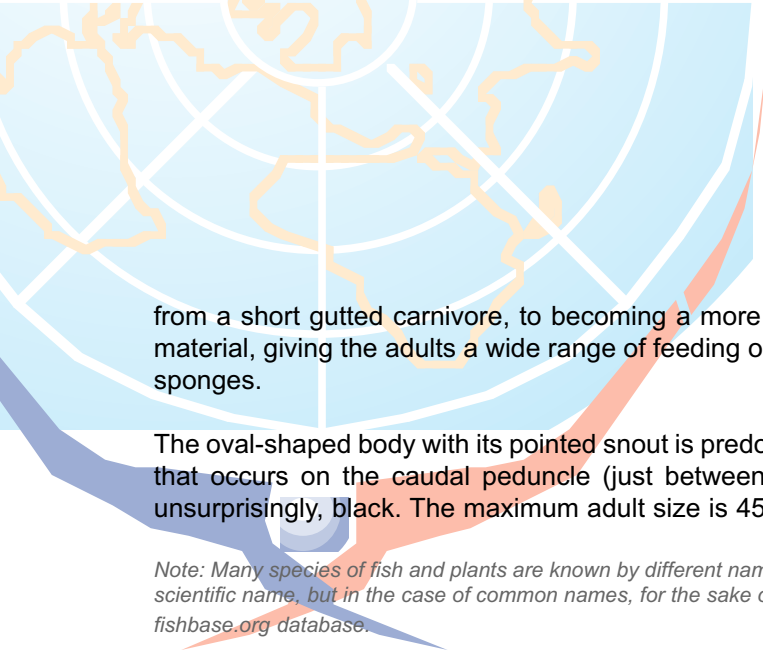
The structure of the fins of Porgies is essentially the same as in the family Serranidae of seabasses with which they can be confused. There are important anatomical differences, however, most obvious of which are that the edge of the gill cover does not end with a sharp spine in the porgies but is rounded or at most bluntly angular; and that the maxillary bone (the bone forming the margin of the upper jaw) is sheathed and hidden when the mouth is closed.

Long, pointed pectoral fins (found on each side of the body behind the gill opening) are likewise characteristic of the family; the spiny and soft portions of the dorsal (back) fin are continuous, and the soft-rayed anal fin is about as long as the soft part of the dorsal.

There are over fifty different species of porgies to be found in the southeastern Atlantic, but we would you to survey and record just one particular species, the Cape white seabream (*Diplodus sargus capensis*), also known as a blacktail or dassie.

The Cape white seabream is primarily an inshore species, favouring turbulent seas and rocky shores, but also often occurs in small shoals over the outer edges of deeper reefs and around offshore pinnacles, to depths of 50m. The diet of this fish changes with age, and as the fish grows so does its intestine, enabling it to change





from a short gutted carnivore, to becoming a more omnivorous adult, able to digest large amounts of plant material, giving the adults a wide range of feeding options including red and green seaweeds to mussels and sponges.

The oval-shaped body with its pointed snout is predominantly silver and there is an unmistakable black saddle that occurs on the caudal peduncle (just between the dorsal and tail fins). The tail fins themselves are, unsurprisingly, black. The maximum adult size is 45cm, but most fish that you see will be smaller than this.

Note: Many species of fish and plants are known by different names in different locations. Where appropriate, we provide the recognised scientific name, but in the case of common names, for the sake of consistency, we have used the common names as they appear in the fishbase.org database.

4.0 Anthropogenic Pressures

EARTHDIVE is recording five different types of anthropogenic pressures (effects resulting from the actions of humans). Collection of this data enables us to establish an ever-evolving **Global Snapshot** of our oceans.

The types of anthropogenic pressures are the same for each region and are:

- Surface Pressures paper, wood, plastic and any other man-made debris
- Boat Activity pleasure, fishing, commercial
- Subsurface Pressures litter, sediment, physical damage
- Evidence of Fishing pots, traps, discarded nets, blast damage, cyanide damage, other etc.
- Coastal Development resorts, villages, towns, distance from the dive sites etc.

Please note any information you feel is relevant and record the data in the notes section for each impact in the Global Dive Log.

Thank you.

5.0 eCORD

EARTHDIVE asks all scuba divers to subscribe to the principles of **eCORD** - the **EARTHDIVE** Code of Responsible Diving - and to encourage others to practice them. **eCORD** is a straightforward 7 Point Plan which will help divers to limit the anthropogenic impact of recreational diving - while at the same time making their diving experiences more rewarding and enjoyable. Be sure to incorporate the 7 points in your dive planning!

1. Know your limits.

Every dive is different and every diver is different. Always ensure that you dive within the limits of your training and experience, whilst taking due account of the prevailing conditions. Take the opportunity to advance and extend your skills whenever that opportunity arises. In particular, buoyancy skills can become a little rusty after any prolonged absence from the water. If you can't get pool or confined water practice before your trip, get your buoyancy control checked out by a qualified instructor on your first dive! There are many national and international dive training organisations which offer a comprehensive range of courses and instructional material beyond basic skills level. Take advantage of them!

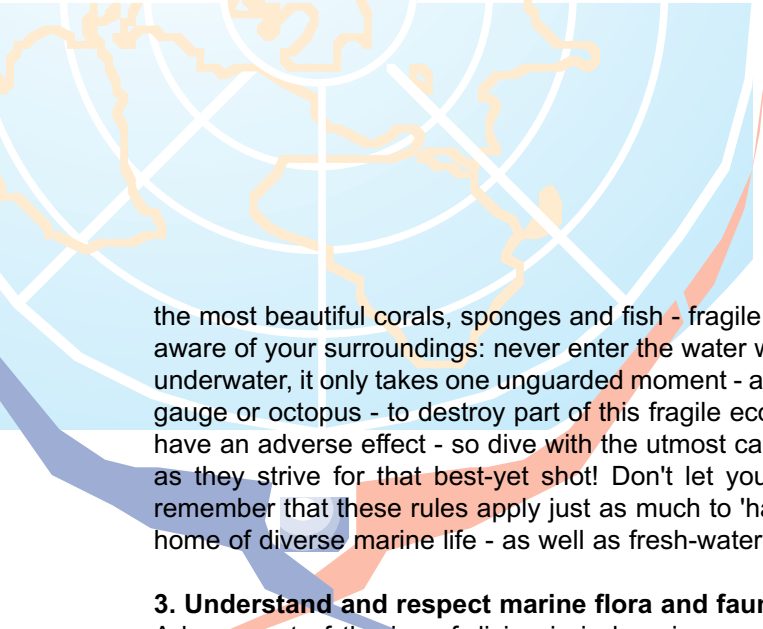
2. Be aware of the marine environment and dive with care.

Not surprisingly, many dive sites are located where the reefs and walls play host to



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the most beautiful corals, sponges and fish - fragile aquatic ecosystems! Starting with your point of entry, be aware of your surroundings: never enter the water where there are living corals, water plants or reeds. Once underwater, it only takes one unguarded moment - a careless kick with a fin, an outstretched hand, a dragging gauge or octopus - to destroy part of this fragile ecosystem. Even fin kicks too close to the reef or sand can have an adverse effect - so dive with the utmost care. Photographers in particular need to take greater care as they strive for that best-yet shot! Don't let your dive become an adverse anthropogenic impact! And remember that these rules apply just as much to 'hard' dive sites - such as wrecks, which have become the home of diverse marine life - as well as fresh-water and other sites.

3. Understand and respect marine flora and fauna.

A large part of the joy of diving is in learning more about the plants and animals who live in this unique underwater environment. In order to survive and thrive, many living creatures disguise themselves to look like plants and inanimate objects, or develop defence mechanisms such as stings. Some even do both! (Have you seen a stonefish lately?) The **EARTH DIVE** briefing packs (available by download only) provide information about indicator species for the region in which you are planning to dive. In addition, dive training organisations run marine naturalist and identification courses. The more that you learn, the more that you will see, the more that you will derive pleasure from your underwater experience - and the safer you will be for yourself, other divers and the marine environment!

4. Don't interfere.

First and foremost, be an observer in the underwater environment. As a general rule, look don't touch. Remember that polyps can be destroyed by even the gentlest contact. Never stand on coral even if it looks solid and robust.

Always resist the temptation to feed fish and discourage others from doing so. You may interfere with their normal feeding habits, damage their health and encourage aggressive behaviour. Leave only your bubbles!

5. Take only what you need.

The marine environment is a valuable source of food for mankind and it is important that it remains so into the future. If you are among those divers who enjoy taking food from the sea, observe some simple rules:

- Obtain any necessary permits or licenses.
- Comply with all relevant fish and game regulations. These are designed to protect and preserve fish stocks, the environment and other users.
- Only take what you can eat. If you catch it and can't eat it, put it back.
- Never kill for the sake of 'sport'.
- Avoid spear fishing in areas populated by other divers or visitors to the area, or where you might cause collateral damage.

Don't be tempted to collect shells, corals or other mementos of your dive. If you want a souvenir, take a photograph!

6. Observe and report.

As an **EARTH DIVE** member, you will be in a unique position to monitor and report on the health, biodiversity and any obvious damage to dive sites using the **EARTH DIVE** Global Dive Log. In addition, we would encourage you to report anything unusual to the appropriate local marine and environmental authorities, or if this is difficult, get your dive centre to do it for you. They have a vested interest in a healthy marine environment, and will normally be more than willing to help. Always be on the lookout for physical damage, fish stock depletion, pollution and other environmental disturbances. If the dive operation itself is causing damage -say by anchoring to the reef - then let them know how you feel in no uncertain terms!


7. Get involved.

No matter where you are diving or snorkelling, be it at home or abroad, there will be at least one (and often many more) marine conservation bodies who are active in the



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area. Don't be afraid to approach them for information, to offer help, or just to find out what they have to offer. You will receive an enthusiastic welcome! They will provide you with lots of opportunities to contribute to marine conservation.



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6.0 Appendices

Post Dive Recording Sheet - **General Data** (complete/add/delete/tick as applicable)

Dive No: Dive Site Name:

GPS: N/S: . E/W: . (Decimal Degrees up to 7 decimal points)

Date: // Boat Shore Water Type: Salt /Brackish/Fresh

Dive Type: Recreational Technical Training Drift Search Wreck Drift
Night Other

Time In: : Time Out: : (24 hour clock) Dive Time: : (hr:mins)

Air/Nitrox Start: End: (psi or bar) Max Depth (ft/m)

Visibility: ft/m Temperatures: water: °C/°F air: °C/°F

Current: None Light Medium Strong (tick)

Surface Conditions: Cloudy Sunny Partly Cloudy Rain Variable other

IF DIVING WITH A CLUB/DIVE CENTRE/LIVEBOARD OR RESORT, WERE YOU GIVEN AN ENVIRONMENTAL BRIEFING: YES NO

Please record any other information you normally record immediately following a dive. Add this data to the **earthdive** website via your control panel as soon as possible. **Thank you**

Post Dive Recording Sheet - **Indicator Species**

Important Note: If you allocated some time to looking for one of the indicator species, but didn't find any, please make sure that you record a **0 (zero)** count in the appropriate box, and record how much time you spent looking for the indicator.



All Lobsters, especially the West Coast Rock Lobster (*Jasus lalandii*)

How many Lobsters did you see? (tick box and/or record actual number)

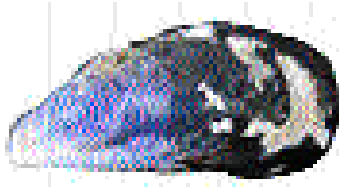
0 1 - 5 6 - 20 20 - 50 51 - 250 >250

Actual Number (write actual number)

How long were you looking for this indicator? (minutes)

Add your additional information here. In what type of habitat did you see this indicator? Can you record its species? What was it doing? At what depth did you see it/them?

Additional Information:



Mussels (*Mytilus galloprovincialis*, *Perna perna* and *Semimytilus algosus*)

How many Mussels did you see? (tick box and/or record actual number)

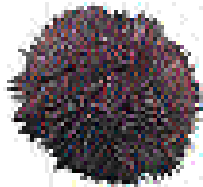
0 1 - 5 6 - 20 20 - 50 51 - 250 >250

Actual Number (write actual number)

How long were you looking for this indicator? (minutes)

Add your additional information here. In what type of habitat did you see this indicator? Can you record its species? What was it doing? At what depth did you see it/them?

Additional Information:



Sea Urchin (*Parechinus angulosus*)

How many Sea Urchins did you see? (tick box and/or record actual number)

0 1 - 5 6 - 20 20 - 50 51 - 250 >250

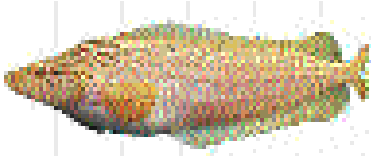
Actual Number (write actual number)

How long were you looking for this indicator? (minutes)

Add your additional information here. In what type of habitat did you see this indicator? What was it doing? At what depth did you see it/them?

Additional Information:





All **Rockfish** of the families *Blennidae* & *Clinidae*

How many Rockfish did you see? (tick box and/or record actual number)

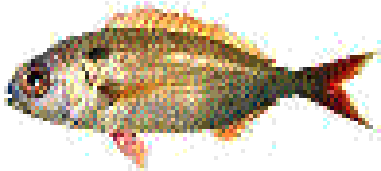
0 1 - 5 6 - 20 20 - 50 51 - 250 >250

Actual Number (write actual number)

How long were you looking for this indicator? (minutes)

Add your additional information here. In what type of habitat did you see this indicator? Can you record its species? What was it doing? At what depth did you see it/them?

Additional Information:



Cape White Seabream

How many Cape White Seabream did you see? (tick box and/or record actual number)

0 1 - 5 6 - 20 20 - 50 51 - 250 >250

Actual Number (write actual number)

How long were you looking for this indicator? (minutes)

Add your additional information here. In what type of habitat did you see this indicator? What was it doing? At what depth did you see it/them?

Additional Information:



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Post Dive Recording Sheet - **Anthropogenic Pressures**



Surface Pressures

Did you see any Surface Litter? (tick box)

Yes No Dont Know

If yes please record any details (plastic, wood, paper, other etc.) Please record quantity and any other relevant information.



Boat Activity

Did you see any Boat Activity? (tick box)

Yes No Dont Know

If yes please record any details (i.e fishing boats, pleasure boats, commercial vessels any other etc)

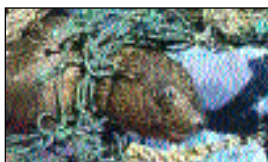


Subsurface Pressures

Did you see any Surface Litter? (tick box)

Yes No Dont Know

If yes please record any details (litter, sediment, physical damage, coral bleaching other etc).



Evidence of Fishing

Did you see any Surface Litter? (tick box)

Yes No Dont Know

If yes please record any details (pots, traps, discarded nets, blast damage, cyanide damage, other etc).



Evidence of Coastal Development

Did you see any evidence of Coastal Development? (tick box)

Yes No Dont Know

If yes please record any details (resorts, villages, towns, distance form the dives site etc).

Evidence of the illegal trade in endangered species

Any observations you make below and record in the Global Dive Log will be passed onto **TRAFFIC**, the world's wildlife trade monitoring network.

TRAFFIC works to ensure that the trade in wild plants and animals is not a threat to the conservation of nature. It has offices covering most parts of the world and works in close co-operation with the Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). **TRAFFIC** is a joint programme of WWF and IUCN-The World Conservation Union.

Evidence of the illegal trade in endangered species

Did you find any evidence at any time during your holiday/dive trip of the illegal trade of endangered species. (tick box)

Yes No Dont Know

If yes please record any details (the species, sale location, and any other available information). Please refer to the **TRAFFIC** Guide for more information concerning species identification, local laws, and contact information of **TRAFFIC** to report offences.



© Elizabeth Fleming
Turtle shell ornaments on display

TRAFFIC

