



EARTHDIVE

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

PRE-DIVE BRIEFING PACK **Eco-Region 7b** **Southern Africa - Sub-tropical/Warm Temperate**





Contents

1.0 General Information

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

2.0 The Southern Africa - Sub-tropical/Warm Temperate Eco-Region

3.0 Indicator Species

- 3.1 Sharks
- 3.2 All Lobsters (especially the Rock Lobster: *Jasus lalandi*)
- 3.3 Perlemoen Abalone (*Haliotis midae*)
- 3.4 Seabream of the species *Polysteganus undulosus*, *Petrus rupestris*, *Chrysoblephus cristiceps* and *C. gibbiceps*
- 3.5 Groupers (*Epinephelus spp*)

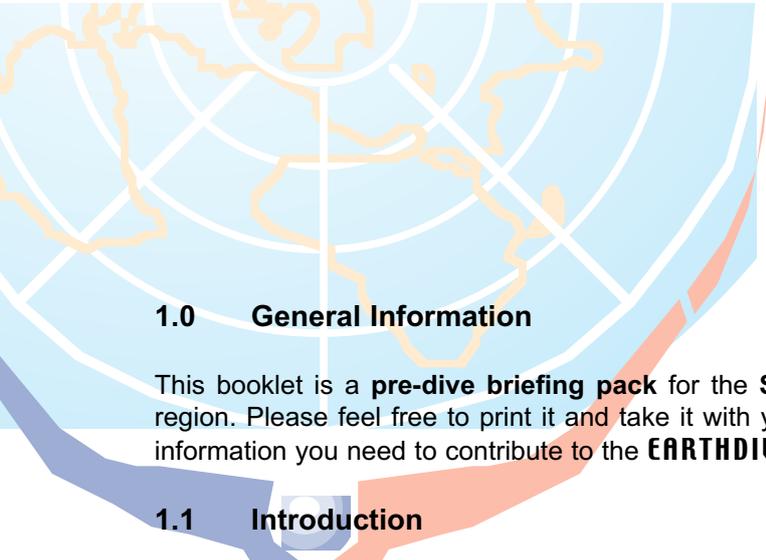
4.0 Anthropogenic Pressures

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 **Southern Africa - Sub-tropical/Warm Temperate** 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



- 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 Southern Africa - Sub-tropical/Warm Temperate Eco-Region

This eco-region comprises the coastal waters of the Republic of South Africa, broadly from Cape Agulhas, east to the border with Mozambique.

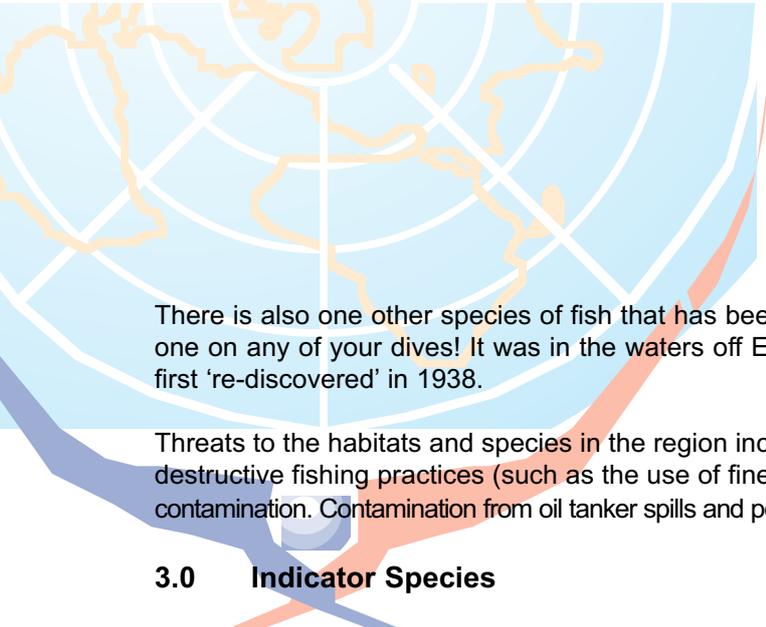
The waters of this eco region are strongly influenced by the warm Agulhas Current, which flows south down the east coast of Africa before meeting the cold Benguela current off the Cape of Good Hope.

As the current reaches the southern tip of Africa, it retroflects, or turns back on itself, and flows eastward as the Agulhas Return Current. The Agulhas is one of the strongest currents in the world, probably second after the Gulf Stream.

The coastline embraces a mix of mangrove forests, unique parabolic sand dunes, and beds of sea grass that provide food and habitat for seabird colonies, sea turtles, and numerous fish. South Africa's De Hoop Nature Reserve is located within this ecoregion, Marine mammals such as dolphins and seals occur in the waters off the coast and southern right whales calve and mate in the sheltered bays of De Hoop each year between May and December. At least 250 species of fish occur in the marine protected area.

As the warm waters of the current meet and mix with the cooler waters of the southern ocean, the resulting conditions allow a mixture of species that are characteristic of different regions. Although not enjoying the biodiversity of tropical regions that lie towards the equator, there are nevertheless a number of endemic fish and invertebrates in the ecoregion. Some of these include the Zanzibar butterfly fish (*Chaetodon zanzibariensis*), African butterfly fish (*Pantodon buchholzi*) and the ear-spot angelfish (*Pomacanthus chrysurus*).





There is also one other species of fish that has been found in these waters, but you are very unlikely to see one on any of your dives! It was in the waters off East London that the long-thought extinct coelacanth was first 're-discovered' in 1938.

Threats to the habitats and species in the region include the loss of mangrove forests, siltation of coral reefs, destructive fishing practices (such as the use of fine-mesh nets), and poor rural sewage treatment leading to contamination. Contamination from oil tanker spills and polluted ballast waters have also posed problems for the region.

3.0 Indicator Species

What to look for and record in the **Southern Africa - Sub-tropical/Warm-Temperate** eco-region:

Sharks

Low numbers are indicators of overfishing



Lobsters (especially the Rock Lobster: *Jasus llandi*)

Low numbers are indicators of overfishing



Abalone (*Haliotis midae*)

Low numbers are indicators of overfishing



Seabream of the species *Polysteganus undulosus*, *Petrus rupestris*, *Chrysoblephus cristiceps* and *C. gibbiceps*

Endemic species



Groupers (*Epinephelus spp.*)

Low numbers are indicators 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 Sharks



Identifying sharks in the wild is a great challenge! While scientists can spend weeks examining every detail of a species, divers may encounter a shark for only a few seconds or minutes. Many species look alike and one individual may not be identical to the next. There are, however, relatively few species in any one specific dive site and with some preparation and a little practice it is possible for all of us to recognise the more common and distinctive species.

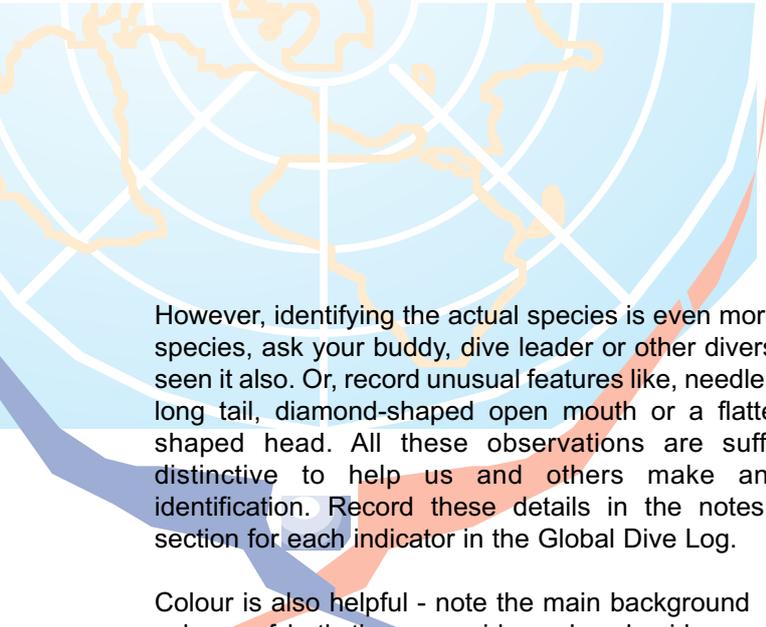
The key to successful shark identification underwater is a process of elimination, based on a mental checklist of the main features to look for in every animal encountered. One feature alone is rarely enough for a positive identification, so gather as much information as you can before drawing firm conclusions.

EARTHDIVE wants you to record sightings of sharks. That in itself is valuable. A total count of all species and the time duration of the count is important information in itself and you can record this data in the Global Dive **Log**.



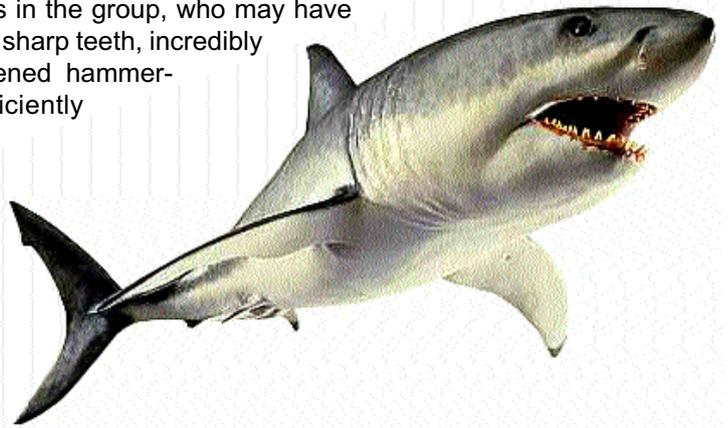
EARTHDIVE





However, identifying the actual species is even more important. If you do not recognise a species, ask your buddy, dive leader or other divers in the group, who may have seen it also. Or, record unusual features like, needle sharp teeth, incredibly long tail, diamond-shaped open mouth or a flattened hammer-shaped head. All these observations are sufficiently distinctive to help us and others make an identification. Record these details in the notes section for each indicator in the Global Dive Log.

Colour is also helpful - note the main background colours of both the upperside and underside as well as distinctive markings. The dorsal (back) fins can also tell us a lot. Do they have a broad or narrow base? Are they curved or upright? Are they falcate (sickle shaped)? Are the tips rounded or pointed? What is the background colour of the fins?



Some species have very distinctive dorsal fins - the first dorsal of the oceanic whitetip, for instance, is huge, rounded and conspicuously marked with a mottled white tip.

One thing we are pretty sure of (unless the **Global Snapshot** proves us wrong!), is that all sharks are restricted in their range in one way or another. Whitetip reef sharks are only found in the Pacific and Indian Oceans (including the Red Sea), for example, while bull sharks are found virtually worldwide but only in tropical and sub-tropical waters. Caribbean reef sharks occur mainly around island reefs, whereas oceanic whitetip sharks are more common farther offshore in oceanic waters.

In this way we can tell you which sharks you might encounter in the Southern Africa - sub-tropical/Warm-Temperate eco-region and some of these are listed below, but given the enormous diversity of species within the region, this list may not be all-inclusive:

- Atlantic Weasel Shark
- Basking Shark (Vulnerable – IUCN)
- Bigeye Sixgill Shark
- Blacktip Shark
- Blue Shark
- Bluntnose Sixgill Shark
- Copper Shark
- Dusky Shark
- Great Hammerhead Shark
- Great White Shark (Vulnerable - IUCN)
- Lemon Shark
- Oceanic Whitetip Shark
- Milk Shark
- Pelagic thresher Shark
- Porbeagle Shark
- Sandbar Shark
- Sand Tiger Shark
- Scalloped Hammerhead Shark
- School or Tope Shark (Vulnerable – IUCN)
- Shortfin Mako
- Silky Shark
- Smalltooth Sawfish Shark
- Thintail thresher Shark
- Tiger Shark
- *Paragaleus pectoralis*
- *Cetorhinus maximus*
- *Hexanchus nakamurai*
- *Carcharhinus limbatus*
- *Prionace glauca*
- *Hexanchus griseus*
- *Carcharhinus brachyurus*
- *Carcharhinus obscurus*
- *Sphyrna mokarran*
- *Carcharodon carcharias* (sparse distribution)
- *Negaprion brevirostris*
- *Carcharhinus longimanus*
- *Rhizoprionodon acutus*
- *Alopias pelagicus*
- *Lamna nasus*
- *Carcharhinus plumbeus*
- *Carcharias taurus*
- *Sphyrna lewini*
- *Galeorhinus galeus*
- *Isurus oxyrinchus*
- *Carcharhinus falciformis*
- *Pristis pectinata*
- *Alopias vulpinus*
- *Galeocerdo cuvier*



3.2 Lobsters (especially the 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.

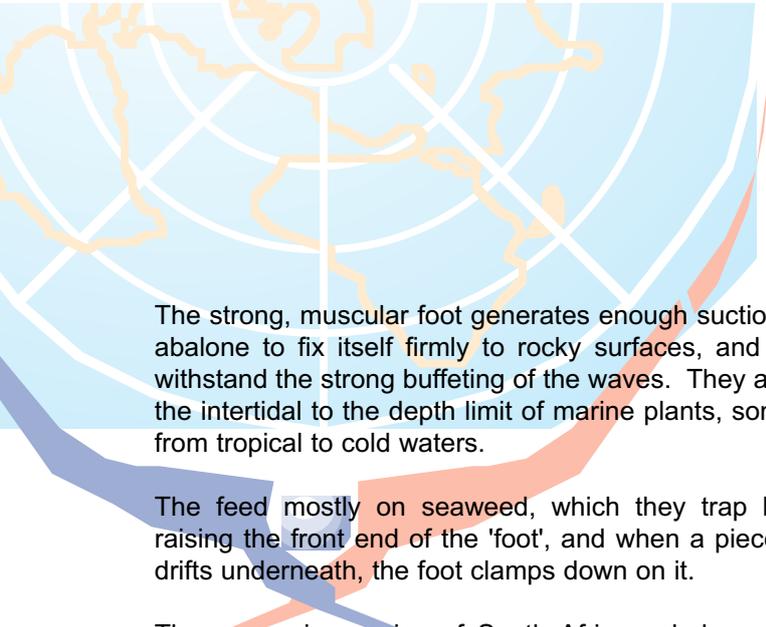
West and east coast rock lobsters have very different biological characteristics. The West coast lobster grows more slowly, moults only once each year, taking approximately 6-9 years to reach the legal size limit of 80mm carapace length. East coast lobsters are much faster growing, reaching their minimum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

Unsurprisingly, low numbers are indicative of overfishing.

3.3 Perlemoen Abalone (*Haliotis midae*)

Abalones are slow growing, herbivorous marine snails. They belong to a large class of molluscs (*Gastropoda*) with single-structured shells. There are over 100 species worldwide in the single genus *Haliotis*, which means 'sea ear', a reflection of the flattened shape of the shell. It is no surprise then that it is called 'Oreille de Mer' in France. Abalone shells can be oval or rounded, with a row of respiratory pores and large dome towards one end. They are edible molluscs and considered a delicacy.





The strong, muscular foot generates enough suction to allow the abalone to fix itself firmly to rocky surfaces, and enables it to withstand the strong buffeting of the waves. They are found from the intertidal to the depth limit of marine plants, some 80 -100m, from tropical to cold waters.

The feed mostly on seaweed, which they trap by marginally raising the front end of the 'foot', and when a piece of seaweed drifts underneath, the foot clamps down on it.

There are six species of South African abalone, of which the perlemoen (*Haliotis midae*) is the largest and most commercially important. It is also the most abundant species in the region and as a result it is the only species around which a commercial fishery has developed. The fishery has suffered heavily from illegal poaching and is in danger of collapse.



Haliotis

The perlemoen is distributed from St. Helena Bay to Port St. Johns. There is a possibility of reseeded natural populations in the future. The shell of a perlemoen grows to a length of 200 mm. The outside, which is covered in irregular ridges radiating from the slightly raised apex, ranges from purplish brown to grey. The inside is iridescent mother-of-pearl.

The common name of 'perlemoen' is a corruption of the Afrikaans word '*perlemoer*' meaning mother-of-pearl.

3.4 **Seabream of the species *Polysteganus undulosus*, *Petrus rupestris*, *Chrysoblephus cristiceps* and *C. gibbiceps***



Red Stumpnose (*Chrysoblephus gibbiceps*)

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.

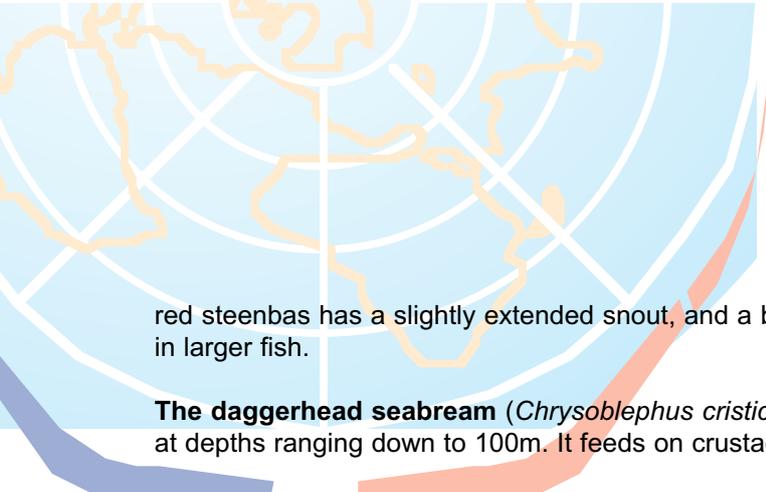
There are important anatomical differences, however, most obvious of which are that the edge of the gill cover does not end with a sharp spine in the porgies but is rounded or at most bluntly angular; and that the maxillary bone (the bone forming the margin of the upper jaw) is sheathed and hidden when 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 40 species of seabream to be found in the region, but there are four endemic species in particular that we would like your help in surveying:

The seventy-four Seabream (*Polysteganus undulosus*) is found over rocky reefs and banks of deep waters. It is a carnivorous species that feeds mainly on fish and squid. It can grow to 120cm. At one time abundant, this elegant fish has become scarce in recent years. The flesh is highly prized. The name is supposedly derived from lines on the body resembling rows of gun ports along the sides of the old "seventy-four" man-of-war.

The red steenbas (*Petrus rupestris*) is the largest of the *Sparidae* occurring in southern African waters, growing to 200cm. It is a solitary territorial fish inhabiting rocky banks in coastal waters and estuaries. It feeds on octopus, crabs and fish. The elongated, robust body is light red to bronze, and in some specimens there are beautiful, yellow undersides. The fins, especially the pectorals are a darker red. The





red steenbas has a slightly extended snout, and a bony ridge between its eyes, which is particularly evident in larger fish.

The daggerhead seabream (*Chrysoblephus cristiceps*) grows to 75cm and can be found over rocky banks at depths ranging down to 100m. It feeds on crustaceans, molluscs, worms, and small fishes

The red Stumpnose (*Chrysoblephus gibbiceps*), has a very localised distribution, being found only from Cape Town up to East London. It can grow to 75cm. It is noticeably deep-bodied, and has a very steep forehead that is slightly concave below the eyes. In older male fish, the upper forehead develops a bulbous projection that becomes increasingly spongy and pitted with age. The snout is somewhat pointed and the body is silvery-pink overall, but darker above. There are 5-7 darker-red, vertical bars on the sides of the body. These are also numerous dark blotches on the body, particularly the upper flanks. This is another solitary species, inhabiting offshore reefs to depths of 150m. The strong teeth help dismember the hard-shelled animals in a diet comprising molluscs, marine worms, sea urchins, octipuses, smaller fish and crabs.

3.5 Groupers (*Epinephelus spp.*)



When people talk about coral reefs, fishermen tend to shrug their shoulders and complain about snagged lines and torn nets. But when you talk about groupers, they suddenly sit up and pay attention. Groupers are among the economically most important fishes of the coral reef, because of their popularity as food. Yet without the coral reef there would probably be no groupers. For this reason, groupers are an extremely important indicator species and your record of their existence or non-existence during your dive tells us a lot.

The Dusky Grouper (*Epinephelus marginatus*) feeds on octopi, crustaceans (crabs) and fishes. It lives on rocky bottoms very close to the coasts. Because of its enormous final size (1,5 meters of length) it is the most impressive coastal fish. It is reef associated and it can live up to 50 years. It is highly territorial and it lives solitary. They occur from 5 to 300 meters of depth. It is also named *Epinephelus guaza* and is considered as a precious food fish.



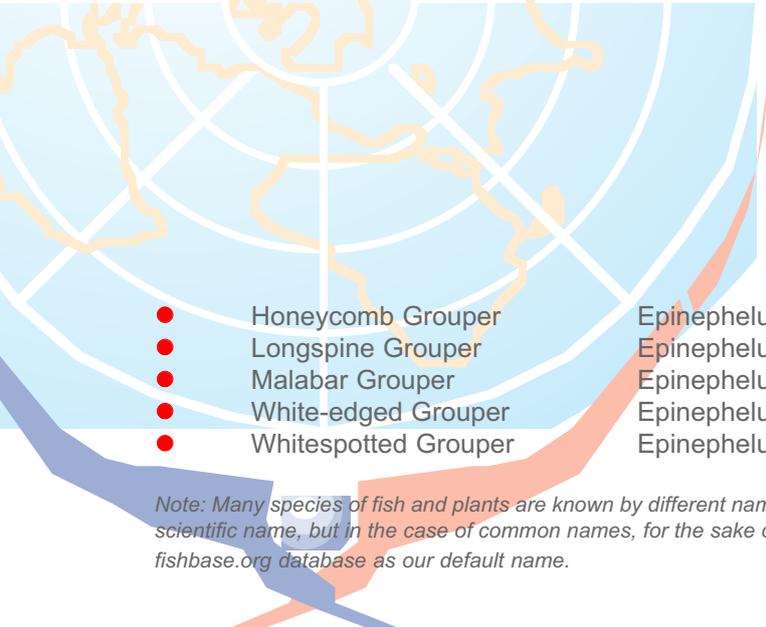
Dusky Grouper

The giant grouper (*Epinephelus lanceolatus*), also known locally as the Brindlebass and Brikwabaars is the largest of all bony fishes to be found in coral reefs. It is common in shallow waters, to depths of 100m. It feeds on spiny lobsters, smaller fishes, juvenile sea turtles and crustaceans. The maximum recorded size for this species is 270 cm, the maximum published weight an incredible 400kg. Any that you encounter are bound to be smaller than this! The giant grouper has a large mouth and a rounded tail; the body is green-grey to grey-brown with faint mottling; there are numerous small black spots on the fins. Juveniles have irregular black and yellow markings. There is anecdotal but unconfirmed evidence of the giant grouper fatally attacking humans!

Like all indicators, it is valuable if you can record the particular species you sight. However, recording the total number of groupers is just as important. The species that we would most like you to record are listed below for the Southern Africa – sub-tropical/Warm Temperate eco-region.

●	Blacktip Grouper	<i>Epinephelus fasciatus</i>	40cm
●	Blue and Yellow Grouper	<i>Epinephelus flavocaeruleus</i>	90cm
●	Catface Grouper	<i>Epinephelus andersoni</i>	80cm
●	Dot-dash Grouper	<i>Epinephelus poecilonotus</i>	65cm
●	Dusky Grouper	<i>Epinephelus marginatus</i>	150cm
●	Giant Grouper (Vulnerable – IUCN)	<i>Epinephelus lanceolatus</i>	270cm
●	Halfmoon Grouper	<i>Epinephelus rivulatus</i>	39cm





- Honeycomb Grouper
 - Longspine Grouper
 - Malabar Grouper
 - White-edged Grouper
 - Whitespotted Grouper
- | | |
|-------------------------------|-------|
| Epinephelus merra | 31cm |
| Epinephelus longispinis | 55cm |
| Epinephelus malabaricus | 234cm |
| Epinephelus albomarginatus | 100cm |
| Epinephelus coeruleopunctatus | 76cm |

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 as our default name.

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!

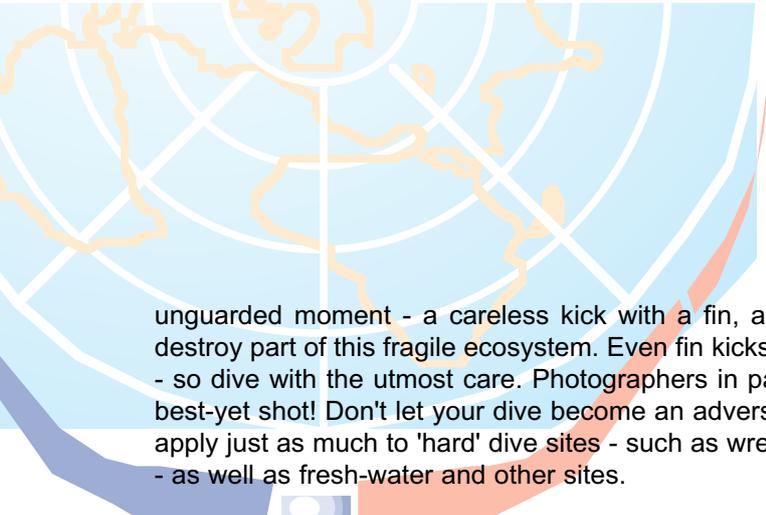
2. Be aware of the marine environment and dive with care.

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



EARTHDIVE





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!

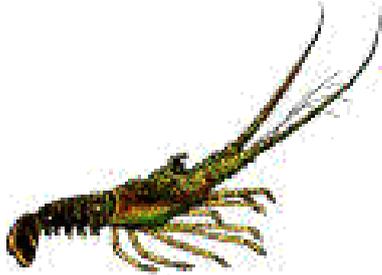
7. Get involved.

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 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.



EARTH DIVE





All Lobsters (especially the Rock Lobster: *Jasus llandi*)

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

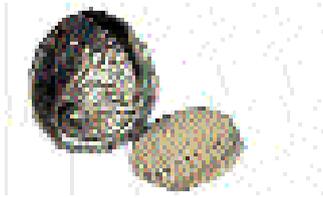
0 1 - 5 6 - 20 20 - 50 51 - 250 >250

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:



Perlemoen Abalone (*Haliotis midae*)

How many Abalone 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? At what depth did you see it/them?

Additional Information:





Seabream of the species *Polysteganus undulosus*, *Petrus rupestris*, *Chrysolephus cristiceps* and *C. gibbiceps*

How many of the four endemic species did you see? Please do not include sightings of any seabream species other than these four endemic species. (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:



Groupers (*Epinephelus spp*)

How many Groupers 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:



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.

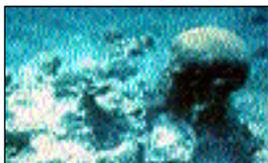


Boat Activity

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

