



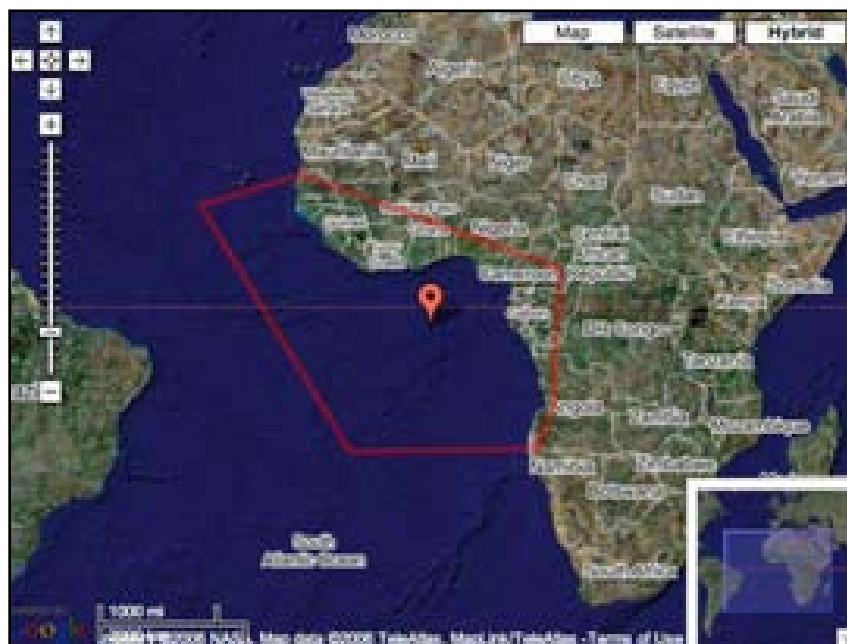
EARTHDIVE

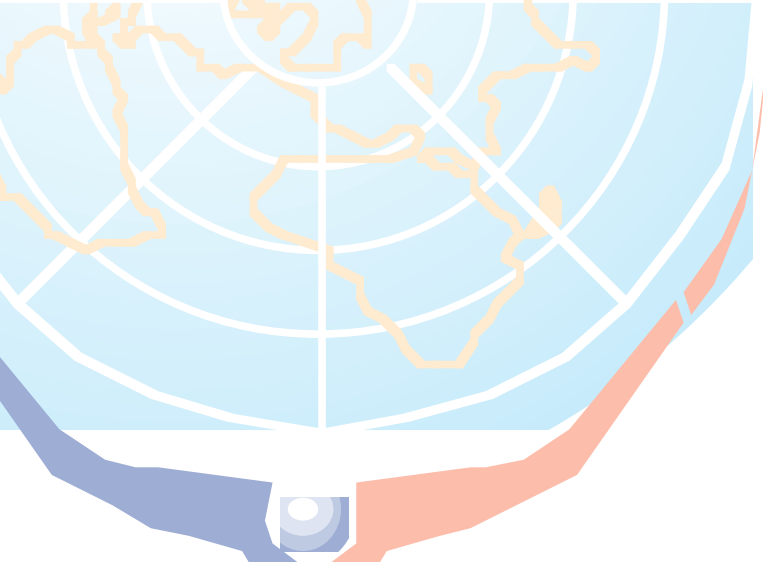
“The health of our oceans is intrinsically linked to the future of life on this planet”

PRE-DIVE BRIEFING PACK

Eco-Region 7c

Africa - Atlantic Coast - Tropical





Contents

1.0 General Information

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

2.0 The Africa - Atlantic Coast - Tropical Eco-Region

3.0 Indicator Species

- 3.1 Sharks
- 3.2 Groupers (*Serranidae*)
- 3.3 All Lobsters
- 3.4 Triggerfish (*Balistidae*)
- 3.5 Sea Urchins (*Echinometra* and *Echinothrix spp*)

4.0 Anthropogenic Pressures

5.0 eCord

6.0 Appendices

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



EARTHDIVE





1.0 General Information

This booklet is a **pre-dive briefing pack** for the **Africa - Atlantic Coast - Tropical** 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 **EARTHDIUE** Global Dive Log.

1.1 Introduction

The **EARTHDIUE 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 **EARTHDIUE** 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 **EARTHDIUE** website can be viewed by you and other visitors.

The **EARTHDIUE** 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 **EARTHDIUE** 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 **EARTHDIUE**.

1.2 How to record your observations into the Global Dive Log

When recording scientific information for **EARTHDIUE**, 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 **EARTHDIUE** 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.

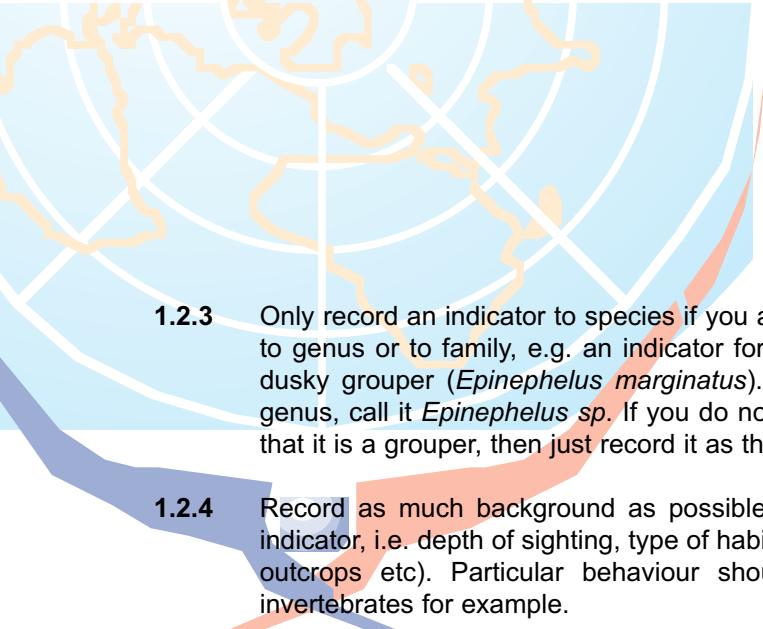
1.2.1 Try and ensure that the time of the underwater recording session is accurately noted. The length of the session can be all of the dive or just a period during the dive e.g. 10 minutes. You may even spend periods of time recording different indicators. For example there may be a dense aggregation 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.



EARTHDIUE



- 
- 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 Africa - Atlantic Coast - Tropical Eco-Region

This eco-region encompasses the Atlantic coasts of the following African countries: Angola, Benin, Cameroon, Congo, Cote D'ivoire (Ivory Coast), Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Nigeria, Senegal, Sierra Leone, and Togo. It also embraces the island groups of St. Helena and Sao Tome and Principe.



The waters of this eco-region are strongly influenced by the effects of the Guinea current. This current flows eastward along the western coast of Africa at latitude 3°N approximately, until it reaches the Gulf of Guinea. It has at least two sources: the North Equatorial Countercurrent and the Canary Current. The seasonal instability of these two currents can affect the seasonal variability of the Guinea Current.

Areas of coastal upwelling characterize the Guinea Current, similar to that of other eastern ocean boundary currents, and this leads to an increased level of productivity. The region is rich with living marine resources and commercially valuable marine and coastal fish species, which include croaker, grunts, snapper, sardinella, triggerfish and tuna.


Local stocks support local artisanal fisheries but transboundary and migratory stocks attract large commercial offshore foreign fleets, and these have historically exerted extreme pressure on the resources, placing the fisheries at risk of collapse

The Senegal and Gambia River Deltas along the coasts of Senegal, Gambia, Guinea and Guinea-Bissau of are diverse areas including large floodplains, saline and inter-tidal flats, dykes, and sand dunes. Important populations of seabirds and water birds nest in the region.



EARTHDIVE





These deltas are also crucial stopover sites for migrating birds, especially waders. The Guinean or Atlantic humpback dolphin (*Sousa teuszii*), and the large (up to 1.5m and 200kg) green turtle (*Chelonia mydas*) are to be found in these waters.

The Guinean-Congolian Coast Mangroves that border Nigeria, Cameroon, Benin, Togo, Ghana, Congo, Cote d'Ivoire, Liberia, Equatorial Guinea, Gabon, Sierra Leone and Angola are the wettest region in Africa, receiving over 10,000 mm of rain per year. Mangroves play important roles as nursery areas for fishes and shrimp, and in stabilising the shoreline. Mangroves are found discontinuously from Senegal to northern Angola, with important areas in the Niger delta, Cameroon, and Gabon. The West African manatee (*Trichechus senegalensis*) is an interesting inhabitant of the shallow coastal waters and freshwater estuaries.

The Gulf of Guinea region with borders of Equatorial Guinea, Gabon, Congo, Angola, Cameroon, Nigeria, Benin, Togo and São Tomé & Príncipe contains areas of upwelling characterized by high productivity, and the southern part of the region is a particularly rich fishery, particularly for deepwater shrimp off the coast of Angola. This is one of the most productive and diverse tropical upwelling zones in Africa and the eastern tropical Atlantic. Dolphin and porpoises are present as well as the West African manatee. Other species include the green turtle (*Chelonia mydas*) and olive Ridley turtle (*Lepidochelys olivacea*).

The coral reefs of four islands in the Gulf of Guinea (Annobón, Bioco, São Tomé and Príncipe) have been ranked second in the list of the **world's top 10 coral reef hotspots** by Conservation International. These hotspots are rich in marine species found only in small areas and therefore highly vulnerable to extinction. The exact area of reef is unknown, but is likely to be less than 200 sq. km. Key threats to the reef include coastal development, sediment pollution from logging, over-fishing, and a proposal to harvest coral. There are two species of coral, *Schizoculina africana* and *Schizoculina fissipara* that are endemic to the area and are adapted to the very low salinities of the water from rivers flowing into the Gulf.

3.0 Indicator Species

What to look for and record in the **Africa - Atlantic Coast - Tropical** ecoregion:

Sharks

Low numbers are indicators of overfishing



Groupers (*Serranidae*)

Low numbers are indicators of overfishing



All Lobsters

Low numbers are indicators of overfishing



Triggerfish (*Balistidae*)

Low numbers are indicators of overfishing



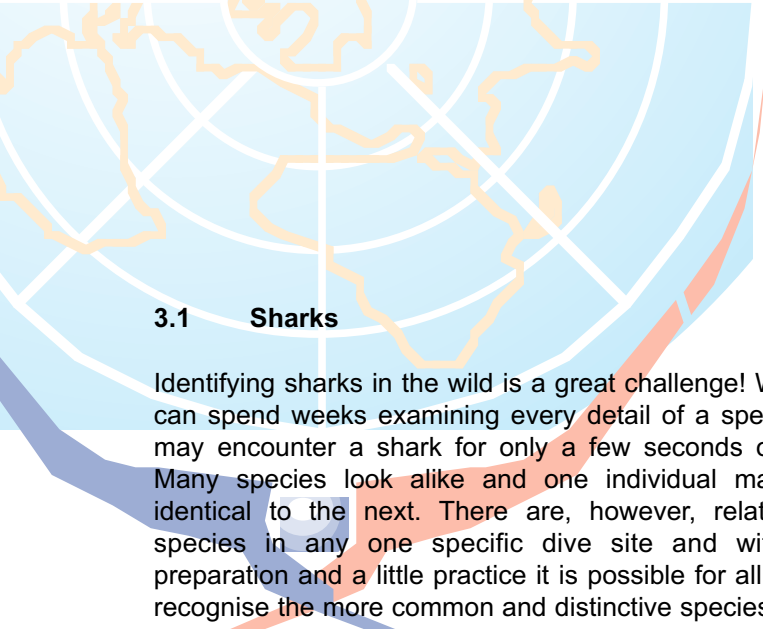
Sea Urchins (*Echinometra* and *Echinothrix* spp)

Low numbers are indicators of overfishing



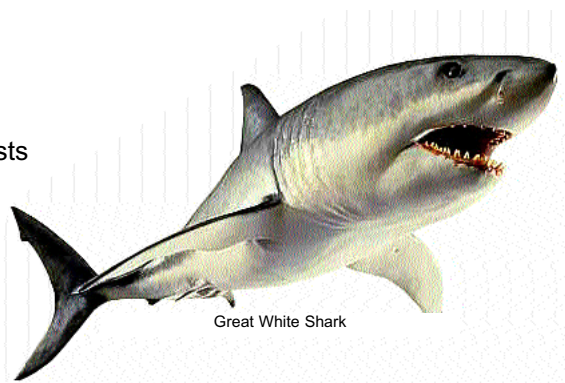
The International Union for Conservation of Nature and Natural Resources (IUCN) provides a listing of species that are at risk of global extinction. The 'IUCN Red List Categories and Criteria' are intended to be an easily and widely understood system and can be found at <http://www.redlist.org> The general 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 on the next few pages.





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.



Great White Shark

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**.

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**.



Blue shark (*Prionace glauca*)

Colour is also helpful - note the main background colours of both the upperside - 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.

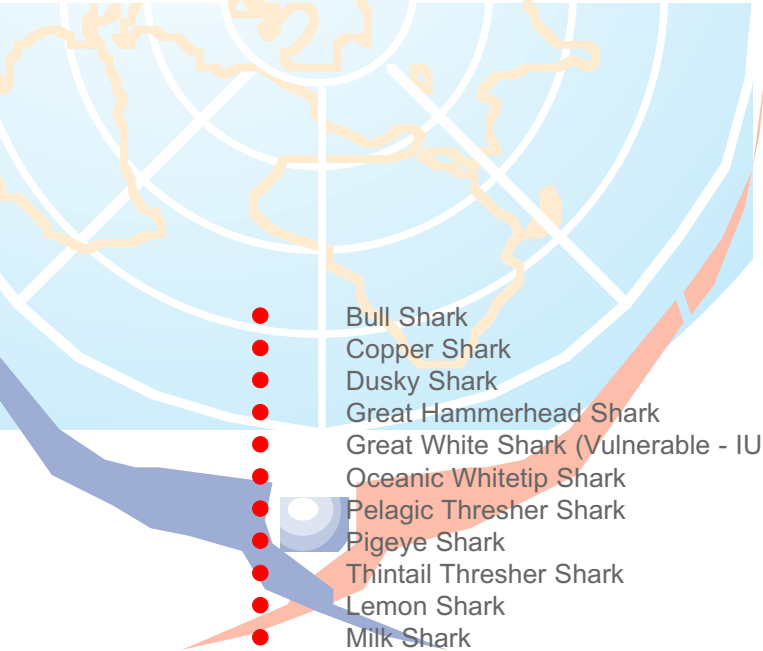
In this way we can tell you which sharks you might encounter in the **Africa - Atlantic Coast - Tropical** eco-region and some of these are listed below, but given the enormous diversity of species within the region, this list is not all-inclusive:

- Atlantic Weasel Shark
- Basking Shark
- Bigeye Thresher Shark
- Bigeye Sixgill Shark
- Bignose Shark

- Blue Shark
- Bluntnose Sixgill Shark

- Paragaleus pectoralis*
- Cetorhinus maximus*
- Alopias superciliosus*
- Hexanchus nakamurai*
- Carcharhinus altimus*
- Prionace glauca*
- Hexanchus griseus*





- Bull Shark
- Copper Shark
- Dusky Shark
- Great Hammerhead Shark
- Great White Shark (Vulnerable - IUCN)
- Oceanic Whitetip Shark
- Pelagic Thresher Shark
- Pigeye Shark
- Thintail Thresher Shark
- Lemon Shark
- Milk Shark
- Night Shark
- Sandbar Shark
- Sand Tiger Shark (Vulnerable - IUCN)
- Scalloped Hammerhead Shark
- School or Tope Shark (Vulnerable - IUCN)
- Shortfin Mako Shark
- Smalltooth Sawfish (Endangered - IUCN)
- Smooth Hammerhead Shark
- Spinner Shark
- Silky Shark
- Tiger Shark
- Nurse Shark
- Porbeagle Shark
- Whale Shark (Vulnerable - IUCN)

- Carcharhinus leucas*
- Carcharhinus brachyurus*
- Carcharhinus obscurus*
- Sphyrna mokarran*
- Carcharodon carcharias*
- Carcharhinus longimanus*
- Alopias pelagicus*
- Carcharhinus amboinensis*
- Alopias vulpinus*
- Negaprion brevirostris*
- Rhizoprionodon acutus*
- Carcharhinus signatus*
- Carcharhinus plumbeus*
- Carcharias taurus*
- Sphyrna lewini*
- Galeorhinus galeus*
- Isurus oxyrinchus*
- Pristis pectinata*
- Sphyrna zygaena*
- Carcharhinus brevipinna*
- Carcharhinus falciformis*
- Galeocerdo cuvier*
- Ginglymostoma cirratum*
- Lamna nasus*
- Rhincodon typus*

3.2 Groupers (Serranidae)



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.

The Goliath Grouper (*Epinephelus itajara*), sometimes called the Jewfish, is classified as critically endangered on the IUCN Red List. Found in shallow, inshore waters to depths of 45m, this indicator prefers areas of rock, coral, and mud bottoms. It is also solitary

and territorial and feeds on crustaceans. As the largest member of the Sea Bass family in the Atlantic Ocean, it can reach lengths of 2.5m and weigh up to 450kg.



There is anecdotal evidence of Goliaths stalking and attempting to eat divers!

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 **Africa – Atlantic Coast - Tropical** eco-region:

- Dusky Grouper
- Goldblotch Grouper
- Goliath Grouper, aka Itajara or Jewfish
- Mottled Grouper
- White Grouper

Epinephelus marginatus
Epinephelus costae

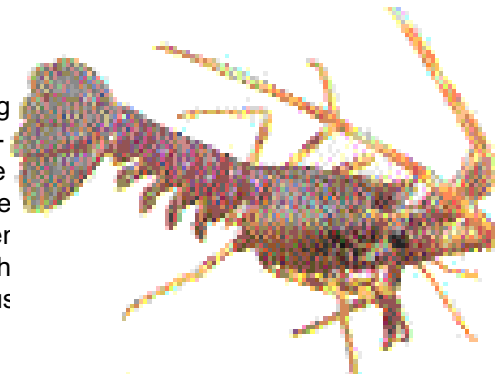
Epinephelus itajara
Mycteroperca rubra
Epinephelus aeneus



Dusky Grouper

3.3 All Lobsters

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 out) during the day and hunt small benthic organisms at night, but then on organic detritus whenever they happen across it. As with all crustaceans, the lobster moults or sheds its shell to grow.



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 warm waters. The first pair of walking legs carries large but slightly unequal pincers that can be both formidable and dangerous.

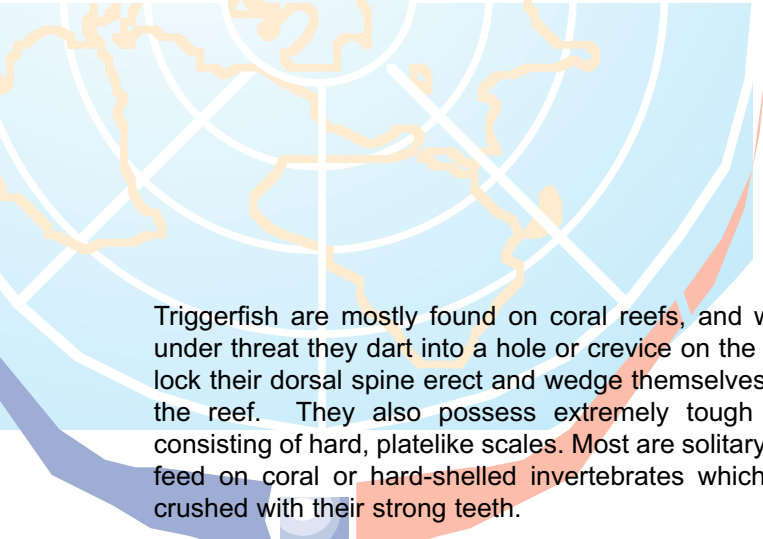
The *Palinurus* genus (frequently transcribed as *Panulirus*) is represented by numerous species in all of the world's tropical and sub-tropical seas as well as more temperate waters. It is a predatory, nocturnal animal with a vividly decorated coat.

The red slipper lobster (*Scyllarides herklotsii*) is a warm water species found in the Eastern Atlantic. They live on stony ground, in caves, and can also be found on muddy. They use the large spade-like scales at the front of the head to burrow into mud, sand or gravel between and under stones. It lacks the large claws of a true lobster, or the long antennae of spiny lobster. Instead it sports very short antennae and two large hinged scales or plates at the front of the shell. The carapace has a rough consistency.

3.4 Triggerfish (*Balistidae*)

Triggerfishes (*Balistidae*) are so called because of the triggerlike mechanism controlling the large first dorsal-fin spine on the top of their head. Once this spine is locked in an erect position, which the fish does in order to wedge itself into crevices in the coral where it cannot be dislodged by a predator, the spine cannot be pushed down until the short "trigger" spine behind it is depressed. The family name *Balistidae* is derived from the Latin ballista, another name for the Roman catapult, in allusion to the trigger mechanism of the dorsal-fin spines.





Triggerfish are mostly found on coral reefs, and when under threat they dart into a hole or crevice on the reef, lock their dorsal spine erect and wedge themselves into the reef. They also possess extremely tough skin consisting of hard, platelike scales. Most are solitary and feed on coral or hard-shelled invertebrates which are crushed with their strong teeth.

Although they have relatively small mouths, they have strong, sharp teeth, and can deliver a painful bite. The diet consists a variety of benthic invertebrates, including crustaceans, molluscs, brittlestars, tunicates, sponges, hydrozoans, tips of branching coral, and small fishes. Sea urchins are a favourite food, and even the long spines of sea urchins pose no problem for a hungry triggerfish. The fish just picks the sea urchin off the bottom, flips it over in midwater and then feeds on the unprotected underside of the urchin. A few species, including the black triggerfish, feed primarily in the water above the reef on large zooplankton or drifting algae that has been detached from the reef.



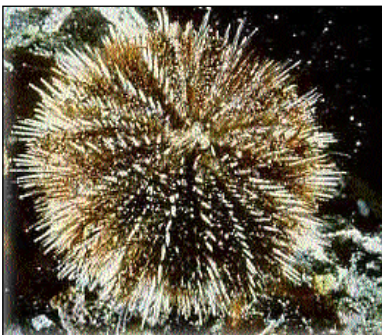
Queen Triggerfish

The ocean triggerfish, (*Canthidermis sufflamen*) can be found at depths ranging from near the surface to 60m. It is brownish grey, a large dark brown spot at the base of the pectoral fins, and grows to 65cm. This species is another large zooplankton feeder.

There are over 40 species of triggerfish, but only a few species will be found in these waters, and these are listed below, along with their maximum adult length.

●	Black Triggerfish	<i>Melichthys niger</i>	50cm
●	Blackbar Triggerfish	<i>Rhinecanthus aculeatus</i>	30cm
●	Bluespotted Triggerfish	<i>Balistes punctatus</i>	60cm
●	Grey Triggerfish	<i>Balistes capriscus</i>	60cm
●	Ocean Triggerfish	<i>Canthidermis sufflamen</i>	65cm
●	Queen Triggerfish	<i>Balistes vetula</i>	60cm
●	Spotted Oceanic Triggerfish	<i>Canthidermis maculata</i>	50cm

3.5 Sea Urchins (*Echinometra* and *Echinothrix* spp)



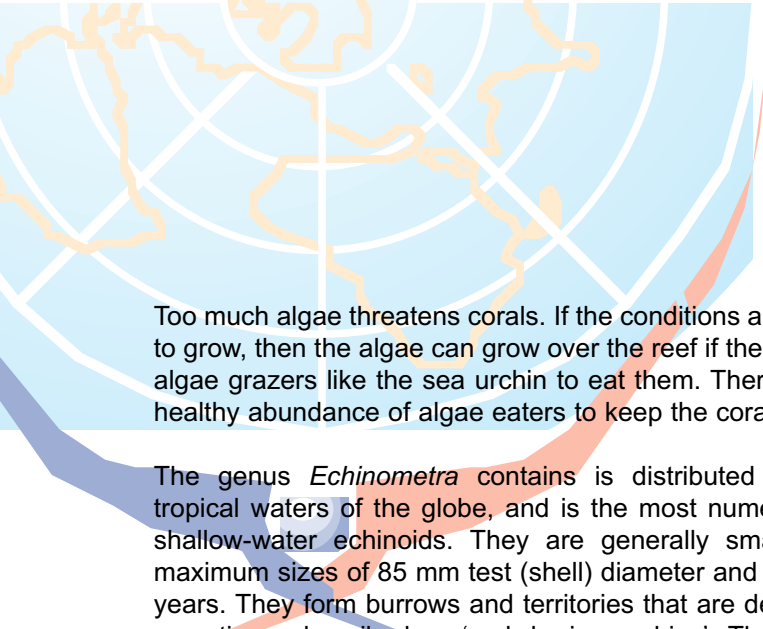
Strongylocentrotus intermedius

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 (*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 genus *Echinometra* contains is distributed throughout the tropical waters of the globe, and is the most numerous of tropical shallow-water echinoids. They are generally small bodied, with maximum sizes of 85 mm test (shell) diameter and may live 8 to 10 years. They form burrows and territories that are defended and are sometimes described as 'rock boring urchins'. The species is the most effective herbivore and in the absence of predators can occur in densities that exceed the primary production potential



Strongylocentrotus nudus

The banded sea urchin (*Echinothrix calamaris*) is a large urchin with long, slender, needle-like banded light and dark green spines which can grow up to 15 cm diameter. Watch out for the venomous spines!

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.

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!



EARTHDIVE





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 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 **EARTHDIVE** 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!

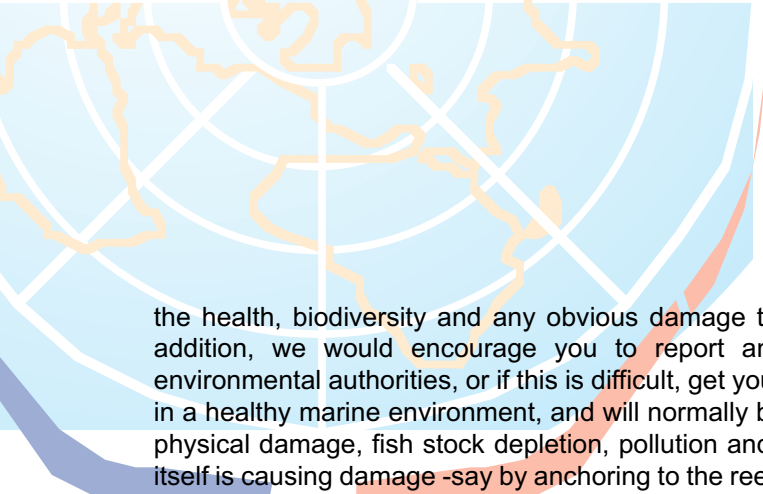
6. Observe and report.

As an **EARTHDIVE** member, you will be in a unique position to monitor and report on



EARTHDIVE





the health, biodiversity and any obvious damage to dive sites using the **EARTHDIVE** 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!

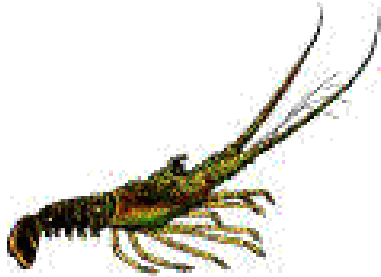
7. Get involved.

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.



EARTHDIVE





All Lobsters

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

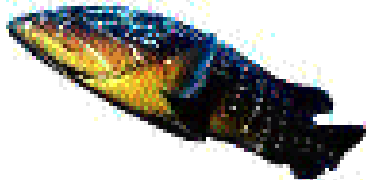
0 1 - 5 6 - 20 20 - 50 51 - 250 >250

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:



All Groupers (*Serranidae*)

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:





Triggerfish (*Balistidae*)

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

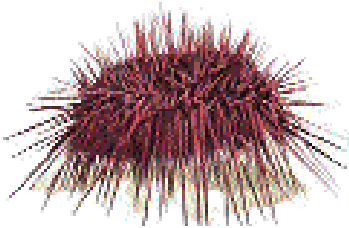
0 1 - 5 6 - 20 20 - 50 51 - 250 >250

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 Urchins (*Echinometra* and *Echinothrix* spp)

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? 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)

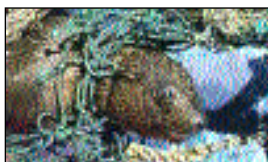


Subsurface Pressures

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

