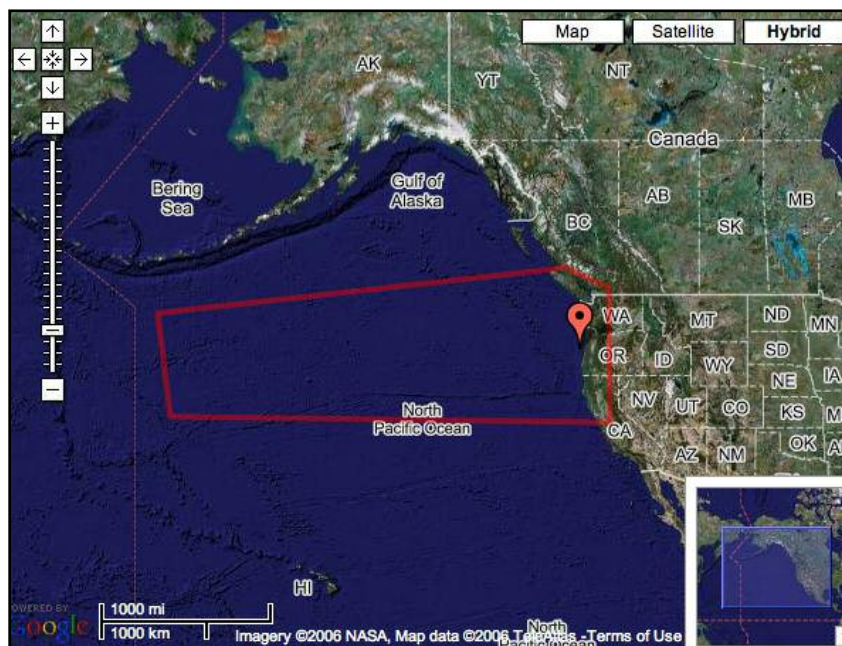


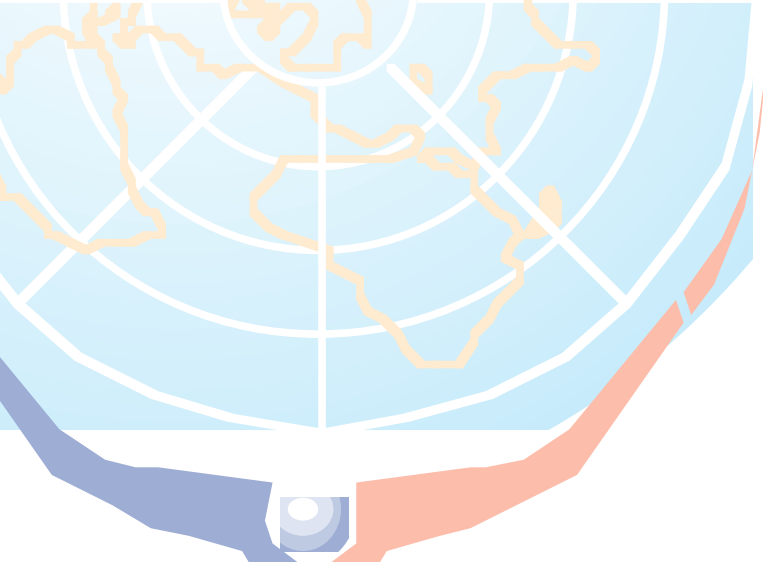


EARTHDIVE

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

PRE-DIVE BRIEFING PACK **Eco-Region 4b** **North America - Pacific Coast - Temperate**





Contents

1.0 General Information

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

2.0 The North America - Pacific Coast - Temperate Eco-Region

3.0 Indicator Species

- 3.1 Lingcod (*Ophiodon elongates*)
- 3.2 Kelp Greenling (*Hexagrammos decagrammus*)
- 3.3 All Rockfish
- 3.4 Large Kelps - giant (*Macrocystis sp.*) and bull (*Nereocystis luetkeana*) kelps
- 3.5 California Sea Cucumber (*Parastichopus californicus*)

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 **North America - Pacific Coast - 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



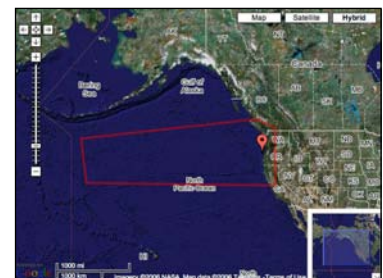
- 1.2.3** Only record an indicator to species if you are 100% certain that it is that species. Otherwise record to genus or to family, e.g. an indicator for the sub-tropical Atlantic Coast of South America is the dusky grouper (*Epinephelus marginatus*). If you are uncertain of the species but recognise 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 The North America - Pacific Coast - Temperate Eco-Region

This eco-region comprises the coastal waters of the US states of Oregon and Washington, plus that part of California north of San Francisco. It also encompasses the waters around Vancouver Island, in the Canadian province of British Columbia,

The California Current is a major influence on the climate of western North America and on the productivity of both terrestrial and marine ecosystems along the West Coast.



This cool offshore current flows southward along the west coast of North America, its main influence extending from the Columbia River to central Baja California. It remains offshore for most of the year except for the month of September when the flow is quite close to the coast. The prevailing northwesterly winds help to generate a seasonal upwelling from February to September, and this contributes greatly to the high rates of productivity seen in the region. The rate and volume of upwelling is greater than anywhere else along the west coast of North America. Water temperatures are fairly constant throughout the year. Average surface water temperatures range between 9° and 11°C in winter and 13-15°C in summer. Like all upwelling zones, the area off these coasts supports huge marine mammal, seabird, and fish populations. The area is best known, however, for the extensive kelp forests and for the southern sea otters (*Enhydra lutris*), which wrap themselves in kelp to keep from floating away while they feed on oysters and sea urchins. There is also some endemism in invertebrates and fishes.

The mouth of the Columbia River is rich in wildlife. The East Mooring Basin is a popular haul out area for California sea lions, harbour seals and cormorants. Many of the low islands, which are grassy and forested wetlands, are home to bald eagles,



great blue herons, numerous diving and dabbling ducks, and river otters.

Jacques Cousteau, arguably the father of modern day scuba diving, once proclaimed that the spectacular coastal waters of Vancouver Island and Nanaimo were 'the best temperate water diving in the world and second only to the Red Sea'. Certainly the marine life that you are likely to encounter when diving here includes giant pacific octopus and sixgill sharks, in addition to resident wolf eels and hundreds of harbour seals. Divers can also rift through gardens of colourful kelp, anemones and sponges. There are also a number of artificial reefs in the area.

There are a multitude of environmental threats to the region, including coastal water pollution, especially around major cities, leading to potentially contaminated seafood. The intense harvesting of abalone leads to loss of habitat and food for sea otters. Non-biodegradable plastics represent a particular problem as they trap or maim animals and may cause death by drowning or strangulation.

Important species to be found in the region are typical of the California Current and include the southern sea otter (*Enhydra lutris*), northern elephant seal (*Mirounga angustirostris*), California sea lion (*Zalophus californianus*), northern fur seal (*Callorhinus ursinus*), Guadalupe fur seal (*Arctocephalus townsendii*), Steller's sea lion (*Eumetopias jubatus*), grey whale (*Eschrichtius robustus*), harbor seal (*Phoca vitulina*), pilot whale (*Globicephala maerorynchus*), killer whale (*Orcinus orca*) Pacific salmon (*Oncorhynchus spp.*), yellowfin tuna (*Thunnus albacares*), yellowfin sole (*Limanda aspera*), Pacific cod (*Gadus macrocephalus*), giant kelp (*Macrocystis pyrifera*), burrowing starlet sea anemone (*Nematostella vectensis*).

3.0 Indicator Species

What to look for and record in the **North America - Pacific Coast - Temperate Eco-region**:

Lingcod (*Ophiodon elongatus*)

Low numbers are indicators of overfishing



Kelp Greenling (*Hexagrammos decagrammus*)

Low numbers are indicators of overfishing



All Rockfish

Rare, slow growing species.



Large Kelps - giant (*Macrocystis sp.*) and bull (*Nereocystis luetkeana*) kelps

Healthy, diverse ecosystem



California Sea Cucumber (*Parastichopus californicus*)

Rare endemic

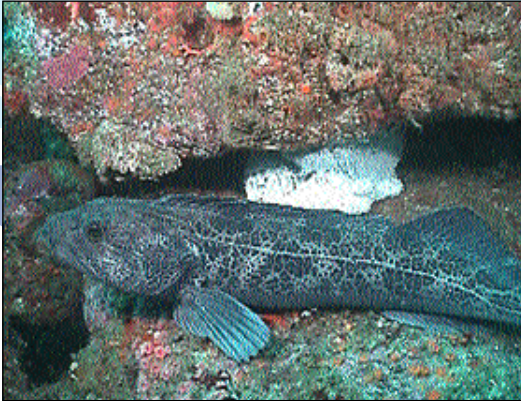


The International Union for Conservation of Nature and Natural Resources (IUCN) provides a listing of species that are at risk of global extinction. The 'IUCN Red List Categories and Criteria' are intended to be an easily and widely understood system and can be found at <http://www.redlist.org> The general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

The body of the lingcod is elongate, tapering and only slightly compressed. The head is elongate and conical, the mouth is large with numerous large teeth. Lingcod are generally dark brown with lots of spots and blotches on the upper part of the body,





but come in a variety of colours ranging from blue green to red brown.

They occur between Point San Carlos, Baja California, and Kodiak Island, Alaska. They are not abundant south of Point Conception except in a few localities. They live at or near the bottom, generally in close association with rocky areas and kelp beds, especially where there is a strong tidal movement. They occur most abundantly at depths ranging to about 110 metres (350 feet) feet, but will often go into deeper water and have been caught as deep as 820 metres (2,700 feet) feet off southern California.

Young lingcod feed primarily upon shrimp and other crustaceans until they are big enough to eat fish. Once started on fishes, it seems that any kind coming within reach is fair game. Male and female lingcod first mature when they are three years of age and about 58 cm in total length. Nearly all are mature at age four when they are nearly 66 cm long. Spawning usually takes place from December through March. The eggs are large (0.5 cm in diameter) and adhesive, sticking in large masses to rocky crevasses, generally on subtidal reefs. The male lingcod guards the eggs after fertilization until they hatch. A female 76 cm long may lay approximately 60,000 eggs; whereas, a 114 cm female may lay more than 500,000 in a single season.

The lingcods teeth, as well as the gillrakers, are extremely sharp and can cause serious injury to the fingers of careless hunters. NEVER put your fingers into the mouth or gill chamber of a lingcod.

As well as being taken by sport and commercial fishermen, scuba divers have been known to take a substantial number of this fish.

3.2 Kelp Greenling (*Hexagrammos decagrammus*)

The kelp greenling (*Hexagrammos decagrammus*) grows to a length of 60 cm. The mouth is small, terminal and directed upwards. The upper jaw reaches the anterior point below the eye orbit. The snout is blunt with thickened lips and the moderate teeth are in rows on the sides of the jaws and in patches at the tip. The head is conical and compressed. It has one notched dorsal fin, a rounded caudal (tail) fin and an anal fin with one dorsal spine. There is an erectable cirrus (slender tentacle) above and behind each eye and a small pair of cirri in between the eyes and dorsal fin.



Males are brown to olive with blue or copper; blue spots on the head and anterior portion of body. Each blue spot has a round ring of reddish spots. The dorsal and caudal fins are brown to black, the pelvic fins dusky blue and the pectoral fins spotted white. Females are light brown with orange to blue spots, their dorsal fins are red to orange with clouds of blue and the pectoral fins are pale yellow. Both sexes have an ocellus on the posterior end of the dorsal fin, an eye-shaped spot, usually dark-ringed, with a lighter colour inside, believed to deceive predators.

This indicator can be found at depths to 46 metres. It is principally benthic (bottom dwelling) but will swim to the surface in search of food. To be found in shallow waters with rocky and sandy substrates and common in kelp beds, the fish spawns in fall/winter with the male actively guarding the nest. It feeds on polychaetes (marine worms), mussels and small crustaceans and is distributed from southern California to the Aleutian Islands, although it is more common in northern waters.



3.3 All Rockfish (*Sebastes spp.*)

Rockfish are a diverse and important group of marine fishes, with over 70 different types to be found along the Northeast Pacific coast and over 100 worldwide. They come in a rainbow of colours, as evidenced by their names: Black Rockfish, Canary Rockfish, Yellowtail Rockfish, and so on. They are members of the scorpion fish family, (*Scorpaenidae*), so it should be no great surprise that the spines on the fins are sometimes venomous, and skin punctures can be very painful.

The different species enjoy a number of habitats. Some live in the rocky reefs, some linger within the canopy of the kelp forests, and some inhabit the deep seafloor. They are prevalent in every underwater habitat from the sub-tidal down across the continental shelf and beyond 8,000 feet deep. Individuals of some species live to be over 200 years old! The diet of each species varies, but includes plankton, krill, octopus, shrimp, small fishes, crabs and squid. Size is also a variable factor across the species.

A number of rockfish populations are in vulnerable due to over-fishing and recent oceanographic and climate conditions. As many types of rockfish produce just a few young per year, commercial and recreational fishing has greatly reduced the once-plentiful populations along the coasts of the region.



Canary Rockfish



Quillback Rockfish

Individual rockfish pose difficulty in identification, both because of the numbers of species and because of their morphological similarity and variability. Some authorities have grouped the species into five colour categories: Red, Black, Red/Black, or White-Spotted Red. These categories are further sub-divided by the strength of their spines – either weak or strong.

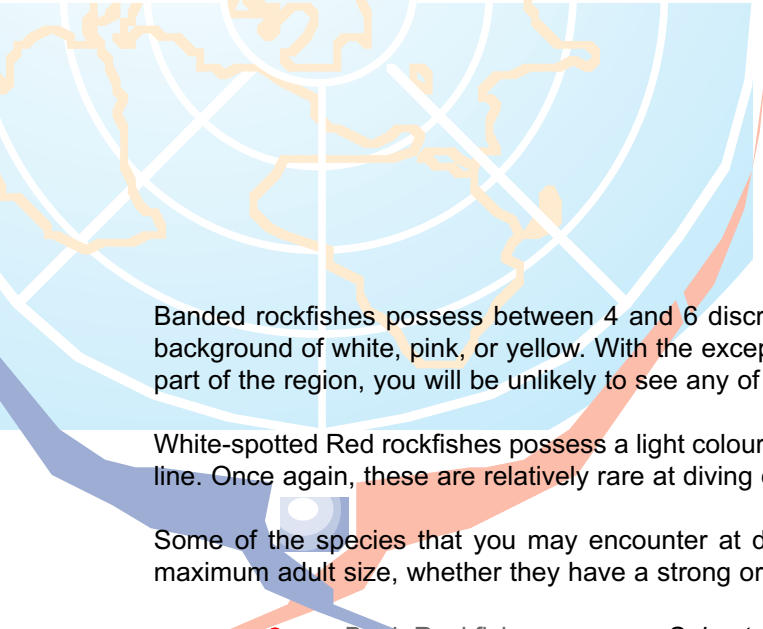
Red rockfishes have a light background coloration of orange, yellow, or, most commonly, red. Typically, dark blotches are present on the back and often extend from the base of the dorsal fin to below

the lateral line; these blotches may be diffuse or relatively discrete. The infrequent dark phase of some typically red rockfishes is noted under the description of body color. In general, dark red-category rockfishes have a much redder body than black category rockfishes. If you observe any in this category, they are likely to be at the limits of recreational dive depths.

Black rockfishes have predominantly dark background coloration. Most are a uniform dark color, ranging from black to brown with darker blotching or pale areas on the dorsum and lightening to white, grey, or pink ventrally. Others, often more shallow water species, may display strongly contrasting colors such as black and yellow.

Red/black rockfishes possess almost equal proportions of light and dark colors, as the label suggests, which makes selecting either the red or black category difficult. No unifying color pattern is apparent among these fishes; however, a characteristic color combination (e.g., horizontal striping) is often sufficient for identification.





Banded rockfishes possess between 4 and 6 discrete vertical bands of dark color (red to black) on a light background of white, pink, or yellow. With the exception of the Treefish (*Sebastes serriceps*) in the southern part of the region, you will be unlikely to see any of this category at diving depth.

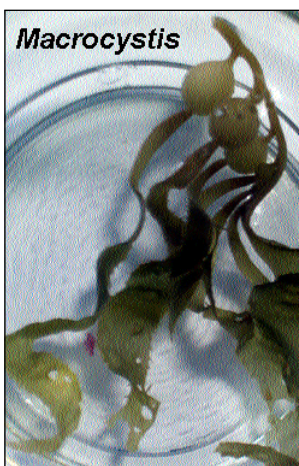
White-spotted Red rockfishes possess a light coloured body with 2-5 pale areas (i.e., spots) above the lateral line. Once again, these are relatively rare at diving depth.

Some of the species that you may encounter at diving depth are listed below. The list also indicates the maximum adult size, whether they have a strong or weak spine arrangement and the colour category.

●	Bank Rockfish	<i>Sebastes rufus</i>	51 cm	Weak	Red/Black
●	Bocaccio Rockfish	<i>Sebastes paucispinis</i>	91 cm	Weak	Red
●	Black Rockfish	<i>Sebastes melanops</i>	63 cm	Weak	Black
●	Black & Yellow Rockfish	<i>Sebastes chrysomelas</i>	38cm	Strong	Black
●	Brown Rockfish	<i>Sebastes auriculatus</i>	56 cm	Strong	Black
●	Canary Rockfish	<i>Sebastes pinniger</i>	76 cm	Strong	Red
●	China Rockfish	<i>Sebastes neblousus</i>	43cm	Strong	Black
●	Chilipeper Rockfish	<i>Sebastes goodei</i>	56 cm	Weak	Red
●	Copper Rockfish	<i>Sebastes caurinus</i>	58 cm	Strong	Red/Black
●	Gopher Rockfish	<i>Sebastes carnatus</i>	41 cm	Strong	Black
●	Grass Rockfish	<i>Sebastes rastrelliger</i>	56 cm	Strong	Black
●	Greenspotted Rockfish	<i>Sebastes chloristicus</i>	51 cm	Strong	White
●	Kelp Rockfish	<i>Sebastes atrovirens</i>	43cm	Strong	Black
●	Olive Rockfish	<i>Sebastes serranoides</i>	61 cm	Weak	Black
●	Puget Sound Rockfish	<i>Sebastes emphaeus</i>	18 cm	Strong	Red/Black
●	Quillback Rockfish	<i>Sebastes maliger</i>	61 cm	Strong	Black
●	Rosy Rockfish	<i>Sebastes rosaceus</i>	36 cm	Strong	White spotted
●	Squarespot Rockfish	<i>Sebastes hopkinsi</i>	29 cm	Weak	Black spotted
●	Starry Rockfish	<i>Sebastes constellatus</i>	18cm	Strong	White spotted
●	Yelloweye Rockfish	<i>Sebastes ruberrimus</i>	91 cm	Strong	Red
●	Yellowtail Rockfish	<i>Sebastes flavidus</i>	66 cm	Weak	Black

3.4 Large Kelps - giant (*Macrocystis sp.*) and bull (*Nereocystis luetkeana*) kelps

Like huge fingers that disappear into the depths of the sea, the Giant Kelp Forests found in the waters off north America, are the rainforests of the sea.



Kelp leaves called fronds can grow up to 50 centimetres a day. Kelp forms dense canopies up to 35 metres above the seabed. Most of us eat kelp regularly, by consuming ice-cream or jelly. Products made from kelp are used to thicken these foods, and other products like toothpaste.

Held upright by gas-filled bladders at the base of leaflike blades, kelp fronds grow straight up to the surface, where they spread across the top of the water to form a dense canopy. Giant kelp often grows in turbulent water, which brings renewed supplies of nutrients, allowing the plants to grow to a possible height of 53 metres (175 ft). The stemlike stipes are tough but flexible, allowing the kelp to sway in ocean currents. Unlike a proper root system, the holdfast - a cone-shaped mass of branching extensions called haptera - doesn't carry nutrients or water; it anchors the kelp to a rock.





3.5 California Sea Cucumber (*Parastichopus californicus*)

The California sea cucumber, *Parastichopus californicus*, is found from the Gulf of Alaska to Baja California, Mexico in the low inter-tidal zone down to 249 meters. This is the largest sea cucumber on the West Coast, up to 20in (50cm) in length when it is relaxed. When it is feeding this species is mobile, having tube feet on its ventral surface. Twenty tentacles at the anterior end of the body secrete a substance which aids in the capture of detritus and small organisms on sand and rock bottoms. The California sea cucumber is taken commercially in Southeast Alaska and Kodiak, and south along the West Coast. The California sea cucumber is in the Phylum *Echinodermata* and Family *Stichopodidae*.



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 dives site 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.

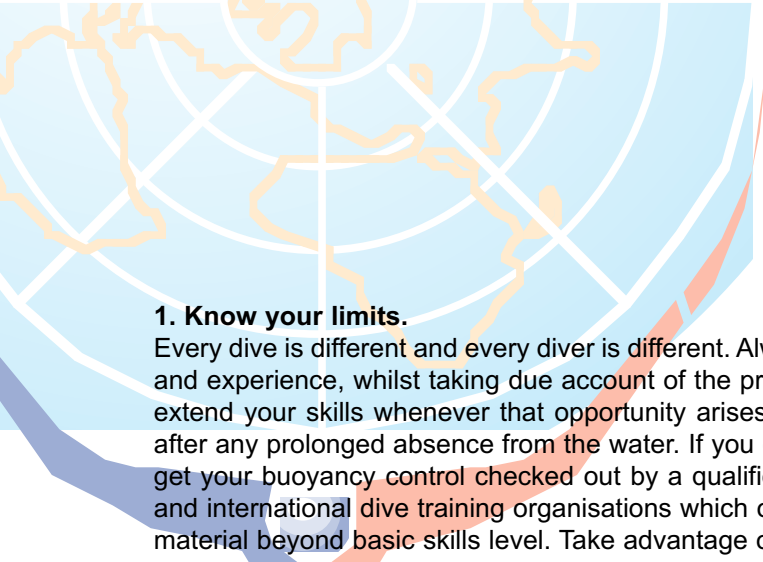
5.0 eCORD

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!

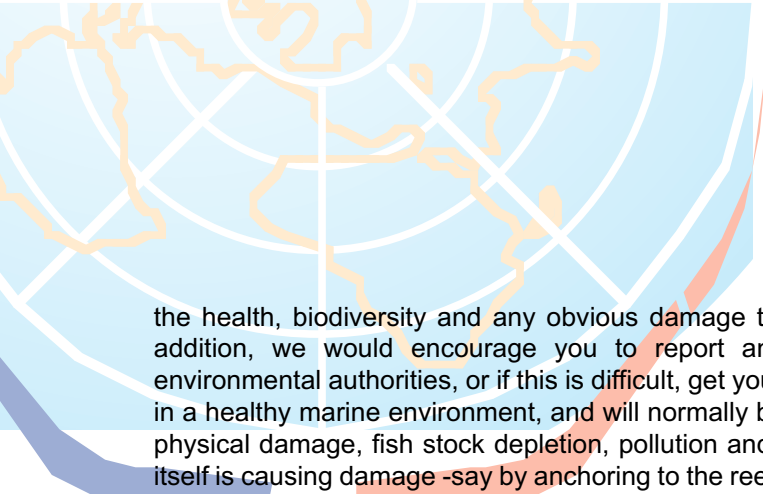
6. Observe and report.

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!

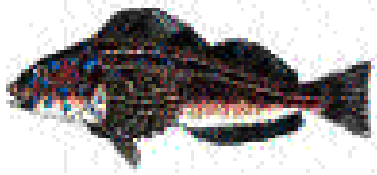
7. Get involved.

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





Kelp Greenling (*Hexagrammos decagrammus*)

How many Kelp Greenling 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

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:





Large Kelps

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

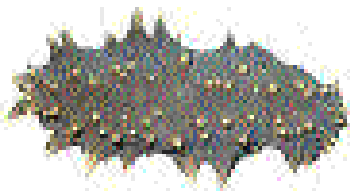
0 1 - 5 6 - 20 20 - 50 51 - 250 >250

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? It would be helpful if you note whether the large kelp you observed were in large groups, and over how large an area each group was spread (m²). If part of a kelp forest, try to assess the overall size. Also, at what depth(s) did you see it?

Additional Information:



California Sea Cucumber (*Parastichopus californicus*)

How many California Sea Cucumbers 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:



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)

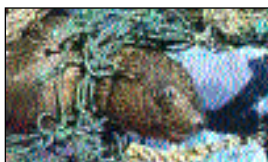


Subsurface Pressures

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).

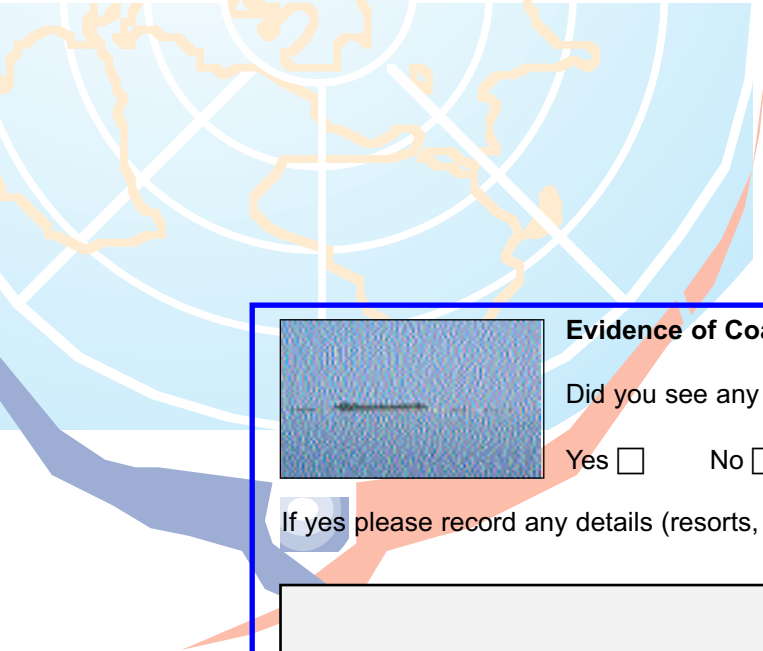


Evidence of Fishing

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

