

AN INSIGHT INTO THE MARINE LIFE OF SEYCHELLES





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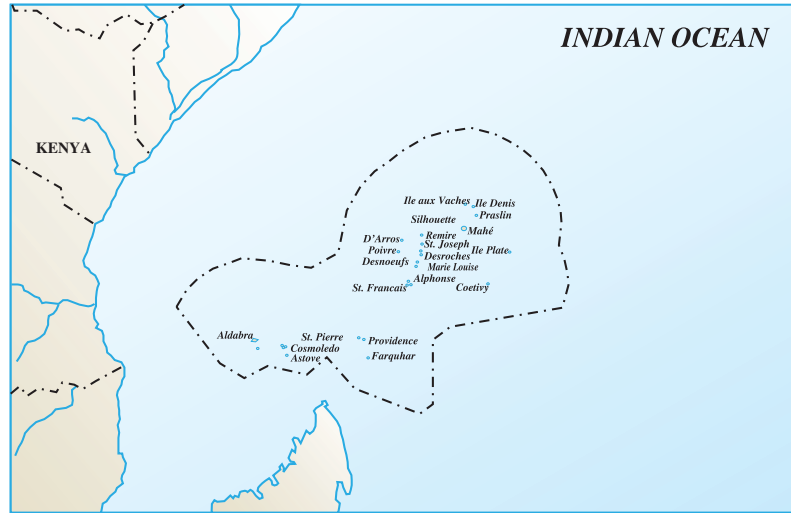
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Introduction

*The Republic of Seychelles consists of an archipelago of 115 islands scattered over an **Exclusive Economic Zone** of 1.3 million square kilometres of ocean. As the custodian of this large marine territory, the country is host to abundant and diverse marine life. Much of this life remains a mystery to people. Many, however, want to acquire a greater insight into the underwater world. We have put together this short booklet with this in mind.*

The booklet is not intended as an identification tool; fish and marine life identification books covering the Seychelles and Indian Ocean region have already extensively covered this topic. It is rather a first step to help teachers, students and amateurs learn more about the natural history and ecology of the marine environment around the coastal areas of Seychelles, as well as about how they can help promote conservation of marine life.

Marine habitats in Seychelles

There are many fascinating natural habitats to be observed in our islands. These include ones that are easily accessible to anyone such as mangroves and rocky and sandy shores. Other habitats including coral reefs can be accessed at low tide but better enjoyed by snorkellers and divers. The table below lists them. In this book we describe some of these habitats and concentrate more on coral reefs, since they contain such abundant and diverse life forms.

Type	Location	Area
Mangroves	G and C	C= 100ha
Rocky shores	G	G= 100kms
Sandy shores	G and C	G= 70kms
Coral Reefs	G and C	G= 130sq.km
Seagrass beds	G and C	?
Algal beds	G and C	G= 100sq.km
Submarine banks	G and C	49,550sq.km
Open Ocean	EEZ	1.3 million sq.km

G: Granitic islands. C: Coral islands





Mangroves

Mangroves are unusual habitats centred around plants that do well in a saline environment. Mangroves once covered many shores of the islands. The best-developed **mangrove forests** are located behind beaches near open stream mouths. On the Western coast of Mahé, a mangrove belt exists between Port Launay and Port Glaud. Less extensive areas exist in various other places on Mahé, in particular in the backwaters of the Mahé East Coast Reclamation. On Curieuse Island, a well-developed, mangrove area is located around the Turtle Pond lagoon. Aldabra, Cosmoledo and Astove are the only important mangrove localities on the coral islands. The Aldabra mangroves occupy a total area of 800 ha.

Most mangroves in the granite islands are perceived to be muddy places but at Port Glaud at high tide the mangrove has interesting marine life and one can snorkel and canoe in the channels. Fiddler crabs (*Krab semafoi*) and Giant Land crabs or shore crabs (*Tyangoman*) and several species of molluscs inhabit the muddy shores. The mangrove crab (*Krab ver* or *Krab karle*) was once common but has been over exploited as a food source in Seychelles.

At low tide fish life is characterised by two species of mudskippers (*Kabot sotier*). These make burrows, one species with turrets outside the hole. At high tide the fish life is more diverse and consists basically of juvenile forms of reef fishes. However in Aldabra adults of various species such as snappers, groupers (*Vyey*), and emperors (*Kapten*) and others occur.





Rocky shores

Rocky shores are common in our islands. There are approximately 69 kms of rocky shores on Mahé, 22 kms on Praslin and 7 kms on La Digue. These are areas characterised mostly by high energy waves. Many of the animals and plants display interesting adaptations for life in turbulent waters and to heavy pounding by waves

*On the rocks bordering these areas are various shells particularly littorina, small limpets (Bernik), nerites (Bigorno), crabs such as **sally lightfoot** (**Karkasaye**) and small barnacles (Granban). In rock pools, brittle stars and small sea urchins are seen Underwater granite rock faces often are dotted with a few coral species. Shells such as Turbo (Birgo) live attached to the granite faces. Some cowries (Pislaz) are still moderately abundant in crevices. Certain herbivorous fish species such as the **lined tang** (Sirizyen) are prominent near the current swept rocks. Large parrotfish (Kakatwa) and wrasses sometimes graze around the rocks as well.*





Sandy areas

Sandy areas are found all over the islands but few people pay attention to the life in and under the sand. Two to three species of sea cucumbers are found as well as certain goby fish (Cabo) species that live in burrows in association with snapping shrimps. Various shells such as members of the Olive (Zoliv) and Terebra (Fizo) and Cone (Kon) families burrow in the sandy sediments.

Algal beds

The granitic islands have abundant communities of marine algae commonly referred to as sea weeds (Gomon), dominated by Sargassum. The dominant groups in the granitic islands are Brown followed by Red and Green algaee. On Mahé and Praslin there are about 28 and 32 square kilometres respectively of algal beds in coastal areas. Marine algae are very important habitats in Seychelles.

Algal beds around the granitic islands show an interesting zonation pattern with certain species dominating certain zones. Animal life will be different in each zone. The fish life is represented by about 100 species. Some species such as the **blackeye rabbitfish (Kordonyen lafimen)** use these areas mostly as a feeding area, whilst some others are territorial and are found around boulders of dead coral either totally or partly covered by algae. Like sea grasses, some zones of marine algae in Seychelles act as protected areas where fish can grow until they are large enough to move to the reef.



Sea grass beds

Sea grasses are flowering plants that live beneath the sea. They form forests in shallow waters although some species have been found up to depths of 25 metres in the coral islands. There are 8 species in Seychelles. Almost one third the inner reef area of Mahe, Praslin and La Digue is covered by seagrassesss. Sea grasses are not only important biologically but also form barriers to wave energy and thus protect the shoreline.

The animal life here is characterised by a high concentration of **sea cucumbers** (Banbara). Three or more species of **sea urchins**, some camouflaged amidst the vegetation, are also quite widespread, while shells can be common and include the **tiger cowrie** (Pislaz). In shallow and muddy areas hundreds of pinna shells (Larsdam) bury themselves in the soft sediments. Certain species of shells show a preference for certain levels of the sea grass forest.

Burrowing animals include the powerful mantis shrimp and snapping shrimps. The fishes found in sea grass areas in Seychelles comprise some 50 species. Some fish species are limited to the grass beds. Although many of the species are also found in other marine habitats, often they consist of individuals in various stages of growth. The grass beds therefore serve as nursery areas for different species of fish.





Coral Reefs

Three main types of coral reefs have been described from the Seychelles: fringing reefs, platform reefs and atolls. Fringing reefs are characteristic of the granitic islands, the largest being found on Mahe and Praslin. Platform reefs include those at Platte, Darros, Cerf islet at Providence, African banks and Coetivy. Atolls include Farquhar, Alphonse, St. Francois and St. Joseph, Aldabra, Cosmoledo and Astove.

Reefs are the result of one of the most fascinating partnerships in the natural world. Coral colonies are formed in warm tropical seas by a large number of tiny animals called polyps that secrete the hard skeleton composing the reef. When polyps die, the hard skeleton is left behind. Hundreds of polyps grow on top of each other over the years and slowly form a reef. However, the animal polyps are very inefficient at catching preys and rely for food on a special type of very small algae, called zooxanthellae, which live within the polyps. .

The corals can only grow in shallow, clear seas because the algae need sunlight to live. Coral bleaching, the response to abnormally high temperatures, is the result of a breakdown of the partnership between algae and polyps. The polyps expel the zooxanthellae when the water temperature goes above 32-34 °C, to prevent poisoning by the by-products of photosynthesis produced at high temperatures. The loss of the coloured algae leads to the white appearance of bleached corals. However, the corals can only survive for a limited amount of time without their algae. Unless water temperature decreases and the polyps are able to reacquire the zooxanthellae, the whole colony dies of starvation. Global warming is probably responsible for the increased incidence of bleaching in recent times. The Seychelles had been a relatively safe haven for corals until 1998, when a dramatic bleaching event killed a large proportion of the reefs.

Many species living in the reef, feed on the corals themselves while others graze on algae growing on the coral surface, or filter feed on the microscopic plants, animals and bits of organic matter floating in the water. A multitude of different species of fish can always be found skirting around the edges of the corals. **Emperor angelfish** swim near caves, ledges or channels. Schools of fish like batfish (Pouldo) , jacks or trevallies (Karang), and jobfish (Zob) glide by the reef in search of the next meal. Lucky divers will catch sight of a white-tipped reef shark, a nurse shark, or a school of eagle rays (Lare sousouri) passing noiselessly by.





Night-time on the reef

Once the sun goes down and the light starts to fade, familiar daytime species go into hiding in the various nooks and crannies on the reef, or bury themselves in the sand. At the same time, nocturnal creatures are waking up and venturing forth in quest of food. Many nocturnal fish such as **squirrelfish** (**Lyon**) and snappers tend to be generalised feeders, with large mouths suited to snapping up whatever they can find. Many also have large eyes to maximise light for hunting. The red colour of many species such as lionfish (*Poisson arme*) and squirrelfish is virtually invisible in the darkness, providing them with camouflage to protect them from potential predators.

Many molluscs and crustaceans are active at night, presumably too tasty to risk exposing themselves during the day. Look for their eye shine reflected by your torch to locate **octopuses** (**Zourit**), nocturnal shrimps (**Sevret**), crabs (**Krab**) and lobsters (**Houmar**).





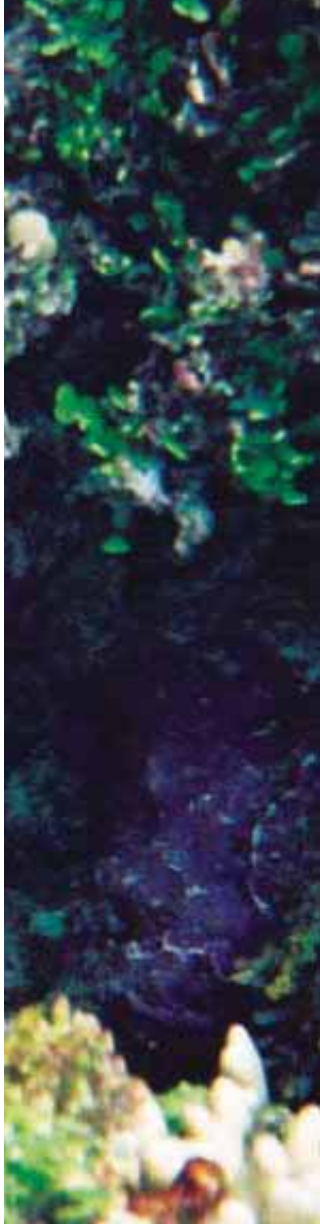
Coral watching

Seychelles reefs host a great diversity of corals, around 178 species of stony corals and 71 species of octocorallian corals such as sea fans and organ pipe corals. These grow in a variety of shapes, colours and sizes. Individual species are often difficult to identify, but it is fascinating to observe the different patterns of growth and marine life associated with different corals.

*Generally speaking, corals can be divided into two groups: octocorallian or soft corals, the polyps of which have eight tentacles, and stony corals whose polyps have six or multiples of six tentacles. Only the stony corals have skeletons made from limestone, but a few of the soft corals, like organ pipe coral and blue coral also have hard skeletons but made from a hard protein. The photos show **a selection of hard and soft corals.***

Colonies of some corals are always of a particular shape, while other species can grow into many different shapes depending on the local conditions of light and water movement. Even different parts of the same specimen can grow in different ways! Here are the general growth forms which can be observed on many reefs in Seychelles: Freelifving, Digitate, Massive, Fan, Foliose, Nodular, Columnar, Plate, Encrusting and Branching.





Dangers of the deep

When most people think of dangers in the sea, they think of sharks. In fact, shark attacks are almost unheard of in Seychelles. There are however, a few other marine animals that have defense strategies which do pose some hazard, and divers, snorkellers and reef walkers should exercise caution to avoid a run-in with them.

Cone shells usually bury themselves in the sand and under rocks during the day, coming out at night to feed on other molluscs, worms or fish. The venomous dart they use to kill their prey is poisonous: never pick one of these shells up.

*Venomous fish like the well camouflaged stonefish (Laf) and the **clearfin lionfish (Pwason arme)** have poison in their spines as a defense against predators. Their stings are painful and can lead to collapse and even, occasionally, death.*

The sting of fire corals is used to capture prey but can cause swimmers severe pain and inflammation lasting several days if brushed against.

Avoid brushing against the long sharp spines of black sea urchins (Lantannyen): they can penetrate deeply into the flesh and cause long-lasting inflammation.

*The sharp spines of the **crown of thorns starfish** which eat coral, can cause a lot of pain and long-lasting inflammation.*





Focus on fish

More than one thousand species of fish occur in the Seychelles waters, and divers and snorkellers are certain to encounter some of them. While it can be great fun trying to identify individual species, it is also fascinating to observe and try to interpret fish behaviour as they go about their lives, eating, resting, breeding, and interacting with other species.

Interesting fish on the reef

*The social structure of reef fish is incredibly diverse. Several species, such as sergeants (Bweters), **bluegreen puller** and **humbug damselfish**, form large schools that can include several hundred individuals. Lined tang (Sirisyen) and jewel damselfish, on the other hand, are strongly territorial and vigorously defend their area of reef from competitors. In some species, such as the jewel fairy basslet, the social structure can be highly variable. Jewel fairy basslet often form large clusters of up to 400 individuals. Males take discrete territories within the colony, whereas female home ranges overlap with each other and can span several male territories. In extremely large groups, dominant males occupy the upper regions of the group and actively spawn with females. Small subordinate males are only found in the lower areas and do not even attempt to mate. Large groups can also be divided in several discrete sub-units which, in time, can fully segregate and form independent colonies.*





Parental Care

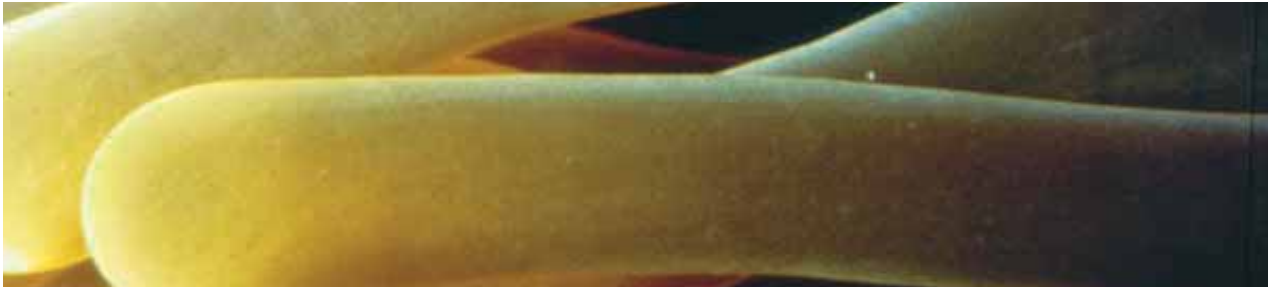
Reef fish display a wide range of mating and parental behaviour. Several species, such as the **threadfin butterfly fish (Papiyon)**, are monogamous and release their eggs in the water column. Monogamy is probably forced on these species by the need to defend a territory. Many wrasses also lack any form of parental care, but the males are often polygamous and defend a breeding ground which females visit when they are ready to spawn. On the other hand, in several species the male invests lots of energy in parental care. In cardinalfish, the male mouthbroods the eggs laid by a single female and fully takes over the ordeal of parental care. Similarly, male **network pipefish** brood the eggs in a special pouch. Other species, such as many damselfish, are polygamous and defend nests within their territories. In damselfish, several females can spawn with a single male, which can obtain over 250,000 eggs within a single breeding cycle. Damselfish are well known by divers for their aggressiveness against intruders, especially when the eggs are present. However, it is often possible to observe a male cannibalising some of its own eggs. This phenomenon, called filial cannibalism, is thought to be a way of making up for the loss of foraging opportunities experienced during parental care.



Symbiosis

One of the most impressive associations on the reef is that between anemones and anemonefish. Predators never venture close to the stinging tentacles of anemones, but anemonefish are never attacked by their host. These fish obtain their immunity by acquiring the chemical signature of the anemone, which eventually recognises the fish as a part of itself. Anemonefish aggressively defend their host from specialised predators and will even threaten divers who move too close to their anemone. A fascinating aspect of the anemonefish life is their ability to change sex. All anemonefish, including the **Seychelles anemonefish** are born male. The largest individual fish changes into a dominant female. Together with the largest male, the dominant female prevents excessive growth of any other anemonefish on the host. If the dominant female is removed, the dominant male changes sex and the second largest male rises in the hierarchy.





Trickery

Resemblance to other fish can also be a very effective defense. The **Valentin's sharpnose puffer** is a highly poisonous species of pufferfish and is carefully avoided by predators. The perfectly edible filefish, called the 'blacksaddle mimic', is almost identical to the puffer and even imitates its model's swimming pattern. In other instances, resemblance among species is advantageous to both the species involved as well as the predators. Juveniles of several species of sweetlips are characterised by a black and white pattern and clearly advertise their unpalatability by swimming well in the open with a characteristic swaying motion. By increasing the number of similarly distasteful prey, the sweetlips ensure that the predators learn quickly to avoid them.



Getting clean

Cleaner stations are a common sight in most areas. Many fish go to these areas to be attended by **cleaner wrasse**, which remove parasites from their clients. Fish advertise their wish to be cleaned by spreading the pectoral fins, opening their mouth and lifting their gill plates. The cleaner fish often venture near or even into the mouth of large predators, such as **moray eels (kong)** but they are never attacked. Cleaners perform a special dance when they approach their clients, and this behaviour, together with their characteristic colours, ensures that their identity is not mistaken. Some predatory fangblennies take advantage of the immunity enjoyed by the cleaner fish. The blennies are almost identical in colour and shape to the cleaner fish and even imitate their dance. However, when they get close to a potential client, they take a bite out of the scales or gills of the unsuspecting fish. Older fish seem to be able to learn through experience how to recognise genuine cleaners and avoid their aggressive mimics.



Sex changes

Sex change is a relatively common occurrence in reef fish. Many **parrotfish** (**Kakatiwa**) and **wrasses** start their lives as females, and only the largest individuals metamorphose into males. In some fish, such as the crescent wrasse, the situation is even more complex. In this species, both primary and secondary males exist. Secondary males are born female and only subsequently turn into males. They are usually very colourful and hold territories, whereas primary males have a female-like colouration and school together with the females. Territorial males spawn individually with females and are usually highly successful, whereas primary males are limited to sneaking or inefficient group spawning. The high risk of mortality before reaching an adequate size to turn into males justifies the apparently inefficient strategy of the primary males.

Protecting marine life

The Seychelles is host to hundred species of marine animals and plants. These are all important in the marine ecosystem and many have become of economic importance.

Estimated number of marine species occurring in Seychelles

Group	No of Species	No of Endemic Species
Marine algae	170	-
Sea grasses	8	-
Invertebrates		
Sponges	350	5 (?)
Sea anemones	55	-
Stony corals	178	2 (?)
Octocorallians (soft corals)	71	?
Proboscis worms	15	(?)
Marine molluscs	300 (?)	?
Serpulids	50	?
Sea spiders	22	9 (?)
Shrimps	165	1
Feather stars	10	-
Sea stars	32	-
Brittle stars	44	-
Sea Urchins	33	2 (?)
Sea Cucumbers	35	
Vertebrates		
Fish	1000 (+)	10 - 20 (?)
Sea snake	1	-
Sea turtles	4	-
Marine Mammals	21	-





All around the world people's lives are connected to the marine environment. For example, we eat seafood, we use ocean products like seaweed in products like toothpaste and ice cream, we transport goods across the world's oceans, oceanic algae help control the earth's climate, and tourism associated with marine environments generates income for millions of people worldwide.

Likewise, what we do affects the oceans. For example household cleaners, rubbish, fertilizers and motor oils can end up in the oceans if we are not careful. Untreated sewage and industrial effluent can also cause marine pollution. Deforestation of hillsides can lead to soil erosion and the resultant soil washes into the sea where it reduces the light needed for coral growth. Oil tankers transporting fuel for our cars and heating homes can have accidents, spilling millions of tons of oil into the ocean and affecting marine life.

Many countries, such as Seychelles, have taken action to protect marine life by designating marine parks and reserves, where fishing is controlled. Many countries are also now putting in place legislation to control overexploitation of fish and other marine species, such as **hawksbill turtles (Kare)** found in their waters, and promote sustainable fishing practices. But each of us also has a responsibility to do whatever we can to reduce marine pollution, protect marine life and use the oceans' resources sustainably.

Marine protected areas of Seychelles

<i>Name</i>
<i>Ste. Anne Marine National Park</i>
<i>Curieuse Marine National Park</i>
<i>Baie Ternay Marine National Park</i>
<i>Port Launay Marine National Park</i>
<i>Silhouette Marine National Park</i>
<i>Ile Cocos , Ile la Fouche & Ilot Platte Marine National Park</i>
<i>Cousin Island Special Reserve</i>
<i>Aride island Special Reserve</i>
<i>Aldabra Special Reserve</i>
<i>African Banks and Surrounding Reefs</i>
<i>North East Point and Anse Nord d'Est Shell Reserve</i>
<i>South East Island to Point au Sel Shell Reserve</i>
<i>Pointe Zanguilles to Anse Boudin Shell Reserve (Praslin)</i>
<i>La Passe to Cap Bayard River Shell Reserve (La Digue)</i>
<i>Mahé, N.E.Point to S.Point fisheries protected area</i>
<i>Praslin, Roche Corbijeaux to Anse Marie Louise fisheries protected area</i>
<i>Western La Digue, N.Point to S.Point fisheries protected area</i>



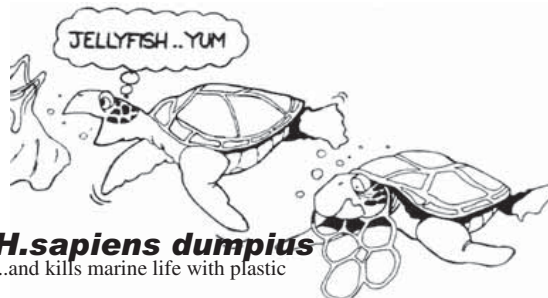
Homo sapiens dumpius

'feeds' the fish with rubbish and gives cigarettes to fish (butts swell up in their stomachs)...



H.sapiens pollutius

allows engines to leak oil and flushes toilet on the reef



H.sapiens dumpius

...and kills marine life with plastic

How you can help

On land:

- *Resist the temptation to buy marine souvenirs and curios, including shells, corals, desiccated fish and other artefacts made from marine animals.*
- *Resist the urge to collect seashells along beaches: many are used by hermit crabs. Admire them and leave them for others to enjoy. Collecting shells is prohibited in nature reserves, marine parks and shell reserves in Seychelles.*
- *Reduce household pollutants. Cut down and properly dispose of herbicides, pesticides and cleaning products so that they don't end up eventually polluting rivers and oceans.*
- *Reduce automobile pollution. Repair oil leaks and recycle used motor oil.*
- *Protect ocean wildlife. Don't dispose of fishing lines, nets or plastic items in or near the water.*
- *Be considerate of sea life habitats. Don't feed sea birds, mammals or turtles or disturb their nesting grounds.*
- *Take part in beach clean-ups or other ocean-oriented activities.*



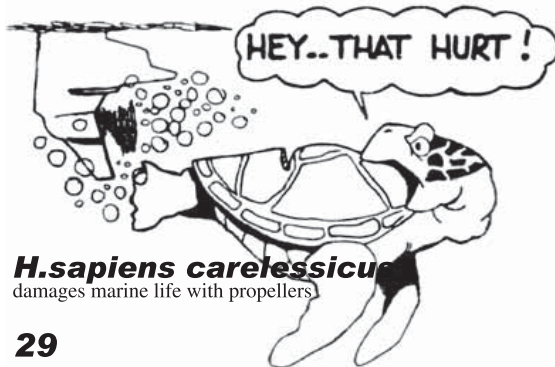
H.sapiens anchorus

smashes coral when anchoring...



H.sapiens divertus

breaks coral with fins and dive gear



H.sapiens carelessicus

damages marine life with propellers

In the sea:

- 🐟 *Take care when diving or snorkelling not to damage corals with your feet or equipment.*
- 🐟 *Show respect for all forms of marine life: do not pick up, touch, poke or feed any animals. Many of them are fragile and easily damaged.*
- 🐟 *Do not pick up any animals that are attached to rocks or the reef as they will not survive after being detached.*
- 🐟 *Do not collect any living marine animals for souvenirs. Leave empty shells for hermit crabs and other animals to use.*



H.sapiens snorkellus
kills coral by standing on it

When reef walking:

- *Watch where you tread to avoid stepping on any corals or other living things. Many of them are fragile and can die upon initial impact. Follow sand channels wherever possible.*
- *Use a bucket or container with a transparent base for easier underwater viewing instead of picking up and disturbing marine life.*
- *If you do pick up animals, ensure that your hands are wet, and keep them moist with seawater. If possible, place them in a sea water container for brief observation.*
- *Do not collect any marine animals for souvenirs, particularly shells and corals. Some shells which appear to be empty have hermit crabs living deep inside, or fan worms living on them.*

Useful Resources for Teachers

Title	Author	Description	Type	Available at
Indian Ocean Tropic Fish Guide	Helmut Debelius	an excellent guide, with colour illustrations for the marine enthusiast	book	BirdLife Seychelles
Our mysterious Ocean	Reader's Digest	an excellent reference book for children	book	BirdLife Seychelles
Ocean	Miranda Macquitty	a detailed book providing fascinating facts and answers about marine species	book	BirdLife Seychelles
Fish	EyeWitness	a reference book with colourful illustrations	book	BirdLife Seychelles
Ecology	EyeWitness Series	a reference book to help teacher classroom activities and projects. Has a chapter on Life in the Ocean	book	BirdLife Seychelles
At the Sea's Edge	William T.Fox	a guide to coastal geomorphology for the amateur naturalist	book	BirdLife Seychelles
Will a clownfish make you giggle	Kay Dokken	a question and answer book for children about marine life	book	BirdLife Seychelles
Tropical Topics	Queensland Park and Wildlife Service	a variety of environmental topics with a special 'blue series' on marine creature	newsletter	BirdLife Seychelles
Ocean Alive	Environment Media	a four-part documentary about different marine species	Video	NAVC
Seascapes	Tom Jacson, Key West	about coral reefs	Video	NAVC
50 Million Years	Australia Broadcasting Corporation	life under the sea and among coral reefs	Video	NAVC
Common Marine Life		about different types of fish and coral	Video	NAVC

About BirdLife Seychelles

BirdLife Seychelles is a local, non-profit Association registered under the laws of Seychelles. We took over the long-running programme of outstanding work by BirdLife International, who have operated in Seychelles since 1968. We are part of a growing global network of BirdLife partner organisations.

BirdLife Seychelles has the following core objectives:

Conservation of threatened species such as the Seychelles magpie robin, the Black paradise-flycatcher, the Seychelles Scops owl, marine turtles and marine fish.

Conservation and sustainable use of terrestrial and marine habitats such as Cousin Island Special Reserve.

Education and awareness programmes for Seychellois and visitors.

Training Seychellois to undertake conservation work.

Core support to Nature Seychelles is provided by the Royal Society for Protection of Birds (RSPB). We work in collaboration with several local partners.

For more information about BirdLife Seychelles, please contact the Chief Executive at the following address: P.O. Box 1310, Suite 202 Aarti Chambers, Mont Fleuri, Mahé, Seychelles Tel. (248) 225 097, Fax. (248) 225 121, email: birdlife@seychelles.net

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Ministry of Education & Youth, P.O. Box 48, Mont Fleuri Mahé, Seychelles, Tel: 224 777	Ministry of Environment, Botanical Gardens, Mahé, Seychelles, Tel: 224 644
Ministry of Agriculture & Marine Resources, Victoria Mahé, Seychelles, Tel: 611 120	National Audio Visual Centre, Mont Fleuri, P.O. Box: 48 Mahé, Seychelles, Tel: 224 777

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Many fish or other marine creatures do not have Kreol names and we have used Kreol names in parentheses where these are known. We have tried to keep to common English names for animals and plants in the text. The common names of fish are from the Indian Ocean Tropical Fish Guide by Helmut Debelius 1993, Aquaprint, Germany.

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