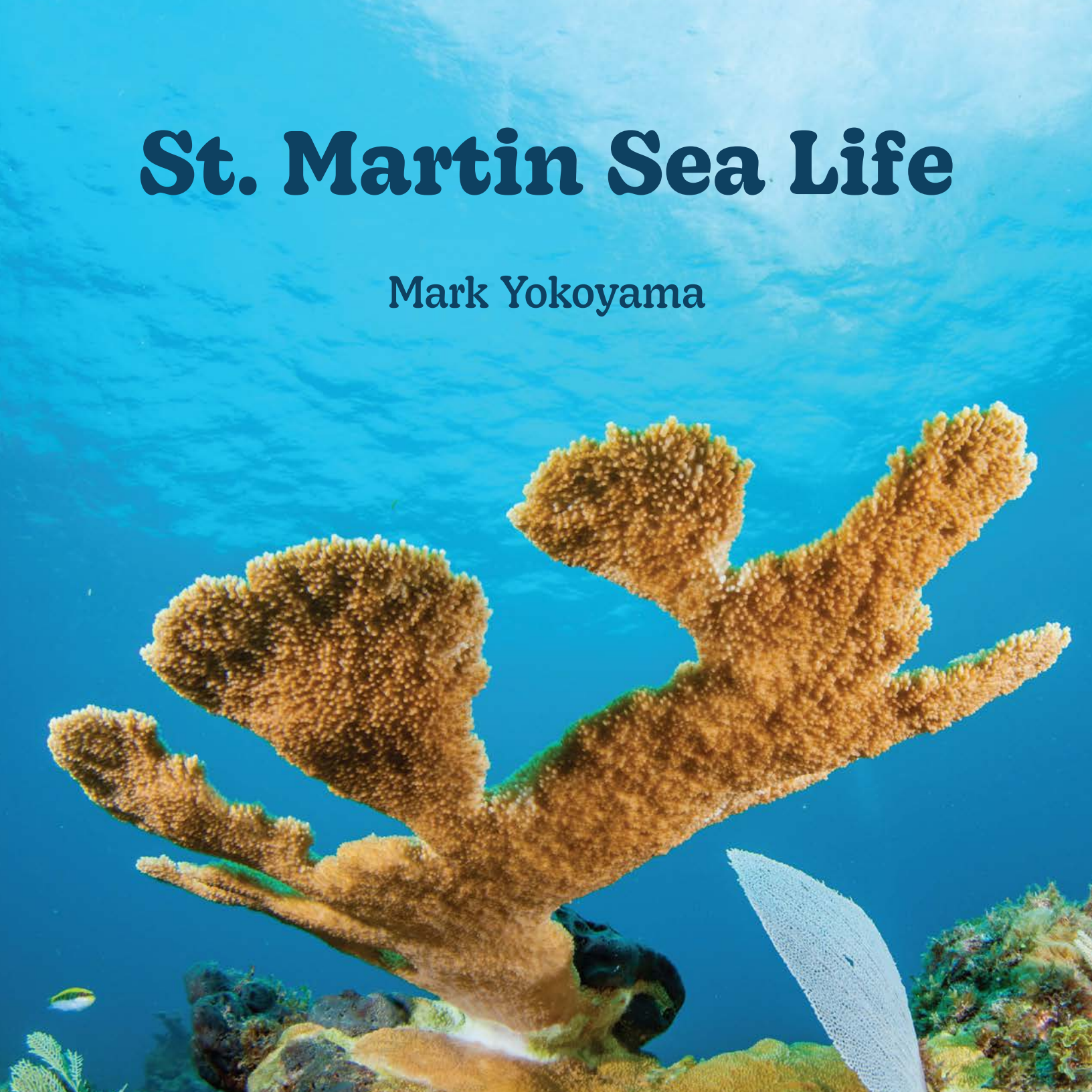
St. Martin Sea Life

Mark Yokoyama



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Contents

St. Martin Seas

The sea is vast. It surrounds St. Martin. The people of St. Martin have depended on it for food since prehistoric times. We still use it today. We eat its fish and seafood. We swim, sail and snorkel in it. We listen to its waves and look into its beautiful blue water.

The sea around St. Martin is full of life. There are thousands of different living things. There are microscopic animals and 40-ton whales. There is life floating on the surface and creatures thousands of meters deep on the sea floor.

In the sea, there are many places where groups of animals and plants live together. They provide for each other and keep the local system in balance. In each of these special habitats, the animals and plants depend on each other for survival.

Sandy beaches, seagrass beds, mangrove wetlands, coral reefs and the open ocean are all very different from each other. Each one is full of animals that are specially adapted to live there. All of these habitats can be found in the sea around St. Martin. In this book, we will explore all of them and learn about some of the animals, plants and algae that live in each one.

Sandy Shallows

The sea is full of life. But if you look into the sea at the beach, you might only see sand. Where is all the life?

In places with rocks or reefs, there are many places to hide. Where the sea floor is sandy, the only place to hide is under the sand. That's where many of the animals live. Animals like clams, crabs and worms bury themselves in the sand. Some animals also have light colors so they blend in to the sand.

Sand moves a lot. Waves bring it from place to place. Even animals that burrow into the sand have to keep moving. Waves could take away the sand, leaving them exposed, or bury them too deep.

Where is the food in sandy areas? Most seaweed is attached to rocks. In the sand, there's nothing for it to hold on to. But there are tiny animals and plants floating in the water. These are called plankton. Some things that live in sandy areas eat this floating food.

There are also bits of food mixed in with the sand. Some animals eat this. Some even eat the sand, digest the food that is in the sand, and poop the clean sand out. Sea cucumbers eat this way.

There are also animals that hunt in sandy areas. Stingrays dig into the sand to eat crabs and other animals buried there.

They can be hard to find, but there are many things living in sandy sea areas. They keep the sand and the water clean.

Southern Lugworm (*Arenicola cristata*)
This worm makes a burrow in the sand. It eats tiny bits of food in the sand by eating the sand. After it digests the food, it shoots out the clean sand. This makes a mound on the sea floor that looks like a little volcano.

Photo by Eric Lazo-Wasem, Yale Peabody Museum

Eared Ark Clam
(*Anadara notabilis*)
These clams live under the sand. You may see their shells on the beach. They were eaten by Amerindian people living on St. Martin thousands of years ago.

Cushion Sea Star (*Oreaster reticulatus*)
This starfish makes a pile of sand, and pushes its stomach out of its mouth and around the sand. Any small animals in the sand are digested by its stomach.

Red Heart Urchin (*Meoma ventricosa*)
This urchin has 56 very small feet around its mouth. These feet push sand into its mouth. It eats microscopic algae growing on the grains of sand.

Chocolate Chip Sea Cucumber
(*Isostichopus badionotus*)
The mouth of this animal is on the underside of its body, facing the sea floor. The mouth is surrounded by about 20 tentacles that dig in the sand to find food.

Caribbean Velvet Shrimp
(*Metapenaeopsis goodei*)
This shrimp hides under the sand during the day. At night it comes out to eat tiny creatures, seaweed and bits of dead animals and plants.

Blue Crab (*Callinectes sapidus*)
This crab lives in sandy shallow seas. It can also go into ponds. It hunts small animals like worms. It also eats algae, plants and dead animals. It grows from egg to adult in about a year.

Yellowhead Jawfish
(*Opistognathus aurifrons*)
This fish digs a burrow in the sand with its mouth. It stays in or near the burrow eating bits of food from the water. At night, it closes the entrance to its burrow with a little stone.

Peacock Flounder (*Bothus lunatus*)
This fish is a master of camouflage. It can change its color to match whatever it is swimming over. It is often found in sandy areas.

Shortnose Batfish (*Ogcocephalus nasutus*)
This funny-looking fish uses its fins like legs to walk along the sea floor. It has a horn on the front of its head. It also has a lure it can stick out and wiggle to attract fish and other small animals so it can eat them.

Flying Gurnard (*Dactylopterus volitans*)
This fish has long fins that it can fan out like wings. These colorful fins surprise predators, giving it a chance to escape. It eats crabs and clams out of the sand.

Lizardfish (*Synodus intermedius*)
This hunter lies on the sea floor. Often it is covered in sand to hide itself. When a smaller fish comes by, it darts up to catch it.

Southern Stingray (*Hypanus americanus*)
This ray eats crabs and other animals that hide under the sand. It flaps its fins to blow the sand away to find them. This can help uncover things for other fish to eat, too.

Mangrove Forests

St. Martin has mangrove forests around some of its ponds, and in places where ponds connect to the sea. Mangroves protect both the sea and the land. They are full of life above and below the water.

There are a few kinds of trees in a mangrove forest. All of them are adapted to live in wet and salty places. The **Red Mangrove** can grow in the water. It has above-ground roots that branch out like tripod legs to keep it steady. The **Black Mangrove** grows at the edge of the water. It grows roots that stick up into the air so the tree can breathe. The **White Mangrove** lives near water, but not in it.

Mangroves protect the land from waves. Their roots trap sand and mud so small waves don't take it out to sea. During a big storm, mangroves also absorb some of the energy of big waves. This makes the waves weaker, so they do less damage to land and homes.

Mangroves protect the sea by keeping it clean. When rains wash dirt and leaves down from the land, they get trapped in the mangrove roots instead of flowing out to sea. Also, oysters and anemones cling to mangrove roots and filter food from the water. This is how mangroves keep the sea clean and clear. Corals and seagrasses need clear seas to survive.

The dirt and leaves that get trapped in mangrove roots provide food for many creatures. Crabs, snails, worms and many other animals eat this food. These small animals are food for other animals, like fish and birds.

Many fish and lobsters hide among the mangrove roots when they are young. There are things for them to eat, and they are safe from bigger fish that would eat them. When they get bigger, they leave the mangroves and go out to the reef.

Mangroves connect the land and sea. They also protect the land and sea. They keep our island from washing into the sea and they keep our seawater clear and clean.

Red Mangrove (*Rhizophora mangle*)
This mangrove has branching roots that are often in the water. Swimming animals like fish can hide between the roots. Oysters, anemones and seaweeds attach to the roots and grow on them.

Black Mangrove (*Avicennia germinans*)
This tree lives at the water's edge. It has special roots that grow up into the air so it can breathe. Sea animals can live on or around these roots.

Green Feather Algae
(*Caulerpa sertularioides*)
Mangrove roots give this seaweed something to grow on. This seaweed is food for some of the animals that live around mangrove roots.

Christmas Tree Hydroid (*Pennaria disticha*)
These tiny animals grow together in colonies that look like feathers. They have stinging cells to catch even smaller animals in the water. These hydroids are often anchored to mangrove roots.

Brown Anemone (*Exaiptasia diaphana*)
This anemone lives on mangrove roots. It has tiny algae inside it that make food from sunlight. It also has stinging tentacles that can catch food in the water.

Mangrove Upside Down Jellyfish (*Cassiopea xamachana*)
This jellyfish has tiny algae that live inside it and make food from sunlight, like plants do. It lies upside down on the sea floor so its algae can get the sunlight they need.

Caribbean Spiny Lobster (*Panulirus argus*)
Young lobsters are very common in mangrove wetlands. They have food and protection there. When they get larger, they move to coral reefs in deeper water.

Checkered Puffer (*Sphoeroides testudineus*)
This is one of the most common fish in mangrove areas. It has strong teeth for crushing snail and crab shells. It stays safe by hiding in mangrove roots.

Seagrass Beds

In the sea, most of the things that look like plants are seaweeds, also called algae. Most seaweeds are connected to rocks or corals. They aren't found in sandy areas where they have nothing to hold on to.

Seagrasses are different. They are plants, related to grasses and other plants we see on land. Seagrasses have long leaves called blades. They make flowers. They also have roots.

Seagrass roots are very important. They grow down into the sand to hold the seagrass in place. Seagrass doesn't need a rock or coral to cling to. Seagrasses can grow by sending out roots and sprouting new shoots. A large area of seagrass is called a seagrass bed or seagrass meadow.

Seagrass beds can become very large and strong because all the grasses are connected. This helps seagrasses stay in one place even when currents are moving water and sand around them. This also creates a place for many animals to live.

Many small fish live in the seagrass because they can hide among the leaves. Crabs, shrimp, clams and snails often live among the roots of the seagrass. There are even small animals and algae that grow on the seagrass itself.

Seagrass beds provide more than just shelter. Animals like turtles, fish and sea urchins eat living seagrass leaves. Crabs and other animals eat dead seagrass leaves and roots as they decay. These small creatures can also eat other tiny bits of food that get stuck around seagrass. Seagrass also produces oxygen that animals need to breathe.

A bay like Grand Case Bay has about one square kilometer of seagrass. There may be eight million or more fish living in these seagrass beds, and hundreds of millions of smaller animals. These animals are all part of the food web that makes the sea so lively and amazing. Without seagrass beds, we also wouldn't have many of the fish and seafoods that people enjoy eating.

Turtle Grass (*Thalassia testudinum*)
This grass is has long, flat, wide blades. It is the most common kind of seagrass around St. Martin. It is called **Turtle Grass** because **Green Turtles** eat it. It is also eaten by surgeonfish, sea urchins and some parrotfish.

Manatee Grass (*Syringodium filiforme*)
This seagrass is common around St. Martin. It has blades that are long and tubular, like strings. There are large meadows of this grass in the sea by Coconut Grove.

Paddle Grass (*Halophila* sp.)
This seagrass has short, oval-shaped leaves that look like little paddles. One species is native to the Caribbean. Another comes from the Indian Ocean, and is taking over in some areas around St. Martin.

Brush Seaweed (*Penicillus capitatus*)
Seagrasses create a surface that algae can anchor to. **Brush Seaweed** attaches to seagrass roots and grows among the seagrass. It looks like a fuzzy ball on a stick.

Sun Zoanthid (*Palythoa grandis*)
Zoanthids are related to corals. They look like mini sea anemones and live in colonies. They eat tiny bits of food floating in the water.

Elegant Anemone (*Actinoporus elegans*)
Most anemones need a solid surface to attach to. Seagrasses and their roots can provide a place for anemones to anchor themselves.

West Indian Sea Egg
(*Tripneustes ventricosus*)
This sea urchin is usually found in seagrass meadows. It mostly eats **Turtle Grass** and algae. It will cover itself with **Turtle Grass** leaves to hide.

Giant Hermit Crab (*Petrochirus diogenes*)
This hermit crab grows big enough to live in a **Queen Conch** shell. Sometimes it eats the conch and then takes its shell. This one has a sea anemone attached to its conch shell.

Queen Conch (*Aliger gigas*)
The **Queen Conch** lives in seagrass beds. It eats seagrass, algae and bits of dead algae trapped in the seagrass. It can grow up to two kilograms and live 30 years or more.

Caribbean Reef Squid (*Sepioteuthis sepioidea*)
Baby reef squid often live in very shallow seagrass beds. Adults hunt for fish, crabs and other foods on reefs and in deeper seagrass meadows.

Green Razorfish (*Xyrichtys splendens*)
This fish blends in perfectly in a **Turtle Grass** bed. It even moves its body like it is a blade of grass swaying with the waves.

Slender Filefish (*Monacanthus tuckeri*)
This fish hides in seagrass beds. It moves with the grass and is very difficult to spot. It eats shrimp and other tiny animals living in the seagrass.

Bluestriped Grunt (*Haemulon sciurus*)
These fish hatch from eggs floating in the sea. As tiny larval fish, they settle on **Turtle Grass** beds. The young fish stay in these grasses as they grow bigger.

Spotted Trunkfish (*Lactophrys bicaudalis*)
This fish eats all kinds of small creatures. It blows water from its mouth to move sand away so it can find food underneath. It also eats seagrass sometimes.

Great Barracuda (*Sphyraena barracuda*)
Young barracudas often live in seagrass beds where they can hide in the grass. Adults can be a meter long. They come to seagrass meadows to hunt smaller fish.

Green Turtle (*Chelonia mydas*)
Small **Green Turtles** live out in the ocean and eat many things. As they get bigger, they come to seagrass meadows and mostly eat seagrass and algae.

Coral Reefs

St. Martin is surrounded by clear, warm water. There are lots of areas less than 50 meters deep, which is pretty shallow and sunny compared to other parts of the ocean. These are perfect conditions for coral reefs, and there are many coral reefs in the seas around St. Martin.

Coral reefs are made by animals and algae. The most important reef building animals are hard corals. They are also called stony corals. They are tiny animals that live together in colonies. They build hard skeletons that are like stones. Coral reefs are mostly made of these skeletons. Some algae create hard structures on and between corals. These help hold a reef together.

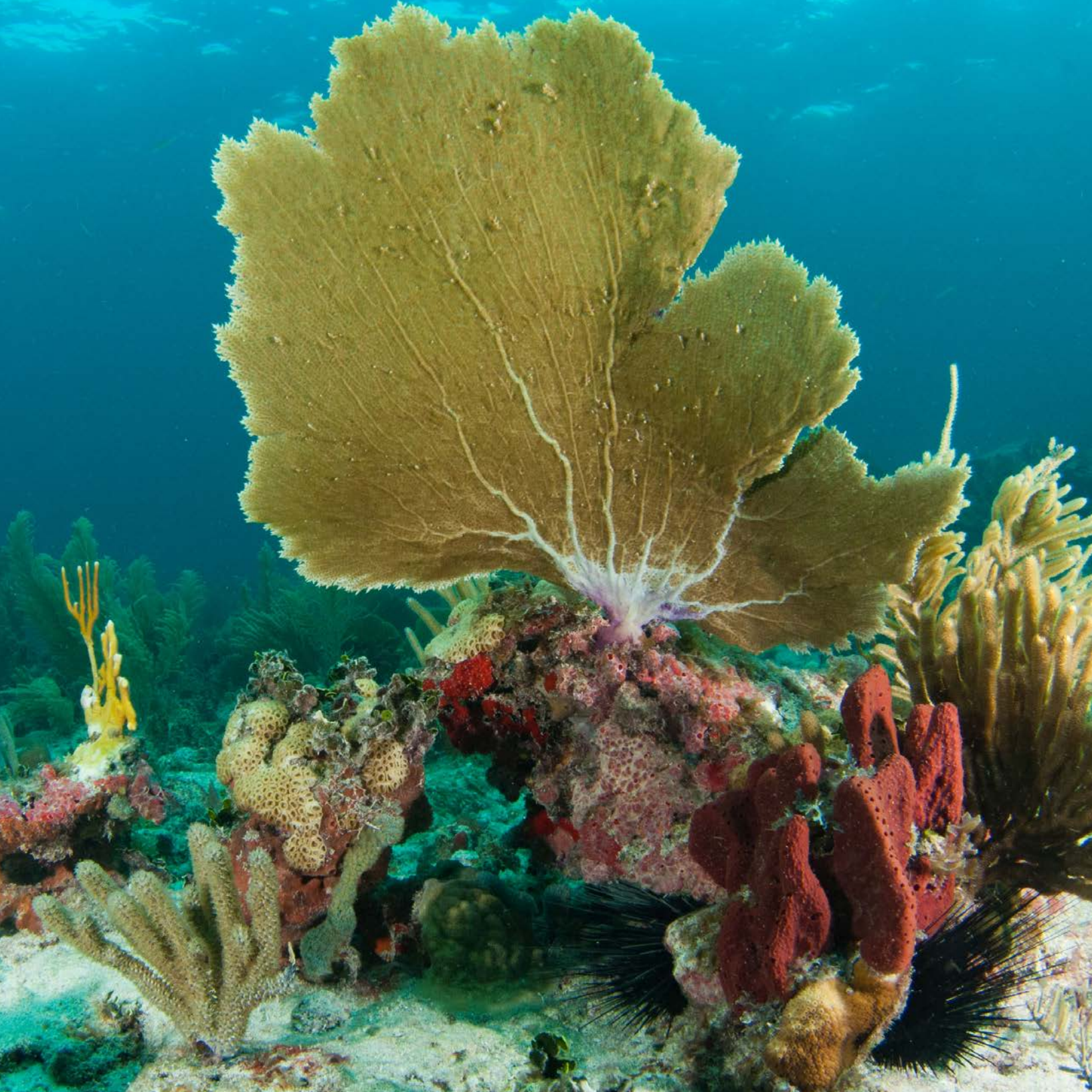
Lots of other animals and seaweeds grow on reefs created by coral skeletons. Every surface of a coral reef is alive. Some parts, like seaweed, get energy from sunlight. Others, like sponges and oysters, get energy by eating tiny bits of food floating in the water. Corals themselves actually do both of these things.

Coral reefs are full of places to hide, and they are full of things to eat. This makes them the perfect home for many fish and other animals. All kinds of creatures live on reefs: crabs, snails, fish, octopuses and many more. Coral reefs are only a tiny part of the ocean, but they are the richest and most diverse habitat in the sea.

Coral reefs are also very important to people. We eat fish and lobsters that live on the reef. Fishing has been an important source of food on St. Martin since prehistoric times.

Reefs also protect the island. In a storm, big waves hit the reef before they get to shore. After hitting the reef, they are weaker and do less damage when they hit the land. This helps protect houses and people, too.

Coral reefs are also amazing and beautiful places to discover. Taking people diving and snorkeling on reefs provides money and jobs on St. Martin. One study found that coral reefs contribute over $50 million to St. Martin's economy each year.



Hard Corals

Coral reefs are mostly made of hard coral skeletons. Hard corals are tiny animals that grow in colonies. Each colony is made of many polyps. Each polyp is an individual animal, but in a colony, the polyps are all connected to each other. Usually the polyps are very small, smaller than a grain of rice.

Each polyp is a soft tube with tentacles at the end. The tentacles have stinging cells that help the coral catch food. The food is mostly plankton, little animals and algae that float in the water. The coral digests the food in its stomach, which is inside the tube.

Corals also have another way to get energy. They have tiny algae cells inside them called zooxanthellae. Corals protect these cells and give them nutrients they need. The algae cells turn sunlight into food for the coral. This is why reef corals need sunny places with clear water. They are getting much of their energy from the sun with the help of the algae. The algae also give the corals their color. Without them, most corals are white.

Coral colonies build skeletons. The polyps live on the outside of the skeleton. These skeletons are made from calcium carbonate. This is what chalk and seashells are made from, too. Even though each coral polyp is tiny, the skeletons made by a whole colony can be huge. Colonies of some corals can be several meters wide and tall.

Coral colonies can be very large, but they take a long time to grow. Even the fastest growing corals grow only about five centimeters a year. A large coral colony can be hundreds of years old.

There are many different kinds of hard coral. They grow skeletons of different shapes. They are also fighting each other for the same space in the sunny shallow water. Some corals will grow over other corals. Others uses special tentacles to dissolve their neighbors so they can take their space. Together, they provide the foundation for the reef and all the life that's there.

Elkhorn Coral (*Acropora palmata*)
This coral grows in branching colonies up to four meters wide and two meters tall. It is one of the fastest growing corals.

It lives in very shallow water, usually five meters or less. It is often found in areas with strong waves. When waves break off a piece of the coral, it can start a new colony. A colony can live for hundreds of years.

Elkhorn was the most common coral in many shallow reefs in the Caribbean. Sadly, disease, pollution and high water temperatures killed many of them since the 1980s. Today, only about 3% of these corals are left. Many shallow reefs around St. Martin are made of dead **Elkhorn** skeletons.

Growing a new colony from a broken piece may be the key to saving this coral. People are farming this coral by taking small pieces and growing them. These pieces are "planted" on the reef to bring it back to life.

Fused Staghorn Coral (*Acropora prolifera*)
Staghorn Coral is closely related to **Elkhorn Coral**. It lives in shallow water. It has smaller branches that create spaces for fish to hide. Most of these corals have died in recent decades.

Grooved Brain Coral
(*Diploria labyrinthiformis*)
Brain corals grow in round balls. The balls can grow up to two meters wide. The coral polyps live in the grooves that wind around the coral.

Yellow Finger Coral (*Madracis auretenra*)
This coral grows in clusters of finger-shaped branches. Small fish living near one of these corals can hide between the branches if a predator swims by.

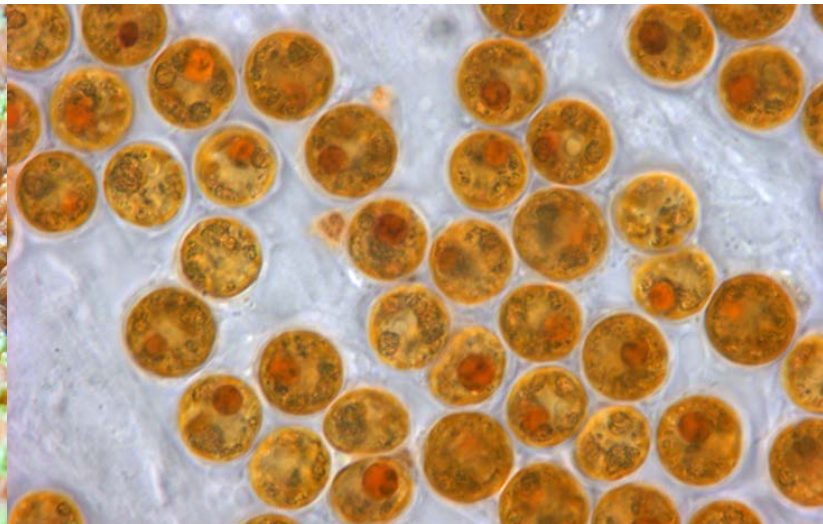
Pillar Coral (*Dendrogyra cylindrus*)
This coral grows in pillar shapes. Unlike many corals, its polyps are extended during the day. They coat the pillars like fur and wave in the water.

Maze Coral (*Meandrina meandrites*)
Many hard corals only stick their polyps out at night. This is what a **Maze Coral** looks like at night.

Maze Coral (*Meandrina meandrites*)
During the day, this coral retracts its polyps, leaving the bare skeleton showing.

Mountainous Star Coral
(*Orbicella faveolata*)
This coral can grow into huge mounds up to three meters tall. This close-up shows the individual polyps, which look like little stars.

Zooxanthellae
These are some of the tiny algae cells living inside corals. Without them, most tropical corals cannot survive. This photo was taken through a microscope.
(Photo by Todd C. LaJeunesse)



Soft Corals

Soft corals are related to hard corals. They share many things in common. Soft corals are tiny tube-shaped animals. They have stinging tentacles to catch food, and they also have algae cells that create food from sunlight. They also grow in colonies.

Soft corals don't build hard skeletons out of calcium carbonate like hard corals do. Soft coral colonies create flexible structures. Some create tiny pieces of hard material to make their flexible skeleton stronger. Soft corals don't create the structure of the reef like hard corals, but they do attach to it.

Many soft corals around St. Martin look like giant fans, feathers or fuzzy plants. They move back and forth with the currents of the water. As they move, their polyps reach their tentacles out to catch food. Soft corals are often found in areas with waves and currents, where they can filter more food out of the water.

Soft corals are an important part of the reef. They keep the water clean by filtering out plankton and eating it. Animals hide in and around soft corals. Some animals also eat them.

Grooved-blade Sea Whip
(*Pterogorgia guadalupensis*)
This sea whip has flat blades that look like ribbons. On either side, there is a row of polyps.

Sea Rod (Family Plexauridae)
Different sea rods are common on the reefs of St. Martin. From a base attached to the reef, they grow many flexible branches. The coral polyps are extended to catch food. The polyps can be pulled in for protection.

White Telesto (*Carijoa riisei*)
The polyps of this soft coral are white because they don't have algae cells living inside. This coral has to pick all its food from the water.

Venus Sea Fan (*Gorgonia flabellum*)
Sea fans are also very common on St. Martin's reefs. They usually live in shallow waters, ten meters deep or less, so they can get lots of sunlight. They can grow more than a meter tall.

On the Reef

Hard corals provide the structure of a reef, but there are many different seaweeds and animals that grow on reefs. By attaching to the reef, they can have a permanent home in the swirling currents of the ocean.

Seaweeds, also called algae, are similar to plants. Most of them are anchored to the reef and grow upward. They are powered by sunlight, using photosynthesis to turn carbon dioxide and water into sugars and other materials they need. Algae compete with corals for sunlight. They also grow faster than corals. On a healthy reef, fish and other animals eat enough algae to keep it from taking over the coral.

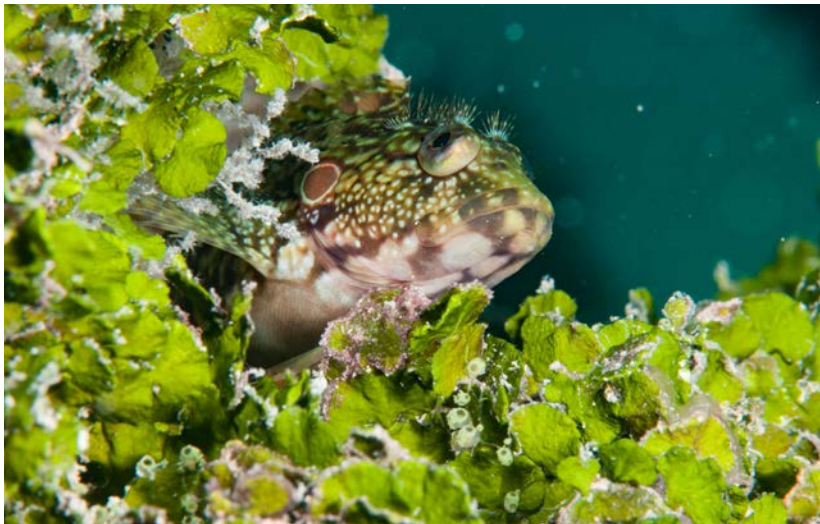
Sponges are very simple animals that live on reefs. They filter tiny food, like bacteria, from water. Sponges are full of narrow pathways. They pull water in from their sides, and filter out food. Then they push the water out of their tops. Some sponges don't need sunlight, so they can grow underneath reef structures.

Anemones, zoanthids and fire corals are all related to corals. They all have stinging cells that they use to catch plankton from the water. Tube worms build hard tubes in the reef where they live. They have feathery structures called radioles. These catch food particles from the water, and the worms also use them to breathe, like gills.

Tunicates also live attached to the reef. They are often found in groups and look like soft bulbs. They have two holes. One is the mouth and the other is the anus. Even though they look primitive, they have many of the same body parts as we do, including a heart and a very simple brain.

When you see a reef, almost every part of it is alive. All of these algae and animals have a role in a healthy reef ecosystem.

Watercress Algae
(*Halimeda opuntia*)
This algae grows on the reef in spaces between corals. It can provide a hiding place for fish and other animals.



Giant Barrel Sponge (*Xestospongia muta*)
These sponges can be bigger than a person and hundreds of years old. Small animals like shrimp hide on and around them.

Azure Vase Sponge (*Callyspongia plicifera*)
This sponge grows in a cup shape. Sometimes small animals like brittle stars hide inside.

Branching Tube Sponge (*Aiolochroia crassa*)
This sponge can be yellow, purple, or both. The inside is usually yellow.

Red Encrusting Sponge
(*Monanchora arbuscula*)
These sponges grow in a crust over dead reef or on the underside of a reef.

Blade Fire Coral (*Millepora complanata*)
Although it isn't actually a coral, fire coral is very similar. It creates a hard skeleton and has stinging cells. It often grows as a crust over hard or soft corals.

Sponge Zoanthid
(*Umimayanthus parasiticus*)
This animal is very closely related to corals, but it doesn't live in a big colony or build a skeleton. It lives on sponges.

Giant Anemone (*Condylactis gigantea*)
This anemone has tentacles with stinging cells like a coral polyp, but it is much bigger. It can eat things like fish and shrimp.

Social Feather Duster (*Bispira brunnea*)
With their feathery radioles extended, these worms look like a cluster of flowers waving in the water. They are actually related to earthworms and most of their body is hidden in a tube.

Magnificent Feather Duster
(*Sabellastarte magnifica*)
This worm has long radioles that catch bits of food from the water. They also absorb oxygen so the worm can breathe.

Christmas Tree Worm
(*Spirobranchus giganteus*)
If this worm is in danger, it shoots back into its tube. It even has a hard plug it can use to block the opening of its tube to protect itself.

Blue Bell Tunicate (*Clavelina puertosecensis*)
It looks very simple, but a tunicate is a close relative to vertebrates like fish, birds and people. It is a closer relative to humans than an octopus or a lobster is.

Flat Tunicate (*Botrylloides nigrum*)
This tunicate is very small. It grows in colonies that cover the surface of a reef or rock.

Reef Creatures

Many animals living on reefs can move around by swimming or crawling. They could leave the reef, but most of them stay on it. It is their home, and they are adapted to life there.

The coral reef provides shelter for these animals. Shelter is hard to find in the open sandy areas around a reef. The reef also provides food. Many of these animals eat algae or animals that are attached to reefs.

Many of these animals have relationships with animals that are attached to reefs. There are shrimp and crabs that almost always live by anemones for protection. There are brittle stars and basket stars that usually spend their days hiding inside sponges. There are snails and worms that eat corals.

These animals don't have to wait for food to flow to them in the current. They can go find food. If a lot of algae is growing somewhere and smothering the coral, they can go over and eat it. Animals that eat food bits trapped in the sand around a reef make those nutrients available to the reef animals that eat them.

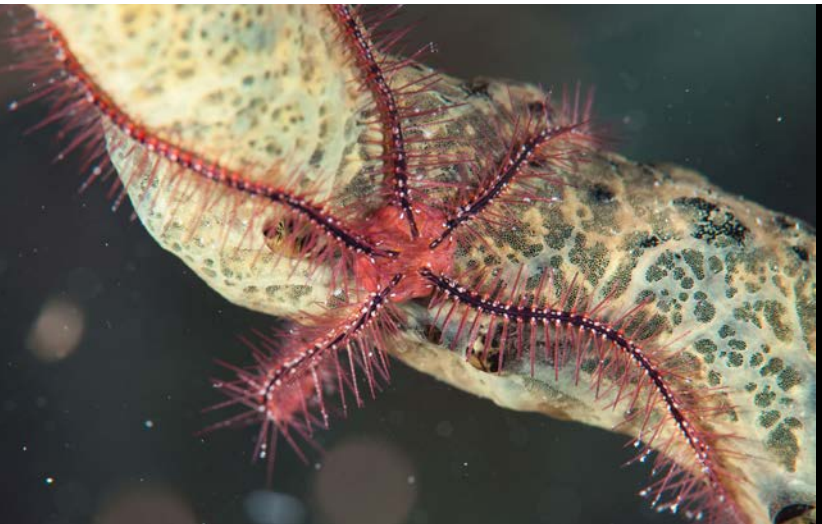
The reef is full of relationships between animals that keep the reef balanced. The reef is also productive because nutrients are being used over and over as animals eat algae and eat each other.



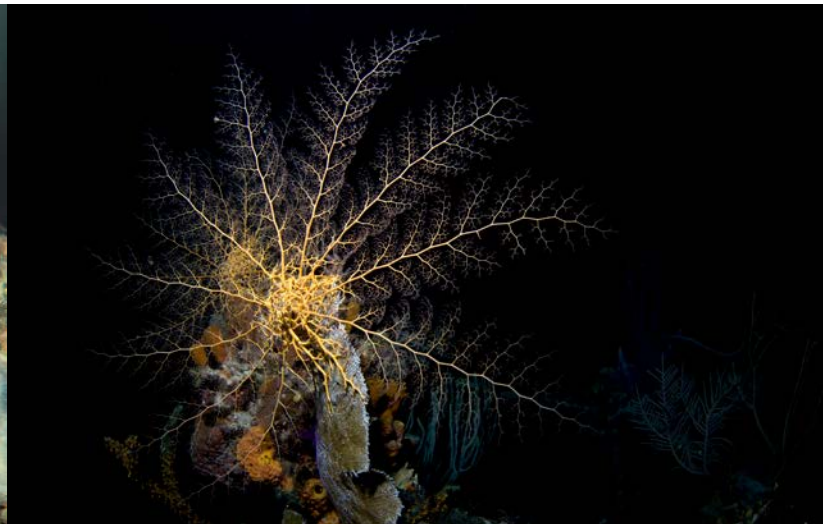

Bearded Fireworm (*Hermodice carunculata*)
A fireworm crawls around the reef eating corals, anemones and other small animals. For protection, it has fluffy bristles that are hollow and filled with venom.

Long-spined Urchin (*Diadema antillarum*)
This urchin is one of the most important reef animals. It eats algae. Without it, algae will cover the reef. Since 2022, many of these urchins have been killed by a parasite, putting our reefs in danger.

Sponge Brittle Star (*Ophiothrix suensoni*)
This brittle star hides during the day, and comes out at night to filter plankton from the water. It is usually found on sponges.



Giant Basket Star (*Astrophyton muricatum*)
During the day, the basket star curls up into a tiny ball. At night, it climbs up on the reef and opens its arms to catch food in the water. Its arms can stretch a meter wide.

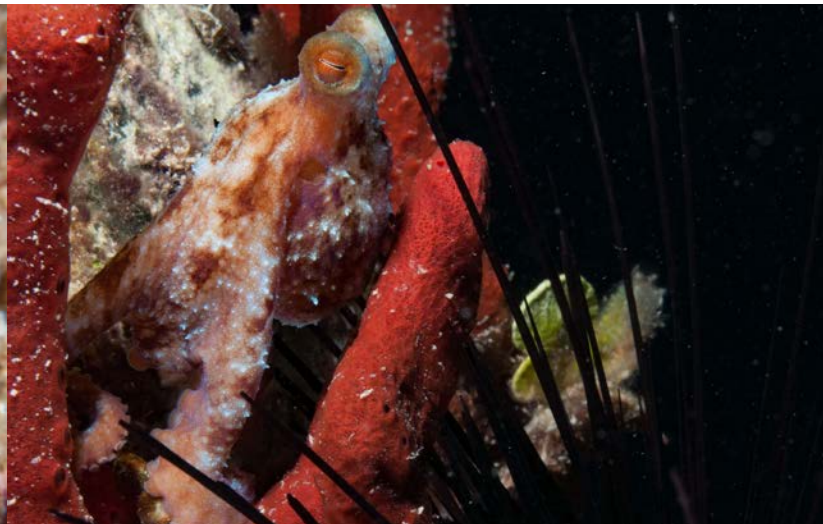


Flamingo Tongue (*Cyphoma gibbosum*)
This snail eats soft corals. It has a plain white or pink shell. The beautiful pattern is on its mantle, living tissue that is stretched over the shell.

Lettuce Sea Slug (*Elysia crispata*)
This sea slug eats algae. It also takes some parts from the algae it eats into its own cells. These parts convert sunlight to food inside the sea slug.

Dushi Sea Slug (*Flabellina dushia*)
This tiny sea slug has red growths called cerata. It eats things with stinging cells, like hydroids. It absorbs their stinging cells and moves them to the tips of its cerata for protection.

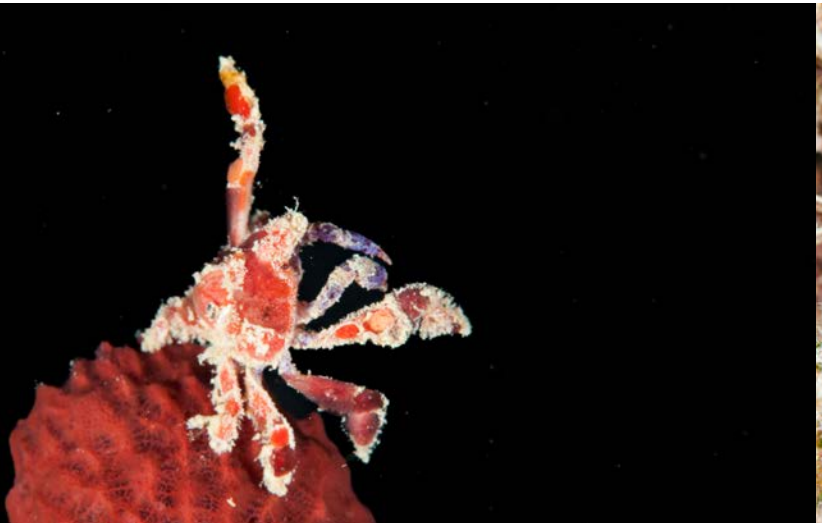
Caribbean Reef Octopus (*Octopus briareus*)
This octopus hunts for shrimp, crabs and lobster on the reef at night. It can change color and pattern to blend in to the things around it.



Slipper Lobster (*Scyllarides aequinoctialis*)
The **Slipper Lobster** hides on the reef during the day, and goes out at night to find food on the sea floor.

Swollen-claw Mantis Shrimp (*Neogonodactylus oerstedii*)
This mantis shrimp can punch its front claws with incredible speed to smash the shell of a crab, snail, or clam it wants to eat.

Cryptic Teardrop Crab (*Pelia mutica*)
This little crab is a decorator crab. It decorates its shell with living things like algae and sponges. This helps it stay hidden during the day. It comes out at night to find food.



Arrow Crab (*Stenorhynchus seticornis*)
This long-legged crab lives on the reef. It eats small creatures like feather duster worms.

Anemone Crab (*Mithraculus cinctimanus*)
This crab eats algae. It also grows algae on its back to hide itself. It is usually seen hiding under a sea anemone for protection.

Pederson's Cleaner Shrimp (*Ancylomenes pedersoni*)
This shrimp lives in an anemone for safety. It cleans parasites and fungus from fish. Fish go to the anemone because they know it usually has a shrimp inside that will clean them.

Banded Cleaner Shrimp (*Stenopus hispidus*)
This shrimp has bright colors that are easy to see. It attracts fish. It uses its three pairs of claws to pick parasites off the fish. This is what the shrimp eats.

Hawksbill Turtle (*Eretmochelys imbricata*)
This sea turtle is usually found on reefs because it mostly eats sponges. It has a sharp beak that it uses to tear open sponges, which are very hard to eat.

Fish on the Reef

There are hundreds of different kinds of fish on the reefs around St. Martin. They depend on the reef and the reef depends on them.

Some fish live inside the reef itself. There are blennies that live in tubes in coral skeletons, sticking just their heads out to catch food. Some fish eat coral, pulling the polyps from the reef with their mouths.

Many other fish eat algae or animals found on the reef. Corals depend on algae-grazing fish. Without these fish, algae would smother the coral.

Reef fish depend on the reef for shelter. Some spend their whole life in the nooks and crannies of the reef. Others hide in the reef during the day, and spend their nights hunting or grazing in nearby seagrasses.

The reef is home to many fish that eat other fish. Sharks are speedy hunters. Scorpionfish blend in to the reef, striking when another fish accidentally gets too close. Moray eels have a long, thin body so they can wind through small spaces in reefs to hunt.

Some fish even feed themselves by cleaning other fish. These cleaners eat parasites and dead skin from larger fish. Even though the larger fish are often hunters, the small cleaner fish can clean them without being eaten. They even clean in and around the mouths of bigger fish.

Reef fish have an amazing diversity of shapes, colors and lifestyles. Many even change dramatically as they grow, helping them use every resource the reef has to offer.




Spinyhead Blenny
(Acanthemblemaria spinosa)
These tiny fish live in corals, usually in tubes made by worms like the **Christmas Tree Worm**. They stick their head out of their tube to catch food as it flows by in the water.

Sharknose Goby (*Elacatinus evelynae*)
This fish cleans other fish, eating dead skin and parasites from them. It can even clean in and around the mouths of bigger fish without being eaten by them.

Foureye Butterflyfish
(*Chaetodon capistratus*)
These fish have pointy mouths. They pull small animals from the reef, including soft coral polyps. They mate for life and are usually seen in pairs.

Queen Angelfish (*Holacanthus ciliaris*)
When it is small, this colorful fish eats parasites from bigger fish. As an adult, it eats sponges that grow on the reef.

Beaugregory (*Stegastes leucostictus*)
This type of damselfish is bright blue and yellow when young, but brown and yellow as an adult. Damselfish guard a patch of reef where they grow algae to eat.

Blue Tang (*Acanthurus coeruleus*)
Blue Tang are bright yellow when young. Adults are blue and often travel in large schools eating algae off of the reef.

Redband Parrotfish (*Sparisoma aurofrenatum*)
Parrotfish have teeth that grow together like a hard beak. They use it to scrape algae from the reef. The bits of reef they scrape off become sand. A big parrotfish can poop one ton of sand per year.

Spotted Goatfish (*Pseudupeneus maculatus*)
This fish has two long barbels on its chin. It uses them to feel around under the sand for crabs and other small animals to eat.

Longspine Squirrelfish (*Holocentrus rufus*)
This fish usually hides in the reef during the day and goes out at night to hunt. It mostly eats small animals that live on the sea floor.

Bluehead (*Thalassoma bifasciatum*)
A male **Bluehead** will guard a territory and several females. If he dies, the largest female will turn into a male and take over the territory.

Nassau Grouper (*Epinephelus striatus*)
Groupers are hunters. They have big mouths and swallow their prey whole. Many have become rare due to overfishing.

Queen Triggerfish (*Balistes vetula*)
Triggerfish have strong jaws for crushing food like urchins and shrimp. They make a nest for their eggs on the sea floor and guard it until the eggs hatch.

Porcupinefish (*Diodon hystrix*)
This fish eats snails, clams and crabs. If it is in danger, it can swallow water, expanding into a ball with spines sticking out in all directions.

Trumpetfish (*Aulostomus strigosus*)
This fish blends into its surroundings, especially soft corals like sea rods that wave in the water. It eats small fish that come too close.

Spotted Scorpionfish (*Scorpaena plumieri*)
Scorpionfish blend into the reef and wait for a fish or crab to come close. Then they open their mouth quickly to suck it in. They have venomous spines for protection.

Spotted Moray (*Gymnothorax moringa*)
Morays hunt fish and other reef animals. Their body shape lets them swim into crevices and small holes to find food.

Reefs in Danger

Reefs are incredibly important to St. Martin. They protect the coast from erosion. They reduce the destruction of storm surges during hurricanes. They are home to fish and other seafood St. Martin people have eaten since prehistoric times. Older buildings and stone ovens were built with lime made from corals. Reefs attract divers and snorkelers who stay, shop, and eat here, spending money and creating jobs.

Since the 1980s, coral reefs have struggled for many reasons. Disease and high water temperatures have killed many corals. Overfishing of algae-eating fish like parrotfish can allow algae to take over the reef, smothering corals.

Pollution can also hurt reefs. Nutrients in pollution can spark blooms of algae that take over a reef. Pollution may contribute to some of the diseases that kill corals. Since 2011, large amounts of sargassum seaweed have arrived on St. Martin. The nutrients from this seaweed may also harm reefs by causing algae blooms.

All the species on a reef are connected. Changes to one species can have wider impacts. For example, on reefs with fewer sharks, there may be more mid-size predators like snappers. These snappers might eat more small algae-eating fish. Without these small fish, algae can take over the reef. Newly-introduced species, like the **Red Lionfish**, can also throw the reef out of balance.

Our reefs are in danger. We could lose all the benefits they provide. Many reefs have been lost or degraded, but we are learning how to help reefs. Scientists are studying why some reefs are dying and how it can be avoided. We are growing corals so we can help rebuild reefs. Marine protected areas give fish and other animals a safe place to grow so overfished species can recover.

Dead Reefs
On many shallow reefs around St. Martin, we can see the skeletons of **Elkhorn Corals**. About 97% of these corals have died since 1980. Many dead reefs are covered in algae now.

Filament Algae (*Chaetomorpha linum*)
Large amounts of this algae have grown on reefs around St. Martin. This kind of algae bloom is often caused by high levels of nutrients in the water from pollution.

Red Lionfish (*Pterois volitans*)
This fish was introduced to the Caribbean. It eats many native species and reproduces rapidly. Many consider it one of the biggest threats to reef life in the Caribbean.

Reef Balls
Scientists have been studying different ways of growing corals, rebuilding reefs and providing habitats for reef fish and other animals. Reef balls are one of them.

The Open Ocean

The open ocean is the area far from the shore, where the sea floor is generally much deeper. Often, the ocean is so deep there are areas where light never reaches. Most of the ocean is like this. It is also called the pelagic zone.

Some things live on the surface of the open ocean. Tiny algae use sunlight to grow. Tiny animals eat these algae. These tiny algae and animals are called plankton. Most animals that live near the surface of the open sea either eat plankton or hunt animals that eat plankton.

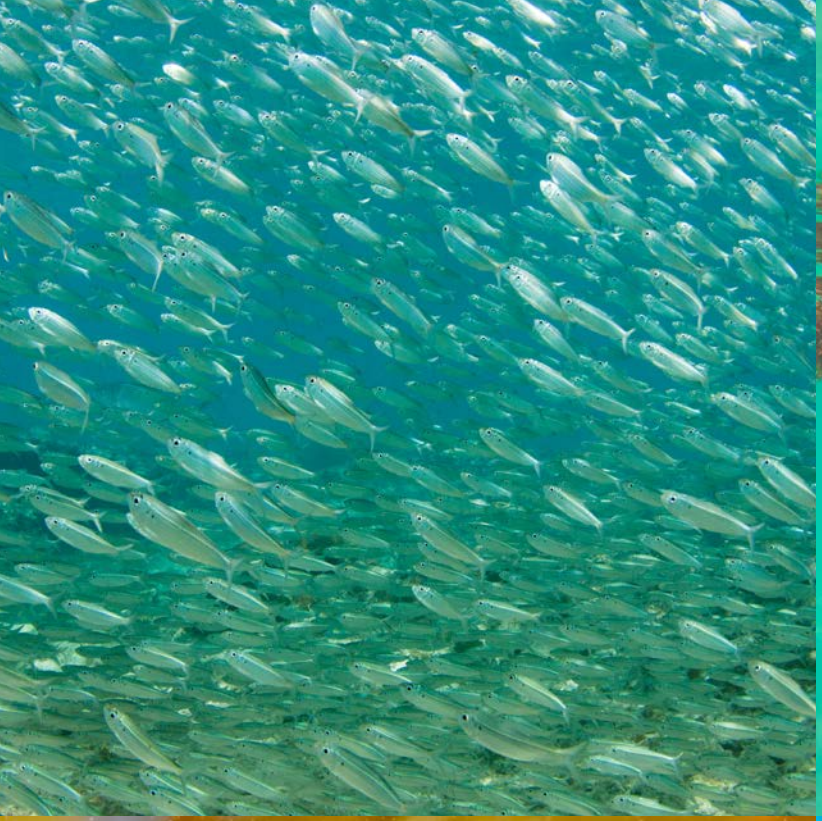
On the surface of the open sea, there is usually no place to hide. Larger predators, like tuna, marlin, sharks, and dolphins are usually powerful and fast. But smaller animals do have some ways to protect themselves. Some jellyfish are transparent, so they are hard to see. Small fish often travel in schools. The school can move together to confuse a larger fish that is hunting them. Flyingfish can even jump out of the water to get away from predators.

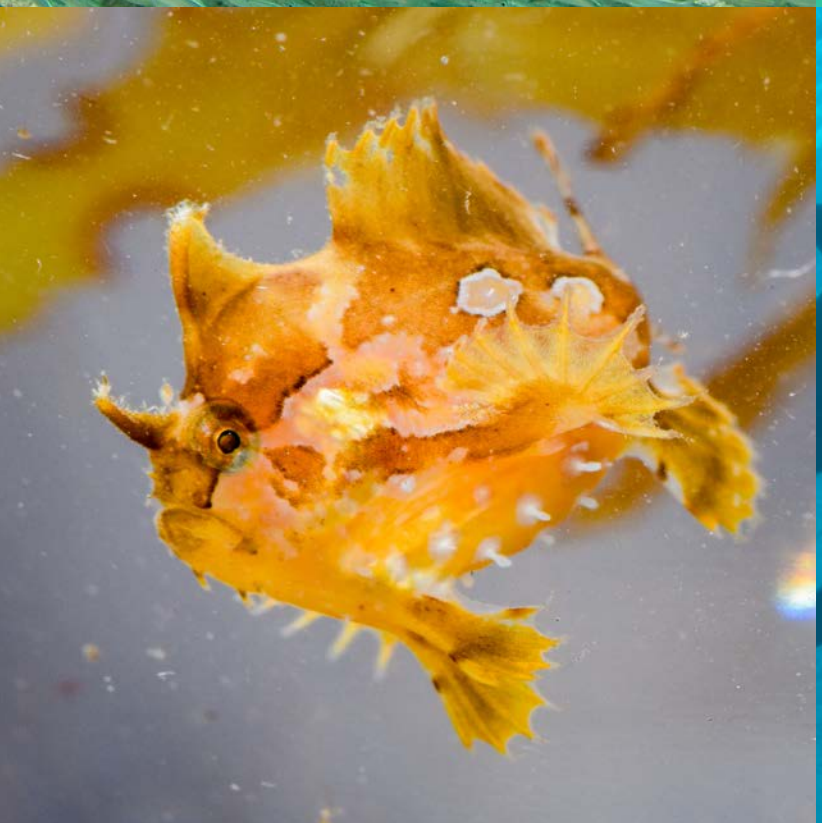
Sargassum is a kind of floating seaweed that does give animals a place to hide. There are many animals that live on and around it. In the Caribbean, we have only had large amounts of sargassum since 2011. We are still learning about it, and how animals use it.

The sea very close to St. Martin is shallow, but there are deeper areas nearby. Within 50 kilometers of St. Martin, there are seas 2,000 meters deep, where sunlight never reaches. Within 100 kilometers, there are seas more than 5,000 meters deep.

Deep below the surface of the open ocean, there is a whole different group of animals. Many of them live their whole life in darkness. The main source of food is dead plankton that sink from the surface. Animals like deep-sea sponges and corals eat this. There are also deep-sea hunters, like squid and fish.

It is very difficult to visit the deep sea. We still don't know the life story of many of the things living there. Scientists discover new things every time they visit.






Atlantic Flyingfish (*Cheilopogon melanurus*)
Flyingfish eat plankton near the surface of the open ocean. To escape predators, they use their long fins like wings to glide through the air for 10 meters or more. (Photo by Gary Leavens)

False Herring (*Harengula* sp.)
These small fish feed on plankton near the surface of the ocean. They form large groups called schools that all swim together in the same direction.

Mahi-mahi (*Coryphaena hippurus*)
These fish hunt in the open ocean, near the surface. They often hunt flyingfish. They grow quickly and mature at about 5 months. (Photo by NOAA)

Tiger Shark (*Galeocerdo cuvier*)
These sharks can grow over four meters long. They are big enough to eat almost any kind of sea life, even sea turtles. They can travel thousands of kilometers through the open ocean. (Photo by Albert Kok)

Moon Jellyfish (*Aurelia* sp.)
These jellyfish eat plankton. They catch them using stinging cells on their tentacles. Some small fish are swimming with this one, perhaps for protection.

Sea Spider (Order Pantopoda)
Sea spiders are not actual spiders. But they are related to spiders. They are usually very small. This one was less than a centimeter long. It was living in sargassum.

Sargassum Swimming Crab (*Portunus sayi*)
This small crab is often found in sargassum mats. Its back legs are wide and flat, like paddles, for stronger swimming.

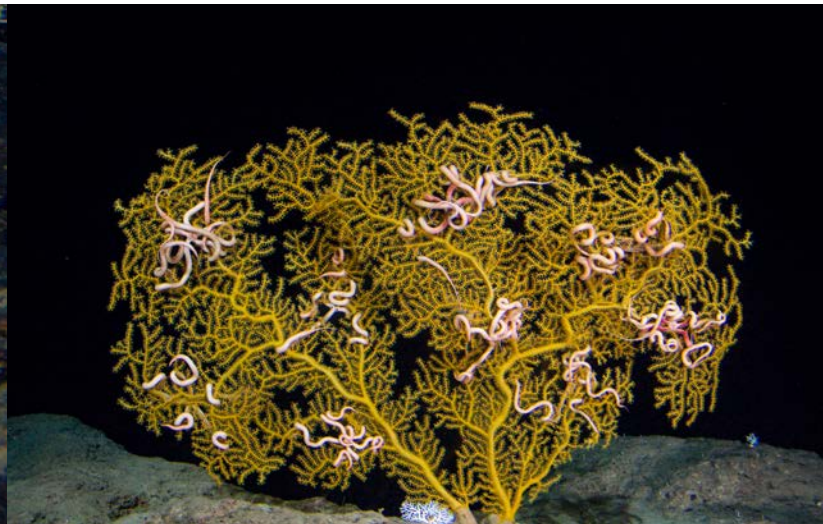
Sargassum Frogfish (*Histrio histrio*)
This small fish clings to clumps of sargassum. It is almost perfectly hidden there. It has a fleshy lump on its upper lip that it uses to lure little fish and shrimp. When they get close, it swallows them.

Humpback Whale (*Megaptera novaeangliae*)
These whales come to St. Martin's warm waters in the winter to give birth to their calves. Adults are about 15 meters long and weigh up to 40 tons. They can live for 50 years. (Photo by Ed Lyman/NOAA)

Common Bottlenose Dolphin (*Tursiops truncatus*)
These dolphins live in groups called pods. They talk to each other using squeaks and whistles. A dolphin brain is bigger than a human brain. (Photo by Agnès Etchegoyen)

Glass Sponge (Family Euplectellidae)
These sponges filter bacteria and other microscopic foods from the water. They build their structure from silica in a delicate pattern.

Gold Coral (*Paramuricea* sp.)
This kind of soft coral lives deep underwater and gets all its food by filtering it from the water. It is a habitat for other animals, like the brittle stars clinging to this one.



Swimming Sea Cucumber
(*Enypniastes eximia*)
This sea cucumber eats bits of food from the sand or mud on the deep sea floor. It spends about a minute pushing food into its mouth, then swims while it digests.

Velcro Sea Star (*Novodinia antillensis*)
This kind of starfish lives on the deep sea floor. It has feathery tentacles that can filter tiny bits of food falling through the water.

Rattail Fish (Family Macrouridae)
These fish are some of the most common deep-sea fish. They hunt fish, shrimp and crabs in the dark. They can smell prey and sense movement in the water.

Tripod Fish (*Bathypterois grallator*)
This fish has fins with long rays. It rests on them on the ocean floor. It can sense when a smaller fish or shrimp is near, and uses its fins to push the food to its mouth.

About This Book

This book was made by Les Fruits de Mer. Les Fruits de Mer is a non-profit association based in St. Martin. Their core mission is to collect and share knowledge about local nature and heritage. They carry out this mission through books and other publications, their free museum, short films and oral histories, events and other projects. Discover more and download free resources at lesfruitsdemer.com.

Amuseum Naturalis is a free museum of the nature and heritage of St. Martin and the Caribbean, created by Les Fruits de Mer. It is located at the historic Old House in French Quarter, on the hill above Coconut Grove. For the latest information, visit amuseumnaturalis.com.

Mark Yokoyama has photographed and written about nature on St. Martin since 2009.

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Discover the amazing living seas of St. Martin! We are surrounded by unique habitats, from mangroves and seagrass beds to coral reefs and the open ocean. Each one has its own story, and a special group of animals that lives there. Find out what makes each of these underwater places so important, and how every creature has a special role to play in St. Martin's seas.