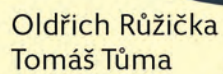


ATLAS OF SEAS AND OCEANS FOR KIDS

ATLAS OF SEAS AND OCEANS FOR KIDS



ALBATROS

DEEPEST PLACES OF THE OCEANS

Just as there are tall mountains on land, there are enormous underwater trenches in the oceans where sunlight does not reach and the pressure is immense. They formed when tectonic plates moved and one plate was forced under another deep into the Earth.

1. Pacific Ocean—Mariana Trench—deepest point: 10,935 m.
2. Atlantic Ocean—Puerto Rico Trench—deepest point: 8,376 m.
3. Southern Ocean—South Sandwich Trench—deepest point of the Southern Ocean—Factorian Deep: 7,432 m.
4. Indian Ocean — Java Trench—deepest point: 7,290 m.
5. Arctic Ocean—Molloy Deep—deepest point: 5,550 m.



ARCTIC OCEAN

THE WORLD'S OCEANS

ISLANDS

We find them in every ocean: small rocky islets and huge islands the size of countries. Some islands were formed by volcanoes; others are mountain peaks rising above the sea. They can be small and uninhabited, or very large, with cities, forests, and millions of people.

LARGEST ISLANDS OF THE OCEANS

Arctic Ocean — Greenland
Pacific Ocean — New Guinea
Indian Ocean — Madagascar
Atlantic Ocean — Great Britain
Southern Ocean — Alexander Island

On the map you'll find the five world oceans, the largest islands of each, and the deepest places hidden beneath the sea surface. Some ocean trenches are deeper than the height of the world's highest mountain, Mount Everest. The oceans are all connected and together form one huge watery world around the Earth.

PACIFIC OCEAN

SEAS

A sea is a marginal part of an ocean and usually lies close to land. There are more than seventy seas on Earth. Marginal seas are partly enclosed by land or islands but are widely connected to the ocean (for example, the Caribbean Sea). Inland seas are almost completely surrounded by land and are connected to the ocean by only narrow straits (for example, the Mediterranean Sea).

OCEAN CURRENTS

Huge moving masses of water in the oceans. They carry warm and cold water across the planet and affect weather, climate, and the lives of marine animals.

SOUTHERN OCEAN

SHAPES OF LAND AND SEA

ISLAND

A piece of land surrounded by water on all sides.



PENINSULA

A piece of land surrounded by water on three sides and connected to the mainland on one side.



CAPE

A part of land that juts out into the sea or ocean.



ISTHMUS

A narrow strip of land that connects two larger land areas and separates two bodies of water.



BAY

A part of a sea or ocean that extends into the land.



STRAIT

A narrow stretch of water that connects two seas or oceans and separates land.



CANAL

A man-made waterway built to connect two seas, oceans, or rivers.



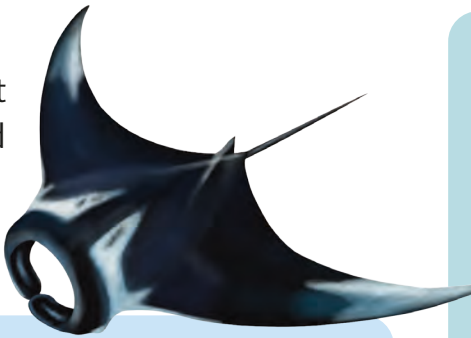
THE GREAT BARRIER REEF

It is the largest coral reef in the world and lies off the coast of Australia. It is made up of thousands of coral reefs and islands where huge numbers of fish, turtles, sharks, and other marine animals live.



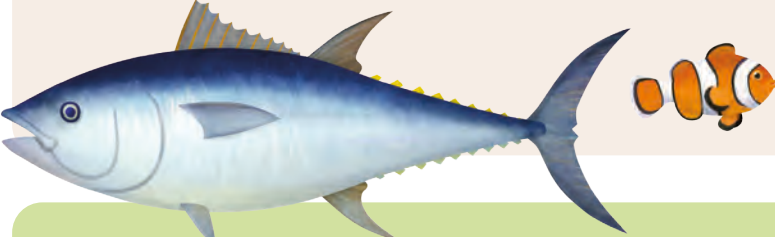
OCEAN INHABITANTS

The oceans are home to countless creatures of many shapes and sizes. Some breathe with gills, others with lungs. Some have hard shells, while others have soft bodies. You can find fast fish, powerful sharks, clever dolphins, colorful corals, and tiny plankton. Even the smallest creatures are important, because many larger ocean animals could not survive without them.



FISH

They are the most numerous group of vertebrates in the oceans. They breathe with gills and most move using fins. Most fish also have a swim bladder, a gas-filled sac. It lets them stay at a certain depth without constantly swimming. Examples include the Atlantic bluefin tuna and the Ocellaris Clownfish.



ELASMOBRANCHS

Elasmobranchs are close relatives of fish, but their skeleton is made of flexible cartilage instead of bone. Unlike many bony fish, they have no swim bladder, so many must keep swimming to avoid sinking. Sharks and rays belong to this group.



MARINE MAMMALS

Marine mammals breathe air with lungs and feed their young with milk. Although they live in the water, they must surface regularly to breathe. Dolphins, whales, seals, sea lions, and walrus are marine mammals.



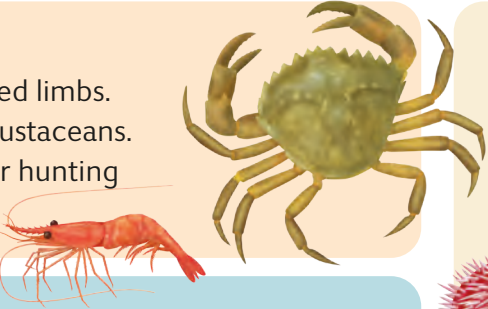
MOLLUSKS

Mollusks are among the most diverse ocean dwellers. They include fast squids, intelligent octopuses, and shell-protected bivalves. They are one of the largest groups of invertebrates on Earth.



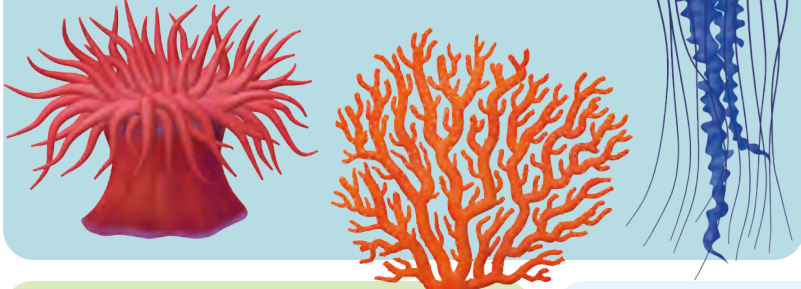
CRUSTACEANS

Crustaceans have hard external shells and jointed limbs. Shrimp, crabs, lobsters, and langoustines are crustaceans. Many live on the sea floor searching for food or hunting smaller animals.



CNIDARIANS

Although they have no brain or bones, cnidarians have lived successfully in the oceans for hundreds of millions of years. They use stinging cells to catch prey and repel enemies. Jellyfish, corals, and sea anemones are cnidarians.



ECHINODERMS

They are some of the strangest animals on the seafloor. Some grow sharp spines, and others can regenerate lost body parts. Starfish, sea urchins, and sea cucumbers are echinoderms.



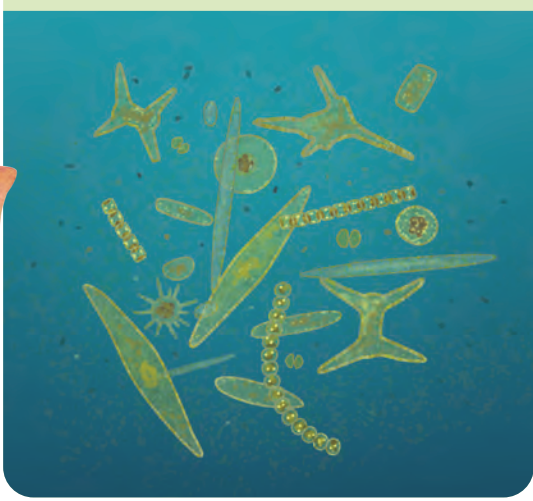
PLANKTON

Although plankton is often nearly invisible, many ocean animals depend on it—from small fish to giant whales.



PHYTOPLANKTON

Phytoplankton consists of algae and tiny organisms that float in the water. Using sunlight, they make their own food and produce oxygen. Though nearly invisible, they are among the ocean's most important inhabitants. They are estimated to produce about half of Earth's oxygen.



ZOOPLANKTON

Zooplankton is made up of tiny animals carried by ocean currents. They feed on phytoplankton and are food for fish, jellyfish, whales, and other marine animals. Some large swarms of zooplankton can even be seen from space.



ANTARCTIC KRILL

An example of zooplankton is this tiny shrimp-like crustacean. Whales, seals, penguins, and many fish feed on it. Thanks to this finger-sized creature, even the largest animals on Earth survive. Few animals are as important to ocean life as Antarctic krill.

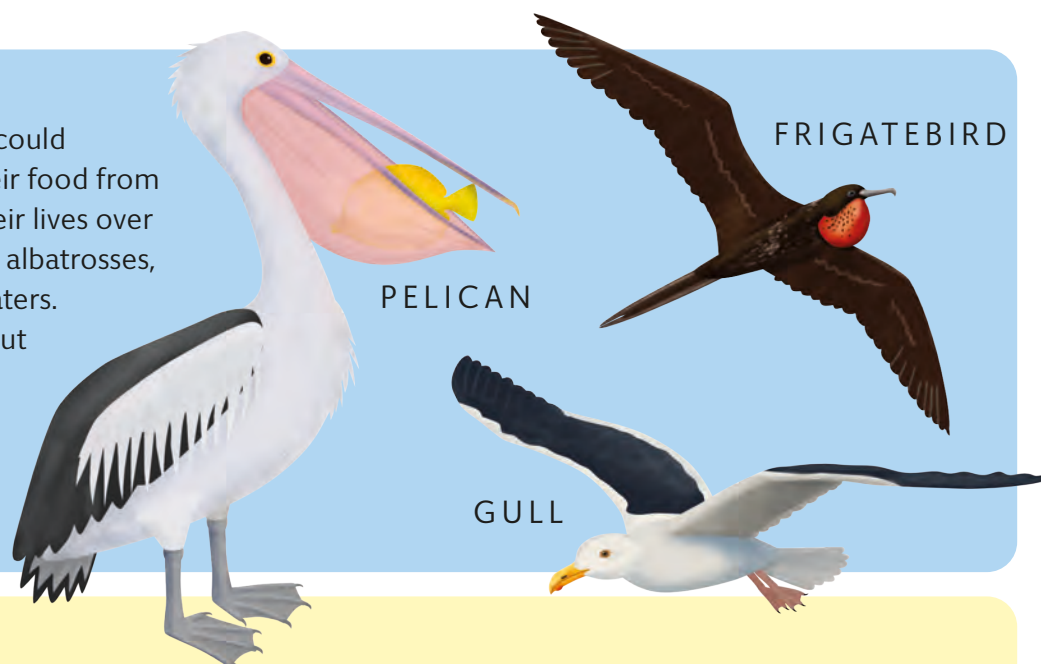


OTHER OCEAN LIFE

Coral reefs burst with color and life. Brightly colored fish swim among the corals, while crabs, shrimp, and langoustines hide among the rocks and crevices. Seabirds circle overhead searching for food. Although birds do not live underwater, they are closely linked to the ocean and are just as much a part of it as the creatures below the surface. Each group of ocean inhabitants is adapted to a different way of life, and together they create a rich and diverse underwater world.

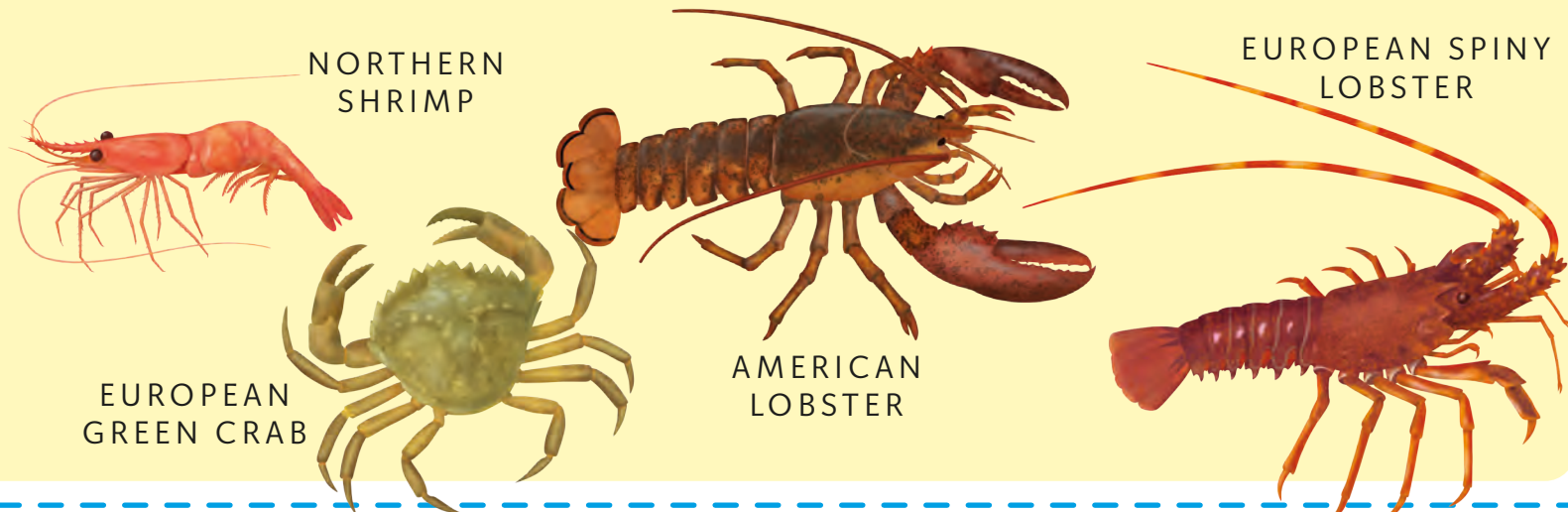
SEABIRDS

Although they do not live in the water, they could not survive without the oceans. They get their food from the sea, and many species spend most of their lives over the open ocean. These include gulls, puffins, albatrosses, pelicans, frigatebirds, penguins, and shearwaters. A frigatebird can stay aloft for months without landing. A pelican has a flexible pouch under its beak that can hold several liters of water and fish; it then drains the water and swallows its prey.



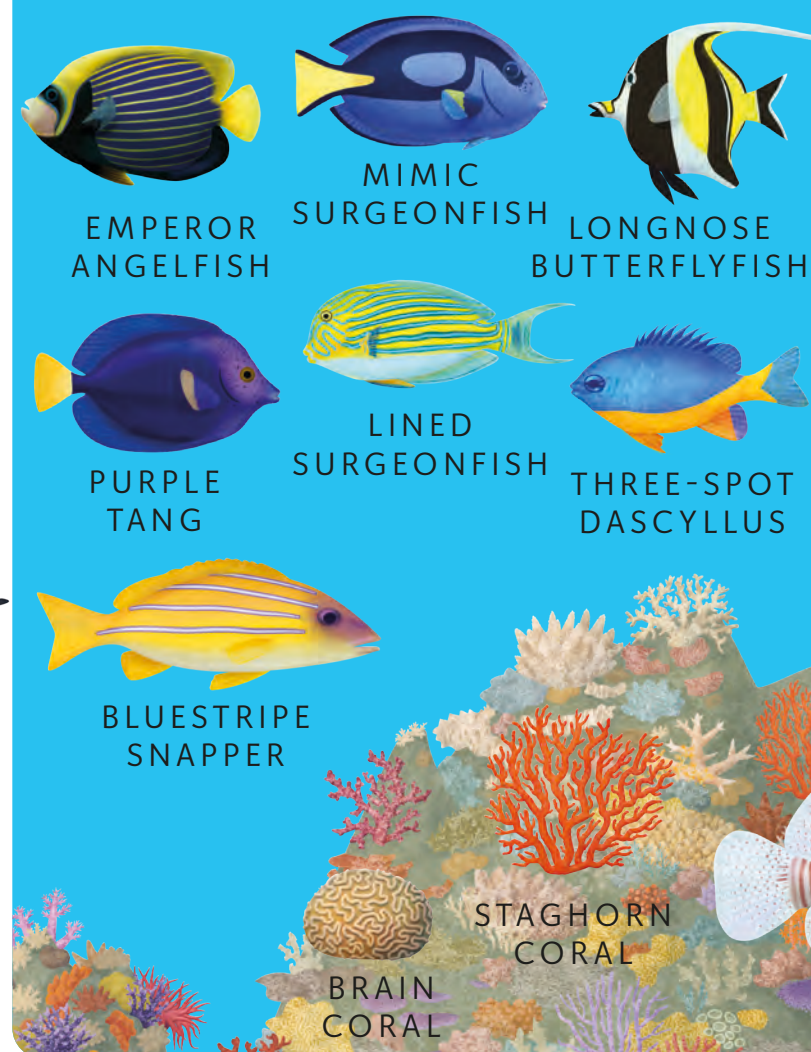
CRUSTACEAN REPRESENTATIVES

Shrimp, lobsters, langoustines, and crabs live on the seafloor. The northern shrimp is an important part of the diet of many fish, birds, and marine mammals. The American lobster uses its strong claws for defense and hunting. The European spiny lobster defends itself with its long, spiny antennae. The shore crab is an agile hunter that eats clams, worms, and smaller crustaceans. In some parts of the world, it has become invasive and displaces native species. Some of these crustaceans are fished and considered delicacies.



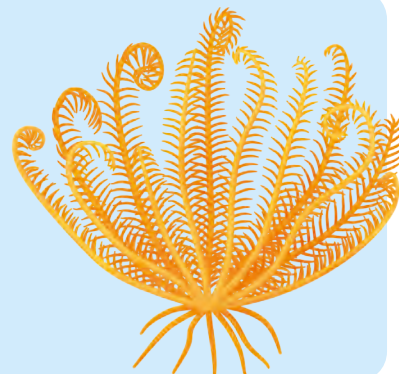
THE GREAT BARRIER REEF

This enormous coral reef is made up of billions of tiny coral animals. Although each measures only a few millimeters, together they have built one of the largest structures on Earth. It stretches for more than 2,300 kilometers in the Pacific Ocean and is home to thousands of species of fish, corals, turtles, and other marine creatures.



SEA LILY

At first glance, they look like underwater flowers, but they are animals. With their branching arms, they catch plankton and other tiny organisms from the seawater.

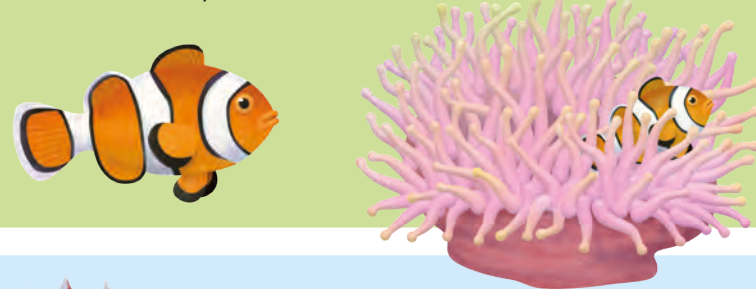


PICASSO TRIGGERFISH

It can grow up to 30 centimeters in length. Its bright colors resemble a painted picture, which is how it got its name. It is known for its aggressive nature and fiercely defends the nest it builds on the seafloor. If approached too closely, it may even attack an unsuspecting diver.

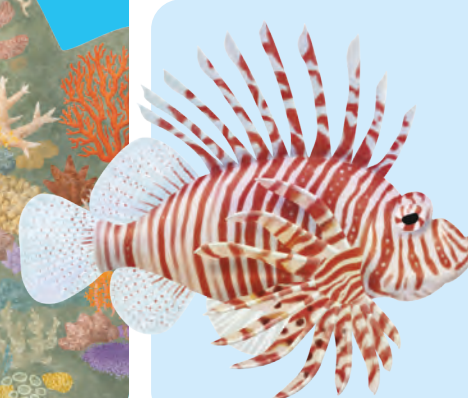
CLOWNFISH AND COOPERATION UNDERWATER

This small fish, about 10 centimeters long, is probably best known from the movies. Not all creatures compete; some help each other. When both benefit, we call it symbiosis. The ocellaris clownfish finds shelter among an anemone's tentacles and, in return, helps the anemone get food and protects it from predators.



RED LIONFISH

Its long fins hide venomous spines. A sting is very painful and can cause severe swelling. Native to the Indian and Pacific Oceans, it has spread into the Mediterranean Sea, where it has become an invasive species with no natural enemies.



SEAHORSE

The seahorse is a fish that swims upright and looks like a little horse. Interestingly, the male carries the young in a special pouch on its belly. Each eye can look in a different direction, which helps it find food and watch for danger.



DEPTHS OF THE OCEANS

Sooty Shearwater

Western Gull

European Green Crab

Bottlenose Dolphin

Flying Fish

Atlantic Mackerel

Atlantic Bluefin Tuna

Moon Jellyfish

Green Sea Turtle

Giant Manta Ray

Pufferfish

EUROPEAN SQUID

It belongs to the mollusks, and, as unbelievable as it sounds, it moves by jet propulsion. It draws water into its body and then forcefully ejects it. This lets it move very quickly and escape danger. When threatened, it releases a dark cloud of ink that confuses attackers.

European Squid

Sandbar Shark

Common Cuttlefish

Blue Jellyfish

Whale Shark

SLOANE'S VIPERFISH

It lives in the dark waters of the midnight zone. Its long teeth are so large that they do not fit inside its mouth. It has an extended ray on its dorsal fin with a light-producing organ that may help lure prey.

Fangtooth

Sloane's Viperfish

Black Swallower

Giant Squid

NAUTILE MINI-SUB

Mini subs help us explore life and landscapes hidden in the dark ocean depths. Nautilie is a small research sub that can take scientists up to 6 kilometers below the surface. Using lights, cameras, and robotic arms, it explores places humans cannot normally reach. It also took part in the exploration of the famous Titanic wreck.

SEA CUCUMBER

A modest resident of the seafloor. It moves slowly along the bottom, collecting tiny bits of food and helping keep the ocean clean. It is one of the few animals that can live even in the deepest ocean trenches.

GULPER EEL

It inhabits abyssal depths down to about 5,000 meters. Thanks to its highly sensitive senses, it can find food even in complete darkness.

Gulper Eel

Sea Cucumber

Shipwreck

GIANT AMPHIPOD

The giant amphipod is adapted to life in the deepest parts of the ocean. While its relatives are smaller than a fingernail, this giant can grow to over 30 cm and live as deep as 9 km below the surface. Its body is built to withstand pressures thousands of times greater than at sea level, like hundreds of elephants standing on a sheet of paper.

GIANT SQUID

One of the largest invertebrates on Earth. It lives hundreds of meters below the surface, where it uses its long tentacles to hunt fish and other cephalopods. Its huge eyes, nearly the size of a soccer ball, help it spot prey in the near darkness. The giant squid inspired the legends of the Kraken; sailors told stories that its massive tentacles could drag ships beneath the waves. In reality, it is much less dangerous, but it remains one of the ocean's most mysterious inhabitants.

Giant Amphipod

Mariana Snailfish

MARIANA SNAILFISH

It is considered the deepest-living known fish in the world. It inhabits the floor of the Mariana Trench, where total darkness and immense water pressure prevail. Its soft body is perfectly adapted to life in one of the planet's most inhospitable places. Although it lives in complete darkness kilometers below the surface, it does not look like a frightening deep-sea monster—it is a small, pale, and rather delicate-looking fish.

HUMPBACK ANGLERFISH

It lives in the ocean's dark depths, carrying its own light on its head. This lures curious fish right into its mouth. When prey comes close, it snaps it up in an instant. It is one of the strangest and best-known deep-sea creatures.

FLOATING PLATFORM

Some rockets launch from or land on special platforms at sea. This makes operations safer and allows some rockets to be reused after landing, reducing waste and lowering the cost of future flights.

Scientific Satellite

PEOPLE AND THE OCEAN

Research Aircraft

UNDERSEA FARMS

On undersea farms, people raise fish, mussels, and other marine animals or grow seaweed. This reduces the need to catch as many wild fish.

Mining Platform

Container Ship

Floating Platform

Cruise Ship

Mining Ship

Fishing Vessel

Coastal Fishing Boat

Offshore Wind Turbine

Cable Ship

Undersea Farms

Offshore Wind Turbine

Wave Power Plant

Mining Robot

IceNode Underwater Robot

FISHING VESSELS

They catch the fish that end up on our plates. To ensure there are enough fish in the future, it is important to catch only as many as can reproduce and to use more sustainable fishing methods.

Robotic Arm

Sunken Treasures

CONTAINER SHIPS

They carry goods between continents and connect the world. Many of the products we use travel part of their journey by sea. These ships emit large amounts of harmful gases, so cleaner propulsion methods are being developed, and more goods should be produced closer to where they will be used.

CRUISE SHIPS

Cruise ships let people discover the ocean's beauty and visit distant islands and coasts. But they use large amounts of fuel, pollute the air, and can disturb marine animals. That is why greener ships and more sustainable ways of traveling are needed.



YACHT

The oceans serve people not only for transport and fishing, but also for recreation, sport, and exploration. A yacht is a small boat used for travel or relaxation on the water. Some yachts have sails and are powered by the wind, while others are powered by engines.



TROPICAL STORMS

They form over very warm ocean water, most often in areas near the equator. Warm water heats the air above the surface; the air rises and creates enormous thunderclouds. The warmer the water, the more energy hurricanes, typhoons, and cyclones can gain. A hurricane, a typhoon, and a cyclone are the same type of powerful tropical storm—the name changes depending on the region where the storm forms. In the Atlantic and off the western coasts of Central America and Mexico, the term hurricane is used; in Asia, typhoon; and in the Indian Ocean and near Australia, cyclone. The NOAA Hurricane Hunter aircraft flies directly into hurricanes to collect data that help predict their strength and path.



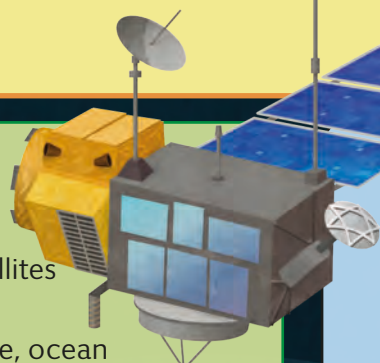
ICEBREAKER

A special ship designed to travel through frozen seas. It has a very strong hull and powerful engines that allow it to break through thick sea ice and create a path for other vessels. In some parts of the polar oceans, an icebreaker is the only way to travel through frozen waters.



SATELLITES

Meteorological and research satellites monitor sea level, water temperature, ocean currents, and sea-ice movement. They help scientists forecast weather, monitor climate change, and protect the oceans.



ROBOTIC ARM

An underwater robotic arm (gripper) helps scientists collect rock, coral, and animal samples from places humans cannot reach. Some are delicate enough to pick up fragile sponges or corals without damaging them.



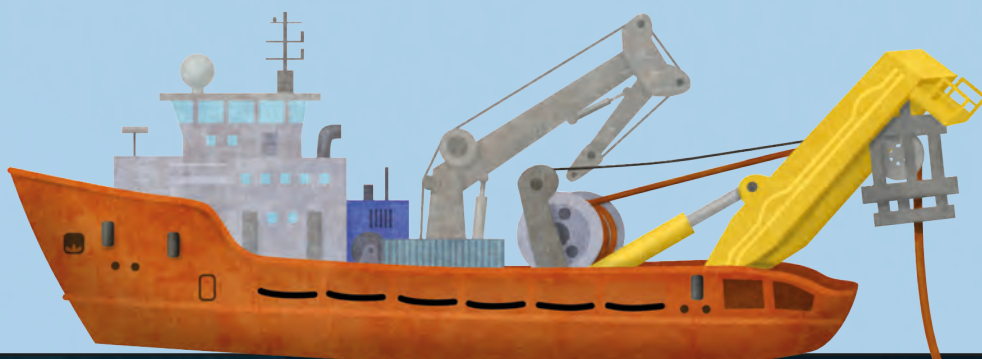
TANKERS

They transport oil, natural gas, and other liquid raw materials across the oceans. They are important for supplying many countries, but spills can seriously harm marine environments. Modern tankers have strict safety features, such as double hulls, to reduce the risk of spills.



CABLE SHIP

Special ships lay thousands of kilometers of submarine fiber-optic cables on the ocean floor to carry most internet data between continents.



OCEAN PROTECTION

The oceans give us food, oxygen, and energy and affect life across the Earth. Scientists study them using modern technology and look for ways to protect them. The future of the oceans also depends on each of us. Even small everyday actions can help keep the oceans full of life for future generations.

METEOROLOGICAL BUOY

Buoys continuously measure water temperature, wave height, wind speed, and air pressure, sending data to meteorologists around the world. Their measurements help meteorologists forecast the weather more accurately and provide early warnings of dangerous storms.



Research Vessel

Meteorological Buoy

Cleanup Ship

Litter Cleanup

Mangroves

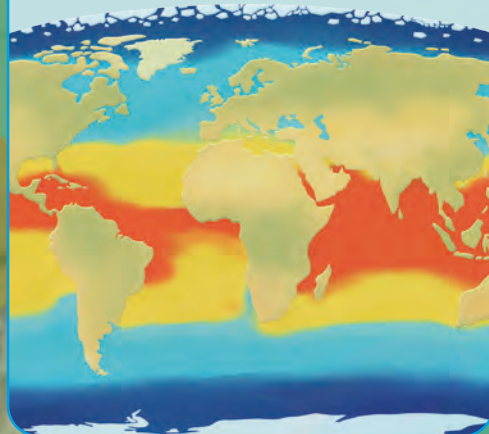
GARBAGE PATCH

Plastic and trash that people discard in nature often reach the ocean through rivers. The Great Pacific Garbage Patch is a huge area in the Pacific Ocean where ocean currents collect large amounts of plastic waste. It is not a solid island but a vast accumulation of plastic and other debris floating in the water that threatens life in the oceans.



OCEAN WARMING

In recent years, the oceans have been gradually warming as they absorb much of the heat caused by climate change. Warmer water can affect the weather, make some storms stronger, and make life more difficult for corals and other marine animals.

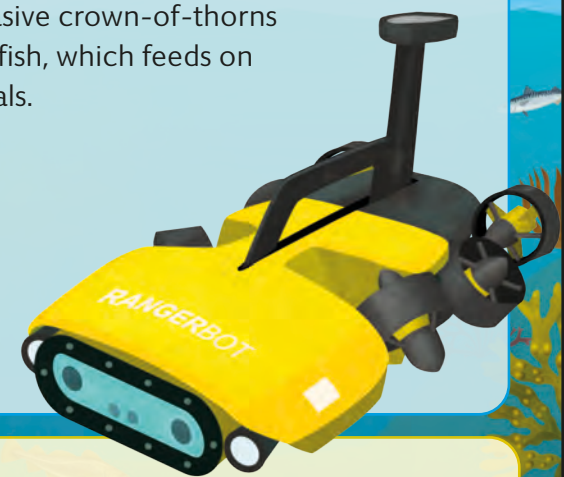


Underwater Glider

Meteorological Buoy

UNDERWATER ROBOTS

They help scientists restore coral reefs. They track where coral larvae travel and find the best places for them to grow. Some also detect and remove pests that damage coral reefs, such as the invasive crown-of-thorns starfish, which feeds on corals.



CLEANUP VESSEL

Pollution caused by waste is one of the biggest problems facing the world's oceans. Every year, millions of tons of plastic enter the sea, threatening fish, turtles, birds, and other marine animals. That is why special vessels called skimmers collect plastic, debris, and oil slicks from the surface, helping keep the oceans cleaner. The best solution is to prevent waste from reaching the ocean in the first place. That is why some skimmers now operate on rivers, where they catch plastic before it reaches the sea.



Kelp Forest

Bull Kelp

Sugar Kelp

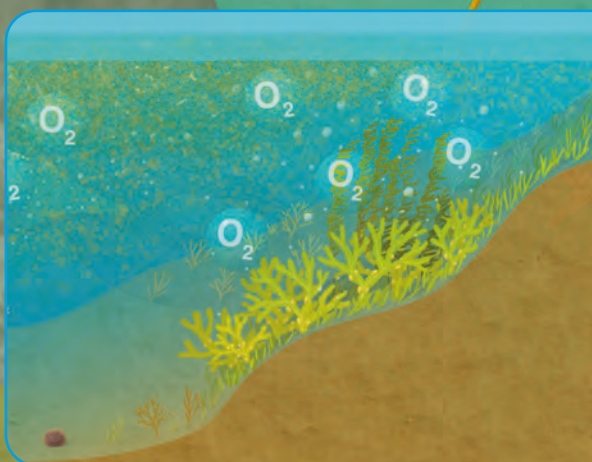
METEOROLOGICAL BALLOON

Meteorological balloons rise to altitudes of tens of kilometers and measure temperature, pressure, humidity, and wind speed. Hundreds of meteorological balloons are launched every day around the world to help improve weather forecasts.



THE OCEANS' LUNGS

Tiny phytoplankton, seaweed, and marine plants produce huge amounts of oxygen through photosynthesis. It is estimated that about every second breath we take is thanks to life in the oceans.



Underwater Robot

UNDERWATER GLIDER

The SeaExplorer can autonomously travel through the ocean for months, measuring temperature, salinity, currents, and oxygen levels in the water. Its data help scientists better understand the oceans, forecast the weather, and track climate change.



HOW YOU CAN HELP KEEP THE OCEANS FULL OF LIFE

SAVE WATER

Don't waste water when brushing your teeth, showering, or washing your hands. Water from rivers eventually reaches the seas and oceans. Saving water helps protect nature and reduces the amount of polluted water that returns to the environment.



LEARN ABOUT THE OCEANS

The more you learn about the oceans, the better you'll understand why they matter. Books, movies, and visits to aquariums show how rich and fascinating life beneath the surface is. Many scientists became interested in the oceans because of books they read as children.



USE LESS PLASTIC

Plastic waste can travel through rivers to the ocean. Use a reusable bottle or bag instead of single-use plastics. A plastic bottle can take hundreds of years to break down in nature.



RECYCLE

Recycled waste can often be reused instead of ending up in nature. Recycling uses fewer raw materials and creates less waste. Recycled plastic can become new bottles, clothing, or even benches.



NATURE IS NOT A SOUVENIR

Shells, stones, and sand are part of the shore and provide shelter or homes for many animals. Leave them where they belong so future visitors—and nature itself—can enjoy them. In some protected areas, removing shells or sand is even prohibited.



DON'T LITTER

Trash doesn't belong on the beach or in the sea. If you clean up after yourself and help pick up litter left by others, you'll help protect marine animals that might mistake it for food. Every piece of litter you pick up means less risk for fish, turtles, birds, and other marine animals.

