Seashells & Beachcombing for Kids

An Introduction to Beach Life of the Atlantic, Gulf, and Pacific Coasts

Stephanie Panlasigui & Erika Zambello

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Disclaimer Kids should always be accompanied by an adult when outdoors, especially near the ocean. Life jackets are essential when swimming, and always be aware of potentially hazardous conditions, such as riptides, heavy surf, treacherous currents, sneaker waves, and potentially dangerous marine animals. It's your responsibility to recognize, and avoid, the potentially dangerous bugs, insects, plants, or animals in your area. Always be aware of the weather and your surroundings, and stay off private property.

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Thank you to our families and friends who have gone on countless adventures with us and supported us year after year.

—Stephanie Panlasigui and Erika Zambello

We would like to acknowledge that the places we explore on the Atlantic and Pacific Coasts, and throughout North America, are the ancestral lands of Indigenous peoples. Many places that are now designated as parks, wildlife refuges, and other conservation lands were founded upon exclusions and erasures of many sovereign nations. We encourage you to learn more about the Indigenous peoples on whose lands you live, learn, play, and explore. A helpful place to start is the website Native Land (https://native-land.ca) to learn the names of these sovereign nations. But don't stop there—learn more about the ways each nation continues to live in connection with nature to this day and into the future.

Table of Contents

A Word From the Authors

Beaches may be narrow, but they are full of drama. From crashing waves to iconic wildlife, beaches are a window into not only our oceans but our own human behavior as well.

We are drawn to the beaches by birds. Gulls, terns, tiny sandpipers that run along the surf. Birds of all shapes and sizes have become skilled at using the beaches to not only find food but also find mates and raise their chicks.

Once you start looking at birds, you realize how much more there is to see! The birds feed on fish swimming just a few inches from shore, or on tiny crustaceans, clams, or worms just below the sand. That seaweed you see washing up from the waves? It's full of food

not just for birds but for so many creatures! The more you really explore and study the beaches, the more discoveries you can make. We love that each time we hit the sand, there is an opportunity to learn something new.

Beaches may not seem vulnerable, but they are, and it's up to us to protect them. We need to make sure we keep trash off the sand, and we need to work across cities, states, and countries to reduce the sea level rise that could flood these marvelous places. Already so many homes and businesses have been built on beach dunes—we must protect what is left for the plants and animals that need these places to survive.

We hope you love the beaches as much as we do!

Beach Basics

WHAT IS A BEACH?

A beach is the place where land meets a body of water, and sand builds up over time. When you think of a beach, you might think of a long, narrow strip of sand along the ocean, but beaches can also form along lakes or even rivers. But ocean beaches are the most widespread and probably the most well known.

PARTS OF A BEACH

Supratidal Zone

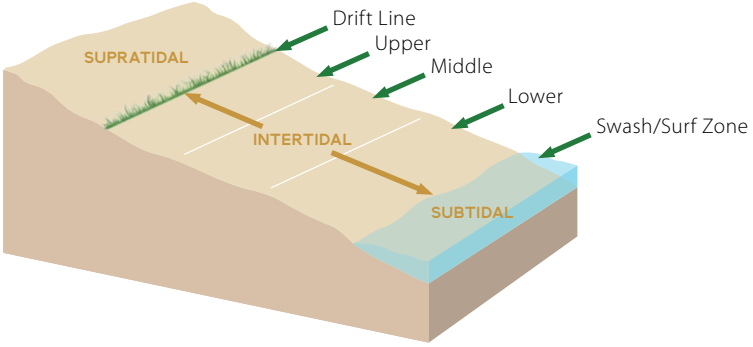
This area may be splashed by waves during high tide, but it is almost never completely under water.

Drift Line or Wrack Line

This area or "line" is where shells or seagrass are left on the beach during high tide.

Intertidal Zone

This section of the beach is underwater during high tide, but it is exposed during low tide. It is often



divided into three zones: Upper, Middle, and Lower. Because conditions change frequently in the Intertidal Zone, it can be a difficult place to live, yet many species have adapted to living here.

Swash/Surf Zone

This zone is where waves crash into the sand.

Subtidal Zone

This zone is always covered by salt water.

Barrier Island

Barrier islands run parallel (sideways) to the coastline and are made of shifting sands deposited by currents. They can change shape after storms or over time. They are very important for animals (some of which are specially adapted to living there) and people, as barrier islands often absorb wind and waves from storms and hurricanes.

Sand

Sand is formed from ground-up rock, shell, and fossils, giving different beaches a unique look and feel. Some beaches are famous for pure white sand, while others have pink, black, or even orange sand!

Dune

When sand is held in place by the roots of plants and further sculpted by strong winds, they form hills of sand called *dunes.* Dunes create important habitat for a range of native species, but they are more fragile than they look. Don't walk on them!

HABITATS ON A BEACH

Beaches are home to a wide variety of habitats, or places where animals and plants can live. Here are some of the most well-known types on beaches.

Yellow-Crowned Night Heron

Mudflats: When the tide is low, stretches of land covered in mud and silt are exposed. Mudflats don't have a lot of vegetation, but they provide habitat for many marine invertebrates (ocean animals that don't have bones). Many bird species visit mudflats to forage.

Tidepools: Tidepools occur in the intertidal zone of beaches with rocky shores, and they can be explored

during low tide. Species that live here have adapted to survive difficult conditions, including the force of waves, temperature changes, and long exposure to air and sun. Many tidepools can be found along the Pacific Coast because a lot of the coast has rocky shores. Rocky shores are less common on the Atlantic Coast, but Maine has rocky shores and offers some notable tidepools to explore. (For more on tidepools, see page 114.)

Mangroves: In Florida, mangrove forests grow right into the water. Mangroves are trees that are specially adapted to wet and salty conditions. Mangroves have prop roots that grow down from the branches for stability. Mangroves provide important habitat to a range of species, including nesting wading birds like herons and egrets, as well as barnacles, fish, and even deer! In fact, 75% species of fish that anglers like to catch in South Florida depend on mangroves for their survival. Did you know that mangroves protect people too? They protect the

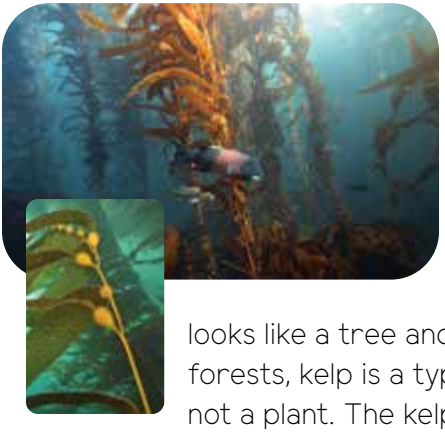
shoreline—and coastal communities—from erosion during storms and storm surges.

Estuaries: An *estuary* is where a river meets an ocean and the freshwater and saltwater mix. Many unique habitats are found in estuaries. Examples include mangroves (page 11) and salt marshes (below).

Salt Marshes: Salt marshes are low, flat areas that are affected by tides. Grasses and other plants live in salt marshes. This habitat is important for a huge number of birds, and essential as places to rest and feed for the birds that migrate north and south along both coasts on migratory routes called the Atlantic and Pacific Flyways. Salt marshes also offer a safe place for young fish to begin their life. There are many other animals that benefit from salt marshes, including otters, dolphins, and crabs.

UNDERWATER HABITATS

Some habitats are under water and not visible from shore, but signs of life from these ecosystems can wash up on the beach.



Kelp Forest: On the Pacific Coast, kelp forests provide food and shelter to many species, including iconic animals like sea otters and sea lions. Even though kelp looks like a tree and we call these areas forests, kelp is a type of brown algae, not a plant. The kelp's *holdfast* looks like roots and anchors the kelp to the ocean floor. *Floats* are gas-filled bulbs that help the kelp stand upright. Kelp grows extremely fast, up to 1½ feet per day, and kelp can reach 175 feet in length.

Seagrass Meadows: Seagrasses are underwater plants that live in estuaries and oceans. Seagrass meadows are important habitats for fish, sea turtles, manatees, and birds.


Florida coral reef

Coral Reefs: Coral may look like a rock or a plant, but corals are actually small animals. There are soft corals and hard corals. Hard corals create a hard exoskeleton (exterior skeleton) and are considered to be *reef-building* corals. Coral reefs form over thousands of years, and these massive and important structures have the most biodiversity (different kinds of life-forms) of any marine ecosystem.

Oyster Reefs: Oysters are shellfish that grow on the rocky ocean bottom or on other oyster shells. As they grow on top of each other, the shells accumulate, creating an oyster reef over time where many other invertebrates and fish can shelter and feed.

Blue Whale

Open Ocean: Any area of the ocean beyond the coastal areas is considered open ocean. Some of the biggest animal species live in the open ocean, including great white sharks, humpback whales, and sperm whales. The world's largest animal is the blue whale (below), which can grow to almost 100 feet long and can weigh 400,000 lbs. The world's largest fish is the whale shark (above), which can grow to almost 40 feet long and can live to 150 years old. Both blue whales and whale sharks grow to immense sizes by eating vast amounts of the ocean's tiniest creatures, called *plankton*.

TIDES

Unlike most other bodies of water, oceans are affected by tides. Earth's oceans are huge, and over the course of a day, they are affected by the gravity of the moon and the sun. Tides are essentially long, large waves driven by the gravitational pull of the moon and the sun. When one of these waves reaches its highest point, it's called *high tide*. Later, when the waves recede to their lowest point, it's called *low tide*. Most beaches have two high tides and two low tides per day.

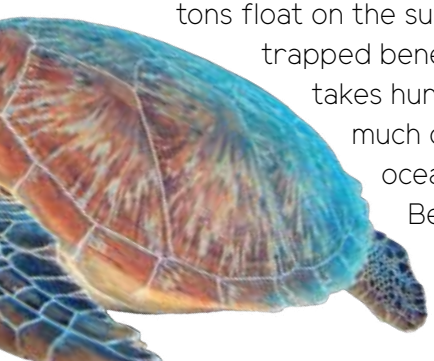
Tides also can bring creatures with them—like sea turtles. These turtles use currents and tides to navigate around the ocean, eventually returning to the beaches where they were born to lay their own eggs.

Have you heard of messages in a bottle? For hundreds of years, people have carefully written messages on slips of paper, sealed them in bottles, and thrown them into the sea, hoping someone would find them someday. These bottles can float in the ocean for a *long* time, but eventually tides carry them to shore once more. In fact, in 2018, Australian beach-goers discovered a message written 132 years

ago! The bottle and message had been thrown over the side of a ship as part of a German experiment to study ocean currents.

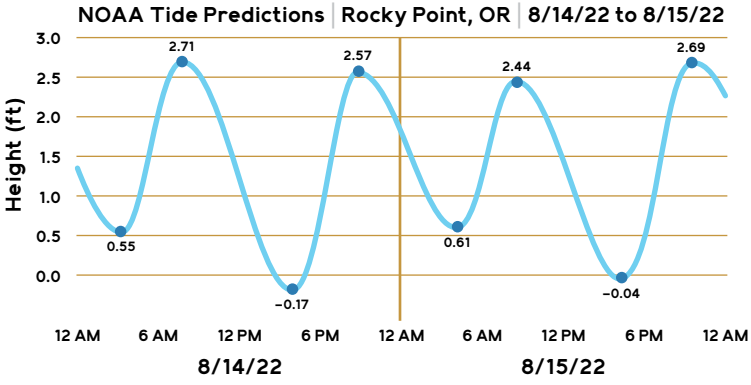
Unfortunately, tides can also bring trash to our beaches—or pull trash we have left behind out to sea. Recently, a trash can fell into the ocean in Myrtle Beach, South Carolina, dragged farther into the water by an outgoing tide. In 2021, the trash can reappeared—4,000 miles away in Ireland! The tide had connected the trash can with the Gulf Stream, which in turn carried it all the way to the shores of Ireland.

Still, trash is a huge problem in the ocean, already numbering an estimated 5.25 trillion pieces; 269,000 tons float on the surface, and so much more is now trapped beneath the waves. Because plastic takes hundreds of years to degrade, much of this trash will remain in our oceans for a long time to come. Because of this, we need to make sure no more trash reaches



the sea. If you bring items to the beach, take them home. Bring a bag with you to collect any additional trash that you might see during your beach trip, and dispose of it properly. For eating and drinking, choose utensils that can be reused, like metal forks and canteens. Scientists think there could be millions of water bottles in the oceans right now, posing choking hazards to wildlife. Because many sea creatures can't tell the difference between plastic and food, they may eat too much, causing them to get sick or even die.

Date	Day of the Week	Time	Predicted Tide (In Feet)	High/Low
8/14/22	Sunday	3:13 am	0.55	Low
8/14/22	Sunday	7:41 am	2.71	High
8/14/22	Sunday	3:58 pm	−0.17	Low
8/14/22	Sunday	8:50 pm	2.57	High
8/15/22	Monday	4:07 pm	0.61	Low
8/15/22	Monday	8:28 pm	2.44	High
8/15/22	Monday	4:27 pm	−0.04	Low
8/15/22	Monday	9:29 pm	2.69	High



Because tides can have a major impact on how much of the beach is exposed during your visit, it is always a good idea to check the tide chart before any outing. Tides are predictable, which means scientists can use math to determine when high tide and low tide will occur. Tables that list tide data are available online (tidesandcurrents.noaa.gov/tide_predictions.html). Once you find a tide table online or at a local shop in your area, look up the date you plan to head to the beach and the high- and low-tide times.

Some tide terms to know:

High Tide: When the tide reaches the highest point on the beach for that day, before retreating once more.

Low Tide: When the tide reaches the lowest point on the beach for that day, before surging once more.

Crest: The highest part of a wave.

Neap Tide: These tides are moderate because both the sun and the moon are at right angles to each other, this makes high and low tides closer together than normal.

King Tide: Full moons can bring higher-than-normal tides, called *king tides.* In some areas, king tides can cause flooding.

Note: *Tsunamis* (see pg. 29) are sometimes called tidal waves, but they're completely unrelated to tides. They're actually caused by earthquakes and the like.

CURRENTS

Currents move water from one part of the ocean to another. They always flow in the same direction at a predictable speed, and they move based on a combination of factors, including water, wind, waves, ocean temperature, and more. People have studied currents since the early days of sailing to help them navigate across the oceans.

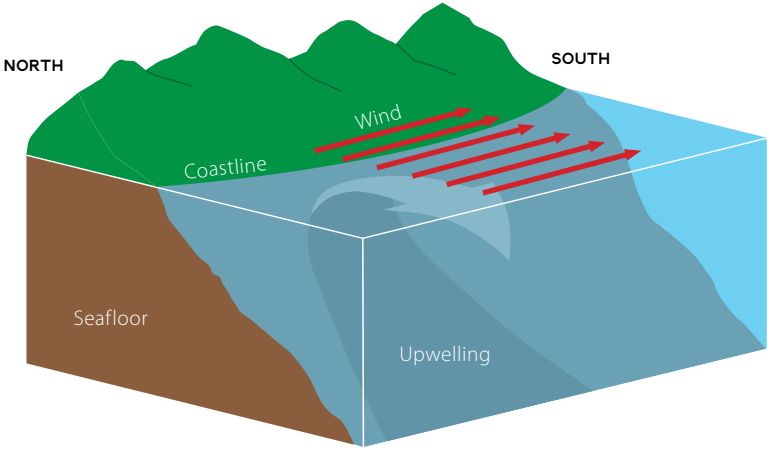
Along the Atlantic Coast, the Gulf Stream moves warm water from the Gulf of Mexico northward, eventually all the way to Iceland and the United Kingdom. Another current called the Labrador Current narrowly hugs the Atlantic Coast traveling southward. Near the Outer Banks of North Carolina, the Labrador Current and the Gulf Stream meet, and the mixture of warm and cold water moving in opposite directions can create fog and rough waters. These conditions caused over 5,000 shipwrecks in the area now known as the Graveyard of the Atlantic.

Elsewhere in the oceans, currents drive nutrients from one place to another, as well as temperature changes that have become essential for iconic creatures that have adapted to specific ocean conditions. Wildlife depend on currents to bring the nutrient-rich water—and the food it contains—up from the bottom and then around the globe.

For example, along the Pacific Coast, winds blowing along the shore from north to south push water away,

and deeper water comes up to take its place. This process, called *upwelling*, occurs in spring and peaks in summer. The deeper water that comes toward the surface tends to be colder and richer with nutrients. These nutrients support the growth of seaweed and plankton that are eaten by many fish, birds, and other animals.

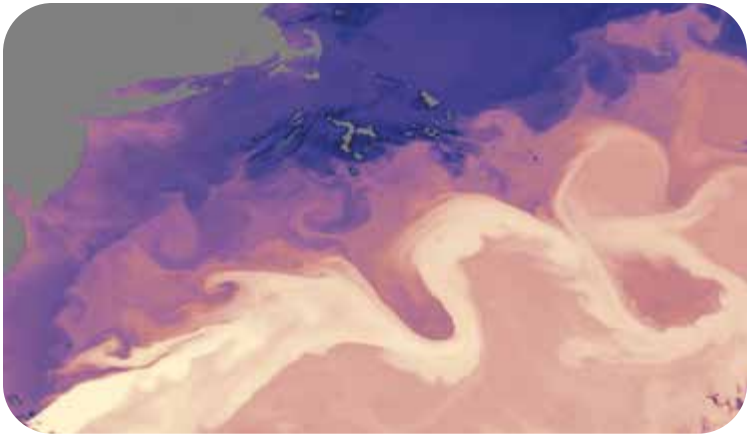
It's not just ocean creatures that depend on ocean currents—we do too. Ocean currents take warm water from the tropics and move it both north and south toward the earth's poles. As a result, the entire planet has a more moderate climate. Without the currents, temperatures would be much more extreme (either hot or cold).



During upwelling, wind-displaced surface waters are replaced by cold, nutrient-rich water that rises up from below.
Figure modified by D. Reed from image by J. Wallace and S. Vogel, *El Niño and Climate Prediction.* Image courtesy of Sanctuary Quest 2002, NOAA/OER.

Climate change has already altered many of these critical ocean currents, speeding them up. These faster currents won't be able to absorb as much heat, which instead will remain in the atmosphere. Moreover, the wildlife species that live in these surface environments—where much of the heating and speeding will occur—will have to adapt to changing conditions or go extinct.

Climate change affects more than the Gulf Stream—it also makes hurricanes (such as Hurricane Katrina, shown below in an NOAA satellite photo) become more frequent and intense.



The Gulf Stream is a warm current within the cool waters of the Atlantic Ocean. This NASA satellite photo of the Gulf Stream shows the water temperature: purple for colder water and yellow for warmer water.

There is an exception to this: the Gulf Stream. The Gulf Stream current might actually be slowing down as ice from the Arctic continues to melt. The addition of ice water to the surrounding ocean in turn makes the water less salty and less likely to sink to the bottom of the ocean. This interferes with how the Gulf Stream works.

SAND COLOR AND WATER COLOR

Different regions have beaches with different types of sand. Sand is created in different ways, and it is made up of tiny fragments of rock, fossil or shell.

Brown/Yellow Sand: Sand of these colors are made up of a mix of different minerals. When rivers are the source of the gravel for the sand, the sand is finer (smaller). When glaciers are the source, there are larger grains and more pebbles.

Black Sand: Sand of these colors are made up of a mix of different minerals. The black sand on some beaches comes from igneous rocks (volcanic rocks).

Quartz Sand: Often called "sugar sand" because it looks like sugar, this type originates from quartz, which gives it a bright white color.

Coquina (Orange): Some sand is even orange. Daytona Beach is a famous example, and the color comes from ground-up rock known as *coquina.* Coquina is made up of the shells of many

different kinds of sea creatures. When the coquina breaks down, it turns to sand. It gets its rusty color from the presence of iron (a mineral).

Feldspar: An abundant mineral, feldspar makes up much of the sand on beaches as you head farther north up the Atlantic Ocean coastline.

Why does water look different at the beach? Sand! When you hold a glass of water in your hand, the water looks clear.

At the beach, you can see the water appear bluer and darker. The color of sand and rocks can also affect the water color you see. For example, white rocks and sand make the water look bright turquoise blue at some beaches. Floating sand and debris stirred up by wave action, or an abundance of microscopic organisms in the water called *zooplankton* and *phytoplankton,* can also give water a murky look.

The bright-white sand and shallow waters of this Florida beach give the water its brilliant turquoise color.

The water gets deeper closer to shore in this part of the Maine coast. The depth of the water and the brown rocks make the water appear dark blue.

BEACH SAFETY

Beaches are fun, exciting places, but at the beach, visitors are exposed to sun, wind, and water, so it's good to prepare for your visit. Here are a few things to consider.

Surf, Tides, and Other Conditions

Before you head to the beach, check the conditions of the place you want to visit. You want to know how high or low the tide will be during the visit, the surf (wave) conditions, and weather conditions. The surf report will tell you how big the waves are. The weather forecast will help you gather the right clothes and supplies for the day.

If lightning is in your weather forecast, it may be unsafe to visit the beach. If you are already at the beach and you hear thunder or see lightning, get out of the water immediately and find a place to take shelter away from the water.

Your local weather forecast may include a UV index, which tells you strong UV (ultraviolet) rays are in your area. UV rays come from the sun, and even on

a cloudy day UV rays can cause a sunburn and other damage to your skin.

Lifeguards

Lifeguards are trained to make sure everyone at the beach is safe. They monitor the tides and weather, and look out for rip currents. When you are at the beach, you can ask the lifeguard to give you safety information. They respond to emergencies when a person is in danger in the water.

Some beaches do not have a lifeguard on duty, or a lifeguard may only be on duty during certain hours. You can check before you pick which beach to visit.

Beach Warning Flags

Public beaches often have a special flag system. Pay special attention to the flag systems on public beaches. A double red flag (see below) means the beach is closed. A red flag notes dangerous

Water Closed to Public

High Hazard
High Surf and/or Strong Currents

Medium Hazard
Moderate Surf and/or Strong Currents

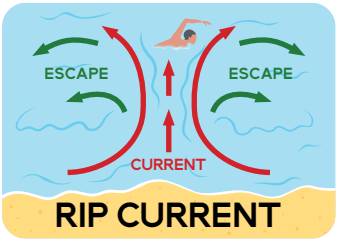
Low Hazard
Calm Conditions, Exercise Caution

Stinging/Hazardous Marine Life
Man o' War, Jellyfish, Stingrays

conditions due to strong currents or high surf. A yellow flag indicates a medium hazard (moderate conditions). A green flag is displayed when conditions are calm. A purple flag informs visitors that jellyfish or other dangerous marine life are present. When in doubt, ask lifeguards or other authorities for help.

Rip Currents

Rip currents, sometimes called *riptides*, can be dangerous and common, especially after storms. Put simply, a rip current is an area of current that moves away from the beach and into the ocean. Rip currents are essentially narrow channels of fast-moving water that can overtake even the best swimmers, dragging them into the open ocean. They often occur near structures such as piers or jetties, so don't swim near them. If you're caught in a riptide, don't panic. Instead, signal/yell for help, and swim sideways (parallel) to the shore, not directly against the current. (Fighting a rip current would simply tire you out.) Rip currents are rarely more than 80 feet wide, so once you're free of the current, you should be able to turn and swim toward shore.



If you suspect someone's in trouble in the water, immediately notify a lifeguard and/or call 911.

Tsunamis

A *tsunami* is a large wave caused by an earthquake or volcanic activity. Tsunamis are an uncommon event on the Pacific Coast, and an even rarer event on the Atlantic Coast. Still, you should know what a tsunami is—and what to do in the super unlikely event one occurs. Large earthquakes, usually under the ocean, are the main causes of tsunamis. They can also be caused by volcanic activity and landslides. The force of the earthquakes, volcanic activity, or landslides creates a series of large waves that can flood beaches and travel far onto land.

When a tsunami is about to strike, water often pulls back from the beach first, exposing lots of sand and even shells and flopping fish. If this happens, you need to leave the beach and get to higher ground right away. Tsunami emergency signs often direct which way to go. Weather agencies and governments may also signal a tsunami warning. As with other natural disasters, chances are you'll never experience a tsunami, but it's good to be prepared.

BEACH GEAR AND PRO TIPS

Sunscreen

Prepare for a visit by packing sunblock for protection from sunburn. You can also wear a hat, sunglasses, and long sleeves to protect your skin from the sun.

Water and Snacks

A day in the sun is hot, so it's important to pack water and snacks to keep you hydrated and fueled for a day of adventure.

Life Jackets/Swimming Safety

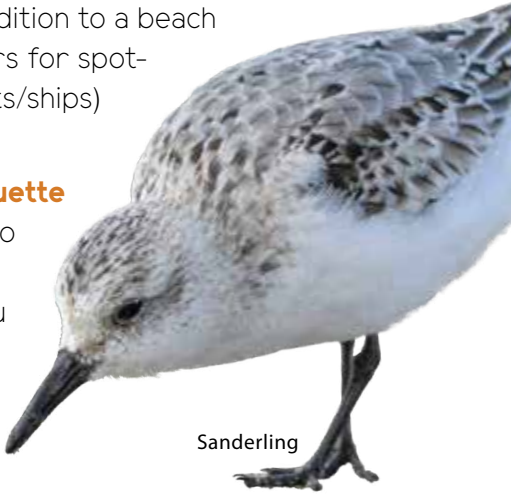
If you're swimming or going into the water, always have an adult with you or supervising, be sure to wear a life jacket/flotation device, and swim with at least one (or more) people. Your adult guardian may also consider carrying a water-rescue throw bag.

A Notebook and Binoculars

If you want to sketch your finds as you explore, a notebook is a great addition to a beach bag, and so are binoculars for spotting birds (and even boats/ships) from afar!

Collecting Rules and Etiquette

Check local beach rules to see if you are allowed to take shells home with you or if they should remain where you found them. Collecting shells that



Sanderling

are alive—with animals still inside them—is usually illegal, so leave them be! And before you collect any shells, smell them! Anything that smells fishy should stay at the beach.

Leave No Trace

The saying "leave no trace" means that when we visit a place, we leave it in as good a condition as we found it—or better! The goal is to leave only footprints behind. Our beaches are a treasure, so please do your best to take care of them.

Know Before You Go

Prepare for your visit by checking the rules for the beach. Take note of the weather forecast and any potential hazards. It's always a good idea to bring a map!

Choose the Right Path

Be sure to walk along maintained trails. Sand dunes are especially vulnerable, so please stay off them and stick to boardwalks and paved trails instead.

Respect the Wildlife

We share beaches with a variety of wildlife; whenever possible, simply admire beach life from a distance. When you visit the beach, be respectful of the wildlife. Don't chase birds or get too close to animals.

Leave What You Find

Close observation, photographs, or drawings are great ways to remember what you saw at the beach. The things you discover at the beach belong right

where you find them. Leave those discoveries behind to protect nature and so other visitors can enjoy them too. If you do decide to take shells home, make sure you leave anything still living right where you found it, and check local beach rules to confirm whether taking shells home is allowed.

Properly Dispose of Trash

Make sure you place any trash and recyclables in the proper bins. If bins are not available, take these items home with you. Trash can harm or even kill wildlife.

Be Careful with Fire

Campfires can be dangerous and hurt the environment, wildlife, and other people. If the beach you're visiting allows fires, use established fire rings. Before you leave, make sure you put out the fire completely.

Be Kind to Other Visitors

All the visitors at the beach—including you!—are excited to enjoy their day exploring, playing and relaxing. Be courteous and respectful of other visitors so everybody can have a good experience. A little kindness goes a long way.

How to Use This Book

This book is intended to help you identify the animals and other life-forms you see at the beach. Because North America's beaches differ a lot, depending on whether you're on the Atlantic Coast of Florida or the rocky Pacific Coast of Washington State, this book is split into two main parts. One field guide, starting on page 46, covers the beach life and animals you'll find on the Atlantic and Gulf Coast. The field guide for the Pacific Coast starts on page 80.

Within each section, the animals and plants are organized in groups—birds, shells, and so on—with photos to help you identify common beach finds.

But before you dive in there, it's helpful to take a look at the bigger picture. Here's a quick rundown of both our coasts and how they form, as well as maps showing some famous beaches, seashores, and other sites, such as areas with tidepools.

Ochre sea stars

The Atlantic and Gulf Coasts

NOTABLE BEACHES

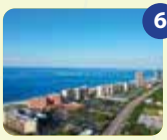
Galveston, TX

Holly Beach, LA

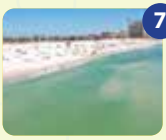
Grand Isle Beach, LA

Biloxi, MS

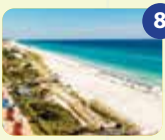
Gulf Islands National Seashore, MS



Orange Beach, AL



Pensacola Beach, FL



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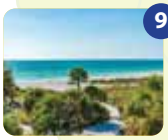

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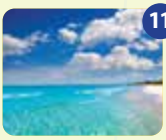

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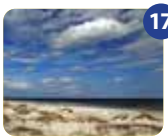

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Tybee Island, GA

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Folly Beach, SC

Myrtle Beach, SC

Outer Banks, NC

Virginia Beach, VA

Rehoboth Beach, DE

Asbury Park on the Jersey Shore, NJ

Fire Island, NY

Hampton Beach, NY

Montauk, NY

Martha's Vineyard, MA

Cape Cod, MA

Old Orchard, ME

Acadia National Park, ME

HOW BEACHES FORMED ON THE GULF AND ATLANTIC COASTS

Ocean levels have risen and fallen and risen and fallen many times since the Earth formed about 4.5 billion years ago. The history of the Atlantic Ocean begins 150 million years ago. Back then, all of our current continents formed one super-continent, known as Pangaea. When the movement of large, underground pieces of Earth's crust—known as *plates*—started to fracture under Pangaea, a brand new crust appeared far below the surface of the ocean in what we now call the Mid-Atlantic Ridge. As Pangaea broke up into different continents, they in turn continued to move farther apart (just a few centimeters each year, which is why you can't feel this movement). As they moved into their current locations, the Atlantic Ocean formed in between. The formation of the Atlantic Ocean is the beginning of the stories of our coastal beaches here.

Florida: Much of Florida's east coast is flanked by barrier islands. During the end of the last ice age, about 18,000 years ago, the ocean was 360 feet *lower* than it is today. Rivers brought sediment, like soil and rocks, out to the ocean, where it piled up to form ridges and dunes. When sea levels eventually rose as the glaciers melted, the water moved into the low-lying areas behind the ridges,

Recommended Reading

INSPIRING READS ABOUT CONSERVATION AND SCIENCE

Bill Nye's Great Big World of Science, by Bill Nye and Gregory Mone

The Book of Hope: A Survival Guide for Trying Times, by Jane Goodall and Douglas Abrams

Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants, by Robin Wall Kimmerer

Going Blue: A Teen Guide to Saving Our Oceans, Lakes, Rivers & Wetlands, by Cathryn Berger Kaye, MA, and Philippe Cousteau

Last Chance to See, by Douglas Adams and Mark Carwardine

A Sand County Almanac, by Aldo Leopold

Silent Spring, by Rachel Carson

BOOKS ABOUT SCIENTISTS

Life in the Ocean: The Story of Oceanographer Sylvia Earle, by Claire A. Nivola

Manfish: A Story of Jacques Cousteau, by Jennifer Berne

Rachel Carson: Pioneer of Ecology, by Kathleen V. Kudlinski

Secrets of the Sea: The Story of Jeanne Power, Revolutionary Marine Scientist, by Evan Griffith

Shark Lady: The True Story of How Eugenie Clark Became the Ocean's Most Fearless Scientist, by Jess Keating

FIELD GUIDES

Backyard Birding for Kids, by Erika Zambello

Fossils for Kids, by Dan R. Lynch

Insects & Bugs for Kids, by Jaret C. Daniels

The Sibley Guide to Birds, by David Allen Sibley

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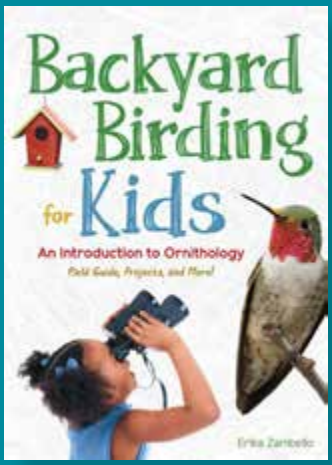

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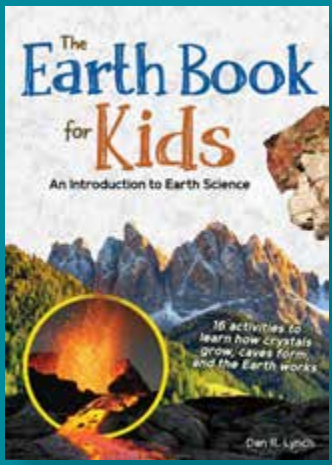

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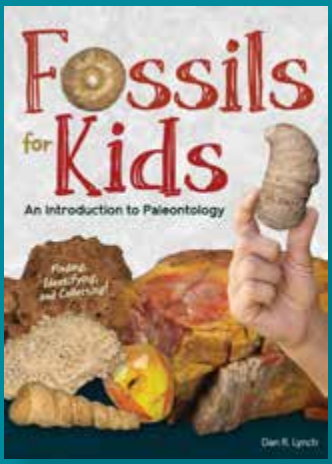

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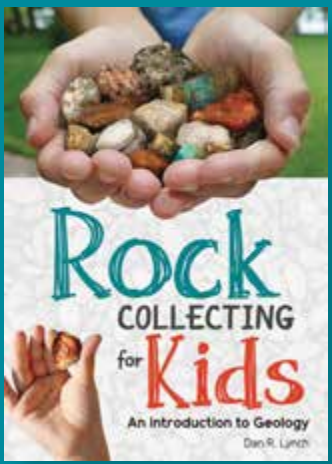

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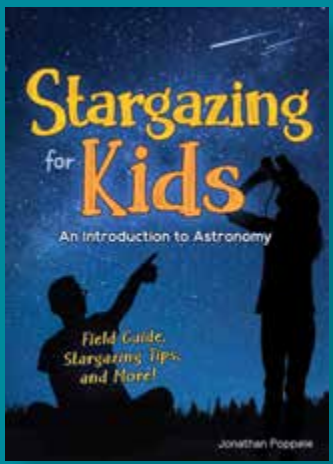

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