



# OUR COASTAL SEAS

## Key Takeaways:

- Coral reefs cover less than 1% of the seafloor yet are home to one-fourth of all marine species.
- Our oceans are warming as a result of climate change. The microscopic, plantlike algae that live within the tissues of corals provide them with nourishment and give them their vibrant colors, but corals are sensitive to changing water temperatures. When the ocean around them warms too much, they force their algae out, bleaching the corals white and starving them of their main food source.
- Carbon dioxide, one of the greenhouse gases contributing to climate change, is also making the ocean more acidic. Reefs will struggle to survive both bleaching and an increase in acidity. Half of all shallow coral reefs worldwide have already died, and almost all of them could be gone within the next few decades.
- Coastal seas are vitally important in the fight against climate change. Seagrass absorbs 35 times as much carbon dioxide as the same area of rain forest. This helps reduce some of the greenhouse gases that warm the oceans.
- Mangroves are saltwater-tolerant trees that also provide many benefits to humans and animals—the mangroves protect coasts from hurricanes and flooding and help capture carbon dioxide, and their dense, arched roots provide critical nurseries for young fish before they venture into the coral reefs.

- In addition to climate change, destructive fishing practices and water pollution are other human activities that contribute to the decline in these closely connected ecosystems.
- Overfishing and unsustainable fishing practices have altered food webs and led to the decline of fish stocks as well as shark numbers. Shark populations have decreased by 90%, causing a domino effect on the health of their coral reef ecosystems.
- Coastal ecosystems can recover, if given the time and opportunity. By turning more coastal areas into effectively managed and protected areas, fish will be allowed to grow and reproduce, mangroves and seagrasses can regrow, and fishing grounds can recover and help sustain humanity and the natural world.

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These stands of giant kelp can reach 50 m from sea floor to the surface, their fronds carried upwards by air filled floats.



## GUIDED DISCUSSION PROMPTS

Use these prompts to generate a class or small-group discussion based on the Our Coastal Seas episode or on videos on [ourplanet.com](http://ourplanet.com).

- 1** The episode presented several examples of how animals working together in groups can increase an individual's or a species' chance for survival. Discuss these examples and how successful the animal would be without the help of the group.

Examples from the episode:

*Larger fish and rays work together to herd shoals of smaller fish like anchovies toward one another.*

*Bottlenose dolphins in the Everglades have developed their own technique for catching prey; they work together to herd fish into a circle while churning up the mud surrounding them, causing the fish to panic and leap out of the water.*

*Humpback whales travel to Alaska all the way from the tropics to feed on herring that gather there to breed. After blowing a curtain of bubbles to concentrate the fish, the lead whale then communicates with the other whales to synchronize their attack, swimming up from below. By cooperating like this, a single whale can eat one ton of herring a day.*

- 2** In a coral reef ecosystem, every resident has a role to play in maintaining the health of the reef. Compare this with your own environment or family. What types of things do you rely on your community or family to provide to you? How do you help your family or community? How would your community or family change if a key member disappeared?

Examples from the episode:

*The coral provides the structure that the entire community depends on.*

*Small grazing fish help keep parasites off coral.*

*Sharks help maintain a balance in the fish community by hunting predators that feed on the small grazing fish.*



## GUIDED DISCUSSION PROMPTS

- 3** Discuss the benefits of establishing marine protected areas. Cite examples from the episode of species or locations that were declining and are now improving thanks to governments creating sanctuaries that restrict human activity.

Examples from the episode:

*In California, kelp forests grow abundantly in protected areas where the entire community can live without pressure from people. Outside the sanctuary, sea otters do not have as much protection in the kelp forests, so sea urchins graze unchecked, causing their populations to expand and the kelp forests to continue to fall.*

*The recovery of the islands of Raja Ampat in Southeast Asia has been remarkable since protection was put into place in 2007. Biodiversity is increasing—sea turtles that used to be hunted now peacefully graze, manta rays are returning looking for cleaner wrasse, and shark and fish numbers are slowly increasing.*

- 4** Coastal seas make up less than one-tenth of the world's oceans, but 90% of all marine creatures live in these areas because they're within reach of sunlight. Not only do coastal seas provide for numerous marine species, but two-thirds of humanity also lives along the coastline. With more people settling in these areas comes a continuous increase in development. Why might the overdevelopment of coastlines have negative consequences?

- 5** Even if you live thousands of miles from the coast, your life is still connected to oceans. Discuss the ways we need our oceans. How would our lives change without them? What can we do to help protect them? Discuss small changes people can make to improve the health and future of our coastal seas.



## ACTIVITIES

ACTIVITY IDEA	SUBJECTS
Solve a science investigation by sequencing clues and understanding the effects of climate change on coral reefs.— <a href="#">The Case of the Missing Sea Turtle</a>	Science
Create a jellyfish art model out of recycled plastic litter to understand how sea turtles mistake trash for food.— <a href="#">Only Jellies in the Belly</a>	Arts
Use your engineering skills in a science experiment that exposes the damaging truth behind some industrial fishing practices.— <a href="#">Be Careful What You Fish For</a>	STEM
Design travel brochures for coastal areas around the world and discover how these towns can benefit from sea turtles without harming them.— <a href="#">Turtles on Vacation</a>	Social studies
Write a persuasive letter outlining the benefits of coastal seas and demanding their protection.— <a href="#">A Need for the Seas</a>	Language arts

### What We Can Do:

- Spread the word—talk to your friends and family about the importance of coastal ecosystems.
- Encourage smart shopping—when buying seafood, make sure to look for a label indicating it came from a fishery or farm that has been certified as meeting environmental sustainability standards that protect both wildlife and communities.
- Ask questions—don't be afraid to ask a shop or restaurant where their seafood comes from and how it was caught. Posing these questions can help you choose sustainable seafood, and it sends a message that people care about the source of their food.
- Watch your trash—don't throw litter anywhere except in proper waste containers. Always attempt to recycle or repurpose items when possible, especially plastic. Avoid single-use plastic items such as straws and bags.
- Enjoy the coasts—spend time in and around coastal seas, but always remember to leave them how you found them! Knock down sand castles, fill holes, and leave with everything you came with (including trash).

### Additional Resources:

- [Shark facts vs. shark myths](#)—separates fact from fiction about these important marine species
- [Mangroves may be one of nature's best defenses against a changing climate](#)—learn more about a mangrove's special adaptations and how it helps people and wildlife
- [10 facts about sea otters](#)—fun facts about this adorable resident of kelp forests
- [How does climate change affect coral reefs?](#)—how WWF is working to save coral reefs in Belize from the effects of climate change
- [Shark species WWF webpage](#)—why these creatures are important and the threats they face
- [Sea turtle species WWF webpage](#)—information on the various species of sea turtles and what we're doing to help protect them
- [Overfishing WWF webpage](#)—causes, impacts, and how WWF is working to put a stop to it
- [Illegal fishing WWF webpage](#)—an overview of this continued threat to marine habitats
- [Our Planet official webpage](#)

