



ONE PLANET

Key Takeaways:

- When humans built their first settlements, the world was full of life—on land and in the sea. But with the human population rapidly increasing, so is the misuse of our planet's resources. Our presence on this planet has caused a 60% decline in populations of mammals, birds, fish, reptiles, and amphibians in just over 40 years.
- All life depends on water. The irregularity of rains, caused by climate change, is posing challenges all over the world. If rainfall is more predictable and certain, life can flourish.
- About 90% of life in the ocean is found in the shallow seas close to the coasts. These areas also absorb heat and carbon dioxide from the atmosphere and are vital in the fight against climate change.
- Although the poles seem remote, their stability is crucial to all life. The sea ice that surrounds the poles reflects sunlight back into the atmosphere and helps protect the Earth from overheating. This sea ice is disappearing as these areas continue to warm faster than any other part of the planet.
- Nearly 300 million people and eight out of ten land-dwelling species live in forests. Forests provide a vast array of resources to all of us, including food, habitat, medicine, fresh water, and the air we breathe.
- The stability of life relies on the connection between habitats. The biomes across our planet connect to one another, so the health of one will affect the health of others. In order for all life around the world to flourish, we need to improve the health of all ecosystems – from forests and oceans to grasslands and polar regions.
- Never has it been more important to understand how the natural world works. With our help, the planet can recover. What we do in the next 20 years will determine the future for all life on Earth.

The Milky Way sets through the Tres Marias, or Three Marys rock formation, in the Valle de la Luna in Chile's Atacama desert.

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OUR PLANET
NETFLIX



GUIDED DISCUSSION PROMPTS

Use these prompts to generate a class or small-group discussion based on the Our Planet – Intro episode or on videos on ourplanet.com.

1 Everything on this planet is interconnected. The health of one ecosystem can have effects that ripple across other ecosystems. How is this possible? How could species living in one environment be impacted by what's going on in a completely different environment? Discuss how different biomes can be connected, using examples from the episode. Propose a follow-up challenge of researching different biomes and the ways their health is connected to one another.

Examples from the episode:

Deserts and oceans appear to be far from one another with little in common, but in fact, they're connected in an interesting way. Water from the open ocean evaporates into clouds that travel and eventually empty the water onto the land, creating much-needed sources of water in desert areas. Meanwhile, winds from the desert sweep up billions of tons of dust into the sky, at least a quarter of which falls into the ocean and provides nutrients for marine life.

The seas surrounding the Peruvian coastline are some of the richest seas on Earth. The richness of these waters is due to the Humboldt Current, a highly productive current that flows along the western coast of South America, bringing large numbers of fish. Daily migrations of about 5 million seabirds, such as cormorants and boobies, flock to these waters to breed and feast on anchovies. With climate change severely impacting the glaciers of the Antarctic and Arctic, sea ice is melting and adding more fresh water into the oceans. This extra water affects sea levels, salinity, and currents, including the Humboldt. If the poles continue to melt at such speeds, the stability of the Humboldt current will deteriorate, as will the seabird population that depends on it.

2 Across ecosystems, patterns of interactions between species develop. Although the species involved may differ, the types of interactions remain consistent. This episode showed examples of different relationships between species existing in a variety of ecosystems. Describe some of these relationships you saw. What threats do each of these species face? How does the future of one impact the future of the other? How could we use these relationship patterns to ensure these species have a future?

Examples from the episode:

In tropical rain forests, orchid plants capture orchid bees and glue pollen sacs onto their backs, which the bees then carry to other plants, helping them to pollinate. In return, the plant covers the bees in a perfume that helps them attract mates.

Algae that flamingoes feed on remain dormant in the desert dust of Africa. When the rain comes, the algae resurface, allowing the flamingoes to feed and lay their eggs. Flamingoes rely on the algae, and the algae depend on the rainfall.

Wolves and caribou are some of the only species that can survive the winters in the boreal forests of North America. Wolves live in these forests year-round, while caribou merely pass through on their way further north. The wolves depend on the migration of caribou as a primary food source in the winter.



GUIDED DISCUSSION PROMPTS

3 With the various human-induced threats facing our planet, including climate change, deforestation, and pollution, species all over the world are feeling the impacts differently. Some of the species most heavily affected are those who migrate between environments. These species rely on their habitual or seasonal migration patterns to feed, breed, or take shelter. Discuss examples from the episode of migrating species. What is putting their migration patterns and survival at risk?

Examples from the episode:

Grazers, such as wildebeest, are always traveling, following the rains to find fresh grazing. The future of these species' migration depends on rain and grassland availability.

The boreal forests of North America are a crucial refuge for the species that are able to survive here, such as caribou. Each spring, the caribou leave the forests and head north toward the tundra to give birth. However, their migrations aren't what they used to be – the herd has decreased by 70% over the past 20 years.

4 Ice on both land and sea serves a variety of purposes. Share and discuss the different examples provided in the episode. What is currently happening with our planet's ice? How is human activity affecting the ice? If the ice disappeared, how would it impact the rest of the world?

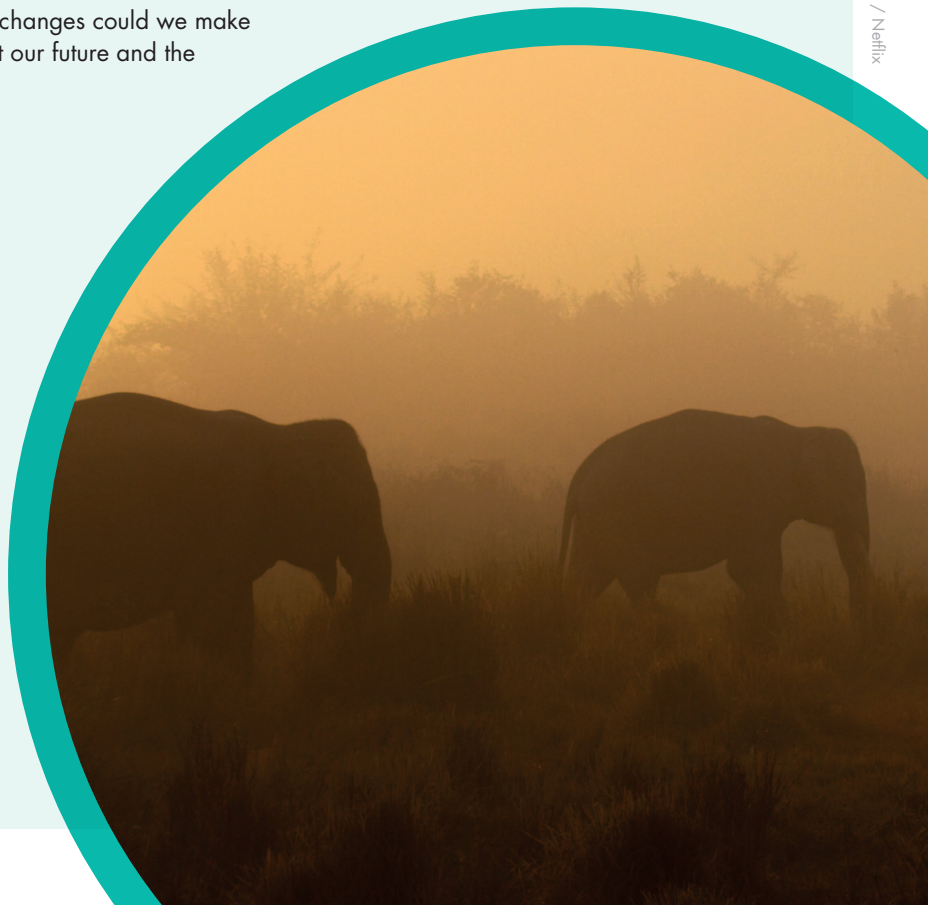
Examples from the episode:

Polar bears specialize in hunting seals out of frozen ocean, which is now literally melting beneath their feet. Sea ice breaks up every year and is now happening earlier and earlier in the year, causing the bears' hunting season to be shorter and shorter. Cubs are growing up underweight, which decreases their chance of survival.

Glacier ice and sea ice in Greenland reflect the sun and prevent Earth from overheating. Over the last 20 years, Greenland has been losing ice, and the rate of loss is accelerating. In addition to the ice falling from the top of the glacier, ice from beneath the surface breaks away and creates colossal tidal waves. Glaciers are breaking apart twice as fast as they did ten years ago, causing salinity levels to change, currents to be disrupted, fresh water to empty into the ocean, and sea levels to rise.

5 What is biodiversity and why is it important? What does an ecosystem's biodiversity tell us about the overall health of that environment?

6 What can we do to help our planet? What small changes could we make in our everyday routines that could greatly impact our future and the future of species and biomes?



ACTIVITIES

ACTIVITY IDEA	SUBJECTS
Create a climate timeline and understand just how many components of an ecosystem are affected when climate is altered.— Climate Trackers	Science
Understand how our daily uses of energy are connected to the future of polar bears through cause-and-effect modeling.— What's the Connection?	Science
Conduct a research project that outlines the benefits of using renewable energy versus energy originating from fossil fuels. Present your research in the form of a persuasive argument as if your objective is to convince a panel of government officials.	Language arts
Start a movement in your school to help protect our frozen worlds by saving energy. Conduct an energy audit at your school and propose a plan to your school administration of ways to improve current sources of energy expenditure.	Social studies
Itemize your daily water expenditure and strategize on how to improve it when given a water budget.— A Drop in the Bucket	Math
Compose a poem using metaphors and similes to describe the importance of free-flowing rivers.— Like the River Flows	Language arts
Think twice about throwing food out by learning how much water it took to make that food and creating a pictograph representation of your lunch.— How Much Water Is in Your Lunch?	Math
Use the Free-Flowing Rivers app to interact with nature and use augmented reality to discover the importance of free-flowing rivers.	STEM
Perform an audit at your school or home to analyze water usage and determine strategies for conserving water.	Social studies
Write a persuasive letter outlining the benefits of coastal seas and demanding their protection.— A Need for the Seas	Language arts
Perform an audit in your school or classroom to discover just how many everyday products come from forests and sign the Forest Stewardship Council (FSC) pledge.— Trees and Tigers	Social studies
Get to know your local forest by exploring with a notepad and/or camera and trying to identify as many species as possible using the SEEK iNaturalist app.	Science
Research the impacts of single-use plastics and propose environmentally friendly alternatives to the administration within your school or community.	Science/social studies
Create a public service announcement that will raise awareness about wildlife crime and how to speak up for animals that have no voice.— Be the Voice	Language arts
Use what you've learned about how our food practices impact the health of our planet to write a letter to a future pen pal about Earth.— Eating Our Planet	Language arts
Bring the challenge and importance of reducing food waste to life by measuring what's getting thrown away in your own cafeteria.— Be a Food Waste Warrior	Science



What We Can Do:

- Don't be wasteful—buy only as much food as you need and eat it all. In the US we waste nearly half of the food we buy; this wastes all the energy that went into producing it, and the food often ends up in a carbon-emitting landfill. Also, understand your personal impact on our planet's water supply, and avoid being wasteful of water.
- Encourage smart shopping—be sure to look for the FSC logo on wood and paper products, and 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. Don't be afraid to ask a shop or restaurant where their seafood or forest products come from.
- Switch to renewable energy—if you own your house, you can check out solar panels or ask your utility to switch you to renewable energy. Many utilities can make the change with little to no effect on your bills.
- Change the way you move—walk, ride bikes, carpool, or take public transit. Doing one of these even once more per week helps.
- Plant trees—start an effort within your school or community.
- Be aware of illegal wildlife trade—poaching is a major threat to wildlife; never buy products that come from elephants, tigers, gorillas, or other endangered species.
- 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 nature—go out and enjoy your local forests, waterways, and coastlines; just remember to leave them as you found them!
- Spread the word—talk more about environmental issues such as fresh water availability, food waste, pollution, deforestation, and climate change. Bring it up to your friends and family, city council, or school. Start holding your leaders accountable for taking action themselves.

Additional Resources:

- [What is biodiversity?](#)—short web story about why biodiversity is important and the threats facing biodiversity around the world
- [Forests biome WWF webpage](#)—why the health of forests is declining, and why we need to act now
- [What's a boreal forest? And the three other types of forests around the world](#)—explains the difference between boreal, tropical, subtropical, and temperate forests
- [Forests, Climate Change, and the Role Green Giants Play](#)—understand the complex relationship between forests and climate change
- [Oceans biome WWF webpage](#)—why oceans are important, and how WWF is working to protect them
- [7 ways you can help save the ocean](#)—easy tips for how to do your part
- [Understanding grassland loss in the Northern Great Plains](#)—breaks down what's happening in the Great Plains of North America, and why it matters
- [Grasslands habitat WWF webpage](#)—why prairies are important, and the threats they're facing
- [Free-flowing Rivers WWF webpage](#)—colorful answers to questions on the importance of keeping rivers free-flowing
- [Freshwater habitats WWF webpage](#)—species that depend on fresh water, and the threats these habitats face
- [Fresh Water initiative WWF webpage](#)—what WWF is doing to help protect our planet's fresh water
- [Why are glaciers and sea ice melting?](#)—explains why glaciers are important and what happens when they're lost
- [3 things you should know about January's record-low Arctic sea ice](#)—a simple outline breaking down what is happening with sea ice, and the impacts
- [Polar bears and climate change](#)—a full assessment of the vulnerability of these important members of the Arctic to the effects of climate change
- [Arctic habitat webpage](#)—what makes the region unique, and why it's in danger
- [Antarctica ecoregion webpage](#)—information on the region's biodiversity and current health status
- [Polar Regions habitat webpage](#)—why the poles matter
- [Our Planet official webpage](#)



OUR JUNGLES

Key Takeaways:

- Jungles, otherwise known as rain forests or tropical forests, have numerous benefits to people and animals—they store carbon, which helps regulate climate and cool the planet, and provide food, habitat, and medicine. They also play a huge role in purifying our air and water.
- Destroying or degrading these forests harms us all—people lose homes, security, and income, while animals face extinction and the entire planet becomes more vulnerable to climate change.
- The biggest cause of deforestation in rain forests is the clearing of land for agriculture use or to create roads, railways, and other infrastructure. Forest degradation mainly occurs as a result of illegal logging.
- Time has made Borneo's rain forests rich and diverse; they are the oldest rain forests in the world. In the past 50 years, Borneo has lost more than half of its rain forests, leaving a questionable future for its unique variety of species.
- Rain forests are naturally resilient. Areas cleared of trees can spring back to life if given the time and space to do so.
- Orangutans are critically endangered because they are losing their habitat. Their rain forest homes are being transformed into oil palm plantations and other forms of agriculture. However, there is a responsible, sustainable way of harvesting palm oil that if implemented would ensure that we benefit from forests without destroying them.
- Populations of many rain forest species like gorillas and elephants are threatened by poaching. Poachers kill about 20,000 African elephants every year (or one every 25 minutes) for their tusks, which will be traded and sold illegally as decorative pieces.

A Sumatran Orangutan.



GUIDED DISCUSSION PROMPTS

Use these prompts to generate a class or small-group discussion based on the Our Jungles episode or on videos on ourplanet.com.

1 An endemic species is a plant or animal that can be found in only one particular area. This type of isolation can cause species to develop unique traits and behaviors, along with relationships with other wildlife. Why do you think these species never spread to other geographic locations? What kind of effects would this geographic exclusivity have on a species' chances for survival?

Examples from the episode:

In New Guinea, more than half of the plants and animals are found nowhere else due to the fact that they were separated from other areas by rock formations. The animals here are very unusual, such as the black sicklebill bird that can morph into different shapes and the birds of paradise that perform elaborate dances to attract mates. If these plants or animals were to lose their rain forest homes, their species would have no chance of surviving because they are not found anywhere else.

There are over 39 species of pitcher plants in Borneo, most of which aren't found anywhere else in the world. These plants rely on their animal neighbors, such as mountain tree shrews (also endemic to Borneo), to help them survive. The shrews eat the sugar out of pitcher plants' lids, then defecate along the outside of the plant. Once the rain washes the waste into the plant, the pitchers get those extra nutrients that they need. Since these species rely on each other and are found nowhere else in the world, if something were to happen to either of them, it would jeopardize the future of the other.

2 Poaching for illegal wildlife trade is the leading cause of wildlife loss in the Congo Basin, driven by an ever increasing demand. With the region's human population expanding, the rich resources found in this area are being depleted for people's livelihoods. This includes the trade of bushmeat, or wild game, which a lot of communities look to for sustenance or income. In the Congo alone, over a million tons of bushmeat are consumed each year. What impact does this unsustainable wildlife hunting have, not only on the rain forest ecosystem but also on the people involved? Are there beneficial alternatives?

Example from the episode:

Families of lowland gorillas in the Congo rely on the silverback male to provide for and protect the family, primarily from poachers. Poaching for bushmeat has significantly harmed gorilla populations, so this lead male has to continuously be aware of the family's surroundings. This trade for bushmeat has helped spread the Ebola virus, which is deadly to both animals and humans. In order to protect gorillas and stop the spreading of disease, new protected areas are being designated for gorilla populations, and alternative sources of income, such as ecotourism, are being introduced to communities in order to protect gorillas while helping local people.



GUIDED DISCUSSION PROMPTS

3 Deforestation, fragmentation of habitats, and degradation are occurring in forests all over the world as a result of agriculture, illegal logging, and infrastructure. Discuss what happens to a forest when it is cleared, fragmented, or degraded. Would those activities affect the ecosystems or species the same way or differently? Name species from the episode that are affected by deforestation or forest fragmentation, and explain how they are affected.

Examples from the episode:

Ninety percent of the primary rain forest in the Philippines is gone; what's left is the last refuge for the Philippine eagle. Its survival depends on finding territory with large stretches of rain forest; fragmented forests don't leave room for prey to support these animals.

In addition to being home to half of the planet's remaining rain forests, the Amazon is also the home of black spider monkeys. These monkeys spend most of their time in trees, coming down only to retrieve nutrients from salt lakes. They prefer mature rain forests and seldom venture into disturbed habitats, so they are especially vulnerable to the effects of forest fragmentation.

In the Amazon, deforestation displaces countless rain forest species, from top predators like jaguars down to the thousands of varieties of frogs.

4 We have replaced countless acres of rain forest with oil palm trees, pushing many animals out of their homes and close to extinction. However, there are ways to sustainably harvest palm oil without depleting the habitats of animals. Discuss possible solutions for continuing to utilize and profit from this natural resource while minimizing the impact on the environment.

Example from the episode:

We lose 100 orangutans every week because of human activity, primarily due to rain forest conversion for oil palm agriculture. In the past 20 years, orangutan rain forest has declined 80%. With better management practices, the palm oil industry could continue to benefit without depleting these forests of the habitats so many depend on. By implementing stronger protection of these forests while monitoring palm oil production to ensure it's being done sustainably, both people and nature will benefit.

5 Consider all of the ways rain forests have touched your life today. What have you used that came from a rain forest resource? Try to generate as many ideas as possible, including furniture, building materials for floors or walls, doors and window frames, fruits, paper, tissues, toilet paper, clean air, pencils, rulers, toys, musical instruments, medicine, shampoo, soap, pizza dough, cookies, chocolate, bicycle tires, soccer balls, etc.

6 What can we do to help rain forests and the species that depend on them? What small changes could we make in our everyday routines that could greatly impact the future of rain forests?



ACTIVITIES

ACTIVITY IDEA	SUBJECTS
Create a public service announcement that will raise awareness about wildlife crime and how to speak up for animals that have no voice.— Be the Voice	Language arts
Perform an audit in your school or classroom to discover just how many everyday products come from forests, and sign the FSC pledge.— Trees and Tigers	Social studies
Create a mosaic or collage in the shape of an elephant or orangutan using labels of products made from palm oil.— Watch Your Noodles for Elephants Sake	Arts
Many of the animals in this episode are seen strategically using tools to obtain what they need (orangutans using sticks to dig out ants; elephants mining for salty plants underwater using their trunks). Provide students with a commonly used tool and challenge them to be creative in marketing it for a different use than what it's most known for.	STEM

What We Can Do:

- Spread the word—talk to your friends and family about the importance of rain forests and all of the benefits they provide.
- Encourage smart shopping—be sure to look for the FSC logo on wood and paper products to help keep forests healthy for the betterment of all of us (animals, humans, oxygen, climate). Also, try to make a conscious effort when purchasing items containing palm oil to look for a label indicating it was produced sustainably.
- Plant trees—start an effort within your school or community.
- Be aware of illegal wildlife trade—poaching is a major threat to rain forest animals; never buy products that come from elephants, tigers, gorillas, or other endangered species.
- Enjoy the forests—spend time in forests and appreciate the health benefits they have to offer, but always remember to leave them how you found them!

Additional Resources:

- [Which everyday products contain palm oil](#)—get familiar with the labels on your groceries
- [Orangutans and palm oil](#)—how palm oil plantations and illegal logging are driving habitat loss
- [Endangered species threatened by unsustainable palm oil](#)—five of the most impacted rain forest species
- [Thirty Hills](#)—WWF's 60-year challenge to save Sumatra's rain forest
- [Gorilla facts](#)—FAQs on one of the rain forests' most influential residents
- [Orangutan species webpage](#)—outlines the threats facing these critically endangered species
- [Gorilla species webpage](#)—why this close cousin of humans is in need of protection
- [Amazon habitat webpage](#)—facts about this rich diverse ecoregion
- [Congo rain forest and basin webpage](#)—exploring the world's second-largest tropical rain forest
- [What's a boreal forest? And the three other types of forests around the world](#)—explains the difference between boreal, tropical, subtropical, and temperate forests
- [Our Planet official webpage](#)



OUR HIGH SEAS

Key Takeaways:

- Beyond the shallow coastal waters lie the high seas, or open ocean. The open ocean covers 60% of our planet's surface. It is the largest habitat on our planet, but also one of the least understood—we have explored only 5% of the world's oceans.
- The open ocean is enormous and largely ungoverned, leaving it vulnerable to overfishing, illegal fishing, mining, and hazardous shipping.
- We have assumed that the open ocean was too large to damage, but we now understand it is under enormous threat. In addition to unsustainable fishing practices, our oceans are suffering from the effects of climate change and pollution (noise and plastics).
- In addition to providing us with food, the oceans offer other benefits like supplying half of the oxygen we breathe and playing a huge role in cloud formation and climate.
- One-third of all fish stocks have been harvested beyond their limit due to unsustainable industrial fishing. This includes populations of bluefin tuna, which have been fished close to extinction.
- If we harvest the oceans in sustainable ways, they can be productive and supply us with an abundance of food.
- Global cooperation to form international agreements is the only way our oceans will recover.



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Drag net of a seine fishing vessel full of Yellowfin tuna (*Thunnus albacares*), Los Roques, Venezuela. Caribbean.



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GUIDED DISCUSSION PROMPTS

Use these prompts to generate a class or small-group discussion based on the Our High Seas episode or on videos on ourplanet.com.

1 Describe the cycle of matter and flow of energy among living and nonliving parts of a marine ecosystem, starting with phytoplankton. Why are phytoplankton important? What threats do phytoplankton face? What kind of ripple effect would their decline have on other marine species?

Example from the episode:

Phytoplankton depend on nutrients released from animals, such as bottlenose dolphins, in the form of waste. The plankton then combine these nutrients with energy from the sun to provide half the oxygen in the air we breathe. Phytoplankton are the basis of many marine food webs, so many animals depend on them. Phytoplankton need the energy provided by the animals as much as animals need the energy provided by the phytoplankton.

2 Discuss the role of oceans in regulating climate using terms associated with the stages of the water cycle. How do oceans help protect us against climate change?

Example from the episode:

Moisture from oceans collects in tiny particles and forms clouds. These ocean clouds reflect the sun's energy back into space, helping slow global warming. This important role in cloud formation also means that oceans drive weather systems that sustain life in other areas of the world.

3 There are 10 times more animals living in the deep oceans than previously thought. These creatures often look unlike anything ever seen on our planet; they have adapted traits necessary to survive the heavy pressure and darkness of these environments. Provide examples from the episode of these deep-sea adaptations.

Examples from the episode:

Dragonfish and deep-sea angler fish have adapted bioluminescence, using their glowing attachments to lure their prey.

Deep-sea corals have adapted to not require the sunlight that their shallow coral reef relatives need to survive.



GUIDED DISCUSSION PROMPTS

4 Compare and contrast overfishing and illegal fishing. What are the causes of these destructive actions? Discuss in terms of human population and consumption of natural resources. What will eventually happen if these problems are not addressed?

Examples from the episode:

Overfishing occurs when more fish are caught than the population can replace. This causes an imbalance in the ecosystem and affects the social and economic well-being of the coastal communities that depend on fish for their livelihood.

Illegal fishing is a key driver of global overfishing. It is essentially defined as fishing without permission. One form of illegal fishing is fishing in foreign areas that are governed by other countries. It can also refer to using banned fishing techniques that damage the environment, fishing for a species that is protected, or fishing in an area that is protected and designated as being off-limits. Illegal fishing threatens the food supply of both marine animals and people.

5 With so many changes occurring to our oceans, marine species are being forced to adapt and make drastic changes to their way of life. With unsustainable fishing occurring, waters that were once dominated by fish are now being taken over by other species. What kind of impacts would this have? How would this affect the food web and the species within it?

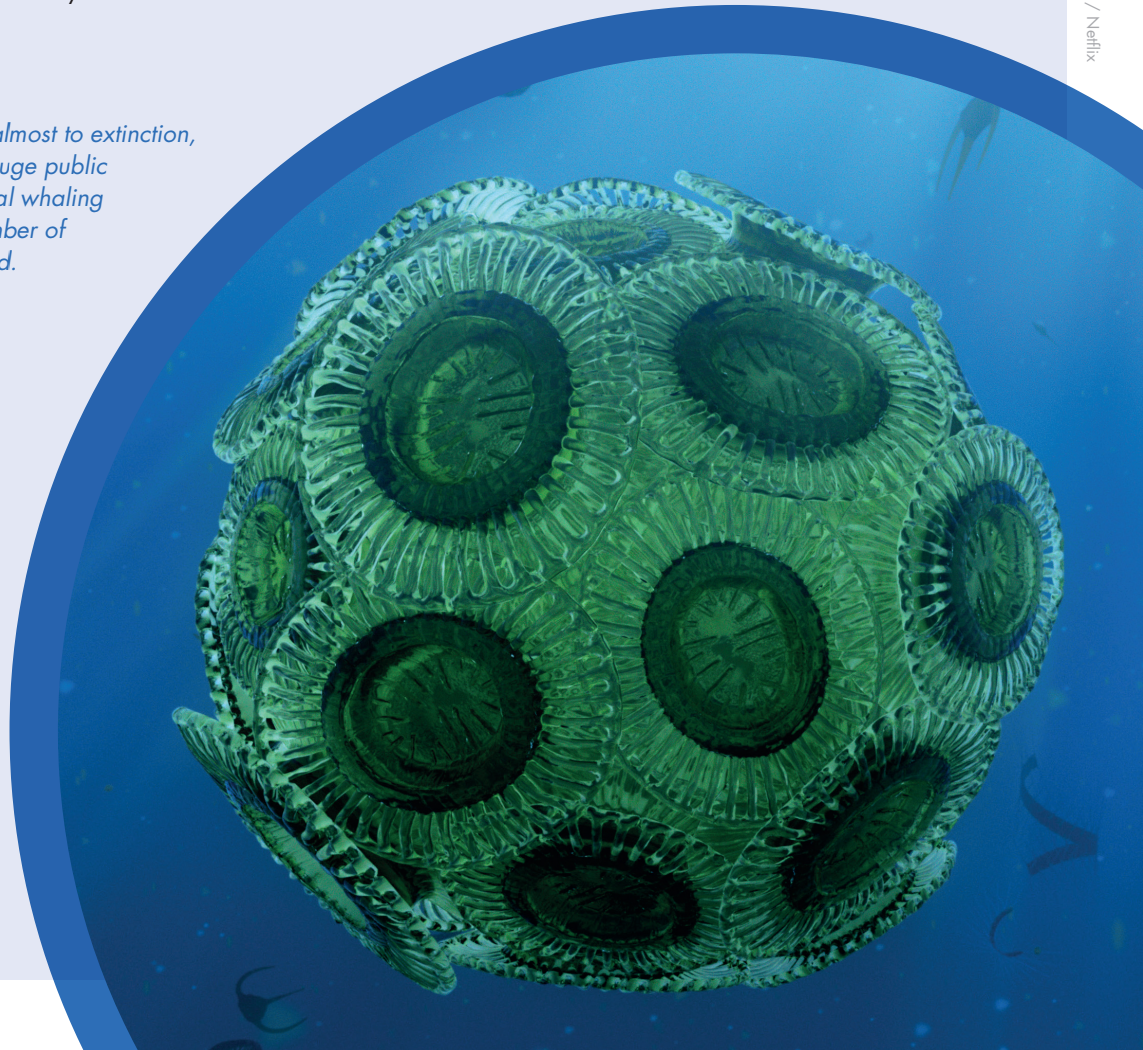
Example from the episode:

Squid are increasingly replacing fish, indicating a serious imbalance in our oceans. Squid breed quickly and have fast-growing young, able to fill gaps left by fish we overharvested. Sea lions are now forced to eat squid instead of their preferred meal of anchovies.

6 Don't underestimate the power of your voice. Even with large global environmental issues, such as saving our oceans, gathering support and initiating the conversation demonstrate the value in each individual being able to make a difference. We can begin to improve the health of our oceans; oceans have the power to recover if given the opportunity. Discuss what can be done in your community to help oceans.

Example from the episode:

Humpback whales were hunted almost to extinction, leaving only a few thousand. A huge public outcry led to a ban on commercial whaling in 1986, and since then, the number of humpbacks has steadily increased.



ACTIVITIES

ACTIVITY IDEA	SUBJECTS
Participate in a game of limbo while learning about zones of the oceans and endangered deep-diving marine species.— How Low Can They Go?	Physical education
Use your engineering skills in a science experiment that exposes the damaging truth behind some industrial fishing practices.— Be Careful What You Fish For	STEM
Write a persuasive letter outlining the benefits of oceans and demanding their protection.— A Need for the Seas	Language arts
Play a dolphin-themed twist on the game Marco Polo to model how these intelligent animals use echolocation to find fish.— Food or Foe?	Physical education
Create a jellyfish art model out of recycled plastic litter to understand how sea turtles mistake trash for food.— Only Jellies in the Belly	Arts
Research the impacts of single-use plastics and propose environmentally friendly alternatives to the administration within your school or community	Science/social studies

What We Can Do:

- Spread the word—talk to your friends and family about the importance of the ocean.
- 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 oceans—spend time in and around the oceans, but always remember to leave them how you found them!

Additional Resources:

- [Effects of MPAs](#)—this magazine article dives into a study that unveils the benefits of marine protected areas
- [A small straw's big environmental impact](#)—understanding the threats straws pose to the environment
- [7 ways you can help save the ocean](#)—easy tips for how to do your part
- [Tackling plastic pollution in the Galapagos](#)—a closer look at the different ways plastic is impacting this habitat
- [Stemming the tide of plastics in our oceans](#)—colorful infographic of where the trash is coming from and what the solution is
- [Bluefin tuna species WWF webpage](#)—facts about the threats facing this impressive marine hunter
- [Growing underwater noise in the Arctic puts whales and other animals at risk](#)—information about how noise pollution from boats and oil exploration can harm whales, dolphins, and other species
- [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](#)



OUR FROZEN WORLDS

Key Takeaways:

- Sea ice is of immense importance to plants, animals, and people. It provides protection, habitat, and feeding grounds.
- Polar regions seem beyond reach for most of us, but they are not beyond our influence. The Arctic and its unique environment are warming twice as fast as the rest of the planet due to the positive feedback loop. Sea ice reflects sunlight back into the atmosphere, while oceans absorb it. When there is less sea ice, more sunlight is absorbed into the ocean, causing increasing water temperatures. The warmer water then continues to melt the sea ice. As long as climate change persists at the current rate, this cycle will continue. With current levels of emissions, the Arctic could be ice-free in the summer by 2040.
- Life in the poles is not easy. Species that are able to thrive in these environments have adapted survival techniques that help them find food, protect their families, and withstand the cold temperatures. But as climate change continues to threaten the amount of sea ice available, these species are facing new challenges that they may not be able to overcome.
- Polar bears spend over 50% of their time hunting for food. Their dependence on sea ice for traveling, hunting, mating, and resting makes them extremely vulnerable to a changing climate.
- Humans are causing climate change. Greenhouse gases trap heat in the atmosphere and regulate our climate. These gases exist naturally, but humans add more by burning fossil fuels for energy and by clearing forests. These gases act like a blanket; the thicker the blanket, the warmer our planet becomes.

Gentoo penguins in Antarctica live mainly on crustaceans, such as krill. Krill depend on the shelter and algae food source provided by sea ice to survive their first year of life.

GUIDED DISCUSSION PROMPTS

Use these prompts to generate a class or small-group discussion based on the Our Frozen Worlds episode or on videos on ourplanet.com.

1 As with all ecosystems around the world, the polar regions rely on plant life and the smallest of creatures to support a larger food web. Discuss a food web example provided in the episode. Who are the producers and primary consumers? How do they benefit the polar regions? What would happen if they disappeared? How does a balanced food web contribute to the health of an ecosystem?

Example from the episode:

Ice is the soil upon which plant life grows and therefore provides food for grazers such as krill. In Antarctica, algae trapped in the ice begin to be set free upon the ice melting, creating the polar equivalent to grasslands. This attracts large amounts of krill, which all the larger creatures such as leopard seals, king penguins, and humpback whales depend on. With sea ice disappearing, the amount of algae produced is reduced, which in turn brings fewer krill and threatens the future of the larger creatures below the sea ice.

2 With the effects of climate change impacting the poles more than any other areas in the world, the species of these regions are making life-altering, risky decisions. Review how climate change is affecting our frozen worlds. Using examples from the episode, discuss some of the decisions different species are making in order to survive in their changing environment.

Examples from the episode:

Large numbers of walrus are hauling out on a crowded, single beach. Their natural home is on the sea ice, but as it declines, the beach is the closest place to their feeding grounds they can rest. Unfortunately, the shoreline can be up to 250 miles round-trip, and often, young walrus cannot make the trip.

A mother ringed seal leaves her pup out in the open, vulnerable to predators such as polar bears. In times past, she would have built a den on the ridge to cover her pup, but the sea ice is freezing later in the season and is melting quicker, making it flatter and providing no time for her to build shelter.

Leopard seals escape Antarctica's winter by traveling to South Georgia Island, typically returning to Antarctica in the spring. However, they are now staying away longer while king penguins, their food source, continue to crowd around the island's shores in search of krill and space to raise their chicks.



GUIDED DISCUSSION PROMPTS

3 The polar regions are important to many species that don't live there on a permanent basis. Many marine animals and birds travel long distances to feed or breed at the poles. Discuss why these animals make these long trips to the polar regions, providing examples from the episode. How will the loss of sea ice or other climate change impacts affect these species?

Examples from the episode:

Albatross travel over the Antarctica seas to feed on nutrients that have been stirred up from the deep by the rough currents and raise their chicks on surrounding land for one year before they're ready to take flight.

In the summer, narwhals travel to the Arctic awaiting the break in sea ice that allows them to travel in safety to the shallow bays where their feeding grounds are.

4 Why do we need sea ice to help fight against global warming? In the episode, sea ice is referred to as "the planet's protective white shields." Explain this metaphor.

Example from the episode:

Sea ice plays a vital role in determining the climate of the entire planet. The white surface of the ice reflects the sun's energy back into space, whereas the dark surface of the water absorbs over 90% of the energy and warms the planet, contributing to climate change. For thousands of years, there has been a healthy balance of sea ice forming and retreating. That is now no longer the case, as there is 40% less sea ice cover in the summer than there was in 1980. By 2040, the ocean in the Arctic will be mostly free of ice in the summer months. This loss of ice will inevitably have devastating consequences for all those who depend on it.

5 Polar bears are a vital member of the Arctic ecosystem. Discuss the various ways their lives are being affected by climate change and how their absence would cause a decline in the health of the ecosystem.

Example from the episode:

Polar bears depend on sea ice to hunt, using stealthy tactics to sneak up on their prey. Due to rising temperatures, sea ice is freezing later in the year, making it much flatter. It is more difficult for the polar bears to hunt on the flat sea ice because there is no place for them to hide and sneak up on their prey.

6 What can we do to help our frozen worlds and the species that depend on them? What small changes could we make in our everyday routines that could greatly impact the future of the polar regions?



ACTIVITIES

ACTIVITY IDEA	SUBJECTS
Create a climate timeline and understand just how many components of an ecosystem are affected when climate is altered.— Climate Trackers	Science
Read an excerpt from the diary of a polar bear patrol team member and create a journal entry as if you're part of the team protecting polar bears and people.— My Day on Patrol	Language arts
Understand how our daily uses of energy are connected to the future of polar bears through cause-and-effect modeling.— What's the Connection?	Science
Play a red light/green light-style game that represents the stamina and focus polar bears require to catch a meal and stay alive.— Polar Bear Freeze	Physical education
Conduct a research project that outlines the benefits of using renewable energy versus energy originating from fossil fuels. Present your research in the form of a persuasive argument as if your objective were to convince a panel of government officials.	Language arts
Take the Polar Bear IQ quiz to test your knowledge of polar bears. The more answers you get right, the more polar bears make it across the sea ice! Have students create their own game using facts on climate change and the polar regions.	Trivia game
Start a movement in your school to help protect our frozen worlds by saving energy. Conduct an energy audit at your school and propose a plan to your school administration of ways to improve current sources of energy expenditure.	Social studies

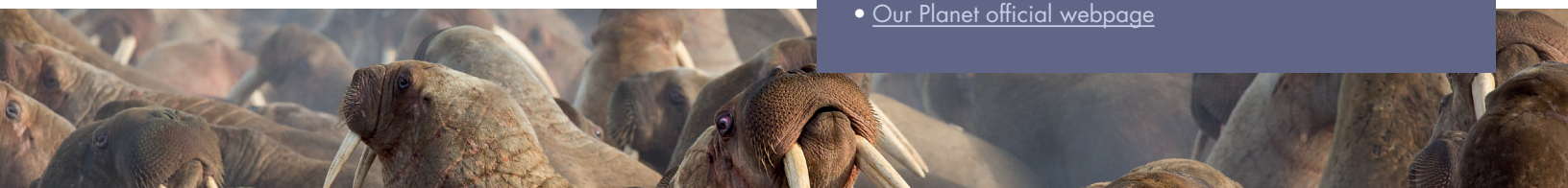
What We Can Do:

There's so much we can all do. The pollution driving climate change comes primarily from our electricity, our transportation, and our food.

- Switch to renewable energy—if you own your house, you can check out installing solar panels, which are getting cheaper and cheaper, or, more simply, ask your utility to switch you to renewable energy; many utilities can make the change with little to no effect on your bills.
- Change the way you move—you can walk, ride bikes, carpool, or take public transit—even doing these just one more time per week helps.
- Don't waste food—one simple way is to buy only as much as you need, and eat it all. In the US, we waste nearly half of the food we buy, which wastes all the energy that went into producing it, and it often ends up in a carbon emitting landfill.
- Spread the word—talk more about climate change. Bring it up to your friends and family, bring it up to your city council or school. Start holding your leaders accountable for taking action themselves.

Additional Resources:

- [What is a walrus haulout and what does it mean for the planet?](#)—answers frequently asked questions regarding walrus haulouts, similar to what is shown in the episode
- [3 things you should know about January's record-low Arctic sea ice](#)—simple outline breaking down what is happening with sea ice and the impacts
- [Polar bears and climate change](#)—a full assessment of the vulnerability of these important members of the Arctic to the effects of climate change
- [Polar bear species webpage](#)—facts about this important species including how we can help protect polar bears
- [Arctic habitat webpage](#)—what makes the region unique and why it's in danger
- [Antarctica ecoregion webpage](#)—information on the region's biodiversity and current health status
- [Polar regions habitat webpage](#)—why the poles matter
- [Our Planet official webpage](#)





OUR GRASSLANDS

Key Takeaways:

- Grasslands have many names – you may know them as prairies, steppes, meadows, savannahs, or pampas.
- Grasslands are found on every continent except Antarctica, covering over a quarter of the land on our planet. They are found in areas where there is not enough regular rain for forests to grow.
- The deep and fertile soils and absence of tree cover make grasslands perfect for farming. People have used grasslands to grow crops and support herds of grazing domestic animals for thousands of years.
- Grasslands support a great number of animals, such as zebra, antelope, and wildebeest, which need space to roam great distances. In turn, these grazers keep grasslands healthy by stimulating new growth with their trampling feet, keeping trees and shrubs from taking over, and providing food for predators.
- Grasslands help to prevent global warming by absorbing carbon from the atmosphere and storing it underground. The larger the variety of plant species in a grassland, the more efficient the grassland is at absorbing CO₂.
- Today, nearly 40% of Earth's habitable surface is used to make food. Assuming current trends continue, global population is expected to reach more than 9 billion, and the demand for food could increase by 70% by 2050. What we eat and how we produce it will determine the future of our planet's grasslands.
- Each year, between 30% and 40% of the food produced globally for humans is wasted. That's over 1 billion tons — four times the number of calories needed to feed the more than 800 million people who are malnourished.
- The conversion of the grasslands has meant that some wild animals have lost their habitats. They are forced to try to find food or living space closer to people, and this can lead to clashes. Grassland wildlife are also threatened by hunters. In recent years, attacks by poachers on rhinos to steal their horns has brought the species to the edge of extinction.
- If we choose carefully, our planet can give us space to grow enough food for every person and leave enough space for the incredible wildlife that need grasslands to survive. We need to think more carefully about what we eat and also how we can farm more efficiently to use less space.

Each year over two million wildebeest, zebras and gazelles migrate across Northern Tanzania and Kenya in search of green pasture.



GUIDED DISCUSSION PROMPTS

Use these prompts to generate a class or small-group discussion based on the Our Grasslands episode or on videos on ourplanet.com.

1 The grazers that live in grasslands are constantly on the move, following the rain that causes the grass to flourish. These animals can migrate over very long distances in search of their food. The chewing, tromping, and fertilizing of these grazers contribute to keeping the grasslands healthy. These large herds in turn support populations of predators such as cheetahs, lions, and African wild dogs. How would these animals and their migration routes be impacted by climate change, and what would happen to their grassland ecosystem without them?

Example from the episode:

In the Serengeti, herds of over a million wildebeest gather. These grazers attract predators, such as cheetahs. This natural balance is made possible because there is enough space for each species to thrive; the Serengeti has been protected for over 60 years. One of the effects of climate change is irregular rainfall, causing droughts in some areas and floods in others. The lives of these grazing species depend on rainfall; if the rainfall schedule were to change, so would the likelihood of the wildebeests' survival. And without them, the health of the grasslands and the survival of the larger predators are also in trouble.

2 Grasslands are a prime example of how a growing human population leads to an increase in consumption of natural resources and results in larger impacts to the Earth. Discuss this in terms of cause and effect, citing examples from the episode. What kind of changes could be made to minimize these impacts?

Example from the episode:

Grasslands are being plowed up for cropland and converted for urban development. This not only pollutes and destroys vital wildlife habitat, it disrupts the natural benefits that the environment provides and uses a lot of water and energy. However, if we learn to use the land and our food more efficiently, we could find a balance where everybody wins. Advancements in technology will allow new farming methods to do more with less and continue to feed the growing population while leaving space for wildlife. We can help by making an effort to not waste food in our homes, our workplaces, and our schools.



GUIDED DISCUSSION PROMPTS

3 In addition to their genetic characteristics, animals pass down behavioral traits to their offspring as well. These behaviors may have originated years ago, but continue to be passed down through generations in order to help the animals survive. Provide an example from the episode of a species whose members' survival depends on these tricks learned from their parents. As species continue to face challenges like habitat loss and poaching, populations are decreasing. What would happen if these behaviors stopped being passed down?

Example from the episode:

Elephants in Namibia have learned to survive in a harsh desert environment where riverbeds only flow once or twice a year. The matriarch female leads her family to a special place known to have food available even in a drought. She only knows of this place's existence from her mother, and now she is teaching her own family how to get there. Elephants can only survive in this area because of knowledge passed down from previous generations. If the knowledge is lost, the elephants may no longer be able to live in that environment.

4 For many grassland species, the loss of their habitat isn't their only problem. As their habitat gets converted for human uses, animals are forced to wander in search of food and water, many times leading them right into human-occupied areas. This can pose problems as these species encounter humans and compete for space and food. Conflict with humans and habitat loss are two predominant threats leading many grassland species to face extinction. Discuss, in terms of cause and effect, how changes to the environment may result in the extinction of a species. Is it possible to bring animals back from the brink of extinction?

Examples from the episode:

There were only a few Przewalski's horses that remained in Mongolia. Careful breeding of 12 of these horses in captivity increased their numbers until they were safe to release back onto the plains. Their recovery was secured only because the vast Mongolian grassland has remained largely untouched.

Over the last 100 years, the number of wild tigers has declined by over 95%. But in India, despite pressure from poaching and a growing human population, tiger numbers are increasing, thanks to protection of the grasslands. Protect the precious space that deserts and grasslands provide, and the animals will bounce back.

5 Agriculture is the world's largest industry – it employs more than one billion people and generates trillions of dollars' worth of food each year. When sustainably managed, agriculture can benefit the ecosystem; some of our healthiest remaining grasslands are privately or communally managed and sustainably grazed for livestock, which keeps them from being converted into cropland and supports biodiversity. But when unsustainably managed, agriculture can destroy habitats and have serious detrimental impacts to wildlife. Define unsustainable agriculture; what is the current design problem? Discuss innovative solutions for how we will feed people in the future when we've run out of space, without harming the environment.

Example from the episode:

Two hundred years ago, millions of bison grazed across the grasslands of the Northern Great Plains. Today, 40% of North American grassland has been lost to cropland, and less than 30,000 plains bison remain.

6 Consider your recent meals. What did you eat? Did you have any leftovers? What did you do with them? What small changes could we make in our everyday routines that could greatly impact the future of grasslands?



ACTIVITIES

ACTIVITY IDEA	SUBJECTS
Play a game that forces players to work together and demonstrate the benefits of wildlife corridors to species like elephants.— How Did the Elephant Cross the Road?	Physical education
Design an experiment to test elephant deterrent techniques and avoid human conflict.— How to Outsmart an Elephant	Science
Conduct a science experiment to understand the importance of soil to healthy life everywhere.— Don't Treat Soil Like Dirt!	Science
Use what you've learned about how our food practices impact the health of our planet to write a letter to a future pen pal about the Earth.— Eating Our Planet	Language arts
Rethink throwing out that sandwich from your lunch after calculating what it took to get it to you.— How Much Water Is in Your Lunch?	Math
Bring the challenge and importance of reducing food waste to life by measuring what's getting thrown out in your own cafeteria.— Be a Food Waste Warrior	Science
Take the Food Waste Quiz to test your knowledge of how we treat our food and how it impacts our planet. Then create a pledge for your home or school of how you plan to alter your food routine and make a difference.	Social studies

What We Can Do:

- Farm smarter—our planet provides us enough space to grow food for every person and leave enough space for wildlife that needs grasslands to survive. With farming methods improving all the time, we can produce all we need using less space.
- Diversify our diets—by making careful choices about what we eat, we can have a healthy diet while reducing the amount of space needed to produce our food. Eat more fruits and vegetables, buy sustainably produced products, and follow recommended dietary guides.
- Cut out food waste—we can avoid wasting food by buying and preparing only what we need. At meals, try to take only as much food as you realistically think you'll eat. If you do end up with leftovers, save it for another time or repurpose it, rather than throw it away. Encourage your school to compost or establish a share table in the cafeteria to avoid wasting food.
- Spread the word—share with family and friends how they can help by saving food, balancing their diets, and shopping smarter.

Additional Resources:

- [Understanding grassland loss in the Northern Great Plains](#)—breaks down what's happening in the Great Plains of North America and why it matters
- [Grasslands habitat WWF webpage](#)—explains why prairies are important and the threats they're facing
- [Deserts habitat WWF webpage](#)—an overview of these unique habitats and the species that depend on them
- [Meet the bison: facts about America's national mammal](#)—why bison are unique to our landscape
- [Elephant species WWF webpage](#)—what WWF is doing to help protect these magnificent species and their migration routes
- [The next Dust Bowl? Great Plains grassland loss slows overall, but rises in South Dakota](#)—recounts the Dust Bowl of the 1930s and how we prevent history from repeating itself
- [Our Planet official webpage](#)



OUR FRESH WATER

Key Takeaways:

- Less than 1% of the world's water is fresh and accessible, yet freshwater habitats such as lakes, rivers, and wetlands are home to more than 10% of all known animals and almost 50% of all known fish species.
- Freshwater ecosystems help regulate temperature, transport nutrients, and allow wildlife to travel through different landscapes to complete their life cycles.
- Everything that lives on land, including people, depends on fresh water. Water is essential for drinking, growing crops, manufacturing, producing energy, and transporting goods.
- Wetlands are some of the most productive habitats on the planet. They help filter water, minimize the effects of floods and storms, and support high concentrations of animals.
- Poorly managed dams can divert and disrupt the natural flow of rivers, which affects wildlife and people. About a quarter of the world's river basins run dry before they reach the sea because so much water has been taken from them.
- Fresh water availability is becoming unpredictable and uncertain in many areas of the world. It's threatened by climate change, population growth, and changing consumption patterns.
- We are not alone in our need for water, but we have the ability to ensure that fresh water flows. To keep water flowing, all users need to work together. Reducing pollution, improving our irrigation systems, minimizing personal water use, and properly managing dams will help protect freshwater habitats. We should also focus on renewable energy options, such as solar and wind, that have a less detrimental impact on rivers and the communities, cities, and biodiverse ecosystems that rely on them.

Florida manatees leave coastal seas to swim up rivers in the winter to find warmer water and abundant freshwater plants to eat. Humans are now taking so much water from springs, and polluting others, that manatees are losing their winter homes.

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GUIDED DISCUSSION PROMPTS

Use these prompts to generate a class or small-group discussion based on the Our Fresh Water episode or on videos on ourplanet.com.

1 Discuss fresh water's role in ecosystems like forests and deserts. Use terms related to the water cycle and examples from the episode. How do ecosystems and fresh water depend on one another? How would the health of one be impacted by the health of the other?

Examples from the episode:

The Iguazu Falls, lying between Brazil and Argentina, are the largest waterfalls on the planet. Much of the falls' water comes from the Amazon rain forest 1000 km away, where it rises as vapor from the canopy. One tree can give off 1000 L of water a day. As the vapor rises, it condenses into clouds. About 20 billion tons of water – more than what travels down the river itself—leave the forest as vapor each day. As clouds travel, they shed water, irrigating farmland and forest, and filling the Pantanal, the largest tropical wetland on Earth. If the rain forest is destroyed, this life-giving cycle will be broken.

The desert of central Australia is one of the driest places on Earth. Once per decade, this desert is transformed by moisture-laden clouds of the monsoon. These clouds eventually burst, flood the desert, and create Australia's largest lake. Huge numbers of fish and birds swarm this area to benefit from the lake before it dries up for another ten years.

2 Fresh water is becoming scarce. Climate change is impacting weather patterns, and growing human populations continue to misuse and overuse the water we have available. These effects are being felt all over the world and by many different species. Discuss how resource availability (specifically fresh water) affects organisms in an ecosystem, using examples from the episode.

Examples from the episode:

Elephants need to drink 200 L of water a day; they eat wood because it contains a lot of moisture and dig holes in the sand of riverbeds, following their extraordinary sense of smell in their search for water.

Hippos rely on flowing water to keep cool; without it, they're crammed together in mud, which can create tension.

Buffalo in an urgent search for water head to the water holes, risking their lives by having to share the water supply with their biggest predator—lions.



GUIDED DISCUSSION PROMPTS

3 Dams are created in order to provide an alternative source of energy generation. However, if constructed poorly, they can pose many problems. Cite examples from the episode of some of the negative impacts of dams. Who is affected and how? Research and discuss other ways in which communities can provide alternative sources of energy.

Examples from the episode:

Pacific salmon swim up rivers in North America, leaping up waterfalls to assist with their migration. However, they're not able to do this when dams are present. These salmon are now swimming up fewer than a quarter of the rivers they used to because of dams disrupting the rivers' connectivity. This poses problems not only for the salmon, but for Alaskan brown bears that depend on these fish for sustenance and will not sustain themselves through hibernation without them.

Rivers throughout the Mekong system no longer flow as a result of dam construction. This impacts the numerous species of freshwater fish that rely on these rivers to migrate and breed. The Mekong supports the largest inland fishery in the world; one-fifth of all freshwater fish caught by people worldwide comes from this system. The inability of these fish to reproduce will impact the people that depend on these rivers for income and food.

4 Every living thing needs water. Humans rely on it for the food we eat, the clothes we wear, and the energy we depend upon. Animals use it for their homes, for nourishment, and for protection. Freshwater ecosystems support more than 100,000 species – from fish and insects, to amphibians and reptiles, to birds and mammals. Share examples from the episode that demonstrate the variety of ways fresh water is used by species, then consider all the ways you use fresh water each day. What small changes could you make to your surroundings or daily routine to improve the status of fresh water around the world?

Examples from the episode:

Cichlid fish use Lake Tanganyika in Tanzania, and Siamese fighting fish use the Mekong River in Southeast Asia as breeding grounds to attract mates and lay their eggs.

Manatees in Florida travel from the sea to the rivers in the winter to keep warm and graze on freshwater plants.

Jaguars, despite being excellent swimmers, cannot hunt very well in water. Capybaras, a prey for jaguars, are aware of this and use the water as protection to escape.



ACTIVITIES

ACTIVITY IDEA	SUBJECTS
Itemize your daily water expenditure and strategize on how to improve it when given a water budget.— A Drop in the Bucket	Math
Compose a poem using metaphors and similes to describe the importance of free-flowing rivers.— Like the River Flows	Language arts
Build a model of a wetland ecosystem and perform a science experiment to unveil why they're important.— Nature's Sponges	STEM
Think twice about throwing food out by learning how much water it took to make that food and creating a pictograph representation of your lunch.— How Much Water Is in Your Lunch?	Math
Use the Free-Flowing Rivers app to interact with nature and discover the importance of flowing rivers through augmented reality.	STEM
Perform an audit at your school or home to analyze water usage and determine strategies for conserving water.	Social studies
Thinking of your local lake or river, take the How Healthy Is Your Favorite Water Basin quiz to give your local waterway a health report card. Then develop a plan with your community for improving the water basin's health.	Social studies

What We Can Do:

- Spread the word—talk to your friends and family about the importance of conserving fresh water.
- Watch your water use—understand your personal impact on our planet's water supply and avoid being wasteful.
- Save your energy—to help combat the effects of climate change, encourage renewable energy sources, unplug devices when they're not in use, and walk or bike when you can instead of using a car.
- Recharge your local water source—return rain where it belongs by using downspouts and gutters, or collect rainwater for outdoor uses such as watering lawns or flower beds.
- Enjoy your local freshwater resources—spend time in and around rivers and lakes, but always remember to leave them the way you found them!

Additional Resources:

- [Freshwater Force](#)—join the movement and fight for the conservation of freshwater habitats
- [Depending on Clean Water: Five Freshwater Animals](#)—highlights from just a few of the thousands of species that rely on fresh water
- [An 83% decline of freshwater animals underscores the need to keep rivers connected and flowing](#)—what the health of its species can tell us about the health of the freshwater ecosystem
- [5 Amazing Animals That Live in the Pantanal and Need Our Help](#)—key species that call the world's largest tropical wetland home
- [Free-flowing Rivers WWF webpage](#)—colorful answers to questions on the importance of keeping rivers free-flowing
- [Freshwater habitats WWF webpage](#)—species that depend on fresh water, and the threats these habitats face
- [Fresh Water initiative WWF webpage](#)—what WWF is doing to help protect our planet's fresh water
- [Our Planet official webpage](#)





OUR FORESTS

Key Takeaways:

- We've lost half of our forests worldwide due to deforestation, primarily to create farms and ranches as well as roads, railways, and other infrastructure.
- Forests also are being degraded and fragmented, mainly because of illegal logging.
- Loss and degradation of forests not only causes a loss in species but also changes the world's climate.
- Forests are resilient and are capable of bouncing back if given the time and space to do so.
- While acting as the lungs of the Earth, forests help purify our air and water while also soaking up large amounts of carbon, preventing it from entering our atmosphere and contributing to climate change.
- Forests provide animals and people with homes, food, and fresh water. Humans additionally rely on forests for resources to produce a number of products including clothing, medicine, and paper.
- Tigers are essential members of their ecosystem, and their numbers have declined dramatically due to human causes.



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Tiger cubs with mother, Kanha National Park, India.



GUIDED DISCUSSION PROMPTS

Use these prompts to generate a class or small-group discussion based on the Our Forests episode or on videos on ourplanet.com.

1 The episode provided many examples of the interdependence between forests and animals. Discuss these examples and how the animals and forest depend on each other. Why are they important? And what would happen if the animals or the forest were to disappear?

Example from the episode:

In India, macaque monkeys and hornbills eat and disperse seeds, helping trees germinate and spread. In a similar scenario, ring-tailed lemurs in Madagascar are the only species capable of eating and dispersing seeds of certain species of trees that would not survive otherwise.

2 There are a variety of relationships that exist between different animal species (competitive/predatory/mutually beneficial). Share an example from the episode of an interaction that one forest-dwelling species has with another. What is the type of relationship between these species? How do these species need each other? How is the interaction/relationship related to the availability of the natural resources around them? What kind of ripple effect would occur if any of these species were to disappear or go extinct?

Examples from the episode:

The grazing of elephants helps shape forests, which in turn helps the African wild dogs by clearing way for their prey to emerge.

Pine nuts from pine trees in Russia help sustain species like wild boar through the winter, which in turn provide a source of prey for larger predators like the Amur tigers.

Immature leaf bugs feed on tree sap, then excrete it as "honey dew," which smaller lemurs eat.

In western Alaska, bald eagles engage in a fierce competition for salmon. Spawning spots are known to all nearby predators, so as rivers freeze, the competition becomes even more intense. Females, being larger, can usually fight off males, while young bald eagles are stuck fighting for scraps.



GUIDED DISCUSSION PROMPTS

3 Tigers are solitary animals that require vast amounts of forest landscape as their territory to roam. In order to protect one tiger, we must conserve around 25,000 acres of forest. With poaching and deforestation threatening their survival, what are possible solutions to bring tiger populations back from the brink of extinction?

Example from the episode:

Fewer than 600 Amur tigers remain in the wild. However, that number is a significant increase from what it was several decades ago. This is a result of Russia becoming the first country in the world to grant these tigers full protection by monitoring tiger populations and reserving areas for them to roam. The footage of Amur tigers from this episode contains the most intimate pictures of them ever taken. These rare glimpses reveal that their future relies on having forests in which to hunt.

4 Fires are a natural and beneficial element of many forest landscapes—they help return nutrients to the soil and allow the growth of new flowers and trees that wouldn't have germinated if not for the fire. However, fires are problematic when they occur in the wrong place, at the wrong frequency, or at the wrong severity. Each year, millions of acres of forest around the world are destroyed by fire. How is climate change contributing to the frequency of these damaging fires? What are the impacts and who is affected?

Example from the episode:

Older redwoods have adapted to survive fires, thanks to their fire-resistant bark. However, many species of trees are incapable of naturally recovering and are destroyed in these irregular fires caused by threats like climate change. These forest fires alter the structure and composition of forests and also open them up to invasive species, threaten biological diversity, alter water cycles and soil fertility, and destroy the livelihoods of the people who live in and around the forests.

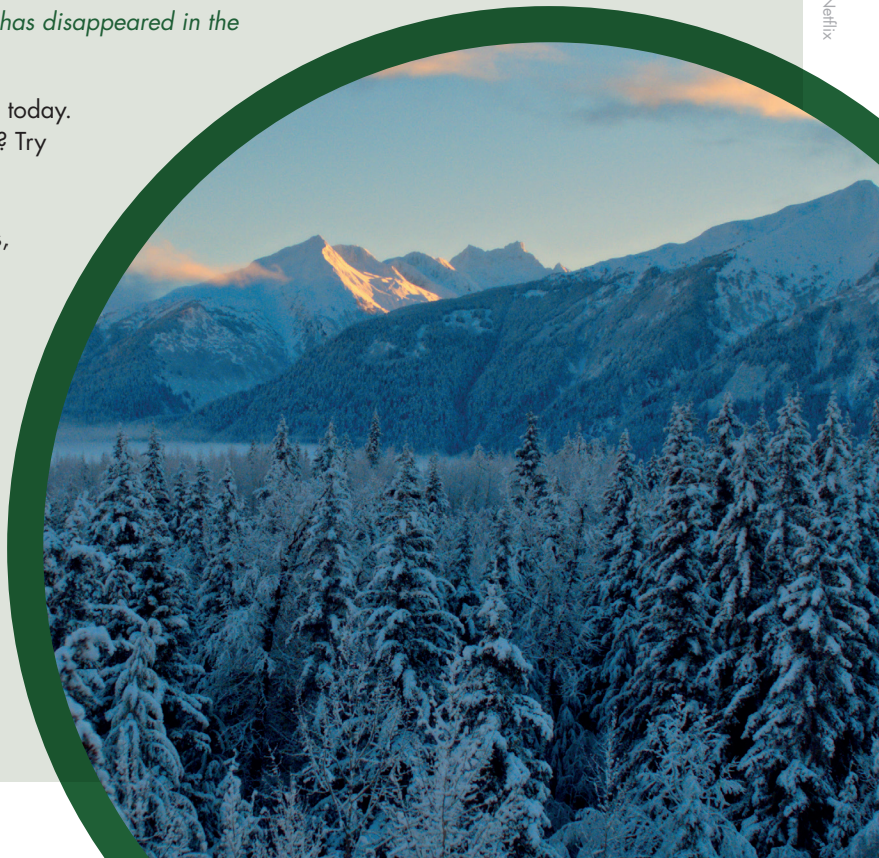
5 How do changes to the environment, such as deforestation, affect the physical or behavioral traits of species? Species become extinct because they can no longer survive and reproduce in their environment. If species cannot adjust to change that is too fast or drastic, the opportunity for the species' evolution is lost. Name a species from the episode that would be forced to adapt at the risk of going extinct. What choices do they have? What could be done differently to assure a future for forests and these forest-dwelling species?

Example from the episode:

Fossas, Madagascar's largest predators, rely on the dry, deciduous forests of the island as their primary habitat. One-third of the fossa population has disappeared in the past 20 years due to deforestation.

6 Consider all of the ways forests have touched your life today. What have you used that came from a forest resource? Try to generate as many ideas as possible, including furniture, building materials for floors or walls, doors and window frames, fruits, paper, tissues, toilet paper, clean air, pencils, rulers, toys, musical instruments, medicine, soccer balls, bicycle tires, etc.

7 What can we do to help forests and the species that depend on them? What small changes could we make in our everyday routines that could greatly impact the future of forests?



ACTIVITIES

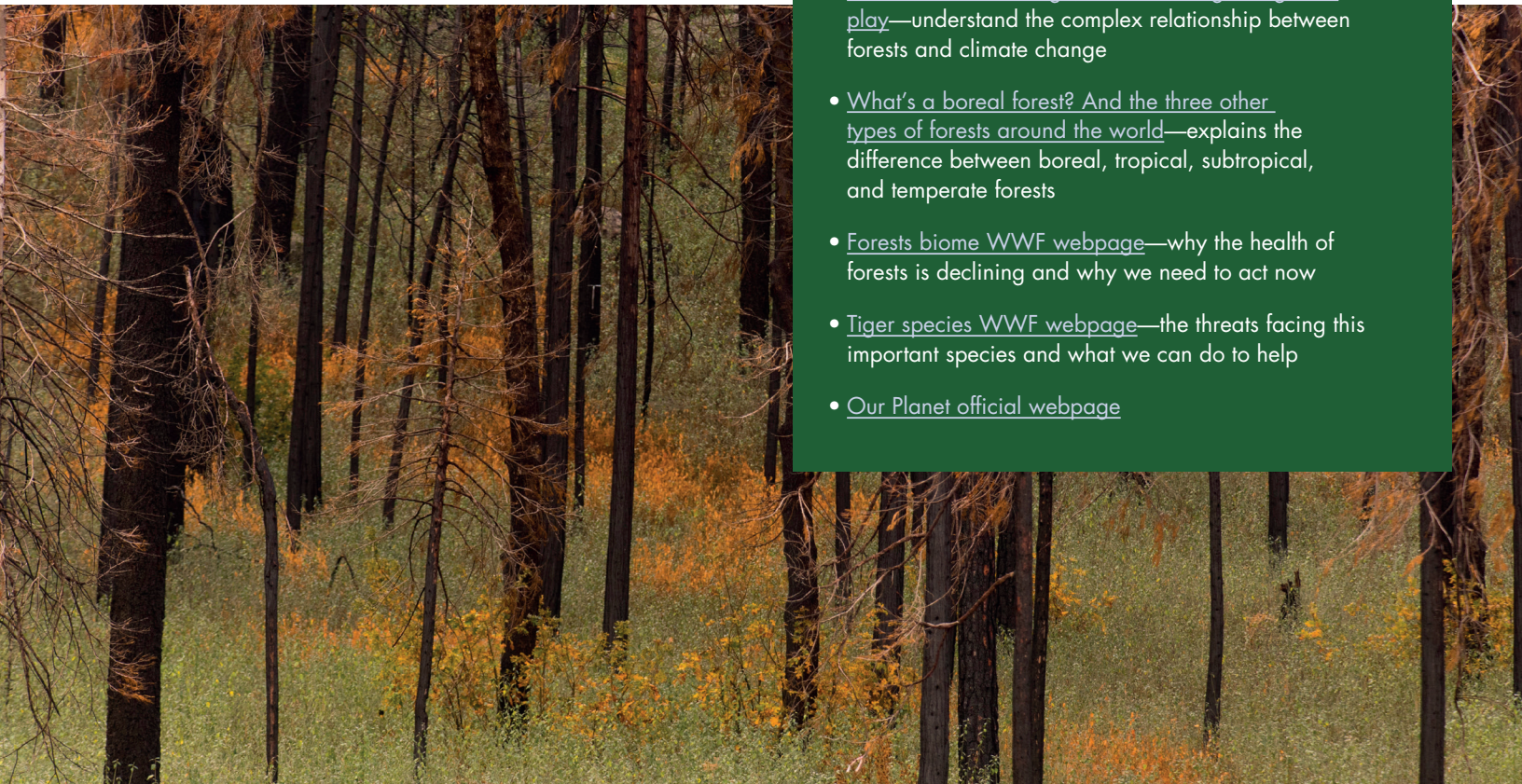
ACTIVITY IDEA	SUBJECTS
Participate in a STEM challenge to understand the importance of apex predators like tigers in their ecosystem.— The Missing Piece	STEM
Perform an audit in your school or classroom to discover just how many everyday products come from forests, and sign the FSC pledge.— Trees and Tigers	Social studies
Read of the challenges tigers come across regularly, and compose a journal entry from their point of view.— A Look Through a Tiger's Eyes	Language arts
Get to know your local forest by exploring with a notepad and/or camera and trying to identify as many species as possible using the SEEK iNaturalist app.	Science
Take the What Tree Are You? quiz and compare your results with those of a friend. Compose a writing sample stating whether you agree or disagree with your results based on the similarities outlined between you and the tree you were matched with.	Language arts

What We Can Do:

- Spread the word—talk to your friends and family about the importance of forests.
- Encourage smart shopping—be sure to look for the FSC logo on wood and paper products.
- Plant trees—start an effort within your school or community.
- Enjoy the forests—spend time in forests and appreciate the health benefits they have to offer, but always remember to leave them how you found them!

Additional Resources:

- [Uporny's story](#)—a colorful, illustrative reading that tells the story of one remarkable tiger's journey
- [Forests, pine nuts, and tigers](#)—details the connection between the loss of the Amur (Siberian) tiger and our increasing demand for pine nuts
- [Want to help save the world's forests? Look for the FSC label when you shop](#)—why the FSC label matters for forests, people, and wildlife
- [Forests, climate change, and the role green giants play](#)—understand the complex relationship between forests and climate change
- [What's a boreal forest? And the three other types of forests around the world](#)—explains the difference between boreal, tropical, subtropical, and temperate forests
- [Forests biome WWF webpage](#)—why the health of forests is declining and why we need to act now
- [Tiger species WWF webpage](#)—the threats facing this important species and what we can do to help
- [Our Planet official webpage](#)





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.

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

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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.

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 Rajat 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.— The Case of the Missing Sea Turtle	Science
Create a jellyfish art model out of recycled plastic litter to understand how sea turtles mistake trash for food.— Only Jellies in the Belly	Arts
Use your engineering skills in a science experiment that exposes the damaging truth behind some industrial fishing practices.— Be Careful What You Fish For	STEM
Design travel brochures for coastal areas around the world and discover how these towns can benefit from sea turtles without harming them.— Turtles on Vacation	Social studies
Write a persuasive letter outlining the benefits of coastal seas and demanding their protection.— A Need for the Seas	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](#)

