

How have human activities impacted sea turtle survival?



Sea Turtles—How have human activities impacted sea turtle survival?

Look at the poster picture. It shows a Hawaiian Green Sea Turtle swimming in the warm waters of the Pacific Ocean near Hawaii. This species is endangered, meaning it is in immediate danger of extinction.

Discuss with a partner about why sea turtles might be endangered.

1. Conduct research about the factors that threaten sea turtles. List specific examples for each threat category listed in the boxes below.

Illegal Harvesting

Habitat Loss

Ocean Pollution

Climate Change

Other

2. Which example above do you think causes the greatest harm to sea turtles. Why?

Sea Turtles and Human Activities

Image Information: The poster image shows a Hawaiian Green Sea turtle (Chelonia mydas). Their streamlined bodies allow them to swim swiftly, over long distances but prevents them from retracting their head and limbs. The green sea turtle is not named for the color of its shell but for the color of its fat and cartilage. Worldwide, sea turtles are listed as endangered species. Because they grow slowly and are particularly vulnerable to over fishing, habitat loss and ocean pollution, especially from discarded plastic items, the number of nesting populations is critically low.

Question: How have human activities impacted sea turtle survival?

Possible student answers:

Illegal Harvesting

- Over fishing and poaching threaten population size

- Accidental capture in commercial fishing nets can drown turtles

- Black market trade in eggs and tortoise shells

Habitat Loss

- Development along beaches destroy nesting sites

- Light pollution in nesting areas confuse hatchlings trying to find water

- Sea wall construction block beach access

Ocean Pollution

- Plastic waste in the ocean (trash including single-use plastics like straws, soda and water bottles)

- Chemical runoff from land pollutes waterways and destroy food sources

- Entanglement in discarded nets and fishing gear causes them to drown

- Oil spills can poison turtles who ingest oil and tar

Climate Change

- Changing sand temperatures effect egg development

- Changing ocean water levels reshape coastlines making it difficult for turtles to find nesting areas

Other

- Injured by boats and large ocean vessels

- Predators eating hatchlings on land and shark feeding on adults in water

- New Diseases like fibropapillomatosis

Interesting Info: Human activities on land and water have created survival problems for the world’s sea turtle populations. Sea turtles encounter habitat loss; pollution, and overharvesting, as well as challenges related to a changing climate. Plastic beach trash interrupts their reproductive routines by blocking paths to sand dunes where they lay their eggs. Floating plastic debris is confused as potential food, resulting in blocked digestive systems and in some cases causing starvation. Discarded fishing gear and floating trash block ocean migration routes and entrap turtles, making them susceptible to drowning.

Support the Phenomena:

NGSS: Science and Engineering Practices #6 – Constructing Explanations and Designing Solutions: In K-2, students **generate solutions to a problem**; In 3-5, students **use evidence to support an explanation**; In 6-8, students **apply scientific ideas /evidence to construct an explanation of real-world phenomena**; In 9-12, students **apply engineering practices to design solutions to problems**.

- In K-2, have students look up information on sea turtles, and sea turtle rescue organizations. Have them describe the human activities that affect sea turtles (such as plastic pollution in the ocean) and propose solutions that reduce the impact of human activities on sea turtles.
- In 3-5, have students complete the charts on the student page and for each category choose one factor and provide an explanation on how it impacts the sea turtle population. Have them cite the sources they used in their research to explain their choices, and offer ideas on how changes in human activities could help protect sea turtles.
- In 6-8, students complete the charts on the student page. They then choose one human activity to investigate further and propose possible solutions that could mitigate the impact of that human activity on the sea turtle population.
- In 9-12, students complete the charts on the student page. They select one human activity factor and apply engineering practices to design a possible solution to the problem that factor presents. Their solutions should include research that supports their proposed design, and they should produce a model that provides evidence of their model’s success.

More information: To learn more about the Hawaiian sea turtles, visit State of **Hawaii, Division of Aquatic Resources**. The **World Wildlife Organization** or the **National Oceanic and Atmospheric Administration (NOAA)**. Has general information on sea turtles worldwide. **Sea Turtle, Inc.** provides information on conservation, education, and rehabilitation.