



HAWAIIAN SEA TURTLES: LEARNING GUIDE

Lesson plans and activities created for your classroom

Best suited for: Grades 4-7

RELATED NGSS/OCEAN LITERACY BENCHMARKS

- [4-LS1-1](#): Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
- [5-ESS3-1](#): Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
- [MS-LS2-4](#): Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
- [MS-LS2-5](#): Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
- [MS-LS4-4](#): Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.
- [OL5](#): The ocean supports a great diversity of life and organisms.
- [OL6](#): The oceans and humans are inextricably connected.

BACKGROUND & OVERVIEW

Most of the turtles in Hawaii are home to two species: the [green sea turtle](#) and the [Hawaiian hawksbill sea turtle](#). This learning guide will reinforce concepts related to species introduction, diet, life cycle, threats, and solutions. It is designed for grades 4-7 but can be adapted across the elementary and middle school level by the instructor.

As an instructor, this guide can be used to supplement [the lesson plan found on our YouTube channel](#) (15 minute interactive video) or your own. You can choose which activities to use. All activities can be modified to support lesson delivery on topics such as: ocean conservation, climate change, marine debris pollution, marine reptiles as a whole, and ecosystem health.

OBJECTIVES

1. Familiarize students with sea turtle species found in Hawaii, including terminology
2. Introduce diet of sea turtles and the relationship with coral reefs
3. Introduce the life cycle process of sea turtles
4. Explain the main threats to sea turtle populations
5. Discovering how humans of all ages can support sea turtles

STUDENT UNDERSTANDING

1. I have a basic understanding of the Hawaii's sea turtles, including their population status, how to tell them apart, and adaptations they have to live in their environment.
2. I understand what sea turtles eat, how they reproduce, and how they are part of ocean health.
3. I understand the challenges facing sea turtle populations, and how I can help be part of the solution.



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VOCABULARY

Green sea turtle (n): The more common sea turtle found in Hawaii

Hawaiian hawksbill sea turtle (n): The less common sea turtle found in Hawaii

Threatened population (n): A species that is threatened with extinction

Endangered population (n): A species that is at risk of extinction

Herbivore (n): Feeding on plants, vegetarian

Omnivore (n): Feeding on plants and animals

Hatchling (n): A young sea turtle that has recently emerged from its egg

Derelict fishing gear (n): Fishing gear left behind in the ocean such as nets, line, and hooks

Biodiversity hotspots (n): An area with a large variety of species within the habitat

Lost years (n): The period of time between hatchling and adulthood when sea turtle are in the open ocean

Basking (v): When sea turtle naturally lays on the beach for warmth

Thermoregulation (n): The process of maintaining core body temperature

Marine Debris (n): Human-created waste left intentionally or accidentally in the ocean

Bycatch (n): Marine animals caught during fishing activity for a different species

Boat Strike (n): When a boat hits, injures or kills a marine animal

Carapace (n): The shell of a sea turtle

Incubation (n): The period of time sea turtle eggs are in the nest before hatching

Washback (n): A sea turtle hatchling that has been washed back to shore by waves it is unable to pass

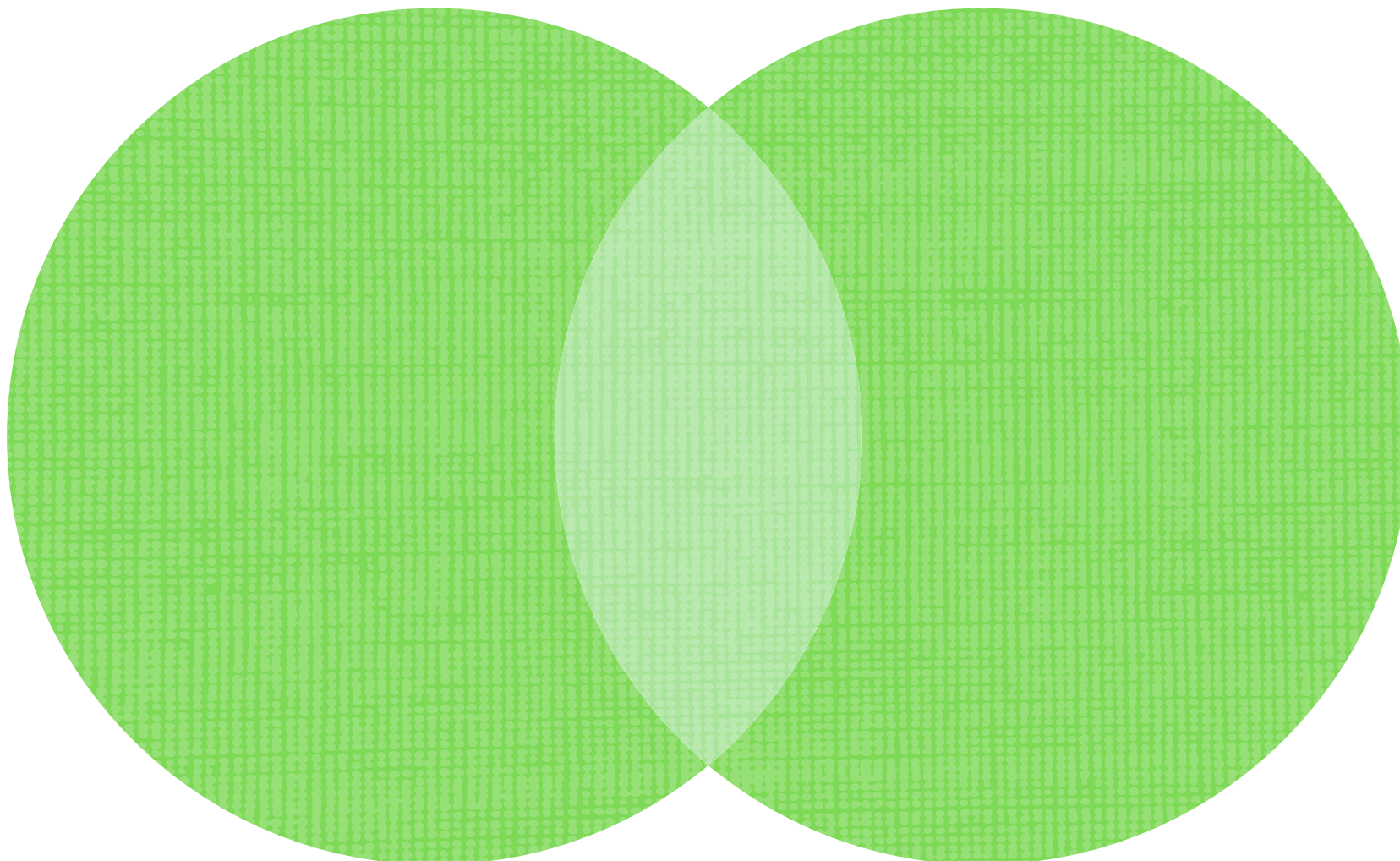
Hawaii's Sea Turtle Comparison

Using the word bank below, place each characteristic in the appropriate area of the Venn Diagram.

population is endangered found on coral reefs population is recovering
eats seagrass eat jellyfish eats algae omnivores as an adult
eats sponges more common in Hawaii breathes air herbivores as an adult

Hawaiian Green Sea Turtles

Hawaiian Hawksbill Sea Turtles



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Hawaiian Green Sea Turtles

Hawaiian Hawksbill Sea Turtles



Name:

Date:

Sea Turtle Writing Exercise

Members of the public should always give sea turtles space and never attempt to disentangle a sea turtle because it could make the injury worse. Always report injured marine life directly to HMAR or the marine animal rescue organization in your area.

Prompt: Imagine you are a marine biologist that rescues sea turtles for HMAR. You arrive at a beach and see two sea turtles entangled in fishing gear. One is a Hawaiian hawksbill sea turtle that has a small hook in its right front flipper. The other is a green sea turtle with monofilament fishing line wrapped around its head. Summarize how both the hook and the line are making survival more challenging for each animal. Explain which sea turtle you would prioritize saving first, and explain why.



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Sample answer:

The hook is hurting the hawksbills sea turtle and making it more challenging to swim and get to the surface to breathe. Over time, the hook could create a larger injury and become infected.

The fishing line is an entanglement hazard for the green sea turtle. It could get caught on something and prevent the sea turtle from breathing. It is also likely making it more challenging for the animal to eat.

We would want to prioritize the Hawaiian hawksbill sea turtle because its population is endangered. If they were both the same species of sea turtle, we would prioritize the individual with the fishing line entanglement hazard because if it gets caught on anything, the animal may not survive. In a perfect world, we would save both.

Key messages:

- Fishing gear should be disposed of responsibly
 - Fishing gear can injure sea turtles
 - Fishing gear can entangle sea turtles
 - Sea turtles can ingest fishing gear as food
- We should know where our seafood comes from to ensure it is caught sustainably and responsibly





SEA TURTLES & CORAL REEFS

Sea turtles are marine reptiles that are found in all oceans. In Hawaii, we mainly have the green sea turtle (*Hawaiian name: honu*) and the Hawaiian monk seal (*Hawaiian name: honu'ea or 'ea*). As adults, their primary habitat is coral reefs. Both species have algae (*Hawaiian name: limu*) as part of their diet, and they are known to graze the algae on shallow coral reefs.

Coral reefs are considered rainforests of the ocean. Shallow water corals, where sea turtles are found, need sunlight. The plants that live in their skin need sunlight to photosynthesize and create food for the corals so that they can grow, and provide oxygen. As corals grow, their exoskeleton becomes the large reef structure. This structure helps protect coastal areas from large waves, storms, and climate change impacts like sea level rise. Coral reefs are *biodiversity hotspots*, which support over 1 million species of marine life. One way they support many species is serving as a “nursery,” for fish. Fish lay eggs in coral reef crevices that are protective from predators. When those fish grow safely to adulthood, some go to the open ocean, where they support many other species of marine life as food.



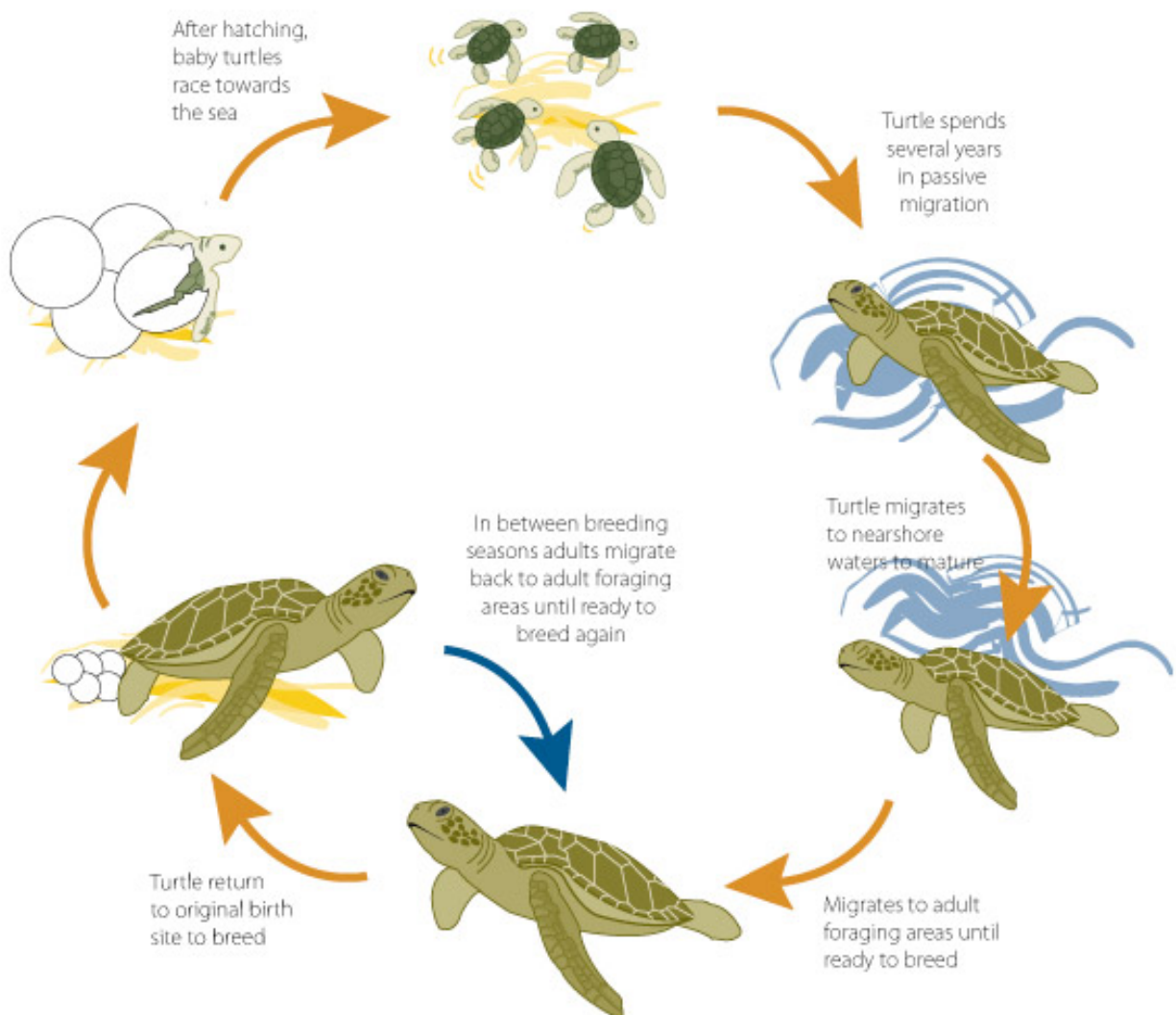
The ocean is a very complex ecosystem. Many of the impacts on the ocean affect other parts of the ecosystem as well. Sometimes, changing one piece of the puzzle throws everything out of balance. Humans understand some of these relationships, but there are many we don't understand fully yet.

Directions: Read the excerpt above. Use this information to fill in the worksheet on how the amount of sea turtles, algae, and coral reefs found in a specific area impact each other, and humans. Place arrows to show if the amount is increasing, decreasing, staying the same. Describe an impact of the change on human. Provide an example.

Sea Turtles	Amount of Algae	Health of Coral	Impact on Humans
↑ _____	_____	_____	_____ _____ _____
↓ _____	_____	_____	_____ _____ _____
_____	↑ _____	_____	_____ _____ _____

SEA TURTLE LIFE CYCLE ART

The life cycle of a sea turtle is complex, but understanding the process helps us understand how to best support their recovery. Pregnant sea turtle mothers go back to the beach that they were born on, and lay a nest of ~100 eggs and then leave. They can lay multiple nests per season. Those eggs incubate for 60-70 days until hatchlings emerge and attempt to make their way to the ocean using the moonlight. They face numerous threats during this journey, including predators, large waves, marine debris, and confusing lighting. If they make it to the open ocean, they are threatened by marine predators as they grow. This time period is called the “lost years,” because this part of sea turtle life cycle is not understood well by scientists, and more research is needed. Less than 1% of sea turtles make it to adulthood. As adults, sea turtles live in shallow, coastal waters and can be found on coral reefs as their primary habitat. After about 35 years, sea turtles are able to reproduce. Female sea turtles that reproduce return back to the beach they were born on to start the cycle again.





Your students can model the life cycle of a sea turtle using hands-on, project-based learning.

Option 1: Life Cycle Simple Craft | Option 2: Life Cycle Diorama

OPTION 1: YOUNGER STUDENTS

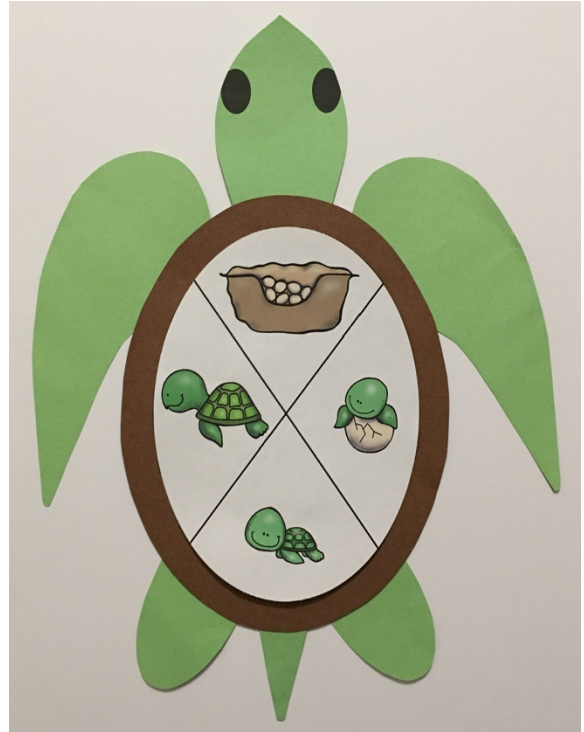
Students will create a sea turtle species of their choice that accurately represents the anatomy of a sea turtle and the stages of the life cycle. This can be done at home but it best for In classroom to share materials.

Materials:

1. Green, black, and brown construction Paper (1 each per student)
2. Paper plate to represent carapace
3. Scissors, markers, and glue for the class

*Total cost of materials per student ~\$2.50

Directions: Make your own sea turtle using construction paper. The paper plate, representing the carapace, will be used to show the 4 stages of a sea turtles life cycle - nesting, hatchling, juvenile, and adult. Include any information about each life stage that you want to remember.



OPTION 2: OLDER STUDENTS

Using their imagination and the lessons learned about sea turtles, students can use materials of their choice to depict the life cycle and habitat of a sea turtle. This project is best as a long-term take home project, but can be carried out in the classroom. When completed, students can present their diorama to classmates as a class or in small groups.

Materials:

1. Shoebox (1 each per student)
2. Paint, glue, markers
3. Figures

*Total cost varies by student

Directions: Using a shoebox, complete a diorama representing a sea turtle's life in your own way. For completion, your diorama must include the following components:

- A sea turtle species learned in class
- All 4 life stages of a sea turtle
- A component of their habitat
- One threat to sea turtles

