Sea Turtles: Ocean Travelers

Program length: 60 Minute Program (*includes demonstrations and hands-on stations)*

Recommended for: 3rd-5th grade students **K-2nd grade version in development*

Journey into the world of sea turtles! Elementary students discover the incredible body parts and behaviors that help sea turtles survive their ocean adventures. From flippers that help them move on land and sea, beaks that help them eat, to their "built-in compass," students will see how sea turtles are amazing navigators! A lesson packed with hands-on activities, students explore turtle diets, race like hatchlings to the ocean, and investigate how challenges like predators and pollution affect these incredible animals.

Highlighted standards:

- **3-PS2-3:** Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.
- **3-PS2-4:** Define a simple design problem that can be solved by applying scientific ideas about magnets.
- **3-LS1-1:** Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.
- **3-LS3-1:** Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.
- **3-LS3-2:** Use evidence to support the explanation that traits can be influenced by the environment.
- **3-LS4-1:** Analyze and interpret data from fossils to provide evidence of organisms and the environments in which they lived long ago.
- **3-LS4-2:** Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving mates, and reproducing.
- **3-LS4-3:** Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.
- **3-LS4-4:** Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.
- **4-LS1-1:** Construct an argument that plants and animals have internal and external structures that function to support survival, growth behavior, and reproduction.
- **4-ESS2-2:** Analyze and interpret data from maps to describe patterns of Earth's features.

- **5-LS2-1:** Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
- **5-ESS3-1:** Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
- **5-PS3-1:** Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

Sharks: Ultimate Survivors

Program length: 60 Minute Program (*includes demonstrations and hands-on stations)*

Recommended for: 6th, 7th, and 8th grade students

Dive into the fascinating world of sharks in this hands-on, science-based program designed for curious middle school students! Participants will explore how shark adaptations determine survival, how the environment shapes natural selection, and the unique ways sharks reproduce through fun demonstrations and hands-on stations. Build your own shark, test survival strategies, and investigate shark eggs and embryos. Learn how microplastics impact apex predators through bioaccumulation and what actions we can take to protect ocean health.

Highlighted standards:

- **MS-LS2-4:** Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
- **MS-LS3-2:** Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.
- **MS-LS4-2:** Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms
- **MS-LS4-3:** Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.
- **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.
- **MS-LS4-6:** Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.

Plastics to Possibilities

Program length: 60 Minute Program (*includes lecture and lab)*

Recommended for: High School students

Explore one of today's biggest environmental challenges- Microplastics! High school students will investigate what microplastics are, how they move through ecosystems and their impact on wildlife and people. Through hands-on labs students will test filtration methods, examine real microplastic samples, and take on an engineering design challenge to create solutions. They'll also discover how Colorado's waterways connect to the ocean- and why local action matters on a global scale.

Highlighted standards:

- **HS-ESS3-2:** Evaluate competing design solutions with cost-benefit ratios.
- **HS-ESS3-4:** Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
- **HS-ESS3-5:** Connecting to environmental data and future impacts.
- **HS-ETS1-2:** Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
- **HS-ETS1-2:** Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
- **HS-ETS1-3:** Evaluate a solution to a complex real-world problem, based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.