

Ocean Expert Exchange - Educator Resources

TOPIC - ***Stories That Bones Tell: Manatees***

FEATURED EXPERT - ***Dr. Danielle Ingle, Postdoctoral Research Associate,
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TARGETED LEARNING STANDARDS:

ELEMENTARY SCHOOL NGSSS:

- SC.K.N.1.5:** Recognize that learning can come from careful observation.
- SC.5.L.17.1:** Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycles variations, animal behaviors and physical characteristics.

MIDDLE SCHOOL NGSSS:

- SC.6.N.1.5:** Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence.
- SC.7.L.15.2:** Explore the scientific theory of evolution by recognizing/explaining ways in which genetic variation and environmental factors contribute to evolution by natural selection and diversity of organisms.
- SC.7.N.1.5:** Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics.
- SC.8.N.1.6:** Understand that scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of imagination in devising hypotheses, predictions...

HIGH SCHOOL NGSSS:

- SC.912.L.14.13:** Distinguish between bones of the axial skeleton and the appendicular skeleton.
- SC.912.N.1.1:** Define a problem based on a specific body of knowledge; pose questions, conduct systematic observations, examine books and other sources of information to see what is already known, review what is known in light of empirical evidence, plan investigations...
- SC.912.N.1.6:** Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied.
- SC.912.N.1.7:** Recognize the role of creativity in constructing scientific questions, methods and explanations.

SUPPLEMENTAL RESOURCES:

- Video Short - FWC Fish & Wildlife Research Institute [Science Snippets: Manatee Ribs](#) (Grades K-12)
- Video Short - FWC Fish & Wildlife Research Institute [Science Snippets: Manatee Bone Remodeling](#) (Grades K-12)
- Video Short - FWC Fish & Wildlife Research Institute [Science Snippets: Marching Molars](#) (Grades K-12)
- Video Short - The Science of... [Manatee Chronicles 002: Case of the weird-looking manatee bone](#) (Grades 4-12)
- 3D Model - University of Wyoming via Sketchfab [Trichechus manatus \(manatee\), skull](#) (Grades K-12)
- Reading - D. Morgan, B. Brady and D. Ingle [Sirenian Biology](#) (Grades 6-12)
- Reading - Journal Exp. Biol. [Developmental changes in bone mechanics from Florida manatees...](#) (Grades 8-12)
- Video Short - PBS LearningMedia [Unlikely Animal Relatives | San Diego Zoo Kids](#) (Grades K-12)
- Video Shorts - Manatee Lagoon an FPL Eco-Discovery Center [Educational Videos](#) (Grades K-12)
- 360 Video - Wildlife Protection Solutions [Swim with Manatees in their Endangered Habitat](#) (Grades K-12)
- Lesson Library - UF | IFAS Extension [Manatee Workbook Series](#) (Grades 2-4)
- Lesson w/ Video Short - Clearwater Marine Aquarium [Manatee Mania](#) (Grades K-8)
- Resource Library - Save the Manatee [Education Materials for Teachers and Students](#) (Grades K-12)
- Resource Library - Volusia County Florida [Manatee Education](#) (Grades K-6)
- Resource Library - Florida Fish and Wildlife Conservation Commission [Florida Manatee Program](#) (Grades 6-12)