

Visiting the Estuarium

For the Teacher of Grades 3-5

Before Your Visit:

1. First-timers

Teachers may want to preview the Estuarium before bringing students. Contact Denise Keaton at (251) 861-7511 or dkeaton@disl.org for a free teacher's pass.

2. Student Activities:

- Discuss the local plants and animals familiar to students.
- Talk with your students about making observations: shapes, colors, patterns, similarities, differences, etc. Let them practice describing plants and animals using their observations.
- Discuss ways students have interacted with the Delta, Bay, or Gulf of Mexico, i.e. vacation, fishing, eating etc.
- Have students come up with questions they might answer at the Estuarium.

3. Student Vocabulary: discuss the following terms.

invertebrate vertebrate food chain/food web salinity estuary

4. Handouts

Make copies of the attached activity for your students to complete while visiting the Estuarium. Bring pencils and crayons (for rubbings).

During Your Visit:

- Complete handout.

After Your Visit:

- Have students make a list of all the animals they saw. Then divide the class into several groups and have each group classify the animals according to different criteria. One group can organize them as invertebrates/vertebrates; another could place them into correct habitats - delta, bay, gulf, or land; another could identify animals as predators/prey, or where they live in the water column - top, middle or bottom. They could also make a food chain/web from the list.
- Use the field trip as a vehicle for a creative writing/drawing activity.
- Have each student research the animal he or she chose from the Invertebrate Trail and write a paragraph about it.



Grades 3-5 AL Course of Study Science Objectives addressed at the Estuarium

Grade

- 3
- 3.) Describe ways energy from the sun is used.
Examples: plant growth, light, heat
- Identifying fossil fuels as a source of energy
- 7.) Describe the life cycle of plants, including seed, seed germination, growth, and reproduction.
- Describing the role of plants in a food chain
 - Identifying plant and animal cells
 - Describing how plants occupy space and use light, nutrients, water, and air
 - Classifying plants according to their features
Examples: evergreen or deciduous, flowering or non-flowering
 - Identifying helpful and harmful effects of plants
Examples:
 - helpful - provide food, control erosion
 - harmful - cause allergic reactions, produce poisons
 - Identifying how bees pollinate flowers
 - Identifying photosynthesis as the method used by plants to produce food
- 8.) Identify how organisms are classified in the Animalia and Plantae kingdoms.
- 10.) Determine habitat conditions that support plant growth and survival.
Examples: deserts support cacti, wetlands support ferns and mosses
- 12.) Identify conditions that result in specific weather phenomena, including hurricanes.
- Identifying positive and negative effects of weather phenomena
Examples:
 - positive - flooding deposits good soil when waters recede
 - negative - flooding kills crops
 - Identifying technology used to record and predict weather, including thermometers, barometers, rain gauges, anemometers, and satellites
 - Organizing weather data into tables or charts
- 13.) Describe ways to sustain natural resources, including recycling, reusing, conserving, and protecting the environment.
- Recognizing the impact of society on human health and environmental conditions
- 4
- 5.) Describe the interdependence of plants and animals.
- Describing behaviors and body structures that help animals survive in particular habitats
Examples:
 - behaviors - migration, hibernation, mimicry
 - body structures - quills, fangs, stingers, webbed feet

- Describing life cycles of various animals to include incomplete and complete metamorphosis

6.) Classify animals as vertebrates or invertebrates and as endotherms or ectotherms.

- Describing the organization of cells into tissues, organs, and organ system
- Describing the grouping of organisms into populations, communities, and ecosystems
- Classifying common organisms into kingdoms, including Animalia, Plantae, Protista, Fungi, Archaeobacteria, and Eubacteria
- Tracing the flow of energy through a food chain
Example: producer, first-level consumer, second-level consumer, and third-level consumer
- Identifying characteristics of organisms, including growth and development, reproduction, acquisition and use of energy, and response to the environment

7.) Describe geological features of Earth, including bodies of water, beaches, ocean ridges, continental shelves, plateaus, faults, canyons, sand dunes, and ice caps.

5 9.) Describe the relationship of populations within a habitat to various communities and ecosystems.

- Describing the relationship between food chains and food webs
- Describing symbiotic relationships

At the Estuary

3rd-5th Grade Activity Answer Sheet

The titles of panels where answers are found are in italics.

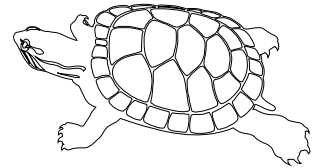
Answers are in bold.

3rd – 5th Grade Activity

Name: _____

Before the Delta

1. How long ago did mosasaurs live on earth? *Mosasaur* **89-65 million years ago**



Mobile Delta Gallery

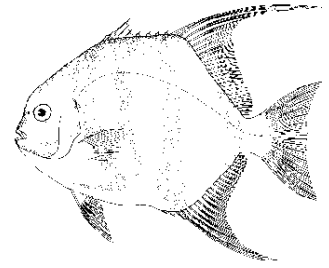
1. Are the animals in the Mobile Delta gallery living in fresh water or salt water? *Up in the Delta (D1)* **fresh water**
2. Amphibians and reptiles are ectothermic (cold blooded). What does this mean? *Secret Creatures (D6)* **They have little internal control of their body temperatures. They must seek warmer areas of their environment to maintain their body temperature.** Name one *amphibian* that is not a frog found in this gallery. *Amphibians (D7)* **central newt, mole salamander,** *Shallow Tributary (D9)* **greater siren**
3. Name two plants growing in Alabama that might eat animals. *Bog Plants (D12) or Pitcher Plant Bog Audio Kiosk* **pitcher plants and sundews** What are two major threats to the long-term survival of the bogs these plants live in? **draining, development, and prevention of burning**
4. Name and draw the King of the Delta. Why is it called the King of the Delta? *King of the Delta (D15)* **because it's at the top of the Mobile delta food web**



American Alligator

5. What *insect* can you find in the Mobile Delta that is an *invasive species*? *Alien Species (D12)* **fire ant**

Mobile Bay Gallery



1. In the largest tank in this gallery, find the fish with a "beard" (more technically known as *barbels*, which taste). What kind of fish is it? *Hint: this is not a catfish.* **black drum**
2. Name, and describe or draw, your favorite animal at the touch table.

Answers will vary.

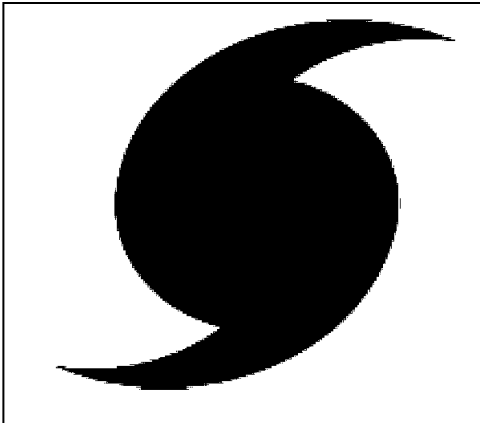
Is it a vertebrate or an invertebrate?

3. Name three things you can do to help ensure that seahorses don't go extinct in the wild. *Seagrasses (D12)* **Never buy wild-caught seahorses, never buy dried seahorses, and spread the word.**
4. How much water can one oyster filter in an hour? *Nature's Filter* **five gallons** What body part do they use to filter? **their gills** What do they filter out of the water? **food and sediment**
5. Name four animals that live among salt marsh grasses. *Protection and Production (B17)* **shrimp, snails (marsh periwinkles), crabs (fiddler crabs, juvenile blue crabs), ribbed mussels**

Barrier Island Gallery



1. The sediments of Mobile Bay come from the erosion of what mountain chain?
Restless Ribbons (BI2) the Appalachian Mountains
2. What was the first name the French gave to Dauphin Island? *Massacre Island (BI4) Massacre Island* What year was Dauphin Island given that name?
1699
3. Draw a hurricane. *Hurricane (BI5)*

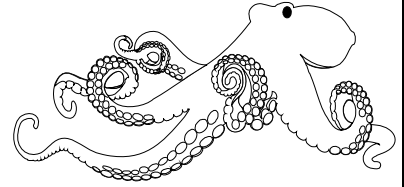


Does a hurricane form in warm water or cool water? **warm water**

4. Name two *reptiles* that can be found in the *Maritime Forest tank*. **Eastern glass lizard and Eastern box turtle**
5. **Billy Goat Hole:** Use the fishing pole to catch a fish. What kind did you catch? *Let's Go Fish* **Answers will vary.** How long was it? **Answers will vary.** Was it long enough to legally keep? **Answers will vary.**
6. **Soup of the Sea:** What makes an organism plankton? (Circle one)
a. a drifting lifestyle b. small size c. certain body features
d. all of the above

What kind of plankton produces most of the oxygen on the planet?
phytoplankton By what process do they produce oxygen? **photosynthesis**

Gulf of Mexico Gallery



1. List two ways sharks might help people. *Predator or Prey (G17)* **They help maintain balance in ocean populations; and they are used in the medical industry: their cartilage has been used to make artificial skin, their corneas have been transplanted into humans, their blood and liver oil seem to aid in white blood cell production.**
2. What kind of animal, called a "living fossil," has lived on Earth for 400 million years? *Hard Shell (G8)* **horseshoe crab**
3. How many of the eight species of sea turtles are currently threatened or endangered? *Hurdles for Turtles (G9)* **seven** Name three predators of a sea turtle *hatchling*. **fish, crabs, raccoons, birds, humans**
4. Find the *Mola mola*. What record does it hold? *Mola mola: Ocean Sunfish floor panel* **world's heaviest bony fish**
5. **Underwater Exploration:** Name and draw an animal that can be found in the deep sea. **Answers will vary.**

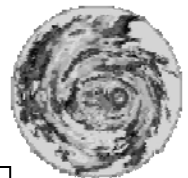
List one interesting fact about it. **Answers will vary.**

1. **The Weather Station:** Record these current weather conditions.

Answers will vary

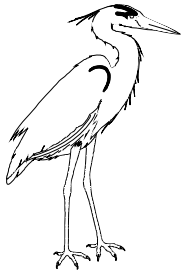
Air Temperature	_____	Wind Speed	_____
Water Temperature	_____	Wind Direction	_____
Dissolved Oxygen mg/L	_____	Salinity	_____

* Don't forget to include units of measure.

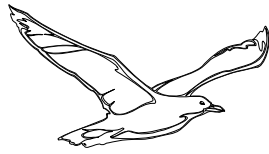


The Living Marsh Boardwalk

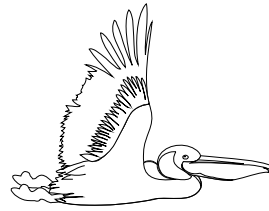
1. Circle the birds you observe while on the boardwalk. **Answers will vary.**



Great Blue Heron



Sea Gull



Pelican



Egret

2. Look at the area of water and grass. What kind of ecosystem is this? *Life in a Salt Marsh or Audiokiosk salt marsh* What are two benefits of these ecosystems? **They provide a nursery ground for many animals, and they serve as a filter between land and sea.**
3. What helps stabilize sand grains, leading to the building of sand dunes? *Mr. Sand and Friends, Part 2 dune grasses, like sea oats*
How can we help sand dunes stay in place? *Mr. Sand and Friends, Part 3 We can avoid walking or driving on dunes, build sand fences, and plant dune grasses.*
4. How do plants and butterflies benefit each other? *Butterflies of Dauphin Island Butterflies deliver pollen from flower to flower so plants can spread. Butterflies use plants for all stages of their lives.*
5. 90% of floating marine debris is what kind of material? *Marine Debris plastic*
Explain one way marine debris harms wildlife. **Animals can become entangled in marine debris, unable to eat, breathe, or swim. Animals might eat marine debris, which gives them a false feeling of fullness, and they starve. Marine debris can accumulate and disperse toxic substances that harm wildlife that eat or absorb the toxins. Mechanical cleaning of marine debris can cause habitat disturbances.**
Explain one way marine debris harms people. **Marine debris can pose health and safety hazards and endanger the livelihood of fishermen and recreational boaters. Marine debris can obstruct propellers or block cooling intakes.**

Invertebrate Trail

In the space below, make a rubbing of your favorite invertebrate from the Invertebrate Trail.