

Visiting the Estuarium

For the Teacher of Grades 6 – 8

Before your visit:

1. First-timers

Teachers may want to preview the Estuarium before bringing students. Contact Denise Keaton at (251) 861-7515 or dkeaton@disl.org for a free teacher's pass.

2. Student Activity: Mobile Bay Map (attached)

- Have students complete the included Mobile Bay Map activity.
- Ask students what differences they would expect to see in habitats, flora, & fauna at the different locations they've labeled.

3. Student Vocabulary

estuary salinity delta brackish water barrier island
gulf invertebrate vertebrate

4. Handouts

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

During your visit:

- Complete handout.

After your visit:

- Draw or list organisms seen in the Estuarium in the appropriate areas on the map of Mobile Bay, labeled prior to your visit. Discuss why these organisms live where they do (salinity tolerances).
- Identify the observed animals as invertebrates or vertebrates, and identify their taxonomic groupings (amphibian, reptile, etc.).
- Have students research the animal they chose from the Invertebrate Trail and write an essay about it.



Grades 6-8 AL Course of Study Science Objectives addressed at the Estuarium

Grade

- 6 2.) Describe factors that cause changes to Earth's surface over time.
Examples: weathering, erosion, deposition, water flow, hurricanes, farming and conservation, deforestation and reforestation, waste disposal, global climate changes, greenhouse gases
- Comparing constructive and destructive natural processes and their effects on land formations
Examples:
 - destructive - erosion by wind, water, and ice
 - Distinguishing strata by geologic composition
Examples: predicting relative age of strata by fossil depth, predicting occurrence of natural events by rock composition in a particular strata
- 5.) Describe layers of the oceanic hydrosphere, including the pelagic zone, benthic zone, abyssal zone, and intertidal zone.
- 6.) Describe regions of the oceanic lithosphere, including the continental shelf, continental slope, and abyssal plain.
- 7 1.) Describe characteristics common to living things, including growth and development, reproduction, cellular organization, use of energy, exchange of gases, and response to the environment.
- Predicting how an organism's behavior impacts the environment
 - Identifying unicellular organisms
- 4.) Describe organisms in the six-kingdom classification system by their characteristics.
- Recognizing genus and species as components of a scientific name
- 7.) Describe biotic and abiotic factors in the environment.
Examples:
 - biotic - plants, animals
 - abiotic - climate, water, soil
- Classifying organisms as autotrophs or heterotrophs
 - Arranging the sequence of energy flow in an ecosystem through food webs, food chains, and energy pyramids
- 8 1.) Identify steps within the scientific process.
- Applying process skills to interpret data from graphs, tables, and charts
 - Identifying controls and variables in a scientific investigation
 - Measuring Système International (SI) units
 - Identifying examples of hypotheses
 - Identifying appropriate laboratory glassware, balances, time measuring equipment, and optical instruments used to conduct an investigation

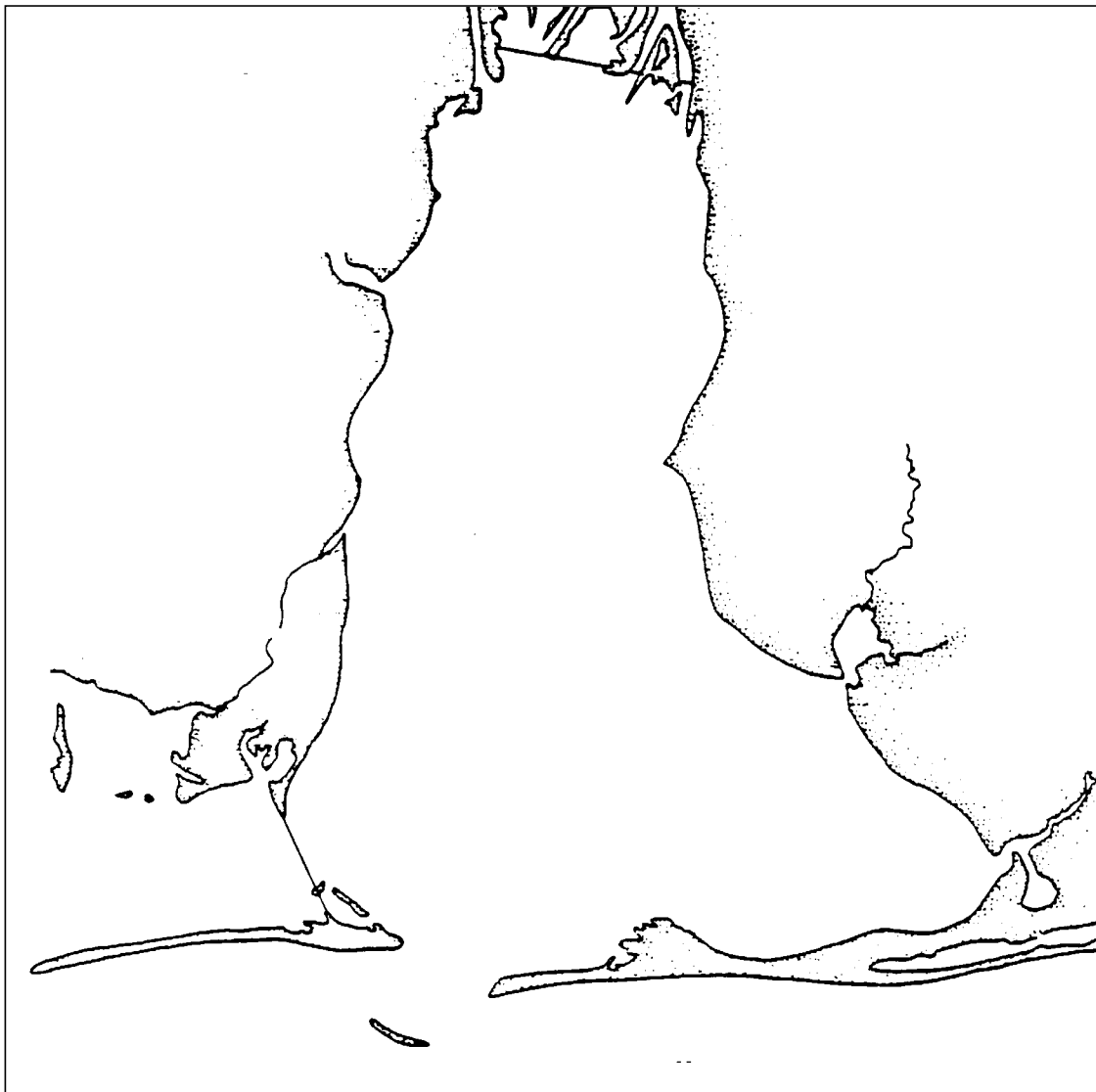
Name: _____

MAP OF MOBILE BAY (To be completed BEFORE your visit.)

Label North, South, East, and West.

Label these locations around coastal Alabama: Mobile Delta, Middle Bay Lighthouse, Dauphin Island, Gulf of Mexico

Label where you would find these salinities: Freshest Water, Saltiest Water, Brackish water.



At the Estuarium

6th – 8th Grade Activity

Name: _____

What is the Estuarium?

The Estuarium is an aquarium exhibiting plants, animals, and habitats of coastal Alabama. An *estuary* is a place where fresh water from land mixes with salt water from an ocean. This facility highlights habitats of Alabama's Mobile Bay estuary and the Northern Gulf of Mexico. Your visit through the facility will take you from the fresh water *delta*, where enormous rivers empty into the bay, to the salty Gulf waters.

This worksheet is divided into the galleries that you will find as you tour the Estuarium. Read the panels, observe the tanks, and ask docents and staff to help you find the answers.

Entrance

1. Mobile Bay is the _____ largest estuary system in the United States. (Circle one)
- A. first B. second C. third D. fourth E. fifth

Mobile Delta Gallery

1. At the largest tank in the Delta Gallery, you will observe a swamp scene. Swamps are dominated by trees. Name one common tree in the swamp. _____
2. Name three benefits of the wetland filtration system. _____

3. Name three fish that are considered "living fossils" of the delta. _____

4. What are invasive species? _____

Name two invasive species that have been introduced into the Southeastern U.S.

_____ What is the approximate dollar

value of the damage done by invasive species? _____

Mobile Bay Gallery

1. Why is Mobile Bay so "dirty?" _____
_____ What effect does this have on the health of the bay? _____

2. Name a vertebrate and an invertebrate you found interesting on the Touch Table. What did you find interesting about each of these animals?
Vertebrate: _____

Invertebrate: _____

3. Find the largest tank of the Mobile Bay Gallery. The poles in this tank represent what structure? _____ When was it lit for the first time? _____ It was manned until what year? _____
4. What happens during a jubilee? _____

5. What animal did people avoid eating in months without "R" in their names? _____
_____ How do these animals feed? _____

Barrier Island Gallery

1. Why was Dauphin Island originally called Massacre Island? _____
_____ Why wasn't Massacre Island a very good name for this island? _____

2. Below is a cross section of a barrier island. Label the following habitats:

beach fresh water marsh/swamp dune maritime forest salt marsh

Label one plant or one animal that can be found in each of the above habitats.



3. Name three man-made structures intended to protect property from coastal erosion. _____ What problem(s) do they create? _____
_____ What is another (non-structural) remedy people have tried? _____ How effective is it?

4. **Soup of the Sea:** What is the word for the group of organisms that drift with currents? _____

Gulf of Mexico Gallery

1. What is the name of the heaviest *bony* fish? _____
What is unusual about its body? _____
2. Observe the octopus. The large, bulbous *mantle* above the octopus' eyes contains what? _____
3. What is sargassum? _____ How does it serve as a "mobile home?" _____

More than 50 species are adapted to life in sargassum. Name five. _____

4. Look above you. What three things are carried by the pipes running throughout the Estuarium? _____ Where do the pipes deliver what they are carrying? _____
5. Observe the thickness of the acrylic wall on the largest tank. Why is it so thick?

6. **Underwater Exploration:** What does SCUBA stand for? _____
_____ What year was scuba developed?
_____ And by whom? _____

1. The Weather Station

Record these current weather conditions:

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

* Don't forget to include units of measure.

Would you expect the salinity to be higher on the north side of Dauphin Island, or on the south side? _____ Why? _____

The Living Marsh Boardwalk

The living marsh boardwalk is located outside the Estuarium. This area was once the site of a sewage-septic tank used by the Air Force. In 1993 the Dauphin Island Sea Lab removed the septic tank and rebuilt the marsh. Use the panels and audio kiosks on the boardwalk and your own observations to answer the following questions.

1. What are the two dominant plants in the salt marsh? _____

2. What animal makes a daily migration up and down these marsh plants? _____
_____ Where would you find it at high tide? _____
_____ Why? _____

3. Name five plants that help build dunes. _____

4. As you look *east* across Mobile Bay, what large, man-made structure do you see?
_____ What type of natural resource is this
structure extracting deep beneath the bay's surface? _____
5. What is marine debris? _____
How does eating plastic kill an animal? _____

Invertebrate Trail

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