Visiting the Alabama Aquarium

For the Teacher of Grades 6 – 8

Before your visit:

1. **First-timers:**
   Teachers may want to preview the Estuarium before bringing students. Contact our scheduling coordinator at (251) 861-2141 x7511 or schoolvisit@disl.org for more information or 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).

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 Alabama Aquarium

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: _____

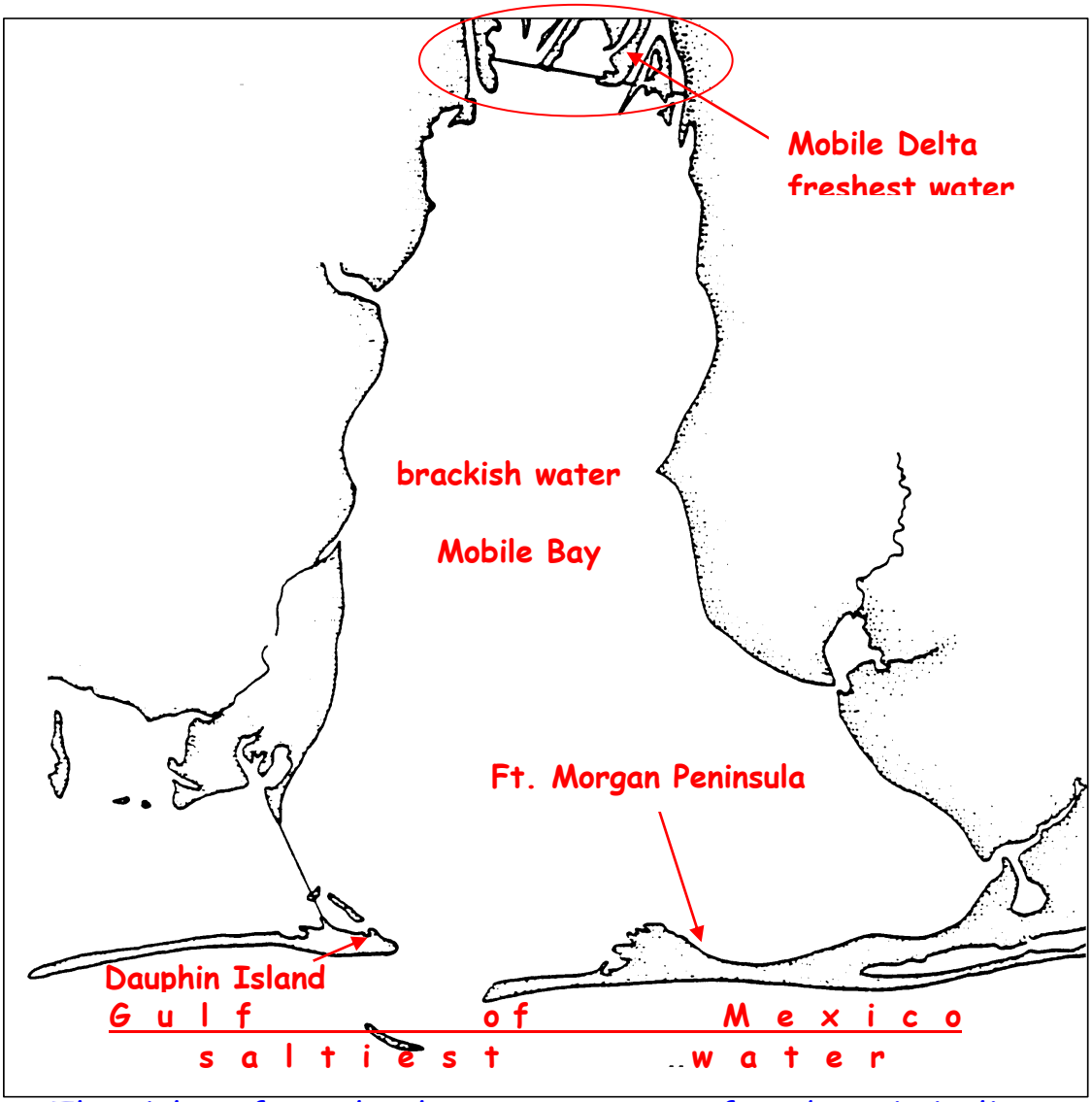
MAP OF MOBILE BAY

To be completed *BEFORE* your visit.

Label North, South, East, and West.

Label these locations around coastal Alabama: Dauphin Island, Gulf of Mexico, Mobile Bay, Ft. Morgan Peninsula, Mobile Delta

Label where you would find these salinities: freshest water, saltiest water, brackish water.



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

At the Estuarium

Answers are in bold.

6th – 8th Grade Activity Name: _____

Entrance

1. Mobile Bay has the **sixth** largest watershed by volume in the United States and the 4th largest by water volume in North America.

Mobile-Tensaw River Delta

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. **Cypress, black or tupelo gum**
3. Name two benefits of the wetland filtration system. **Wetland vegetation absorbs and contains rainwater, sparing downstream properties from flooding. As flood waters slow, sediment and pollutants drop to the bottom among the wetland plants. Bacteria in the soil help purify the water. Plant roots and stems help hold the sediment, stabilizing the shorelines and absorbing nutrients.**
4. What are invasive species? **Invasive species are those kinds of (non-native) organisms that out-compete other species for space or nourishment.** Name two invasive species that have been introduced into the Southeastern U.S. **water hyacinth, nutria, zebra mussel, fire ant, Mediterranean gecko, Cuban treefrog, red-bellied pacu, Rio Grande cichlid, sword fern, alligator weed** What is the approximate dollar value of the damage done by invasive species? **$138 billion per year**

Mobile Bay Estuary

1. Name a vertebrate and an invertebrate you found interesting on the Touch Table.

   What did you find interesting about each of these animals? **Answers will vary.**

   Vertebrate: _____

   _____

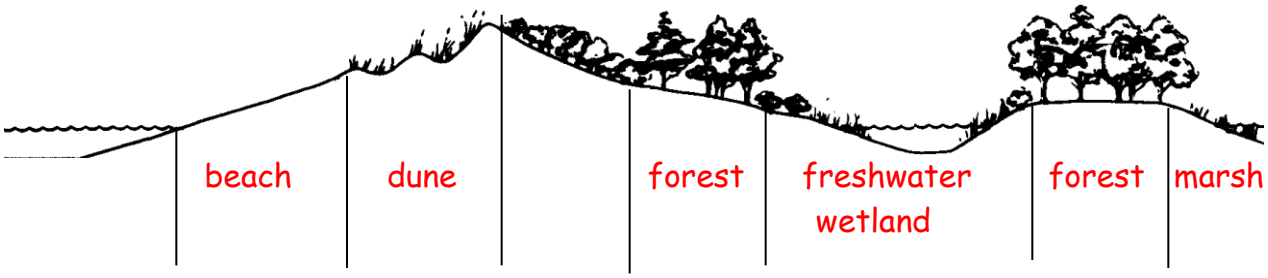
   Invertebrate: _____

   _____

2. Find the largest tank of the Mobile Bay Gallery. The poles in this tank represent what structure? **Middle Bay Lighthouse**
3. What happens during a jubilee? **Low-oxygen bottom water moves to shore as an easterly wind blows surface water away from shore, allowing the oxygen-poor water to creep closer to the beach. Animals starving for oxygen are trapped between the beach and the advancing oxygen-poor water. Under extreme conditions, they are forced onto shore – a Jubilee.**
4. Why are sea grass meadows shrinking? **There is less of the sunlight they need to survive because erosion and pollution seep into the water, clouding the water. Extra nutrients cause algae blooms, which can shade out seagrasses.** What impact can this loss have on humans? **Sport and commercial fish lose their nursery, leading to a decline in their numbers.** What can humans do to help halt this loss? **We can insist on good coastal management and building practices.**

Dauphin Island

1. Below is a cross section of a barrier island. Label the following habitats:
   beach *dune* *maritime forest* *salt marsh*
   Label one plant or one animal that can be found in each of the above habitats.
   Plants and animals will vary. Answers may include
   Beach: plankton, seaweeds, shorebirds – sand pipers & willets, coquinas, sand fleas. Dune: ghost crabs, skinks, monarch butterflies, terns, skimmers, oyster catchers, sea oats, morning glories, seaside rosemary, beach heather, seaside goldenrod, live oak, slash pine. Maritime forest: slash pine, alligators, squirrels, skinks, snakes, migratory birds – black-necked stilts, summer tanagers & prothonotary warblers, garden spiders, cardinals, American kestrels. Swamp: cypress. Salt marsh: grasses – cordgrass & needle rush, crabs, shrimp, periwinkle snails, ribbed mussels



Gulf of Mexico Gallery

1. What is the name of the heaviest *bony* fish? **Mola mola, or ocean sunfish**
   What is unusual about its body? **Its tailfin is almost nonexistent.**
2. Observe the octopus. The large, bulbous *mantle* above the octopus' eyes contains what? **internal organs: hearts, gills, and the digestive system**
3. What is sargassum? **brown, floating seaweed** How does it serve as a "mobile home?" **It floats on ocean currents using small air bladders, and there is an entire community of small, specialized organisms that live on and among it.**
4. Look above you. What three things are carried by the pipes running throughout the Estuarium? **freshwater, saltwater, and air** Where do the pipes deliver what they are carrying? **to the tanks in the Alabama Aquarium**

1. **ARCOS Weather Stations:**
   Record current weather conditions for the Dauphin Island station. **Answers will vary.**

Air Temperature _____	Water Temperature _____
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? **south side** Why? **Because there is fresh water flowing into the water on the north side, and the island slows the freshwater's passage south of it.**

The Living Marsh Boardwalk

The Living Marsh Boardwalk is located outside the Alabama Aquarium. 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? *Life in a Salt Marsh or Audiokiosk* **smooth cordgrass and black needlerush**
2. What animal makes a daily migration up and down these marsh plants? **the marsh periwinkle snail** Where would you find it at high tide? **high on the grasses** Why? **to avoid predators that come into the marsh on high tides**
3. What are two functions that barrier islands perform? *Barrier Islands* **1. Protect mainland areas from erosion by absorbing much of a storm's energy. 2. Trap a mix of fresh and salty Gulf water, contributing to the formation of estuaries. Coastal seafood species are dependent upon the abundant food and brackish water habitats the estuarine environment provides.**
4. As you look *east* across Mobile Bay, what large man-made structure do you see? *Energy from the Sands of Time* **a platform, or rig** What type of natural resource is this structure extracting deep beneath the bay's surface? **natural gas, or methane**
5. What is marine debris? *Marine Debris, A Silent Killer* **Marine debris is trash, or any object not normally found, on our coasts or in our oceans.**
   How does eating plastic kill an animal? **With plastic filling their stomachs, animals have a false sense of being full (they are unable to digest plastic), and may die of starvation**

Invertebrate Trail

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