

STUDENT MASTER

Just What Are Estuaries?

Estuaries are areas of transition where fresh water and salt water meet. An estuary is a partially enclosed coastal embayment (or bay) where fresh water and salt water from the ocean mix. For that mixing to occur, there must be an opening from the estuary to the ocean for at least part of the year. That lets salt water from the ocean enter the estuary. Most of today's estuaries formed because the sea level of Earth's global ocean has slowly risen over the last 18,000 years, drowning river valleys and filling in glacial troughs.

Some unique Great Lakes coastal wetlands are referred to as freshwater estuaries. They occur where rivers and Great Lakes water mix in shallow wetlands located near the mouth of a river.

Procedure

1. Use Resource: *Map of Mobile Bay, Alabama* to answer the following questions.
 - Q1. Is Mobile Bay, Alabama located on a coast? If yes, what large body of water is that coast on?
 - Q2. Can you find evidence that fresh water enters Mobile Bay? List any evidence that you can see.
 - Q3. Can you find evidence that salt water is entering the bay? List any evidence that you can see.
 - Q4. Do you think Mobile Bay is an estuary? Support your answer with estuary facts.
 - Q5. Now examine the shoreline inside Mobile Bay and see if you can find another, smaller estuary. Name the estuary and describe the features you think makes it an estuary.
2. Use Resource: *The Four Types of Estuaries* to answer the following questions.
 - Q6. Name the four main types of estuaries.
 - Q7. Look back at Resource: *Map of Mobile Bay, Alabama*. What type of estuary is Mobile Bay? What type of estuary is Weeks Bay?
 - Q8. Look at the photo on Resource: *What Kind of Estuary Is This?* Identify which type of estuary is shown in the photo.

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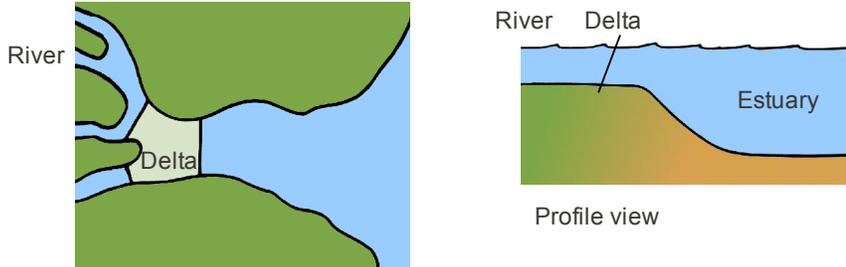
Map of Mobile Bay, Alabama



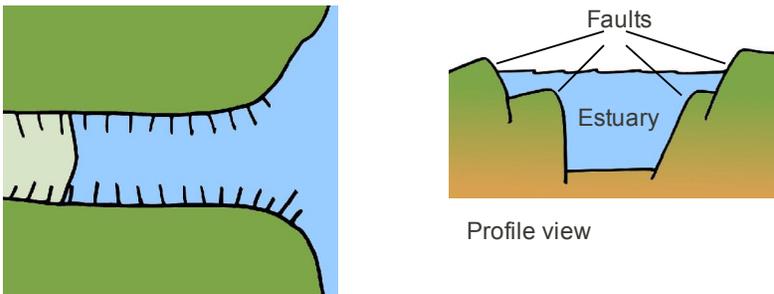
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The Four Types of Estuaries

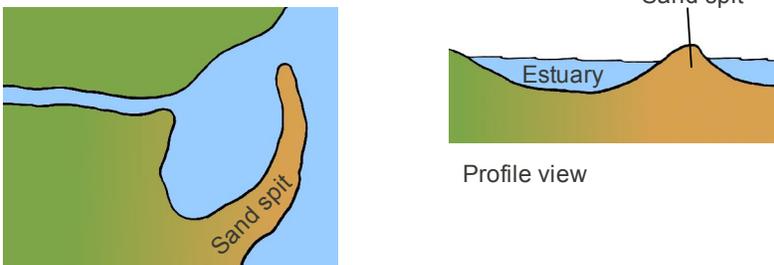
1. **Coastal plain estuaries** are formed when sea level rises, flooding existing river valleys. This type of estuary contains a delta. A delta is a low-lying sediment deposit found at the mouth of a river.



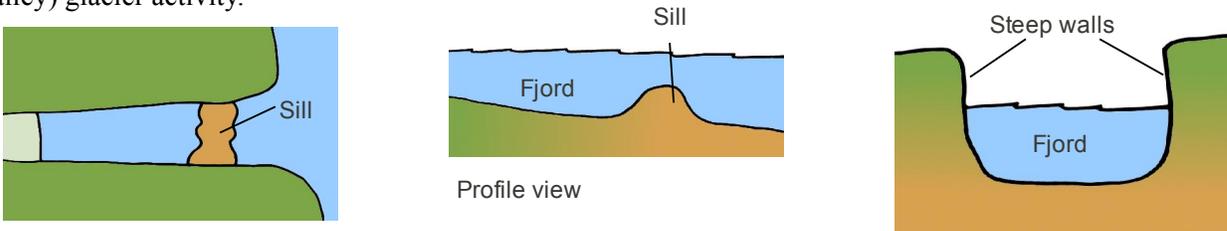
2. **Tectonic estuaries** are caused by the folding or faulting of land surfaces. An area of land effectively drops down, allowing water from the ocean to rush in.



3. **Bar-built estuaries** form when a shallow lagoon or bay is protected from the ocean by a sand bar or barrier island.



4. **Fjords** are U-shaped valleys carved out by glacial erosion. Fjords are found in areas with long histories of alpine (valley) glacier activity.



Adapted from ONR Office of Naval Research: Oceanography Habitats: Estuaries Characteristics

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What Type of Estuary Is This?



Jobos Bay National Estuarine Research Reserve, Puerto Rico