

What Are Estuaries?

Estuaries are coastal embayments where rivers meet and mix with ocean water. Many still believe that every drop of fresh water entering an estuary is lost, since it can no longer be used for drinking, irrigation or manufacturing. Not so!

Estuaries are some of the most productive areas in the world precisely because of fresh water inflow. Why? Because fresh water provides the dissolved fresh nutrients or fertilizer necessary to sustain high plant productivity in the form of emergent salt marsh grass, phytoplankton and underwater sea grasses.

Rivers also supply sediment, which drops out of suspension as the fresh water slows and mixes with salt water. This material continually rebuilds marsh edges, maintaining the extensive growth of salt marsh grass. And most obviously, rivers maintain a salinity gradient throughout the estuary, allowing survival of animals which require various salinities for optimal salt balance or protection from predators.

Water is almost constantly in motion within an estuary from river flow, tidal movement and wind-driven circulation. This flow, coupled with high phytoplankton productivity, has resulted in an abundance of filter-feeding animals such as oysters, mussels and barnacles along with filter-feeding fish such as menhaden and anchovy.

Predator animals then consume these filter feeders. Uneaten plants and animals are efficiently and rapidly recycled within the estuary by microorganisms renewing the supply of nutrients to keep the energy engine in motion. Therefore the brownish-green color of estuarine water is not a result of pollution or stagnation, but rather indicates a healthy, productive ecosystem.

The grassy edges of estuaries provide food and protection for larval and juvenile fish, shrimp and crabs, many of which are no bigger than an eighth of an inch when they make their way in from their birthplace in the open Gulf of Mexico.

However, estuaries are just another example of nature's balancing acts. Excessive inputs of nutrients coupled with light-blocking extreme sediment loads can easily upset the ecosystem balance, leading to phytoplankton blooms, low dissolved oxygen and fish kills.

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