

AIM: What transitional zones (ecotones) exist between adjacent biomes and aquatic ecosystems?

1. Wetlands

- a. zone connecting a terrestrial biome to an aquatic ecosystem that is inundated with water for all or part of the year
- b. consist of emergent vegetation (plants extend above water line)

c. **marshes** (mainly grasses)

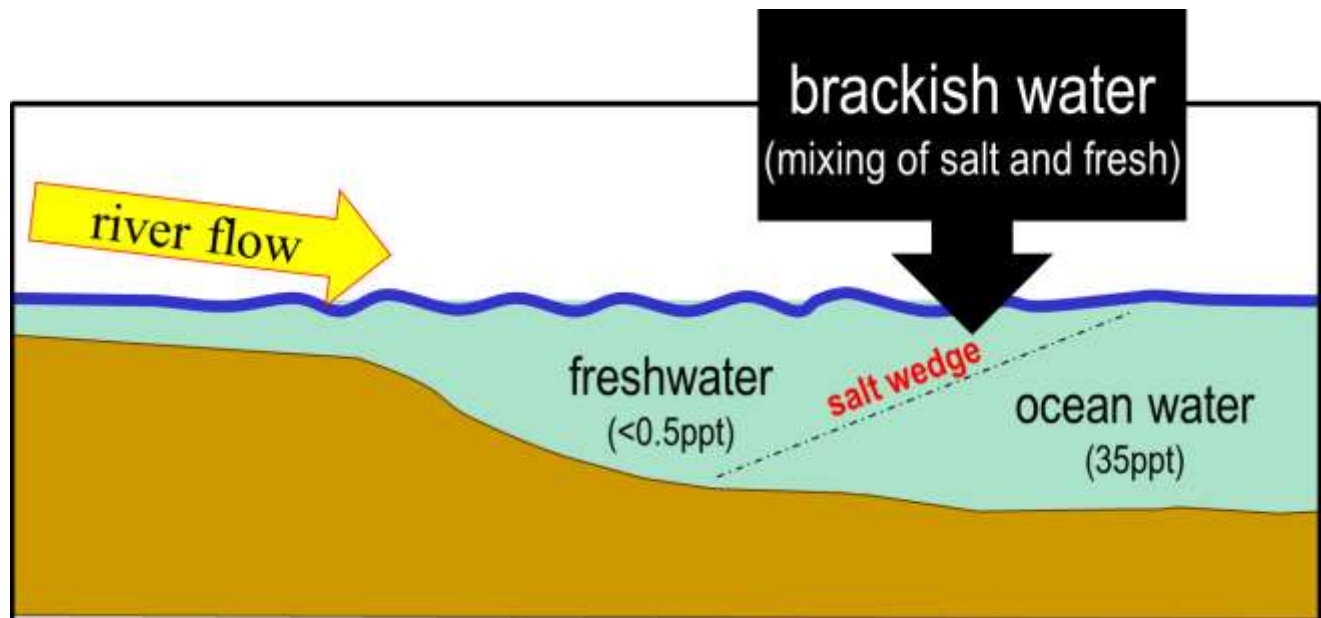


d. **swamps** (trees – mangroves/cypress)



2. Estuaries

- a. partially enclosed areas where seawater mixes with freshwater typically located where a river enters an ocean
- b. consists of brackish water mixture of fresh and saltwater

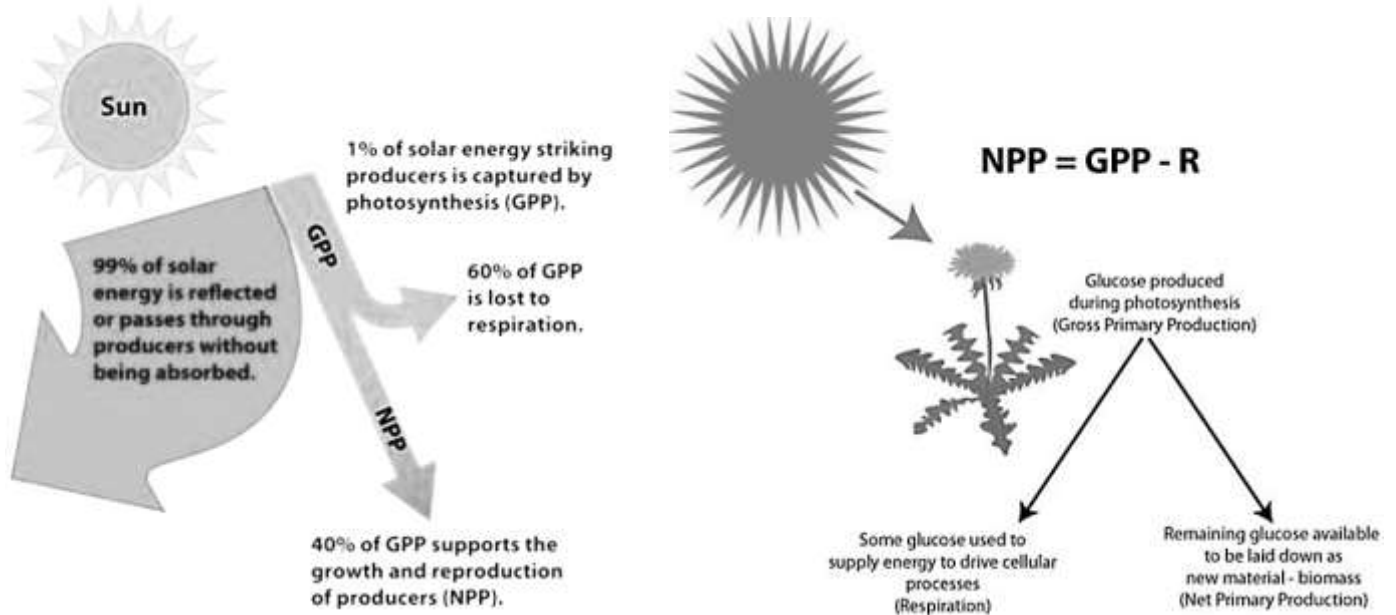


3. Benefits of Wetlands and Estuaries

Wetlands provide a myriad of **ecosystem services**. Ecosystem services are benefits that humans freely gain from the natural environment and from properly- functioning ecosystems. The four main categories of ecosystem services are provisioning, regulating, supporting, and cultural; healthy wetlands have benefits in all four categories.

we can separate into 2 easier categories: ecological and economical

a. **Productivity** - estuaries: greatest NPP (Net Primary Productivity) per unit area



- b. **natural water filter**
- c. **assists in groundwater recharge**
- d. **slows water – controls flooding**
- e. **storm buffer – slows erosion**
- f. **habitat for fish and wildlife**
- g. **breeding ground for migratory animals**
- h. **recreation**
- i. **natural products / jobs for economy**
(food: rice, fish, shellfish; animal pelts; building materials: bamboo)

3. Benefits of Wetlands and Estuaries (continued)

some statistics illustrating the relevance of wetlands to the U.S. economy

Economists estimate that one acre of wetlands provides about \$10,000 worth of **ecosystem services**

- *National Wildlife Federation*

The estuary regions of the United States comprise a significant share of the national economy, with 43 percent of the population, 40 percent of the employment and 49 percent of the U.S. economic output located in the estuary regions.

Coasts and estuaries contribute more than \$800 billion annually in trade and commerce to the U.S. economy.

43 percent of all adults in the United States visit a sea coast or estuary at least once a year to participate in some form of recreation, generating \$8 billion to \$12 billion in revenue annually.

28 million jobs in the United States are supported by commercial and recreational fishing, boating, tourism and other coastal industries that rely on healthy estuaries. - *Sarasota Herald-Tribune (Florida)*

4. Human Impact on Wetlands / Estuaries

****Approximately 50% of all original wetlands have been drained, filled, or polluted.****

- a. draining to reveal rich soil for agriculture
- b. coastal housing development
- c. were commonly used as landfills and waste disposal

5. Protection and Preservation of Wetlands

The wetland preservation movement began in the U.S. in earnest with the **Clean Water Act (CWA) of 1972**. Although not specifically written to protect wetlands, the CWA is comprised of a series of **regulations designed to prevent pollutants from contaminating U.S. waters**. And, as we've already learned, pollution is a major threat to the health of wetlands.

The creation of the CWA was notable because for the first time, the U.S. federal government stepped up to regulate water quality. Up until then, each state was responsible for developing its own clean water standards. **The CWA put the U.S. Environmental Protection Agency (EPA) in charge of implementing the goal of clean water nationwide.**

The U.S. Environmental Protection Agency estimates that 75 percent of wetlands are privately owned. So, the EPA and United States Fish and Wildlife Service (USFWS) offer financial assistance and expertise to landowners who would like to restore or protect wetlands on their own property. In addition, **the EPA's "5 Star Restoration Program" provides grants to community organizations, students, landowners and local government groups for wetland and stream restoration projects.** Since 1999, it has kicked off over 250 projects.