# Freshwater and Marine Ecosystems

# Freshwater Ecosystems

- Includes: lakes, ponds, rivers, streams, wetlands
- Freshwater contains little to no dissolved salt.
- The plant and animal life depends on the depth of the water, how fast the water moves, the amount of nutrients, sunlight, and oxygen available

# Lakes and Ponds

- In the shallow areas close to the shores, plants and animals are abundant.
- This nutrient-rich area is known as the littoral zone.
- Farther out from the shore, the open water that gets enough sunlight for photosynthesis is dominated by tiny plants and animals known as phytoplankton and zooplankton.

# Lakes and Ponds

·Some bodies of fresh water have areas so deep that there is too little light for photosynthesis to occur.
·Dead plants and animals drift down and are decomposed by ___bacteria___.
·Eventually the dead and decaying organisms reach the___deep water___ zone, the bottom of a body of water, which is inhabited by decomposers, insect larvae, and clams.

# Lakes and Ponds

Adaptations?

# Wetlands

·Wetlands are areas of land that are covered with _____ for at least part of the year.

·The two main types of freshwater wetlands are _____ and _____.

· _____ are treeless wetlands and _____ contain woody plants or shrubs.

water

marshes

swamps

swamps

Marshes

# Marsh

# Swamp

# Threats to Wetlands

·The importance of wetlands as purifiers of wastewater and absorbers of other hazardous flood waters is now recognized.
·Wetlands are also vitally important as habitats for wildlife.
·The federal government and most states now prohibit destruction of certain wetlands.

# Rivers

- Many rivers originate from melted snow in mountains.
- At its headwaters, a river is usually very cold
- As it progresses, a river may broaden, become warmer, and flow more slowly.
- Its characteristics may change as the land and climate change through which it flows.

# Colorado River

# Threats to Rivers

·Industries use river water in the manufacturing processes and as a receptacle for waste.
·These practices have polluted rivers with toxins, killing river organisms and making river fish inedible.
·Pesticides and other poisons runoff into rivers and coat river beds with toxic sediments.
·Dams alter river flow and may destroy fish habitats.

# Marine Ecosystems

# Marine Ecosystems

·Includes: the intertidal zone, neritic zone, open ocean, benthic zone and estuaries

·Marine ecosystems contain dissolved ___salt___.

·In oceans, lack of water is not a problem. Therefore, the types of organisms present are dependent upon ___nutrients___, sunlight available, and ___temperature___.

# Estuaries

·An ecosystem where fresh water from rivers and streams mixes with salt water from the ocean.
·Estuaries contain plenty of light and nutrients which support large populations of plants and animals.
·Plants and animals that live in estuaries are able to tolerate variations in salinity because the salt content of the water varies as the fresh and salt water mix.

# Threats to Estuaries

·Estuaries provide harbors, access to the ocean, and connections to rivers.  As a result, many of the world's largest cities are built on estuaries.
·Because of this, many estuaries have become polluted.

# Intertidal Zone

- Found along the shoreline
- Mudflats sandy beaches, and rocky shores
- The intertidal zone is only sometimes covered with water. This is based on the daily tides
- Plants and animals must be able to live both underwater and out of water.
- Examples of animals: Worms, crabs, clams, and plankton.
- Adaptations?

# Intertidal Zone

Adaptations?

crashing waves

stick -

outer covering

① exposure to air

# Neritic Zone

·Coral reefs!
·Thousands of species of plants and animals live in the cracks and crevices of coral reefs, making coral reefs among the most __biodiverse__ ecosystems on Earth.
·Corals can only live in __warm__ salt water where there is enough __light__ for photosynthesis. Completely covered with water at all times.
·Animals: sea turtles, starfish, corals, fish, and dolphins.

# Threats to Coral Reefs

·If the water surrounding a reef is too hot or cold, or if fresh water drains into the water surrounding a reef, corals have trouble producing limestone.
·If the water is too muddy, too polluted, or too high in nutrients, algae that live within the corals will die or grow out of control and smother the corals.
·Oil spills, sewage, pesticide, and silt runoff have all been linked to coral reef destruction.

# Coral Reefs

Adaptations?

# The Open Ocean or Oceanic Zone

- The sea floor drops sharply. This zone contains the deep water of the open ocean.
- Phytoplankton are producers that can be found near the surface of the ocean zone.
- Examples of Animals: fishes, whales, and sharks.

# The Oceanic Zone

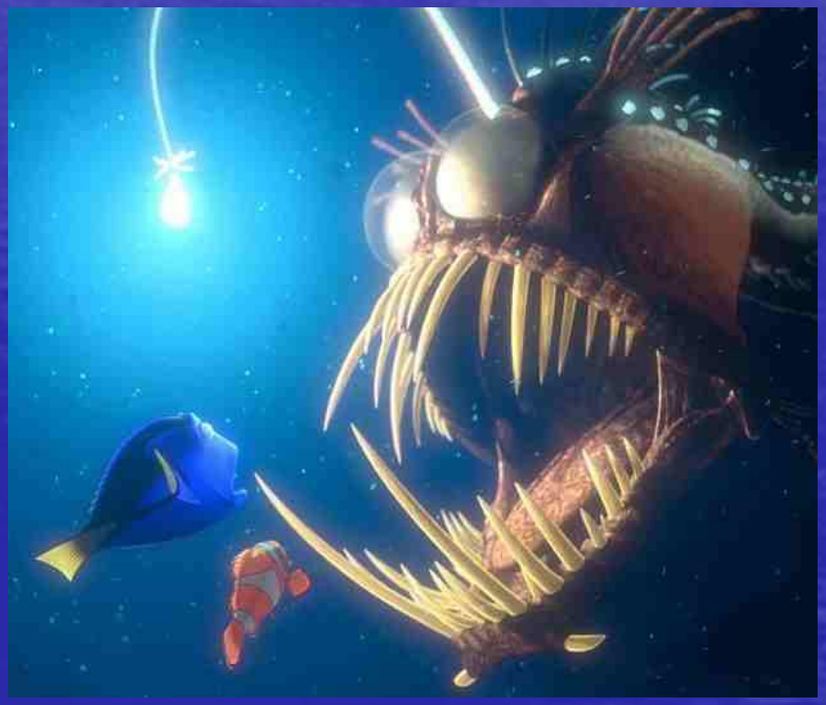
Adaptations?

# The Benthic Zone

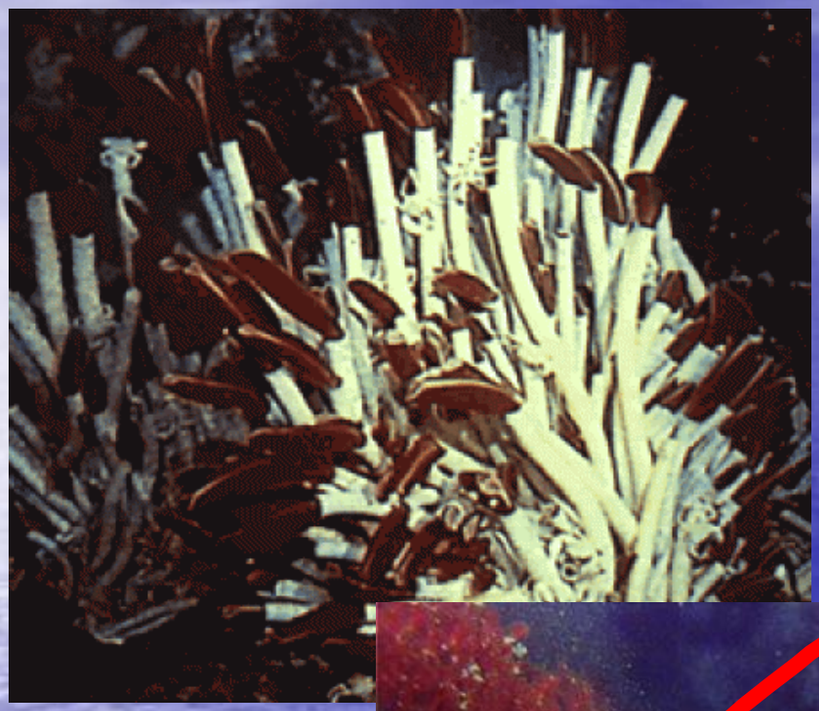
- The deep, dark ocean floor.
- Plants can only grow where there are nutrients and enough light for photosynthesis.
- So are there *producers* in the benthic zone?T
- The depths of the ocean are perpetually dark, and most of the food consists of dead organisms that fall from the surface.

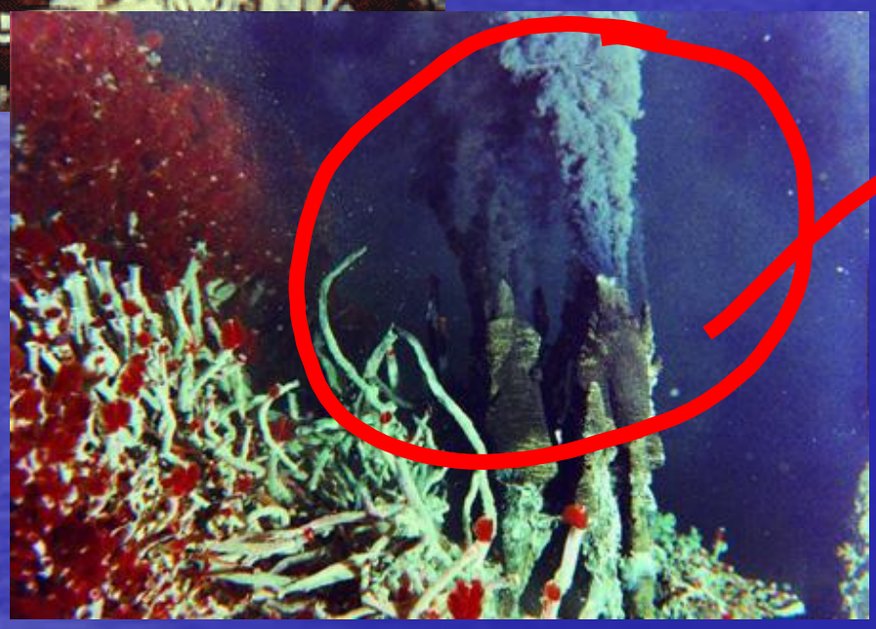
# The Benthic Zone

·The viper fish is a deep-sea fish that lives at depths of 600m or more.



# The Benthic Zone





Adaptations?

* *
thermal vent

# Threats to the Ocean

- The oceans are huge but are becoming increasingly more polluted.
- Overfishing is also destroying fish populations.

# The Marine Zones