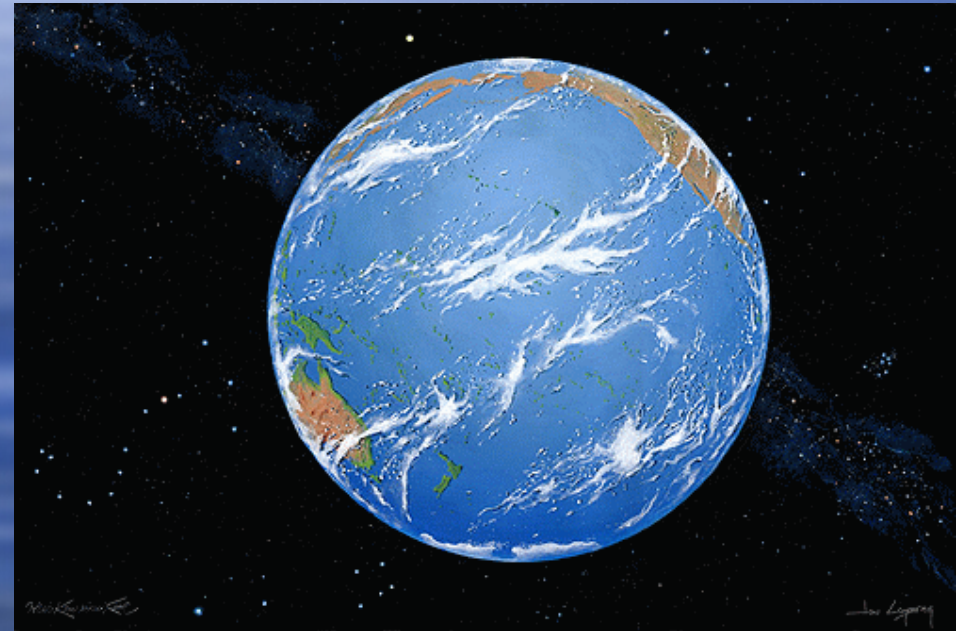


# Aquatic Biodiversity

## Ch. 6 Part 1

# In general - aquatic ecosystems

- ◆ 71% of planet is ocean
  - ◆ 4 major oceans
    - ◆ Pacific - largest
    - ◆ Atlantic
    - ◆ Arctic
    - ◆ Indian
- ◆ 2.2% freshwater





# Aquatic Life Zones

- ◆ Marine (saltwater)
  - ◆ Oceans, estuaries, coastal wetlands, shorelines, coral reefs, mangrove forests
- ◆ Freshwater
  - ◆ Lakes, rivers, streams, ponds, inland wetlands



# Zones

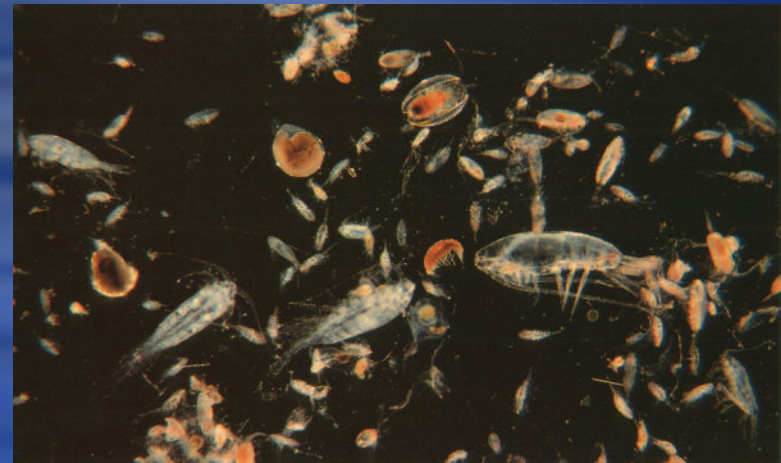
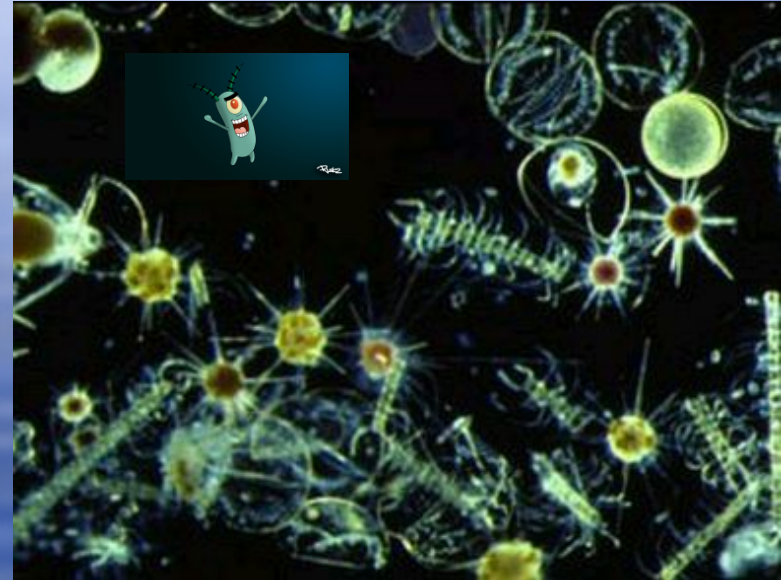
- ◆ 3 major zones - names vary so in general:
  - ◆ Top (photic) - lots of light, warmest
  - ◆ Middle - some light
  - ◆ Bottom (aphotic) - low to no light





# Important Organism Types

- ◆ Plankton!!! - they primarily live in the top “go with the flow”
  - ◆ 3 types
    - ◆ Phytoplankton - photosynthetic - primary producers to support all food chains
    - ◆ Zooplankton - feed on plankton and other organisms - from single cell to jellies
    - ◆ Ultraplankton - photosynthetic bacteria



# Important Organism Types



- ◆ Nekton - the swimmers like turtles, fish, whales - they live in the middle



# Important Organism Types

- ◆ Benthos - bottom dwellers like oysters, crabs, sea stars - they live at the bottom



# Important Organism Type

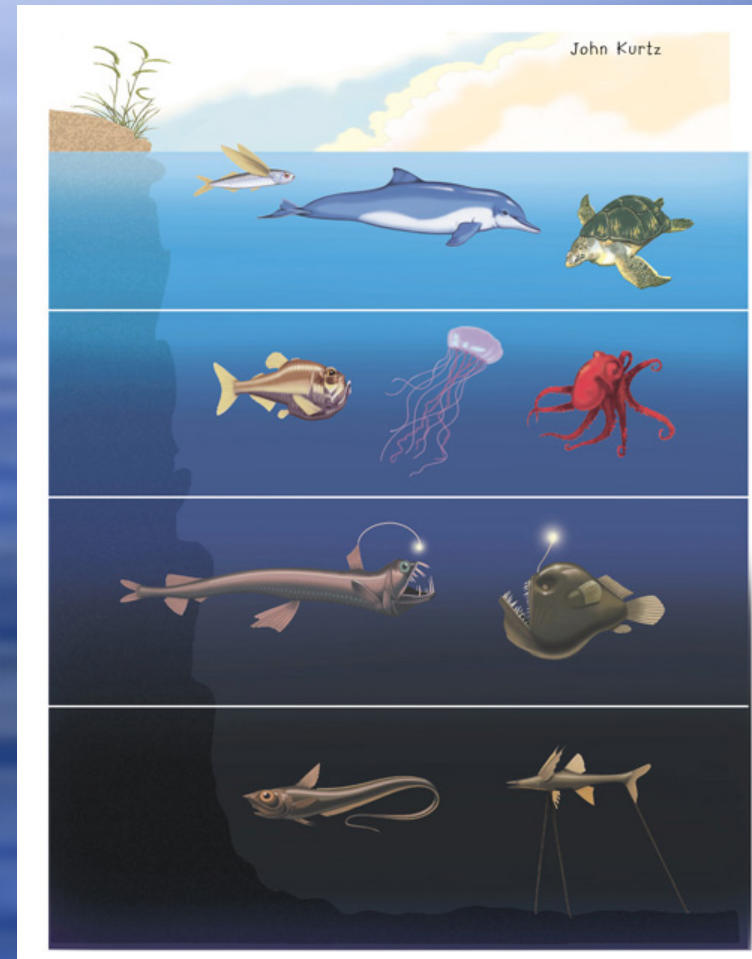
- ◆ Decomposers - mostly bacteria - mostly at the bottom





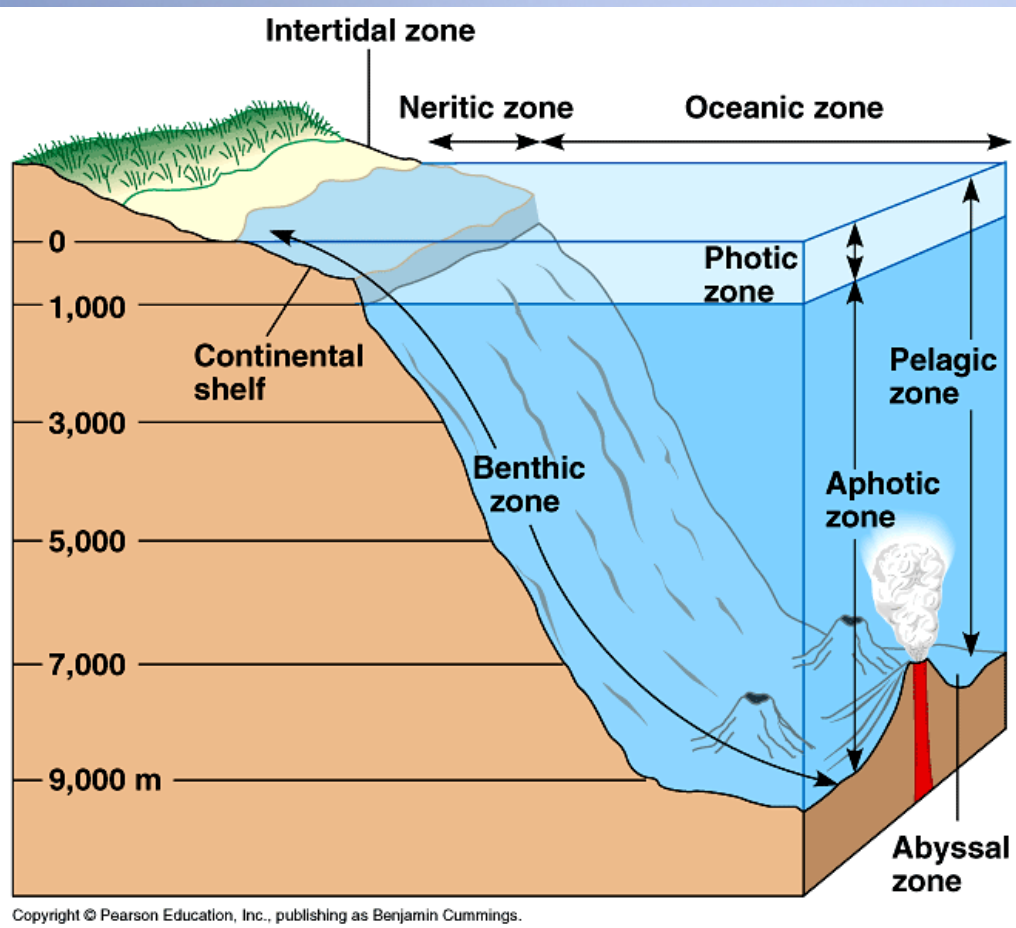
# Layers

- ◆ Distinguished by:
  - ◆ Temperature
  - ◆ Dissolved oxygen content
  - ◆ Availability of food
  - ◆ Amount of light
  - ◆ Amount of nutrients for plants



# Top Layer

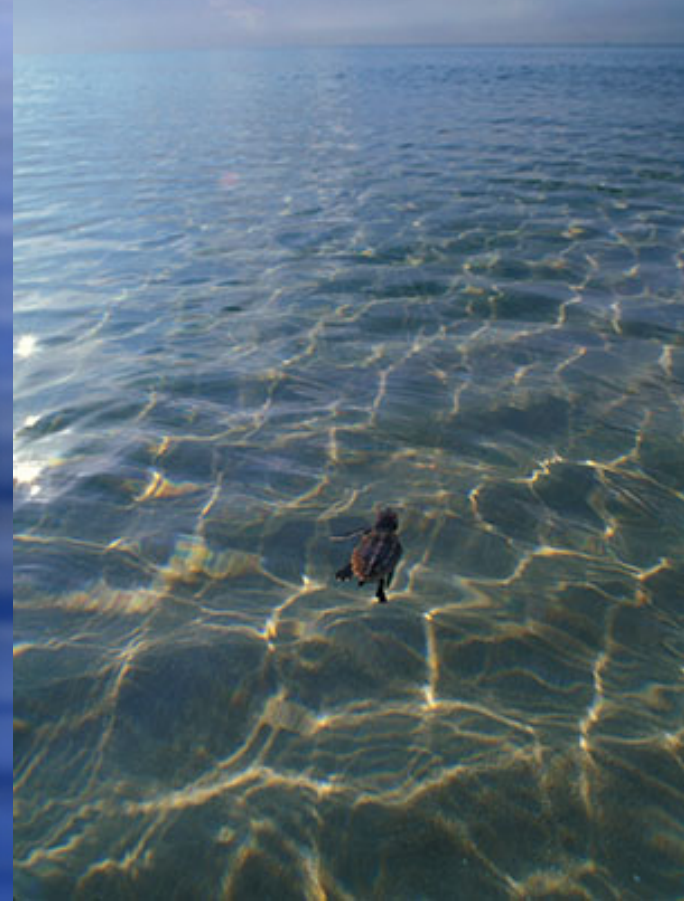
- ◆ Called the photic zone or euphotic zone
- ◆ Where photosynthesis occurs
- ◆ Depth of this zone influenced by turbidity - how cloudy the water is
  - ◆ Cloudy water may result from algal growth or excessive silt runoff





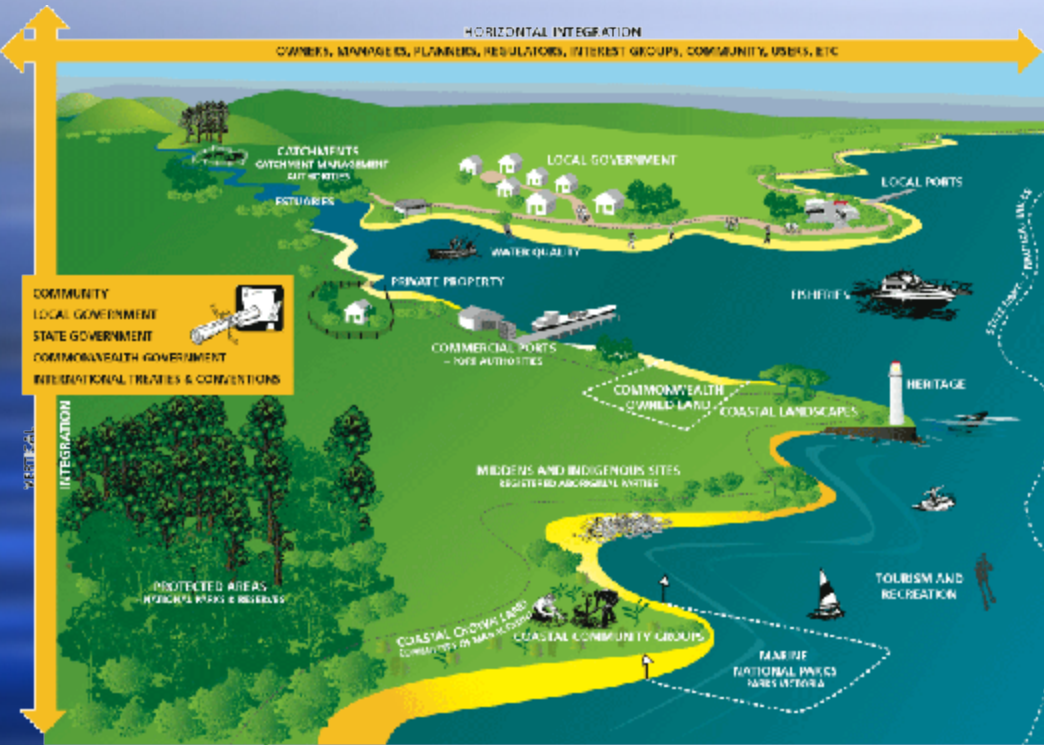
# Ocean vs. Fresh

- ◆ Ocean - lots of light but pretty low nutrients
- ◆ Fresh - plenty of nutrients from runoff but less light when turbid



# Ocean Resources - Coastal Zone

- ◆ Over \$12 trillion per year
- ◆ makes up <10% of all ocean but has 90% of all species
- ◆ provides most of our fish
- ◆ intertidal zone, estuaries, mangrove forests, coral reefs all part of coastal zone
- ◆ Very high NPP due to lots of light and nutrients



We have the biggest impact on the coastal zone



# Open Sea

- ◆ From edge of continental shelf
- ◆ Has photic zone on top
- ◆ Bathyl zone in middle
- ◆ Abyssal zone at bottom
  - ◆ Organisms at bottom often feed on marine snow



# Human Impacts on the Ocean

- ◆ Urban development
- ◆ Overfishing
- ◆ Runoff - nonpoint source pollution
- ◆ Point source pollution from oil tankers, cruise ships
- ◆ Trawling
- ◆ Invasive species
- ◆ Climate change



Raw sewage being released directly into the ocean



# The Great Pacific Garbage Patch









