

## Plankton Chapter Two

### Plankton Terminology

- Plankton are free-floating organisms that they have such weak swimming ability that they are at the mercy of the prevailing water movement
  - phytoplankton are capable of \_\_\_\_\_
  - \_\_\_\_\_ are animals
  - bacterioplankton are heterotrophic and autotrophic bacteria
  - viroplankton are viruses
- Plankton are classified by size as well.
  - \_\_\_\_\_ (above 20 cm)
  - macroplankton (2 to 20 cm)
  - mesoplankton (20 to 200  $\mu\text{m}$ )
  - \_\_\_\_\_ (2 to 20  $\mu\text{m}$ )
  - picoplankton (0.2 to 2  $\mu\text{m}$ )
  - femtoplankton (0.02 to 0.2  $\mu\text{m}$ )
- holoplankton spend their entire lives as plankton
- meroplankton spend only a portion of their lives as plankton
- tychoplankton are only planktonic after being stirred up by \_\_\_\_\_ and will settle out again

### Major Plankton Groups

- Major Phytoplankton groups
  - \_\_\_\_\_
  - Dinoflagellates
  - Prochlorophytes
- Major Zooplankton groups
  - \_\_\_\_\_
  - Hydrozoa
  - Scyphozoa

### Jellyfish & Comb Jellies

- Jellyfish (Cnidaria) and Comb Jellies (Ctenophora) are \_\_\_\_\_ animals that drift through the ocean, although some can actively swim in slower currents. They both have very simple anatomy; Jellyfish with a pulsating bell and flowing tentacles, Comb Jellies with groups of \_\_\_\_\_ they use to paddle through the water.

### Krill

- \_\_\_\_\_ (order Euphausiacea) are possibly the most important species in the sea. Feeding on phytoplankton themselves, these small crustaceans are the main food source for many marine mammals, birds, fish and squid. The entire \_\_\_\_\_ ecosystem would collapse without krill.

### Flotation Mechanisms

- Most plankton are more dense than seawater, therefore employ specific techniques to stay up in the water column.
  - reduce weight and density through \_\_\_\_\_, replacement of heavy ions with lighter ones, or employing gas-filled floats
  - increase surface area to increase \_\_\_\_\_
  - change orientation in the water column to “ride” currents

### Anti-Predator Mechanisms

- Phytoplankton employ several methods to avoid predation.
  - Spines and elongation of cell
  - chain formation and colonization
  - \_\_\_\_\_

### **Plankton Distribution**

- Plankton tend to be distributed in patches. Patches may be caused by physical factors such as:
  - advection (movement of water masses in which plankton is embedded)
  - \_\_\_\_\_ or eddies (circular motions of water)
- or by biological factors such as:
  - \_\_\_\_\_
  - vertical migration
  - marine snow (amorphous particulate material derived from living organisms that become floating microcosms).

### **Primary Production**

- Primary production is the formation of organic compounds from inorganic materials. This is accomplished through photosynthesis or \_\_\_\_\_.
- The standing crop is the total amount of the organism's biomass present in a given volume of water at a given time.

### **Factors Affecting Primary Productivity**

- The most important physical and chemical factors affecting primary production are:
  - light, for photosynthesis
  - nutrient supply, specifically \_\_\_\_\_ (as nitrate,  $\text{NO}_3^-$ , nitrite,  $\text{NO}_2^{2-}$ , or ammonium  $\text{NH}_4^+$ ), phosphate ( $\text{PO}_4^{3-}$ ), and silicate ( $\text{SiO}_2$ )
  - \_\_\_\_\_, which comprises all factors that act to move water masses

### **Major Plankton Phyla**

- Monera (kingdom) – bacteria & cyanobacteria
- Protista (kingdom) – algae & protozoa
- \_\_\_\_\_ – jellyfish
- Ctenophora – comb jellies
- Arthropoda – copepods, krill
- Meroplankton Phyla
  - Annelida – segmented worms
  - Mollusca – shellfish & snails
  - Echinodermata – starfish & sea urchins
  - \_\_\_\_\_ - fish