AQUATIC ECOSYSTEMS
Part One: Freshwater

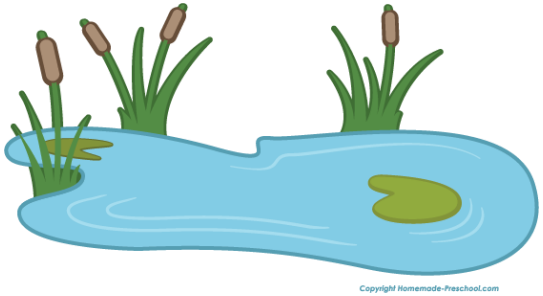
SALINITY

- Salinity is the amount of dissolved salts in water.

- Salinity determines the types of organisms living in an aquatic ecosystem.

- Low Salinity Ecosystems-

Freshwater



High Salinity Ecosystems-

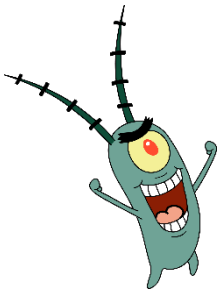
Marine/Saltwater

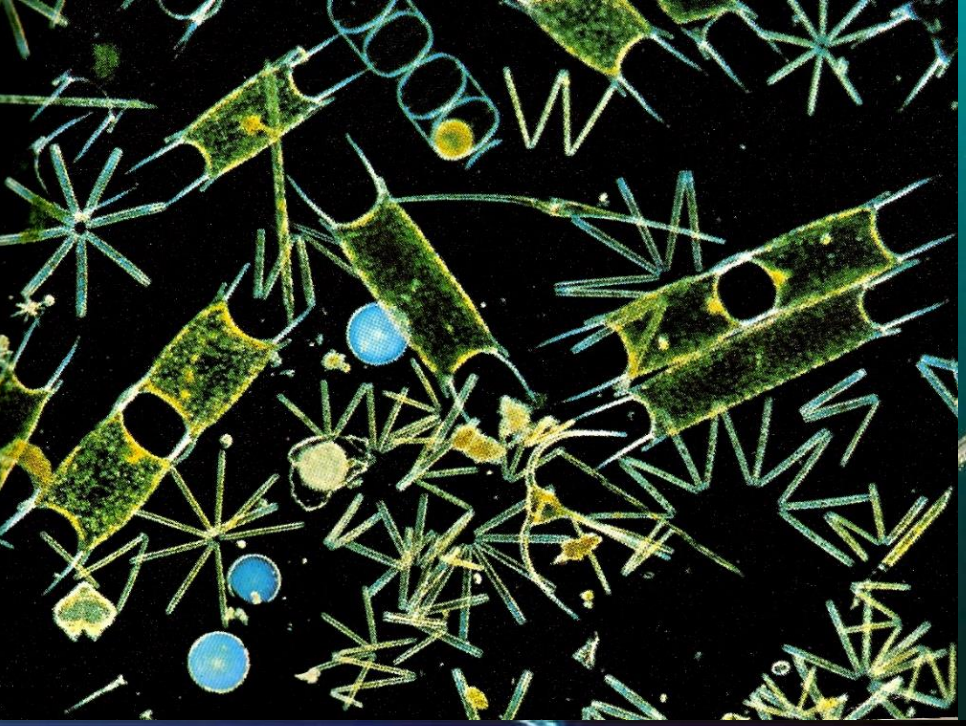
AQUATIC ORGANISMS- PLANKTON

- Plankton are organisms that cannot swim against currents.

2 Types!

- Phytoplankton are microscopic plant-like organisms.
  - Phytoplankton use photosynthesis and are the lowest level producers!
- Zooplankton are drifting microscopic animal-like organisms.





AQUATIC ORGANISMS- NEKTON

- Organisms that are free-swimming.
- Examples include:

- Nekton live in all areas of a body of water.
- Nekton eat zooplankton, other nekton, plants, or scavenge for waste.




AQUATIC ORGANISMS- BENTHOS

- Organisms that are bottom-dwellers (live on the bottom).
- Examples:

- Most benthos feed on food floating by or scavenge for waste.

QUICK! REVIEW!

1) What is salinity? Which ecosystem has the highest salinity?

The amount of dissolved salts in water. Marine ecosystems.

2) What is the role of phytoplankton?

They are the lowest level producers. (Bottom of food chain)

3) Where do benthos live?

At the bottom of a body of water.

4) List 3 examples of nekton.

Dolphins, seals, whales, turtles, fish, sharks.

4 KINDS OF FRESHWATER ECOSYSTEMS

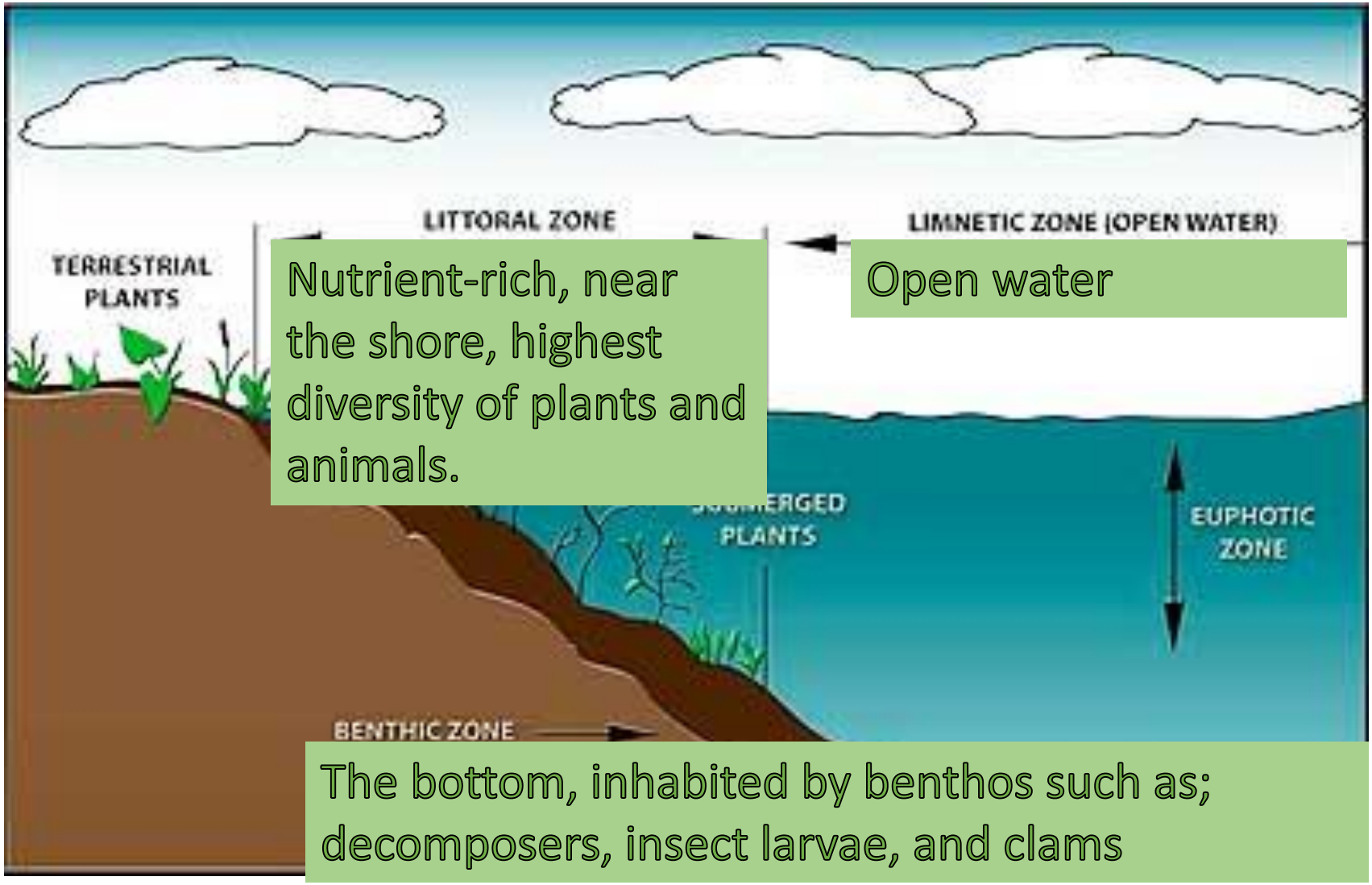
Lakes

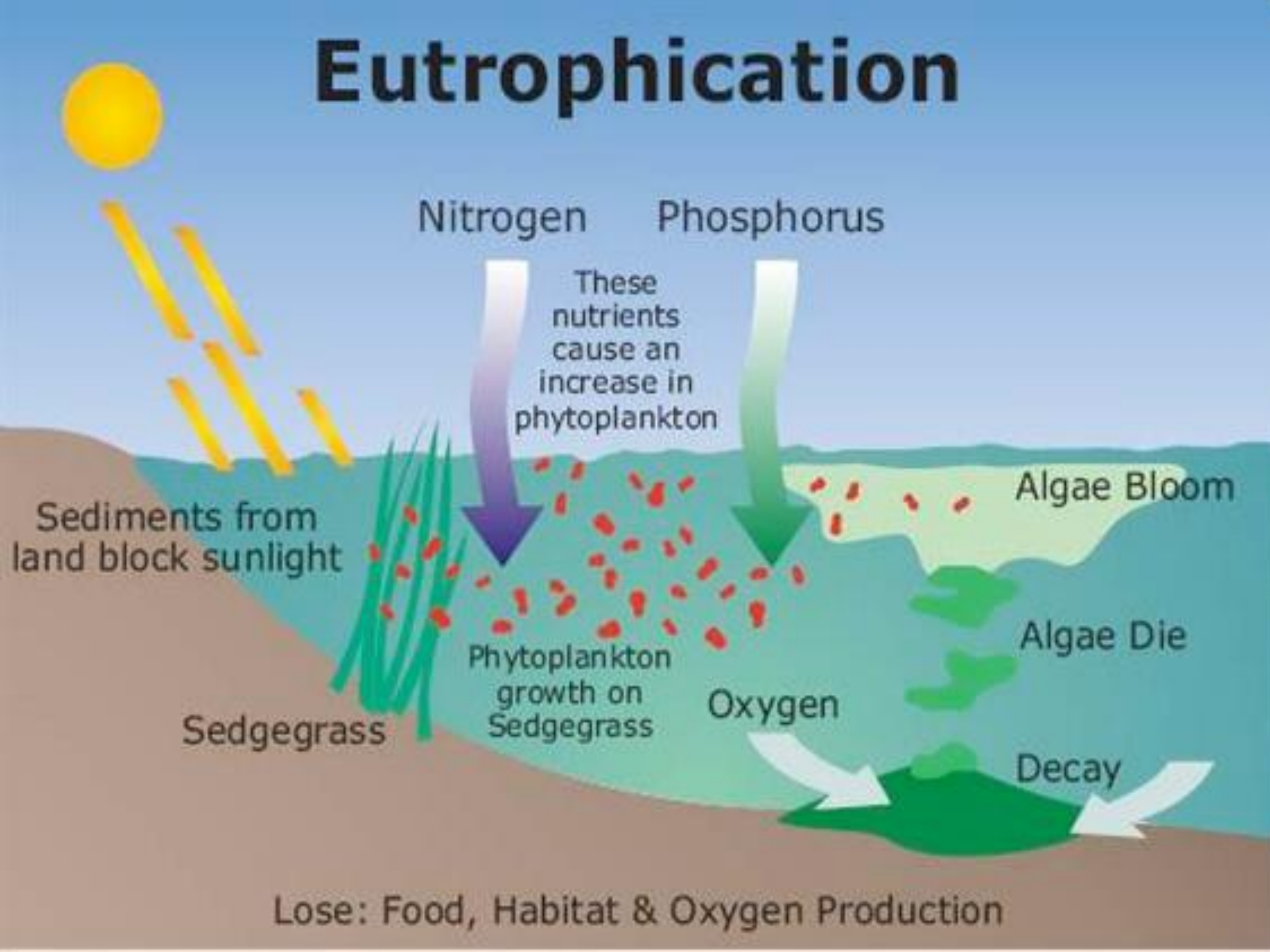
Rivers

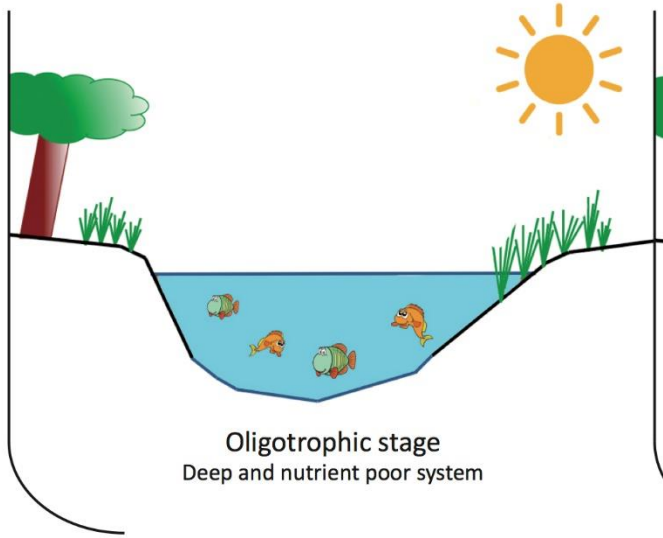
Ponds

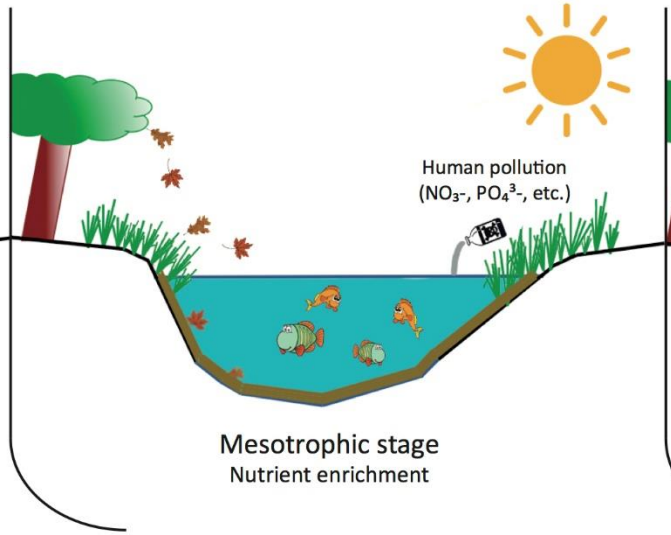
Wetlands

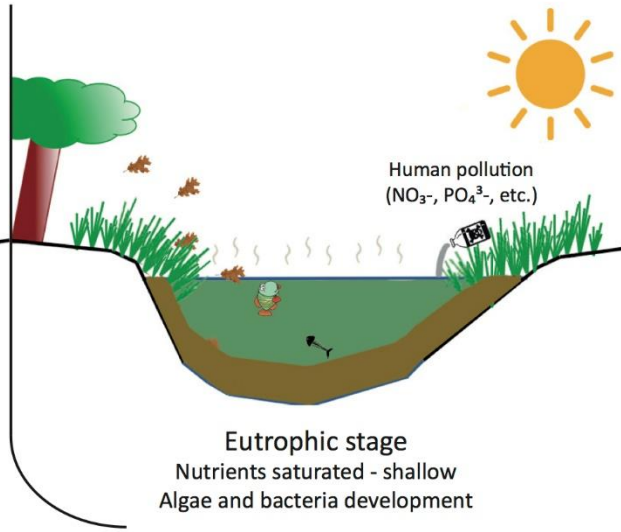
LAKES & PONDS


LITTORAL ZONE
LIMNETIC ZONE (OPEN WATER)
TERRESTRIAL PLANTS
Nutrient-rich, near the shore, highest diversity of plants and animals.
Open water
PLANTS
EUPHOTIC ZONE
BENTHIC ZONE
The bottom, inhabited by benthos such as; decomposers, insect larvae, and clams


Eutrophication
Nitrogen
Phosphorus
These nutrients cause an increase in phytoplankton
Sediments from land block sunlight
Algae Bloom
Algae Die
Phytoplankton growth on Sedgegrass
Oxygen
Sedgegrass
Decay
Lose: Food, Habitat & Oxygen Production


Oligotrophic stage
Deep and nutrient poor system


Human pollution
(NO_3^-, PO_4^{3-}, etc.)
Mesotrophic stage
Nutrient enrichment


Human pollution
(NO_3^-, PO_4^{3-}, etc.)
Eutrophic stage
Nutrients saturated - shallow
Algae and bacteria development

QUICK! REVIEW!

5) Where is the littoral zone? Why is it important?

Near the shore. It has the highest diversity, and much photosynthesis happens there.

6) What lives in the benthic zone? Why no phytoplankton?

Benthos like crabs, anemones, and clams. It's too dark for photosynthesis.

7) What is eutrophication? What causes it?

An increase in the nutrients in an aquatic ecosystem. Land run-off containing fertilizers

8) Why is eutrophication bad?

It causes algae blooms, which die and deplete oxygen in the water. This causes fish to die.

RIVERS

- Usually formed by snow melting on mountains and running down.
- As rivers flow downward, the water becomes warmer, wider, and gains land run-off.
- Plants and animals vary depending on river location, temperature, and current.
- Threats: Sewage disposal, manufacturing wastes, pesticides.
  - Dams completely alter ecosystems.




FRESHWATER WETLANDS

- Marshes- Have woody plants like mangrove trees

- Swamps- No woody plants, mostly grasses

SALINITY