



# LAKES AND PONDS ECOSYSTEM

# Ponds and Lakes

Lentic systems such as lakes, reservoirs, and ponds are more susceptible to pollution than lotic systems because they act as sinks, retaining pollutants; lotic systems such as streams and rivers have more tendency to flush pollutants downstream.



- ◆ Receives large amount of organic discharges
- ◆ Longer retention times
- ◆ WAQ gradients are in the vertical direction

# Ponds and Lakes

- ◆ range in size from just a few square meters to thousands of square kilometers.
- ◆ ponds may be seasonal, lasting just a couple of months.
- ◆ lakes may exist for hundreds of years or more.
- ◆ may have limited species diversity since they are often isolated from one another and from other water sources like rivers and oceans.
- ◆ Most ponds and lakes have outlet streams and both are more or less temporary features on the landscape





# Formation of Lakes and Ponds:

- ❖ Lakes and ponds are formed through a variety of events, including glacial, tectonic, and volcanic activity.
- ❖ As a glacier retreats, it may leave behind an uneven surface containing hollows that fill with water.
- ❖ Some of the oldest lakes and ponds (more than three hundred thousand years old) were formed by tectonic activity related to movement of Earth's crust.
- ❖ Volcanic activity can also lead to lake and pond formation.
- ❖ Other types are solution, river water and coastal.





**Lake Baikal**

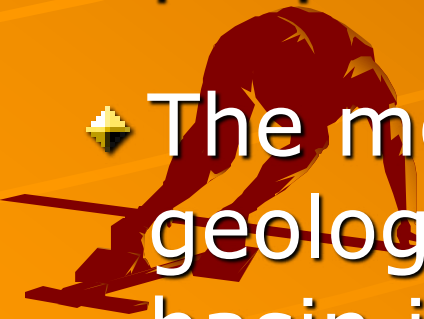


**Crater Lake , Oregon**

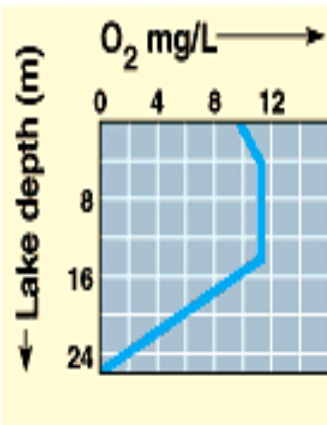


# Ponds and Lakes

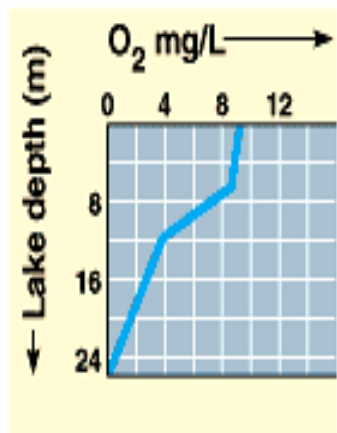
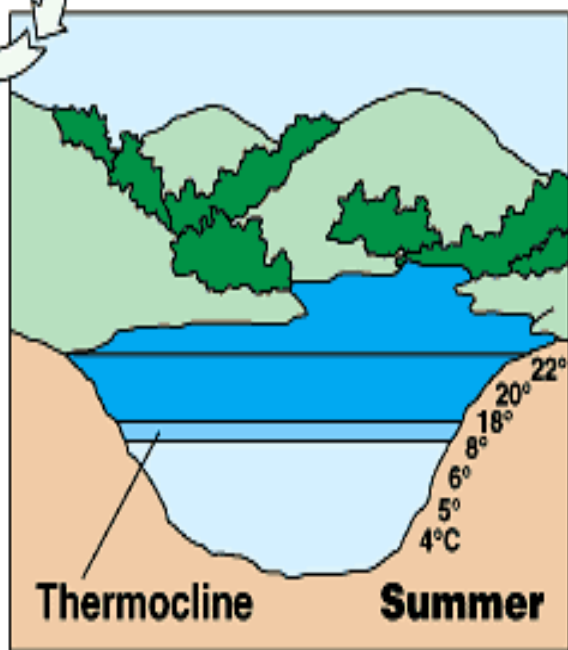
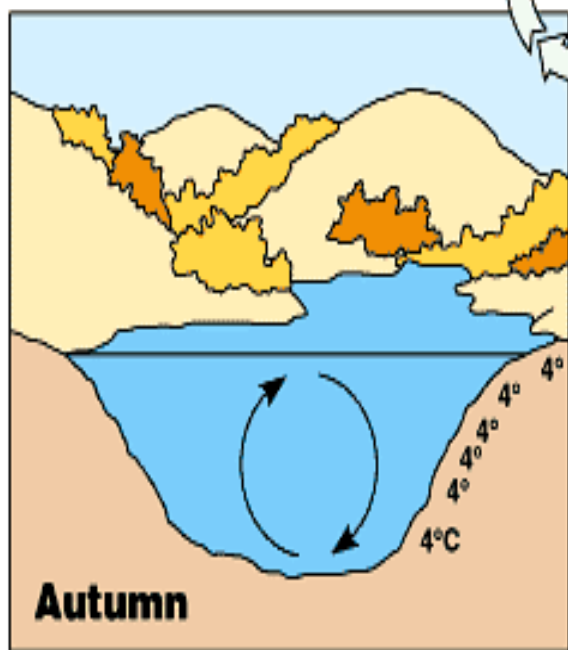
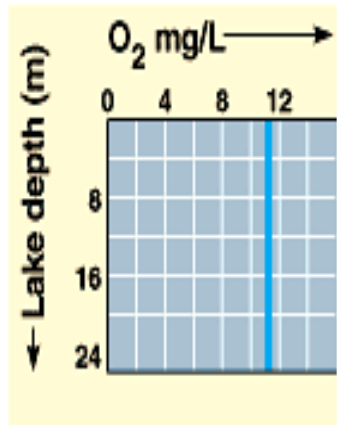
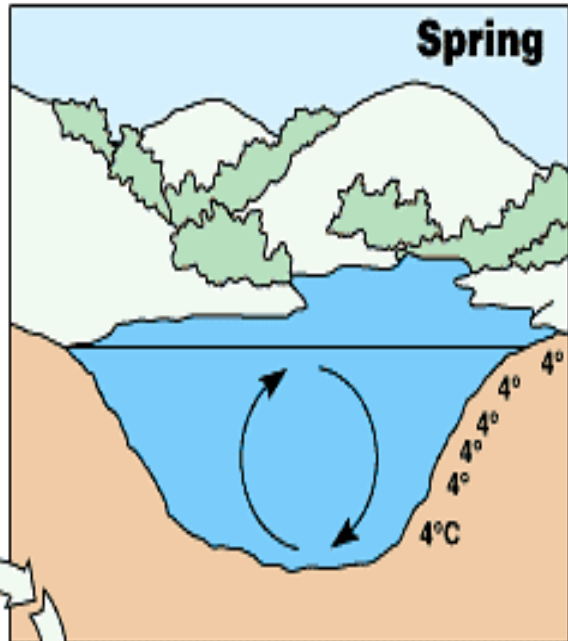
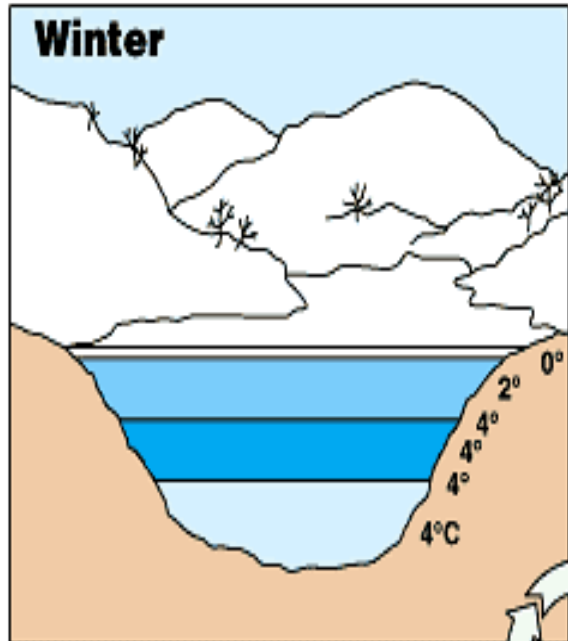
- ◆ The morphology of a lake basin has profound effects on nearly all physical, chemical, and biological properties of the pond/lake.
- ◆ The morphometry of the basins and geological substrate of the drainage basin influence sediment-water interaction and lake productivity.







High O<sub>2</sub> conc.  
 Medium O<sub>2</sub> conc.  
 Low O<sub>2</sub> conc.



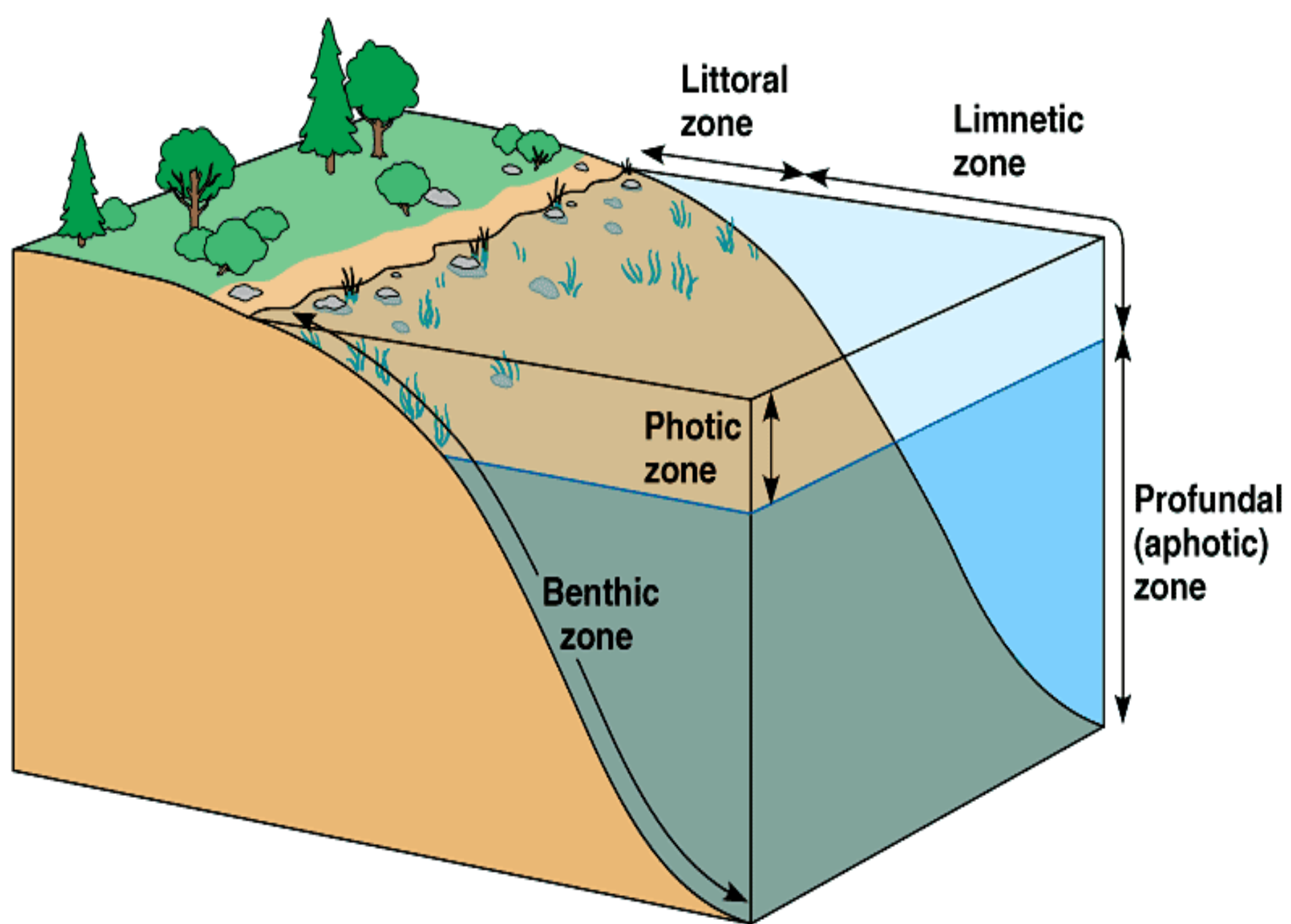
# Ponds and Lakes

◆ divided into four different “zones” determined by depth and distance from the shoreline

- littoral zone
- limnetic zone
- profundal zone
- Photic zone
- Benthic zone







# Littoral Zone

- ❖ warmest since it is shallow and can absorb more of the Sun's heat
- ❖ sustains a fairly diverse community, which can include several species of algae (like diatoms), rooted and floating aquatic plants, grazing snails, clams, insects, crustaceans, fishes, and amphibians
- ❖ the egg and larvae stages of some insects are found in this zone
- ❖ vegetation and animals living in the littoral zone are food for other creatures such as turtles, snakes, and ducks

