

Types of Ecosystem

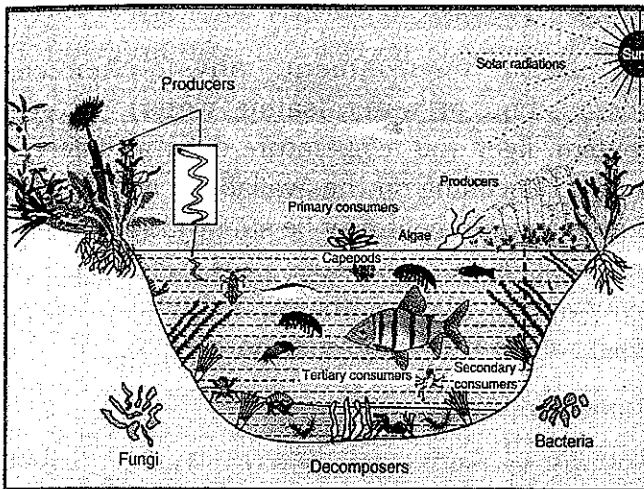


Fig. 1.6. Freshwater Ecosystem

Freshwater ecosystems can be divided into two categories:

- (i) *Standing water or lentic* (lenis, meaning calm) ecosystems like a lake, pond, marshes, or swamp. These are also known as Pond ecosystems.
- (ii) *Running water or lotic* ecosystems are that of a river or a spring.

POND ECOSYSTEMS

These regions range in size from just a few square metres to thousands of square kilometres. Many ponds are seasonal, lasting just a couple of months while lakes may exist for hundreds of years or more.

General Climate

Temperature varies in ponds and lakes seasonally. During the summer, the temperature can range from 4°C near the bottom to 22°C at the top. During the winter, the temperature at the bottom can be 4°C while the top is 0°C (ice). In between the two layers, there is a narrow zone called the *thermocline* where the temperature of the water changes rapidly. During the spring and fall seasons, there is a mixing of the top and bottom layers, usually due to winds, which results in a uniform water temperature of around 4°C . This mixing also circulates oxygen throughout the lake. Of course there are many lakes and ponds that do not freeze during the

winter, thus the top layer would be a little warmer.

Flora and Fauna

Lakes and ponds are divided into three different "zones" which are usually determined by depth and distance from the shoreline.

Littoral Zone: The topmost zone near the shore of a lake or pond is the *littoral zone*. This zone is the warmest since it is shallow and can absorb more of the Sun's heat. It 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 vegetation and animals living in the littoral zone are food for other creatures such as turtles, snakes, and ducks.

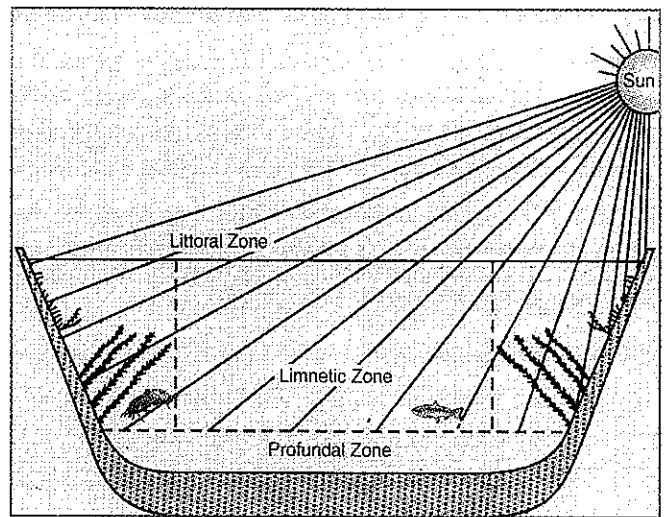


Fig. 1.7. Different zones of a Fresh Water Pond

Limnetic Zone: The near-surface open water surrounded by the *littoral zone* is the *limnetic zone*. The limnetic zone is well-lighted (like the littoral zone) and is dominated by *plankton*, both phytoplankton and zooplankton. Plankton are small organisms that play a crucial role in the food chain. Without aquatic plankton, there would be few living organisms in the world, and certainly no humans. A variety of freshwater fish also occupy this zone.

Profundal Zone: The deep-water part of the lake or pond is called the *profundal zone*. This