Biol 541 -- Ecology of Fishes and Fisheries Biology
Lecture 15 – Freshwater Fishes

Much of our knowledge of the ecology of aquatic systems comes from work in freshwater systems.

Freshwater systems consist of lakes and ponds, rivers, and streams.

Fishes that live in these systems are usually very intolerant to estuarine or marine waters because of osmotic regulation systems. (salt water).

Most freshwater species live in tropical regions, temperate areas like the U.S., have much less diversity, and the fishes are mainly contained in the families Centrarchidae, Cyprinidae, and Percidae.

Lotic systems (flowing freshwater ecosystems)
-- Rivers and Streams

Streams

Distribution and abundance determined by:

temperature

gradient (number of meters of drop per kilometer of stream)

stream order (classifying streams according to pattern of branching)

flow regime

Lentic systems (Ecosystems with low or no movement of water)
Lakes and ponds

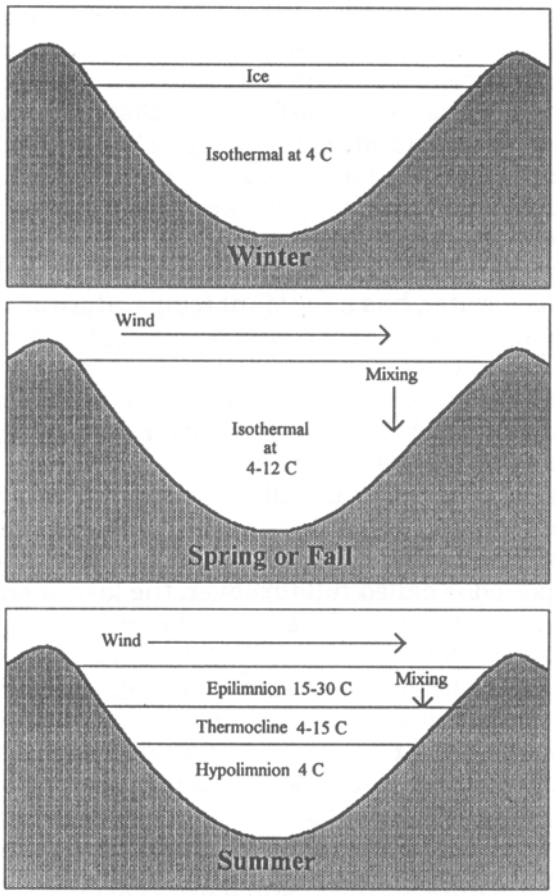

Figure 1-1. *Diagram of a lake and its zonation by depth during climatic seasons.*

Epilimnion -- warm surface water that is completely mixed by wind,

Metalimnion -- Thermocline -- temperatures drop dramatically along a gradient from the warm surface water to bottom waters at 4 C (1C degree drop for every meter in depth!).

Hypolimnion -- is the deepest water at a constant temp of 4C.

In fall, you get the same conditions as in spring -- the thermal stratification breaks down as the water cools, and mixing throughout the lake occurs.

Productivity in lakes

Oligotrophic (primary productivity is very low)
Eutrophic (high primary productivity)

Lakes range between these two extremes.

Eutrophic lakes –

Extreme latitudes

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Trophic cascade