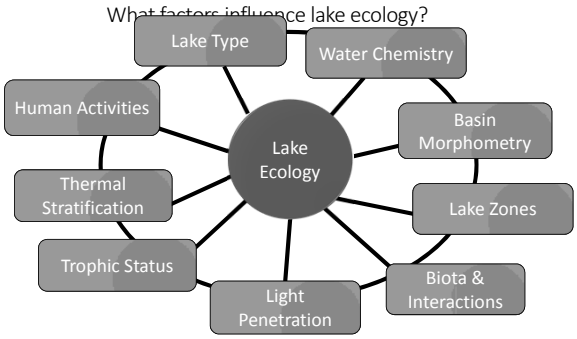
Understanding Lakes: Field Experience at Wintergreen Lake

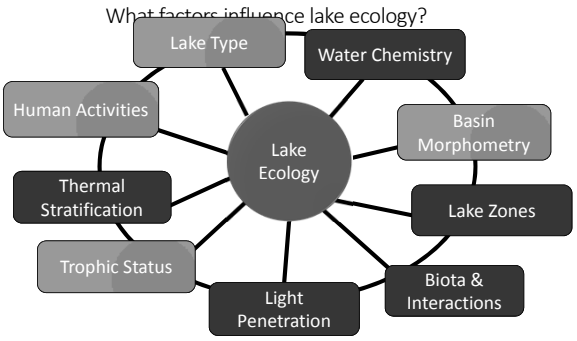
Lake and Stream Leaders Institute
Kellogg Biological Station
July 31 and August 1, 2015

Lake Instructors: Dr. Lois Wolfson and Jane Herbert

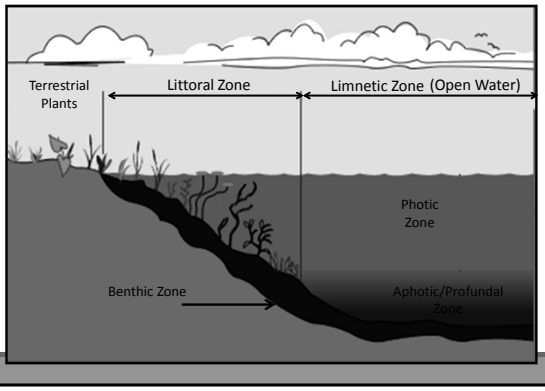
What factors influence lake ecology?



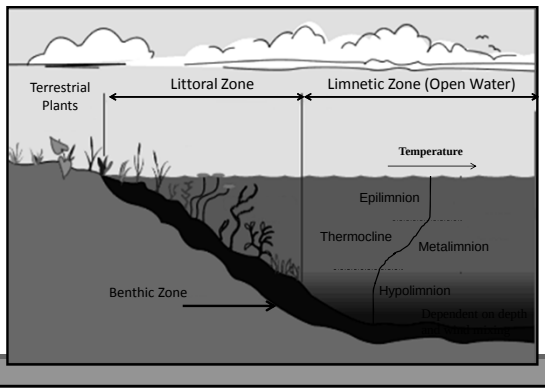
What factors influence lake ecology?

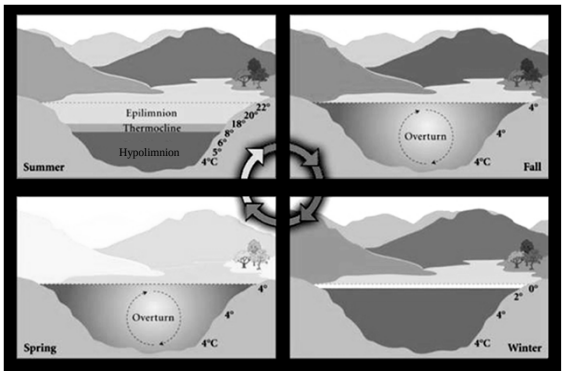


Lake Zonation

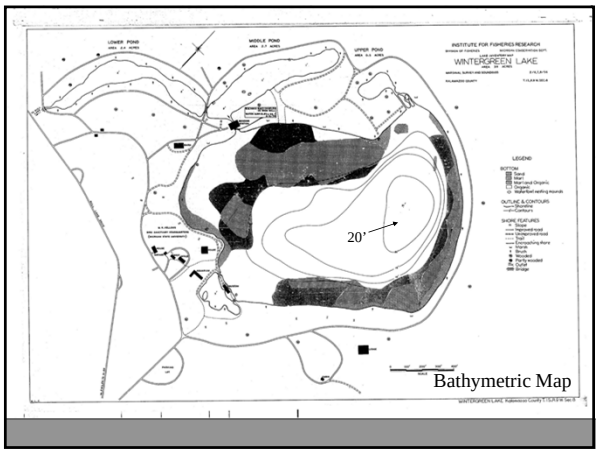


Lake Zonation





Is the lake stratified?



Bathymetric Map

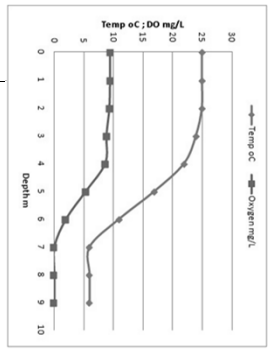
Water Chemistry

Oxygen

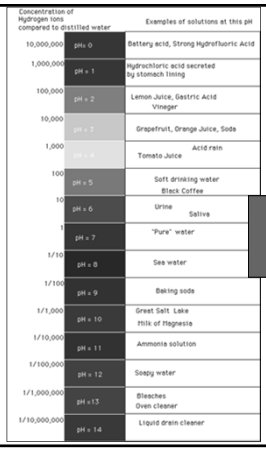
- Source: Atmospheric & Photosynthesis
- Respiration of Aerobic Organisms
- Decomposition of Organic Matter
- Influence on Solubility of Minerals; Nutrient Availability

Lake Profile of a Stratified Lake

Depth m	Temp °C	Oxygen mg/L
0	25	9.5
1	25	9.5
2	25	9.4
3	24	8.9
4	22	8.7
5	17	5.4
6	11	2
7	6	0
8	6	0
9	6	0



pH



At pH 5 or below, most fish eggs cannot hatch

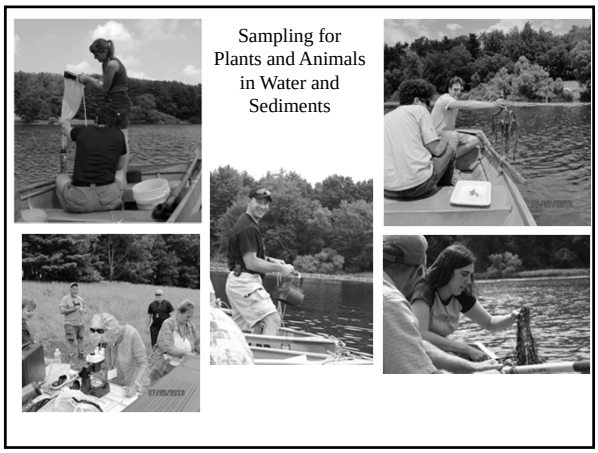
Tolerance levels for various aquatic organisms

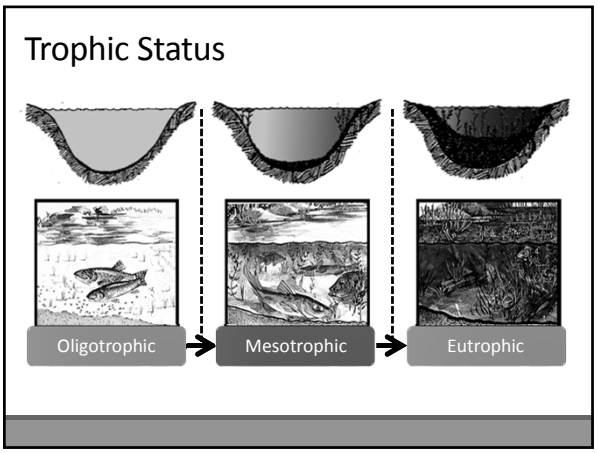
- Clams – pH 6.0
- Smallmouth bass - pH 5.5
- Mayflies and Stoneflies – pH 5.5
- Trout, walleye – pH 5.2
- Frogs – pH 4.0

most lakes and rivers

Collecting Water Sample for other Measurements

Light Penetration using a Secchi Disk


Sampling for
Plants and Animals
in Water and
Sediments


Trophic Status
Oligotrophic
Mesotrophic
Eutrophic