

APPENDIX

AN INVESTIGATION FLOW CHARTS

The aim of the flow charts is to show which rather simple measurements and samplings have to be done and which factors have to be considered to get information of structure and function of an ecosystem.

I. Basic data

(vertical profile in the deepest part of the lake)

1. Water temperature (thermistor)
2. Dissolved oxygen (Oximeter, Winther methods)
3. Light penetration (Secchi disc, light meter)
4. Conductivity
5. pH
6. Water samples (P-inorganic, Nitrate, Nitrite, Ammonium)
7. Vertical plankton hauls
8. Primary productivity.

These basic data are strongly influenced by the following climatic factors acting as forcing functions:

- solar radiation
- wind
- air temperature
- precipitation

II. Sediment

Sediment core
Sediment sample

III. Inputs from the watershed

Depend on land use: arable land
forest

Morphology of the landscape
(steep slopes with increasing run off of nutrients)

Drainage system type

Ratio area lake/area watershed

IV. Lake morphometry

Depth (max) Z_{max}

Depth (mean) Z

Morphology of the lake basin.

From these data we get important information, e.g.

Temperature: Depth of thermocline (Epi-, hypolimnion)

Oxygen: Aerobic - anaerobic zone

Light: 1% light = boundary of zone of primary production

Conductivity: Hardwater - softwater lake

pH: Acidification, special environmental conditions

Nutrients: Eutrophic or oligotrophic conditions. Particularly important in determination of P and N-compounds after the fall turnover for measuring the complete nutrients standard available for future production.

Wind: Influences strongly the stability and position of thermocline, which acts as a physical boundary between the basic compartments epilimnion/hypolimnion.

Precipitation: Has great influence on the stratification and stability of the lake.

Morphology: In shallow lakes the mud-water exchange of nutrients can strongly influence the nutrient supply of the lake: shallow lakes are

productive.

Sediment: Anoxic black sediment (H_2S) has a great exchange of P with the overlying water, P is fixed by iron or manganese.

Watershed: High loading water from arable land, with steep slopes after fertilization. Woodlands and wetland are trapping the nutrients.

Phytoplankton: Waterbloom, esp. blue-green algae, are indicating high productivity.

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