

Ecological state of the lake during restoration measures

Physico – Chemical Indicators



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Poznań and Wągrowiec, 1-15 July 2012

Research Objectives

- To gain deeper knowledge in regard to the current physico-chemical condition.
- To compare recent results with last year's results and therefore foreseeing the upcoming development in the Lake Durowskie.
- To envisage acts in the future in refer to improving water quality in Lake Durowskie.

Sampling Areas

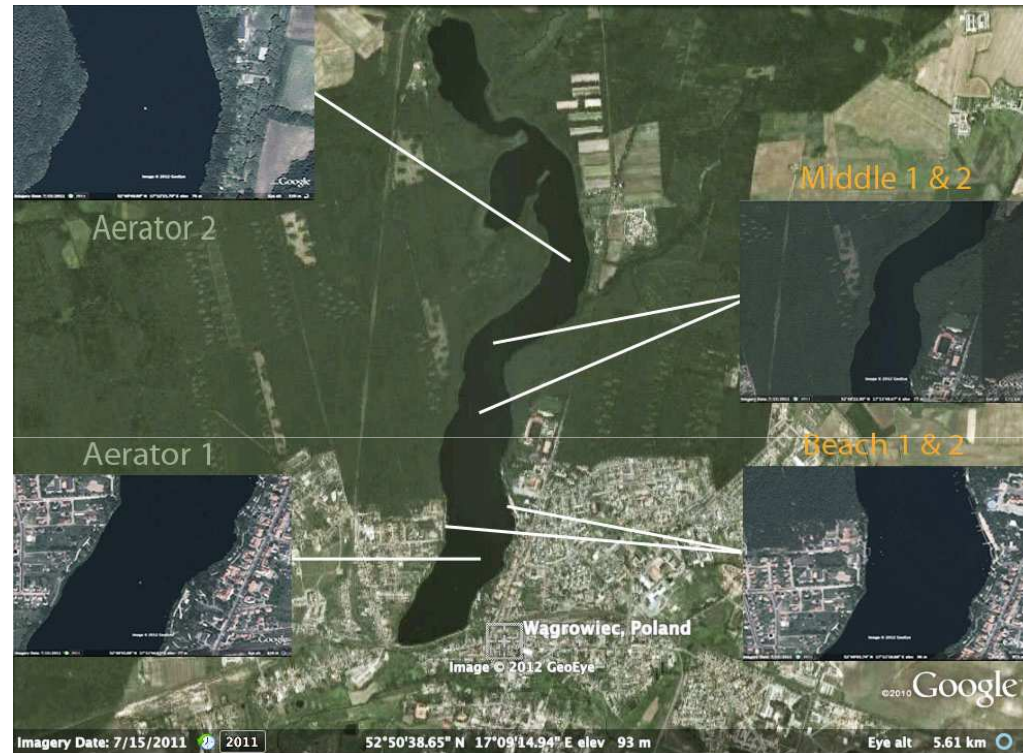
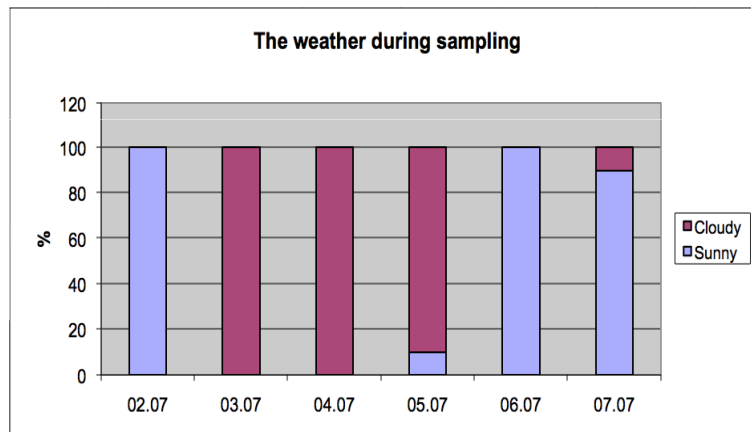


Image Source: Google Earth

Measurements and Sampling Activity



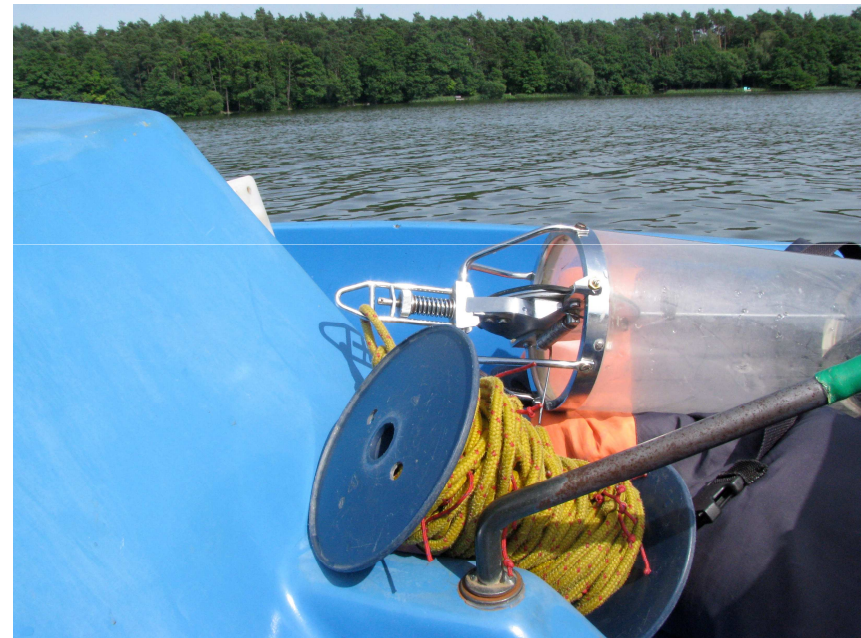
Measured Indicators

- Chlorophyll 'a' concentration.
- Oxygen concentration.
- Conductivity.
- Temperature.
- pH.
- Water saturation with oxygen.
- Total Dissolved Solids (TDS).



Measuring Methods

Apart from Chlorophyll 'a' concentration, the rest of the indicators were measured on the field, respectively.



Chlorophyll 'a' Extraction and Measurement

- Water samples were taken, filtered and stored in a refrigerator.
- In laboratory in Poznan the Chlorophyll 'a' was extracted and calculated.



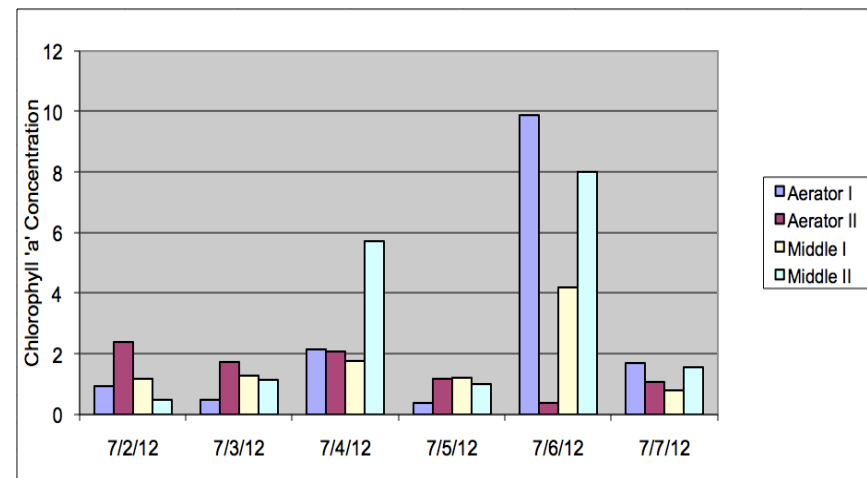
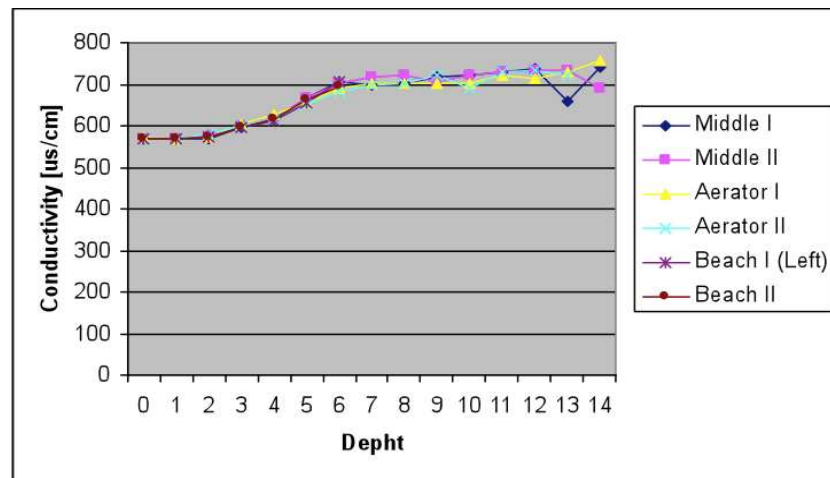
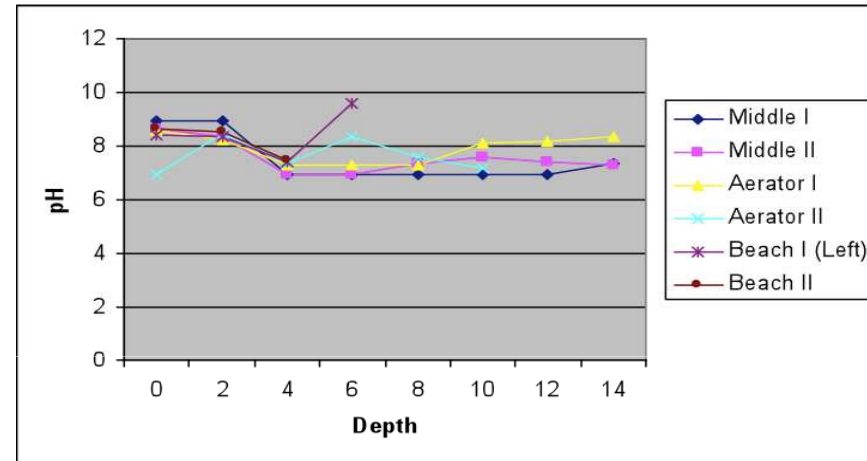
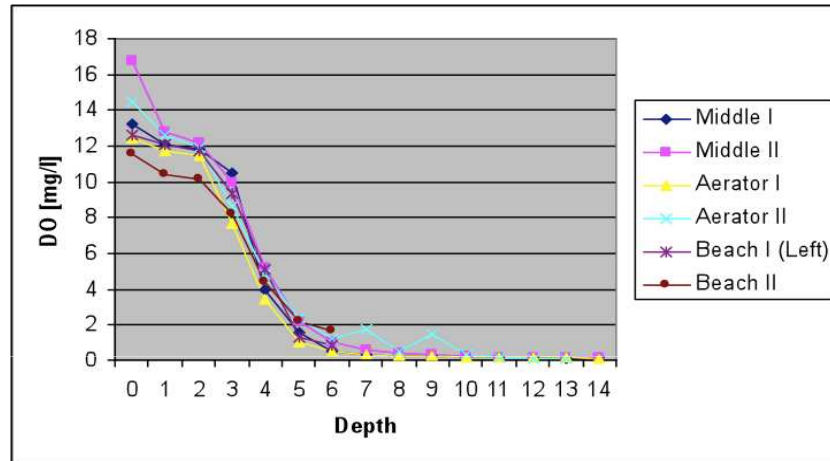
Chlorophyll 'a' Concentration Measurement and Calculation

- Pulverizing of filters by acetone.
- Extraction within 24 hours.
- Measurement of chlorophyll 'a' absorption using Spectrophotometer.

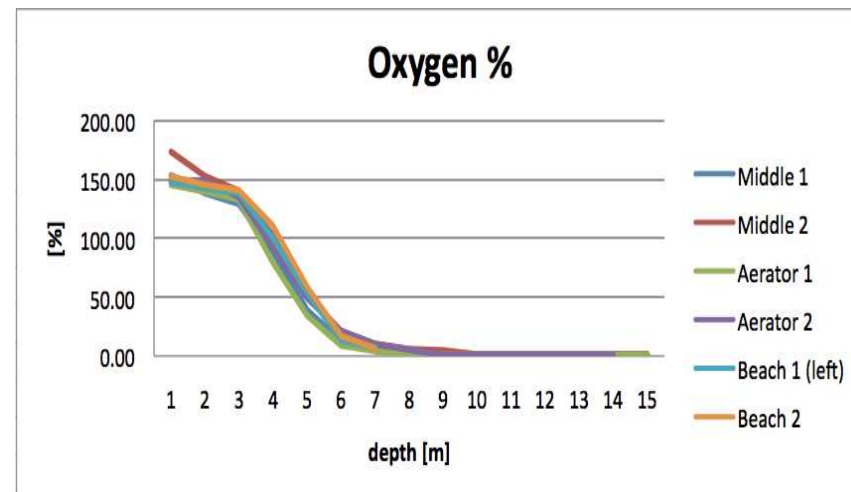
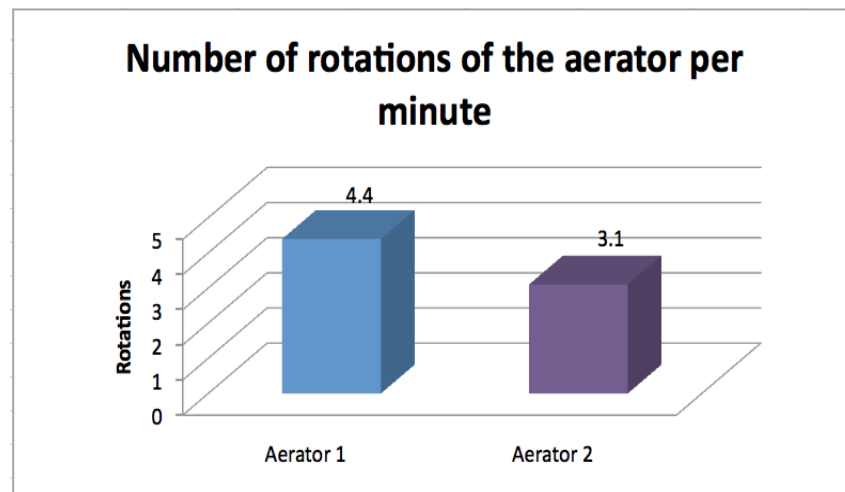
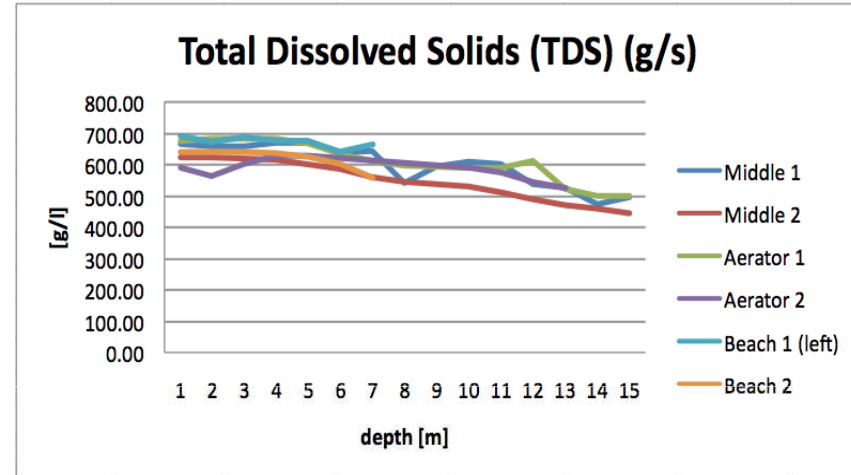
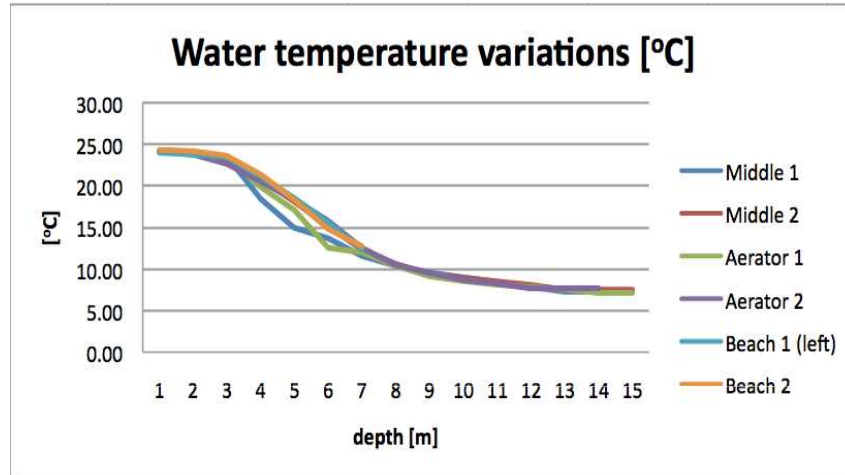


Image source: Private documentation

Research Results



Research Results



Lake Classification

- The results are compared with the regulations of water bodies that been issued by the Polish Ministry of Environment (2008).
- Is compatible with the Water Framework Directive.

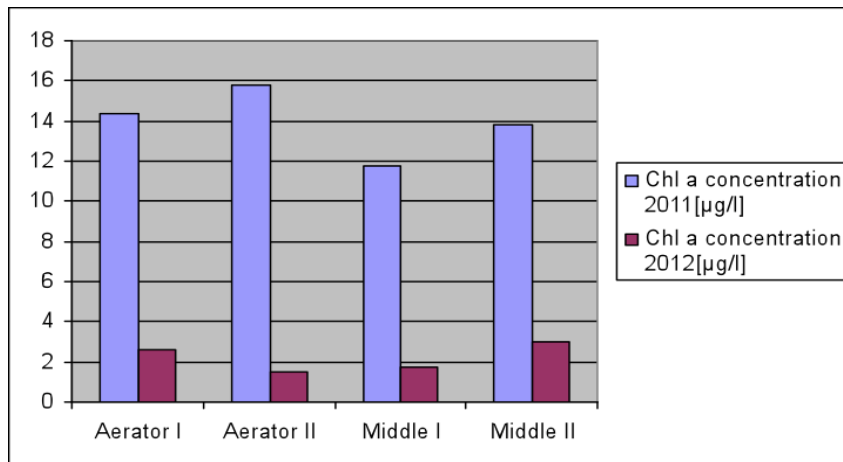
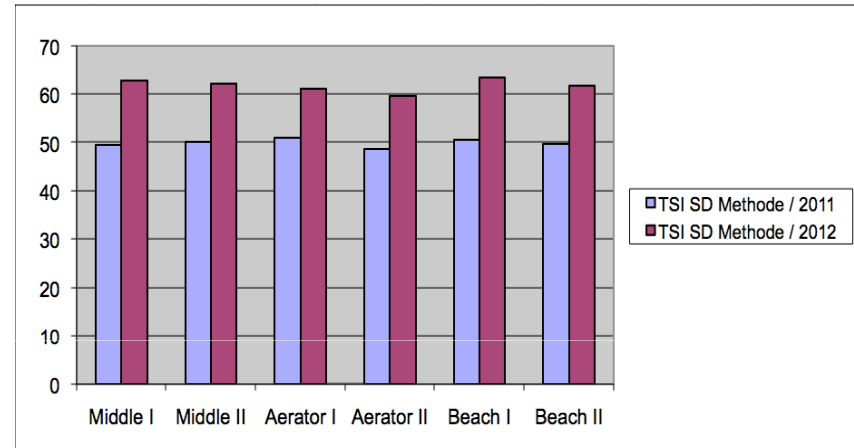
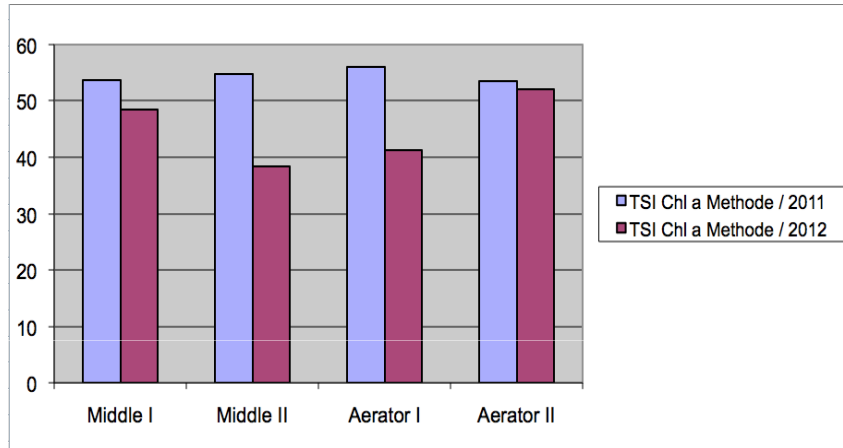
Parameters	Value	Classification
Chlorophyll 'a'	2.2 µg/L	Class 1
Oxygen Concentration (hypolimnion)	0.27 mg/L	Bad
Secchi Disc	0.88	Bad
Conductivity	648.2 µs/cm	Bad

Trophic State Index (TSI)

- Carlson's Trophic State Index is calculated based on Chlorophyll 'a' and Secchi Depth.
- These two values indicate that current status of the lake is mesotrophic.

Trophic State	Oligotrophic	Mesotrophic	Eurotrophic	Hypertrophic	Durowskie
TSI Value	<40	40-50	50-70	>70	SD = 61.84 Chl 'a' = 45.05

Some Comparisons



Any Changes?

Parameter	2011	2012
Chlorophyll 'a'	≈ 14 µg/L	≈ 2.2 µg/L
Conductivity	≈ 400 µs/cm	≈ 648.2 µs/cm
Surface pH	≈ 8.7	≈ 8.87
Transparency	≈ 2 m	≈ 0.88 m
TDS (Surface)	≈ 0.31 g/L	≈ 0.605 g/L
Dissolved Oxygen	≈ 10 mg/L (surface)	≈ 13.5 mg/L (surface)

To Sum Up

- Some indicators values are steeply declining from last year.
- Chlorophyll's "free fall" is due to a very heavy rainy times and Bacillariophyceae.
- Also influences the lake states and the

That's All, Folks!

