Data on occurrence of Gonyostomum semen in brown water lakes

SND-ID: 2024-221. **Version**: 1. **DOI**: https://doi.org/10.57804/7zhp-jp89

Download data

abs_Fluo_data.zip *(4.54 MB)*

Citation

Lindström, E. S. (2018) Data on occurrence of Gonyostomum semen in brown water lakes (Version 1) [Data set]. Uppsala University. Available at: https://doi.org/10.57804/7zhp-jp89

Alternative title

High abundances of Gonyostomum semen in brown water lakes are associated with high concentrations of iron : Fluorescence and abosrbance data

Creator/Principal investigator(s)

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Description

Algal blooms occur frequently in lakes and oceans and the causes and consequences of those are often studied. This dataset focus on a less well known type of algal bloom by the freshwater raphidophyte Gonyostomum semen. This species' abundance and occurrence is increasing, especially in brown water lakes, the most abundant lake type in the boreal zone.

The aim of the study was to investigate which environmental factors are associated with G. semen by statistical evaluation of field data of 95 Swedish lakes over five years (2010–2014). We focused the analyses on the August data, where we had the most complete dataset, and as it is a period when G. semen can be abundant and form blooms.

Phytoplankton was sampled from boat in August by taking a water sample from the epilimnion with a 2-m long Plexiglas tube sampler (diameter = 3 cm). In lakes with a surface area >1 square km a single mid-lake site was used for sampling. In lakes with a surface area <1 square km , five random epilimnetic water samples were collected, and mixed to form a composite sample from which a subsample was taken for analysis. Samples for phytoplankton analyses were preserved with Lugol's iodine solution (2 g potassium iodide and 1 g iodide in 100 mL distilled water) supplemented with acetic acid. Gonyostomum semen cell counts were used as a measure of abundance in each lake. Cell abundances of G. semen were estimated within the monitoring program framework from phytoplankton samples using an inverted light microscope according to the Utermöhl technique.

To characterize the physical and chemical environment of the lakes, the following parameters from the database were used: latitude (Xcoord), longitude (Ycoord), surface water temperature (Temp), pH, conductivity measured at 25 °C (Cond), calcium (Ca), magnesium (Mg), sodium (Na), potassium (K), alkalinity (Alk), sulphate (SO 4), chloride (Cl), ammonium-nitrogen (NH4), total nitrogen (TotN), total

phosphorus (TotP), water color measured as absorbance
of 0.45 µm filtered water in a 5 cm cuvette (AbsF420), silicon (Si), turbidity (Turb), total organic carbon (TOC), iron (Fe), and manganese (Mn). The chemical parameters were from the sample taken at 0.5 m depth and measured according to international (ISO) or European (EN) standards (SS-EN ISO 5667-1:2007.

In 2014 additional water samples were collected during the monitoring sampling and the water from 72 of the 95 lakes was filtered through 0.22 µm supor filter within 1 day of sampling for visible and fluorescence spectra measurements in order to characterize DOM quality. Absorbance scans were performed between 230–600 nm using a 1-cm quartz cuvette. The specific UV absorbance of organic carbon (SUVA254) was then calculated by dividing the decadic absorption coefficient at 254 nm by the DOC (dissolved organic carbon) concentrations.

For further information, see article "High abundances of the nuisance raphidophyte Gonyostomum semen in brown water lakes are associated with high concentrations of iron" by Lebret et al (2018).

The dataset was originally published in DiVA and moved to SND in 2024.

Data contains personal data

No

Language

English

Data format / data structure

Numeric

Identifiers

URN: urn:nbn:se:uu:diva-341683

Research area

Ecology (Standard för svensk indelning av forskningsämnen 2011)

Keywords

Fluorescence, Lakes, Iron, Algae, Algal bloom

Publications

Lebret, K., Östman, Ö., Langenheder, S., Drakare, S., Guillemette, F., & Lindström, E. S. (2018). High abundances of the nuisance raphidophyte Gonyostomum semen in brown water lakes are associated with high concentrations of iron. Scientific Reports, 8(1). https://doi.org/10.1038/s41598-018-31892-7

Accessibility level

Access to data through SND
Data are freely accessible

Use of data

Things to consider when using data shared through SND

Versions

Version 1. 2018-02-12

This resource has the following relations

Obsoletes urn:nbn:se:uu:diva-341683

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DataCite

DDI 2.5

DDI 3.3

DCAT-AP-SE 2.0

JSON-LD

PDF

Citation (CSL)

File overview (CSV)

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