

**IGB**Leibniz-Institut für Gewässerökologie
und Binnenfischerei

FRESHWATER RESEARCH AND ENVIRONMENTAL DATABASE

Lake Stechlin

Porewater (iron, sulphate), peeper 2008 – 2018

FRED Package 1060

Between 2008 and 2018, pore water was collected at various locations on Lake Stechlin using dialysis collectors (peepers). The file contains the iron and sulfate measurements from 11 peepers on six dates.

Study site

The basin of Lake Stechlin was formed during the last continental glaciation ca. 12,000 years ago. Lake Stechlin is a deep, dimictic, formerly oligotrophic clear-water lake that has been undergoing eutrophication since at least the early 2000s and especially since 2010. The lake is located in a nature reserve approximately 80 km north of Berlin, Germany (53°9'5.6" N, 13°1'34.2" E) at 59 m altitude. The lake has a maximum depth of 69.5 m, a mean depth of 23.3 m, a surface area of 4.3 km² and a volume of 96.9 x 10⁶ m³. The catchment has a size of 12.6 km² and is almost completely covered by managed forest (95%).

The lake has three basins (north, west, and south). The deepest point in the lake is near the center, in the main basin (see Figure 1).

Sampling dates and locations

The peepers were exposed in the area of the deepest point (or slightly east of it) or in the southern bay. Details for each peeper are listed in the Table 1)

Table 1 Datum, Wassertiefe, Anzahl und Lage der einzelnen Peeper

Date	Water depth	Basin	number
2008-11-05	ca. 17 m	South	1
2009-06-02	68 m	main	1
2009-12-07	68 m	Main	1
2012-04-01	30 m	South	4
2017-11-29	58 and 69 m	Main	1 each
2018-06-26	58 and 69 m	Main	1 each

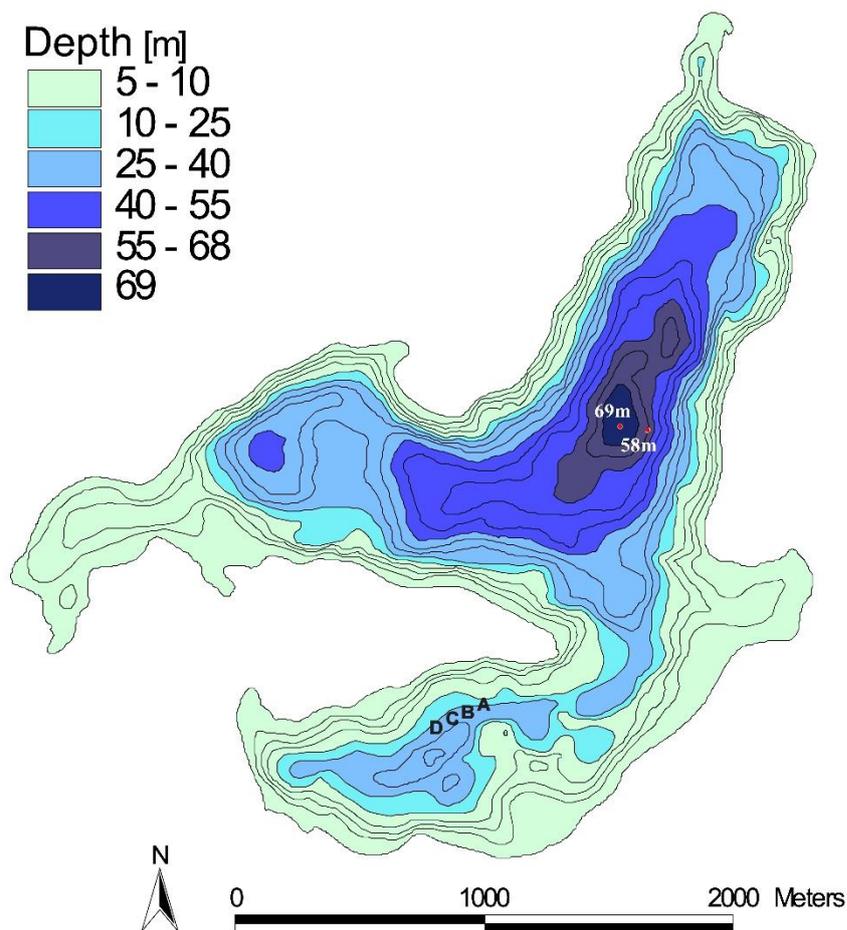


Figure 1 Depth contour map of Lake Stechlin. The three sampling points from 2012 in the southern basin and those from 2017/2018 in the main basin are marked (Wurzbacher et al. 2017, slightly modified)

Methods

The pore water was collected using in-situ dialysis samplers, known as peepers. Peepers are made of clear acrylic plastic. The chambers, which have a volume of approximately 6 ml, are filled with distilled water before exposure and sealed with a dialysis membrane. For this purpose, a plexiglass lid with slots is screwed onto the lower part using plastic screws.

Within 14 days, during which the peeper remains vertically in the sediment, held by a frame (1 m²), the concentration between the water in the chamber and the surrounding pore water equalizes. The water is taken from the Peeper chambers with a pipette for analysis and fixed as quickly as possible.

Until 2012, dissolved iron concentrations were determined using Atomic absorption spectrometry AAS (Perkin Elmer 3300, Rodgau-Jügesheim). From 2017 onwards, optical emission spectrometry using inductively coupled plasma (ICP-OES) was used.

Sulfate was determined using liquid chromatography.

Iron is measured as total dissolved iron. Fe-concentrations below the limit of determination were reported as half the limit of determination. The determination limits are listed in Table 2.

Table 2 Determination limits of iron measurement and the method of measurement.

date	Fe (mg/L)	measuring device
2008-11-05	0.1	AAS
2009-06-02	0.1	AAS
2009-12-07	0.1	AAS
2012-04-01	0.1	AAS
2017-11-29	0.01	ICP-OES
2018-06-26	0.01	ICP-OES

Metadata

Table 3 file description

column	parameter	unit
1	date	YYYY-MM-DD
2	water depth	m
3	Lake basin	
4	Additional name of the sample location	
5	Peeper chamber (from top)	
6	dTFe	mg/L
7	SO ₄ ²⁻	mg/L

Contact

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