

# Benedikt Ehrenfels

## PERSONAL INFORMATION

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POSITION Doctoral Student in Aquatic Chemistry  
AFFILIATION Eawag, Department Surface Waters – Research and Management &  
Institute of Biogeochemistry and Pollutant Dynamics, ETH Zurich  
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## ACADEMIC EDUCATION

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OCT 2016 - **Doctoral Student**  
MAR 2021 Department Surface Waters Research and Management, Eawag &  
Institute of Biogeochemistry and Pollutant Dynamics, ETH Zurich  
  
OCT 2013 - **M.Sc. Environmental Sciences**  
JUN 2016 Faculty of Biology, Chemistry, and Earth Sciences, University of Bayreuth &  
Department of Ecology and Environmental Science, Umeå University (Exchange)  
  
OCT 2010 - **B.Sc. Environmental Sciences**  
SEP 2013 Faculty of Biology, Chemistry, and Earth Sciences, University of Bayreuth

## WORK EXPERIENCE

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OCT 2016 - **Teaching Assistant**  
PRESENT Institute of Biogeochemistry and Pollutant Dynamics, ETH Zurich  
  
MAR - **Student Assistant**  
JUN 2016 Department of Hydrology, University of Bayreuth  
  
DEC 2015 **Student Assistant**  
Ecological Chemistry Group, Alfred-Wegener-Institute for Polar and Marine Science  
(AWI)  
  
AUG - **Student Assistant**  
OCT 2015 Department of Arctic Biology, The University Centre in Svalbard (UNIS)  
  
MAR - **Field and Lab Assistant**  
APR 2014 HYDRA Institute for Marine Science  
  
MAR - **Field and Lab Assistant**  
APR 2013 HYDRA Institute for Marine Science

## SCIENTIFIC PROJECTS

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OCT 2016 - *Nitrogen cycling in Lake Tanganyika and its traces in the pelagic food web under  
contrasting hydrodynamic conditions*  
PRESENT **PhD Thesis** — Eawag & ETH Zurich  
Sup.: [Prof. B. Wehrli](#)

- AUG 2015 - *Life cycle, feeding strategy, and grazing impact of the Arctic pteropod Limacina helicina in autumn*  
APR 2016 **Master Thesis** — The University Centre in Svalbard (UNIS) & Alfred-Wegener-Institute for Polar and Marine Research (AWI) & University of Bayreuth  
Sup.: Prof. J. Søreide & Dr. M. Graeve & Prof. C. Laforsch
- NOV 2014 - *Measurement and preservation of biogenic silica in recent, annually laminated sediment*  
JAN 2015 **Term Research Project** — Umeå University  
Sup.: Prof. R. Bindler
- APR - *Measuring volatile metalloids by AgNO<sub>3</sub>-traps at the fumarolic field of Vulcano, Italy*  
SEP 2013 **Bachelor Thesis** — Istituto Nazionale di Geofisica e Vulcanologia (INGV) & University of Bayreuth  
Sup.: Prof. B. Planer-Friedrich

## TEACHING EXPERIENCE

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- 2021 **Supervisor**  
*Citizen science water quality monitoring in Lake Tanganyika*, Happiness A. Moshi, 4-month research stay at Eawag, PhD Project, TAFIRI & University of Dar es Salaam
- 2019 **Teaching Assistant**  
Bachelorseminar Biogeochemie (paper seminar, B.Sc. level), ETH Zurich
- 2018 **Supervisor**  
*Hochaufgelöstes Gewässermonitoring im Vierwaldstättersee mittels 'Ferry Box'* (Highly resolved water monitoring in Lake Lucerne using a 'FerryBox'), Manuel Walser, Bachelor Thesis, ETH Zurich
- 2017 - **Teaching Assistant**  
2019 Greifenseepraktikum (field practical for biogeochemical methods, B.Sc. level), ETH Zurich
- 2016 - **Teaching Assistant**  
2019 Grundpraktikum Chemie (basic Chemistry practical, B.Sc. level), ETH Zurich

## SCHOLARSHIPS & AWARDS

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- 2017 **SGHL/SSHL poster award** at the Swiss Geoscience Meeting
- 2015 **ERASMUS SMP** for field and lab work abroad
- 2014/15 **ERASMUS SMS** for studying abroad

## REVIEW ACTIVITIES

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IPCC *Special Report on the Ocean and Cryosphere in a Changing Climate (SROCC)*.

## PUBLICATIONS

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**Ehrenfels, B.\***; Junker, J.\*; Namutebi, D.; Callbeck, C. M.; Dinkel, C.; Kalangali, A.; Kimirei, I. A.; Mbonde, A. S.; Mosille, J.; Schubert, C. J.; Sweke, E. A.; Wagner, C. E.; Seehausen, O.; Wehrli, B.: Latitudinal and seasonal differences in stratification leave isotopic signatures in pelagic fish populations of Lake Tanganyika (in prep.).

\* these authors contributed equally

**Ehrenfels, B.**; Callbeck, C. M.; Baumann, K. B. L.; Niederdorfer, R.; Mbonde, A. S.; Lehmann, M. F.; Kuhn, T.; Magyar, P. M.; Kimirei, I. A.; Odermatt, D.; Bürgmann, H.; Mohr, W.; Schubert, C. J.; Wehrli, B.: Hydrodynamics modulate nitrogen fixation and removal in Lake Tanganyika (in prep.).

Callbeck, C. M.\*; **Ehrenfels, B.\***; Baumann, K. B. L.; Wehrli, B.; Schubert, C. J. (2021): Anoxic chlorophyll maximum accelerates organic matter remineralization and nitrogen loss in Lake Tanganyika. *Nature Communications*, 12, 830. doi:10.1038/s41467-021-21115-5

\* these authors contributed equally

**Ehrenfels, B.**; Bartosiewicz, M.; Mbonde, A. S.; Baumann, K. B. L.; Dinkel, C.; Junker, J.; Kamulali, T.; Kimirei, I. A.; Odermatt, D.; Pomati, F.; Sweke, E. A.; Wehrli, B. (2020): Thermocline depth and euphotic zone thickness regulate the abundance of diazotrophic cyanobacteria in Lake Tanganyika. *Biogeosciences Discussions* (to be re-submitted). doi:10.5194/bg-2020-214

Junker, J.; **Ehrenfels, B.**; Namutebi, D.; Kimirei, I. A.; Sweke, E. A.; Mosille, J. B.; Dinkel, C.; Wagner, C. E.; Seehausen, O.: Lake Tanganyika's pelagic fish community from an isotopic perspective (in prep.).

**Ehrenfels, B.**; Boissonnot, L.; Graeve, M.; Søreide, J. E.: The life cycle strategy of *Limacina helicina*: Novel insights into the development of early stages revealed by fatty acid and stable isotope analysis (in submission).

Boissonnot, L.; **Ehrenfels, B.**; Kohnert P.; Søreide, J. E.; Graeve, M.; Stübner, E.; Schrödl, M.; Niehoff, B.: Year-round population dynamics of *Limacina helicina* and *L. retroversa* early stages in a high-Arctic fjord. *Polar Biology* (in review).

Boissonnot, L.; Niehoff, B.; **Ehrenfels, B.**; Søreide, J. E.; Hagen, W.; Graeve, M. (2019): Lipid and fatty acid turnover of the pteropods *Limacina helicina*, *L. retroversa* and *Clione limacina* from Svalbard waters. *Marine Ecology Progress Series*, 609, 133-149. doi:10.3354/meps12837

## PRESENTATIONS (SELECTED)

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**Ehrenfels, B.**; Schubert, C. J.; Lehmann, M. F.; Kuhn, T.; Wehrli, B.: Exploring the nitrogen cycle of Lake Tanganyika from an isotopic perspective. *Goldschmidt 2019*, Barcelona, Spain, 18-23 Aug 2019 (poster & talk).

**Ehrenfels, B.**; Mbonde, A. S.; Baumann, K. B. L.; Dinkel, C.; Brand, A.; Wehrli, B.: Functional response of the phytoplankton community towards changes in stratification in a large oligotrophic lake. *SEFS 11, Symposium for European Freshwater Sciences*, Zagreb, Croatia, 30 Jun - 5 Jul 2019 (talk).

**Ehrenfels, B.**; Dinkel, C.; Wehrli, B.: From nutrients to fish: how climate change affects the ecosystem of Lake Tanganyika. *Swiss Sustainability Week*, Zurich, Switzerland, 5 Mar 2018 (invited talk).

**Ehrenfels, B.**; Kalvelage, T.; Wehrli, B.: How biogeochemistry shapes the ecosystem of Lake Tanganyika. *Swiss Geoscience Meeting*, Davos, Switzerland, 18 Nov 2017 (poster).

Graeve, M.; Boissonnot, L.; **Ehrenfels, B.**; Niehoff, B.; Hagen, W.; Søreide, J. E.: Lipid and fatty acid turnover of Arctic zooplankton organisms revealed by stable isotope analyses. *Arctic Science Summit Week*, Prague, Czech Republic, 4-7 Apr 2017 (poster).

Boissonnot, Lauris; **Ehrenfels, Benedikt**; Niehoff, Barbara; Hagen, Wilhelm; Søreide, Janne E.; Graeve, Martin: Lipid turnover of Arctic shelled pteropods revealed by stable isotope analyses. *ASLO 2017 Aquatic Sciences Meeting*, Honolulu, Hawaii, 1 Mar 2017 (talk).