

# Dr. Roman Alther

## Freshwater ecologist

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### Profile

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My biological expertise covers topics such as aquatic ecology, community ecology and systematics of amphipods. I have sound faunistic knowledge and I'm familiar with planning and implementing ecological monitorings as well as with the subsequent analysis of the data (morphological identification, molecular methods, statistical analysis). Furthermore I know how to prepare and write scientific reports. Thanks to my ongoing scientific career I have personal contacts to various other experts in the field of aquatic ecology, such as people at the BAFU, CSCF, ecological consulting corporations, WWF, or Aqua Viva.

### Current position

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since 2018 **Senior research assistant**  
University of Zurich & Eawag, Dübendorf  
[Research group Prof. Dr. Florian Altermatt](#)

### Education

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2014 – 2018 **PhD in Ecology**  
University of Zurich & Eawag, Dübendorf  
[Research group Prof. Dr. Florian Altermatt](#)  
*Diversity and Distribution of Amphipods in Switzerland*  
Defended: February 2<sup>nd</sup>, 2018  
Partly funded by the Federal Office for the Environment BAFU

2011 – 2013 **Master of Science** in Biology, Master in Ecology and Evolution;  
ETH Zurich & Eawag, Dübendorf  
Grade point average 5.45

[Research group Dr. Chris Robinson](#)

*The contribution of tributaries to macroinvertebrate diversity in glacial catchments*

[Research group Prof. Dr. Florian Altermatt](#)

*Is the Killer Shrimp (Dikerogammarus villosus) invading tributary creeks of Lake Constance?*

2008 – 2011 **Bachelor of Science** in Biology  
University of Zurich  
Grade point average 5.3  
Minor subject: Environmental Sciences

2003 – 2007 **Matura**  
Kantonsschule am Burggraben, St. Gallen  
Grade point average 5.2  
Natural science profile, with focus in biology and chemistry

[Laurenz Alder](#)

*Fledermäuse im Sittertobel*; Rating: sehr gut

January 2007 **DELFL 1<sup>er</sup> Degré** (Diplôme d'études en langue française)

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Switzerland

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**Website**  
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**Date of birth**  
14. November 1988

**Bürgerort**  
St. Gallen

**Civil status**  
Married  
Two children  
(Fabio, Jonas)

**Interests**  
Aquatic Ecology  
Entomology  
Nature conservation  
Photography  
Biking  
Music

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## Professional experiences & Advanced training

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- 2020 **Leadership Essentials** for Postdoctoral Researchers and Senior Assistants, BWI Beratungs- und Weiterbildungsinstitut AG and ETH Zürich
- 2016 **Workshop:** Basic course ornithology, BirdLife Zürich
- 2015 **Workshop:** Basic course reptiles of Switzerland, Koordinationsstelle für Amphibien- und Reptilienschutz in der Schweiz (karch)
- Since 2014 **Freelancer** for the editorial department of the Simply Science Foundation, Zurich: writing articles to inspire children for natural sciences.
- 2013 **Field assistant** at Western Wyoming Community College for a survey on the food webs of alpine streams in the Wind River Mountains, Wyoming, USA: horse trek of several days and conducting experiments in high alpine surrounding.
- 2013 **Scientific internship** at WSL, Birmensdorf (Research group of PD Dr. Anita Risch) and in the Swiss National Park, Zerne: Preparing and conducting experiments on the influence of herbivores on plant community structure: Living in the Park for several months.
- 2012 – 2013 **Scientific assistant** in Prof. Dr. Florian Altermatt's group at Eawag: Species identification IBCH/NAWA (Biodiversity Monitoring Switzerland)
- 2012 **Workshop:** Basic course fishes of Switzerland, Naturmuseum St. Gallen
- 2011 **Scientific internship** at Eawag in the Department of Aquatic Ecology: helping with surveys on alpine streams in the Swiss National Park
- 2010 **Environmental sciences internship** at Foundation SWO, Dübendorf in Public relations and Operation controlling
- 2007 – 2008 **Civilian service** at Foundation SWO, Dübendorf and at the Cantonal Archaeology, St. Gallen

## Professional skills

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### Scientific expertise

Ecological theory, statistics, amphipods of Switzerland, macroinvertebrates of Switzerland (EPT, IBCH), habitat connectivity, ecosystem functioning

### Methodological skills

**Fieldwork** Design & implementation (Kicknet following the Modulstufenkonzept BDM), driving license

**Analysis** Familiar with morphological identification keys, morphometric analysis, molecular identification

**Genetics** DNA extraction, PCR, sequencing, molecular barcoding, database queries, phylogenetic analysis, population genetics

**Informatics** Data handling, processing, and statistical analysis in **R** (multivariate statistics, regression analysis), Bayesian stats in **STAN & WinBUGS**

Preparing scientific drawings in Adobe **Illustrator**, typesetting in Adobe **InDesign**, picture editing in Adobe **Photoshop**, text preparation in **LaTeX**

Database queries and map generation in ESRI **ArcGIS**

### Social skills

**Appearance** Leadership of fieldwork teams, collaboration in international working groups, confident appearance in public, outreach skills of scientific topics

**Languages** **German:** Mother tongue

**Englisch:** Fluent / scientific writing

**French:** Good knowledge in written and spoken language, DELF 1er Degré diploma

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## Publications

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- **Alther R**, Bongni N, Špela B, Fišer C, Altermatt F (2021) *Citizen science approach reveals groundwater fauna in Switzerland and a new species of Niphargus (Amphipoda, Niphargidae)*. *Subterranean Biology* 39, 1–39
- Tabi A, Pennekamp F, Altermatt F, **Alther R**, Fronhofer EA, Horgan K, Mächler E, Pontarp M, Petchey OL, Saavedra S (2020) *Species multidimensional effects explain idiosyncratic responses of communities to environmental change*. *Nature Ecology & Evolution* 4 (8), 1036–1043
- **Alther R**, Bongni N, Špela B, Fišer C, Altermatt F (2020) *Pilotstudie fördert Grundwasserfauna zutage*. *Aqua & Gas* 100 (7/8), 36–42
- Altermatt F, **Alther R**, Fišer C, Švara V (2019) *Amphipoda (Flohkrebse) der Schweiz*. *Fauna Helvetica* 32. info species CSCF & SEG, Neuchâtel, Switzerland.
- Mächler E, Little CJ, Wüthrich R, **Alther R**, Fronhofer EA, Gounand I, Harvey E, Hürlemann S, Walser JC, Altermatt F (2019) *Assessing different components of biodiversity across a river network using eDNA*. *Environmental DNA* 1 (3), 290–301
- **Alther R**, Thompson C, Lods-Crozet B, Robinson CT (2019) *Macroinvertebrate diversity and rarity in non-glacial Alpine streams*. *Aquatic Sciences* 81:42
- Falnioski A, Prevorčnik S, Delić T, **Alther R**, Altermatt F, Hofman S (2019) *Monophyly of the Moitessieriidae Bourguignat, 1863 (Caenogastropoda: Truncatelloidea)*. *Folia Malacologica* 27 (1), 61–70
- Pennekamp F, Pontarp M, Tabi A, Altermatt F, **Alther R**, Choffat Y, Fronhofer EA, Ganesanandamoorthy P, Garnier A, Griffiths JI, Greene S, Horgan K, Massie TM, Mächler E, Palamara GM, Seymour M, Petchey OL (2018) *Biodiversity increases and decreases ecosystem stability*. *Nature* 563, 109–112
- Fišer C, **Alther R**, Zakšek V, Borko S, Fuchs A, Altermatt F (2018) *Translating Niphargus barcodes from Switzerland into taxonomy with a description of two new species (Amphipoda, Niphargidae)*. *ZooKeys* 760, 113–141
- **Alther R**, Altermatt F (2018) *Fluvial network topology shapes communities of native and non-native amphipods*. *Ecosphere* 9 (2): e02102
- **Alther R**, Fišer C, Konec M, Švara V, Altermatt F (2017) *Das Hölloch: Ein Flohkrebbs-Hotspot in der Schweiz*. *Stalactite* 67 (1), 10–16
- **Alther R**, Fišer C, Altermatt F (2017) *Description of a widely distributed but overlooked amphipod species in the European Alps*. *Zoological Journal of the Linnean Society* 179 (4), 751–766
- Fišer C, Konec M, **Alther R**, Švara V, Altermatt F (2017) *Taxonomic, phylogenetic and ecological diversity of Niphargus (Amphipoda: Crustacea) in the Hölloch cave system (Switzerland)*. *Systematics and Biodiversity* 15 (3), 218–237
- Robinson CT, Thompson C, Lods-Crozet B, **Alther R** (2016) *Chironomidae diversity in high elevation streams in the Swiss Alps*. *Fundamental and Applied Limnology* 188 (3), 201–213
- Altermatt F, **Alther R**, Mächler E (2016) *Spatial patterns of genetic diversity, community composition and occurrence of native and non-native amphipods in naturally replicated tributary streams*. *BMC Ecology* 16:23, 1–11
- Robinson CT, **Alther R**, Leys M, Moran S, and Thompson C (2015) *A note on the foodwebs of alpine streams in the Wind River Mountains, Wyoming, USA*. *Fundamental and Applied Limnology* 187 (1), 43–54
- Altermatt F, **Alther R**, Fišer C, et al. (2014) *Diversity and Distribution of Freshwater Amphipod Species in Switzerland (Crustacea: Amphipoda)*. *PLoS ONE* 9 (10): e110328

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## Presentations

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- **Invited speaker: ProNatura Zürich GA 2021** – *“Klein aber oho – Der Bachflohkrebs”* on May 7, 2021 (online)
- **Eawag Symposium 2019** – *“Establishing online identification tools and experimental assays for native and non-native amphipods”* on September 13, 2019 in Dübendorf CH
- **The 18th International Colloquium on Amphipoda** – *“Density-dependent leaf litter consumption in experimental amphipod communities”* on August 29, 2019 in Dijon FR
- **Invited speaker: SVGW Fachaustausch** – *“Amphipoden im Grundwasser – Wissenslücke und mögliche Forschungsrichtung”* on April 25, 2019 in Biel CH
- **Invited speaker: Schweizerische Naturforschende Gesellschaft** – *“Flohkrebse - Eine Übersicht am Beispiel des Kantons Schwyz”* on February 2, 2019 in Einsiedeln CH
- **COST Workshop: DNA-based groundwater biomonitoring** – *“Combining eDNA and citizen science - Lessons learned from Swiss caves”* on January 22, 2019 in Park Škocjanske jame SI
- **Invited speaker: SGHL workshop – Citizen Science** – *“Von Bachflohkrebsen und Höhlenforschenden”* on June 11, 2018 in Zurich CH
- **Invited speaker: Naturschule St. Gallen** – *“Fliessgewässer - Adern der Ökosysteme”* on May 3, 2018 in St. Gallen CH
- **PhD defence** – *“Diversity and Distribution of Amphipods in Switzerland”* on February 2, 2018 in Dübendorf CH
- **Invited speaker: Seminar at Biotehniška fakulteta** – *“Diversity and Distribution of Amphipods in Switzerland”* on November 29, 2017 in Ljubljana SI
- **International Colloquium on Amphipoda:** *“Diversity and systematics of amphipods in Swiss rivers: River network structure shapes community structure”* on September 5, 2017 in Trapani IT
- **Invited speaker: eco.naturkongress 2017** – Workshop #8: *“Wie Fliessgewässer unsere Biodiversität beeinflussen”* on March 31, 2017 in Basel CH
- **biology17** – The Annual Swiss Conference on Ecology, Evolution, Systematics, Biogeography and Conservation: *“Fluvial network structure shapes amphipod communities of Switzerland”* on February 2, 2017 in Berne CH
- **BES Annual Meeting 2016** – Community Ecology Session: *“River network structure shapes communities of native and non-native amphipods”* on December 12, 2016 in Liverpool UK
- **biology16** – The Annual Swiss Conference on Ecology, Evolution, Systematics, Biogeography and Conservation: *“Distribution and biogeography of Gammarus lacustris in the Alps”* on February 11, 2016 in Lausanne CH
- **SEFS9** – Symposium for European Fresh Water Sciences 2015: *“Diversity and distribution of amphipods in Switzerland: An alpine perspective”* on July 6, 2015 in Geneva CH
- **Swiss Rivers Working Group** – Meeting in February 2015: *“Community ecology in river networks: a spatial perspective”* on February 10, 2015 in Dübendorf CH
- **Invited speaker: Schweizerische Gesellschaft für Höhlenforschung** – Wintertreffen 2015: *“Verbreitung und Diversität der Amphipoden in der Schweiz”* on February 7, 2015 in Lucerne CH

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## Teaching

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- **Certificate of Advanced Studies (CAS) in Makrozoobenthos** – Gewässerbeurteilung & Artenkenntnis (ZHAW Wädenswil): Introduction to amphipods
- **Blockkurs Limnökologie** (ETH & UZH): Student project on cryptic diversity within the *Gammarus fossarum* complex
- **Eco PhD Symposium 2016** (Eawag): Co-organisor; Symposium hosting international speakers (Dr. Tanja Schwander & Dr. David Reznick)
- **BIO357 Research Internship, Ecology** (UZH): Supervision and assistance of fieldwork, analysis and report writing.
- **UWW163 Semester Project** (UZH): Supervision and assistance of fieldwork, analysis and report writing.
- **BIO128/BI S430 Vielfalt der Tiere** (UZH & PHZH): Student assistance in practicals
- **BIO141 Ökologie** (UZH): Student assistance in practicals & supervision during exam
- **MAT182 Analysis für die Naturwissenschaften** (UZH): Supervision during exam

## Scientific Reviews

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|---|---|
| <b>Journals</b>                               | Aquatic Conservation: Marine and Freshwater Ecosystems, Aquatic Ecology, Biological Invasions, Ecology & Evolution, Freshwater Biology, Global Ecology and Biogeography, Hydrobiologia, Journal of Biogeography, Journal of Experimental Marine Biology and Ecology, Limnologica, PeerJ, Zoosystema |
| <b>Scientific boards &amp; Working groups</b> | <ul style="list-style-type: none"><li>• Review Seed Grants for the Participatory Science Academy PWA</li><li>• Expert for amphipods in the working group Invasive Aquatic Macroinvertebrates (CSCF, IUCN)</li><li>• Macrozoobenthos expert Eawag for Modulstufenkonzept BAFU</li></ul>              |

## Outreach

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Bieler Tagblatt, Berner Oberländer, GfÖ Nachrichten, HOTSPOT, Pro Natura Magazin, La Liberté, SRF Kopf voran, N + L inside, die umwelt, Höllochnachrichten, Eawag YouTube channel, TeleBilingue

## External funding & Awards

- Forschungsfond Wasser (SVGW; Proposal with Florian Altermatt): 50'000.- CHF
- BAFU (Proposal with Florian Altermatt): 482,700.- CHF
- Eawag Discretionary Funds (Proposal with Florian Altermatt): 259,512.- CHF
- Georges and Antoine Claraz Foundation: 2600.- CHF (Fieldwork funding 2015)
- Swiss Systematic Society: 500.- (~~Travel funding for International Colloquium on Amphipoda 2017~~)
- Best student presentation – Eawag Symposium 2015: September 11, 2015

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## Memberships

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- Gesellschaft für Ökologie (GfÖ), The Ecological Society of Germany, Austria and Switzerland
- Swiss Systematics Society (SSS)
- Schweizerische Gesellschaft für Hydrologie und Limnologie (SGHL)
- Entomologische Gesellschaft Zürich (EGZ)
- St. Gallische Naturwissenschaftliche Gesellschaft (NWGSG)
- Pro Natura Schweiz
- Aqua Viva – Water ecosystems protection and environmental education
- Natur- und Vogelschutzverein Höngg (NVV Höngg), a section of BirdLife Zürich
- 2016 – 2019: British Ecological Society (BES)
- 2014 – 2019: World Wide Fund For Nature (WWF)
- 2016 – 2018: Tiergarten-Gesellschaft Zürich (TGZ)

## Volunteering

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2007 – 2009 Collaboration in the managing group of the Jugendbeiz Talhof, St. Gallen (Jugendsekretariat Stadt St. Gallen)