The Research Department for Limnology, Mondsee, Austria (ILIM), is an international aquatic research institute and part of the University of Innsbruck. Eight research groups at ILIM conduct research on evolutionary ecology in freshwater systems. Our overall research goal is to contribute to a better understanding of evolutionary adaptations of aquatic organisms in the context of climate change and other anthropogenic stressors.

universität innsbruck
Research Department for Limnology, Mondsee

ILIM, located at Lake Mondsee in the Salzkammergut close to Salzburg, has a vacancy for a:

Post-doctoral researcher (80-100%, 3 yrs)

Water flea communities under global change – eco-evolutionary effects and their consequences

The position is part of the international interdisciplinary applied research project "SeeWandel-Climate". The ecosystem of Lake Constance is expected to undergo significant changes in the next few decades due to the interacting effects of continued climate change and invasive species, such as the further proliferation of the Quagga mussel and the water flea *Daphnia cucullata* that have recently invaded the lake. Existing long-term data and new data enable changes in the food web to be investigated, taking into account the interaction with climate change. The data is incorporated into simulation models that forecast the changing biology and ecology of Lake Constance for decades to come. The general goal of SeeWandel-Climate is to provide projections of the consequences of climate change and the impact of invasive species on the Lake Constance ecosystem and its sustainable utilization. The large collaborative project involves researchers from 7 institutions from Germany, Austria and Switzerland, working closely with authorities across borders relying on these projections to implement integrated management at Lake Constance.
SeeWandel-Climate receives funding under the Interreg VI programme "Alpenrhein–Bodensee-Hochrhein (Germany/Austria/Switzerland/Liechtenstein)" which funds are provided by the European Regional Development Fund as well as the Swiss Confederation and cantons, and the International Lake Constance commissions "Internationale Gewässerschutz-kommission für den Bodensee" (IGKB) and "Internationale Bevollmächtigtenkonferenz für die Bodenseefischerei" (IBKF).

The *Daphnia* water flea subproject aims to investigate and predict consequences of the recent invasion of *Daphnia cucullata* for the ecology and evolution of the *Daphnia* community and for the zooplanktivorous fish populations. *D. cucullata* has recently and rapidly increased in abundance in Lake Constance, presumably favoured by the expansion of the stickleback population into the pelagic zone and increasing water temperatures. *D. cucullata* is a member of the *D. longispina* complex and can thus hybridize with the resident *D. longispina*, *D. galeata* and their hybrids. *D. cucullata* differs from the other members in the complex with regard to body size, reproductive output, spatial distribution, vulnerability to predators etc., and its occurrence is expected to change the genomic makeup and traits of the *Daphnia* community in Lake Constance with direct effects on the fish community.

Specifically, this project aims to i) investigate the evolutionary consequences of the *D. cucullata* invasion for the *Daphnia* community using whole-genome data (e.g., hybridization and admixture), ii) assess the spatio-temporal distribution of *D. cucullata*, other members of the complex and their hybrids and community traits in the context of abiotic and biotic parameters, iii) experimentally test effects of Quagga mussel and temperature on competition among *Daphnia* taxa, and iv) integrate *Daphnia* data generated in this subproject with data on zooplankton and fish generated in other subprojects and available long-term datasets for Lake Constance to assess causes and consequences of the *D. cucullata* invasion.

This subproject also includes collaboration with Dietmar Straile (University of Constance), Alexander Brinker (Fisheries Research Station of Baden-Württemberg), Alexandra Anh-Thu Weber, Piet Spaak (both EAWAG) and other researchers in this international project.

The candidate is expected to: i) conduct fieldwork (spatio-temporal distribution), ii) generate and analyze whole-genome data for several hundred *Daphnia* individuals, iii) lead competition experiments, and iv) interpret and publish the project results through peer-reviewed articles and translational material dedicated to practitioners and stakeholders.
There will opportunities to develop the postdoc's own research interests, and to assist in the supervision of Bachelor and Master students.

Ideally, **the candidate** has a strong background in evolutionary ecology and/or bioinformatics, and has recently earned a PhD in a relevant field of evolutionary biology or ecology. Fieldwork experience and experience in conducting laboratory experiments would be additional assets. Excellent communication skills in English and ability to work in a team are essential.

Applications should include a cover letter with a concise statement about your previous education and research experience, your mid-term career plans, and your motivation to work on this project (1-2 pages); a curriculum vitae including a publication list; copies of your academic qualifications; and names and contact information of 2-3 academic references. Please send applications as a single pdf file to Markus.Moest@uibk.ac.at.

Applications will be reviewed on a rolling basis until the position is filled starting from 31st of January 2024. The position can start as early as March 2024 or upon mutual agreement.

The position will be based in the group of Markus Möst (Eco-evolutionary Dynamics group) at the Research Department for Limnology, Mondsee (ILIM), situated directly at Lake Mondsee close to the city of Salzburg in the Salzkammergut region in Austria. The region is characterized by lakes and mountains and offers great opportunities for recreational activities and outdoor sports. At the institute, we aim to ensure a working environment in which everyone can contribute their experience, ideas and ways of thinking and we offer and support professional training. Moreover, we strive for cultural and gender equity, diversity, and inclusion for anyone to be involved in our projects. Candidates with a broad range of backgrounds, perspectives, and ideas will be welcomed and are encouraged to apply. For more information about ILIM, the University of Innsbruck and additional benefits for employees please consult:
https://www.uibk.ac.at/limno/index.html.en,
https://www.uibk.ac.at/en/
https://www.uibk.ac.at/en/career-portal/additional-benefits/

Any questions about the position can be directed to Markus.Moest@uibk.ac.at.

We look forward to receiving your application!

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