Asociación Ibérica de Limnología | Associação Ibérica de Limnologia
AIL
ALQUIBLA
– FEBRUARY 2024 –

Job opportunities / grants

→Post-doc position in biodiversity modelling

University of Giessen, Germany

3-year postdoc position on biodiversity modelling (biological invasions). The aim of the project is to develop a model to simulate the spread of non-native species worldwide over time. The model can therefore be used for predicting past and future dynamics. In parallel, we will develop smaller models for validation. Once developed, there will be numerous options for further work including testing common hypothesis (fundamental research) or developing operational tools for management (applied research).

The position is part of a DFG-funded Heisenberg project on predicting biological invasions and the central position on the modelling part. We will be a team of three people for this project and there will be many opportunities for interactions with other projects and team members.

Deadline: **28/02/2024**

More information here.

→Post-doc position in phytoplankton

Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research, Germany

We are searching for an enthusiastic postdoctoral candidate, who will investigate phytoplankton population dynamics and the associated eco-evolutionary responses to warming and changing dissolved nutrient concentrations. The comparison of different phytoplankton taxa will allow us to observe whether certain populations are more prone to instability under stress. To test this, the candidate will conduct long-term exposure chemostat experiments to assess the interactions between different stressors and their effects on fitness-relevant life-history traits of phytoplankton populations..

Deadline: **26/03/2024**

For more information, please get in touch with Dr. Maarten Boersma maarten.boersma@awi.de).

→Research fellow and Research assistant position in River Ecology

Nottingham Trent University, UK

Nottingham Trent University (NTU) and the Environment Agency are collaborating on the Small Streams Network project, which is developing methods to assess the ecological condition of England's small streams. As part of this project, we are advertising two posts: a Research Fellow in River Ecology and a Research Assistant in River Ecology.

The Research Fellow and Research Assistant will conduct a programme of fieldwork to survey the plant communities present in drying and dry small streams. As such, we're ideally seeking to appoint candidates with plant identification skills, but training can also be provided.

Deadline: **10/03/2024**

More information here for the Research fellow and Research assistant posts, or contacting Prof. Rachel Stubbington (rachel.stubbington@ntu.ac.uk).

→7 tenure track faculty positions

Virginia Tech, Blacksburg, USA

The Virginia Tech invasive species working group was awarded a large internal university investment that will support invasive species-based work that also came with 7 new tenure track faculty positions! The positions are very wide ranging and are meant to be broad to capture a diversity of interests that are required to make meaningful contributions to this socio-ecological problem. These positions will build on our existing strengths that are very transdisciplinary. This is an exciting opportunity to join a strong group that is focused on team science addressing one of the grand challenges.

We are seeking individuals who possess the skills to bridge disciplinary divides, drive innovative solutions, and engage in team science to apply for the following positions (associated college homes are indicated):

- Applied Economist (College of Science, College of Agriculture and Life Sciences, and the Kellogg Center)
- Environmental Law and Policy (College of Liberal Arts and Human Sciences)
- Environmental Data Scientist (College of Science)
- Invasive Species Research and Extension (College of Agriculture and Life Sciences)
- Management Technologist (College of Natural Resources and the Environment)
- Global Change Interactions Biologist (College of Natural Resources and Environment)
- Invasive Plant Genomics (College of Agriculture and Life Sciences)

More information here.

XXII AIL MEETING
VIGO 2024

→**XXII Congress of the Iberian Association Limnology**
23 – 28 June 2024, Vigo, Spain

The congress will be held at A Fundación building located in the center of Vigo (Sede A Fundación Vigo Headquarters, Policarpo Sanz, 24-26, 36202 Vigo). You can fin all the information of the symposium on the website www.ail2024.com and in the document in this link. Information regarding the inscription, sessions, social events, plenary speakers, etc will be found in AIL 2024 website.

Important Dates
- **Abstract submissions close:** 28th February 2024
- **Early bird registration deadline:** 15th March 2024
- **Notification to authors:** 15th April 2024
- **Authors acceptance of offer:** 1st May 2024

→**Workshops in AIL meeting in Vigo**
23 June 2024, Vigo, Spain

Under the XXII AIL MEETING IN VIGO, 2024, various workshops will be conducted at the University of Vigo for young individuals interested in participating. Workshops are intended to convey specific knowledge or skills, as well as an opportunity to become familiarized with the use of auxiliary technology tools for quantitative and qualitative research methods.

The Organizing Committee has selected the following workshops among the received proposals that will take place in the Redeiras building (location) in Vigo, on Sunday 23rd June from 10h to 16h.
- Introduction to meta-analysis in limnology organized by Verónica Ferreira, MARE-Marine and Environmental Sciences Centre, University of Coimbra, Portugal.
- Essentials of eDNA-based freshwater biodiversity assessments - the good, the bad, the ugly organized by Florian Leese, University of Duisburg-Essen, Germany.
- Scientific illustrations and an introduction to Inkscape organized by Katrin Attermeyer from the University of Vienna, Austria.

Fees for attendance to workshops (meals and registration) will be applied, if you want to register for the workshop **please go to the link below: REGISTRATION WORKSHOPS**

New courses:

- Introduction to bayesian inference in practice *March 4th-8th, 2024 (ONLINE)*
- Bayesian phylogenetic inference with beast2 *March 11th-22nd, 2024 (ONLINE)*
- Data manipulation with r tidyverse *April 3rd-5th, 2024 (ONLINE)*
- Generalised additive mixed models (gamm): modelling space-time correlation structures *April 8th-12th, 2024 (ONLINE)*
- Graphs with r's ggplot *April 18th-19th, 2024 (ONLINE)*
- Introduction to palaeogenomics *May 9th-15th, 2024 (ONLINE)*
- Functional trait diversity: calculating and interpreting a key component of biodiversity *May 14th-23rd, 2024 (ONLINE)*
- Speaking with confidence and impact *May 21st-23rd, 2024 (ONLINE)*

Remember you have special discounts (20%) for being sibecol member.

XV Limnology Research Award

→**BEST THESIS: Linking biodiversity, ecosystem services, and ecological stability for river ecosystem sustainability**

Ana Paula SENRA PORTELA, Universidade do Porto e Universidade de Lisboa. Supervisors: João Honrado, Cristiana Vieira, and Isabelle Durance.

Human activities and global environmental change pose significant risks to the ability of river ecosystems to sustain biodiversity and ecosystem services. Thus, it is necessary to understand how ecosystems respond to change, how biodiversity contributes to the supply of ecosystem services, and how to integrate ecosystem status, stability, and human needs in sustainable management. The thesis aims to assess the vulnerability of river ecosystems to environmental changes, investigating their sensitivity, adaptive capacity, ecological stability and to leverage that knowledge for integrated sustainable management. To achieve this, the thesis focuses on river vegetation, and mainly on riparian vegetation, due to its key role in aquatic and terrestrial ecosystem functioning. The thesis combines approaches from ecosystem services theory and modelling, habitat distribution modelling, spatial analysis, remote sensing, and trait-based functional ecology to investigate each component of the vulnerability framework. The thesis results show that the protection and restoration of riparian and aquatic habitats in mountain areas and lowland rivers are essential to safeguard and improve water ecosystem services and river habitats. However, the results also indicate that riparian ecosystems may have limited adaptive capacity to environmental change. The thesis identifies for the first time in riparian forests a partial recovery following an extreme drought consistent with legacy effects or interacting effects with recurrent drought. The ecological stability of riparian plant communities may be further affected by environmental change. Environmental stress associated with minimum temperatures and aridity controls not only which assembly processes prevail, but also functional diversity patterns that underpin ecological stability. Additionally, environmental change impacts are likely to affect ecosystem services supply.

Ecosystem functioning and services are highly sensitive to environmental change due to a tight linkage between response and effect traits in riparian plant communities. Riparian ecosystems, plant communities, and the ecosystem services they provide are highly vulnerable to long-term increases in environmental stress but also to extreme events namely droughts. Human well-being will be affected by declines in the supply of regulation services, which may also compromise nature-based solutions for climate change mitigation and adaptation. Functional approaches can offer critical knowledge to harness synergies in planning and develop adaptive management strategies.

→**ACCESSIT: Effects of changes in leaf quality and diversity of the riparian vegetation on headwater streams ecosystem functioning**

Juan RUBIO RÍOS, Universidad de Almería. Supervisors: J. Jesús Casas Jiménez and María J. Salinas Bonillo.

In forested regions, stream primary production is low due to light limitation. In consequence, most streams' food webs appear to be mainly fueled by allochthonous organic matter inputs from their riparian vegetation. Under a global change scenario, the quality and quantity of such inputs are expected to change with potential implications for stream ecosystems. However, the effects of such modifications on stream ecosystem functioning are difficult to understand due to the existence of complex trade-offs within and among communities making use of leaf litter assemblages. This thesis aims to shed some light on how different changes in the properties of organic matter inputs to headwater streams may alter their ecosystem functioning. To address that objective, I developed different field and laboratory experiments and analyzed the leaf litter decomposition process as an integrative indicator of stream ecosystem status. In the first chapter, I assess how leaf traits may be affected by climate change focusing on persistent after-life traits that have been usually reported to affect leaf litter decomposition, and thus have the potential to impair pivotal effects on the functioning of stream ecosystems. The results from this chapter suggest a decrease of intraspecific leaf quality in riparian deciduous species with global warming in a relatively short term and point to significant implications for Mediterranean mountain streams currently under deciduous gallery forests. In chapters 2 and 3, I investigate how the loss of riparian plant functional diversity or the establishment of dense pine plantations on the slopes of the basins may alter key stream processes (litter decomposition, nutrient cycling, secondary production, fungal biomass), and the likely role of key plant species to alleviate such effects. Our results support a consistent slowing down of the decomposition process, and hence effects on stream ecosystem functioning, derived from plant biodiversity loss but not from pine plantations, as long as riparian vegetation strips along streams are present. Moreover, outcomes from both chapters, underscore the importance of key (N-fixing) species at different scales (instream and catchment) as drivers of plant diversity effects or as buffer of plantation-derived effects in the studied ecosystem processes. In chapter 4, I analyse how detritivores can cope with the invasion of riparian areas of the streams by alien plants. Results from this chapter suggest that big detritivores, with outstanding digestive capacity to process low-quality leaf litter from native or invasive species, may play a key role facilitating the access to nutrients of recalcitrant leaf litter to sympatric small detritivore species via coprophagy. Overall, the results presented in this thesis may help managers and policymakers in the design of ecologically sound conservation programs.

→ACCESSIT: Riparian forests as dispersal corridors for adult European mayflies, stoneflies and caddisflies (EPTs)

Andrés PEREDO ARCE, Universidade de Lisboa. Supervisors: Jochem Kail, Martin Schletterer and Ma. Teresa Ferreira.

Metacommunity theory connects the diversity patterns of the community across the landscape with the effects of ecological processes. As dispersal is one of the main factors driving the metacommunity structure, it is important to understand the interaction between landscape and dispersal to apply metacommunity theory. Herein, we summarize the main challenges of applying metacommunity theory to the mayfly, stonefly and caddisfly community (Ephemeroptera, Plecoptera and Trichoptera, or EPTs). Then, we attempt to solve some of the open questions regarding EPT dispersal and its relation with riparian forests. First, we investigate the diversity of functional dispersal traits of the European EPT species, analysing the existing empirical data and selecting a suitable functional index. Second, we assess the effect of riparian forest in landscape connectivity for EPTs, concluding that deciduous riparian forest can enhance dispersal. Third, we extend the study to four European regions, concluding that the role of native riparian forest as dispersal corridor differs between regions. We achieved three goals: First, we produced a theoretical and methodological framework to include dispersal in the study of EPT metacommunity, highlighting the role of riparian forest as a dispersal corridor. Second, we identify several aspects that require further investigation such as empirical dispersal studies or interactions between ecological stressors and dispersal. Third, we provide a new perspective for riverine and riparian ecosystems management, highlighting the need to consider riparian buffers as an integral part of the riverine ecosystems.

Published in: Peredo Arce, A., J. Kail & M. Schletterer, (2023). Riparian forests as dispersal corridors for adult European mayflies, stoneflies and caddisflies (EPTs). Zoosymposia, 24, 125-136. DOI: 10.11646/zoosymposia.24.1.14

→Structural and functional patterns of prokaryotic communities in Mediterranean wetlands and their relationship with carbon cycling

Javier MIRALLES LORENZO, Universitat de València. Supervisors: Antonio Camacho and Antonio Picazo.

Mediterranean wetlands are actively involved in the uptake or emission of carbon-greenhouse gases (CO_2 and CH_4) from/into the atmosphere. This relevance of wetlands in the carbon cycle is due, in part, to the activity of the prokaryotic communities that inhabit them. However, Mediterranean wetlands correspond to different ecological types displaying a number of type-specific ecological characteristics. The main objective of this thesis has been determining the role of the ecological characteristics of each type of wetland, and its conservation status, in the structuration and carbon metabolisms of the prokaryotic communities inhabiting the waters and sediments of representative wetlands among the different types of Mediterranean wetlands. The results of this thesis demonstrate that the ecological characteristics of the wetland types deeply influence the structure of their prokaryotic communities, as each wetland type and conservation status showed characteristic prokaryotic taxa.

Salinity was the environmental variable that most influenced the prokaryotic community structure. Also, the synergy between wetland conservation status and seasonality was a determining factor in structuring the water prokaryotic assemblages but had a much more modest effect on sediment communities. The relationship between the rates of the main carbon-related metabolisms and the molecular inference of their metabolic potential depended on the balance between different microbial metabolisms and the relative abundance of the groups of prokaryotes involved in these metabolisms. Furthermore, the influence of temperature on the increase of the activity of methanogenic archaea and consequently on methane emissions from the studied wetlands was experimentally determined. The results of this thesis demonstrate the importance of combining in situ measurements of metabolic activity with molecular studies of prokaryotic communities to better understand the greenhouse gases fluxes in Mediterranean wetlands, and thus their potential role in climate change mitigation.

→Vulnerability and resilience of Lake Peñalara as a model for the management of Mediterranean high mountain lakes in the face of global change

Ignacio GRANADOS, Universidad Autónoma de Madrid. Supervisors: Carlos Montes del Olmo and Antonio Camacho.

Spanish high mountain lakes are affected by global change through land use changes (roads, ski resorts, tourist facilities), damming for irrigation or hydroelectric exploitation, unsustainable intensification of recreational and/or livestock use, invasive fish introduction, local pollution in the catchment and are exposed to atmospheric pollution and the synergistic effect of climate change. Despite this generalized degradation process, barely any restoration and conservation actions have been carried out in these aquatic ecosystems beyond trying to reduce recreational pressure in some of the best-known lakes or certain specific actions. However, at Peñalara massif (Sierra de Guadarrama National Park), several actions have been carried out aimed to reverse the degradation process of Lake Peñalara and its catchment. The objective of this study is to use a long-term (30 years) limnological monitoring to determine the response and resilience of these highly vulnerable aquatic ecosystems to direct drivers of global change, to serve as a model for the management of Mediterranean high mountain lakes. For this purpose, firstly the lentic system of the Guadarrama mountain range is described and classified, including a detailed limnological characterisation of Lake Peñalara, establishing its morphometry, its hydrological behaviour, the ice cover phenology, the water column temperature and stability, the light conditions and the variability and trend of the main hydrochemical variables. Between 1970-1990, the lake had become eutrophicated, its shores were heavily eroded, and an invasive exotic salmonid (*Salvelinus fontinalis*) was introduced. Since 1990 several restoration actions were carried out: 1) the complete elimination of an alpine ski resort; 2) the reversal of eutrophication and erosion in Lake Peñalara caused by unsustainable recreational and livestock use through visitor management, lake shore fencing and revegetation of eroded areas; and 3) the brook trout eradication from the lake. For both eutrophication and erosion, a recuperation phase and a stable phase were determined by a change point analysis. With restrictions on recreational use (bathing and camping prohibition, sedentary stay limitation) and livestock access to the water, eutrophication was reversed in ca. 4 years.

Erosion reduction required a more active action of grasslands revegetation, so it took more than 10 years to reach low erosion levels. The removal of the brook trout with gill nets required an important effort and it took 4 to 6 years to reach a certain stability in the recovered macroinvertebrate community. The lake´s sedimentation rate can be explained with generalized additive models mainly by climatological and hydrological variables, while the variability in the percentage of sedimented organic matter is also influenced by variables linked to the lake´s primary production. Under high erosion conditions, the sediment that accumulates annually corresponds to a very specific and limited period of the year, compared to low erosion conditions, which may have important implications in paleolimnological studies related to seasonal processes. It has also been studied the effects of a large snow avalanche that impacted Lake Peñalara causing it to overflow by an impulse wave and affecting the water column and sediment. The instantaneous and short-term (hours, days) changes in the water column have been documented and a sediment loss and accumulation of 0.75 m and 1 m respectively in different areas of the lake. This sediment remobilisation changed the zooplankton community, even with the hatching of resistance eggs of one species (*Daphnia pulicaria*) that had disappeared decades before. The review of the available radiometric dating of this lake indicates that it would have been exposed to an almost complete sedimentary emptying (sediment hiatus) in the area near the avalanche impact with a frequency of centuries or millennia. The model of interaction between researchers and managers of protected areas is also discussed.