



## Giving freshwater biodiversity a seat at the table

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**Researchers from 90 scientific institutions worldwide have stated that freshwater biodiversity research and conservation lag far behind the efforts carried out in terrestrial and marine environments. In a new publication in *Ecology Letters*, they propose a research agenda with 15 priorities aimed at improving research on biodiversity in lakes, rivers, ponds and wetlands. This is urgently needed, as biodiversity loss is taking place much faster in inland waters than on land or in the oceans.**

"Biodiversity loss in freshwater is a global crisis that is literally hidden beneath the water surface," stated Professor Sonja Jähnig of the Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB) and Humboldt University in Berlin. The freshwater scientist spearheaded the agenda for prioritizing research topics and conservation measures for freshwater biodiversity - together with 95 researchers from 38 countries. Eawag was also involved with Professor Ole Seehausen, head of the department Fish Ecology and Evolution.

Freshwater biodiversity encompasses the genes, populations, species, communities, and ecosystems of all inland waters. It provides essential services that are vital to human well-being. Despite its importance, "At present, freshwater biodiversity is declining at an unprecedented rate. The data bear this out very clearly," said Sonja Jähnig.

### **Freshwater animal populations have declined by more than 80 percent**

The latest Living Planet Report of the WWF documents an average decline in populations of 84 percent – in only the last 50 years – for 3,741 populations studied, representing 944 freshwater vertebrate species. This is the steepest decline in the three major realms of land, oceans and freshwater. "Despite the ongoing, unprecedented decline, international and intergovernmental science-policy platforms, funding agencies and major non-profit initiatives still fail to give freshwater biodiversity the priority it

deserves," Dr. Alain Maasri, lead author of the article who is also at the IGB, also criticized.

### **Inland waters significantly underrepresented in environmental funding**

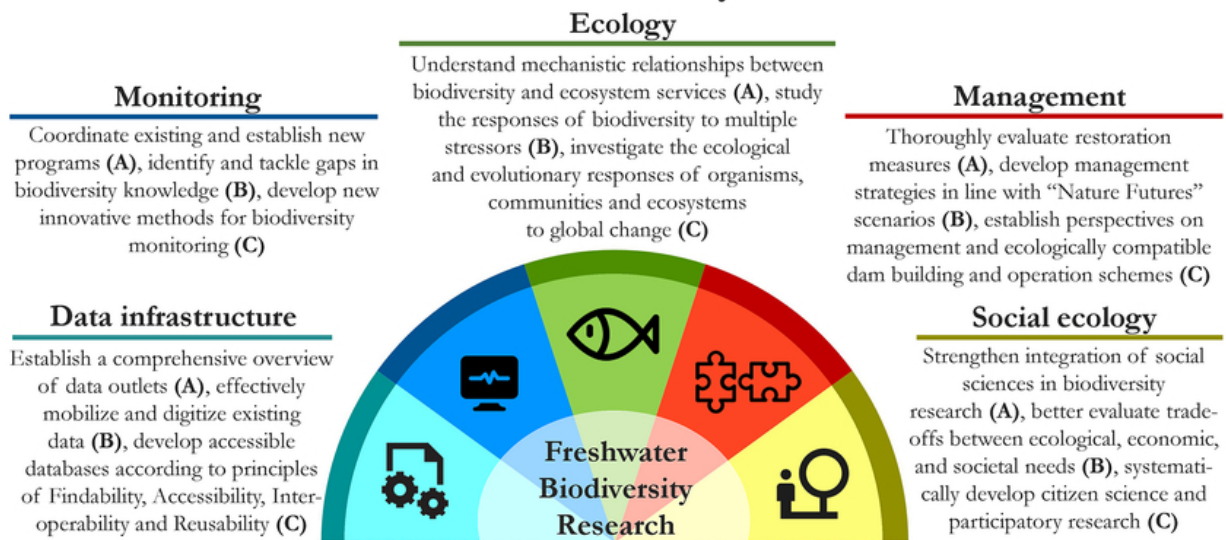
A recent report\* on environmental funding by 127 European foundations shows that inland waters accounted for only 1.75 percent of the € 745 million approved for environmental work in 2018, and that freshwaters ranked second-last among the 13 thematic categories used to assess funding distribution. Often, inland waters are subsumed within terrestrial habitats, and then not adequately addressed in funding plans.

### **New agenda aims to advance biodiversity research and environmental policy**

"The agenda is intended to provide the impetus for a stronger global commitment to research and conservation of freshwater biodiversity; however, concrete actions must always be developed at local, regional and national levels," Sonja Jähnig emphasized.

The authors of the Agenda identified 15 priority needs and grouped these into five major areas: data infrastructure, monitoring, ecology, management, and social ecology, against which international freshwater biodiversity research should be developed in a targeted manner. The authors also identified three major challenges – knowledge gaps, miscommunication and inadequate policies – to be overcome.

## A Global Agenda for Advancing Freshwater Biodiversity Research



The authors of the Agenda identified 15 priority needs in five major areas, against which international freshwater biodiversity research should be developed in a targeted manner. (Graphic: from original publication, Licence: [CC-BY-NC 4.0](https://creativecommons.org/licenses/by-nc/4.0/))

### Close knowledge gaps, communicate better and show political courage

"It's not about pointing fingers at policy makers or other stakeholders. It is up to all of us – including us researchers – to set priorities and work better together," said Alain Maasri. There are major gaps in knowledge and there is unequal access to information, for example about the interactions between organisms and the environment. Monitoring could also be improved with the help of automated image and video analysis, artificial intelligence, remote sensing technologies and the engagement of citizen scientists. Other disciplines and non-freshwater specialists should also be involved.

Communication difficulties exist in coordinating existing monitoring programs, in linking them across sites, and in mobilizing and making existing data available. These must be accompanied by digitization of data from regional and national monitoring agencies, museum collections and research institutions.

The authors hope for more political support in the case of conflicting goals between ecological, economic and social interests through the involvement of local communities and experts. This also implies the inclusion of traditional and indigenous ecological knowledge.

"Above all, lakes, rivers, ponds and wetlands should be explicitly recognized as important habitats and ecosystems in their own right by policy makers and funding organisations, and in management and restoration programs," Sonja Jähnig summed up.

On the genesis of the international agenda The Agenda was initiated during an international workshop of the [Alliance for Freshwater Life](https://www.allianceforfreshwaterlife.org/) in Berlin in November 2018. The Agenda reflects the collective opinion of the authors and is based on intense discussions and the exchange of

knowledge and ideas since the workshop. "I see the proposed agenda with its 15 priorities as a start," says Ole Seehausen. "In order to bring in global perspectives in a representative way, scientists and stakeholders from the underrepresented parts of the global society should now be brought on board."

Cover picture: Solvin Zankl

### Original publication

Maasri A, Jähnig SC, Adamescu M, Adrian R, Baigun C, Baird D, Batista-Morales A, Bonada N, Brown L, Cai Q, Campos-Silva J, Clausnitzer V, Contreras-MacBeath T, Cooke S, Datry T, Delacamara G, De Meester L, Dijkstra K-D, Do VT, Domisch S, Dudgeon D, Eros T, Freitag H, Freyhof J, Friedrich J, Friedrichs-Manthey M, Geist J, Gessner M, Goethals P, Gollock M, Gordon C, Grossart H-P, Gulemvuga G, Gutiérrez-Fonseca P, Haase P, Hering D, Hahn HJ, Hawkins C, He F, Heino J, Hermoso V, Hogan Z, Hoelker F, Jeschke J, Jiang M, Johnson R, Kalinkat G, Karimov B, Kasangaki A, Kimirei I, Kohlmann B, Kummerlen M, Kuiper J, Kupilas B, Langhans S, Lansdown R, Leese F, Magbanua F, Matsuzaki S-I, Monaghan MT, Mumladze L, Muzon J, Mvogo Ndongo P, Nejstgaard J, Nikitina O, Ochs C, Odume ON, Opperman J, Patricio H, Pauls S, Raghavan R, Ramirez A, Rashni B, Ross-Gillespie V, Samways M, Schaefer R, Schmidt-Kloiber A, Seehausen O, Shah DN, Sharma S, Soininen J, Sommerwerk N, Stockwell J, Suhling F, Tachamo Shah RD, Tharme R, Thorp J, Tickner D, Tockner K, Tonkin J, Valle M, Vitule J, Volk M, Wang D, Wolter C & Worischka S (2021) A Global Agenda for Advancing Freshwater Biodiversity Research; Ecology Letters; <https://doi.org/10.1111/ele.13931>

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