



“The continued degradation of freshwater ecosystems and the loss of their biodiversity represent a growing need for more effective policy frameworks for nature conservation.”

Davis et al (2013)

Is biodiversity being left behind?

Key points

- Freshwater ecosystems host an unparalleled diversity of species, but are amongst the most threatened in Europe.
- Optimization of most freshwater provisioning services increase biodiversity loss and work against the EU Habitats and Water Framework Directives.
- European citizens do not accept the continuous loss of biodiversity and on-going extinctions.
- A holistic approach including biodiversity-conscious priority setting and the inclusion of long-term consequences in decision-making is imperative.

Freshwater ecosystems and biodiversity

Freshwater ecosystems host an unparalleled diversity of species. While less than 1% of Europe's surface is covered by freshwater, these areas contain an estimated 10% of all animals and 35% of all vertebrate species.

In Europe, freshwater ecosystems provide important cultural services. Such services include recreation, angling or bird watching which sustain millions of jobs and contribute to the European economy. Regulatory services include buffering against floods and erosion, maintaining water quality as well as carbon storage and nutrient cycling. Finally, provisioning services include transporting waste and goods, non-consumptive use for energy generation, and abstraction for agricultural, domestic and industrial use.

An impending crisis?

The health of freshwater ecosystems and the biodiversity contained within are amongst the most threatened in Europe. Freshwater extinction rates are up to 15 times larger than those in marine ecosystems and the rate of biodiversity decline is far more rapid than that of terrestrial ecosystems.

Habitat destruction and the eradication of threatened biodiversity are not accepted by European citizens. Economic crisis, however, has shackled the southern European governments where most biodiversity is located and limited their financial capacity to mitigate the negative effects of ecosystem exploitation and degradation, especially by hydropower and water abstraction.



This policy brief was developed in preparation of the European Commission's "Workshop on Biodiversity and Ecosystem Services: a strategic dialogue between Science and Policy" to be held in Brussels on 14 November 2013.

BioFresh

BioFresh is an EU-funded international project that runs from 2009-2014. It aims to build a global information platform for scientists and ecosystem managers with access to all available databases describing the distribution, status and trends of global freshwater biodiversity.

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Trade-offs: balancing provisioning and cultural services

In many regions, freshwater is a finite resource and cannot be allocated in a way which will optimize the provisioning of all potential ecosystem services in parallel. Decisions surrounding water resources thus largely involve setting priorities and choosing between multiple objectives. In the case of freshwater ecosystems, these 'trade-offs' often arise in deciding between the maximization of provisioning and cultural or regulatory services, each with distinct implications for biodiversity conservation and human well-being.

While European policies such as the Habitats and Water Framework Directives as well as the Biodiversity Strategy to 2020 aim to protect and enhance freshwater biodiversity and ecosystems, economic incentives gained by capitalizing on select ecosystem services are jeopardizing the attainment of these goals. The short-term, often localized values offered by exploiting provisioning services (e.g. hydropower) tend to overshadow the long-term benefits of the less studied and largely underestimated cultural and regulatory services (e.g. carbon storage).

This prioritization trend in European decision-making has resulted in the widespread inability to achieve conservation objectives. More concretely, the optimization of provisioning services underlies the main threats to freshwater ecosystems, namely overexploitation for water usage, flow modification for hydropower and transport/navigation purposes as well as habitat degradation more generally. Current policies relevant for freshwater, such as the Habitats and Water Framework Directives, largely address cultural ecosystem services, but this field has been very poorly explored.

Moving beyond the status quo: Opportunities for action

European citizens do not accept the continued degradation of freshwater ecosystems and the loss of their biodiversity. There is a growing need for coherent policy frameworks for nature conservation and the mainstreaming of freshwater ecosystem services across sectors.

The current focus on maximizing provisioning services will continue to amplify biodiversity loss, while increased consideration of cultural and regulatory services must be congruent with conservation aims. Thus, a holistic approach is recommended to ensure the full consideration of all aspects associated with the utilization of freshwater ecosystem services. Biodiversity-conscious priority setting and the inclusion of long-term consequences in decision-making is also imperative.

Improving the knowledge base for decision-making via, for example, mapping exercises of the types and status of freshwater ecosystems across Europe, current threats and optimized regions for investment of EU funds is urgently needed within this context. This is especially important to highlight the high concentration and critical status of freshwater biodiversity in southern Europe. Policy actions and funding are needed to enable these countries to fulfil their duties, especially when it comes to restoration and conservation.

Source: Davis, M; Anzaldua, G; Lago, M; Cid Puey, N; Born, W; Scholz, M; Cardoso, A.C. (2013). Exploring variations in the application of the composite ecosystem services approach for freshwater species conservation. Deliverable 6.4 to the European Commission, DG Research as part of the BioFresh project (ref. 226874).