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Provision of policy briefs and factsheets about freshwater biodiversity and articles on how to use the BioFresh portal and scientific findings in policy and management (M51)

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BOKU, Universität für Bodenkultur Wien, Austria
ICLARM, International Center for Living Aquatic Resources Management, Malaysia
IRD, Institut de Recherche pour le Développement, France
UDE, Universität Duisburg-Essen, Germany
IUCN, International Union for Conservation of Nature, Switzerland
UOXF.AC, Oxford University, UK
UB, Universitat de Barcelona, Spain
UFZ, Helmholtz Zentrum für Umweltforschung, Germany
UCL, University College of London, UK
UCBL, Université Claude Bernard - Lyon 1, France
UPS, Université Paul Sabatier- Toulouse 3, France
ECOLOGIC, Ecologic GmbH Institut für Internationale und Europäische Umweltpolitik, Germany
EC-ERC, Commission of the European Communities - Directorate General Joint Research Centre, Italy
UD, University of Debrecin, Hungary
NRM, Naturhistoriska riksmuseet, Sweden
FIN, FishBase Information and Research Group, Inc.



BIOFRESH

Biodiversity of Freshwater Ecosystems: Status, Trends, Pressures, and Conservation Priorities

Project no. 226874




Large scale collaborative project

Deliverable number	D8.7
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PU	Public	✓
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

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In case the report consists of the delivery of materials (guidelines, manuscripts, etc)

Delivery name	Delivery file name	From Partner	To Partner

Introduction

This deliverable concerned the provision of policy briefs and factsheets about freshwater biodiversity and articles on how to use the BioFresh portal and scientific findings in policy and management. Its purpose was to strengthen the interface of BioFresh science with policy both directly (e.g. in the form of policy briefs) and indirectly through building shared understanding of science-policy frameworks and issues.

This report describes a set of policy oriented outputs produced by BioFresh: (1) Policy Briefs, (2) Policy thought pieces, (3) Blog special features and (4) Maps in action series.

The *policy briefs* give clear messages targeting specific policy and/ or stakeholder needs, while the *policy-thought pieces* explore new ideas, pose questions and put forward thought-provoking arguments. The *blog special features* offer background briefings and explanation on the purpose and use of BioFresh outputs and the broader scientific and policy contexts within which they are located. They provide a virtual space where different communities can interact and comment. The *maps in action* series is linked to Global Freshwater Biodiversity Atlas and provide case studies of how maps in the atlas may interact with policy. All the elements presented in this document are available through the BioFresh Platform (<http://www.freshwaterbiodiversity.eu/>) and may serve as examples of good practices to improve science-policy communication to raise awareness on the importance of freshwater biodiversity conservation.

These outputs are part of a broader suite of tools used to deliver the Communication and Dissemination Strategy, and the subsequent Science-policy-interface-strategy (SPIS) and Action Plan. They are written for freshwater scientists, policy makers and stakeholders at the EU and international level. They are generally written in an engaging and straight-forward style so as to be assessable to professionals from other sectors and interested lay publics.

Policy Briefs



In total, 6 policy briefs were produced in BioFresh. They were published on the BioFresh Website, sent to selected policy-makers and stakeholders familiar with the respected topic and promoted and distributed via the BioFresh blog. Moreover, policy briefs Nos 3-5 were presented at the Workshop on “Biodiversity and Ecosystem Services: A strategic dialogue between Science and Policy”, organised by the European Commission on the 14-15th November in Brussels. The topics of the three last policy briefs slightly deviated from the proposed topics in the Science-policy-interface strategy (Deliverable 8.3) mainly because of thematic provisions given by the organisers of the science-policy workshop.

Policy Brief 1: Raising the profile of freshwater biodiversity

This brief informed policy-makers about the outcomes of an online survey conducted in 2011 with 52 respondents mostly from Europe – primarily from government, international NGOs and universities/research institutes – about the status and policy profile of freshwater biodiversity in policy-making and of various communication channels that link science and policy. The survey found that preferred methods for receiving scientific information on freshwater biodiversity include face-to-face briefings, policy briefs and conferences/workshops, with less interest in newspapers/magazine articles.

Policy Brief 2: Mismatch between protected areas and freshwater biodiversity

The policy-brief profiled important findings relating to protected area policy and protected area network design. In short, that the traditional focus on birds and mammals might not act as surrogates for the conservation of freshwater biodiversity purposes. This brief illustrated this policy relevant finding through research conducted on the African continent. The research showed *inter alia* that the protected areas network does not adequately cover freshwater species biodiversity to the same extent as terrestrial species.

Policy Brief 3: Is biodiversity being left behind?

Freshwater ecosystems hold unparalleled species diversity, but are amongst the most threatened in Europe. Prioritizing short-term, often localized benefits in ecosystem provisioning services (such as hydropower) is degrading habitats and damaging cultural and regulatory services such as carbon storage, making it impossible for Europe to meet policy goals under the Habitats and Water Framework Directives. This brief calls for 'biodiversity-conscious priority setting,' considering the full range of services that freshwater ecosystems provide, as well as improving the knowledge of ecosystems' status and threats, to use EU funding resources to the greatest advantage.

Policy Brief 4: Alleviating stress on freshwater biodiversity

This brief discusses the major stressors on freshwater ecosystems such as the continuing modification of rivers for hydropower installations, the massive abstraction of water in the Mediterranean and the uncontrolled spread of invasive species, which to some extent result from misled or incoherent policy. The brief shows that aligning policy on agriculture, water, energy, biodiversity, and other related issues can help ease the pressure on freshwater systems, and will require wider participation from regional and local stakeholders.

Policy Brief 5: Water-food-energy security nexus: Where do freshwater ecosystems fit in?

Water has a 'hybrid identity' as both a medium for all life and a resource for humanity. The Brief points towards policy-makers for having a look beyond the current focus on providing basic human needs, such as food and security, to considering all human needs, including cultural, aesthetic and cognitive needs. This requires large-scale design experiments and research on water-dependent sectors as well as communication and engagement to reframe public perceptions of water.

Policy Brief 6: Riparian areas to sustain freshwater life

This policy brief identifies a response to the situation that a half of European surface water bodies are far from meeting the 'good ecological status' requirement of the Water Framework Directive (WFD). BioFresh/ReFresh identified that intensive land use along rivers is the most important stressor limiting the achievement of good ecological status. It recommends riparian restoration be promoted within River Basin Management Plans as a win-win solution for enhancing ecological quality, biodiversity and ecosystem service. Moreover this action promotes synergies with other sectorial policies such as the greening of the Common Agricultural Policy (CAP).

Policy thought pieces

During the course of the project we published four policy thought pieces in professional and industry magazines. PDFs of each are available on the policy resource area of the BioFresh Platform. <http://research.freshwaterbiodiversity.eu/index.php/policy/policy-thought-pieces>. These thought-pieces had three aims: i) to raise awareness of the BioFresh project and its scientific goals, ii) to communicate key facts on freshwater biodiversity (status, threats and pressures) and to present new ideas, pose questions, and put forward thought-provoking arguments.

Thought-piece 1: Water of Life and the Life in Water

Author: Staff author
Publication: International Innovation. Research Media
Date: October 2010

Key Messages:

This 3 page article, including a 1-page interview with BioFresh leader Prof Klement Tockner appeared in a special biodiversity issue of this commercial science dissemination magazine.

Thought piece 2: Data on biodiversity for Freshwater managers



Author: Jamie Pittock
Publication: Water 21
Date: December 2011

Key Messages:

This 3-page article in the widely read industry magazine Water 21 focused on the informatics/data portal component of the BioFresh project. It made the case for managing freshwater biodiversity, explained how the data-portal would support policy and management action and included a call for contributions to the data portal.

Thought piece 3: Going with the flow



Author: Paul Jepson & Rob St John
Publication: Public Service Review: European Science & Technology
Date: February 2012, issue 13

Key Messages:

This article sought to highlight the importance of freshwater as a media for life on Earth and point out that powerful policy institutions, however, frame water as an inert instrumental resource for sanitation, agriculture and food production. It explored the barriers and opportunities for policies that recognise the dual identity of water as simultaneously a media for life and resource for humanity.

Thought piece 4: Less 'charismatic' species should not be forgotten in conservation



Author: Dr Will Darwell, IUCN (WP7)
Publication: Science for Environmental Policy. DR Environment News Alert Service.
Date: 26 April 2012

Key Messages:

This article reports the results of the assessment of African freshwater species and argues that there is no longer any excuse not to include data on freshwater species in conservation planning. It makes the important policy point that current reserve systems capture less than 50% of freshwater conservation priority areas identified (see also policy brief 2)

Blog Special features

To support the use of data resources in the BioFresh portal we ran two special features on www.Biofreshblog.com

Special Feature 1: Assembling the freshwater database

The first of these, titled "[Assembling the freshwater database](#)" followed on from a June 2011 blog article by Dr Aaike De Wever introducing the [Biofresh freshwater biodiversity information platform and data portal](#) sought to engage the wider scientific community in the process and challenges associated with building the BioFresh freshwater biodiversity data portal. It contained the following five weekly posts between September 11 and October 3, 2011.

Title: [Integrating dispersed datasets.](#)
Author: Aaike DeWever
Topic: The process of integrating models and tools to analyse and view the data

Title: [Obtaining information on freshwater databases biodiversity databases](#)

Author: Aaike De Wever, Astrid Schmidt-Kloiber and Sian Davies

Topic: What is metadata?

Title: [Working with intercalibration datasets](#)

Author: Sian Davis

Topic: Introduction to working with intercalibration datasets on biological water quality indices gathered for the Water Framework Directive across Europe and that are used to construct a common scale of ecosystem health.

Title: [Requesting data and dealing with complex intellectual property right issues](#)

Author: Aaike De Wever, Sian Davies, Astrid Schmidt-Kloiber

Topic: explains how and for what purpose Biofresh (and other) data can be used.

Summary: [Building the BioFresh freshwater biodiversity database](#)

Author: Tom Turnbull

Topic: brings together the above and introduces the scientific concept of data driven discovery.

Special Feature 2: Developments in biodiversity data publishing.

The second Special Feature titled "[Developments in biodiversity data publishing](#)" reported important new developments in data-publishing, archiving and sharing. It was aimed at scientists, young researchers and policy professionals and explained key concepts and initiatives linked to the rise of open data.

Title: [Saving Biodiversity Data, an introduction to the ReBIND project.](#)

Author: Paul Jepson

Topic: Profiles the rebind project and the availability of tools to integrated isolated data sets (for instance on an individual scientist's PC) into an biodiversity informatics networks.

Title: [The Arrival of Data Journals including and interview with Lyubomir Penev of Pensoft Publishers.](#)

Author: BioFresh blog

Topic: Introduces the emergence of data journals and data papers and outlines the arguments for scientists to publish data papers.

Title: [Freshwater Journals Unite to Boost Primary Biodiversity Data Publication](#)

Author: BioFresh blog

Topic: Reports the important agreement on data publishing brokered by BioFresh with the editors of 17 journals publishing papers on freshwater biodiversity.

Title: What does a Data paper look like? outlines the structure and content of a typical data paper

Author: Paul Jepson

Topic: Explains what a data paper is – the typical structure and content - draws attention to the availability of the GBIF integrated publishing tool for producing data papers and some good 'template' examples of data papers.

Title: [Science made easier: Darwin Core explained.](#)

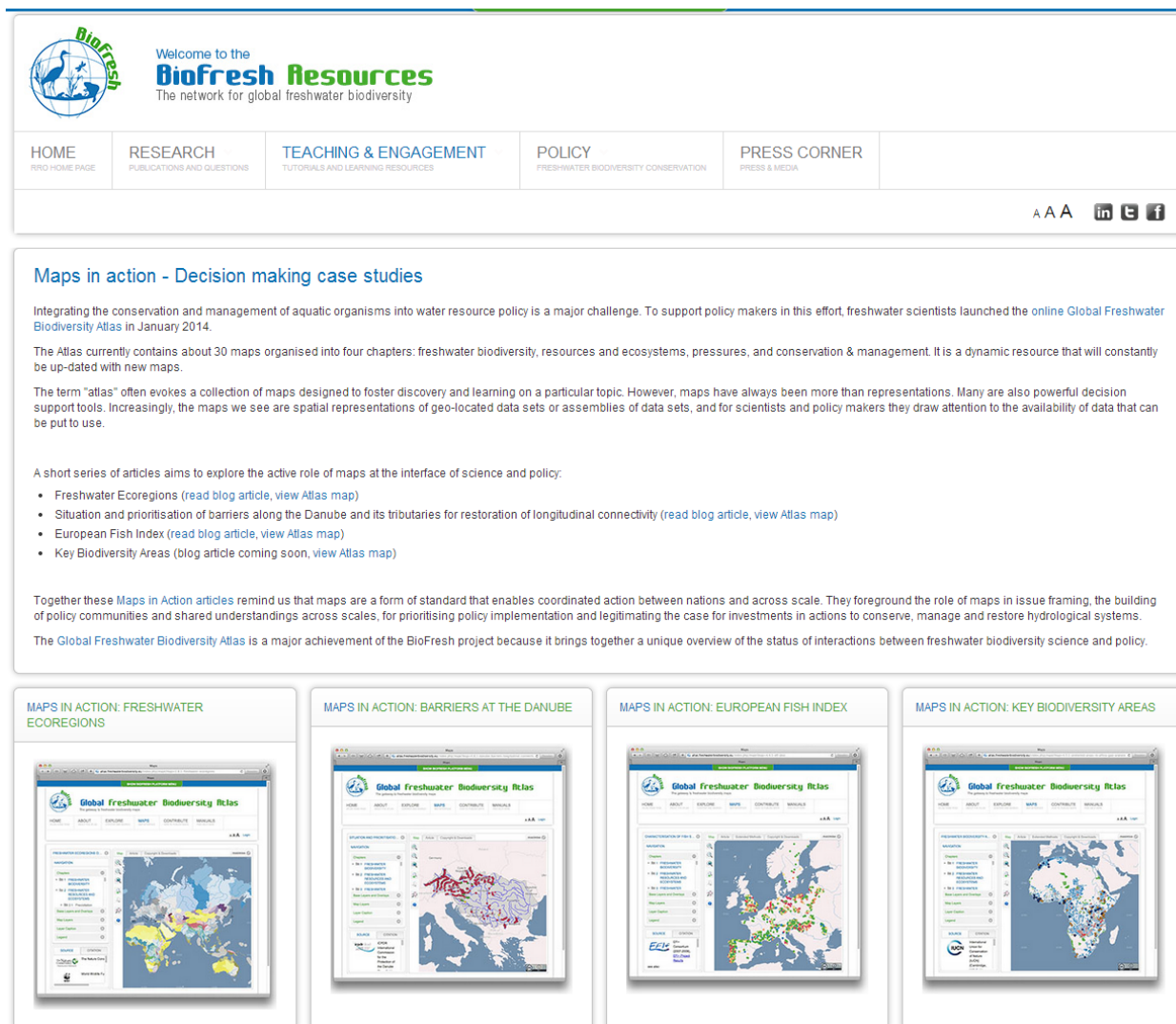
Author: Paul Jepson

Topic: This post introduced the Darwin Core Standard developed to promote data interoperability. It links through to on-line GBIF training videos that explain how to use and apply the standard.

Title: [What is a digital object identifier?](#)
Author: Paul Jepson
Topic: This final post in the series contextualises and explains DOI in an easily understandable way and outlines the case for their wider adoption in science.

Maps in Action Series

This series of four articles (published as [BioFresh blog posts](#) and integrated into the [Platform](#)) are designed to demonstrate the role of maps in interfacing science with policy and river management. Each article takes a different type of map (technically a spatial data visualisation) and drawing on the first-hand accounts of a freshwater scientist or technical expert explains how the map, or the underlying data set – interacts with policy frameworks and initiative to translate into on the ground action.



Maps in action - Decision making case studies

Integrating the conservation and management of aquatic organisms into water resource policy is a major challenge. To support policy makers in this effort, freshwater scientists launched the [online Global Freshwater Biodiversity Atlas](#) in January 2014.

The Atlas currently contains about 30 maps organised into four chapters: freshwater biodiversity, resources and ecosystems, pressures, and conservation & management. It is a dynamic resource that will constantly be up-dated with new maps.

The term "atlas" often evokes a collection of maps designed to foster discovery and learning on a particular topic. However, maps have always been more than representations. Many are also powerful decision support tools. Increasingly, the maps we see are spatial representations of geo-located data sets or assemblies of data sets, and for scientists and policy makers they draw attention to the availability of data that can be put to use.

A short series of articles aims to explore the active role of maps at the interface of science and policy:

- Freshwater Ecoregions ([read blog article](#), [view Atlas map](#))
- Situation and prioritisation of barriers along the Danube and its tributaries for restoration of longitudinal connectivity ([read blog article](#), [view Atlas map](#))
- European Fish Index ([read blog article](#), [view Atlas map](#))
- Key Biodiversity Areas (blog article coming soon, [view Atlas map](#))

Together these [Maps in Action](#) articles remind us that maps are a form of standard that enables coordinated action between nations and across scale. They foreground the role of maps in issue framing, the building of policy communities and shared understandings across scales, for prioritising policy implementation and legitimating the case for investments in actions to conserve, manage and restore hydrological systems.

The [Global Freshwater Biodiversity Atlas](#) is a major achievement of the BioFresh project because it brings together a unique overview of the status of interactions between freshwater biodiversity science and policy.

MAPS IN ACTION: FRESHWATER ECOREGIONS

MAPS IN ACTION: BARRIERS AT THE DANUBE

MAPS IN ACTION: EUROPEAN FISH INDEX

MAPS IN ACTION: KEY BIODIVERSITY AREAS

The purpose of these accounts is to i) remind scientists, policy makers and lay publics that maps are a form of standard that enables coordinated between science and policy and action between nations and across scale, ii) to provide an educational resources on the different path-ways of spatial data into policy and iii) through this justify the effort expended in collation data sets through BioFresh and position the Global Freshwater Biodiversity Atlas as much more than a collection of maps: it embodies and illustrates the state of the freshwater science-policy interface.

Map in Action: [Freshwater ecoregions](#)
Author: Paul Jepson
Theme: The role of maps in creating the conceptual categories through which policy is formulated. In this case the FWEOW maps has contributed to a shift in how we

frame global biodiversity at the most basic level – from terrestrial & marine, to terrestrial, freshwater & marine.

- Map in Action:** [Situation and prioritisation of barriers along the Danube and its tributaries for restoration of longitudinal connectivity.](#)
- Author:** Paul Jepson
- Theme:** The role of map production in strengthening transnational expert communities and empowering their members to mobilise action within their national institutions.
- Map in Action:** [European Fish Index](#)
- Author:** Paul Jepson
- Theme:** Maps as the output of complicated processes of creating common standards – indices – that empower policy to assure compliances with regulatory frameworks and the enrol a broader constituency of actors and sectors in the goals of policy – in this case improving ecological status of freshwaters.
- Map in Action:** [Key FW Biodiversity Areas and protected area network planning](#)
- Author:** Paul Jepson
- Theme:** The role of the under-lying data sets in generating policy action, in this case combining KBA spatial data with other date sets in a MARXAN decision support analysis of protected areas systems scenarios in the Democratic republic of Congo.