

WISER news

105 European scientists met for project midterm meeting in Poland

The first half of WISER was over in August 2010 — the right time to meet and take stock of the achievements since March 2009. Therefore, altogether 105 WISER scientists and experts from European Geographical Intercalibration Groups met from 6–9 September in Dębe, Poland. Situated close to the Narwia River, the government training and conference centre in Dębe provided an ideal venue for various presentations and fruitful discussions. Daniel Hering (University of Duisburg-Essen) opened the starting plenary and welcomed the attendees from 20 countries, followed by a welcome note by Christos Fragakis (European Commission). Before the scientists left for individual workpackage sessions, Rick Ziegler, US Environmental Protection Agency, introduced the audience to an international initiative to evaluate and store literature-based information on ecological evidence (see extra article further below).

For the next two days, the WISER project partners and external experts discussed the achievements in more detail and drafted plans for the analysis of data and dissemination of results. The end of more than 45 individual sessions

and small workshops was marked by a half-day “Uncertainty Workshop”, jointly presented and led by Ralph Clarke (University of Bournemouth) and Mike Dunbar (Centre of Ecology and Hydrology). The workshop in particular addressed the people involved in the WISER field campaigns, who sampled phytoplankton, macrophytes, macroalgae/angiosperms, benthic invertebrates and fish in 33 lakes and 7 transitional and coastal waters. A specific replicate sampling design has been applied in the field that allows the quantification of the effects of different sources of variability, such as spatial and temporal variation or researcher-dependent methodological differences. All this undesired variability (noise) potentially confounds the ecological assessment (signal) and thus needs to be quantified in order to inform water managers about the reliability of assessment results. A specific software tool, WISERBUGS, has been developed for this purpose and was applied during the workshop. WISERBUGS will be made available soon, after an intensive testing of the package. We will also follow-up this topic in our next newsletter.

*Christian Feld
(University of Duisburg-Essen)*



105 European scientists met in Poland for the midterm meeting

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Impressum

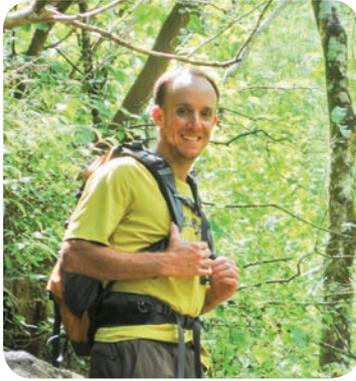
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The Causal Analysis/Diagnosis Decision Information System CADDIS



C. Richard Ziegler, U.S. EPA

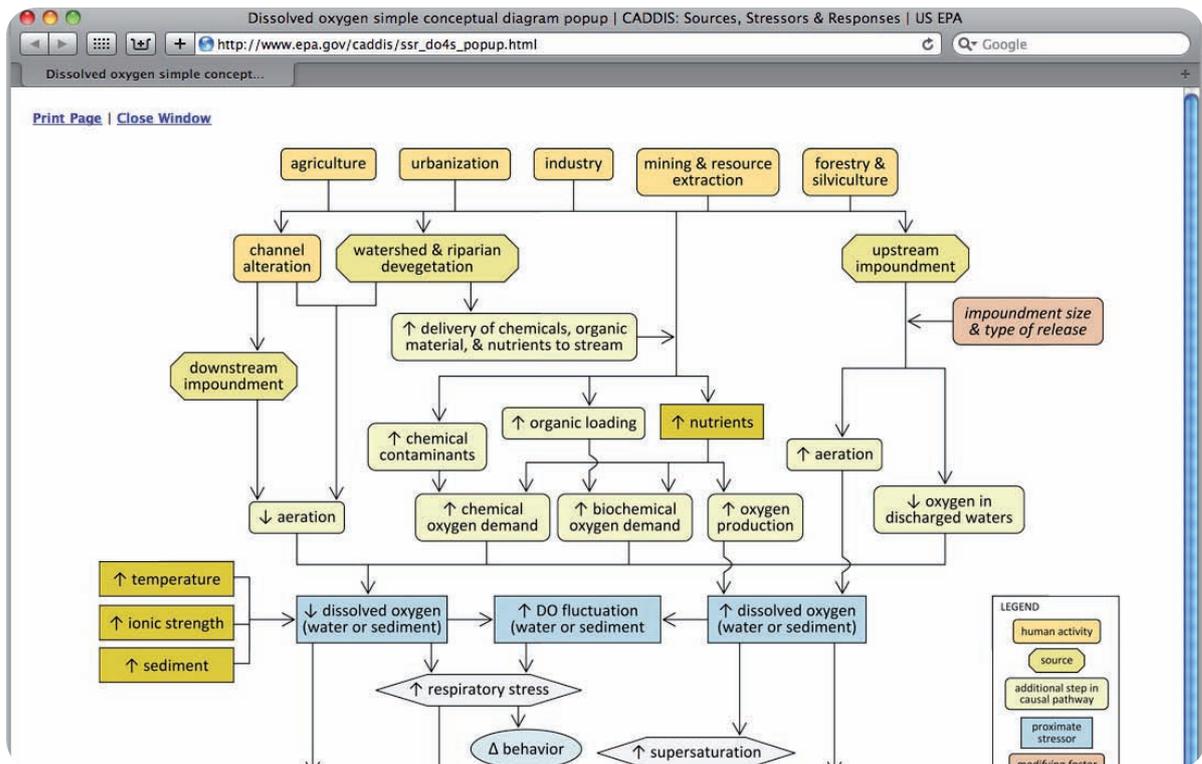
We invited C. Richard Ziegler from the United States Environmental Protection Agency (U.S. EPA) to our midterm meeting in Poland, to present the status of an international effort aimed at improving the way we use scientific information. Rick has dedicated much of his career to improving ways in which technology can be used to better convey and represent science, for the purposes of improving decision making.

Rick spoke on behalf of a team of scientists seeking to synthesise, store and share literature-based evidence. The effort attempts to interconnect existing ecological knowledge databases and allow the scientific community and decision makers to populate (peer production) and use those databases through online user interfaces.

The databases go beyond basic metadata (i.e., author, date, keywords, etc.), to include bivariate associations – for example, “increased freshwater stream salinity (variable #1, causal factor, or stressor) may be proportionate (directional association) to increased abundance of macrocrustaceans (variable #2, effect, or response), Kefford et al., 2003.” The databases can also hold information that shows how management actions can help inform restoration activities.

A similar review of cause-effect relationships in river ecosystems

has recently been compiled by WISER’s workpackage 5.1. The deliverable 5.1-1 (see also [http://www.wiser.eu/programme-and-results/management-and-restoration/riverers/](http://www.wiser.eu/programme-and-results/management-and-restoration/river/)) analysed the implications reported in more than 160 peer-reviewed restoration studies with regard to their effects on the riverine water and hydromorphological quality, and eventually on the biological quality elements. The review revealed that for some common river restoration and management measures, there is already notable evidence available in the literature about the effects – and also non-effects – of restoration. Continued efforts on the compilation of existing knowledge will help inform water managers about the efficiency of management measures and the time scales required to improve the ecological quality. Nevertheless, this effort also requires continued in-situ restoration case studies and their monitoring to fill existing knowledge gaps.



Screenshot of an example to illustrate cause-effect relationships in river ecosystems

The Australian constituency of the international team has made strides to catalog characteristics of strength or quality of evidence, which is then used in synthesis analysis of association information to assess causal relationships.

- ➔ <http://toolkit.net.au>, <http://toolkit.essolutions.com.au/Tools/Online/CausalCriteria>
- ➔ Contact: Angus Webb
angus.webb@unimelb.edu.au

The US group has made strides at visualising associations from the databases using an online diagramming tool (see screenshot):

- ➔ http://www.epa.gov/caddis/cd_icds_intro.html

The online tool has been created by Kate Schofield (contact: schofield.kate@epa.gov). We are considering asking Kate to provide

an instructional webinar for the application of the online tool. The international team has collectively synthesised hundreds of studies, seeks to make the database entries compatible, and may look to combine and digitise relevant work conducted by European scientists such as a recent Austrian literature review of fish-pressure relationships:

- ➔ <http://wasser.lebensministerium.at/filemanager/download/14534/>

Given that the majority of our EU ecological studies start with conceptual diagramming and reviewing literature beyond basic metadata, the EU/WISER community sees tremendous potential in collaborating with the efforts described by Rick.

If you are interested in this international activity, contact Rick at ziegler.rick@epa.gov and our European liaison for this effort, Andreas Melcher at andreas.melcher@boku.ac.at.

The authors of Rick's presentation and members of the international team include:

*J. Angus Webb &
Stephen R. Wealands of
eWater & University of Melbourne*

*Susan Nichols & Ralph Ogden of
eWater & University of Canberra*

*Andreas Melcher of the University
of Natural Resources and
Life Sciences, Vienna*

*C. Richard Ziegler,
Kate A. Schofield, &
Susan B. Norton of the U.S. EPA*

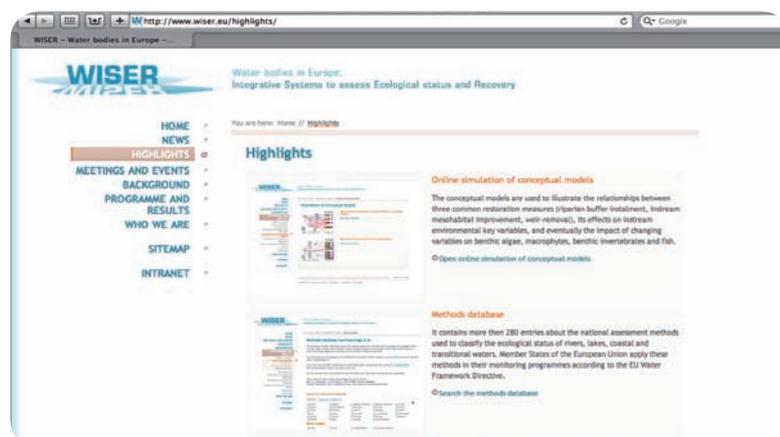
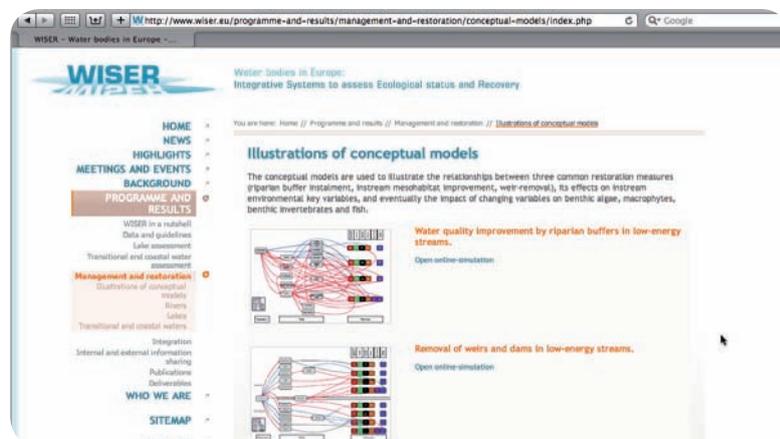
WISER website: New content – new structure

In September 2010 we did a major relaunch of the website. With the redesign we tried to present the structure and the outcome of the different parts and of the project in a more user-friendly and informative way. All workpackages are now described in more detail, explaining the objectives, outcomes, products and the relevance for the targeted end users.

A special “highlight” section points at the top features and outcome of the project to wake the interests of the visitors. For instance, the method database with the attributes of more than 280 European assessment methods as well as the metadatabase provide invaluable information to be shared with other scientists and water managers.

The overall number of visits of the website approximates 4500 per month and shows the interest of the public in our project.

*Joerg Strackbein (University of
Duisburg-Essen)*



Some of the new pages at www.wiser.eu

Deliverable 3.4-4: Fish indicators for ecological status assessment of lakes affected by eutrophication and hydromorphological pressures

One of the objectives of work-package 3.4 is to develop a fish-based indicator of the ecological status of European lakes exposed to hydromorphological and eutrophication pressures. This includes an estimation of the uncertainty of the metric.

Some studies have already assessed the response of individual lake fish metrics to human stresses such as acidification, eutrophication or land use, but only at a regional scale. In these studies, natural parameters influencing environmental variability are considered negligible, and therefore, variability of fish communities (through metrics) is only considered as a response to pressures. Moreover, in most of these studies, the reference is more or less considered the

“best available condition” observed in the dataset. This “reference” condition, however, is rarely defined further.

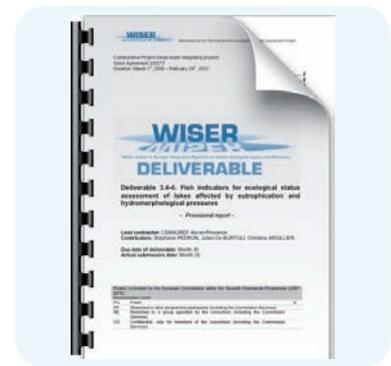
From a general point of view, the approaches raise two questions that have to be solved before starting with metric selection at the European scale: which environmental parameters are influencing fish communities at such a large scale? And how to define the reference conditions?

The deliverable presents the result of a literature review on fish-based metrics already used for bioassessment of lakes and reservoirs. The review allows to provide a list of potential metrics to develop an European lake fish index. The available data and methods to develop and select metrics

responding to eutrophication at the European scale are discussed. Finally, conclusions are drawn on the required improvements and perspectives of the metrics.

➔ www.wiser.eu/programme-and-results/deliverables/

*Lead contractor: CEMAGREF
Aix-en-Provence*



Deliverable 6.4-1: Biological processes of connectivity and metapopulation dynamics in aquatic ecosystem restoration

This review combines a literature study and results from the EURO-LIMPACS project which are used to define relevant biological processes of connectivity and metapopulation dynamics as parts of the development of cause-effect and recovery chains. The review focuses on the overarching biological processes of connectivity and metapopulation dynamics for lakes, rivers and marine waters.

The report starts with general definitions, concepts and ecological theories behind connectivity and metapopulation dynamics in relation to restoration. Some of the methods to describe and quantify dispersal behaviour, metapopulation dynamics, connectivity and colonisation events are reviewed.

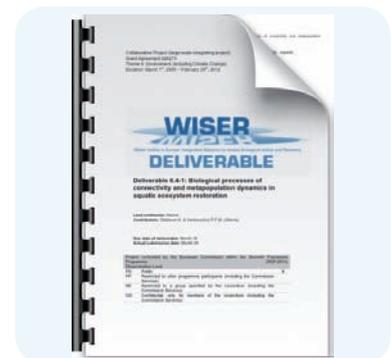
Specific case studies are described that show the role of connectivity and metapopulation dynamics in restoration success.

Restoration success is dependent on the possibility of populations to colonise the new and restored habitat. Due to knowledge gaps and scale discrepancies, both habitat and dispersal constraints still restrict restoration outcome in many programmes. Determining the right scale for species, the extent of the required (different) habitats, the scale at which processes like dispersal and connectivity occur in the context of restoration and even the scale at which large-scale processes that eventually influence habitat quality is an important aspect of successful restoration. However, the spatial scales that are most

important often remain poorly understood. Finally, our main aim was to construct a driver-pressure-state-impact-recovery chain for the biological processes of metacommunity dynamics and connectivity.

➔ www.wiser.eu/programme-and-results/deliverables/

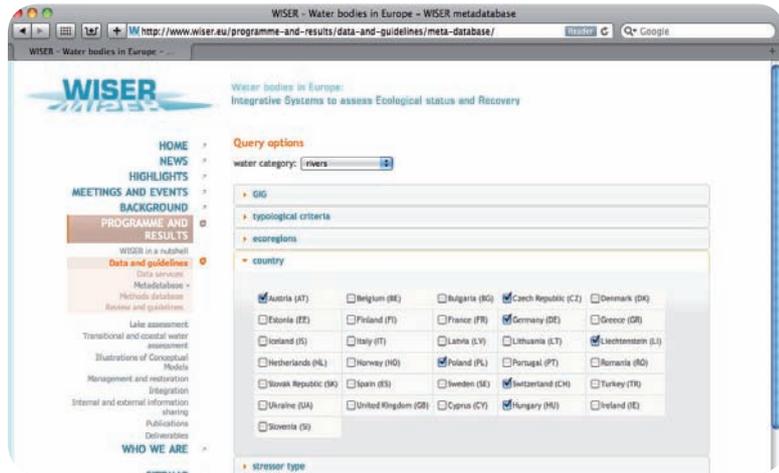
Lead contractor: Alterra



WISER metadatabase online

Since the year 2000, numerous databases have been generated within the scope of EU-funded research projects and extensive monitoring activities in the EU Member States. As a result, hundreds of thousands of individual samples on environmental data and biological quality elements have been compiled. This data is invaluable for current and future research. The WISER metadatabase seeks to summarise the attributes of these databases and provides information on the content, availability and accessibility of the data from previous EU projects and monitoring activities, as well as new data from the WISER field campaigns. The information was provided by the data owners through an online questionnaire and further treated within workpackage 2.1.

While most of the metadata were compiled during the first half of the project, the possibility to query this information was made available to the public only recently. The metadatabase query page offers a variety of options to search for exactly those data that maybe needed for a specific



Online metadatabase: screenshot of some of the query options

analysis: define your query options starting with the water category and then choose from the other query parameters by selecting the features of interest. As query results you will find a summary of the selected query parameters, the number of available sites, other available information and a list of the appropriate databases, from where you can directly link to the corresponding metadatabase entry. The intellectual property rights section of the metadatabase provides information on the general terms of use of the data and the contact person in

case the use is subject to further regulations and approval. One future feature of the query page will include a traffic light system to quickly identify the intellectual property rights of each database. Public data will be labelled in green, whereas those with restricted access will be indicated in yellow or red.

➔ <http://www.wiser.eu/programme-and-results/data-and-guidelines/meta-database/>

*Astrid Schmidt-Kloiber
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WISER final conference, Tallinn 2012



From 23-26 January 2012, the WISER final conference will take place in Tallinn, Estonia. The conference aims at providing a platform to present the overall project results, the tools and, finally, the applicability of the outcome. The focus will be

on a science-policy interface with specific sessions for in-depth scientific presentations and hands-on sessions for the end users.

More information on the meeting will be provided in spring 2011 at www.wiser.eu.

We will also keep you updated in the next newsletter.

More information at:

➔ <http://www.wiser.eu/meetings-and-events/final-conference/>

Some impressions from the midterm meeting in Poland

