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Editorial

Aquatic Invasions – the new European journal of applied research on biological invasions in aquatic ecosystems

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*Aquatic Invasions** is a new on-line journal focusing on biological invasions of the inland and coastal waters of geographic Europe. The journal will form an important tool for the rapid exchange of information pertaining to aquatic invasive** species, providing an opportunity for timely publication of first records of biological invaders and hence prompting risk assessment, early warning and eradication programmes. The journal will also provide an opportunity to publish relevant technical reports and other accounts not publishable in regular scientific journals, including large datasets of aquatic invasive species records from monitoring and biological surveys. Submission of these datasets in standard tabular format will allow publication of primary georeferenced data as annexes to regular articles or short communications. Linked to the available open databases and on-line GIS applications on aquatic invasive species via the Regional Biological Invasions Center information system (RBIC, http://www.zin.ru/rbic/), *Aquatic Invasions* will serve as an essential component of the developing European early warning system on invasive species.

Increased shipping activities, construction of canals and other human activities resulted in massive invasions of alien species into European inland and coastal waters during the last century. As a result significant changes in marine, estuarine and inland waters' biodiversity as well as severe economic impacts occurred (Galil 2000; Zaitsev and Öztürk 2001; Leppäkoski et al. 2002 a, b). Due to the serious challenges posed by invasions of aquatic alien species to Europe, during the last decades European scientists were actively involved in relevant international networking initiatives resulting in several international and regional working groups and the recent establishment of the European Research Network on Aquatic Invasive Species (ERNAIS, http://www.zin.ru/rbic/projects/ernais/) (Panov et al. 2002; Panov 2005).

The concept of ERNAIS was discussed for the first time in 1999 at the 16th Baltic Marine Biologist (BMB) Meeting in Klaipeda, Lithuania. In 2001, the International Association of Theoretical and Applied Limnology (SIL) Working Group on Aquatic Invasive Species (WGAIS) and BMB Working Group on Non-indigenous Estuarine and Marine Organisms (WG NEMO) initiated a broad discussion on ERNAIS and a call for cooperation was sent to known European experts.

** the concept of the ERNAIS e-journal Aquatic Invasions has been first presented at the International Workshop on Biological Invasions in Inland Waters, Florence, Italy, 5-7 May 2005 in an oral presentation by V. Panov and S. Gollasch "European Research Network on Aquatic Invasive Species (ERNAIS): past, present and future" (http://www.dbag.unifi.it/inwat/)*

*** the editorial policy of Aquatic Invasions is to consider internationally agreed terminology in the area of biological invasions, currently developing in frameworks of the Convention on Biological Diversity (see Decisions adopted by the Conference of the Parties to the Convention on Biological Diversity at its sixth meeting, the Hague, 7-19 April 2002) and other international legal instruments, such as the Ballast Water Management Convention of the International Maritime Organization and the ICES Code of Practice on the Introductions and Transfers of Marine Organisms.*

As a result, a first online directory of European experts in the area of aquatic invasions was developed, which included approx. 50 experts in 2001, 85 experts in 2002 and 105 scientists and managers from 27 countries by the end of 2005.

In 2002 ERNAIS was first recognized by European Commission in the Thematic Report on Alien Invasive Species to the Convention on Biological Diversity (http://biodiversity-chm.eea.eu.int/convention/cbd_ec/).

In December 2003, the role of ERNAIS in the development of the European Information Network on Invasive Species has been recognized in the European Strategy on Invasive Alien Species (Genovesi and Shine 2004). Finally, in 2005 ERNAIS became supported for the first time by the European Commission Sixth Framework Programme for Research and Technological Development through the Integrated Project ALARM (Settele et al. 2005).

The key objectives of ERNAIS currently include: (a) the facilitation of international research cooperation, scientific information exchange and management of aquatic invasive species in Europe and worldwide (ERNAIS Experts Database, http://www.zin.ru/rbic/projects/ernais/searchform.asp); (b) the development of an on-line information system on aquatic invasive species for European coastal and inland waters with early warning functions (Aqua-Invader Database, http://www.zin.ru/rbic/ projects/aquainvader/); (c) the establishment of an online journal, focusing on applied issues of aquatic invasions in geographic Europe, (Aquatic Invasions, http://www.zin.ru/rbic/projects/ernais/ernais_journal.asp); and (d) participation in the Global Invasive Species Information Network (GISIN, http://www. gisinetwork.org/).

We see the future of ERNAIS as a European framework for on-line scientific information exchange, relevant to aquatic invasive species, and also as provider of essential information and expertise needed for management of aquatic invasive species at the European level.

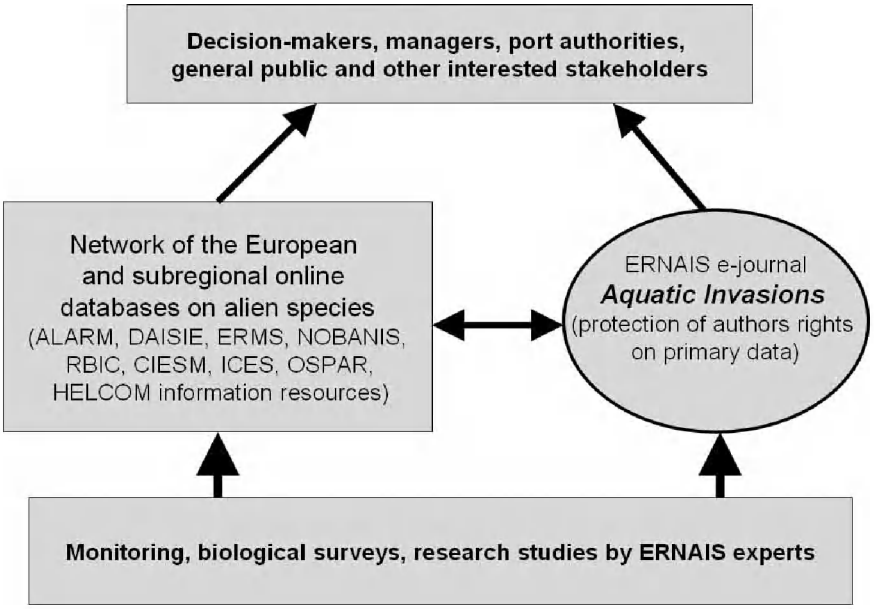

Figure 1. Conceptual model of the European early warning system on aquatic invasive species and the role of the e-journal *Aquatic Invasions* (ALARM – EC FP6 Integrated Project "Assessing LArge scale environmental Risks for biodiversity with tested Methods" at http://www.alarmproject.net , DAISIE - EC FP6 Strategic Targeted Research Project "Delivering Alien Invasive Species Inventories for Europe" at http://www.europe-aliens.org, ERMS – European Registry of Marine Species at http://www.marbef.org/data/erms.php , RBIC – Regional Biological Invasions Center information system at http://www.zin.ru/rbic/ , ERNAIS – European Research Network on Aquatic Invasive Species at http://www.zin.ru/rbic/projects/ernais/ , ICES – International Council for the Exploration of the Sea at http://www.ices.dk , NOBANIS – North European and Baltic Network on Invasive Alien Species at http://www2.skovognatur.dk/nobanis/ ; CIESM – Atlas of Exotic Species of the International Commission for the Scientific Exploration of the Mediterranean Sea at http://www.ciesm.org/online/atlas/ ; OSPAR - OSPAR Commission for the Protection of the Marine Environment of the North-East Atlantic at http://www.ospar.org/ ; HELCOM information resources – Baltic Sea Alien Species Database at http://www.ku.lt/nemo/mainnemo.html and GIS "Invasive Species of the Baltic Sea" at http://www.zin.ru/rbic/projects/invader/).

Currently ERNAIS experts are actively working on the development of on-line information resources on aquatic invasive species, urgently needed for elaboration of relevant management measures on the European and subregional levels (Gollasch 2002; Olenin et al. 2002; Panov and Gollasch 2004; Panov 2004). The future development of these resources should consider their integration in the developing global network of online interoperable databases and information systems via development of the interlinked regional information hubs (Panov and Gollasch 2004). These regional information hubs will provide comprehensive information on aquatic alien species, including regional alien species directories with species-specific entries. Timely access to the geo-referenced monitoring data, using existing Internet and GIS technologies, will support the regional information hubs as early warning systems (Panov and Shestakov 2004), and the ERNAIS e-journal *Aquatic Invasions* will form an essential part of this process, specifically in protecting the authors rights on these primary data (Figure 1).

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