Summary Report on the Experts Meeting on Implementation of a Global Invasive Species Information Network (GISIN) 6-8 April, 2004, Baltimore, Maryland, USA

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Introduction

The experts meeting on implementation of a Global Invasive Species Information Network (GISIN) was held 6-8 April 2004 in Baltimore, Maryland, USA, and attended by 76 participants representing 26 nations. The meeting was sponsored by the U.S. Department of State, coordinated by the National Biological Information Infrastructure, and logistical support was provided by Information International Associates Inc.

Participants in the meeting represented a truly global community, representing numerous governmental, non-governmental, private, academic, and non-profit organizations. The participants consisted of experts in various biological disciplines associated with invasive species as well as experts in information management, Internet, and database technology. The goal of the meeting was to discuss and facilitate the creation of common gateways to search and compare invasive species information from around the globe, and to create an organization to further this goal.

Meeting Process and Products

In the months leading up to the meeting, pre-meeting discussion and resource sharing among participants was facilitated by the creation of an online community – the GISIN Community, hosted by the National Biological Information Infrastructure (NBII) at <http://my.nbii.gov/>. It allowed members to initiate discussion, share documents and other resources, and generally collaborate on issues related to IAS information management and implementation of a GISIN.

A review of online IAS databases and information systems was conducted prior to the meeting, and resulted in the identification of approximately 150 online resources representing potential collaborators and information sources on which a GISIN might be built (Sellers, 2004). Over 80 general biodiversity databases, or information systems lacking either a specific IAS focus, or lacking information on / indication of IAS records were also identified during the research for this review, as being information sources of equal importance in the future implementation of a GISIN. These lists of online information resources will continue to be maintained by the NBII with the future aim of cataloging the information more fully.

The results of the online IAS databases and information systems review were used to design four surveys for assessing the IAS information needs and priorities of the GISIN members. Issues raised by GISIN members in online discussion forums were also considered in the design and focus of the survey questions. The surveys analyzed the content and development of online and offline electronic invasive species databases, data sets, or distributed database systems (DDS). A fourth survey allowed respondents

to evaluate the three other surveys. The results of these surveys were presented to the GISIN participants during the meeting, and will be reported in the proceedings of the meeting (Curd-Hetrick, 2004).

The agenda for the GISIN meeting included presentations from representatives of 11 databases or information systems covering theoretical, centralized and distributed approaches to serving IAS information online. Each day, participants divided into four formal breakout groups to discuss theoretical, practical, organizational, and capacity-building issues relating to the implementation of a GISIN. A draft GISIN Organizational Framework document (Simpson, 2004) was developed prior to the meeting and reviewed by the Financial and Organizational Framework breakout group during their discussions. A fifth group of participants, mainly representing organizations and information systems within the realm of aquatic IAS gathered on the second day of the meeting to discuss collaboration and information sharing with NISbase, an international nonindigenous species database network developed by the Smithsonian Environmental Research Center (SERC) and the U.S. Geological Survey (USGS) Florida Integrated Science Center. There were numerous breakout group discussions and many, many individual discussions that occurred over the course of the three-day symposium. Many GISIN participants reported the initiation of promising partnerships and agreements with other organizations and information systems that had resulted from their participation in the meeting.

Proceedings from the meeting are currently in production with release of the final version scheduled for late June, 2004. The list of IAS databases, edited semi-verbatim transcripts and accompanying presentation materials, breakout group reports and transcripts, photographs taken at the meeting, and other resources are currently available for participants to access through the GISIN online Community. Several documents related to the meeting are also available for general access on a temporary Web page at <http://invasivespecies.nbii.gov/as/gisin.htm>.

With a view to securing the future development of a GISIN, a six member interim Steering Committee (iSC) was selected during the meeting. The GISIN iSC is currently preparing the *Baltimore Declaration*, which represents the general understanding, goals, and agreements of the GISIN participants. This declaration is scheduled for release in late May 2004.

Key Points and Highlights

- A review of online IAS database and information systems was conducted prior to the meeting, and resulted in the identification of over 150 online resources representing potential collaborators and information sources on which a GISIN might be built (Sellers, 2004). The National Biological Information Infrastructure has continued to develop this list, which now includes a total of 202 online information sources.

- Various technologies described, demonstrated, and discussed by participants at the meeting presented the very real possibility for implementation of a GISIN within the immediate future, with the acknowledgement of existing information systems as the initial building blocks. These technologies included Web Services, XML and HTML for translation and presentation of data on the Internet, transport protocols such as DiGIR, registries and gazetteers, language translation tools, and database structures.

- Members of the Inter-American Biodiversity Information Network (IABIN) Invasives Information Network (I3N) project presented their experiences in implementing catalogs of IAS, experts, and research projects in Argentina and Brazil. A database creation tool, the I3N Cataloger, was offered freely to GISIN participants along with the generous offer of a database structure (or empty database structured for IAS data), and trouble-shooting/implementation assistance from leading members of the I3N project.

- A relatively simple distributed approach has been undertaken by SERC and USGS in their design of the NISbase (Non-Indigenous Species Database Portal) system for fisheries data. With collaborator contacts made at the GISIN meeting, NISbase intends to expand its scope beyond its initial focus of marine and aquatic non-indigenous species. This effort holds promise as a simple approach to allowing searches of multiple databases through a single database Internet portal.

- Representatives from Europe and the Baltic Sea region provided a unique perspective in describing their experiences in developing IAS databases through the cooperation of multiple nations, often having disparate political and social backgrounds, but with the common goal of managing IAS. The ten year old Baltic Alien Species Database, and the recently initiated European Research Network on Alien Invasive Species (ERNAIS) were demonstrated and described for GISIN participants.

- National database systems from China and Colombia were presented as models for invasive species information management that may be taken to a regional level. A FISHbase presentation demonstrated how biodiversity databases can include information on non-native status and at the same time deliver information to users in 14 (or more) different languages. NatureServe emphasized the importance of using an assessment protocol to evaluate the impact of IAS on biodiversity, in order to prioritize use of limited resources.

- A key finding of the symposium is that invasive species databases are in fact datasets about native species as well – every alien or non-native organism is native somewhere. Coordination is not just needed among IAS databases, but among native biodiversity datasets, too. The information contained in numerous global and nationally-focused biodiversity databases constitute resources equal in value to those containing IAS information, with respect to IAS risk assessment, identification, management, control, and the implementation of a GISIN. This suggests that both the format and, in many cases, the information, already exists to assist other nations in anticipating and managing potentially invasive species.

- The greatest communication barrier among this international group was not language per se, but vocabulary. The importance of the use of multiple languages in IAS databases should not be minimized. European and Asian projects appear to have addressed this better than North American datasets. However, it was clear from presentations and discussion sessions that biologists and data experts generally have different approaches and have distinctly different lexicons for addressing invasive species issues.

- Invasive species database efforts are almost universally and chronically underfinanced. The resources available for addressing invasive species are always small relative to the impacts of invasive species on ecosystems and economies, and are a fraction of what is needed. This is most apparent in monitoring and research, and less so in management.

- Insufficient taxonomic expertise was a limiting factor in the development of all of these systems. This was of greatest impact on terrestrial systems, although marine invertebrates are also poorly known.

- A uniform approach to taxonomy is a necessity. It appears that the Integrated Taxonomic Information System (ITIS) is the standard of choice among the participants and is viewed as a system that is structured to have general application to nomenclature. It is not the only standard, however.

- Linking species information to on-line taxonomic keys may be a very effective starting point for addressing the dearth of taxonomic expertise. The DiscoverLife identification system and related reporting and mapping tools were demonstrated as a possible component of the GISIN.

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- An “expert database” is simply a list of contact information for individuals with expertise on invasive species for specific geographic regions or taxa. Such a database has been in place for the Baltic Region for over ten years. The largest cost related to an expert database is its maintenance.

- The organizational structure and possible affiliation(s) of the GISIN was a main point for discussion in one of the four breakout groups. The group analyzed and suggested modifications for a draft GISIN Organizational Framework document (Simpson, 2004). Several organizations were proposed as potential affiliates and will be considered by the GISIN iSC during their development of a work plan, including the IUCN Invasive Species Specialist Group, the Global Invasive Species Programme, the Global Biodiversity Information Facility, GloBallast, and others.

- International treaty organizations, particularly the Convention on Biological Diversity (CBD) and the International Plant Protection Convention (IPPC), are likely to be key players in the implementation of a genuinely global invasive species information network.

Conclusion

Participants completed a survey at the close of the meeting to evaluate their experiences. Thirty-eight completed surveys submitted by the participants indicated an overall successful meeting with the vast majority reporting that they had gained valuable knowledge and that their time at the meeting was well spent. Most participants indicated that they would attend any future gatherings related to the implementation of a GISIN, and several inquired as to the date and plans for the next meeting.

Many GISIN participants reported the initiation of promising partnerships and agreements with other organizations and information systems that had resulted from their participation in the meeting. Some indicated that they had come to the meeting with no plans or ideas for how to initiate the creation of a database for their nation or region, but that as a result of the meeting they now had many ideas to take home with them, an increased awareness of other activities occurring around the globe, and an appreciation for the presence of a network of professionals willing to support each in their efforts to combat IAS through information management. Those attending the meeting that represented systems in advanced stages of development also reported gaining new perspectives and ideas for the continued development of their systems, and an increased awareness of the valuable resources they may be able to offer to others in the form of expertise, data and technology.

The GISIN iSC is continuing the work towards the future development of a GISIN, and meeting participants are encouraged to pursue their discussions and collaborations at national and regional levels, and to report milestones and products resulting from them back to the larger GISIN community. The GISIN online Community continues to provide access to resources and a forum for online discussion in support of international collaborative efforts among GISIN members. The very nature of the threat posed by IAS has already highlighted a need for global information sharing among both affected and as yet unaffected nations. The GISIN will fulfill this need.

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