



Global Invasive Species Information Network

SUMMARY REPORT
Global Invasive Species Information Network (GISIN)
Data Providers' Workshop
2-5 June 2008
Athens, Georgia

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Introduction

Invasive alien species (IAS) are organisms--plants, animals, or pathogens--that are found outside their normal range and cause (or are likely to cause) harm to native organisms and/or humans. In some areas of the world, particularly on islands, these species cause the largest threat to our native ecosystems. Because of the enormous impact of IAS in this era of increasing globalization, many organizations are working internationally to facilitate cooperative efforts to prevent the introduction and spread of IAS. The Global Invasive Species Information Network (GISIN) consists of representatives from many of these organizations who are working together to create and implement a framework that allows searches across the world's invasive species databases, so that decision makers will have the information they need to prevent new IAS incursions and control or eradicate existing infestations.

GISIN has developed a specification for a communication protocol for sharing Biostatus, Occurrences, Species Profile URLs, Management Status, Impact Status, and Dispersal Status data. This specification uses existing standards (where available) for content such as species names and location data. Supporting documents, a working prototype, test bed, and prototype directory can be seen here: (<http://www.niiss.org/gisin>) and is based on feedback from 136 respondents from 41 countries (for results of the needs assessment survey, see <http://www.gisinet.org/Survey/SurveyResultsFinal.pdf>). To further implement this developing system, the GISIN seeks to actively recruit and train invasive species database managers and information providers in the use of our proposed methodology to achieve more effective information exchange.

Improving access to global invasive species information will also provide a significant deliverable to Biodiversity Task BI-07-02 set out by the Group on Earth Observations' Global Earth Observation System of Systems (GEO-GEOSS). This task characterizes the current requirements and capacity for invasive species monitoring, identifying gaps, and developing strategies for implementing cross search functionality among existing online invasive species information systems from around the globe. A GISIN map layer or portal will be especially important as a deliverable to the GEO Biodiversity Task 07-02 on invasive species monitoring.

To take the next step and implement the GISIN Protocol, a Data Providers' technical training workshop was held in Athens, Georgia, USA (hosted by Discover Life and The Polistes

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Foundation at the University of Georgia), to test the implementation of the GISIN Protocol and search prototype by connecting distributed online invasive species information systems through web services, exposing/indexing their data holdings for simultaneous search. This test implementation of the GISIN protocol addresses three of the six data models: Biostatus, Occurrences, and [Species] Profile URLs. This workshop was made possible through funding and logistical support from the Secretariat of the Group on Earth Observations (GEO), the U.S. Geological Survey's National Biological Information Infrastructure (NBII), and the U.S. National Aeronautics and Space Administration (NASA), with additional logistical support by The Polistes Foundation. The Steering Team of the Global Invasive Species Information Network and others from around the world are also collaborating on this effort.

Agenda

The workshop was held over a period of three days from June 2-5, 2008. Annie Simpson, Chair of the GISIN Steering Committee opened the workshop on June 2, describing issues associated with invasive species data integration and sharing; and outlining the history and objectives of GEO, the GISIN, and the workshop. Each information system representative gave a brief presentation describing their information system and progress in implementing the GISIN technologies. Participants started each day together and then split into a Web Developer group and a Content Manager group for more detailed discussions, with each group reporting back to the main group at the end of each day (see next page for detailed agenda).

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Agenda for the Global Invasive Species Information Network Data Providers' Workshop 02-05 June 2008, Athens, Georgia, USA

Hotel: The Georgia Center -- 1197 South Lumpkin Street / Athens, Georgia 30602			
Day	Time	Activity	
Mon 02 Jun	PM	Arrive, registration	
	7:00	Dinner and workshop pre-meeting	
Tues 03 Jun	6:30-9 AM	BREAKFAST	
	9:00	Welcome address (John Pickering)	
	9:15	General introduction to GISIN (Annie Simpson)	
	9:30	General introduction to GEO (Annie Simpson and Jeff Morisette)	
	9:45	Alpha Version of GISIN system: based on NISbase , IAS-PS , & TAPIR light (Jim Graham)	
	10:15	BREAK	
	10:30	Presentation of TAPIR light protocol (Jim Graham)	
	11:00	Data provider demonstration of how they implement GISIN (participants)	
	11:30	Explanation of goals and meeting's methods (Jim Graham)	
	12:30 PM	LUNCH	
	2:00	TWO BREAKOUT GROUPS	
		Web Developers	Content Managers
		Modify sample code to create functional GISIN Web service.	Discussion: what are our funding priorities for which data/info types?
3:15	BREAK	BREAK	
3:30	Resume; build individualized software solutions working one-to-one or in small groups.	Discussion: One portal or many? With what functions? What should the portal(s) look like?	
5:00	Adjourn.		
	7:00	Dinner	
Wed 04 Jun	6:30-9 AM	BREAKFAST	
	9:00	Plenary progress report; review of objectives and obstacles	
	9:30	RESUME BREAKOUT GROUPS	
		Web Developers	Content Managers
		Discuss GISIN Registry; continue coding; test searches & list issues.	Brainstorming: what are potential publications? Funding sources?
	10:15	BREAK	BREAK
	10:30	Resume; create summary of progress and issues still to be addressed; future plans for expansion.	Continue discussion from day one and requirements for data attribution.
	12:30 PM	LUNCH	
	2:00	PLENARY: all groups report on successes/failures of implementation	
	3:30	DISCUSSION: Data models & metadata--assurance of provider recognition/data ownership	
	7:00	Dinner	
Thu 05 Jun	6:30-9 AM	BREAKFAST	
	9:00	PLENARY: Synthesis & next steps; draft workshop report; adjourn workshop	
	12:00 noon	LUNCH	
	1:30	Depart	

Participants

Representatives from twelve invasive species information systems or GISIN data providers were hosted by the workshop. Each participant represented a content manager or database developer/programmer of an online invasive species information system that contains freely accessible invasive species data and information. Participants had a desire to share data and information and/or access data from other providers and were able to commit sufficient time after the meeting to apply the GISIN Protocol and connect their database to the GISIN Search Prototype and were willing to establish and maintain their organization's role as an ongoing GISIN data provider. Through their participation in this workshop, data providers helped improve the GISIN Protocol where necessary.

Each participant was asked to:

- Read the GISIN toolkit support documents found online at <<http://www.niiss.org/gisin>>
- Bring a graphical representation of their database structure including fields and content descriptions
- Familiarize (or re-familiarize) themselves with the software, standards (and their versions), and server technologies used to implement/serve their database
- Bring a copy of their database schema, database design, and/or database dictionary
- Bring a copy of their database (or have back door access to it via the Internet) to help with connectivity issues;

Selected participants were also asked to prepare a brief oral presentation about their information system.

Table 1. GISIN Data Providers' Workshop Participants

Name	Organization/Information System	Location	Geographic Scope
Eli Agbayani	FishBase < http://www.fishbase.org/ >	Philippines	Global
Christine Marie Casal	FishBase < http://www.fishbase.org/ >	Philippines	Global
Jim Bacon	Delivering Alien Invasive Species Inventories for Europe (DAISIE) < http://www.europe-aliens.org/ >	UK	Europe
David Roy	Delivering Alien Invasive Species Inventories for Europe (DAISIE) < http://www.europe-aliens.org/ >	UK	Europe
Michael Browne	Global Invasive Species Database < http://www.issg.org/database/welcome/ >	New Zealand	Global
Shawn Dalton	USGS Nonindigenous Aquatic Species database (NAS)	USA	USA

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Name	Organization/Information System	Location	Geographic Scope
	< http://nas.er.usgs.gov/ >		
Pam Fuller	USGS Nonindigenous Aquatic Species database (NAS) < http://nas.er.usgs.gov/ >	USA	USA
Jim Graham	National Institute of Invasive Species Science (NISS) < http://www.niiss.org/ >	USA	USA
Jeff Morissette	NASA, Goddard Space Flight Center	USA	Global
Olivier de Munck	Convention on Biological Diversity (CBD), Invasive Alien Species < http://www.cbd.int/invasive >	Canada	Global
John Pickering	University of Georgia, Discover Life < http://www.discoverlife.org/ >	USA	Global
Elizabeth Sellers	USGS National Biological Information Infrastructure (NBII) - Global Invasive Species Information Network (GISIN) < http://www.nbii.gov/ > < http://www.gisinetnetwork.org/ >	USA	USA/Global
Annie Simpson	USGS National Biological Information Infrastructure (NBII) - Global Invasive Species Information Network (GISIN) < http://www.nbii.gov/ > < http://www.gisinetnetwork.org/ >	USA	USA/Global
Brian Steves	NISbase, Smithsonian Institution < http://www.nisbase.org/ >	USA	USA/Global
Philip Thomas	Hawaiian Ecosystems at Risk project (HEAR) and Pacific Island Ecosystems at Risk (PIER) < http://www.hear.org/ > < http://www.hear.org/Pier/ >	USA - Hawaii/Pacific	USA/Hawaii/Pacific
Alejandro Moreno	INBIAR, Universidad Nacional del Sur, IABIN Invasives Information Network (I3N) < http://i3n.iabin.net/ >	Argentina	Argentina / Americas
Sergio Zalba	INBIAR, Grupo de Estudios en Conservación y Manejo (Gekko), Universidad Nacional del Sur, IABIN Invasives Information Network (I3N) < http://i3n.iabin.net/ >	Argentina	Argentina / Americas

Workshop Accomplishments

During the workshop, the participants discussed, prioritized, and documented a number of important issues. These issues ranged from how to effectively attribute and credit data owners at the individual record and dataset level, to how to overcome complex technology and interoperability issues associated with specific applications and programming languages.

Participants in the Web Developers group worked together to map the GISIN Protocol to their information systems, and then expose their mapped information systems to the GISIN Search. Participants executed test cases against the GISIN Search, verifying expected results and trouble-shooting any issues that were identified during the testing.

Participants in the Content Managers group discussed and prioritized issues ranging from interface design and usability to funding and partnership development, and sustainability of the GISIN.

By the close of the GISIN Data Providers' Workshop, five information systems had successfully mapped the GISIN Protocol to their datasets using the php (PHP Hypertext Preprocessor) toolkit developed by Jim Graham, exposed their data to the GISIN Search, and executed test cases against their datasets using the GISIN Search. However, there is still substantial work to be done to optimize the data provider systems and remove errors. Because this is a distributed system, access to data providers will require that they be online at the time of the search.

The workshop was concluded with a discussion of options for holding a future GISIN Data Providers' workshop. Participants agreed to schedule a second workshop, which will be convened at Elmira College, New York from August 9-12, 2008, with funding from the NBI and logistical support from the Polistes Foundation. Participants in this second workshop will include some that were involved in the first workshop held in June, as well as some additional representatives of information systems and organizations that were unable to participate in the first workshop. Discussion will address the elements of the three remaining data models (Impact Status, Management Status, and Dispersal Status) and ideas for the development of one or more GISIN portals.

Since the June GISIN Data Providers' Workshop, the organizers have received expressions of interest from additional organizations that host and manage invasive species information systems; as well as interest from organizations such as the US National Aeronautics and Space Administration (NASA) in the toolkits and underlying technologies that are being developed as part of this project. The Great Lakes Indian Fish and Wildlife Commission, a terrestrial and aquatic invasive species survey dataset covering three states and involving several state agencies, has also successfully implemented the GISIN Protocol and exposed their dataset to the GISIN Search. There are currently seven data providers online, with at least five more under development. The GISIN system currently serves 637 Biostatus records, 793,008 Occurrences, and 30,389 [species] Profile URLs.

A more detailed report will be drafted by the workshop organizers with assistance from participants and released after the workshop scheduled in August.

Appendix 1: GISIN Data Providers' Workshop Group Photo 04 June 2008



Figure 1: Back Row, left to right: Sergio Zalba, Olivier de Munck, Jeff Morisette, Michael Browne, David Roy, Annie Simpson, Christine Casal, Eli Agbayani. **Front Row, left to right:** Alejandro Moreno, Shawn Dalton, Brian Steves, Pam Fuller, Jim Bacon, Jim Graham, Philip Thomas, Elizabeth Sellers, and John Pickering.