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JOINT WORK PROGRAMME TO STRENGTHEN INFORMATION SERVICES ON INVASIVE ALIEN SPECIES AS A CONTRIBUTION TOWARDS AICHI BIODIVERSITY TARGET 9

*Note by the Executive Secretary*¹

I. INTRODUCTION

1. This document presents the joint work programme to strengthen information services on invasive alien species as a contribution towards Aichi Biodiversity Target 9 further to the Informatics Expert Meeting on Invasive Alien Species held on 5-6 September 2011 in Copenhagen.² This joint work programme has been elaborated by the following major information services providers:

- (a) The Global Biodiversity Information Facility (GBIF);
- (b) The Invasive Species Specialist Group of the Species Survival Commission of the International Union for Conservation of Nature (IUCN/SSC ISSG);
- (c) CABI;
- (d) FishBase;
- (e) Delivering Alien Invasive Species Inventories for Europe (DAISIE);
- (f) The European Network on Invasive Alien Species (NOBANIS);
- (g) The Global Invasive Species Information Network (GISIN);
- (h) The IABIN³ Invasives Information Network (I3N).

* UNEP/CBD/SBSTTA/15/1/Rev.1.

¹ This note has been prepared in close collaboration with the participants of the Informatics Experts Meeting on Invasive Alien Species held in Copenhagen on 5-6 September 2011 whose list of participants is available in annex II.

² http://www.nobanis.org/events_GBIF%20meeting.asp.

³ Inter-American Biodiversity Information Network.

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2. The purpose of this document is twofold:

(a) Describe how to improve the effectiveness of existing information services on invasive alien species through a series of coordinated activities carried out by specialized partners;

(b) Demonstrate that a reasonable amount of support can significantly contribute to the achievement of Aichi Target 9, and hence raise interest among Parties and other donors to facilitate the mobilization of resources for the full implementation of this joint work programme.

3. This document is structured as follows:

(a) Introduction (section I);

(b) Some background on the process that led to this joint work programme (section II);

(c) Requirements to achieve Aichi Biodiversity Target 9 (section III);

(d) Overview of existing information services (section IV);

(e) Individual activities (section V);

(f) Collaborative activities (section VI);

(g) Additional considerations (section VII);

(h) Provisional agenda of the Informatics Expert Meeting on Invasive Alien Species (annex I);

(i) List of participants who attended the Informatics Expert Meeting on Invasive Alien Species (annex II).

II. BACKGROUND

4. In paragraph 3 (b) of decision X/38, the Conference of the Parties requested the Executive Secretary to convene a meeting of the Ad Hoc Technical Expert Group to consider ways to increase the interoperability of existing information resources including existing databases and networks.

5. At the Ad Hoc Technical Expert Group meeting on addressing the risks associated with the introduction of invasive alien species as pets, aquarium and terrarium species and as live bait and live food held in Geneva from 16 to 18 February 2011, the Global Biodiversity Information Facility (GBIF) offered to organize an informatics expert meeting to clarify user requirements, identify priority activities and develop a roadmap for the development of a global informatics infrastructure for invasive alien species building on existing initiatives.

6. As the result, GBIF convened the Informatics Expert Meeting on Invasive Alien Species in Copenhagen from 5 to 6 September 2011. It was attended by a group of 10 experts involved in various initiatives on invasive alien species and experienced in the interface between informatics and environmental science. The agenda is available in annex I and the list of participants in annex II.

III. TOWARDS ACHIEVING AICHI BIODIVERSITY TARGET 9

7. The most critical use cases were discussed at the informatics meeting. A set of high-level priorities were identified and the following preliminary list was identified:

(a) Prevention of the introduction of invasive alien species (e.g., at border control, quarantine etc);

(b) Management/reduction of invasive alien species spread once introduced;

(c) Advice to policy and decision makers (e.g., evaluation of cost-benefits, impacts on the ecosystem and associated services etc.);

(d) Advice to civil society and communities.

8. The participants evaluated the various challenges confronting the existing information systems in meeting these high-level priorities. A set of high-priority challenges were identified and summarized as follows:

(a) Most of the existing information is scattered or dispersed across a variety of information systems in a variety of formats;

(b) Most of the existing information systems suffer from a lack of core resources to maintain and update existing information (e.g., species profiles, primary occurrences data);

(c) There is a need for increased visibility of existing tools and services;

(d) There is an urgent need to standardize terms used to describe information about invasive alien species (e.g., common standard schema, use of agreed vocabularies);

(e) Much of the information available requires some additional quality control by various experts in the field.

9. The participants also recognized that recent developments in information technology could overcome some of the existing challenges. It is also noted that in some fields such as primary biodiversity information, recent progress has enabled the sharing of a large volume of information relevant to the invasive alien species sector. Finally, the group acknowledged that much of the existing information on invasive alien species is accessible freely or open-source. Exceptions were identified, such as for some photo-libraries where copyright may apply.

10. While taking note of the agreed high-level priorities and challenges, the participants acknowledged that the existing information systems are seeking a common goal expressed in the Aichi Biodiversity Target 9 on invasive alien species: “By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment”. The participants agreed that within this target the focus in terms of information sharing should be on identification, creating and comparing species lists, and prioritization activities.

11. In terms of information services, the following is needed to achieve this target:

(a) Establish common documentation and annotation services of invasive alien species based on taxonomic references;

(b) Adoption of a common vocabulary service for the invasive alien species information adopted by all existing information systems;

(c) Data layers for native species ranges;

(d) Development of:

(i) A global registry of invasive alien species lists;

(ii) Invasive alien species profile information; and

(iii) Derived watch lists of invasive and potentially invasive species that are expected to invade new countries;

(e) Assessment of major data gaps in existing information systems and identification of the most critical data mobilization activities in the short-medium term;

(f) Development of a global index of invasive alien species primary biodiversity data⁴ integrated with GBIF and also incorporating absence data information;

(g) Further development of quality control procedures for information systems (including identification of original source of information and inclusion of other available metadata) to ensure optimum quality and accuracy of the content shared;

(h) Aggregation and analysis of relevant knowledge and information to inform decision makers of priority actions against the introduction and spread of invasive alien species;

(i) Capacity-building for the establishment of monitoring mechanisms based on existing distribution records and/or primary occurrence data to determine existing spread and abundance;

(j) Exploration of modelling techniques and other tools to predict future pathways and therefore support decision-making.

12. Some of the above requirements further depend on the following specific information services:

(a) Development of a Global Registry of Invasive Species (GRIS) that can facilitate accurate identification and act as an early warning system. GRIS would require a mechanism to handle synonyms, common names and taxonomic issues and include an efficient system for updates.

(b) In addition to a formal information exchange mechanism that involves databases and web-based resources included in a global register of invasive species information systems, it is critical to establish dynamic networks of experts and practitioners for informal exchange of information, new knowledge, innovations, shared experiences and lessons learned.

13. While the participants agreed on the list of priorities, the issue of funding sustainability was identified as the major constraint and should be addressed holistically across the IAS informatics for the full community and not only specifically to a given information system.

14. Furthermore, national perspectives are the driving force of invasive alien species issues. Ultimately, each country needs to know which risks it faces and which measures are most appropriate to prevent or control its biological invasions.

15. While looking at the roles and responsibilities of existing information systems, the participants expressed strong engagement in cooperation among existing efforts. To improve cooperation, the participants proposed that the leadership of key activities be organized as follows:

(a) Global information systems registry: The participants agreed that The GISIN List (<http://www.gisin.org/GISINlist.htm>) could play the role of a global registry of existing IAS information systems. The GISIN List provides a unified window to discover information located in the respective information systems. This registry or inventory will enable the effective linkage and information sharing from national to global levels.

(b) Global invasive alien species registry: The participants recommended that IUCN/SSC ISSG take the coordination role in the compilation and dissemination of invasive alien species lists in the form of an improved global registry of invasive alien species (GRIS) which compiles invasive alien species lists and enables the derivation of local invasive alien species lists.

(c) Global information exchange infrastructure: Taking into consideration the existing mandate of GBIF and its global infrastructure for the publishing, discovery and access of primary biodiversity data, names and metadata, the participants recommended that the GBIF infrastructure be expanded to be the underpinning primary biodiversity information infrastructure. In addition the

⁴ Primary biodiversity data are the digital text or multimedia data records that detail the instance of an organism – the “what, where, when, how and by whom” of the organism’s occurrence and recording.

participants recommended that GBIF continue to collaborate with the GISIN standards working group to provide support services for controlled vocabularies for invasive alien species, standardization of terms (i.e., Darwin Core and relevant extension), registry of resources (i.e., Global Biodiversity Resources Discovery System) as well as publishing tools (i.e., the Integrated Publishing toolkit, IPT).

(d) Capacity-building/training: Taking into consideration the extensive expertise of CABI in this field, the participants recommended that CABI take a leading/coordinating role in this regard at a global level. Participants recommended CABI cooperate with regional efforts such as I3N and ASEAN⁵ to build on regional invasive alien species expertise.

16. While defining potential roles and responsibilities in various areas, the participants recognized the urgent need to establish a coordinating body/group to oversee future developments. The participants noted that each of the participant information systems have a specific role, none of them alone could play such global coordinating role. Therefore the group recommended the establishment of a joint work programme under the Secretariat of the Convention on Biological Diversity to encourage all parties and other donors to contribute to this implementation plan. Such an approach would provide the required flexibility for each individual information system to operate effectively. The constitution of a liaison group on invasive alien species information services was also recommended as a mechanism to monitor progress in achieving targets set by the joint work programme as well as identifying new priorities.

IV. OVERVIEW OF EXISTING INFORMATION SERVICES

17. The tables below presents an overview of existing information services on invasive alien species.

<i>Name</i>	Information Services - IUCN/SSC Invasive Species Specialist Group
<i>URL</i>	http://www.issg.org ; http://www.issg.org/database
<i>Contact</i>	Shyama Pagad (s.pagad@auckland.ac.nz)
<i>Geographic coverage</i>	Global
<i>Background</i>	The Invasive Species Specialist Group (ISSG) – is one of five disciplinary groups of the Species Survival Commission (SSC) of the International Union for Conservation of Nature (IUCN). It aims to reduce threats to natural ecosystems and the native species they contain by increasing awareness of biological invasions, and of ways to prevent the introduction of, and control or eradicate, invasive species. The ISSG promotes and facilitates the exchange of invasive species information and knowledge across the globe ensuring the linkage between knowledge, practice and policy so that decision-making is informed.
<i>Services</i>	Information exchange resources: The ISSG publishes a biannual newsletter “Aliens”. “Aliens” features articles on issues related to invasive species submitted by global stakeholders. The ISSG has developed, manages and maintains the Global Invasive Species Database (GISD), an online, freely available premier resource of information on invasive species, their ecology, spread, management and impacts presented as species. The GISD focuses on invasive species that threaten native biodiversity and covers all taxonomic groups from micro-organisms to animals and plants in all ecosystems. The GISD aims to increase public awareness about invasive species and to facilitate effective prevention

⁵ The Association of Southeast Asian Nations.

	<p>and management activities by disseminating specialists’ knowledge and experience globally to a broad audience.</p> <p>The GISD was developed soon after the inception of the ISSG as part of the global initiative on invasive species led by the Global Invasive Species Programme (GISP). Species information is either supplied or reviewed by expert contributors from around the world. The GISD offers multi-language functionality and includes limited French language content. Six hundred and fifty of the 850 species profiles have been translated into traditional and simplified Chinese, facilitated by collaboration with the Biodiversity Research Centre of Academia Sinica.</p> <p>The GISD is undergoing a major restructuring that will result in it being developed as an “early warning and detection” tool, presenting annotated inventories of invasive species with the inclusion of framework for a global registry of invasive alien species in addition to more detailed species profiles.</p> <p>The ISSG has also undertaken to develop thematic datasets that can be used as analytical tools by stakeholders. These datasets will be made freely available on the ISSG information portal. Under construction is the thematic Island Biodiversity and Invasive Species (IBIS) database. IBIS provides summaries of invasive species threats to biodiversity on islands, any management action, and related conservation outcomes. Information provided also includes inventories of native species and invasive species on islands/island groups at a fine scale.</p> <p>An invasive species portal is being developed on the ISSG website recognizing the cross-cutting nature of the invasive species issue so global stakeholders can access information related to various sectors such as invasive species and biofuels, invasive species in aquaculture and marine-culture, wildlife health and invasive species, wetlands, forests. etc.</p> <p>Networking:</p> <p>The ISSG manages Aliens-L, a list server dedicated to invasive species that threaten biodiversity. Aliens-L allows users to freely seek and share information on invasive species and related issues.</p> <p>The ISSG operates a dynamic resource and information referral service that has grown over the years, continuing to meet the needs of stakeholders. The referral service provides invasive species and related information to stakeholders on request and facilitates linkages between global experts and practitioners. Requests are received from a wide range of stakeholders on a regular basis, ranging from Government departments consulting over the invasive status of species being considered for import, for example, to school students asking questions on biological invasions and invasive species for their school.</p>
<p><i>Key expertise</i></p>	<p>The key skill and knowledge base of the Invasive Species Specialist Group is its 197 global core members and the wider membership of over 3000 experts and practitioners who contribute to ISSG’s work. Included are policy, technical, scientific, practitioner, and information data and management experts.</p>

<i>Comments</i>	<p>The users of the information services of the ISSG vary from policymakers, decision takers, government experts, scientists, conservation managers, practitioners as well as civil society.</p> <p>The most critical use cases are (1) for prevention of the introduction of invasive alien species such as at border control, quarantine, (2) for management of invasive alien species spread once introduced, (3) for policy makers and decision makers (e.g., assessment of cost-benefits of control/eradication measures, assessment of ecosystem impacts etc.), (4) government experts as well as (5) community experts and civil society.</p> <p>The web-traffic report for the GISD is encouraging (100,000 hits per day with over 1,800 unique visitors per day) reflecting the importance of the resource to stakeholders. Over 1077 members are subscribed to the Aliens-L list with close to 160 messages exchanged every month.</p> <p>Between six to ten stakeholders contact the referral service for information requests and between five to eight contributions of research results and other invasive species related information are received every week, contributing to the resources and extensive archives of the ISSG.</p> <p>Limited resources and lack of strategic funding remains a challenge.</p>
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<i>Name</i>	Delivering Alien Invasive Species Inventories for Europe (DAISIE)
<i>URL</i>	http://www.europe-aliens.org
<i>Contact</i>	Helen Roy (hele@ceh.ac.uk)
<i>Geographic coverage</i>	Regional (Europe)
<i>Background</i>	<p>The website was developed as part of the Delivering Alien Invasive Species In Europe (DAISIE) project funded by the sixth framework programme of the European Commission (Contract Number: SSPI-CT-2003-511202).</p> <p>The general objectives of DAISIE are:</p> <ol style="list-style-type: none"> 1. To create an inventory of invasive species that threaten European terrestrial, fresh-water and marine environments; 2. To structure the inventory to provide the basis for prevention and control of biological invasions through the understanding of the environmental, social, economic and other factors involved; 3. To assess and summarize the ecological, economic and health risks and impacts of the most widespread and/or noxious invasive species; 4. To use distribution data and the experiences of the individual member States as a framework for considering indicators for early warning.

<i>Services</i>	<p>DAISIE provides a one-stop shop for information on biological invasions in Europe, delivered via an international team of leading experts in the field of biological invasions, the latest technological developments in database design and display, and an extensive network of European collaborators and stakeholders.</p> <p>DAISIE is a pivotal instrument in developing a Europe-wide strategy that encompasses both the geographical scale of the problem and unites the study of different taxa in marine, freshwater and terrestrial environments. With direct access to national knowledge bases throughout Europe, those addressing the invasive alien species challenge will easily obtain data on which species are invasive or potentially invasive in particular habitats, and use this information in their planning efforts. Data has been collated for vertebrates, invertebrates, marine and inland aquatic organisms as well as plants from up to 94 countries/regions (including islands) in the wider Europe. Over 248 datasets have been assembled and verified by experts, representing the largest database on invasive species in the world.</p> <p>Access to this resource is provided through three main search facilities:</p> <ol style="list-style-type: none"> 1. Search for information on one of the 10961 alien species occurring in Europe; 2. Search for one of the 2054 experts on biological invasions in Europe; 3. Search regions to explore the alien species threats across Europe, for 69 countries/regions (including islands) and 55 coastal and marine areas.
<i>Key expertise</i>	<p>DAISIE benefits from a wide community of experts in biological invasions throughout Europe. A full list of experts contributing to DAISIE is available at: http://www.europe-alien.org/aboutDAISIE.do?tab=5#. DAISIE has also been used extensively in research. The full list of research topics and scientific literature using/referring to DAISIE covers aquatics, fungi, invertebrates, vertebrates and plants.</p>
<i>Comments</i>	<p>DAISIE provides key opportunities for European research on alien species such as for:</p> <ol style="list-style-type: none"> 1. Comparative assessment of the state of the environment for aliens. 2. Inventory of more than 10,000 alien species recorded and over 40,000 invasion events. 3. Benchmark for monitoring future spatial and temporal trends. 4. Integrated methodology, terminology and approaches across all biomes. 5. Analyses of large datasets, with potential to address numerous questions on invasions. 6. Identification of key problematic species and their key pathways. 7. Identification of regions most affected and most at risk from invasions. 8. Analyses of historical patterns. 9. Reviews known ecological and economic impacts. <p>DAISIE, like many other IAS information systems, suffers from funding limitations. Long-term support is therefore essential to maintain such a valuable information system as well as to support its wide network of experts.</p>

<i>Name</i>	European Network on Invasive Alien Species (NOBANIS)
<i>URL</i>	http://www.nobanis.org
<i>Contact</i>	Helene Nyegaard and Christina Fevejle Nielsen (nobanis@sns.dk)

<i>Geographic coverage</i>	Region (Europe) covering: Austria, Belarus, Belgium, Czech Republic, Denmark, Estonia, Faroe Islands, Finland, Germany, Greenland, Iceland, Ireland, Latvia, Lithuania, the Netherlands, Norway, Poland, Slovakia, Sweden, and the European part of the Russia Federation.
<i>Background</i>	<p>NOBANIS was established as a network between authorities within the region. One of the main goals of NOBANIS is to provide tools for implementing the precautionary approach against the unintentional dispersal of invasive alien species. It also establishes regional cooperation to aid countries in eradication, control and mitigation of these species.</p> <p>The establishment of NOBANIS was a response to the recommendations that came out of the sixth meeting of the Conference of the Parties to the Convention on Biological Diversity in 2002. At that meeting, invasive alien species were made a priority and it was recognized that collaboration on this problem needed to be at both national and international levels.</p> <p>The NOBANIS network has a national focal point in each of the participating countries. The network has grown over time, and more countries will join in near future.</p>
<i>Services</i>	<p>The web portal provides access to information about the alien and invasive species of the region. This includes a central database with updated information from all the NOBANIS countries, factsheets of the most invasive species in the region, access to an identification key to marine invasive species, access to extract country statistical charts on the accessible set of data, newsletters, a species alert function for new invasive species to the region, an invasive species photo bank, and information about the national legislation on invasive alien species in the region.</p> <p>The database of alien species in NOBANIS is designed to identify species that are invasive at present and species that may in the future become invasive. The database also provides information on how the species is introduced, its distribution in the region, what habitats it may inhabit, what ecological and socio-economical effects it may have and references to relevant literature.</p>
<i>Key expertise</i>	NOBANIS provides Ministerial and research expertise at national levels. The NOBANIS taxonomic expertise covers terrestrial, marine and freshwater habitats, covering all groups of organisms. NOBANIS contains information on more than 8,000 species.
<i>Comments</i>	The funding for NOBANIS started from project funding for the period 2004-2008. Today most of the funding is received through voluntary contributions from member countries and through various projects' participation. The databases are owned, maintained, updated and uploaded by member countries. The NOBANIS Secretariat is composed of one person, and operational costs cover the maintenance of the portal and Secretariat. Each national database is built according to an authority file with a set vocabulary. The main advantages of NOBANIS are (1) its low maintenance costs, (2) the regular updates from participating countries, (3) and its large network of experts both at the ministerial and research levels. NOBANIS has extensive collaboration with DAISIE and GISD.

<i>Name</i>	CABI; Invasive Species Compendium
<i>URL</i>	http://www.cabi.org/isc
<i>Contact</i>	Gareth Richards (g.richards@cabi.org)
<i>Geographic coverage</i>	Global

<i>Background</i>	<p>CABI is a not-for-profit international organization that provides information and applies scientific expertise to solve problems in agriculture and the environment. Activities include scientific publishing, development projects and research, capacity-building, and microbial services. In 2001, CABI's Compendium Programme Consortia identified a need for a Compendium on Invasive Species in recognition of the threat posed by invasive species to the global economy and environment, which coincided with a similar recognition by the United States National Invasive Species Management Plan. The Invasive Species Compendium (ISC) is aimed at being an essential tool for: researchers/lecturers and students/resource and environment managers in agriculture, forestry, rangeland, urban land, rivers, lakes and coastal waters/policy makers, agricultural research centres and extension officers/quarantine officers/crop protection and animal health practitioners (both public and private sector)/weed specialists. The Compendium is designed to help a wide variety of users to:</p> <ul style="list-style-type: none"> • Save time, by providing instant access to vital information • Prepare lecture notes, reports, presentations and public information resources • Compile maps, graphs and tables and perform statistical analyses • Teach/train/study • Advise others • Carry out risk analysis <p>To fund the development of the Compendium platform and content, a consortium of a wide range of organizations, including government departments, NGOs and private companies, raised \$3M. The beta version of the Compendium was launched in May 2011 and is open access. Through extension of the ISC Development Consortium, resources to ensure the maintenance and updating of the Compendium are secured until 2016.</p>
<i>Services</i>	<p>CABI produces the Invasive Species Compendium (ISC), which is a one-stop shop for information on invasive species and their effects on natural and managed ecosystems. The Compendium is aimed at having a global coverage for all natural and managed ecosystems. It covers all relevant taxa including animals and plant pathogens (excluding human pathogens). Currently, the Compendium focuses on the highest impact invasive species and already covers more than 1,500 species with detailed datasheets. In addition to species profile datasheets, the Compendium contains a searchable bibliography of >70,000 references, full text papers and reports, images, a glossary of terms and links to picture libraries and identification keys.</p>
<i>Key expertise</i>	<p>The datasheets are based on verified expert-authored information. Additional sources are used for further updating such as the European and Mediterranean Plant Protection Organization (EPPO), the World Organisation for Animal Health (OIE), FishBase, CAB Abstracts as well as commissioned author reviews for less recent datasheets. The ISC has benefitted from CABI's experience in building four previous compendia on crop protection, forestry, animal health and production and aquaculture. CABI also builds and maintains CAB Abstracts; the world's most comprehensive agricultural and environmental bibliographic database, which now has full coverage of invasive species, and CAB Thesaurus; an authoritative controlled vocabulary of over 135,000 indexing terms.</p>

Comments	Most of the interoperability challenges are related to the lack of comprehensive controlled vocabularies within the IAS expert community. Therefore the linkages to other information systems have proven to be problematic in particular with other relevant IAS information systems. CABI would welcome an authoritative source, in particular, of defined vocabulary relating to invasive species to facilitate data exchange between the ISC and other databases (including those not primarily “invasive species” databases), improving the efficiency of updating, and as an enhancement to the CAB Thesaurus.
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Name	FishBase
URL	http://www.fishbase.org
Contact	Christine Casal (c.casal@fin.ph)
Geographic coverage	Global
Background	<p>FishBase work continues under the institutional responsibility of the FishBase Information and Research Group, Inc. (FIN) since January 2011. It was initially created and developed at the International Center for Living Aquatic Resources Management (ICLARM now The WorldFish Center at Penang, Malaysia) in collaboration with the Food and Agriculture Organization of the United Nations (FAO) and many other partners, and with core funding from the European Commission (EC). The FishBase Consortium, a group of nine research institutions, continue to provide financial support and scientific direction to FishBase, with the Leibniz Institute of Marine Sciences (IFM-GEOMAR) functioning as the coordinating body since it was established in 2000.</p> <p>FishBase is a comprehensive information system on finfish. It includes information on over 32,000 species and subspecies (finfish), 291,300 common names, 52,600 pictures, 45,750 references, 1,850 collaborators. In addition to FishBase, the FBC also oversees the development and management of two other global databases (SeaLifeBase and AquaMaps), the work also being carried out in FIN.</p> <p>SeaLifeBase (http://www.sealifebase.org), contains information on 117,300 marine species (excluding fishes), 25,400 common names, 9,700 pictures, 15,350 references, 200 collaborators.</p> <p>AquaMaps (http://www.aquamaps.org) contains information on at least 11,500 species mapped, 8,600 for finfish and 2,800 for non-fish (marine invertebrates, all marine mammals, turtles, snakes), 47 algae (ver. 08/2010).</p>

<i>Services</i>	<p>FishBase and SeaLifeBase offer a wide range of information on aquatic species. FishBase also provides Species Summary Pages (Morphology & Physiology, Genetics & Aquaculture, Trophic Ecology, Population Dynamics, Distribution, Reproduction & Life History, Fish as Food and other related information) as well as fisheries and resource management tools.</p> <p>With regard to Invasive Alien Species, FishBase provides information on the species distribution for more than 4,500 species which have been introduced beyond their natural waters. It also provides information on their natural distribution, their establishment, use and biological characteristics. Furthermore, FishBase provides reports on: species introduced to and established in countries; species which may be able to establish in natural waters of a country; and species with highest number of reports of adverse impacts in countries. It also has species-species links with other online invasive species databases. AquaMaps provides model-based, large-scale predictions of known natural occurrence of aquatic species, its predictions of suitable habitats may be used as an indication for the species probable establishment in a new area. The higher the probability of occurrence the higher the likelihood of its establishment.</p>
<i>Key expertise</i>	<p>FishBase is a decision-support tool for fisheries and resource management with information taken from over 45,750 references as well as over 1,850 collaborators who have provided and checked information on species distribution and biology.</p>
<i>Comments</i>	<p>The majority of FishBase users traditionally come from the sectors of the society including policy and decision makers, researchers, academe, and students. However, it is becoming evident that NGOs, agencies and institutions with advocacies on biodiversity, conservation, and ecosystems approach to sustainable development are also important users of FishBase.</p> <p>FishBase users usually search for information about species, which are available in either condensed form (species profiles) or particular data; reports and even linkage to other information sources. The FishBase website has 390,000+ unique visitors, 1.2M+ hits per day, totalling to over 38M hits in June 2011 alone.</p> <p>Keeping the information within the system up-to-date requires regular and continuous funding to support personnel mainly qualified (2 PhD, 5 MSc and 3 BSc) and experienced (more than 10 years in the field) research staff with fisheries and biology backgrounds, and database and web programmers (5).</p>

<i>Name</i>	Global Invasive Species Information Network (GISIN)
<i>URL</i>	http://www.gisin.org
<i>Contact</i>	Annie Simpson (asimpson@usgs.gov)
<i>Geographic coverage</i>	Global

<i>Background</i>	<p>The Global Invasive Species Information Network (GISIN) was formed in April 2004 at an international meeting held in Baltimore, Maryland, USA, after <u>several years of related meetings</u>.</p> <p>In February 2006, the Secretariat of the Convention on Biological Diversity, the Global Biodiversity Information Facility (GBIF), the government of Morocco and other organizations collaborated to convene an Experts Meeting to build on recommendations made in the CBD information document <u>UNEP/CBD/ COP/6/INF/18</u>, "Scientific and Technical Cooperation and the Clearing-house Mechanism: Report of the Joint Convention on Biological Diversity/Global Invasive Species Programme Informal Meeting on Formats, Protocols and Standards for Improved Exchange of Biodiversity-related Information" for the establishment of the GISIN protocol.</p> <p>In 2008-2009, three GISIN data-provider meetings were held to generate simple data models using controlled vocabulary to effectively share invasive species information among diverse online databases.</p> <p>The proposed data solutions and the GISIN itself are non-proprietary and available for use by all who are interested.</p>
<i>Services</i>	<p>GISIN provides an information exchange protocol designed for sharing specific types of information (or data models) directly relevant to invasive alien species (Occurrences, Species Status, Species Resource URLs, Dispersal, Impacts, and Management) at http://www.gisin.org.</p> <p>There is also a registry of invasive alien species online information systems called The GISIN List at http://www.gisin.org/GISINlist.htm.</p> <p>GISIN-L is a listserv for invasive species information managers. GISIN-tech is a listserv for developers of the GISIN protocol and data providers to the GISIN system.</p>
<i>Key expertise</i>	<p>The Global Invasive Species Information Network (GISIN) and partners are building the standards needed to support an information network for sharing and exchanging invasive species data, information, knowledge, and related metadata, for all organism types. The GISIN aims to connect, through a distributed approach, as many existing and new invasive species information systems as possible throughout the world, by promoting common standards, protocols, and services designed to achieve connectivity.</p>
<i>Comments</i>	<p>The GISIN is a virtual network of invasive species scientists with a volunteer-based global steering committee.</p>

<i>Name</i>	IABIN Invasives Information Network (I3N)
<i>URL</i>	http://i3n.iabin.net
<i>Contact</i>	Sergio Zalba (szalba@criba.edu.ar), Christine Fournier, I3N Coordinator (I3N@usgs.gov)
<i>Geographic coverage</i>	Americas and the Caribbean
<i>Background</i>	I3N is a thematic network established by the Inter-American Biodiversity Information Network (IABIN) to facilitate cooperation on IAS information discovery, collection, management, and distribution and to provide education and training on the use of tools developed and freely distributed by the I3N. The Biological Informatics Program of the United States Geological Survey (USGS) coordinates it.

<i>Services</i>	<p>I3N integrates information from countries throughout the Americas to support the detection and management of invasive alien species. It also provides capacity-building and an array of electronic tools for information management and increased access to information.</p> <p>I3N delivered capacity-building workshops to 17 countries in South and Central America and the Caribbean and to 10 other countries in South Eastern Asia. Most countries in the Americas publish and share species information on their own web sites using the I3N Web Template.</p> <p>I3N also developed risk analysis and pathways and vectors analysis tools for plants and terrestrial and freshwater vertebrates, and distributed them at the continental level.</p>
<i>Key expertise</i>	Capacity-building, national databases, networking, risk analysis.
<i>Comments</i>	I3N databases provide IAS, contacts, references, and projects information that is validated and maintained by in-country experts.

<i>Name</i>	Global Biodiversity Information Facility (GBIF)
<i>URL</i>	http://www.gbif.org
<i>Contact</i>	Samy Gaiji (sgaiji@gbif.org), David Remsen (dremsen@gbif.org), Vishwas Chavan (vchavan@gbif.org) and Éamonn Ó Tuama (eotuama@gbif.org).
<i>Geographic coverage</i>	Global
<i>Background</i>	GBIF serves the primary, scientific biodiversity information indispensable for managing the global environmental systems on which all of life depends. As a unique, government-initiated global endeavour, GBIF brings people, countries and organizations together as both participants and beneficiaries to accomplish our vision and mission.
<i>Services</i>	<p>GBIF provides three core services and products:</p> <ol style="list-style-type: none"> 1. An information infrastructure – an Internet-based index of a globally distributed network of interoperable databases that contain primary biodiversity data – information on museum specimens, field observations of plants and animals in nature, and results from experiments – so that data holders across the world can access and share them; 2. Community-developed tools, standards and protocols – the tools data providers need to format and share their data; 3. Capacity building – the training, access to international experts and mentoring programs that national and regional institutions need to become part of a decentralized network of biodiversity information facilities.

<i>Key expertise</i>	<p>GBIF provides expertise in a variety of fields and in particular in the following:</p> <ol style="list-style-type: none"> 1. Data standardization. 2. Interoperability. 3. Names and taxonomic nomenclatures/resolution. 4. Informatics services (e.g., data publishing, discovering and access). 5. Capacity-building. 6. Engagement with a wide network of participants at national, regional and thematic levels. 7. Promote use of primary biodiversity data by scientists (e.g., invasive alien species, agrobiodiversity, adaptation to climate change, disease vectors, protected areas, IUCN Red Listing, etc.).
<i>Comments</i>	

V. INDIVIDUAL ACTIVITIES

18. The tables below describe the activities that each partner plans to undertake, provided that additional funds are made available when needed.

1 IUCN ISSG			
#	<i>Activities</i>	<i>Justification / Impact</i>	<i>Is additional cost required?</i>
1.1	<p>Develop a restructured version of the GISD including a framework to include a global register of invasive species. Progress work on reciprocal links with the IUCN Red List of Threatened Species.</p>	<p>The GISD, developed in early 2000, is recognized as a significant repository of invasive species information by global conservation organizations. The GISD receives encouraging web traffic averaging 105,000 hits per day with over 4000 unique visitors.</p> <p>The restructuring of the GISD has been undertaken to present increased information components, better search functionality, and improve user interaction in addition to its development as an early warning tool by including a framework structure for a global registry of invasive alien species.</p> <p>The restructuring will also progress work on developing links with the IUCN Red List of Threatened Species in order to provide increased information to users on the impacts of invasive species on threatened species.</p>	No
1.2	<p>Continue the development of the Global Registry of Invasive Species (GRIS) and make it available online, as a new component of GISD, established through cooperation among major data providers.</p>	<p>Population of the GRIS with inventories of invasive alien species, with full acknowledgement of data sources. It is envisaged that the GRIS will serve as an early warning tool and play a critical role as the knowledge base underpinning the prevention and spread of invasive alien species.</p>	Yes

1.3.	Continue the development of the thematic database on island biodiversity and invasive species to include information from global oceanic islands and establish links with the Global Islands Database.	The thematic island database IBIS is envisaged as a decision support tool and a platform for the exchange of best practice for the use of practitioners involved in the management of the invasive species threats on oceanic islands where the major threat to biodiversity is the spread of invasive alien species. Information presented includes inventories of invasive species and threatened species at a fine island scale, management action with links to best practice, project documents, etc.	Yes
1.4	Establish Invasive Species Information Exchange and Network Nodes in three of the major island groups: the Pacific, Western Indian Ocean and Caribbean with the ISSG in New Zealand serving as a central hub.	<p>The remoteness of the islands, their small physical size, limited capacity and resources makes it especially challenging to manage these threats. Credible knowledge and information underpins effective management of ecosystems and good decision-making. Knowledge of species, state of ecosystems and services they provide, threats to biological diversity are essential to inform practice and policy at all levels. Limited capacities, lack of awareness and limited information availability are recognized as barriers to conservation.</p> <p>A regional approach to the management of data and information related to biodiversity and conservation through the establishment of a regional biodiversity hub/node can be vital to the region and cost-effective for these island groups in their endeavor to manage ecosystems and loss of biodiversity. A regional approach to the collation, storage, dissemination and maintenance of biodiversity data and information will provide consistent output to all stakeholders resulting in effective measuring of trends and indicators on the state of the environment across all island countries of the region. This will facilitate better decision-making and reporting. A critical part of the hub/nodes role will be networking. The dynamic exchange of information, experiences and lessons learned will result in better networking and establishment of links and collaborations amongst stakeholders across the region.</p> <p>The ISSG is keen to take the lead in this initiative.</p>	Yes

2 DAISIE			
#	Activities	Justification / Impact	Is additional cost required?
2.1	Update IAS inventory.		No
2.2.	Contribute to the development of indicators to report on trends.		Yes
2.3	Modelling.		Yes

3 NOBANIS			
#	Activities	Justification / Impact	Is additional cost required?
3.1	Update the database.	To ensure that data is reliable and contains the latest knowledge and findings.	No
3.2	Develop data control tools to identify inconsistencies and correct them. This could be synonyms, misspellings, species present in one country but absent in neighbouring countries, etc.	Will ensure an even higher level of data quality and will enhance search function quality.	Yes
3.3	Provide support to the least developed EU Countries.	Will add important data to the network database and ensure a more complete overview on European IAS. Also an important step on the way to be able to create a reliable early warning system.	Yes
3.4	Develop a simple early warning system for EU countries.	An important and useful tool in the battle against IAS.	Yes
3.5	Further develop a more flexible graphic presentation of the information in the database to allow for the comparison of all types of data within the database.	Make it possible for all to make graphic presentations of all types of information available in the NOBANIS-database. It should be possible to compare one country either against all "NOBANIS-countries" or on a country-by-country basis. This is useful regarding presentations for the public, decision makers, etc.	Yes
3.6	Further expand the IAS photo bank on the NOBANIS website.	To provide free access to photos of invasive species, management of invasive species and pathways of introduction. Photos are often requested by media and when presenting IAS issues for the public or decision makers.	No
3.7	New fact sheets on invasive species.	Regularly update existing fact sheets and add new fact sheets on invasive species.	Yes

4 CABI			
<i>#</i>	<i>Activities</i>	<i>Justification/Impact</i>	<i>Is additional cost required?</i>
4.1	Collect data in relation to pathways. Data collected will be published in the ISC in appropriately designed datasheets, hyperlinked to other relevant sources of information within and external to the Compendium.	Part of the ongoing development of the Invasive Species Compendium (ISC) to enhance potential for pathway risk analysis to contribute to the effectiveness of quarantine control and environmental and agricultural protection agencies, and to feed into policy decision-making.	No
4.2	Provide species data by country. Supply the Global Registry of Invasive Species (GRIS) with a list of invasive species occurrences, listing species against countries or sub-national regions, with associated authoritative reference citation and a hyperlink to the associated species datasheet in the Invasive Species Compendium (ISC). Costing is for a one-off supply of data.	Contribution of authoritative data to a global registry of invasive species, which could serve as a risk prioritization tool for policy makers and quarantine control and environmental and agricultural protection agencies.	No
4.3	Communicate the activities of this group of IAS data providers through a dedicated listserv to the Invasive Species Compendium Development Consortium.	Developments implemented and improvements in the interaction between the data providers in this work programme will be communicated to over 24 development assistance, government, and private sector organizations ⁶ with vested interests in the development and growth of knowledge of IAS that can inform policy and management decisions.	No

⁶ Invasive Species Compendium Development Consortium: Australian Centre for International Agricultural Research (ACIAR); Australia, Group Membership (CRCNPB, GRDC, HAL, IACRC); Canadian Food Inspection Agency; Canadian Forest Service; Canadian International Development Agency; India, Ministry of Agriculture; Malaysian Agricultural Research and Development Institute; Mexico, Comisión Nacional para el Conocimiento y Uso de la Biodiversidad; Monsanto; Netherlands Ministry of Economic Affairs, Agriculture and Innovation; Secretariat of the Pacific Community (SPC); Swiss Agency for Development and Cooperation; Syngenta Crop Protection; United Kingdom Department for Environment, Food and Rural Affairs (Defra); United Kingdom Department for International Development (DFID); CABI; Forum for Agricultural Research in Africa (FARA); US Agency for International Development; US Department of Agriculture, Agricultural Research Service (ARS); United States Department of Agriculture, Animal and Plant Health Inspection Service (APHIS); US Department of Agriculture, Foreign Agricultural Service (FAS); United States Department of Agriculture, Forest Service (FS); United States Department of Agriculture, Invasive Species Coordination Program; United States Department of Agriculture, Natural Resources Conservation Service; United States Department of Agriculture, Rural Development; United States Department of Commerce, NOAA's National Ocean Service; United States Department of the Interior, Fish and Wildlife Service (FWS).

4.4	Join the GISIN network. To apply tools available on the GISIN website to become a data provider, upload and share information through the GISIN Data Portal. Cost estimate is subject to a full analysis of necessary staff time required to enable this process.	To fully integrate with the community of information providers on invasive species by joining the global registry of invasive species information systems.	Yes
4.5	Mine the CAB Abstracts to develop indicators.	The CAB Abstracts database can be mined by database experts to investigate relationships between key identifiers, which could include species (for example, invasive species, threatened species or host animals), country or vector pathways. This technique can be used to produce useful data to provide indicative answers or solutions to well thought out questions.	Yes
4.6	Organize capacity-building activities. These activities could include capacity-building workshops, but also webinars and online training sessions implemented in partnership with other invasive species information providers.	It is envisaged that capacity-building workshops will be held as part of the dissemination programme for the ISC. These could be used to introduce stakeholders to complementary information systems and to facilitate data collection from locations where data on invasive species is lacking such as sub-Saharan Africa, the Caribbean and the Pacific. Workshop activities could be supplemented with webinars and online training implemented in collaboration with other invasive species information providers.	Yes

5 FishBase			
#	<i>Activities</i>	<i>Justification / Impact</i>	<i>Is additional cost required?</i>
5.1	Develop watch lists for species detected as “trace” to follow their trends in case they are introduced	Lists of species which may establish upon introduction are not readily accessible more so in developing countries where data is often limited, inaccessible or absent. This would be some sort of a desktop risk assessment, which is readily available at a click of a button. Decision makers can readily put some of the species on the watch list and put up precautionary actions for them.	No

5.2	Prepare statistics at the national level.	Knowing which species have been introduced or have established is important in developing management plans.	No
5.3	Develop modelling tool to fill information gaps for certain countries, based on information on neighbouring countries.	The development of algorithms for predicting species establishment using environmental envelopes of species in AquaMaps with FishBase and SeaLifeBase data would be very useful in data-poor areas, especially so for species brought in through ballast water.	Yes
5.4	Exhaust/incorporate information on invasive species for the ASEAN region.	Several invasive species databases exist for different regions of the world, but none for Southeast Asian countries. Southeast Asia is known, as a hotspot for biodiversity and the identification of probable threats is very critical to its conservation and management. Exhausting information for species introductions in the area would be very useful to assist these (mostly developing) countries in managing their ecosystems.	Yes

6	GISIN		
#	<i>Activities</i>	<i>Justification/Impact</i>	<i>Is additional cost required?</i>
6.1	Expand and update The GISIN List of online invasive species information systems.	Serves as a global registry of invasive alien species information systems.	No
6.2	Improve the user interface of the search function.	Aggregates data from diverse information systems for analyses of occurrences, species status, and URLs of species resources (risk assessments, images, species pages, etc).	No
6.3	Submit GISIN vocabularies to the GBIF community at http://vocabularies.gbif.org .	Controlled vocabularies provide the basis for improved information sharing.	No
6.4	Finalize the implementation of the GISIN protocol by implementing the 3 pending data models.	Management, impact, and dispersal statuses will increase the kinds of data that can be shared among information systems.	Yes
6.5	Tailor search results to user needs.	Fulfilling use case specifications for modelling and risk assessment will better inform decision makers.	Yes

7 I3N			
#	<i>Activities</i>	<i>Justification / Impact</i>	<i>Is additional cost required?</i>
7.1	Publish geo-referenced occurrences online for countries that have not yet done it.	Geo-referenced data will allow the analysis of the present and potential impact of invasive species at the regional level and provide useful information for projecting the distribution of IAS at a global scale.	Yes
7.2	Consolidate national initiatives regarding the management of IAS in Latin America	Improve the management of invasive species data and use it for implementing risk and vectors and pathways analysis.	Yes
7.3	Expand the I3N network to Caribbean countries.	The experience gained in Central and South America, as well as in some Caribbean countries like Jamaica. The Dominican Republic and Bahamas can be easily expended to the other countries in the region to develop a regional network for managing common threats.	Yes
7.4	Prepare risks assessments for common species of special concern.	Countries in the region share a set of invasive or potentially invasive species. Risk analysis can be developed using I3N tools (as Brazil has already done for their IAS) and their results distributed to other countries.	Yes
7.5	Distribute mapping tools.	Basic mapping tools have been developed by I3N using the geo-referenced information in national databases. Their distribution would result in a better understanding of the problem in the Americas.	Yes
7.6	Promote the implementation of national strategies for managing invasive species.	I3N has been helping countries to integrate information on IAS into a set of regulatory and management strategies (like creating an official national list of invasive species, design national committees, etc.). Expanding these activities would result in an improved management of the problem at national and regional levels.	Yes

8 GBIF			
#	<i>Activities</i>	<i>Justification / Impact</i>	<i>Is additional cost required?</i>
8.1	Incorporate invasive alien species extension in the GBIF registry.	The GBIF registry holds a series of extensions to the Darwin Core standards. Such extensions enable the publishing of additional concepts required by a specific community. Such registration will enable all publishers of primary biodiversity data to use a common set of concepts agreed by the community.	No
8.2	Promote the use of the GBIF Integrated Publishing Toolkit (IPT) to publish primary biodiversity data for invasive alien species.	The GBIF IPT offers a simple and efficient tool to rapidly publish primary biodiversity data through the GBIF global infrastructure. The adoption of the IPT will greatly improve the publishing, discovery and access to a larger volume of primary biodiversity from a large spectrum of data publishers.	No
8.3	Tag species based on IAS criteria and develop a list of species-native areas to extract invasive alien species by country.	Based on information in the IAS registry (GRIS), GBIF will tag existing primary biodiversity data and enable the rapid discovery of these resources through the GBIF data portal. Such activity will greatly improve the identification of relevant IAS information shared by the GBIF community.	No
8.4	Promote the use of the Global Name Architecture (GNA).	The GNA offers a unique infrastructure for the identification of names used in various taxonomic references and/or checklists. Such a resource will be of great value in the identification of existing/new names shared within the IAS community.	No
8.5	Contribute to the mobilization of IAS primary biodiversity data through appropriate data mobilization strategies.	Through the GBIF-DIGIT work area, GBIF will raise awareness about gaps in existing IAS information within the publisher community and encourage the mobilization of new information based on agreed priorities.	No

8.6	Provide service through the GBIF data portal and services to the IAS community.	Through the existing GBIF data portal, millions of primary biodiversity data on IAS are already accessible. Through proper tagging and identification of relevant resources/records, the GBIF data portal will offer services to easily discover and retrieve IAS primary biodiversity information (e.g., to GISIN, GISD, I3N, DAISIE, FishBase, NOBANIS, etc.)	No
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VI. COLLABORATIVE ACTIVITIES

19. The table below describes the activities to be undertaken collaboratively, provided that additional funds are made available when needed.

#	<i>Activities</i>	<i>Justification / Impact</i>	<i>Is additional cost required?</i>
1	Make available on the GBIF website a "list of lists" by collecting existing invasive species names from various providers.	The current use of different names for the same species has made it difficult to compile comprehensive information on invasive species. The first step in resolving this issue is the preparation of an inventory of all names by using an existing tool from the GBIF.	No
2	Make available on the GBIF website a tool that provides synonyms of given species names.	The GBIF has a vocabulary server that can be used to define synonyms of species names. Establishing synonyms is the second step to resolve the naming issue.	No
3	Link invasive species names to authoritative references such as the Encyclopedia of Life.	Even if there is no authoritative reference covering all types of species, linking to authoritative references whenever possible improves terminology and facilitates consistent information sharing.	No
4	Develop a mechanism that enables the GRIS to automatically get species synonyms by accessing the corresponding GBIF service.	The GRIS should be able to immediately provide synonyms of registered species names to facilitate cross-references.	Yes
5	Develop a mechanism that enables each partner to automatically register new species to the GRIS.	To fulfil its role of global registry in a sustainable way, the GRIS should have an efficient mechanism to be kept up-to-date.	Yes

#	<i>Activities</i>	<i>Justification / Impact</i>	<i>Is additional cost required?</i>
6	Investigate how each partner can benefit from the GISIN protocol.	The GISIN protocol has been created specifically to exchange information on invasive alien species. It is based on the widely accepted Darwin Core standard, and has been designed in a collaborative way that takes into account existing databases. Partners that implement it will expose their data in a standard way, which will facilitate global discovery, access and cross-references.	Yes

VII. ADDITIONAL CONSIDERATIONS

20. The following consideration should be taken into account when implementing this joint work programme:

- (a) How to mobilize resources;
- (b) How to coordinate the implementation;
- (c) How to review the progress made and plan further activities;

21. Partners will continue to mobilize their own resources. In parallel, the Secretariat of the Convention on Biological Diversity can promote this joint work programme to encourage Parties and other donors to contribute to its implementation.

22. Each partner will be responsible for the activities that it can implement individually. Given its global role and expertise, the GBIF has the capacity to act as a neutral technical coordinator. The Parties should determine any involvement of the Secretariat of the Convention on Biological Diversity in this process.

23. The progress made under this joint work programme should be reviewed through the mechanisms designed to monitor progress towards the achievement of the Aichi Biodiversity Targets.

*Annex I***AGENDA*****Informatics Expert Meeting on Invasive Alien Species
Copenhagen, 5-6 September 2011***

<i>Day 1</i>	<i>Monday 5 September 2011</i>
9 a.m. – 9.10 a.m.	Welcome
9.10 a.m. – 9.30 a.m.	Meeting objectives & approval of meeting agenda (Samy Gaiji, GBIF)
9.30 a.m. – 10.30 a.m.	Session A: Presentations of key information systems and tools. (Chair: Samy Gaiji, GBIF) <i>NOBANIS (Helene Nyegaard)</i> <i>DAISIE (Helen Roy)</i> <i>FISHBASE (Christine Casal)</i> <i>GISIN (Annie Simpson)</i>
10.30 a.m. – 10.45 a.m.	Coffee break
10.30 a.m. – 11.30 a.m.	Session A: (<i>continued</i>) <i>GISD (Piero Genovesi)</i> <i>CABI (Gareth Richards)</i> <i>GBIF (Samy Gaiji)</i> <i>CBD (Olivier de Munck)</i>
11.30 a.m. – 12.30 p.m.	Session B: Identification of the most critical use cases to prevent the impact and minimize the risks associated with introduction of alien species. (Chair: Piero Genovesi)
12.30 p.m. – 1.30 p.m.	Lunch break
1.30 p.m. – 3 p.m.	Session B: (<i>continued</i>)
3.30 p.m. – 4 p.m.	Coffee break
4 p.m. – 5.30 p.m.	Session C: Inventory of requirements from the most relevant information resources and tools, including risk assessment/risk analysis tools for alien species. (Chair: Piero Genovesi)
7 p.m.	Hosted Dinner
<i>Day 2</i>	<i>Tuesday 6 September 2011</i>
9 a.m. – 10.30 a.m.	Session D: Verification of the existing database standards, metadata standards, tools and information exchange protocols. (Chair: Annie Simpson)
10.30 a.m. – 11 a.m.	Coffee break
11 a.m. – 12.30 p.m.	Session E: Specification of the interoperable system addressing invasive alien species and designing the architecture for the open access information network composed with the relevant databases and informatics tools. (Chair: Olivier de Munck)
12.30 p.m. – 1.30 p.m.	Lunch break
1.30 p.m. – 3 p.m.	Session E: (<i>continued</i>)
3.30 p.m. – 4 p.m.	Coffee break

4 p.m. – 5.30 p.m.	Session F: Agreement on the implementation roadmap 2012-2013. (Chair: Olivier de Munck)
5.30 p.m.	Closure of meeting (Nick King, GBIF)

Annex II

LIST OF PARTICIPANTS

***Informatics Expert Meeting on Invasive Alien Species
Copenhagen, Denmark, 5-6 September 2011***

<i>Participants</i>	<i>Role & Organization</i>
Samy Gaiji sgaiji@gbif.org	Senior Programme Officer for Science & Scientific Liaison Global Biodiversity Information Facility Secretariat (GBIF) Universitetsparken 15, 2100 Copenhagen, Denmark
Piero Genovesi piero.genovesi@isprambiente.it	Chair, Invasive Species Specialist Group (ISSG) Species Survival Commission (SSC) International Union for the Conservation of Nature (IUCN) Senior Conservation Officer Institute for Environmental Protection and Research (ISPRA), Italy
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