

ALIENS

Number 13 2001



MESSAGE FROM THE CHAIR

In February 2001 ISSG held its first international conference: on the subject of 'Eradication of Island Invasives'. The conference (held at Auckland, New Zealand) brought together top international scientists and practical experts on eradication and was generally regarded as a great success. The smooth running of the meeting was largely due to the efficient organisation by Dick Veitch and ISSG staff. Proceedings of the conference will be published as a peer-reviewed book early in 2002 and the processing of submitted papers is on schedule. In the meantime, abstracts of papers presented are accessible on the ISSG website. More details on the conference are given in *Aliens 14*.

We have been putting further efforts into developing the ISSG Website (www.issg.org). Please check it out and feel free to provide us with your comments and ideas.

Several ISSG members participated in the Convention on Biological Diversity (CBD)'s Subsidiary Body Meeting (SBSTTA6) in Montreal, Canada 12-16 March 2001, representing IUCN, GISP, or as participants in national delegations. At this meeting a proposal was presented for a worldwide cooperative initiative on alien invasives on islands, prepared by ISSG in cooperation with NZ authorities and under the umbrella of GISP (more in *Aliens 14*).

Several Outputs of the Global Invasive Species Programme (GISP) Cape Town "Synthesis" conference of GISP Phase I were also presented at SBSTTA6, with oral presentations in the Plenary (Hal Mooney, Jeff Waage), and other sessions (including Nirmalie Pallewatta on 'status and trends' and a report by myself on the ISSG Eradication Conference).

Biodiversity Day in May saw IUCN Headquarters, Regional and National Offices and others focussing extensively on alien invasive species. I was interviewed by the BBC World Service and the international media interest was generally very satisfying (more elsewhere in this issue). ISSG also participated in the International Biodiversity Day Workshop in China (along with Jeff McNeely), with two papers, one on possums in NZ and the other on the need for international guidelines/principles on alien invasive species. Both papers were presented on behalf of ISSG by Ji Weihong, a postdoctoral researcher at Auckland University.

In August we were pleased to host a visit to our ISSG headquarters from several distinguished members of the Japanese Biodiversity Network who conducted a study tour of New Zealand. One of their aims is to raise biosecurity awareness in Japan. A rather concerning and poorly known link between New Zealand and Japan is the export of large numbers of wild-caught brushtail possums and wallabies from New Zealand (where they are invasive alien species)

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to Japan for the pet trade. This trade is effectively unrestricted, with neither country carrying out an assessment of the risks. In November this was followed by the participation of ISSG member Alan Saunders in a series of biosecurity symposia organised in Japan itself.

Maj participated in two regional workshops for regional co-operation on IAS: Mesoamerican/Caribbean in June (Costa Rica) and South American in October.

Finally, since the last Aliens, some staff changes have taken place at ISSG headquarters. Following Sarah Lowe's departure (to take up marine biology studies at the University of Queensland, Australia), Michael Browne has stepped in as Database Manager. Souad Boudjelas is also assisting with further development and population of the database. You may receive messages from them inviting you to contribute to this development. An update on the Global Invasive Species Database is given in *Aliens* 14.

JUST IN CASE YOU WONDERED.....

Dear Concerned from Okura,

I can assure you that the individual small mammal in question, while of undetermined genus and gender, is most definitely not an Invasive Alien Species (IAS) but unquestionably endemic to this cartoon.

Sincerely Yours,

The Editor

GLOBAL INVASIVE SPECIES PROGRAMME (GISP) UPDATE

The Mission of the Global Invasive Species Programme is:

To minimise the spread and impact of invasive alien species for the purpose of conserving biodiversity and sustaining human livelihoods.

A bit of history...

GISP PHASE I (1996-2000)

Since 1997, a coalition of scientists, economists, lawyers, social scientists, conservationists, and resource managers have worked together to develop a new comprehensive strategy for addressing the growing problem of the adverse effects of invasive alien species on both our natural as well as managed ecosystems. This programme concentrates on invasive species, those aliens or non-indigenous species that disrupt ecosystem processes, thereby threatening biological diversity, health and economies.

It has been well documented that invasive alien species (IAS) are the second greatest threat to biological diversity globally and the highest threat on many island ecosystems. There are also enormous economic losses incurred due to the impacts of invasive species. The Convention on Biological Diversity (CBD) recognises the importance of this global issue and calls on contracting parties to "prevent the introduction of, control or eradicate those alien species that threaten ecosystems, habitats and species" Article 8 (h)). Many governments, trade sectors, international conventions and institutional instruments are recognising the importance of this issue and are joining in the efforts with those who have already identified IAS as a serious problem on various scales. Awareness of the issue is still growing.

GISP is co-ordinated by the Scientific Committee for Problems of the Environment (SCOPE), in collaboration with the World Conservation Union (IUCN), and the Centre for Agriculture and Bioscience International (CABI) with new partners coming on board. GISP has received initial financial support from the United Nations Environment Programme (UNEP), the Global Environmental Facility, with additional support from the United Nations Education, Scientific and Cultural Organisation (UNESCO), The David and Lucile Packard Foundation, the International Council for Scientific Unions (ICSU), the National Aeronautics and Space Administration (NASA), La Fondation TOTAL, the John D. and Catherine T. MacArthur Foundation, the University of York (U.K.), the U.S. Department of State, Bureau of Oceans and International Environmental Affairs Initiative (OESI), and the Governments of Brazil, Denmark, Norway, New Zealand and the Republic of South Africa. Participating groups and individuals have made substantial in-kind contributions. GISP is a component of DIVERSITAS, an international programme on biodiversity science.

Building the Knowledge Base

The initial phase of GISP (1996-2000) was designed with ten elements, with task leaders in each of the components - each component a building block, in a comprehensive approach for addressing IAS and to build a knowledge base. The elements of the first phase of GISP included:

Biological and Socio-economic Syntheses

- Update and analysis of our knowledge of the ecology of IAS (Marcel Rejmanek and David Richardson);
- Analysis of the current status of IAS and new methods for assessing their changing distributions and abundance (Mark Lonsdale and Richard Mack);
- Analysis of societal views and values of IAS (Jeff McNeely); and
- Analysis of how global change will impact the success of invaders (Richard Hobbs and Harold Mooney).

Policy and Management Syntheses

- Assessment of the best practices for prevention and management of IAS (Jeff Waage);
- Analysis of invasion pathways created by trade and new tools for risk assessment (James Carlton, Gregory Ruiz and David Andow);
- Assessment of the economic consequences and tools for addressing IAS (Charles Perrings and Mark Williamson);
- Analysis of the legal and institutional frameworks for dealing with IAS (Nattley Williams);
- Development of a pilot database on IAS with early warning capabilities (Mick Clout); and
- Development of new approaches for educating the general public on the potential dangers of invasive species (Alan Holt).

Each element was addressed through one or more workshops, resulting in specific products. All of the activities were summarised through collaborative multi-sector international working groups at the GISP Phase I Synthesis Conference in Cape Town, Republic of South Africa, 18-22 September 2000.

Publications and outputs – Results of Phase I of GISP

Invasive Species in a Changing World. 2000. H.A. Mooney, R. J. Hobbs (eds) Island Press, Washington, D.C. (see also *Aliens* 10, p16)

A Guide to Designing Legal and Institutional Frameworks on Alien Invasive Species. Shine, C, N. Williams, L. Gundling. 2000. IUCN Environmental Law Centre (see also *Aliens* 12 p. 11)

The Economics of Biological Invasions. 2000. C. Perrings, M. Williamson, S. Dalmazzone (eds) Edward Elgar Publishers

100 of the World's Worst Invasive Alien Species A selection from the Global Invasive Species Database. 2000; IUCN-ISSG, Lowe, S., M. Browne, S. Boudjelas, M. De Poorter (Distributed with Aliens 12, and pdf at <http://www.issg.org>)

Global Invasive Species Database: at <http://www.issg.org/database> (Coordinated by IUCN/ISSG)
(see also Aliens 14)

The Great Reshuffling: Human Dimensions of Invasive Alien Species. McNeely, J.A. (ed.). 2001. IUCN, Gland, Switzerland and Cambridge, UK (see also page 17)

A Global Strategy on Invasive Alien Species. McNeely, J.A., H.A. Mooney, L.E. Neville, P. Schei, J.K. Waage (eds.). 2001. IUCN, Gland, Switzerland and Cambridge, UK (See also page 18)

Invasive alien species: A Toolkit of Best Prevention and Management Practices. Wittenberg, R., M.J.W. Cock. 2001. CAB International on behalf of the Global Invasive Species Programme, Wallingford, Oxon, UK (See also Aliens 14)

Pathways of Invasion: Strategies for Management across Space and Time. Ruiz, G and J. T. Carlton, (eds). Island Press, Washington, D.C. (in preparation)

Invasive Alien Species: Searching for Solutions. Mooney, H.A., J. McNeely, L. E. Neville, P.J. Schei, J.K. Waage (eds). Island Press, Washington, D.C. (in preparation)

A Plague of Rats and Rubbervines: The Growing Threat of Species Invasions. 2002. Baskin, Yvonne. Shearwater Books/Island Press, Washington, D.C.(in press)

Publications are available through the GISP Project Office and associated publishers, some titles to become available in early 2002.

GISP PHASE II (2000-2005) – “Informing Policy and Translating Policy into Practice”

The GISP Partnership Network

GISP aims to provide a global vision and to catalyse efforts to implement this vision at all scales. GISP operates through a “Partnership Network” comprised of scientific and technical experts on IAS issues from around the world. GISP stakeholders are its Partners - governments, intergovernmental organisations, non-governmental organisations, academic institutions, and the private sector. GISP Partners can be found the world over; Capacity building and promoting international collaboration are key underlying themes for all GISP activities. The initiatives of Phase II of GISP are co-ordinated by a new Executive Board led by Chair, Dr. Jeff Waage, Professor of Applied Ecology, and Head of the Department of Agricultural Sciences at the Imperial College at Wye, Ashford, Kent U.K. The project office, established in 1998, is currently located at Stanford

University in California, United States of America.

Services and resources provided by the GISP Partnership Network include:

- Raising awareness of the IAS problem and potential solutions through relevant organisations and frameworks at national and international levels;
- Creating linkages among governments, between governments and the private sector, and across disciplines;
- Networking databases and providing a gateway for information on IAS issues and expertise;
- Designing and co-hosting workshops on strategic planning, priority setting, and the development of new and better tools to address the problem;
- Summarising scientific and technical information in order to make it readily available to policy makers, scientists, educators, and other audiences; and
- Supporting Partners in the design of projects and programmes to minimise the spread and impact of IAS.

As countries become more aware of the implications of IAS, they tend to look inward, and focus on protecting themselves. The GISP partnership-based initiatives encourage countries to recognise that they cannot solve this problem by working solely within their own borders. By their very definition, IAS are an international problem. GISP helps bring together governments and other institutions to share experience and co-operate in efforts to address national and regional issues.

GISP PHASE II – AN INNOVATIVE AND COLLABORATIVE APPROACH...

The Six Working Group Components of GISP are currently in development, and consist of committees of experts in various disciplines led by Co-Chairs of each group:

1) NATIONAL AND REGIONAL FACILITATION AND CAPACITY BUILDING

Goal: *Improve national and regional capacity to prevent and manage IAS problems worldwide.*

Objectives:

- *Facilitate establishment of effective national and regional capacities on IAS to promote sharing of knowledge and skills;*
- *Contribute to training programmes on IAS for managers and technical staff from different sectors, including pilot projects for testing and adaptation of the GISP Toolkit of Best Prevention and Management Practices;*
- *Promote taxonomy as a key component of national capacity for IAS prevention and management;*
- *Explore a potential role for a devolved “Centre for IAS,” that would facilitate regional efforts in the diagnosis of new IAS problems and support rapid response mechanisms for eradication and control; and*
- *Stimulate the development of new tools in science, policy, information and education, and make available*

best practices for the prevention and management of IAS.

Catalytic Projects: At least ten national workshops in developing countries to:

- 1) design interagency coordinating mechanisms, 2) outline cross-sectoral IAS plans, 3) develop national project proposals to build early warning and rapid response capacities, or 4) adapt the GISP best practices toolkit for local use.

2) COMMUNICATION, OUTREACH AND EDUCATION

Goal: Synthesise and actively disseminate information, both research and operational, to meet the needs of key stakeholder groups, including natural resource managers, policy makers, and the general public, with a particular emphasis on the needs of the developing world.

Objectives:

- *Summarise* scientific and technical information on IAS for decision-makers and natural resource managers;
- *Contribute* material and expertise to the development of educational curricula, press packages, and programmes for community education and empowerment on issues relevant to IAS;
- *Assist* countries in developing and carrying out awareness-raising projects on IAS, including national and regional workshops, studies, and surveys; and
- *Raise the capacity* of IAS experts to communicate their findings to policy makers, journalists, and other stakeholders.

Catalytic Projects: At least seven regional workshops on IAS for policy makers to 1) raise awareness of the IAS problem, 2) build co-operation across environment and agricultural sectors, and 3) lay the foundation for regional and national action plans.

3) GLOBAL INFORMATION MANAGEMENT

Goal: Provide accessible information on scientific, technical and other aspects of IAS and facilitate access to relevant expertise on topics such as IAS identification, prevention, eradication, and control.

Objectives:

- *Develop* and co-ordinate a distributed network of databases on IAS, incorporating predictive and early warning functions;
- *Explore* opportunities for GISP to serve as a thematic focal point on IAS for the Convention on Biological Diversity's Clearing-house Mechanism, and act as a dynamic source of information exchange on IAS issues world-wide; and
- *Develop* and disseminate information tools and technologies for IAS management.

Catalytic Projects: Development of national and thematic IAS databases and regional informatics hubs under a Global Invasive Species Information Network.

4) PATHWAY MANAGEMENT

Goal: Prevent and minimise the impact of IAS, focusing on key sectoral pathways of introduction or redistribution.

Objectives:

- *Conduct* and encourage scientific assessments to evaluate key "pathways" (e.g., shipping, food aid, horticulture and pet trade) for the introduction of IAS and identify opportunities to minimise invasions via these pathways;
- *Assist* key sectors involved in potential introduction of IAS with development of voluntary codes of conduct and other mechanisms to minimise IAS spread and impacts;
- *Provide* government trade representatives to World Trade Organisation and regional trade organisations with information on threats posed by IAS and their relevance to trade, with particular emphasis on developing country needs.

Catalytic Projects: Conduct international conferences on the status, trends, and opportunities for best management of at least four major invasion pathways, involving governments and the private sector.

5) RESEARCH

Goal: Support the development and applications of research and research capacity on IAS.

Objectives:

- *Promote* research aimed at taxonomic needs, risk assessment and risk management, prediction of invasions, impact assessment, IAS and global change, detection and monitoring, control methods (esp. biocontrol), sociological (human) dimensions, economic assessment and tools, and habitat restoration;
- *Co-ordinate* workshops to address priority issues and foster collaboration among researchers in environment, agriculture, and other applied areas of IAS science; and
- *Summarise* scientific and technical information on the biological and socio-economic aspects of the IAS problem (topic areas listed above); and
- *Assess* and promote best practices for integrating and applying research across biological, social, and economic fields.

Catalytic Projects: Undertake assessments of the status, trends, and impacts of IAS in ecosystems of priority concern for biodiversity conservation and sustainable development, as a basis for improving predictive and response capacity at the national and regional levels. Particular attention will be given to the impacts of IAS on "ecosystem services" (e.g., water conservation, forest regeneration, and pollination), implications for protected areas, and best practices for applying the "ecosystem approach" to understanding and mitigating IAS problems.

6) LAW AND POLICY

Goal: *Inform development and strengthen policy and legal instruments.*

Objectives:

- *Provide* technical advice and assistance on IAS to international organisations and conventions to support guidelines, standards, or legal protocols;
- *Review* existing legal and policy instruments (e.g., International Plant Protection Convention, Convention on Biological Diversity) in the context of IAS, identify gaps (e.g. invasive alien vertebrates) and help relevant bodies to revise/develop standards or codes of conduct on IAS;
- *Prepare* a guide to terminology on IAS in international conventions as a contribution to clarification and harmonisation; and
- *Support* and strengthen the review of national and sub-national legal and institutional frameworks on IAS and work in co-operation with international instruments and conventions.

Catalytic Project: Engage international conventions and other relevant bodies in a partnership to prepare a guide to terminology on IAS.



NOTES

INTERNATIONAL MARITIME ORGANIZATION (IMO) 46TH MEETING OF THE MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)

23-27 April 2001, London, UK

The 46th Session of MEPC (Marine Environment Protection Committee) of IMO convened 23rd -27th April 2001 under the chairmanship of Mr. M. Julian (Australia). The Committee's Ballast Water Working Group met to continue development of an international convention for the control and management of ship's ballast water and sediments. The group agreed, in principle, that the final instrument should be based on a ballast water treatment performance standard; however it recognized that ballast water exchange would be used as a starting point within the framework of the finalization of ballast water standards. The Committee agreed to recommend to the Council, based on the progress made to date and subject to confirmation by MEPC 47, that a Diplomatic Conference be provisionally scheduled for the 2002-2003 biennium.

Source (International updates NISC, June 2001 <http://www.invasivespecies.gov/education/intlupd3.shtml>)
Contact: Scott Newsham (snewsham@comdt.uscg.mil)

GISP continues to grow within an innovative partnership network. This collaborative network provides a unique foundation from which we can address the complex issues presented by invasive alien species. A comprehensive and holistic approach is imperative if we are to minimise the impacts of IAS that threaten biological diversity, health and economies.

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The Global Invasive Species Programme

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REPORT OF THE INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA (ICES) WORKING GROUP ON INTRODUCTIONS AND TRANSFERS OF MARINE ORGANISMS (WGITMO),

Barcelona, Spain, March 2001

The report is 104 pages long and available as a pdf file on the ICES Web Site. It covers operational matters of the Working Group including discussion on preparing awareness-raising material and discussion on revision of the "Code of Practice on the Introduction and Transfers of Marine Organisms". It also contains national reports (summaries as well as full), which include information on the presence and/or spread of alien marine organisms, details of new relevant laws or regulations, deliberate releases, accidental introductions and transfers, live imports and exports, as well as planned introductions. There is a wealth of information here. Note: The WGITMO has annual meetings, usually in Northern Spring. It is chaired by Dr. Stephan Gollasch (GoConsult), who also chairs the ICES/IOC/IMO Study Group on Ballast and other Ship Vectors and convenes the Baltic Marine Biologists Working Group Non-indigenous Estuarine and Marine Organisms.

Available from: <http://www.ices.dk/reports/ACME/2001/>

THE PLANT KILLER - *MIKANIA MICRANTHA* IN SOUTH CHINA

As one of the 100 kinds of the world's worst invasive alien species, *Mikania micrantha* has called more and more people's attention. People are alarmed at its growth rate (so-called mile-a-minute weed), and are also afraid of it's damage. Originating in South and Central America, the plant has become a serious problem in India, Bangladesh, Sri Lanka, Thailand, the Philippines, Mauritius, Malaysia, Indonesia and many of the Pacific islands. Since the 1980's, it has been found in South China.

Mikania micrantha has threatened many native species in South China. Once established, the plant becomes rampant and covers other plants. It then kills those plants by cutting out the light and smothering them. Many plants near *Mikania micrantha*, including trees, bushes and grasses, can not escape the doom, so people call it Plant Killer. In South China, the plant is a potential menace to tropical fruit trees and crops.

It has been deduced that *Mikania micrantha* was initially introduced to Hong Kong by sea. Gradually it arrived at Shen Zhen, Zhu Hai then quickly spread to the whole of South China. Now most cities of Guang Dong province have found trace of the plant , of which Shen Zhen and Dong Guan are worst affected. Recently, the plant was detected in Lei Zhou peninsula and some mountainous areas. These regions belong to tropical or subtropical areas, which have a high temperature and abundant precipitation. According to our data, the distribution areas mean annual rainfall exceeds 1500mm. The mean annual temperature is 21.3°~23°. The mean temperature in January is 12.8°~15.7°, and in July is 27°~33.2°

Generally, *Mikania micrantha* prefers sunny, moist and fertile place, such as roadsides and the sides of streams. However, we also found it in arid soil and shady places. Our research showed that it has a wide niche in South China. In its habitats, soil pH varies from 4.15 to 8.35, and soil OM is 2.29~32.85(g /kg⁻¹), that is to say, it can grow in acidic or alkali and fertile or unfertile soil. The various habitat attributes to extensive invasibility.

Though many plants are damaged by *Mikania micrantha*, some plants can grow with it. These include *ageratum Conyzoides*, *Bidens pilosa*, *Wedelia chinensis*, *Eichhornia crassipes*, *Commelina communis*, *Paederia scandons*, *Ipomoea cairica*, *Lantana camara*, etc. In Dong Guan, we found *Mikania micrantha* covered by *Cuscuta chinensis*, which can possibly give us some ideas of how to control the plant.

Mikania micrantha's harm is unquestionable and it is an urgent but difficult task to control the plant. Chinese researchers are studying its eradication and the government

gives much support to the study. Moreover, the public also take an active part in the plant's eradication. However, *Mikania micrantha* is so vigorous that we can't eliminate it completely by simple manual or mechanical means. Biological control is the best method but it is still a challenge in China at the moment.

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Alien Invasive Species – South and Southeast Asia.

Report of Workshop on Alien Invasive Species, GBF-SSEA.

IUCN Regional Biodiversity Programme, Asia, Colombo, Sri Lanka. ISBN: 955-8177-10-3 Edited by: P. Balakrishna, 121 pages.

In view of the importance of the issue and with an aim to assess national and regional status of invasive alien species, the IUCN Regional Biodiversity Programme, Asia organised a regional workshop on the issue as a part of South and South-east Asia Regional Session of Global Biodiversity Forum in Colombo, Sri Lanka during October 1999. Several country studies and status reports were presented during this workshop. Participants also came up with a set of recommendations from the discussions to deal with invasive alien species in the region. The report contains the country papers presented during the workshop along with the recommendations that came out of this regional workshop.

Copies can be obtained from:

IUCN Regional Biodiversity Programme, Asia
53, Horton Place,
Colombo 7,
Sri Lanka.

Tel: ++94-1-682465, ++94- 74-710439
Fax: ++94-1-682470,
E-mail: iucn-rbp@slt.net.lk

IMPACT OF INVASIVE SPECIES ON BIODIVERSITY CONSERVATION AND THE LIVELIHOODS OF POOR PEOPLE

Invasive species is an increasingly important disturbance factor throughout the world's humid tropical forests. It affects the species composition and the spatial distribution of plants and animals. Thereby, it affects the availability of natural forest resources, such as non-timber-forest products, to people who live in, and who are entirely dependent upon the resources found in, forests. People strongly dependent upon local forest resources will be more affected by of a changing spatial and temporal distribution in forest resources, than people who are less dependent on those resources.

Indigenous people living in the interior parts of the forest away from developed infrastructure, and hence often having few or no alternative income sources/options are therefore more sensitive to, i.e., more likely to be affected by, changes in the availability of local natural resources (such as non-timber-forest-resources). Invasive species can affect the availability of local forest resources both through direct and indirect mechanisms.

Throughout the humid tropics, highest concentrations of native and endemic biodiversity tend to occur in the interior of forests. These areas also tend to be critical for the existence of many indigenous peoples. Such is indeed the case in the Western Ghats (in southern India), a global biodiversity hot-spots. Suitable strategies are needed to conserve the forest and its biodiversity while ensuring a sustainable resource base for indigenous groups, Soligas, that have long inhabited the area.

The causes for and the impact of increasing invasive species abundance are complex and of interdisciplinary nature, involving ecological, social, and economic issues, and interactions between them. Figure 1 illustrates a general conceptual model of how invasive species may affect conservation of biodiversity and local people's livelihoods.

The spatio-temporal distribution and composition of biodiversity, and local forest resources in general, can be affected directly by the invasive species (due to predation, herbivory, parasitism, pathogens, and competition). This

may cause a change in the local people's utilisation (such as extraction) patterns (spatially and temporally) of the local forest resources. Finally, there may be a feedback impact of the changed spatio-temporal utilisation patterns on the spatio-temporal distribution and composition of the natural resources, either directly or indirectly (the latter through its impact on the biophysical processes). This diagram is very simplistic and emphasises the general similarity between invasive species and any other human disturbance with effects across a wide range of spatial scales.

The goal of the present study was to understand how invasive species, in particular Lantana, affected local people's livelihood and conservation of forest biodiversity, in a forest area in southern India. The research presented in this paper represents initial efforts within a broader and integrated research program on the impact of disturbance and fragmentation on biodiversity and local people's livelihoods, in an area in southern India. The objectives were to examine a) the effect of Lantana cover on the area used by Soliga people, b) the effect of Lantana cover on median walking distance for collection of NTFPs, c) the relationship between human disturbance intensity and the density of Lantana, and, d) the effect of density of Lantana on natural regeneration of woody plant species.

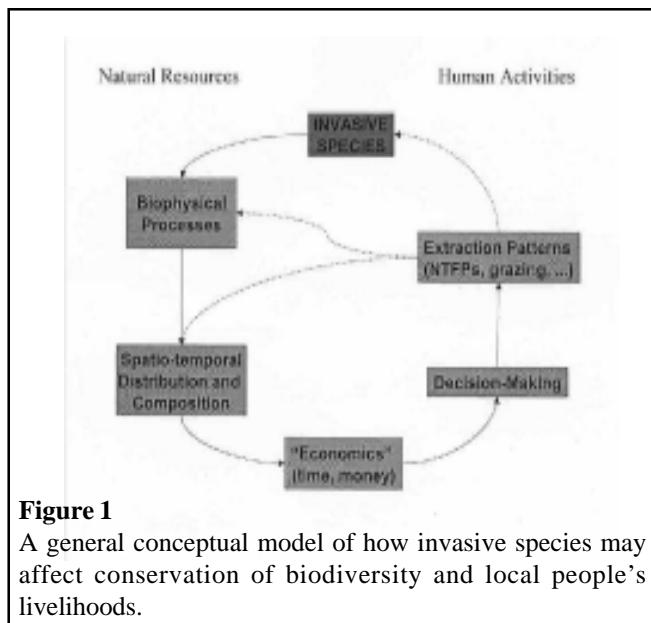


Figure 1
A general conceptual model of how invasive species may affect conservation of biodiversity and local people's livelihoods.

Eight Soliga settlements in total, two in each of the four major vegetation types, were used for this study. Each settlement was located entirely within the given vegetation type (i.e., the minimum distance from any settlement to the boundary of the given vegetation type was at least one kilometre).

In each vegetation type and starting from the settlements (Podus) to the undisturbed (relatively undisturbed) forest, one plot for each of five disturbance levels, ranging from the most disturbed (level 1) to the least disturbed (level 5) laid on the settlements were considered. All other transects (levels 2, 3, and 4) were placed on a "scale" between the first and the fifth levels. This scale followed a distance or topographical measure, because it is assumed that the human impact decreases as we go away from the settlement into the forest and also the presence of topographical

barriers. The location of areas for each disturbance level was selected based on interviews with the Soliga people in each settlement, and we collected information on a) number of households, population of the podu (approximate number), b) expanse of the podu in terms of hectares/acres, c) whereabouts of the places where firewood was collected regularly and occasionally, and, d) number of cattle and location of areas that are often/seldom grazed.

Our findings suggest that people had to walk further to collect non-timber-forest-products in areas affected by Lantana compared to areas not affected by Lantana. This would imply that people had to spend substantially more time to collect NTFPs if Lantana is present around their settlement. This will obviously reduce the amount of time that they have available for other activities. Even if the estimated area used by the Soligas is an overestimate, there is no reason why the relative overestimate should be different among the different levels of relative Lantana cover. The positive relationship between the relative intensity of disturbance and the density of Lantana is only indicative of the causal relationship. It cannot be implied that higher disturbance intensity itself causes greater density of Lantana. The absence of regenerating woody plants above a critical density of Lantana demonstrates

that no understorey vegetation can become established, once Lantana is sufficiently dense. Neither cattle nor goats eat Lantana, and areas traditionally used for grazing can therefore not be used anymore. Traditionally, villagers would use areas outside the park boundaries for grazing. Grazing on many of these areas have, however, become impossible. Instead, the villagers walk cross the park boundary and walk further and further into the park in search for grazing areas. This increased distance has meant a big increase in the time the local villagers have to use to reach good grazing grounds. It also affects the livelihood of the local tribal people, who have legal permission to live and sustain themselves within the protected area.

Our future research activities will specifically investigate the causes for higher density of Lantana, and the underlying causes for the spread of invasive species.

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Reprinted from: Secretariat of the Convention on Biological Diversity (2001). *Assessment and management of alien species that threaten ecosystems, habitats and species. Abstracts of keynote addresses and posters presented at the sixth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice, held in Montreal, Canada, from 12 to 16 March 2001.* Montreal, SCBD, 146p. (CBD Technical Paper no.1). with permission from the author.

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THE SEVENTEENTH MEETING OF THE CITES (CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA) - ANIMALS COMMITTEE.

30 July - 3 August 2001, Hanoi, Vietnam.

Agenda Item 20 Trade in Alien Species

The working group, chaired by Dr Rod Hay (Regional Representative for Oceania) concentrated on the requirement to produce a list of potentially invasive species, agreeing that the purpose of such a list is to provide Parties with examples of CITES species that have become invasive. The Chair and US representative will contact the IUCN/SSC Invasive Species Specialist Group (ISSG) to start the development of a limited list. Until the CBD has agreed a set of guiding principles on invasive species, it would be inappropriate for CITES to develop a plain language guide specifically for CITES Parties.

For more information please contact Alison Rosser, IUCN/SSC Wildlife Trade Programme Officer at
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PUBLICATIONS

INTRODUCED SPECIES IN U.S. COASTAL WATERS

A new report entitled “*Introduced Species in U.S. Coastal Waters*” was presented to the Pew Oceans Commission in October 2001. Written by James T. Carlton, Ph.D., of Williams College and Mystic Seaport. It describes a “game of ecological roulette” playing out along the US coasts as hundreds of species arrive each day by way of ships’ ballast waters, fishing activities, and other means. It shows that the rate of marine introductions has risen exponentially over the past 200 years and shows no sign of leveling off. The report describes several vectors, explains why introductions continue, and discusses management issues. It highlights the loss of coastal habitat and biodiversity and the millions of dollars spent each year to research and control introduced species. The report stresses the need for prevention, and recommends a compulsory ballast water management program, an early-warning and rapid-response system, and greatly expanded research and public education programs. For a copy of the report:

http://www.pewoceans.org/reports/introduced_species.pdf

Source: media release, 22 October 2001: <http://www.pewoceans.org/>

RISK ASSESSMENT FOR MANAGING THE TROPICAL WEED, *MIMOSA PIGRA*

INTRODUCTION

The pressure on many tropical wetlands is increasing as human populations and development activities increase. As a consequence, many wetlands have been lost and degraded. In recent years the extent of degradation caused by invasive species has been recognised and many management actions taken, often addressing the effect rather than the cause(s). This is the case for the thorny shrub *Mimosa pigra* (known colloquially as mimosa) that has now become a major pest in many tropical wetlands (Rea & Storrs 1999).

Within this context we have collated an information base on the biology and management of *mimosa* as a case study for the application of a risk assessment procedure designed to assist weed managers. Much of the information for this assessment has come from northern Australia, where mimosa has been seen as a major weed for more than two decades, and from South East Asia where it is increasingly becoming a major menace.

WETLAND RISK ASSESSMENT FRAMEWORK

A wetland risk assessment framework has been encouraged under a formal resolution of the Ramsar Wetlands Convention (van Dam et al. 1999). The framework contains six steps, as shown in Figure 1.

1. *Identification of the problem* - identify the nature of the problem and develop a plan for the remainder of the assessment, including the objectives and scope.
2. *Identification of adverse effects* – evaluate the likely extent of adverse change.
3. *Identification of the extent of the problem* – estimate the likely extent of the problem.
4. *Identification of the risk* – integrate the results from the above steps.
5. *Risk management and reduction* - make decisions to minimise the risks without compromising other societal, community or environmental values.
6. *Monitoring* – verify the effectiveness of the risk management decisions.

MIMOSA PIGRA WETLAND RISK ASSESSMENT

Identification of the problem

Mimosa is native to tropical America where it occurs in a wide belt extending from Mexico through Central America to northern Argentina. It has been introduced to other areas and is now widespread and a serious weed. It can spread rapidly and invade large areas of tropical wetlands. The extent and consequences of such invasions were assessed on the basis of existing information and recommendations made for control measures, including

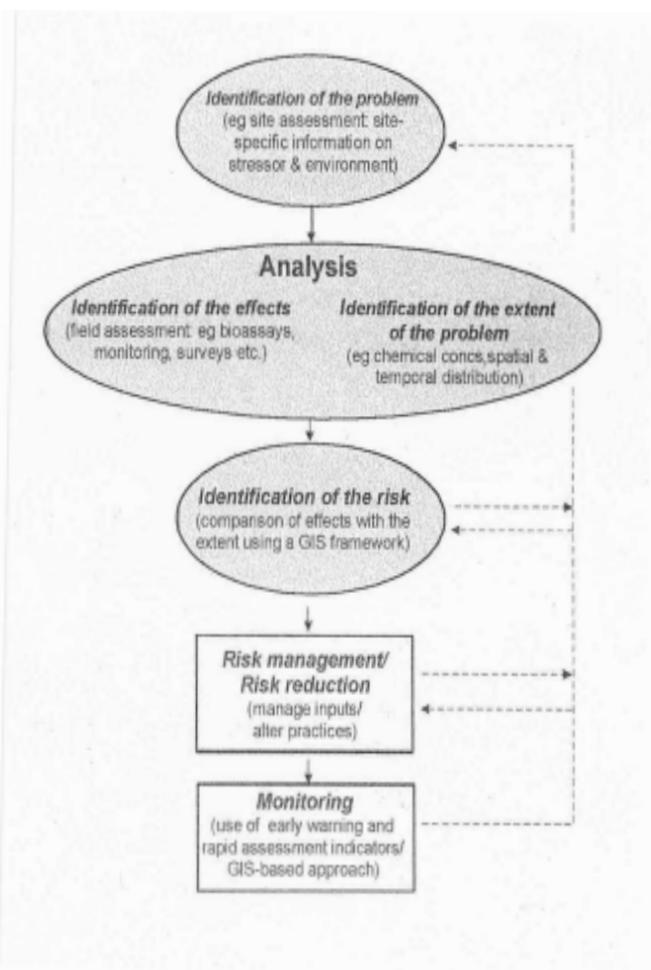


Figure 1. Model for wetland risk assessment
(updated from van Dam et al. 1999)

training, and information gaps identified.

Identification of adverse effects

Mimosa is an enormous problem in Australia with floodplains and swamp forest being invaded by dense monospecific stands of mimosa, which have little understorey except for mimosa seedlings and suckers. For native species, the impact is severe and many animals have become scarce or have disappeared. However, some species have increased in the short term or along the outer edges of the infestation. The extent of such changes is not well known.

Mimosa also interferes with the lifestyles of indigenous peoples who rely on the natural environment. It can disrupt stock watering, irrigation, tourism, and recreational use of waterways. In Thailand it has resulted in sedimentation in irrigation systems and reservoirs. In many cases economic impacts are contingent with ecological impacts. For example, tourism is affected directly by restricted access

to floodplains and by loss of income in a range of associated service activities. Another economic impact is the financial cost of controlling the weed. In northern Australia it is estimated that more than US\$12 million has been spent on research and control of mimosa.

Identification of the extent of the problem

Mimosa favours a wet-dry tropical climate and has been introduced into most tropical regions of the world where it can grow in dense thickets in comparatively open, moist sites such as floodplains, coastal plains and riverbanks. In its native range it occupies similar habitats, especially in areas which have been disturbed, but usually occurs as small thickets or as individual plants. In 1975 only a few mimosa plants were known to occur in wetlands in northern Australia; by 1989 it reportedly covered 80 000 ha and could extend to 4,200,000 ha, although these figures have not been corroborated and in many locations information on the extent of the problem does not exist.

Identification of the risk

The risk of infestation for many wetland habitats in tropical countries is high and the cost of management high. Mimosa has many features that are generally considered 'advantageous' to a weed. The rapidity with which it can spread and develop impenetrable thickets is well known, as is the difficulty of control. Given these features the risk of infestations spreading and resulting in severe problems is high.

Risk management and reduction

In northern Australia the recommended strategy for controlling mimosa is to prevent initial invasion, eradicate small infestations by physical or chemical means and, for large infestations adopt an integrated approach involving biological control, herbicide application, mechanical removal, fire and pasture management. All of the above require some level of training and logistical support. Interruptions in control programs wastes time, resources

and funds, and allows mimosa time to recover from past treatment. Common problems with controlling mimosa are a lack of awareness of the problems that could occur if the weed is not effectively controlled, and discontinuity in control.

Monitoring

Monitoring to prevent the introduction and establishment of mimosa is essential. Areas likely to be infested can be regularly surveyed and machinery etc that is likely to carry propagules can be inspected and cleaned. Critically, monitoring should be ongoing and directed towards priority sites or processes, and where necessary training provided so that this is done effectively.

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ALIEN INVASIVE PLANTS IN BANGLADESH AND THEIR IMPACTS ON THE ECOSYSTEM

The study describes the name of some important invasive alien species and their impacts on the ecosystems so far known to occur in Bangladesh. More than 300 exotic species are supposed to either grow in the wild or are cultivated as an economic crop. The herbaceous and lianas are the dominant exotics followed by trees and shrubs.

Plants of economic importance have been introduced to Bangladesh for many years (Islam, 1991). Migration or introduction of plants from one place to another may be natural or planned. Bangladesh, like many other countries, has a long history of plant introduction from different countries or geographic areas of the world. Most of the plants have been brought by settlers, invaders, seamen and traders. There are no detailed records of exotic plants, except the more common plants and a few cultivated ones. Many of the exotic plants are of economic benefit. Some of the very common fruit trees, like litchi (*Litchi chinensis*), pineapple (*Ananas sativus*), watermelon (*Citrullus lanatus*), coconut (*Cocos nucifera*) and guava (*Psidium* sp.) are also introduced as are most of the pulses and oil yielding plants. Many important vegetables, like cucurbits (*Cucurbita* spp.), radish (*Raphanus sativus*), potato (*Solanum tuberosum*) and carrot (*Daucus carota*) came from other countries and have been naturalised throughout the country.

However, a good number of exotic plants are weedy in nature. Most of them were first introduced as garden or ornamental plants before becoming established elsewhere. Some of them are so well established that they are now the dominant plant and became noxious weeds of forests and wastelands (*Eupatorium odoratum*, *Mikania cordata*, *Croton* sp. etc.). Some are also considered noxious weeds of cultivated fields (*Alternanthera*, *Scoparia* and *Heliotropium* spp.). Others are found in water land (*Eichhornia*, *Eleocharis* and *Monochoria* sp.).

In the 19th century the British were mostly contributed to the introduction of some economically important forest plants from almost all the continents. The introduced species are *Tectona grandis*, *Albizia* spp., *Samanea saman*, *Xylia kerrii*, and *Swietenia macrophylla*. In the 20th century this trend continued to be the same and some Australian species (*Eucalyptus camaldulensis*, *Acacia mangium*, *Acacia auriculiformis*) are getting preferences in the plantation programs. *Leucaena leucocephala* (Tropical America) are also found all over the country and pines (*Pinus oocarpa* and *P. caribaea*) are also planting in the hilly areas (Das, 1982). Of these, the *Acacia auriculiformis* is dominating in all the plantation programs and growing well in all sorts of degraded land. Recently the controversy arose that pollen of the species is allergic to many people. Very recently, the cultivars and hybrids of different crops and ornamental plants are also introduced haphazardly.

Some weedy species dominate crop fields, forests, wasteland and marginal lands. Some of the species have luxuriant growth and suppressed the growth of other native species (Table 1). This results in a loss of native floral diversity of the country. The threat posed to natural habitats by these alien invasive plants is becoming a major concern among conservationists, ecologists, foresters, policy makers and scientists. Though the undisturbed natural forests are resistant to such invasion, the degraded and secondary forest areas and wastelands are aggressively invaded by the invasive species.

To prevent the adverse impacts of invasive plant species to the natural ecosystem, the possible suggestion is that i) enhancing awareness among the planters, growers and public; ii) development of database on invasive species; iii) quantify the abundance of the species; iv) development of environmentally sound eradication methods; and, v) introducing the necessary quarantine, legislation and regulations on the spread of the invasive plants.

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Table 1: Alien exotics in Bangladesh which have a detrimental impact on the ecosystem.

Scientific Name	Family	Origin	Impact on the ecosystem
<i>Acacia auriculiformis</i>	Mimosaceae	Australia	Widely planted in afforestation programmes, but controversy over pollen allergy!
<i>Eucalyptus camaldulensis</i>	Myrtaceae	Australia	Promising growth performance in experimental plantations, but now ban due to its controversial impact on environment.
<i>Leucaena leucocephala</i>	Mimosaceae	Trop. America	Occasionally cultivated; wild in coastal areas; suppressed the regeneration of other species
<i>Acanthospermum hispidum</i>	Asteraceae	South America	Common weed of cultivated fields
<i>Cassia occidentalis</i> L.	Caesalpiniaceae	Trop. America	Common weed of wasteland and road side
<i>Cestrum diurnum</i> L.	Solanaceae	Trop. America	Weed of road side and rail line
<i>Lantana camara</i> L.	Verbanaceae	Trop. America	Common weed of hilly areas, prevent regeneration of native species
<i>Ageratum conyzoides</i> L.	Asteraceae	South America	Common weed of waste and cultivated field; aero-allergic pollen species
<i>Alternanthera ficoidea</i> (L.) R. Br.	Amaranthaceae	Brazil	Common weed of cultivated and waste land
<i>Atylosia scarabaeoides</i> Benth.	Fabaceae	Australia	Common weed of wasteland
<i>Eupatorium odoratum</i> L.	Asteraceae	C / S. America	Common weed of wasteland; suppressed the regeneration of other species in plantation programs
<i>Commelinella obliqua</i> Buch.-Ham.	Commelinaceae	Java	Frequent weed in wasteland
<i>Convolvulus arvensis</i> L.	Convolvulaceae	Europe	Frequent weed of waste place
<i>Croton bonplandianum</i> Baill.	Euphorbiaceae	South America	Abundant weed of waste and cultivated land
<i>Eichornia crassipes</i> (C. Martius) Solms.	Pontederiaceae	Trop. America	Abundant aquatic weed; aggressive growth inhibits other aquatic flora
<i>Evolvulus nummularius</i> (L.) L.	Convolvulaceae	West Indies	Common weed in cultivated and open fields.
<i>Hypitis suaveolens</i> (L.) Poit.	Lamiaceae	Trop. America	Common weed of hilly regions
<i>Ipomoea carnea</i> Jacq.	Convolvulaceae	America	Common weed of all habitat
<i>Ludwigia adscendens</i> (L.)	Onagraceae	Cent. America	Common weeds in aquatic and marshy habitat
<i>Mikania cordata</i> (Burm. f.) Robinson	Asteraceae	Trop. America	Abundant weed of forest and wasteland; engulf other economic crops by its luxuriant growth
<i>Mimosa pudica</i> L.	Mimosaceae	South America	Common weed of cultivated and waste land.

THE KRUGER NATIONAL PARK INCREASES ITS EFFORTS TO CONTROL ALIEN INVASIVE PLANTS

Alien plants have probably been resident within the Kruger National Park (KNP) since its proclamation some 100 years ago. However, the effects of these non-indigenous plants and their potential threats were most likely not fully recognised at that time. It was not until 1956 that the first control efforts were made when work started on controlling syringa trees (*Melia azedarach*) along the Crocodile River on the southern boundary of the KNP. However despite ongoing and intensified efforts, alien plant populations have steadily increased to the present situation where 214 alien plant species have been recorded in the KNP with an additional 150 non-indigenous species found in camps and personnel villages. These include a suite of aggressive invasive aliens that have invaded riverine zones (including *Lantana camara*, *Melia azedarach*, *Mimosa pigra*, *Chromolaena odorata*, *Ricinus communis*, etc). Aquatic plants such as *Pistia stratiotes*, *Eichhornia crassipes*, *Azolla filiculoides* invade dams and rivers, while terrestrial areas are invaded by *Opuntia stricta* (which has invaded an area of over 35 000 ha in the Skukuza region).

It is now widely accepted that the control of alien invasive organisms is not a short-term or once-off effort. On the contrary, it requires detailed surveillance and ongoing monitoring, investigation and research into the most suitable long-term control options and the maintenance of a control strategy once put in place. A variety of well known methods are used in the KNP. These vary from mechanical (including digging up root systems, slashing, chopping, ring-barking alien plants), to chemical (utilising acceptable and tested herbicides) to biological (making use of plant-specific insects or pathogens to damage and control aliens). These options are however generally incorporated into integrated control programmes (employing a combination of the aforementioned methods and techniques). Ultimately, all these efforts and combinations of approaches aim at a sustainable solution to an ever-increasing problem.

Some specific examples from the KNP:

(1) Sour prickly pear (*Opuntia stricta*) - Integrated control methods are used for the control of this serious alien invader. In this programme, herbicides are used to control the periphery of the infestation and contain it, while two biocontrol agents namely, a cochineal species and a Cactoblastis moth have been released throughout the infestation. It is through the combination of these techniques that effective control may be achieved. It is hoped that current herbicidal control efforts will limit the prickly pear to the current infestation of 35 000 ha and prevent it from spreading to the rest of the KNP. The integration of the biocontrol agents with the herbicide programme aims to reduce the number of large, adult fruiting plants within the infestation (largely through the

Cactoblastis moth), while the cochineal destroys stands of dense prickly pear plants.

(2) Aquatic alien plants - free-floating waterweeds pose a difficult situation in that the areas infested are difficult to reach and present dangerous situations with crocodiles and hippos lurking in the water. Fortunately much work has been done on the biological control of waterweeds through the Plant Protection Research Institute, with many areas brought under successful control. One of the main benefits of biological control is the long-term sustained control requiring limited human inputs and vastly reduced cost implications. The KNP co-operates with the PPRI to monitor post release impacts and other aspects of biocontrol and thereby provide more knowledge and insight into the efficacy of the biocontrol agents in an integrated management plan.

Sunset Dam, near Lower Sabie Restcamp, is just one example where the KNP Alien Biota Section and researchers from the Plant Protection Research Institute have embarked on a biological control effort against water lettuce (*Pistia stratiotes*). In 1996, a small population of snout weevils, *Neohydronomus affinis*, were released onto the plants. In September 1997, the dam had witnessed a dramatic decrease in plants, and was cleared of all but a few plants remaining along the shoreline. However, with the extensive seed load in and around the dam that has built up over the years, new young plants continually germinate. Plant regrowth is particularly effective in the winter months when the weevils are less active and Sunset Dam is then once again covered by water lettuce by mid to late winter. As weevil activity and damage to water lettuce increases again in spring months, the dam is once again opened up and so the pattern continues. Nevertheless, experts predict that an equilibrium point will be reached, where these fluctuations become less pronounced and the water lettuce persists at much lower levels. This same pattern was evidenced on the Sabie River between 1987 and 1993, when the biological control agents were released onto the water lettuce infesting the Sabie River within the KNP. Since 1993 this infestation is successfully controlled through the actions of the biocontrol agents, with only a few plants visible along the edges of the river at worst.

Thus, even under normal circumstances, the KNP faces huge challenges to bring the invasion of this large conservation area by alien plants under acceptable levels of control. An exceptional challenge is now upon the KNP to deal with the effects of the extensive February 2000 floods that brought with them large quantities of alien plant propagules and seeds from the upper catchment areas. Many of these areas are heavily invaded by serious plant invaders that were not known to occur in the KNP prior to the floods. Thus the variety, distribution and densities of

alien plants in the KNP have increased significantly with this extreme but natural event.

Strategies used to deal with invasive plants in the KNP by the Alien Biota Section encompass many different aspects. In addition, strategic partnerships with the successful *Working for Water* Programme, the Plant Protection Research Institute and other forums bordering the KNP have been entered into to tackle the alien problems in a holistic manner in order to maximise returns on investment. Similarly, much-needed donations and sponsorships are essential to boost the capacity to fight invader plants and these include a vehicle donation and logistical support from Robor Stewarts & Lloyds and other equally important contributions. Significant funding received from the *Working for Water* project enables attention to the main river systems flowing through the KNP. This work is extremely labour intensive and challenging due to the difficult and dangerous terrain and inhospitable conditions under which the work is carried out. However, in this manner significant clearing and control of alien plants is achieved, targeting species as they germinate after the floods and continuing with follow-up clearing operations over the next two years.

Other strategies aimed at not only reactive (i.e. clearing of invasions) but proactive work efforts are also being launched in the KNP. For example, potential alien invasive plants have been ranked in order of potential threat to the KNP ecosystem and are being systematically removed from rest-camps and personnel villages throughout the KNP. These efforts rely on surveys and priority listings for immediate removal based on the ability of these non-native plants to produce vast quantities of seed, disperse highly effectively as well as evidence from other similar regions where these species have become a significant problem.

If you have any queries on the control of alien plants in the KNP, please contact the Alien Biota Office in Skukuza (KNP) or

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IUCN ACTIVITIES AT BIODIVERSITY DAY MAY 2001

May 22nd 2001 was International Biodiversity Day, on the theme "Biodiversity and Management of Alien Invasive Species". Many IUCN offices used the opportunity to promote the issue of invasive alien species. Most were involved in media work, and distributed copies of the ISSG booklet "*100 of the World's Worst Invasive Alien Species*". IUCN HQ organised a press conference featuring Jeff McNeely, introducing the issue of invasive alien species (IAS) in general, and presenting "*The Great Reshuffling - Human Dimensions of Invasive Alien Species*"

Media results included: The front page of the International Herald Tribune, L'Express ran a half page article; Interviews by various staff were heard on BBC UK, World Service BBC and BBC Today, radio Deutsche Welle, Radio France Internationale. IUCN and invasive alien species also featured in: Reuters, Agence France Presse, Financial Times, Le Monde, De Telegraaf Binnenland, ATS Swiss News Agency, DPA - German news agency, EFE Spanish News Agency and Associated Press.

IUCN Eastern Africa has used the Lake Victoria journalist network to promote the issue and has had follow up enquiries for interviews. **IUCN SUR** put a Spanish version of the press release on its web site. **IUCN Vietnam** has assisted the "*For Quality of Life Programme*" weekly TV to produce an programme on alien species, including (with help from the IUCN Regional Biodiversity Program), sending a team to the Tram Chim National Park where a training workshop on *Mimosa pigra* control was being organised, to explore materials and carry out interviews. The national Environment Agency website has posted information on alien species, and various media work was carried out. The "*100 of the World's Worst Alien Invasive*

Species" booklet was translated in Vietnamese. **IUCN Laos** also translated the "*100 of the World's Worst Alien Invasive Species*" booklet and distribute it widely in addition to promoting articles for daily news papers on the issue. **IUCN Nepal** feaured in a radio talk show and organised a workshop on aliens species, as well as carrying out varying media activities. **IUCN Sri Lanka** held a press conference resulting in TV interview and front page article in the Sunday Observer. Two workshops were held to celebrate Biodiversity day. Channa Bambaradeniya - Head, Biodiversity Programme, delivered a lecture at the second annual biodiversity seminar of the Young Zoologists' Association and was the guest speaker at a biodiversity seminar organised by a school in Kandy. Ranjith Mahindapala, Director Programme, delivered the key note address at the University of Sri Jayewardenapura, Nugegoda, at the commencement of a week-long exhibition relating to World Biodiversity Day. **IUCN Regional Biodiversity Programme (RBP)** teamed up with the Office for Environmental Planning and Protection (OEPP) to organise a national workshop on Invasive Species in Bangkok, Thailand, on 22 May 2001. Dr. Balakrishna delivered the Key Note Speech. The proceedings from the Regional Global Biodiversity Forum's workshop on alien invasive species" were officially launched. **IUCN Pakistan** featured live on a Pakistan-TV panel together with the Capital Development Authority, discussing various issues of invasive alien species, including alien trees and introduced freshwater fish; other media interest included the leading daily newspaper (in Urdu) and radio.

Source: Overview compiled from information provided by Wendy Goldstein. IUCN Head Communication and Environmental Education wjg@hq.iucn.org

**6TH MEETING OF THE CONVENTION ON
BIOLOGICAL DIVERSITY (CBD)'S SUBSIDIARY
BODY ON SCIENCE, TECHNOLOGY AND
TECHNOLOGICAL ADVICE (SBSTTA)**
Montreal, Canada 12 – 16 March 2001.

SBSTTA6, focused on invasive alien species and emphasised this by providing background information through presentations, side events, roundtables and additional documentation, the bulk of which was provided by ISSG/IUCN and/or CABI, representing GISP. The Meeting noted and commended GISP on its input, its work in general and recommended the continuation of this. Of particular importance for ISSG was the Meetings Endorsement for the call for an island cooperation initiative and the welcoming of the offer of New Zealand, IUCN/ISSG and GISP to explore means to establish such an initiative (more on this in the next issue of *Aliens*).

The discussion on the CBD's interim guiding principles was very disappointing, including a failure to agree on definitions, disagreement on the interpretation of the precautionary approach, and on the requirements for risk analysis for deliberate introductions. The issue of avoiding impacts of one's actions and decisions beyond one's own country boundaries made no headway. As a result, the draft text contains many unresolved bits, and is to be considered a retrograde step compared to what was already agreed to at COP5. Two Parties (New Zealand and Norway) expressed their disappointment about this rather forcefully.

On the positive side substantive discussion took place around future work options and pleasing progress was achieved, resulting in many recommendations, including on cooperation with other international bodies (and with GISP), and on giving priority attention to geographically and evolutionary isolated ecosystems.

Identifying national needs

Parties and other Governments, were urged to address the threats posed by invasive alien species, by identifying their national needs and priorities, creating mechanisms to coordinate national programmes, reviewing relevant policies, legislation and institutions and by integrating the invasive alien species issues into national biodiversity policies, strategies and action plans. They were further urged to promote awareness of the threats caused by IAS, facilitate the involvement of all stakeholder groups, enhance cooperation between the various sectors that might provide pathways or vectors and develop capacity to use risk assessment/analysis.

Parties and other governments were urged to promote and carry research and assessments (with the support of relevant international organisations), including on: characteristics of species invasiveness and the vulnerability of ecosystem; impact of invasive alien species on biological diversity; the importance of various pathways; the socio-economic implications of invasive alien species; the development of environmentally benign methods to control and eradicate invasive alien species, including

measures for use in quarantine and to control fouling of ship hulls; the costs and benefits of the use of biocontrol agents to control and eradicate invasive alien species; means to enhance the capacity of ecosystems to resist or recover from alien species invasions; priorities for taxonomic work; and criteria for assessing risks from introduction at the genetic, species and ecosystem levels;

International cooperation

Parties and other Governments were urged to collaborate with trading partners and neighbouring countries as well as regionally in order to address threats of invasive alien species to biological diversity in ecosystems that cross international boundaries, to migratory species, and to address matters of common regional interest.

The meeting welcomed international initiatives, including development of a European Strategy on Invasive Alien Species by the Council of Europe and the development of a closer relationship between the International Plant Protection Convention and the CBD and its work;

The Meeting urged the incorporation of IAS issues where relevant, by other institutions, Conventions and programmes. The meeting decided that the CBD clearing-house mechanism will be used to facilitate scientific and technical cooperation in IAS issues, and invited the Executive Secretary to explore with GISP the potential for the latter to be an international thematic focal point.

Capacity Building

The Executive Secretary was requested to support the development and dissemination of technical tools and related information on the prevention, early detection, monitoring, eradication and/or control of invasive alien species through, *inter alia*: compilation and dissemination of case-studies; further compilation and preparation of anthologies of existing terminology used in international instruments; compilation and making available lists of procedures for risk assessment/analysis and pathway analysis; identification and inventory of existing relevant expertise; development of databases; facilitated access to such information for all countries; and development of systems for reporting new invasions of alien species and the spread of alien species into new areas; and to explore means to facilitate capacity enhancement for eradication work on continents and islands.

GISP was requested to participate in the identification and exploration of, further specific gaps in the international regulatory framework from a technical perspective of the threats of invasive alien species to biological diversity, and to report back to the COP7.

SBSTTA decided to provide additional guidance to the Global Environment Facility regarding the provision of financial resources to help developing countries to strengthen capacity-building for eradication and control of invasive alien species.

PUBLICATIONS

GISP WORKSHOP: THE GREAT RESHUFFLING: HUMAN DIMENSIONS OF INVASIVE ALIEN SPECIES

McNeely, J. A. (Editor). 2001. *The Great Reshuffling: Human Dimensions of Invasive Alien Species*. IUCN, Gland, Switzerland and Cambridge, UK. vi + 242pp. ISBN: 2-8317-0602-5. £14, US\$21, Order no. B669. Published by IUCN (as contribution to GISP). Compilation of papers delivered during a workshop on the human dimensions of the IAS problem, held in Cape Town, South Africa on 15-17 September 2000, as part of the Global Invasive Species Programme (GISP), covering some of the many human dimensions that are part of the causes, consequences and responses to the invasive alien species problems.

Excerpt from the Introductory chapter (J. McNeely): While the issue of invasive alien species has important biological components, the human dimensions deserve much greater attention. First, virtually all of our planet's ecosystems have a strong and increasing anthropogenic component that is being fed by increasing globalisation of the economy. Second, people are designing the kinds of ecosystems they find productive or congenial, incorporating species from all parts of the world. Third, growing travel and trade, coupled with weakening customs and quarantine controls, mean that people are both intentionally and inadvertently introducing alien species that may become invasive. And fourth, the issue has important philosophical dimensions, requiring people to examine fundamental ideas, such as "native" and "natural". The great increase in the introduction of alien species that people are importing for economic, aesthetic, accidental, or even psychological reasons is leading to more species invading native ecosystems, with disastrous results: they become invasive alien species (IAS) that have significant deleterious effects on both ecosystems and economies. Human dimensions of the IAS problem, include historical, economic, cultural, linguistic, health, psychological, sociological, management, legal, military, philosophical, ethical, and political dimensions. These are addressed in terms of the causes, the consequences, and the responses to the problem of IAS. It is without doubt that human dimensions of IAS are fundamental, and that successfully addressing the problem will call for greater collaboration between different economic sectors and among a wide range of disciplines.

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ISTITUTO NAZIONALE FAUNA SELVATICA PUBLICATIONS

Alien mammals and birds in Italy: survey, impacts on biodiversity and management guidelines

Andreotti A., N. Baccetti, A. Perfetti, M. Besa, P. Genovesi, V. Guberti, 2001. *Mammiferi e Uccelli esotici in Italia: analisi del fenomeno, impatto sulla biodiversità e linee guida gestionali*. Quad. Cons. Natura, 2, Min. Ambiente - Ist. Naz. Fauna Selvatica. ISSN 1592-2901. 189 pages. In Italian, with Executive Summary in English. Purposes of the present paper is a) to provide a general description of the biological invasions of mammals and birds in Italy, b) to produce a list of alien mammals and birds, c) to describe the threats posed by these species, and d) to define synthetic guidelines for their management.

Guide lines for the control of the American grey squirrel (*Sciurus carolinensis*) in Italy

Genovesi P. e S. Bertolino, 2001 - *Linee guida per il controllo dello Scoiattolo grigio (*Sciurus carolinensis*) in Italia*. Quad. Cons. Natura, 4, Min. Ambiente -Ist. Naz. Fauna Selvatica. ISSN 1592-2901. 52 pages. In Italian with English Executive Summary.

At present the complete eradication of the grey squirrel from Italy is considered unpractical although biologically feasible, because it would require specific legal instruments and unlimited funds. Therefore, the objectives of the present plan are the containment of the grey squirrels and the preservation or restoration of viable red squirrel populations in the largest possible portion of the species' original range. The plan identifies several actions.

Guide lines for the control of the coypu (*Myocastor coypus*).

Cocchi R. e F. Riga, 2001 - *Linee guida per il controllo della Nutria (*Myocastor coypus*)*. Quad. Cons. Natura, 5, Mill. Ambiente -Ist. Naz. Fauna Selvatica. ISSN1592-2901. 41 pages. In Italian with English Executive Summary. Complete eradication of the coypu from Italy is considered an unpractical option, whereas eradication of small populations in Southern Italy, Sardinia and Sicily is considered feasible. The report includes information on distribution, legal frameworks and a review of management techniques.

The publications can be ordered at :

Istituto Nazionale Fauna Selvatica

Via Ca' Fornacetta 9

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PUBLICATIONS

GISP PUBLICATION: A GLOBAL STRATEGY ON INVASIVE ALIEN SPECIES

McNeely, J.A., H.A. Mooney, L.E. Neville, P. Schei, and J.K. Waage (eds.) 2001. *A Global Strategy on Invasive Alien Species*. IUCN Gland, Switzerland, and Cambridge, UK., in collaboration with the Global Invasive Species Programme. x + 50 pp. ISBN: 2-8317-0609-2.

The GISP Global Strategy on Invasive Alien Species is based on contributions from the team leaders of the eleven main topics addressed under GISP Phase I. It summarises key findings of the Phase I synthesis Conference, held in Cape Town, South Africa, in September 2000 and is directed to the decision-makers whose policies and practices are affecting the movement of species around the world.

The spread of invasive alien species (IAS) is creating complex and far-reaching challenges that threaten both the natural biological riches of the earth and the well being of its citizens. While the problem is global, the nature and severity of the impacts on society, economic life, health, and natural heritage are distributed unevenly across nations and regions. Thus, some aspects of the problem require solutions tailored to the specific values, needs, and priorities of nations while others call for consolidated action by the larger world community. Preventing the international movement of invasive alien species and co-ordinating a timely and effective response to invasions will require cooperation and collaboration among governments, economic sectors, non-governmental organisations, and international treaty organisations. This strategy highlights the dimensions of the problem and outlines a framework for mounting a global-scale response. While both the problem and the scale of the solution may appear dauntingly complex, the issue presents an unparalleled opportunity to respond with actions that link preservation of biodiversity with protection of the health and livelihood of the world's human populations (page viii).

The publication highlights the various dimensions of the problem, including the need for urgency, how IAS affect biodiversity as well as economic sectors, the movement and the ecology of alien species, and management and policy responses to the problem. A large section is devoted to the presentation of ten strategic responses outlining the framework for mounting a global-scale response to turn back the tide:

- 1) Build management capacity
- 2) Build research capacity
- 3) Promote sharing of information
- 4) Develop economic policies and tools
- 5) Strengthen national, regional and international legal and institutional frameworks
- 6) Institute a system of environmental risk analysis
- 7) Build public awareness and engagement
- 8) Prepare national strategies and plans

- 9) Build invasive alien species issues into global change initiatives

- 10) Promote international cooperation

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Every alien species needs to be considered potentially invasive, until convincing evidence indicates that it presents no such threat (page 9).

ALIEN SPECIES IN FINLAND

Nummi, R 2001. *Alien species in Finland*. Published by the Finnish Environment 466. Ministry of the Environment. ISSN 1238-7312, ISBN 952-11-0872-X.

This is the first compiled national Finnish report on alien invasive species. The report is being published in English to make known Finland's efforts to implement the Convention on Biological Diversity also outside its own borders. The report contains information on marine and terrestrial introduced alien species and environments. The Ministry of the Environment was the financier of the report, and experts on vertebrates, invertebrates and plants contributed to its preparation. This report will be reviewed with a view to the current needs in the conservation of biological diversity and the sustainable use of its components, the latest research findings, and national and international developments in this field and it will be updated on a regular basis.

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PUBLICATIONS

EUROPE-WIDE STRATEGY, INFORMATION, AND MANAGEMENT FROM COUNCIL OF EUROPE

The Council of Europe has recently posted several interesting alien invasive species related documents on the *Berne Convention* web site, including:

"Bern Convention action on invasive alien species in Europe"

Document Number T-PVS (2001) 10. 30 pages. Document prepared by the Directorate of Culture and Cultural and Natural Heritage. The section on "Work Ahead" in this reports includes the following: "The Bern Convention groups the great majority of European states (39 out of 45). ... [T]he regional scale is particularly fit to deal with the problems associated with invasive alien species. A "common front" of all European states is necessary to take a precautionary approach and avoid the introduction of new invasive species. International co-operation is fundamental for success. Thus the Convention is looking for a greater synergy with other European institutions -in particular the European Commission -to harmonise legislation and programmes on invasive alien species.This initiative will be placed in the light of a regional implementation of the Convention of Biological Diversity and is not intended to be just a purely policy paper, but to stimulate and start precise programmes and action on the ground and see progress on legal issues."

"Contribution to a European strategy on the invasive alien species issue"

Document Number: T-PVS (2001) 12. 12 pages. Document prepared by European section of IUCN/SSC Invasive Species Specialist Group and the Directorate of Culture and Cultural and Natural Heritage. The document includes the rationale, aim, and context for action. It describes key elements for a European strategy, including awareness, Prevention of unwanted introductions, Management of invasive alien species, Restoration, Policy, Legal and Institutional framework, and International co-operation. Sections on needs and Priorities, as well as on the possible role of the Bern Convention are also included.

"Guidelines for Eradication of Terrestrial Vertebrates: a European Contribution to the Invasive Alien Species Issue"

Document Number T-PVS (2000) 65 Revised 1. 29 pages. Document established by Mr Piero Genovesi, Ph.D. IUCN/SSC Invasive Species Specialist Group, National Wildlife Institute -Italy. The section on the scope of the report contains the following: "Despite the remarkable efforts to provide instruments for best management of invasive alien species, at present the implementation of eradication campaigns remains inhomogeneous at the European level.The aim of the present paper is to help reducing these obstacles. In view of the need to integrate eradication

campaigns into global and regional strategies on IAS, the report is organised in two parts. In the first part, the guiding principles for dealing with biotic invasions are reviewed, especially with respect to the planning of eradication. In the second part, guidelines for planning an effective eradication campaign are defined.[T]he present report will focus on the different aspects of the correct and effective planning of a control campaign including biosecurity policies, repartition of roles and responsibilities, monitoring needs, and recovery of native species after eradication."

"Identification of non-native freshwater fishes established in Europe and assessment of their potential threats to the biological diversity"

Document number 2000 T-PVS (2001) 6 35 pages. Document prepared by Benigno Elvira, Department of Animal Biology I, University Complutense of Madrid and funded by the Ministry of the Walloon Region. The document has sections on trends, biological characteristics, reasons for introductions, ecological impact of naturalised fishes, and management of invasive and nuisance fish. It also contains appendices with bibliography and country lists of introduced freshwater fishes.

Available at: www.nature.coe.int/CP21/index.htm

RUDDY DUCK CONTROL TRIAL (UK)

The UK Government's December 2000 report on the Ruddy Duck control trial (doc. no. 2000/49) can be downloaded from: <http://www.nature.coe.int/CP20/index.htm>

Source: Dr Baz Hughes (Baz.Hughes@wwt.org.uk)
WEBSITE: <http://www.wwt.org.uk/threatsp>

BIOLOGICAL INVASIONS IN GERMANY - A CHALLENGE TO ACT?

Contributions and results of a Conference in Berlin, October 4th-7th, 2000. Ingo Kowarik & Uwe Starfinger (Eds). 104 pages.

Publisher:

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REPORT OF SESSION III - INVASIVE ALIEN SPECIES, AGRICULTURAL DEVELOPMENT, AND THE AID TRADE, CGIAR STAKEHOLDER MEETING

Washington D.C. - October 31, 2001

Invasive alien species are non-native organisms whose explosive population growth and spread causes harm to economies, the environment, or human health. Long recognized as threats to agriculture, invasive alien species are now also considered one of the leading drivers of biodiversity loss and environmental change. Growing world trade and ongoing changes in landuse and climate are accelerating the appearance of new invasive alien species problems.

At a session organized by the Global Invasive Species Programme (GISP), the U.S. National Invasive Species Council (NISC), World Bank's Environment Department, CGIAR (Consultative Group on International Agricultural Research) centres and donors identified the major invasive alien species issues in their sectors and discussed the priorities for addressing these. Workshop participants agreed that:

- Invasive alien species can have a significant impact on development, affecting sustainability of livelihoods, food security and essential ecosystem services and processes.
- Targeted development assistance programmes have reduced the threat or impact of particular invasive alien species.
- Development assistance projects and emergency food aid programmes have been significant pathways for the introduction of serious new invasive alien species to poor countries, either through contamination of imported plant and animal resources, or the deliberate introduction of beneficial species which subsequently become invasive and damaging.
- Cooperation between agricultural, environmental and related ministries will be essential to effective prevention and management of invasive alien species

Participants noted that:

- The status of invasive alien species problems in developing countries is very poorly known relative to other regions, and CGIAR centres can contribute to assessment.
- Action against invasive alien species is constrained by a lack of awareness at the national and development agency level, where there is a need to quantify the costs of invasive species problems
- Centres are often challenged to deliver short term benefits in productivity from new agricultural introductions, without sufficient knowledge on potential invasiveness of new plant and animal species or varieties. This identifies an urgent need for predictive tools to evaluate invasiveness.
- Besides direct impacts on agricultural production, e.g. by invasive pests, alien plant and animal material can pose a serious threat to the erosion of valuable genetic resources,

particularly in areas of crop origin.

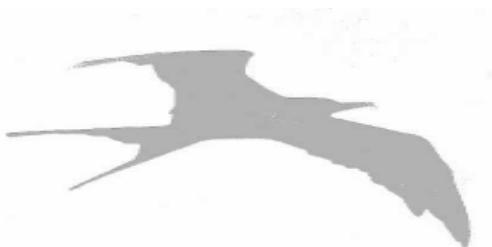
- Genetically modified organisms (GMOs) to the extent that they are potentially invasive and damaging, should be considered in programmes on invasive alien species
- Microbial systems have received far too little attention as potential areas of invasion and agricultural/environmental impact
- There are few truly effective barriers to species spread today, which creates a need to anticipate and understand emerging and potential problems, to prioritise these and to be proactive.

The following actions were supported at the meeting:

1. An assessment of the status and threats posed by invasive alien species to developing countries should be undertaken, with specific effort to quantify impact and costs of invasive problems, relative to other development challenges.
2. A study of pathways by which invasive alien species become problems in developing countries, with particular emphasis on the role which development assistance and emergency assistance plays in the creation of new problems.
3. Development, in concert with GISP, the International Plant Protection Convention and the Convention on Biological Diversity of best practices for governments, private sector and development assistance programmes which reduce risks to developing countries from invasive alien species.

It is proposed that GISP, NISC and the World Bank develop these actions into a project, and that a committee of experienced specialists from CGIAR Centres be engaged for its design and to facilitate its execution. Results of (1) and (2) above would be reported to ICW 2002.

The meeting was chaired by Dr. Tom Lovejoy, Chief Biodiversity Advisor, World Bank. Dr. Jeff Waage, Chair of GISP and Head, Department of Agricultural Sciences, Imperial College, made a presentation on "Invasive Alien Species, Agricultural Development and the Aid Trade", and Panelists included Dr. Meryl Williams, Director General



ICLARM, Dr. Coosje Hoogendoorn, Deputy Director General, Programmes, IPGRI, Dr. Anne-Marie Izac, Deputy Director General, Research, ICRAF, Dr. Ren Wang, Deputy Director General, IRRI and Mr. James Hester, Agency Environment Coordinator, USAID. The meeting was organized by the Global Invasive Species Programme in cooperation with the US National Invasive Species Council (of which Mr. Hester was a representative) and the Biodiversity Team in the Environment Department of the World Bank.

Report provided by

Jamie Reaser

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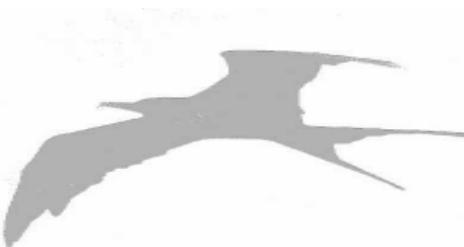


PREVENTION AND MANAGEMENT OF INVASIVE ALIEN SPECIES: FORGING COOPERATION IN SOUTH AMERICA

On 17-19 October, the Global Invasive Species Programme (GISP) joined with the Governments of Brazil and the US to host a South American workshop on invasive alien species in Brasilia. This was the third in a series of seven regional workshops being co-hosted by GISP and NISC [the US National Invasive Species Council]. Participants included government officials from the environment and agriculture ministries of 12 South American countries, as well experts from regional and global organisations and the US. The first day of the meeting was open to the public and provided talks on invasive alien species from global and regional perspectives. During the following two days, invited participants engaged in workshops where they identified common challenges posed by invasive species and discussed possible solutions and next steps. The meeting resulted in a draft regional resource directory for South America and a joint declaration calling for region-wide approaches to deal with the problem. Initial steps to address the problem in South America include better coordination among ministries within countries, establishment of regional legal frameworks to coordinate activities between countries, expansion of regional databases and networks for sharing technical data, and raising public awareness. For more information, contact: Jamie K. Reaser (jamie_reaser@doi.gov).

Source: NISC International Updates Newsletter #6, November 2001
(<http://www.invasivespecies.gov/education/>)

Note: A regional meeting: **Invasive Species: Facing the challenge of their presence and spread in Mesoamerica and the Caribbean** was held June 11-12, 2001 in San Jose, Costa Rica. A meeting report will be released by the IUCN regional Mesoamerican Office (UICN, ORRA) later this year.



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MANAGEMENT OF INVASIVE ALIEN SPECIES: FORGING COOPERATION IN THE BALTIC/NORDIC REGION

21-23 May 2001, Copenhagen, Denmark

This meeting was the first in a series of seven regional workshops, co-sponsored by the U.S., the Global Invasive Species Programme (GISP), and at least one regional host government. The meeting was funded by the U.S. Department of State and the government of Denmark. Approximately 40 individuals from the Baltic/Nordic region (including Russia, Poland, and Germany), as well as representatives of the U.S. and intergovernmental organizations participated in the meeting. Presentations provided participants with global and regional perspectives on invasive species ecological, economic, management, and policy issues. Particular emphasis was given to the patterns, trends, needs, and opportunities in the Baltic/Nordic Region. Workshop sessions were used to identify a set of common objectives for the region and the core elements of a regional invasive species strategy. Participants produced a statement that calls for the governments in the region to establish a Regional Invasive Species Task Force consisting of invasive species focal points from each country. The Task Force's mission is to provide regional coordination, facilitate regional communication and to establish a process for the development of a regional invasive species strategy. Contact: Jamie K. Reaser (jamie_reaser@doi.gov)

Source (NISC international updates, June 2001 <http://www.invasivespecies.gov/education/intlupd3.shtml>)

US NATIONAL INVASIVE SPECIES MANAGEMENT PLAN

President Clinton issued Executive Order (E.O.)13112 on Invasive Species (Order) in February 1999 (*see also Aliens 9, page 14.*) For full text see:

<http://www.invasivespecies.gov/laws/execorder.shtml>

The Order established an interagency National Invasive Species Council (Council), as well as a non-federal Invasive Species Advisory Committee (ISAC). The Council is co-chaired by the Secretaries of Agriculture, Commerce and the Interior, and currently includes the Secretaries of State, Treasury, Defence, Transportation, and Health and Human Services, as well as the Administrators of the Environmental Protection Agency and US Agency for International Development. Under the E.O., the Council is to: provide national leadership on invasive species; see that their Federal efforts are coordinated and effective; promote action at local, State, tribal and ecosystem levels; identify recommendations for international cooperation; facilitate a coordinated network to document and monitor invasive species; develop a web-based information network; provide guidance on invasive species for Federal agencies to use in implementing the National Environmental Policy Act; and prepare a national invasive species management plan. These process are to involve considerable “stakeholder” input, and after a period of public commenting, the Council staff finalised and published its first National Invasive Management Plan, in January 2001.

An “invasive species” is defined as a species that is 1) non-native (or alien) to the ecosystem under consideration and 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health. (Executive Order 13112, Appendix 1).

The Plan presents nine interrelated areas that the Council considers priorities in addressing invasive species problems

1) Leadership and Coordination: The Council is directed by the order to provide national leadership and oversight on invasive species and to see that Federal agency activities are coordinated, effective, work in partnership with States and provide for public input and participation.

- Establish a transparent oversight mechanism for use by Federal agencies in complying with the Order and reporting on implementation.
- Ensure that a clearly defined process will be developed and procedures will be in place to resolve jurisdictional and other disputes regarding invasive species issues.
- Conduct an evaluation of current legal and regulatory authorities relevant to invasive species.
- Prepare an analysis of legal and policy barriers to coordinated and joint actions among Federal

agencies.

- Identify at least two major invasive species issues, regulations or policies where coordination is inadequate and take action that fixes the problem.
- Coordinate and provide to the Office of Management and Budget (OMB) a proposed cross-cut budget for Federal agency expenditures concerning invasive species.
- Convene a working group of agency leads on international agreements relevant to invasive species.
- Prepare a 2-year work plan identifying specific initiatives to work with State, local and regional organisations.
- Prepare and issue guidance on invasive species for Federal agencies to use in implementing the National Environmental Policy Act (NEPA).

2) Prevention: A risk-based approach is mandated by the Order and requires consideration of the likelihood an invasive species will establish and spread as well as the degree of harm it could cause.

- Develop a fair, feasible, risk-based comprehensive screening system for evaluating first-time intentionally introduced non-native species in consultation with the Invasive Species Advisory Committee (ISAC), State governments, scientific and technical experts and societies, and other stakeholders, including affected industries and environmental groups.
- Develop modifications to the screening system or other comparable management measures (i.e., codes of conduct, pre-clearance or compliance agreements) to formulate a realistic and fair phase-in evaluation of those intentional introductions currently moving into the U.S., in consultation with ISAC, State governments, scientific and technical experts and societies, and other stakeholders, including affected industries and environmental groups.
- Identify the pathways by which invasive species move, rank them according to their potential for ecological and economic impacts, and develop mechanisms to reduce movement of invasive species.
- Take the steps to interdict pathways that are recognised as significant sources for the unintentional introduction of invasive species.
- Implement a process for identifying high priority invasive species that are likely to be introduced unintentionally and for which effective mitigation tools are needed.
- Develop a risk assessment program for the intentional and accidental introduction of non-

native species through U.S. international assistance programs and encourage other countries and international organisations to do the same.

3) Early Detection and Rapid Response: An integrated approach involving research and development, technical assistance, and operations is needed to facilitate and implement effective action.

- Take steps to improve detection and identification of introduced invasive species, recognising the need for jurisdictional coordination.
- Develop a program, in close cooperation with State and local efforts, for coordinated rapid response to incipient invasions.
- Develop and recommend to the President draft legislation, in consultation with the States, to address rapid responses to incipient invasions, possibly including permanent funding for rapid response activities.

4) Control and Management: When invasive species appear to be permanently established, the most effective action may be to prevent their spread or lessen their impacts through control measures.

- Land management agencies will seek additional resources - through the annual appropriations process consistent with Administration policy - to significantly enhance control and management of invasive species on Federal lands.
- Develop and recommend to the President draft legislation to authorise matching Federal funds for State programs to manage invasive species.
- Explore and, as appropriate, adopt sanitation and exclusion methods for preventing spread of invasive species.
- Develop and issue a protocol for ranking priority of invasive species control projects at local, regional, and ecosystem-based levels.
- Develop a proposal for accelerating the development, testing, assessment, transfer, and post-release monitoring of environmentally safe biological control agents.
- Develop a proposal for cooperation with private industry to utilise current programs and to facilitate development, testing, transfer and training concerning use of environmentally compatible pesticides and herbicides in controlling invasive species.
- Prepare a list of connecting waterways to develop

a strategy for preventing movement of aquatic species among watersheds and initiate a research program on methods to prevent such movement. Expand opportunities to share information, technologies, and technical capacity on the control and management of invasive species with other countries, promoting environmentally sound practices.

5) Restoration: Executive Order 13112 requires Federal agencies to "provide for restoration of native species and habitat conditions in ecosystems that have been invaded." Without restoration, areas may become reinfested by the same or new invasive species.

- Develop and issue recommendations, guidelines and monitoring procedures for Federal land and water management agencies to use, where feasible, in restoration activities.
- Identify sources of propagative material for native species in areas of restoration or reclamation projects.
- Prepare draft legislation to authorise tax incentives and otherwise encourage participation of private landowners in restoration programs.
- Develop criteria for the use of non-native species in overseas restoration projects.

6) International Cooperation:

- Strengthen and expand U.S. participation in mutually supportive standards and codes of conduct within international fora.
- Develop a strategy and support materials for U.S. representatives to encourage and assist all countries with development of coordinated policies and programs on invasive species.
- Identify the limitations and strengths of existing international agreements and develop a program of work to further strengthen them.
- Outline an approach to a North American invasive species strategy.
- Establish an ongoing process to consider the risks of invasive species during the development of U.S. trade agreements.
- Sponsor technical assistance workshops in other countries.
- Provide financial and technical support to international meetings of policy makers, as well as regional and global programs.
- Conduct a study of international assistance as an invasion pathway.

7) Research: research supports each aspect of the Plan.

- Include, as part of the cross-cut budget proposal, an initiative to adequately fund Federal invasive species research programs.
- Establish and coordinate a long- and short-term research capacity that encompasses the range from basic to applied research for invasive species. This initiative will build on existing efforts that reflect a range of perspectives and program



approaches.

- Prepare a catalogue of existing aquatic and terrestrial control methods.
- Develop and implement a plan to strengthen international research collaborations between the U.S. and other countries.

8) Information Management:

- Develop guidance for managing information concerning invasive species in aquatic and terrestrial environments.
- Maintain and enhance the Council's website, www.invasivespecies.gov, on a continuing basis.
- Post and maintain "case studies" on control and rapid response efforts on the Council's website.
- Include a locator for occurrences of invasive species in the United States by county.
- Link the website to major U.S. databases, websites, and most State information networks that deal with invasive species, and to websites in other nations that have active invasive species programs.
- Develop and implement a memorandum of understanding among appropriate Federal Departments to establish an invasive species assessment and monitoring network.
- Expand the website to include information on internationally relevant agreements, codes of conduct, meetings, publications, experts, programs, and financial resources, as well as regional and global invasive species databases.
- Produce an Invasive Species Compendium for North America.

9) Education and Public Awareness: How invasive species are viewed is moulded by human values, decisions, and behaviours.

- Coordinate development and implementation of a national public awareness campaign, emphasising public and private partnerships.
- Identify and evaluate existing public surveys of attitudes and understanding concerning invasive species issues.
- Compile a comprehensive assessment of current invasive species communications, education, and outreach programs.
- Develop a model public awareness program that incorporates national, regional, State, and local level invasive species public education activities, including a plan for testing the model over the next year.
- Coordinate development and implementation of an international education campaign.
- Develop a series of education materials to guide organisations in development assistance, industry, international finance, and government sectors to write and implement "codes of conduct."
- Co-host a series of international workshops on invasive species in different regions for policy makers.

The Plan is intended to present an ambitious yet "doable" blueprint, from which the U.S. Federal agencies, along with their partners, can work to minimise the significant impacts of invasive species. The next and most difficult step will be implementation of the Plan, a process that the Council has begun through the establishment of multi-partner committees and task teams. As implementation proceeds, the Council will provide updates on its website and continue to expand its information-sharing network.

Source: This report was compiled from information provided on the National Invasive Species Council website: www.invasivespecies.gov where the full version of the national invasive species management plan can also be obtained.



PUBLICATIONS

AQUACULTURE IN CANADA'S ATLANTIC AND PACIFIC REGIONS

Report of the Standing Senate Committee on Fisheries - First Session, Thirty Seventh Parliament (Canadian) June 2001. 102 pages. This report has several pages on the issues of escaped Atlantic Salmon in British Columbia (Pacific Coast). For instance, page 46 and following ".....Atlantic salmon are present in B.C. salmon spawning streams at all life history stages. Last year we learned that surveys of 1% of the potential rearing habitat for Atlantic salmon on Vancouver Island had shown the presence of juvenile Atlantic salmon in three rivers (the Tsitika and Adams rivers, and Amor de Cosmos Creek); this indicated that Atlantic salmon escapees were successfully spawning in rivers. At the time, we were surprised to find out that so little study was being undertaken in this area".

Another interesting quote, on page 46, "With regards to past attempts, in the past century, to establish Atlantic salmon on the West Coast, it was explained to us that these were unsuccessful because the industry used eggs and alevins, unlike Atlantic salmon that now escape which may be fully or mostly grown and have a better chance of colonising. Current escapees may also be acclimatised to local conditions, given that they may be the offspring of generations of parents raised in the Pacific environment. As well, compared to the situation 100 years ago, the depressed state of native pacific salmonid populations, particularly steelhead trout, has left a vacant niche for feral Atlantics, which are capable of persisting in B.C. streams, adversely affecting native salmonids through competition for food and space."

Available from:

<http://www.parl.gc.ca/37/1/paribus/commbus/senate/com-E/fish-e/rep-e/repintjun01-e.htm>.

DEVELOPING A CANADIAN NATIONAL PLAN ON INVASIVE ALIEN SPECIES

A process recently began in Canada to develop a national plan to address the threat of invasive alien species. On September 19th, a joint meeting of federal, provincial and territorial Wildlife, Forests, and Fisheries and Aquaculture Ministers endorsed the development of a draft plan to address the threat of invasive alien species by the fall of 2002. In recognising the threat of invasives to biodiversity, Ministers emphasised the need for a response that is founded on enhanced inter-jurisdictional collaboration. Invasive alien species was identified as one of four priority issues for the implementation of the Canadian Biodiversity Strategy, along with a biodiversity science strategy, enhanced capacity for status and trends reporting, and stewardship of biodiversity.

As a first step in developing a national plan, a National Workshop on Invasive Alien Species was held from November 5-7, 2001, at the Canadian Museum of Nature, Ottawa, Ontario. Responses to the Workshop were enthusiastic, and it was attended by nearly 150 participants from 14 federal departments and agencies and 11 provincial and territorial ministries, as well as experts from municipal governments, First Nations, inter-governmental organisations, environmental and community-based non-governmental organisations, business and industry, and academia. The Workshop was coordinated by a federal/provincial/territorial steering committee, and the agenda included national and international speakers with a breadth of experience in the management of invasives: Dr. David Pimentel (Cornell University), Dr. Hugh MacIsaac (University of Windsor), Dr. Eric Allen (Canadian Forest Service), Bill Houston (Agriculture and Agri-Food Canada), Dr. Bill Gregg (United States Geological Survey), Paula Warren (Department of Conservation, New Zealand), Katherine Glassner-Shwayder (Great Lakes Commission), and Greg Stubbings (Canadian Food Inspection Agency). The presentations highlighted case studies and lessons learned that guided discussions on principles and elements, data and information management and monitoring, taxonomy and research, risk analysis, stewardship, education, international co-operation, legislative and regulatory review, and ethics and values. The IUCN "Guidelines for the Prevention of Biodiversity Loss due to Biological Invasion" were among the background documents distributed to participants before the Workshop.

The Workshop was successful in achieving its overall objectives; it identified and clarified key issues in the Canada context, and initiated the development of a national approach for managing invasive alien species. Progress was made toward identifying elements and principles of a national framework, and a collaborative process was outlined for developing the national plan

by the fall of 2002. In terms of next steps, a Workshop report will be drafted and distributed to participants by the end of November. Participants will review the report, after which it will be revised and more broadly distributed. A multi-stakeholder working group will then be convened to draft a discussion paper that proposes a strategic framework and action plan. The paper will build on the Workshop results, including the goals, elements and action items that were recommended by Workshop participants.

There was broad agreement on several key considerations for a national approach to the management of invasive alien species. Participants recognised the need for action, including a national plan, to address invasives. Such a plan should build on and enhance existing strategies and conventions, including the approaches articulated by the Convention on Biological Diversity, the United States, New Zealand, and others. Participants noted the need for international cooperation both within North America and beyond.

Participants acknowledged that while many good things are ongoing in Canada, there is a need to enhance communication and coordination, and address gaps by developing a comprehensive and integrated management approach. Participants emphasised the need for a comprehensive gap analysis of legislation and policies as the basis for action. Governance was identified as a key issue, including the need to address national coordination, clearly identify roles and responsibilities, and recognise the leadership role of the federal government as a champion, shepherd and facilitator. At the same time, participants also recognised the need to share responsibility for this initiative among all stakeholders. The need for a focused plan was highlighted, including the setting of clear targets and the prioritisation of activities.

Participants recommended that the national plan fully consider economic, environmental and socio-cultural factors, including ethical considerations, and that Canada adopt a precautionary approach that presumes risk and applies a comprehensive screening system to all organisms and pathways. Participants agreed that the strategy should adopt a bio-geographical (ecosystem) approach, and also recognise Canada's responsibility not to be an exporter of invasive alien species. The need for greater public education and awareness arose again and again, and will clearly be critically important to the success of the national plan.

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WORKSHOP ON DEVELOPMENT OF REGIONAL INVASIVE SPECIES INFORMATION HUBS, INCLUDING REQUISITE TAXONOMIC SERVICES, IN NORTH AMERICA AND SOUTHERN AFRICA

14-15 February 2001, Davis, California, USA. Organisers: Dr. Jim Quinn, University of California, Davis, jfquinn@ucdavis.edu, Dr. Bill Gregg, USGS (US Geological Survey), william_gregg@usgs.gov, Ms. Laurie Neville, GISP (Global Invasive Species Programme), lneville@leland.stanford.edu.

The objectives of the workshop were to share experience in developing distributed information networks relevant to Invasive Alien Species and to provide recommendations on concepts and criteria for developing and co-ordinating IAS regional information hubs and requisite taxonomic services to facilitate identification, assessment and rapid response to IAS. Working sessions focused on IAS information management and technical issues, and developing the taxonomic capabilities and services required to support informed responses to IAS. The workshop products will provide important support for ongoing taxonomic initiatives and for GISP plans to develop a global invasive species information network. They will also provide guidance for planning pilot regional invasive species hubs in Mexico and South Africa, for which seed grants are being provided through the Environmental Diplomacy Fund of the U.S. Department of State. The workshop was sponsored by the U.S. Geological Survey in cooperation with the Global Invasive Species Programme. It was hosted by the University of California at Davis. The Davis declaration was produced, which calls for international treaty organisations and the science agencies of developed nations to invest in developing nations to prevent the export of invasive species. This declaration was distributed at the Convention on Biological Diversity (CBD) Subsidiary Body (SBSTTA6) in March 2001.

Source: <http://www.invasivespecies.gov/new/davis.html>

"We need to anticipate which new species will arrive and get away from us," said James Quinn, a UC Davis professor of environmental science and policy and an organiser of the recent UC Davis conference. "The best source of that information is what the same species do in other countries. Small investments in poorer countries' labs and museums would let us work together to collect, standardise and share that knowledge." Source : UC Davis Media release, 22 March 2001, (http://www.newssearch.ucdavis.edu/news_releases/03.01/news_invasive_species.html)

Participant's Report on the Workshop

The workshop was very fruitful, and laid the foundation for the GISP plans to develop a global invasive species distributed information network. ISSG will continue to participate in and support this initiative. Workshop participants identified several challenges that will need to be

dealt with as part of the establishment of such international network:

- * Agencies and individuals are often reluctant to share raw data.
- * Intellectual property issues need to be resolved to facilitate the free flow of information.
- * The source or authority associated with information that is synthesised from a variety of sources must be maintained.
- * Existing networks may be reluctant to make a long-term commitment to the network without funding.
- * Different taxonomic groups have different constituencies. Whereas both conservation and agriculture departments tend to deal with invasive terrestrial plants and insects, invasive aquatic species and vertebrates are more likely to be the preserve of conservation departments.
- * Agriculture departments have little incentive to buy in to the network as they already have large, efficient systems in place

Other information-related issues of high importance to ISSG are the following:

- * Completeness, accuracy and currency of information are often poorest where that information is most urgently needed.
- * Participation in a distributed information network by some of the most severely affected countries and regions is impeded by a lack of financial resources.
- * Special provision needs to be made for those who cannot access the information they need to deal with threats from IAS, because of poor internet connections and/or older equipment.
- * It will be a number of years before a truly international distributed network is operating adequately. Existing efforts to gather and disseminate invasive species information also require attention and support given the gravity of IAS problems that are with us right now.

One aim of the Global Invasive Species Database is to help fill some of the current gaps. Priorities for the Global Invasive Species Database hence range from a focus on the some of the world's worst invasive species, to a focus on areas where information and resources are comparatively scarce, including small-island developing states and other islands. (See also *Aliens* 14).

Report provided by Michael Browne (Participant to workshop)

ISSG Database Manager

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IMPORTATION CONTROL AND PROTECTING NATIVE CANADIAN BIODIVERSITY

The Role of Importation Control in Protecting Native Canadian Biodiversity: Recommendations for the Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act (WAPPRITA) A discussion document. Prepared by: Cathy Keddy - Consulting Ecologist, Murray Smith - The Biodiversity Management Group, Brent Tegler - North-South Environmental Inc, For Canadian Wildlife Service, Environment Canada. 180 pages.

The purpose of this report is to review the actual and potential significance of international wildlife trade in the introduction of foreign animals and plants harmful to native Canadian wildlife, and the potential role of the Wild Animal and Plant Trade Regulations of the Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act, in controlling the intentional importation of potentially harmful alien species. The aim is to provide a solid foundation for developing an effective, coordinated, national approach to the cooperative control of alien species importation. It does not focus on related, but also important, aspects such as: accidental and incidental importations; interprovincial movement of alien species; and intentional importations of micro-organisms, except where they are associated with the importation of a macro-organism. The report includes an in-depth review

of the characteristics of invasive alien species and of native ecosystems that lead to harmful invasions. It also describes the consequences for native ecosystems of invasion by harmful alien species. Another section looks at techniques and mechanisms for preventing, eradicating and controlling invasive alien species importation and introductions; the administrative and legal issues, and issues of cost. There is a review of risk assessment, as it applies to importation and means to incorporate such assessments into Canada's regulatory program of importation controls. Current relevant federal and provincial legislation and policies are discussed. Another section provides guidance for creating a process for listing species. The major recommendations of the report, include: principles that should be adopted; actions that should be taken; and suggested timelines for these actions.

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Aliens is the bi-annual newsletter of the Invasive Species Specialist Group (ISSG). Its role is to put researchers, managers and/or practitioners in contact with each other and to publish information and news of alien invasive species and issues. Contributions, should focus on conservation issues rather than economic, health or agricultural aspects of alien invasions. News of upcoming conferences, reports, and news of publications are also welcome, especially where they are of major international relevance. Please send your contributions, marked "for consideration for Aliens" to m.depoorter@auckland.ac.nz

The New Zealand-based **Invasive Species Specialist Group (ISSG)** is a specialist group of the Species Survival Commission (SSC) of the World Conservation Union (IUCN). It is chaired by Mick Clout. The goals of the ISSG are to *reduce threats to natural ecosystems and the native species they contain - by increasing awareness of alien invasions and of ways to prevent, control or eradicate them.*

Aliens-L is a listserver dedicated to invasive species. It allows users to freely seek and share information on alien invasive species and issues, and the threats posed by them to the Earth's biodiversity. To subscribe, send a message to listadmin@indaba.iucn.org with no subject and the message: "subscribe aliens-L" in the body of the text. (Note: without quotation marks). As soon as you have subscribed to the list you will receive information on how to use the list, including sending messages to the listserver and de-subscribing yourself from the listserver. Most subscribers are English speaking, however, if you would like your message translated into English before posting it, please contact m.depoorter@auckland.ac.nz (we can currently deal with short messages in Spanish, Italian, Dutch, French, Arabic and Chinese).

Cooperative Initiative on Island Alien Invasive Species

The aims of the Cooperative Initiative on Island Invasive Alien Species are: to enhance empowerment and capacity in key areas of invasive alien species (IAS) management on islands; to facilitate cooperation and sharing of expertise; to help enable local, national and regional entities to identify invasive alien species problems, work out solutions and implement them resulting in improvement in

the conservation of island biological diversity. ISSG will undertake the facilitation of this initiative, with support from New Zealand (as a Party to Convention on Biological Diversity (CBD)) and under the umbrella of the Global Invasive Species Programme (GISP). This initiative is a recent development, and any interested individuals or institutions/agencies are encouraged to participate.

The Global Invasive Species Database is freely available online at www.issg.org/database. The development of the database, and the provision of content for it, are ongoing. Priorities range from a focus on some of the world's worst invasive species to a focus on areas where information and resources are comparatively scarce, including small-island developing states and other islands. The database has images and descriptions for a wide variety of invasive species. Records for these species include information on the ecology, impacts, distribution and pathways of the species, and most importantly, information on management methods as well as contact details of experts that can offer further advice. The database also provides links to numerous other sources of information.

IUCN Guidelines for the Prevention of Biodiversity Loss Caused by Alien Invasive Species <http://iucn.org/themes/ssc/pubs/policy/invasivesEng.htm>

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IUCN: <http://iucn.org>

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