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International Association for Ecology, Association Internationale d'Écologie, Internationale Vereinigung für Ökologie

INTECOL Newsletter

ECOLOGY IN A CHANGING WORLD
VIIIth International Congress of Ecology
Seoul, Korea, 11-18 August 2002

At the INTECOL Board meeting in December 2000, it was agreed that the next International Congress of Ecology, organised by INTECOL, will be hosted by the Ecological Society of Korea in August 2002.

The programme will include plenary sessions, contributed presentations (symposia and posters), round table discussions and thematic workshops. A major component will be field excursions conducted before, during and after the Congress, as well as cultural and social events.

The theme of the Congress is:

Ecology in a Changing World.

Within this general area, the Congress will examine the degradation of ecosystems and focus on their restoration and renewal. The emphasis will be on how ecological science can address environmental issues, and symposia will discuss new findings, new theories and paradigms, recent advances with methods and new information technologies.

Participants will be invited to propose symposia that they will organise in accordance with the Congress theme. Suggestions may be included on the Congress flyer or sent directly to the INTECOL Secretariat at the Lunigiana Museum of Natural History (address p. 2).

During the Congress, excursions will be made to sites of ecological interest in the vicinity of the Congress venue, Seoul (Korea). It is expected that a number of excursions lasting several days will be offered before and after the Congress.

Although the official language of the Congress will be English, it is expected that there will be simultaneous translation of certain plenary sessions.

Further details of the Congress, along with information regarding registration, lodging (a range of options will be available, from four star hotels to lodging in private houses) and abstract forms, will be included with the circulars, available summer 2001. Alternatively, further details can be obtained from the Secretariat or Board Members.

The Congress web page address can be found at the INTECOL web site at

WWW.INTECOL.ORG.

New Board Members

INTECOL welcomes two new board members, Prof. Dr. Kazue Fujiwara (Japan) and Prof. Rusong Wang (Chinese Academy of Sciences). A profile of Rusong will appear in the next Newsletter.

Dr. Kazue Fujiwara is a Professor of Yokohama National University (YNU) in Japan. She has worked in the Institute of Environmental Science and Technology since it was founded at YNU, with Prof. Dr. Akira Miyawaki, a former President of INTECOL. She moved to the Graduate School of Environment and Information Science in April 2001, when the Institute was abolished. Her professional speciality is Vegetation Science, especially phytosociology. She has studied especially evergreen broad-leaved forest vegetation, including tropical rainforests and mangroves, as well as mire vegetation and terrestrial vegetation since 1969. She was educated mainly in Japan but had a CNRES grant in 1969 as a visiting researcher at the University of Lille (France) and as a visiting researcher in the Federal Institute for Vegetation Mapping (Germany).

Recently she received a Fulbright grant and stayed as a visiting researcher in the Institute of Ecology and Department of Geography at the University of Georgia, USA. She works globally,

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comparing vegetation dynamics, human impacts on vegetation, vegetation shift under global change, and species richness. Her work has also involved comparison of vegetation composition and systems, especially in East and Southeast Asia since the 1970's, eastern North America since 1985, and more recently in other parts of the world. She has also worked on restoration of natural vegetation, often with Prof. Miyawaki, providing information on the potential natural vegetation of sites. She is also a committee member in many government ministries, including the Ministry of Education, Culture, Sports, Science and Technology; the Ministry of Environment; the Ministry of Construction; the Ministry of Economy, Trade and Industry; and local governments. In this capacity she is a consultant for the conservation, planning, management and restoration of green environments. She has been an INTECOL member since the Syracuse meeting in 1986, and she was a member of the General Office for the 1990 INTECOL meeting in Yokohama. In 2000, she was the Secretary General and Chief of the Executive Committee for the annual meeting of the International Association for Vegetation Science (IAVS) in Nagano. She has also been a member of the Advisory Council of the IAVS since 1994 and of the Editorial board of 'Phytocoenologia' as well as an Editorial Consultant for 'Plant Biosystems'.

Obituary: Arthur Hasler, Limnology Pioneer

Arthur Hasler, one of the leading figures in 20th century freshwater ecology, whose research answered an intriguing mystery of nature - how migrating salmon precisely identify their "home" waters - died on Friday (March 23) after a long illness. He was 93. Hasler, a professor emeritus of limnology who spent 41 years on the faculty at the University of Wisconsin-Madison, made a number of enduring contributions to the field of lake research. His most famous research came in the late 1940s, when Hasler developed ways to demonstrate how "olfactory imprinting," a finely honed and ingrained sense of smell, enabled salmon to journey literally thousands of miles to spawn in the precise stream of their birth.

"Many people who work on ecological problems today remain awed by the insightfulness of Hasler's research," says John Magnuson, retired director of the UW-Madison Laboratory of Limnology and longtime colleague of Hasler. "He was a big thinker and had grand ideas, but he also believed you were not done with your research until you dealt with its applications in society."

Hasler, a 1969 inductee to the National Academy of Sciences, also pioneered a new way to study ecological problems by creating controlled experiments of entire lake ecosystems, which are too complex to be studied piecemeal in a laboratory. Whole-ecosystem experiments are widely used today in lakes, streams, forests and oceans. Hasler's research also helped define land-water interactions as a primary variable in the water quality and ecological health of lakes. In his emeritus years, Hasler developed "Salmon for Peace", a project which he hoped would bring Russia and China together around the shared goal of salmon management in the Amur River, which shares borders with both countries.

Hasler served as an advisor to 52 doctoral students during his tenure at UW-Madison, and was author of more than 200 publications and seven books. He was a past president of the American Society for Limnology and Oceanography, the American Society of Zoologists and the Ecological Society of America. He was also a founder and first director of the Institute for Ecology. He was elected to the American Academy of Arts and Sciences in 1972, and holds many lifetime service and achievement awards from limnology and ecology professional societies, both national and international.

Hasler is survived by his wife, Hatheway, and his children, Sylvia (Thatcher), A. Frederick, Bruce, Mark, Galen and Karl.

FOCUS ON RESEARCH: THE GLOBAL INVASIVE SPECIES PROGRAMME

Invasive Alien Species: Forging Cooperation to Address a Borderless Issue

BACKGROUND: ORIGINS AND ACTIONS

The ever-increasing impact of invasive alien species (IAS) on global economies and environment suggests that further efforts are necessary to augment the current framework for effective prevention and control. Close to the turn of the 20th Century, only a handful of countries had an awareness of the invasive alien species problem that allowed them to adequately address their responsibilities under Article 8 (h) of the Convention on Biological Diversity (CBD). The CBD, recognising the importance of this global issue, calls on contracting parties to: *"prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats and species"* (Article 8 (h)).

The need for a global invasive species programme emerged in 1996, at the Norway/UN Conference on Alien Species, held in Trondheim. This brought together experts on this subject with representatives from over 80 countries to examine our understanding of the problem, its extent and the global capacity to address it. This conference concluded that invasive alien species were a major threat to biodiversity conservation (as well as agriculture); indeed they were probably the greatest threat next to habitat destruction, and almost certainly the single greatest threat recognised in island ecosystems.

It also emerged from this meeting that most countries had insufficient awareness, information or capacity to address their invasive alien species problems. And yet, recognising that though there are existing gaps in management, research and information, some solutions exist. Throughout the world, many governments, and environment agencies in particular, had limited access to these existing solutions and to the best practices which had grown out of managing invasives in some countries, or in other sectors, such as agriculture.

*The Nile perch (*Lates nilotica*) introduced to Lake Victoria in 1954 has resulted in the extinction of over 200 endemic species of cichlid. The oily flesh of this fish requires drying by wood fires, as opposed to sun drying of the native fishes previously harvested. The harvesting of trees for firewood to process the fish has led to erosion of soils and ultimate eutrophication of the lake. Water hyacinth thrives in these conditions, resulting in a costly battle for the communities surrounding Lake Victoria. (Photo credit: Jens Bursell)*

The Global Invasive Species Programme (GISP) focuses on those aliens or non-indigenous species that disrupt ecosystem processes and thereby threaten biological diversity, health and economies. GISP was developed as a cooperation between specialists on invasive alien species, including scientists, lawyers, environmentalists, policy makers, economists, resource managers and others. The programme was established in 1997 to address the global threats caused by invasive alien species and to establish a knowledge base on the issue. Since 1997, this 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 species on both our natural as well as managed ecosystems.

*The Giant African Snail (*Achatina fulica*); introduced to the Pacific and Indian Ocean Islands as a food source, has become an agricultural pest. It dominates landscapes and with a voracious appetite, competes with native species for resources. (Photo credit: L.E. Neville)*

The mission of GISP is to enable governments and other organisations to use the best practices available to manage IAS and to promote the development of

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additional tools and strategies needed to improve global management of IAS. GISP provides support to the implementation of Article 8(h) of the Convention on Biological Diversity (CBD), and strives to promote collaboration and partnerships with a holistic, multi-sectoral approach.

GISP has been initially supported by several international organisations with long and complementary experience in invasive alien species problems. The Scientific Committee for Problems of the Environment (SCOPE), along with partners from The World Conservation Union (IUCN), and CAB International (CABI) initiated Phase I of this innovative Programme. GISP is supported by the United Nations Environment Programme (UNEP) and the Global Environmental Facility, (GEF). Additional support from UNESCO, the Norwegian government, ICSU, NASA, La Fondation Total, The David and Lucile Packard Foundation, U.S. Environmental Diplomacy Fund and the John D. and Catherine T. MacArthur Foundation has facilitated the progress in the initial phase. The Global Invasive Species Programme (GISP) is a component of DIVERSITAS, an international programme on biodiversity science.

GISP began with a three-year work plan centred on eleven components and the delivery of a specific set of practical outputs, and sought to improve the scientific basis for decision making on invasive species issues. Each of these components contributed to building the comprehensive approach required for dealing with the issue. Some of these components were aimed at establishing the background and the scientific and social basis of invasive alien species problems, including the current status of invasives, their ecology, human dimensions of the invasive species problem and the relationship between invasive alien species and global change. Another set of projects addressed more practical considerations: the identification of pathways of invasion, early warning systems, methods for prevention, early detection and management, risk assessment, legal and institutional frameworks, the economics of invasive alien species and educational programmes.

Box 1: Key publications of GISP Phase I

McNeely, J.A., Mooney, H.A., Neville, L.E. Schei, P.J., Waage, J.K. (eds.) (in press). ***A Global Strategy on Invasive Alien Species.*** IUCN, Gland, Switzerland and Cambridge, UK.

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

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

Mooney, H.A., Hobbs, R.J. (eds.) 2000. ***Invasive Species in a Changing World***. Island Press, Washington, DC.

Perrings, C., Williamson, M., Dalmazzone, S. (eds.) 2000. ***The Economics of Biological Invasions***. Edward Elgar Publishing, Cheltenham, UK.

Ruiz, G., Carlton, J.T. (eds.) ***Pathways of Invasions: Strategies for Management across Space and Time.*** Island Press, Washington, DC. (volume in preparation)

Shine, C.,Williams N., Gundling, L. 2000. ***A Guide to Designing Legal and Institutional Frameworks on Alien Invasive Species***. IUCN, Gland, Switzerland, Cambridge and Bonn. xvi+138 pp..

Wittenberg, R., Cock, M.J.W. (in press). ***Invasive Alien Species: A Toolkit of Best Prevention and Management Practices***. CAB International, Wallingford, Oxon, UK.

Box 2: A Global Strategy on Invasive Alien Species, Ten Strategic Responses:

- Build national capacity to manage invasive alien species problems
- Build capacity to undertake critical scientific, social and economic research
- Promote the sharing of information on invasive alien species and their management
- Develop economic policies and practical and effective economic tools
- Strengthen national, regional and international legal and institutional frameworks
- Institute a system of environmental risk analysis
- Build public awareness and engagement
- Prepare national strategies and plans
- Build invasive species issues into global change initiatives
- Promote international cooperation to mitigate the problems of invasive alien species

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The specific outputs of this initial activity of GISP are presented as a series of publications directed at different stakeholder groups. These publications include: a global strategy for invasive alien species, a prototype database for early warning, a toolkit of best practices, various scientific volumes directed at target audiences and a popular book to expand awareness among the general public (Box 1).

Under the CBD, the Conference of Parties agreed to a set of interim Guiding Principles, to which GISP contributed. Considering these principles and incorporating the efforts of numerous experts who contributed to the final reports of the GISP Components during a Phase I Synthesis Conference held in Cape Town, South Africa in September 2000, GISP has developed ten strategic responses, within a Global Strategy. These elements are intended to guide policy-makers in responding to the growing challenge of invasive alien species (Box 2).

Since 1999, GISP has also supported the Secretariat to the Convention on Biological Diversity by providing information and advice on IAS problems. The Sixth Meeting of the Scientific, Technical and Technological Advice to the CBD (SBSTTA 6), held in Montreal, Canada, in March 2001 acknowledged the contributions of GISP and recommended the continuing cooperation between SBSTTA and GISP. This meeting also facilitated new partnerships and created opportunities for governments, international conventions, and others to engage in cooperative efforts to address mitigating the threats of invasive alien species and to work towards improving management of the problem on a global scale with regional considerations.

A NEW PHASE TO ADDRESS NEW TASKS

When GISP began in 1997, the number of national environmental programmes addressing invasive alien species was few. We know today that the growth of new invasive alien species problems is accelerating with increased trade and with global change. The demand for knowledge is growing in pace with the problem. GISP has been a proactive programme, anticipating this demand. As more countries recognise the importance of invasive alien species and build national programmes, we perceive that the need for GISP will grow as well.

Whereas, the first phase of GISP contributed to the knowledge base on invasive alien species, the second phase will promote new partnerships with stakeholders and will promote regional activities to facilitate national capacity, co-operation, and implementation for the prevention and management of IAS - essentially facilitating the transformation of policy into practice.

The second phase effort will provide assistance to governments and development agencies to identify and initiate national and regional projects to mitigate threats resulting from invasive species impacts. It will support existing projects and initiatives and will promote international capacity building and networking. Major components of regional and national initiatives will include national strategy development, surveys, inventory and taxonomic support, pilot projects on invasive alien prevention and management including habitat restoration and raising awareness through information sharing, outreach and education. GISP involves the voluntary contribution from a substantial group of scientists, lawyers and managers from all parts of the world.

Thus GISP will seek to extend participation to invite new, active partners, including the CBD, other conventions, governments, organisations and individuals. GISP, in consultation with governments and international organisations at the Phase I Synthesis Conference in South Africa (2000), developed from the Global Strategy and recommendations, a six-part work plan that will focus the concerted action of GISP specialists (Box 3).

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Box 3: The six work plan elements of GISP Phase II

- Improve and facilitate national and regional capacity to prevent and manage IAS problems worldwide.
- Actively disseminate information, both research and operational, to meet the needs of key stakeholder groups, *including managers, policy makers and the general public,* with a particular emphasis on the needs of the developing world.
- Provide accessible information on scientific, technical and other aspects of IAS and facilitate access to relevant expertise including IAS identification, prevention, eradication and control in collaboration with partners.
- Prevent and minimise impacts of invasions, focusing on key sectoral pathways of introduction and/or redistribution.
- Support the development and applications of research and research capacity on IAS.
- Inform development and strengthening of policy and legal instruments.

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GISP provides a framework where all individuals and institutions can work in cooperation to develop practical approaches to the problem of IAS. GISP Partners have the opportunity to provide direction for and fully participate in the GISP programme of work - to inform policy and to help translate policy into effective practice.

The Programme has identified a very substantial need to focus more attention on invasive alien species in developing countries. In these countries, invasive species are not just a conservation issue, or an agricultural issue, but a profound sustainable development issue, affecting poverty, rural livelihoods, health and gender equity. Invasive alien species affect crucial and limiting ecosystem services, and processes such as soil recovery, reforestation and water conservation. Invasive alien species interfere with many development objectives, in these parts of the world which are presently least able to assess, prevent and mitigate them. These elements are, like climate change, pollution and other processes, a global challenge to sustainable development, for all to consider.

Avian malaria, introduced to Hawai'i via introduced birds kept by settlers, is spread by the vector mosquito, Culex quinquefasciatus *– this mosquito, also an introduced species (via water barrels of early sailing ships). Avian malaria has contributed to the extinction of at least 10 native birds species in Hawai'i. (Photo credit: Jack Jeffrey Photography)*

The primary impacts of invasive alien species clearly have impacts on biological diversity and the functioning of ecological systems. However, it is often secondary impacts – such as the firestorms that are fueled by invading alien plants in South Africa – that communicate best to an unwary public. (Photo Credit: ARGUS)

INTEGRATING SOCIAL DIMENSIONS INTO THE PROGRAMME

The cultural differences, priorities and beliefs of people must be considered in the issue of IAS. The economy, health and well being of a society are important facets to consider when making decisions about prevention and management. It is clear that many introduced species have tremendous benefits to local economies; the majority of agricultural crops and livestock that have been introduced over decades have proven this. However, in the event that particular aspects of the introductions are overlooked, then problems may arise, and the costs to mitigate a resultant problem may be astounding. Costs to society should reflect the impacts on natural resources, health, agriculture and industry. These costs are often difficult to clarify because the actual effects of IAS on ecosystem services are frequently difficult to determine. However, collaboration and the sharing of information and resources will assist in the provision of adequate assessments, and the best prevention and management measures.

Consideration with respect to the societal impacts and benefits of regional and national programmes are vital. The South African Working for Water Programme provides an innovative multifaceted approach to management and control of invasive plants, and addresses social reform within the programme. Community empowerment is a key feature of this campaign. Jobs have been created in a difficult economy and people are employed to manage invasive alien plants that threaten native diversity, deplete water tables and fuel wildfires. This management approach has had positive socioeconomic outcomes

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in addition to addressing conservation issues.

Human values and perspectives are determining factors and a driving force behind the accelerated movement of species and products through trade. Consideration of these aspects are necessary to minimise threats posed by invasives through this pathway. The diversity of the values will be important considerations when applying management programmes for prevention and mitigation at national and local levels and for successful collaboration in capacity building programmes. Facilitation of the sharing of resources and information among countries are key to minimising the impacts of invasives.

Many of the serious invasive alien species in the developing world are sadly associated with international assistance projects. In some cases, alien species are unintentionally introduced with planting material. In other cases, new crops or other organisms are introduced which subsequently become invasive. Development aid in Africa and Asia has been a source of serious insect and weed invaders that consequently threaten food security in some countries. This sensitive issue must be addressed, in order to assess the full cost and benefits involved and to identify precautionary measures. Those countries that have the resources and abilities to assist others should be aware of the ramifications. Inequities must be addressed, and international standards and codes of conduct established to avoid the potential impacts that follow such activities

CONCLUSION

New opportunities exist for collaboration between programmes and governments that have been engaged in management of invasions over time within a variety of ecosystems and conditions. It will be innovative approaches to inter-agency collaborations that will contribute to solving the problem. The complex relationships that exist between regions, nations, agencies, and industry provide a challenge that must be addressed in the management of IAS; however, it is these components that are key to addressing the issue with unique approaches and coming to a consensus on minimising impacts.

The spread of invasive alien species is a complex challenge that does not respect political boundaries. The nature and severity of impacts on biodiversity, society, economies, and health are affecting the world's regions at such an alarming rate that priority must be given to addressing the issue holistically with international scope, and with mindful consideration for all impacts at regional and global scales.

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Information/ Subscriptions

For comments on the Newsletter, including contributions, please contact the Editor, Greg Masters (details on p. 2). Further information including enquiries for joining the Society should be addressed to the Secretariat Office (Almo Farina, p.2 for details) or your local Board member.
INTECOL is always keen to hear the views of members and non-members alike.

Deadline for the next Newsletter is 1 September 2001.

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The International Association for Ecology is an international non-governmental professional organisation that represents ecologists worldwide. INTECOL is part of the Section of the Environment of the International Union of Biological Sciences (IUBS). The IUBS is an affiliate of the International Council of Scientific Unions, the highest-level international, non-governmental science organisation.

INTECOL, formed in 1967, has 1,300 individual members, 32 affiliated national ecological societies and 7 professional organisations.

INTECOL works to:

- promote the development of the science of ecology and the application of ecological principles to global needs, particularly through international co-operation;
- collect, evaluate, and disseminate information about ecology;
- promote national, regional, and international actions in ecological research; train personnel, co-ordinate large scale applications of ecological principles; and encourage public awareness of the economic and social importance of ecology;
- arrange conferences, workshops and symposia, conduct lecture series, publish manuscripts, develop programs or projects, assist in establishing new institutions or organisations, and take any other actions deemed appropriate to implement the general objectives of the association.

A major activity of INTECOL is the organisation of the International Congress of Ecology, the major professional meetings of ecologists from throughout the world. The VII Congress, held in Italy in 1998, was attended by more than 2200 participants from 70 countries.

INTECOL is managed by a board of officers elected every four years. The board is advised by a Council which consists of nominated representatives of the affiliated national ecological societies. INTECOL is supported by annual dues from its members and by grants from national and international governmental groups and organisations and private foundations.