



Filling the gaps in the IAS legal framework

— New Zealand hosts CBD Expert Group



Delegates at work during the Auckland meeting

There are a wide variety of international legal instruments that include provisions for the prevention and/or control of invasive alien species (IAS). Correspondingly, there are numerous international bodies with responsibilities reflecting these provisions. For example, the Food and Agriculture Organisation (FAO) of the United Nations (UN) hosts the Secretariat of the International Plant Protection Convention (IPPC) which was first ratified in 1952 and which provides a framework for the control of plant pests. A newcomer on the scene is the International Convention for the Management of Ballast Water and Sediments, which was

adopted in February, 2004, and which is yet to come into force. It is administered by the International Maritime Organisation (IMO), the UN body responsible for the regulation of shipping.

One of the characteristics of the majority of these instruments is that they are highly sectoral, with the two mentioned above, for example, addressing IAS associated with plant pests and shipping. In the case of the IMO Convention, the subject is even more specific, dealing only with IAS introduced by ballast water, while ignoring those introduced by other ship-related vectors, such as the ship's hulls. Analysis of the bigger and broader



CBD

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FROM THE DESK OF THE DIRECTOR

Invasive alien species have often been deemed to be “biological pollution”. As a biologist with many years of experience in the pollution field, I personally, do not like the term. The inherent differences between chemical pollutants, and live organisms which grow and reproduce – sometimes at mind-boggling rates – mean that it is difficult to apply the same management principles to them. For example, dilution – which is frequently used as a management tool to reduce levels of contaminants to non-toxic levels – simply doesn’t apply. Although it has been used in the context of ballast water exchange at sea – where sea water from the open ocean is allowed to flow through the ballast water tanks, thereby “diluting” the organisms in the original ballast water – many are now arguing that this practice may actually rejuvenate the remaining organisms by introducing a new supply of nutrients. As a result, within a few days many of these organisms can regain their original numbers.

Be that as it may, there is one aspect of this comparison which I believe warrants further exploration, namely, the question of liability, or the application of the “Polluter Pays Principle” to the introduction of invasive species. There are

now a number of international instruments dealing with pollution liability and, while it may be more difficult to determine liability in the case of the unintentional introduction of invasive species, it should certainly be considered in relation to deliberate introductions – especially of species which are known to be invasive. Some responsibility should also be accorded to governments who knowingly allow the exportation of proven invasives from their own countries to states who clearly do not have the capacity to evaluate the threat, or to manage the consequences. After all, Article 14 (d) of the Convention on Biological Diversity commits Contracting Parties to notify other states of threats originating in their territory, and to take action to prevent or minimize such threats.

It is widely acknowledged that, because of their transboundary nature, invasive species cannot be successfully managed at the national level alone. For effective management, there must be regional and international co-operation. In the face of the overwhelming lack of appropriate capacity in much of the world, surely it is time for those in the know to stand up and be counted.

Dr Lynn Jackson
Director: GISP Secretariat

Visit our website at www.gisp.org for daily updates on IAS news, events, jobs and much more...

The highly dedicated GISP web team, based at the International Ocean Institute at the University of the Western Cape in Cape Town, South Africa, under guidance of webmaster, Martin Cocks, has been burning the midnight oil over the last couple of months. Not only have they started to populate the Global Interactive Map with information and contacts from countries all over the globe, but they have also worked on a revamped and updated user-interface section. This “new look” GISP web portal aims to simplify and speed up searches and downloads,

update and expand news and contacts and add even more new links to IAS databases and websites.

Visit us at www.gisp.org for a fresh experience and please send any comments and suggestions to our communications coordinator, Ms K Brand at brandt@sanbi.org

Remember to keep on sending us your latest IAS information to ensure it gets incorporated into the GISP Global Interactive Map from where it is made available to all interested parties! Send info to gisp@uwc.ac.za

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picture of the IAS legal framework, shows that, as a result of this sectoral, piecemeal approach, there are a number of gaps and inconsistencies which potentially undermine the overall effectiveness of the international regulatory framework for addressing invasive alien species. These concerns have been discussed at several of the recent meetings of Contracting Parties to the CBD, and culminated in the establishment of an Ad Hoc Technical Expert Group on Gaps and Inconsistencies in the International Regulatory Framework in Relation to Invasive Alien Species. At the kind invitation of the Government of New Zealand, this group, together with a number of observers from relevant organizations, met in mid-May in a girl guide camp (Otima) in the Waitakere Mountain Range on the outskirts of Auckland.

The almost constant rain, a cosy fire in the meeting room, and the camaraderie engendered by the informal nature of the venue, set the scene for an open, frank and highly productive discussion which concluded with a number of potentially far-reaching recommendations.

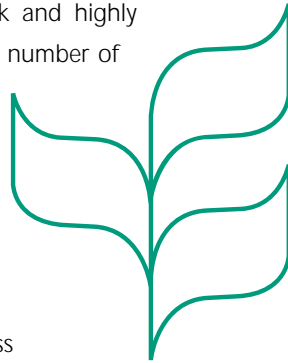
The primary objectives of the meeting were to:

- i) further clarify gaps and inconsistencies (building on previous reports)
- ii) develop practical options on how to address the gaps and inconsistencies, where possible within the context of existing international frameworks

- iii) identify appropriate standard-making authorities or other appropriate options if required.

The meeting identified close to twenty specific gaps and inconsistencies in the international regulatory framework in relation to invasive alien species. The major gaps identified included the lack of standards to address animal IAS (those not covered by IPPC or OIE); ship-related vectors other than ballast water; and civil air transport. A number of possible options were proposed to address the first of these, and there will need to be further discussion thereon to agree on the most appropriate way forward. In the case of the latter two, it was acknowledged that there were already some preliminary efforts by the relevant organisations to deal with them, and it was recommended that these efforts be supported. There was also general agreement though, that

even in areas where the legal framework is adequate, there is, in many parts of the world, a lack of capacity at the level of national governments to implement even existing regulations. The recommendations therefore underlined calls made by GISP and others for substantial support for capacity-building efforts.



CBD

Further details and the final report of the meeting are available from the CBD website: www.biodiv.org

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GISP members signing the new constitution

TACKLING THE GROWING SPREAD OF INVASIVE SPECIES ACROSS THE GLOBE: RENEWED COMMITMENT FROM KEY INTERNATIONAL ORGANISATIONS

GISP members sign new constitution

On April the 10th, senior representatives from key international environmental organizations met in Cape Town, South Africa for the inaugural meeting of the GISP Voluntary Association. This 2-day event also saw the four founding members of GISP adopting a new Constitution which will combine and strengthen their efforts in the global struggle against invasive species. The programme is intended to create synergy, not only among the work programmes of its members, their regional offices and centres, but also with a wide range of global partners.

GISP Founding Members

The four founding members of the “renewed” GISP include:

- **The World Conservation Union** (also known as IUCN – The International Union for Conservation of Nature and Natural Resources) with world headquarters in Gland, Switzerland.

- **CAB International** (CABI), registered with the United Nations as an international treaty, with headquarters in Oxfordshire, United Kingdom.
- **The Nature Conservancy** (TNC), incorporated under the laws of the District of Columbia, based in Virginia, United States of America.
- **South African National Biodiversity Institute** (SANBI), established in terms of the National Environmental Biodiversity Act, based at Kirstenbosch National Botanical Gardens, Cape Town, South Africa.

SANBI has also agreed to host the voluntary association, and provide administrative and logistical support to the GISP Secretariat, which is located at the SANBI offices in Kirstenbosch Gardens.





THE GISP BOARD. From left to right: Prof. Brian Huntley, Dr. Silvia Ziller, Dr. Bill Jackson, Dr. Geoffrey Howard, Dr. Dennis Rangi, Dr. Lynn Jackson, Dr. Mark Lonsdale (Chair) and Dr Sean Murphy.

Statements from the Board:

Dr Mark Lonsdale, CSIRO, Australia and GISP Board Chair: *"This agreement establishes GISP as a pre-eminent global knowledge broker tackling invasive species. Agencies can partner with GISP secure in the knowledge that the collaboration will be managed by a robust governance structure."*

Contact: mark.lonsdale@csiro.au

Dr Silvia Ziller, TNC and GISP Board Member: *"We are happy to become a part of GISP and help take it beyond the boundaries it has managed to cross so far. GISP and its mission need to be understood and incorporated by many countries in the world, who can greatly benefit from the solid information base, capacity and expertise only the Programme has built in global terms."*

Contact: sziller@tnc.org

Dr Bill Jackson, IUCN and GISP Board Member: *"Tackling invasive species is a key economic, social and ecological challenge. The new constitution will enable GISP to have major impact on addressing this challenge worldwide."*

Contact: WJJ@hq.iucn.org

Dr Lynn Jackson, Director: GISP Secretariat and ex officio Board Member: *"The Secretariat is delighted that there is now a solid base on which we can build and expand the partnerships with the many individuals and organisations who have already expressed their willingness to join forces in the common struggle against the devastating impacts of invasive species."*

Contact: Jackson@sanbi.org

GISP Constitutional Objectives

The primary objective of GISP is to facilitate and assist with the prevention, control and management of invasive species throughout the world.

To achieve this, it will:

1. raise global awareness of the ecological and socio-economic impacts of invasive species
2. contribute to the development of a global information system on invasive species and maintain a website to facilitate information exchange
3. gather, assess and disseminate information on the impacts of invasive species, the resources and methods available for preventing incursions and for the control and management thereof once they have been introduced
4. improve the technical basis for assessing the impacts of invasive species and for their prevention, control and management
5. build capacity to deal with invasive species by providing information, advice and training to entities and officials who have been tasked with the management of invasive species
6. inform policy development, both on a multi lateral and on a national level
7. build international partnerships and networks to achieve the various objects set out above.

The GISP Partnership

Network in Action

A focus on the South African National Biodiversity Institute (SANBI)

A global leader in biodiversity policy and research, GISP board member and host agency to the GISP Secretariat

Extracted and edited from an article by Michael Cherry, Associate Professor in the Department of Botany and Zoology at the University of Stellenbosch in Stellenbosch, South Africa. E-mail: mic@sun.ac.za
Citation: Cherry M (2005) South Africa – Serious about Biodiversity Science. *PLoS Biol* 3(5): e145 Abbreviations: NBI, National Botanical Institute; SANBI, South African National Biodiversity Institute

South Africa's new Biodiversity Act, signed on September 1, 2004, expands the mandate of the National Botanical Institute (NBI) to include responsibilities relating to the full diversity of the country's fauna and flora; it is now known as the South African National Biodiversity Institute (SANBI) (Pretoria, South Africa). Previously responsible for eight national botanical gardens and three herbaria, as well as botanical research centres in Pretoria and at its largest garden at Kirstenbosch

on the slopes of Table Mountain, it now additionally should influence the prospects of all collections of specimens; coordinate research on indigenous biodiversity and its sustainable use; advise conservation agencies and municipalities with regard to planning decisions relating to biodiversity; coordinate the control of invasive species; and monitor the effect of any genetically modified organisms released into the environment.

Acting Chief Executive Officer Brian Huntley admits openly that this is quite a brief. It's not difficult to see why it is the former NBI that has inherited this mantle, since it has become, over the past decade, by far the largest and most dynamic South African institution working in the biodiversity arena. Operating under the aegis of the Department of Environment Affairs, it was formed in 1989 through the amalgamation of what had previously been the National Botanical Gardens and the Botanical Research Institute. Currently supporting 680 staff, it has flourished particularly during Huntley's tenure, which has been characterized by an influx of externally funded projects, to the extent that external income – \$18 million per annum – now exceeds the



\$16 million it receives from its parliamentary grant and from entrance fees paid by the million or so visitors to its gardens each year. Huntley is optimistic that this brief can succeed, although he concedes that in few countries does any single institution bear responsibility for research, information dissemination, and applications relating to biodiversity. But he believes that South Africa is a small enough country, with enough good intellectual capacity, for this model to work.

This view is echoed by Andrew Balmford of Cambridge University, who is spending a sabbatical at the Percy Fitzpatrick Institute for African Ornithology at the University of Cape Town. "While the obvious challenge is to link biodiversity conservation to development needs", he says, "there are very few developing countries which have the prospect of delivering jobs related to the conservation industry. South Africa has this prospect, not only because it is unbelievably diverse, but because of international goodwill towards the country".

Huntley's strategy will be to bring a sound scientific base to the enterprise, as he has already done with the NBI. There are several examples of this. One is the African Plants Initiative – being led by the SANBI, Kew Gardens in the United Kingdom (London), and the United States Missouri Botanical Garden (St. Louis, Missouri, United States) – whose aim is to create an electronic library of the type specimens of all African plants: an estimated 300 000 accessions of 60 000 species. This includes scanned pictures of each individual specimen, the quality of which, according to Huntley, "is as good as if one were examining the specimen through a standard dissecting microscope." Another example involves



The Global Invasive Species Programme

placing the 2.5 million specimens in South Africa's herbaria on a computerized database, a task now 40% complete. A third example is the Southern African Botanical Diversity Network (Pretoria, South Africa), founded in 1996, which has, to date, trained 200 botanists in ten countries in the region.

By contrast, research on zoological diversity, traditionally the domain of the country's natural history museums, has lagged behind. The Iziko South African Museum in Cape Town, for example, one of the country's five national natural history museums, now has only seven research staff in natural history compared to the 16 it had in 1989. Why have they failed to capitalize on external funding in the way the NBI has done? One answer is that, unlike the three national herbaria, which all fell under the jurisdiction of the NBI,



Prof. Brian Huntley, Acting Chief Executive of the South African National Biodiversity Institute (SANBI) and GISP Board Member

these five institutions have retained their institutional autonomy, and consequently have remained fragmented in their efforts. One, the South African Institute for Aquatic Biodiversity (Grahamstown, South Africa), is run by the National Research Foundation, while the other four are funded by grants from the Department of Arts and Culture, which has tended to view them as educational, rather than research, organizations. Huntley emphasizes that the SANBI does not aspire "to do what other organizations are already doing well."

With regard to natural history museums, he says that the first step will be to take the initiative in conducting a thorough review of their funding, and the "best practice of dealing with large and dispersed collections".

For more on SANBI, visit www.sanbi.org

BIODIVERSITY AND THE SOUTH AFRICAN ECONOMY

The extraordinary diversity of habitats found on the southern tip of the African continent includes three globally recognized biodiversity hotspots: the temperate Cape Floristic Region (see below), the arid Succulent Karoo, and the subtropical Maputaland-Pondoland-Albany area. South Africa has good universities, museums, and herbaria, and reasonably well-run conservation agencies at both the provincial and national levels, but only 6.6% of its land surface has formal conservation status, lagging behind the global mean of 11.5%.

Protection is important for a number of reasons. A decade after the advent of democracy, the economy is booming at last, with the country currently experiencing the longest sustained period of growth in its history since the early 1960s. Rising levels of affluence have led to increased demand for housing, roads, and recreational facilities – all developments that affect biodiversity. The benefits that biodiversity brings to the economy are increasingly being realized, notably through ecotourism. Tourism is the fastest growing sector of the economy, having risen to 7% of GDP in 2003, from only 2% a decade previously. The virtual abandonment of agriculture subsidies has led to much marginal agricultural land – previously farmed essentially to generate subsidy – being converted to private nature reserves, used either for ecotourism or for hunting, and sometimes for both. Such land now comprises 13% of the country's surface – more than twice the area protected by the state.



Cape flowers in August

(Photo: Peter Jones)

Invasive species under global change – signs from a homogenized world

GUEST ESSAY by Phoebe Barnard¹ Wilfried Thuiller and Guy Midgley (Climate Change Research Group, South African National Biodiversity Institute)

The world is changing at a dizzying pace – seemingly faster each day. Although we seldom detect it from one day to the next, we all have small moments of shock when we return to an area long since left, and suddenly realize the scale of change.



Namibia's former President, Sam Nujoma, left the country to help coordinate an armed struggle for independence in 1960. When he returned nearly 30 years later, he was appalled to realize the extent of deforestation in his home region – which had been largely undetected by those he left behind. This moment of sad epiphany eventually drove Nujoma to champion a number of integrated environment and development projects in the country. Environmental change had been noticed by an influential person – a rare, and for Namibia pivotal, event.

Global environmental change, risk and vulnerability

Global environmental change has been a fact of life on earth for millennia, even aeons. It is, after all, what enabled our planet to evolve and become habitable. But with our huge human population, the relentless consumption and affluence of many, and our predilection for settling in natural hazard zones – beachfronts, floodplains, fire-prone forests and shrublands, tornado and cyclone flight paths, volcanic slopes – things are getting serious now. Between three and four billion people live in coastal areas around the world, one billion of them at sea level or less than 5 m above. And we are pressurizing our natural areas more and more. Over 1.35 billion live in globally recognized biodiversity hotspots and high-biodiversity wilderness areas. Along with human settlement go many other direct drivers of environmental

change – habitat fragmentation, biotic invasion, and land conversion. Indeed, ecologists are starting to talk about these issues together with climate change as the 'lethal cocktail' of threats to biodiversity.

Vulnerability of ecosystems and societies from natural hazards has been heightened almost exponentially in the last century, by global climate change and the twin pressures of human population growth and the growing world economy^{2,3,4}. Insurance companies are starting to specialize in natural hazards coverage⁵. Risk and uncertainty are fundamental facts of life for planners, but the stakes have grown dramatically in the past hundred years.

Invasive species and the steamroller of globalization

A century ago, people didn't speak of 'alien species,' much less invasive species. Fruit trees, cereal crops, ornamental flowering species, livestock and rabbits from home were comforting to settlers transplanted far across the globe, and some of these imports made the difference between survival and starvation to migrants – whether Polynesian, British, Vietnamese or Israeli. They had positive values. Dick Mack⁶ and A.W. Crosby⁷ have written of the cultural imperative that drives humans to propagate familiar species during colonization. Even today, many alien species introductions are perceived favourably by most people. Only once highly invasive, with direct impacts on other cultural or economic values, do people's perceptions start to change. The introduction of *Prosopis* to Kenya, for example, was initially welcomed, and only when it started to take over floodplains used for grazing livestock did people reconsider its value.

Box 1

"It is clear that invasive alien species and anthropogenic climate change are individually two of the greatest threats to ecosystem structure, function, integrity and the services they provide – their synergistic impacts are relatively unknown but a major cause for concern."

GJ Masters, CABI Bioscience, & GF Midgley, Climate Change Research Group, South African National Biodiversity Institute⁸

Now, with 6.2 billion people on the planet, many trading and traveling freely between continents, with ten billion gallons of ballast water moving around the world per year and thousands of passenger flights per day, the homely trickle of comfortingly familiar garden and farm species has become a devastating flood of intentional and unintentional species introductions. Transported into new habitats via old pathways (e.g. wooden pallets) and newer ones (e.g. internet-based catalogue sales in 'exotic pets,' seeds and cuttings, ballast tanks of intercontinental cargos), the problem has become almost impossible to measure, never mind regulate. The new cultural imperatives of free trade, consumerism and the allure of an affluent, instant-gratification society where one can get anything, anywhere, anytime are combining with serious consequences for invasive species management. Faced with these powerful realities, many people on the street question why we bother trying to stem the tide. And in a world with difficult challenges and disparities, it is important for us to ask ourselves those same questions, and to marshal enough data to make our case for continued and expanded action.

Climate change and invasive species

Many of us can see intuitively that climate change will affect the way that we manage biological invasions. The question is how. Our understanding of the synergistic effects of global warming on biological invasions is still pretty basic. A 2004 report on this subject for The World Bank and Global Invasive Species Programme by Greg Masters and Guy Midgley⁸ concluded that although this issue is urgent, it is little studied (Box 1). The science of such impacts is still very new, though developing fast. We know enough to say with

Box 2.

"Climate change is going to shuffle the ecological cards that determine which climatic conditions occur where, and which species are most likely to be players in the game. Many rare and endangered species have restricted distributions and may be particularly vulnerable to climate change, opening up new possibilities for non-native species to invade the "new" ecosystems that will be formed under different climate conditions. The disappearance of the Pleistocene mega-fauna undoubtedly was due at least partly to climate change, and I for one would hate to see our planet's strange and magnificent life forms replaced by cosmopolitan mundane forms such as cattle, goats, and dogs. Diversity helps make life on our planet worth living, and the threats posed by climate change will require vigorous action from all of us. "

Jeffrey A. McNeely
Chief Scientist, IUCN – The World Conservation Union

some confidence, however, that the combined effects of climate change, land use change and globalization will accelerate the ecological homogenization of our world⁹. For those of us who value diversity, whether biological or cultural, this is an appalling prospect (Box 2).

We know that both climate change and invasive species have increasing ecological, economic and social impacts^{10,11}. The synergies between them are likely to be strong, but are difficult to predict in detail (Boxes 2, 3). For a start, since ecological disturbance favours many invasive species, we can be reasonably sure that disturbance caused by climate and land use changes, through extinctions and other ecosystem alterations, will often facilitate invasion. And we can be pretty certain that some alien species which are currently non-invasive, or only mildly invasive, will be 'triggered' by climate changes, so that they become significantly invasive in certain ecosystems, even to the point of transforming them. At about this point, confidence dissipates. We may also find, for example, that other species will become less invasive due to climate change. But many invaders have ecological traits

Box 3.

“By the end of this century, climate change is likely to be the dominant driver of change to ecosystems. The expected changes in climate will accelerate the already high rates of establishment of invasive species and, as communities change in response to new climate regimes, blur the very line between what is ‘native’ and what is ‘invasive’.”

Walt Reid – Former Director: Millennium Ecosystem Assessment

that could be favoured by predicted climate changes. And with terrestrial plant invaders, we know that rising atmospheric carbon dioxide favours fast-growing plants and woody plants. This has major potential implications for invasive plants, especially woody encroaching species^{8,12}.



The many factors likely to influence the interplay of biotic invasion and climate change across varied landscapes and in the oceans are subtle. But it is very likely that climate suitability plays a key role in determining whether species will become invasive, and that climate, trade and tourism pressure together can predict this invasibility quite well in specific areas^{13,14,15}. We are starting to have a good handle on the predictors of invasibility, and now need increasingly sensitive models to factor in synergistic impacts under different climate scenarios. Some of the best ecologists and modellers will be needed to thrash this issue out, with rigorous testing of assumptions and predictions (Box 4).

Invasive species management in a changing world

Increasingly, for governments and organizations, globalization and global change are changing the centre of gravity of both environmental management and national development. Planning, policy development and management are becoming a lot more complex. Whereas in the past we could manage and plan in isolation, with the assurance that tomorrow would be much like today, we now need to gather data from different disciplines, talk to people in departments we've barely heard of, build scenarios and predictive models that enable us to paint pictures of what the future will look like, and try to chart a sensible response. Invasive species lend themselves well to this interdisciplinary sort of treatment and modelling – we are starting to understand the basics of their biology and behaviour in different novel environments, and more powerful spatially explicit models can start to help us understand how species distributions and invasions might respond to climate change and what would be the likely effects on invaded ecosystems. But the development of policy and legislation adequate to deal with uncertainties of the future, as well as realities of the present, is a tricky game, as South Africa, Japan and other countries have recently discovered.

Planning, policy and management, as well as becoming more complex, are also getting a lot more serious, with the stakes much higher than they once were. With both climate change and invasive species, we are approaching several points of no return. We are committed to a significant and momentous degree of global warming, no matter when we curtail our greenhouse gas emissions, due to the thermal inertia of the oceans^{16,17}. And with many invasive species in many places, the invasion has simply gone too far for eradication or management to be a cost-effective or sensible option¹¹. We need to demonstrate to planners and managers the necessity of investment in invasive species prevention, early detection and rapid-response, and the perilous consequences of inaction. With the complications of climate change factored in, we need to provide much

1 Phoebe Barnard, Scientific and Technical Coordinator in the Global Invasive Species Programme Secretariat, moved on 1 June 2005 to the Climate Change Research Group, South African National Biodiversity Institute. She can still be reached at barnard@sanbi.org.
2 Simmon R. 2005. Earth Observatory Features: The rising costs of natural hazards. NASA Earth Observatory, http://earthobservatory.nasa.gov/Study/RisingCost/rising_cost2.html, using US Census Bureau/Worldwatch Institute data. Accessed 10 May 2005.
3 Hughes L. 2000. Biological consequences of global warming: is the signal already apparent? *Trends in Ecology and Evolution* 15: 56-61.
4 Parmesan C. & Yohe G. 2003. A globally coherent fingerprint of climate change impacts across natural systems. *Nature* 421: 37-42.

5 Schmid E., Way M., Keck P. & Perils C. 2004. Managing risk and uncertainty: what impact will climate change have on the insurance industry? *Proceedings of a Global Synthesis Workshop on Biodiversity Loss and Species Extinctions: Managing Risk in a Changing World. Subtheme Climate Change: Turning Down the Heat*. IUCN World Conservation Congress 3, November 2004, Bangkok.
6 Mack R.N. 1999. Motivations and consequences of the human dispersal of plants. In McNeely, J.A. (ed.). *The great reshuffling: human dimensions in invasive alien species*, pp. 23-34. Gland: IUCN.
7 Crosby A.W. 1986. *Ecological imperialism: The biological expansion of Europe, 900-1900*. Cambridge University Press, Cambridge, UK.
8 Masters G.J. & Midgley G.F. 2004. Analysis of invasive species and climate change. Report to The World Bank and Global Invasive Species Programme. 34 pp.

better and more sophisticated advice to managers about appropriate and strategic practical responses they can take in different circumstances.

Planning and management decisions can, sometimes literally, make the difference between life or death, economic prosperity or collapse, social well-being or strife. Environmental management, trade or customs decisions which do not tread circumspectly in light of the shifting sands of global change can add insult to the injury of ecosystems; economies and public health already at risk from myriad other factors.

The high stakes of global change

Invasive species, climate change, deforestation, human settlement and urban sprawl, habitat conversion and fragmentation, globalized trade, pollution – all these changes and others are adding insult to injury, suffocating ecosystems and marginalizing species. For humans, they can make life harder and more hazardous for the poor, and more expensive and hazardous for the rich who can buffer themselves from the worst effects. Of all these changes, global climate change is one of the hardest for us to predict or tackle. Its effects, we now know, are likely to be enormously destructive to biodiversity – largely because its pace is often likely to outstrip the capacity of species to evolve, especially in altered landscapes. And they will often be enormously expensive for human societies – largely because both poverty and affluence have made humans, their activities and their infrastructure, highly vulnerable.

The light at the end of this dark anthropogenic tunnel is, of course, that we are better equipped than ever before to deal with global change. International initiatives, financing, and expertise are all mobilized – or, at least, financing is starting to appear on the global mainstream political agendas. What is more of a bottleneck is the political and public will to make difficult choices about energy and resource consumption at the societal and personal levels, and make do with a bit less convenience or material wealth.

Box 4. GLOBAL CHANGE, BIODIVERSITY, ECOSYSTEMS AND SOCIETY IN AFRICA

A new African-European consortium, being developed by members of the South African National Biodiversity Institute, the Universities of York, Stockholm, Montpellier and the Witwatersrand, the Centre of Excellence in Birds as Keys to Biodiversity Conservation (University of Cape Town), the Centre of Excellence for Invasion Biology (University of Stellenbosch), and other partners is looking at the impacts of global change on African biodiversity, ecosystems and societies. Subject to funding, one of its components will investigate how biotic invasions, climate change, land conversion and fragmentation interact to influence biodiversity and ecosystem function in different parts of the continent. Africa is the continent most starkly vulnerable to climate change, and has among the least detailed information to feed into models. However, the teams are starting to tease apart these global change variables, and look at their synergistic impacts on biodiversity, ecosystems and human societies.

As Peter Raven of the Missouri Botanical Garden puts it, we are heedlessly stampeding towards a state of ecological catastrophe. Creeping changes which were viewed as positive progress a generation or two ago are now piling up – sometimes with devastating impacts on biodiversity, ecosystems, society and the economy. As scientists and planners, our responsibility is to apply our best minds and tools to understanding the synergistic impacts of these changes, and helping managers and decision makers respond appropriately. As consumers and citizens, however, our responsibility is to help all our fellow citizens appreciate the stark choices we face ahead.

9 Mooney H.A. & Hobbs R.J. 2000. *Invasive species in a changing world*, p. 458. Island Press, Washington, D.C.

10 Perrings C. 2003. The economics of abrupt climate change. *Philosophical Transactions of the Royal Society of London B*. 361:2043-2059.

11 Perrings C., Williamson M., Barbier E.B., Delfino D., Dalmazzone S., Shogren S., Simmons J. & Watkinson A. 2002. Biological invasion risk and the public good: an economic perspective. *Conservation Ecology Online* 6.

12 Midgley G., Hughes G., Thuiller W., Drew G. & Foden W. 2005. Assessment of potential climate change impacts on Namibia's floristic diversity, ecosystem structure and function. Report to the Namibian National Biodiversity Programme, Directorate of Environmental Affairs, Windhoek. 73 pp.

13 Lonsdale W.M. 1999. Global patterns of plant invasions and the concept of invasibility. *Ecology* 80:1522-1536.

14 Stohlgren T.J., Binkley D., Chong G.W., Kalkhan M.A., Schell L.D., Bull K.A., Otsuki Y., Newman G., Bashkin M. & Son Y. 1999. Exotic plant species invade hot spots of native plant diversity. *Ecological Monographs* 69: 25-46.

15 Thuiller, W., Richardson, D.M., Py_ek, P., Midgley, G.F., Hughes, G.O. & Rouget, M. 2005. Niche-based modelling as a tool for predicting the global risk of alien plant invasions. *Global Change Biology*. in press.

16 Wigley T.M.L. 2005. The climate change commitment. *Science* 307:1766-1769.

17 Meehl G.A., Washington W.M., Collins W.D., Arblaster J.M., Aikue H, Buja L.E., Strand W.G. & Haiyan T. 2005. How much more global warming and sea level rise? *Science* 307: 1769-1772.

Global Invasive News

We are grateful to the many websites that so kindly make their photographs available

ARGENTINA

Beavers in Argentina

One's first impression of the lush green Argentine part of the island of Tierra del Fuego, could easily be that of paradise untouched. But a closer look at the many lakes and fallen trees, soon paints a less rosy picture. The estimated 250 000 beavers chop down the trees to dam rivers, resulting in these lakes in order to protect themselves from predators and also to provide them with readily available sources of food – the tree bark and trapped vegetation. Considering that it usually only takes two beavers to build such a dam, it is obvious that the environmental impact of large populations is huge!

An estimated 50 beavers were introduced to Argentina in the 1940s from native Canada by the then military rulers in the hope of establishing a fur industry. They soon thrived with plenty of food and no natural predators, up to the point where they are today an official plague.

These large rodents are known to pollute water and render roads impassable while destroying the livelihoods of the local timber loggers at an alarming rate.

While a beaver bounty of \$1.50 per dead rodent was in place till last year, there was little evidence of the amount of beavers killed and the campaign was suspended. The result: beaver numbers are increasing annually at a rate of 20%, forcing officials to adopt a control campaign, which includes the commercial use of the skin and meat.

Contradicting this approach, beavers are still used as a tourist drawcard with an established "beaver trail". Visitors eagerly pay for guided beaver tours in the hope of encountering one in the wild. While most locals accept that the beavers are there to stay, the population is growing so rapidly that there are increasing concerns about a possible infiltration to the mainland across the Straits of Magellan – and of course from there on to the Continent!

Source: BBC News: <http://news.bbc.co.uk/go/pr/fr/-/2/hi/americas/4490517.stm>



UNITED STATES

A profile schema for IAS

In paragraph 25 of decision VI/23, the Conference of the Parties of the Convention on Biological Diversity (CBD) called on relevant organizations to contribute to the creation and maintenance of a global invasive species information network to

- ensure effective international cooperation and expertise sharing
- provide information to assist countries to perform effective risk analysis
- provide information on potential pathways of alien invasive species and
- provide support for management and control efforts, particularly for locating technical support for rapid response activities.

In support of the above, the Government of the United States of America has made funds available for the development of an invasive species profile schema to assist in the establishment of the Global Invasive Species Information Network. The CBD Secretariat has invited comments and suggested additions on the first draft of the invasive alien species schema document, with a view to facilitate its widest possible adoption.

To comment on the schema, please go to the Convention's website at: <https://www.biodiv.org/doc/restricted/gisin/Default.aspx> (login: ias password: ias2). The full text of this notification is available on the CBD website at: <http://www.biodiv.org/doc/notifications/2005/ntf-2005-060-ias-en.pdf> or contact Dr. Marcos Silva at secretariat@biodiv.org

UNITED KINGDOM

Nothing funny about this harlequin

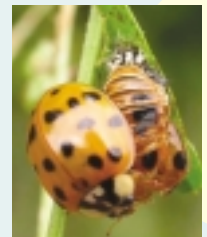
An alien ladybird, the harlequin (*Harmonia axyridis*), known for its voracious predatory skills allowing it to easily outcompete indigenous bugs, was first spotted in Britain in September 2004. Fearing that it may rapidly spread northward from its presently more-or-less still confined region in the South East, scientists from the University of Cambridge, Anglia Polytechnic University, the Centre for Ecology and Hydrology, the Natural History Museum and The Wildlife Trusts, have joined forces in organizing a nation-wide survey of this tiny orange and black spotted pest.

Calling on all gardeners, farmers and wildlife enthusiasts to report sightings of the pest, the scientists are hoping to not only monitor the harlequin and its impact, but also to use this approach as a model for how to deal with invasive species.

The harlequin, an Asian native, is an established pest in North America where its ability to take out other populations of insects made it an attractive bio-control agent. Unfortunately they are now dominating their niche while their numbers are also rapidly increasing annually in France, Belgium and Holland.

In the UK, they have probably been introduced unintentionally on plants coming in from continental Europe and the fear is that they will wipe out many of the 46 species from the ladybird family (*Coccinellidae*) with its huge appetite for greenfly, a main food source for the locals. Harlequins are also known to turn on other ladybirds and other insects, including butterfly eggs, caterpillars and lacewing larvae – and they love fruit, particularly pears! Any harlequin sightings in Britain can currently be reported at www.harlequin-survey.org

Source from BBC NEWS: <http://news.bbc.co.uk/go/pr/fr/-/2/hi/sciece/nature/4348881.stm>



FRANCE

Louisiana crayfish causing havoc in France

They can lay up to 750 eggs at a time and can reproduce for nine months of the year! This prolific "mudbug", the Louisiana Red Swamp crayfish escaped into wetlands in France in 1976 and has since spread rapidly, causing environmental damage wherever it goes. Not only does it devour sensitive wetland plants, it also severely disturbs the water quality of France's marshes. The result is opaque water with little or no sunlight passing through, making it difficult for any aquatic life to survive.

The invasive crayfish also disrupts breeding areas for frogs and other amphibians and in some sites infestations have already led to complete extinctions of local amphibian species.

The Louisiana crayfish is one of several American species introduced to countries in Europe and Africa, causing huge disturbances to the infiltrated aquatic systems. Among a number of alarming effects, is a report from scientists in Spain who found that astaxanthin, the reddish-orange pigment in the body and shell of the crayfish, turns the skin of baby white storks an orange colour. This in turn, they fear, may be disturbing to the parents, and could ultimately interfere with nesting success.

The Louisiana crayfish can survive extreme conditions, making it a very successful invader! It can travel up to two miles a day, much of the time out of the water. It tolerates drought, low oxygen levels and very high temperatures. By digging burrows, it is also able to resist pollutants and chemical treatments for eradication. Carrying a disease that has decimated native crawfish species across France and elsewhere, there is agreement that this invader must be stopped. With problems and high costs associated with both chemical and mechanical control methods, the best option seems to be to commercially fish these invaders and process them on the spot into tasty preserved products.

Source: <http://www.nola.com/news/t-p/frontpage/index.ssf?base/news-2/11033530295716>



JAPAN

Squirrels no longer welcome in Japan

Kamakura – a coastal city in the Kanagawa Prefecture, less than an hour's drive from Tokyo – is host to an estimated population of up to 30 000 non-native red-bellied tree squirrels, that have reportedly "gone amok"! Known as "Taiwan-risu", these pests are damaging their surrounds and authorities argue that they should be covered under the Invasive Alien Species Law which came into effect on 1 June 2005.



Although there has been an effort to stop feeding and round up some of the squirrels, many feel that eradication will prove to be an impossible task, arguing that residents should rather adapt to coexistence with these critters. Native to Southeast Asia, in particular to Taiwan, these squirrels are slightly bigger than their native Japanese relatives and proliferate with a number of batches of up to five offspring per year.

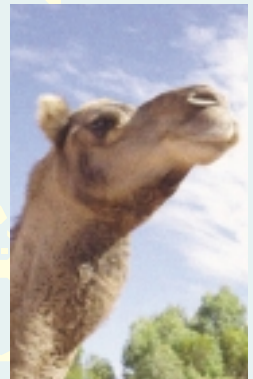
To complicate any control methods, children on school outings and tourists alike warm up naturally to these furry cute animals, often feeding them snacks, despite anti-squirrel leaflets distributed by the government.

Source: The Asahi Shimbun (IHT/Asahi: May 5, 2005)

AUSTRALIA

Feral Camels to be Culled in Australia

Thousands of feral camels roam South Australian rural areas, drinking from the much needed scarce water supplies of the sheep and cattle stations – and authorities agree that they need to go! Agreeing that aerial culling, by helicopter, would be the most effective method all round, it is believed that the culling could start very soon.



Although it is not certain how many animals are intended to be culled, it is estimated that the herds in close proximity of stations consist of 60 000 animals, with more than 700 000 feral camels across Australia. What is more, authorities warn that this number could double over the next 8 years if the current population is not controlled.

While the Central Australian Camel Industry Association annually harvests between 5000 and 8000 animals as an alternative meat source, and also sells some live animals, these measures are not enough to curtail the population.

Animal welfare groups like the RSPC have spoken out against the aerial culling as slaughtering method, as animals are not likely to be killed cleanly from a moving platform such as a helicopter, resulting in injuries and painful deaths.

Camels, imported in large numbers from 1840 to 1907 to serve the exploration and cartage industries, played a crucial role in the early days of settlement in the arid Australian interior. After trucks became generally used in the 1920s, early eradication efforts failed and feral populations established in many inland areas, now occupying an estimated 2.8 million square kilometers, which is over 37% of mainland Australia.

Source: Environment News Service, <http://www.ens-newswire.com/ens/apr2005/2005-04-26-07.asp>

UNITED STATES

Californian Invasive Weeds Awareness Week

The second annual Weeds Week, organized by the California Invasive Weeds Awareness Coalition (CALIWAC) is scheduled to take place across the state on July 18th to 24th this year. This event allows local groups that control invasive plants a chance to show off their hard work while educating local citizens and policymakers. Activities around the state will include displays, field trips, kids' activities and hacking activities.

Most of the activities are conducted by Weeds Management Areas (WMAs) which bring together landowners and managers in counties to coordinate efforts and expertise against common invasive weed species. This program is overseen and supported by the California Department of Food and Agriculture's Integrated Pest control Program.

For more, visit www.cal-ipc.org



HAWAII

Aerial Imaging used in search of Hidden Invaders

A remote-sensing technique developed by scientists from Stanford and the Carnegie Institution, can now help to identify invasive plants before they get established. The exciting new technology has already assisted the scientists to detect invasives in a rainforest near Kilauea Volcano in the Hawaii Volcanoes National Park and it is believed that it will be able to detect the impact of biological invasions on entire ecosystems.

The aircraft imagery does not only show where current invasions are taking place, but also how – in this case – the forest canopy chemistry has changed as a result of the invasion.

One of the invaders studied is the Kahili ginger plant that grows below the forest canopy and cannot be detected from above with traditional aircraft or satellite photography. However, the new methods allow detection of this and possible other understory species. With weeds often difficult to trace in the dense wet forests of Hawaii, this new technology is very useful for mapping purposes, which are in turn needed in order to develop effective control plans.

Source: <http://news-service.stanford.edu/news/2005/march9/invade-030905.html>



SCOTLAND

New Horticultural Code of Conduct to control IAS – Scotland

Once the favourites of gardening and pond enthusiasts, introduced plants like giant hogweed, Himalayan balsam, floating pennywort and water hyacinth are spreading across Scotland at an alarming rate!

In June, the deputy environment minister, Lewis Macdonald, launched a code aimed at raising the issue among landscape designers, importers, retailers and gardeners. This follows last year's prohibition on the importation and sale of non-native plants known to be invasive under the Nature Conservation Act, 2004. But the authorities have not yet listed the plants to be banned from sale, allowing trade in many of the invaders to continue.

In Scotland, more than 60% of non-native species in the wild are garden escapees, according to PlantLife, and hopes are up that once this new Code is properly implemented, it will start to block this major invasive pathway.

In launching the new Code, Mr. Macdonald said: "What we are doing today is about defending Scotland's natural environment. Gardeners are among the most important guardians of the environment. They are in the front line against those species that threaten our biodiversity. The Code of Practice will help them play their part."

Some of the species of particular concern are the Spanish bluebell (*Hyacinthoides hispanica*), Parrot's feather (*Myriophyllum aquaticum*), Marsh pennywort (*Hydrocotyle umbellate*) and the great nuisance, *Rhododendron ponticum*.



Source: <http://news.scotsman.com/scotland.cfm?id=598292005>



SWITZERLAND

Surveying Alien Invasive Species in Switzerland

CABI recently completed a report on alien species in Switzerland for the Swiss Agency for the Environment, Forests and Landscape (SAEFL). Lists of all alien species in Switzerland were compiled, available information on these summarised, species with the greatest potential for negative impact on the environment and economy highlighted, and data sheets prepared on the more important species.



CABI

Given the lack of knowledge in some groups, especially the species of small size such as insects, fungi etc. the report was only able to provide a first overview. In some of these groups no reliable lists exist of species found in Switzerland and many may be undescribed as yet. Moreover the origin of some species is not known. However, problematic or potentially problematic species, or invasive alien species (IAS) are well covered in the report, giving an indication on the severity of the problem. About 798 species are listed and data sheets are presented for 105 of these.

Special efforts were made to locate information on impact studies of these species. In most cases this information is scarce, since the impact is difficult to show on a continental scale, and most such studies have been done on islands. One of the key findings of the report was the need for impact studies in Europe, so that objective decisions can be made regarding the need for interventions.



Text kindly provided by GISP Member: CAB International. For more information, visit <http://www.cabi-bioscience.org/ch.asp>

AUSTRALIA

Invasive Garden Plants in Australia

A recent report "Jumping the Garden Fence: Invasive garden plants in Australia and their environmental and agricultural impacts" by leading CSIRO scientists, Dr Richard Groves, Dr Robert Boden and Dr Mark Lonsdale, has revealed that 40% of the most damaging weeds to farmers, have escaped from Australian gardens! This is one of a number of stark findings in this WWF-Australia-commissioned report.

With garden plants making up 94% of all introduced plant species in Australia, WWF argues that it is hard to believe that nurseries are still openly selling invasive plants. According to the report as many as 25% of species listed on the ISSG's World's Worst Invasive Species list, are still sold.

Mr. Andreas Glanznig, WWF's Biodiversity Policy Manager, said that "too many invasive garden plants remain for sale. At the moment, this is a freeway for the spread of weeds, and the environment and agriculture are the big losers". He also stressed the need for legislative changes and stricter preventative measures.

The report lists the ten most serious invaders currently for sale across Australia. These are: Asparagus fern, Broom, Fountain grass, Gazania, Glory lily, Hybrid mother of millions, Japanese honeysuckle, Pepper tree, Periwinkle and Sweet pittosporum.

One of seven key recommendations in the report, is the urgent prohibition on sale of many of these invaders.

The report can be downloaded from: http://www.wwf.org.au/News_and_Information/Publications/PDF/Report/Jumping_the_garden_fence.pdf Source: <http://www.wwf.org.au>

JAPAN

Tough new IAS legislation for Japan

Enacted on 1 June 2005, the new Japanese Invasive Alien Species Act prohibits the importation, sale, raising and release into the wild of 37 species. The list includes plants, animals and insects and those who violate this new law, face heavy fines and even jail sentences.

The law sets a maximum jail sentence of three years or a 3 million yen fine for individuals, and up to 100 million yen for businesses importing invasives into the country. It is widely welcomed by environmentalists, although some feel that a broader law which would cover a broader range of species would have been better.

THE LIST:

MAMMALS:

Taiwan macaque; Crab-eating macaque; Rhesus macaque; Common raccoon; Crab-eating raccoon; Javan mongoose; Taiwan squirrel; Gray squirrel; Nutria; Brushtail possum and Reeve's muntjac.

BIRDS:

Laughing thrushes; White-browed laughing thrush; Masked laughing thrush and Red-billed mesia.

REPTILES:

Snapping turtle; Green anole; Brown anole; Brown tree snake; Taiwan beauty snake and Taiwan pit viper

AMPHIBIANS:

Cane toad

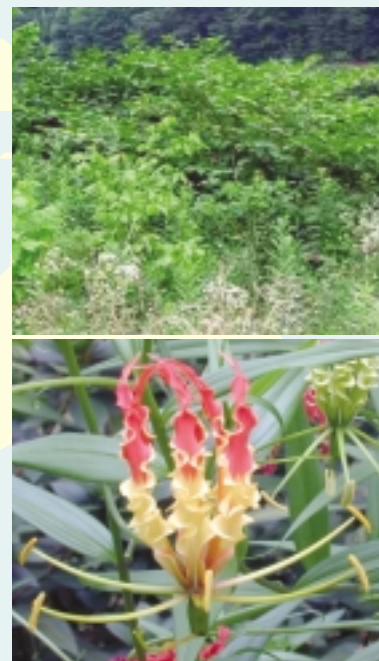
FISH:

Largemouth bass; Smallmouth bass; Bluegill and Channel catfish

INSECTS AND INVERTEBRATES:

Red imported fire ant; Fire ant; Argentine ant; Red back spider; Brown widow spider; Mediterranean black widow spider; Black widow spider; *Loxosceles reclusa*; *Loxosceles laeta*; *Loxosceles gaucho*; Atrax and Hadronyche; Buthidae.

Source: <http://www.asahi.com/english/Herald-asahi/TKY200506110109.html>



Sustainable Aquaculture with Exotic Species?

A Guest article by Imène Meliane, Marine Programme Officer, IUCN-The World Conservation Union, Regional Office for South America



Aquaculture is one of the fastest growing industries in the world today, and is perceived as one of the primary solutions to the fisheries crisis, as it has potentially significant socio-economic benefits. Although awareness of the environmental problems related to aquaculture (such as eutrophication and habitat degradation) is increasing in the general public and decision makers are starting to address the issues, very little is currently being done to control and manage exotic (non-indigenous) species in aquaculture. The majority of the aquaculture industry is based on exotic species.

There are many examples of accidental escapes and even purposeful releases of aquaculture exotic species, with irreversible and unpredictable ecological impacts. The widely cultured Japanese or Pacific oyster, *Crassostrea gigas*, is one of the most cited examples of an aquaculture species which has consistently escaped, causing severe ecological and economic damages in various parts of the world.

Pests and associated species hitchhiking with the target aquaculture species are also a serious threat. Some of these species are harmful to the aquaculture industry or facility itself. *Terebrasabella heterouncinata*, a worm causing shell deformation of cultured abalone, was introduced from South

Africa into Californian abalone facilities and has caused significant damage to the abalone farming industry. Examples of other major pests transferred through aquaculture species include the Japanese oyster drill, turbellarian flatworms, Asian eelgrass (*Zostera japonica*), and several invasive seaweeds such as *Codium fragile*, *Sargassum muticum* and *Undaria pinnatifida*.

Surprisingly, invasive alien species are currently recognized as one of the major threats to biodiversity, particularly in marine and aquatic environments, yet the national and international instruments to manage deliberate introductions of exotic species in aquaculture are limited, and the few existing international instruments are voluntary and non-binding.

The Government of Chile recognizes the threats posed by invasive alien species, but also recognises the significant economic and societal benefits associated with aquaculture of exotic species. As a result, it has made sustainable aquaculture development and diversification a priority, and is working towards a specific management plan for the import of exotic species for aquaculture purposes based on rigorous risk assessment.

IUCN and the Chilean Government, through its Under-Secretariat for Fisheries, are joining forces in implementing a project entitled "Addressing Alien Species in Aquaculture Systems", funded by the TOTAL foundation for Biodiversity and the Sea, in collaboration with Biosecurity New Zealand. The project aims to reduce threats posed by alien species in aquaculture systems by providing methodologies to assess the risk of invasions, and to control and manage escapes and invasions when they occur. It also aims to raise awareness within the aquaculture community about the threats posed by invasive alien species on native biodiversity, but also on other socio-economic activities.

Under this project, one of the most significant challenges is to develop a comprehensive and practical framework for the



"Assessment and management of risks related to the importation of Alien species for Aquaculture purposes in Chile". Indeed, assessing and managing risk of exotic species introductions has been highlighted as a priority in several international fora, but very few practical methodologies exist that could help countries or regional groups to address this issue.

One of the primary questions from this challenge is "How should the Chilean system be designed to reconcile conservation and development needs?" Predicting the behaviour of an introduced species is a subject where scientists are asking more questions than providing answers. Qualitative risk assessment methodologies do not seem to be fully satisfying for decision makers while existing quantitative risk assessment methodologies require a high level of data that is unavailable in most cases. Defining acceptable levels of risk in an economy in transition requires a compromise between development and conservation and making such political decisions in the world of uncertainty around exotic species is not a simple matter.

We attempted to answer this primary question by organising a workshop involving members of the Chilean National Technical Committee on Alien Species, academics and scientists, international marine invasive species experts from Biosecurity New Zealand and the Marine Biodiversity Conservation Unit from the Department of Infrastructure, Planning and Environment of the Northern Territory, Australia, and, of course, professional staff from the Chilean Undersecretariat for Fisheries and IUCN.

Taking into account the challenges faced when implementing sustainable development principles, participants discussed a wide range of issues; these included comparisons between the different regulations and management systems governing the import of exotic species that are in effect in other countries, as well as an investigation into existing risk assessment methodologies. The workshop recommendations included developing a semi-quantitative risk assessment where the levels of acceptable risk are set through a transparent and consultative process with the establishment of adequate methodologies for long term monitoring of introduced species, according to their level of risk.

The resulting methodology and the proceedings of the workshop will be available shortly on the IUCN web page. We very much look forward to your comments.

For further information, contact **Imène Meliane** at IUCN-The World Conservation Union, Regional Office for South America, Av. Shyris 2680 y Gaspar de Villaroel, Edificio MITA COBADELSA, PH, Quito, Ecuador
Tel: ++ 593(2) 226 10 75 E-Mail: imene.meliane@iucn.org



GloBallast enters new phase

by Adnan Awad



The GEF-UNDP-IMO Global Ballast Water Management Programme (GloBallast), aimed at assisting developing countries in implementing measures to minimize the adverse impacts of aquatic invasive species transferred by ships in ballast water, has begun a new phase, following the initial, successful, execution of the five-year US\$10.2 million project by IMO. The preparatory phase of the new project, to be known as GloBallast Partnerships, was initiated on 1 April 2005 with funding of around US\$700,000 from the Global Environmental Facility (GEF).

This preparatory project will be executed by IMO over a period of 18 months and is expected to provide the groundwork for the full-scale GloBallast Partnerships project (full title: Building Partnerships to Assist Developing Countries to Reduce the Transfer of Harmful Aquatic Organisms in Ships' Ballast Water), to become operational in 2006/2007. The main objective is to assist particularly vulnerable countries and/or regions to enact legal and policy reforms to meet the objectives of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, adopted by IMO in February 2004.

The Convention requires ratification by 30 States, representing 35 per cent of world merchant shipping tonnage, in order to enter into force. Assisting States to implement the

requirements of the convention is seen as critical if the new instrument is to make a timely entry into force and for its aims to be achieved. The issue of aquatic invasive species, including the transfer of harmful organisms in ships' ballast water and sediments, is seen as one of the greatest threats to global marine bio-diversity and ecosystems, and as a significant threat to coastal economies and even public health. The transfer of harmful organisms in ships' ballast water is set to increase three-fold as a result of the increase in shipping activity predicted in the next decade. Developing countries and Small Island Developing States are said to be at particular risk, as globalisation of the world economy continues and new markets and therefore ports and shipping routes are opened in these areas.

Institutional strengthening and capacity building through technical cooperation programmes such as GloBallast Partnerships are vital if the most vulnerable countries are to be protected from the increasing risks of aquatic bio-invasions. GloBallast Partnerships is intended to be a five-year project with a tentative budget of US\$17 million, of which, US\$10 million will come from in-kind contributions from the participating countries and other interested partners. The remainder of the funding will be in the form of a GEF grant to support incremental costs. The United Nations Development Programme (UNDP) is acting as implementing agency for GEF. The initial phase known as PDF-B – will include the development of a plan to enact legal reforms, identification of a plan to establish criteria for vulnerable areas, a stakeholder involvement plan and a monitoring and evaluation plan. The project will be managed by a Project Management Unit established by IMO.



FOCUS ON FISNA



The Forest Invasive Species Network for Africa (FISNA) was created in December 2004 by FAO delegates from seven African countries at a meeting jointly organized by FAO and the Forest Research Institute of Malawi (FRIM).

The aim of this meeting was to explore ways of revitalizing the work done under the existing "Tree Pest Management Network for Central, Eastern and Southern Africa".

The countries represented included Ghana, Kenya, Malawi, South Africa, United Republic of Tanzania, Uganda and Zambia. Delegates agreed that there should be a stronger focus on forest health issues, particularly on the increasing problems associated with invasive species, including insects, diseases and woody species. Hence, they agreed to rename the network "The Forest Invasive Species Network for Africa".

The mandate of the renewed network will be to coordinate the collation and dissemination of information relating to forest invasives in sub-Saharan Africa for sustainable forest management and conservation of biodiversity.

Since the establishment of FISNA, a new website created by African specialists and hosted by FAO, has been launched to provide a means to quick and effective information sharing and to build the FISNA network. This website will allow countries to more effectively address the problem of invasive species by sharing information about new outbreaks and best management practices.

This regional website also provides references, publications and other links related to invasive species across Africa.

Visit this exciting new website at www.fao.org/forestry/site/26951/en

For more information, contact Clement Z Chilima, FRIM, Malawi at cchilima@frim.org.mw

The objectives of the network are to:

- facilitate exchange of information, provide a link for communication and raise regional awareness on forest invasive species
- develop and disseminate technical information
- alert and provide policy advice on transboundary movement phytosanitary measures and other relevant information
- facilitate taxonomic support, cross-sectoral linkages and the mobilization of urgently needed resources towards improved prevention and control of these invasive species.



Invasives in Print

recent IAS publications



Ecology and Management of Western Corn Rootworm

Western Corn Rootworm, *Diabrotica virgifera virgifera*, has been a major economic pest of maize in the Americas for many years. Since the early 1990s it has become an increasing threat to maize in Europe and is expected to spread to all maize growing areas of

the continent. In December 2004,

CABI Publishing issued a new book "Western Corn Rootworm: Ecology and Management", edited by Prof. Stefan Vidal, Georg-August University, Goettingen, Germany, Dr. Ulli Kuhlmann, CABI Bioscience, Delémont, Switzerland and Prof. C. Richard Edwards, Purdue University, W Lafayette, Indiana, USA.

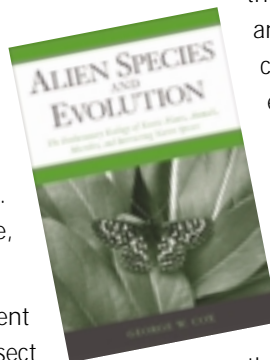
This book provides a comprehensive review of current knowledge on the biology and ecology of this insect pest and how it might be managed in order to limit its damage as it spreads into new agroecological areas. Cultural, biotechnical and biological control measures are addressed, as are ecological baseline data such as population dynamics, economic thresholds and aspects of its behaviour. The book also examines the potential of applying the same plant protection techniques in Europe as those currently used in North America. The book may be ordered via the CABI Publishing website at www.cabi-publishing.org/bookshop

(Information kindly provided by GISP Member: CAB International)

Alien Species and Evolution

A new state-of-the-art review of the evolutionary ecology of exotic and native species was recently published by Island Press, a non-profit environmental publisher with a mission to provide information and resources to the environmental and development sectors.

In *Alien Species and Evolution*, author and biologist George W. Cox reviews and synthesizes emerging information on the evolutionary changes that occur in plants, animals, and microbial organisms when they colonize new geographical areas, and on the evolutionary responses of the native species with which alien species interact.



The book is broad in scope, exploring information across a wide variety of taxonomic groups, trophic levels, and geographic areas. It examines theoretical topics related to rapid evolutionary change and supports the emerging concept that species introduced to new physical and biotic environments are particularly prone to rapid evolution. The author draws on examples from all parts of the world and all major ecosystem types, and the variety of examples used gives considerable insight into the patterns of evolution that are likely to result from the massive introduction of species to new geographic regions that is currently occurring around the globe.

GEORGE W. COX is emeritus professor of biology at San Diego State University in San Diego, California. He is the author of *Alien Species in North America and Hawaii* (Island Press, 1999) as well as numerous textbooks.

To order the publication, visit Island Press at <http://www.islandpress.org/books/detail.html?SKU=1-55963-009-4>



Southeast Asia: Exploring Linkages between Development Assistance and IAS

A report and resource guide for the US Agency for International Development, entitled "Linkages between Development Assistance and Invasive Alien Species in Fresh-water Systems in Southeast Asia" by Alexis Gutiérrez and Jamie Reaser was published in March 2005 on behalf of GISP.

The assessment is based on the results of an intense study

which included a comprehensive literature review, the convening of a panel of experts, and virtual and actual interviews and a final peer review process. The report details the findings of the assessment which is focused on three areas:

- development assistance as pathway of introduction
- development assistance projects adversely impacted by IAS, and
- development assistance projects working to address IAS.

The report is published by USAID and distributed for free while stocks last and serves as a contribution to the work of the Global Invasive Species Programme (GISP).

Nonnative Invasive Plants of Southern Forests: a field guide for identification and control by James H. Miller, Southern Forest Research Station, USDA Forest Service

(May 2003, revised and reprinted August 2003, revised and reprinted 2004)

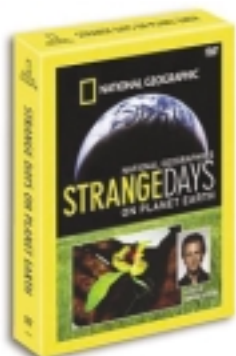
The objective of this book is to provide information on accurate identification and effective control of 40 species invading



the forests of the 13 Southern States of the USA at an alarming rate, showing both growing and dormant season traits. Over 60,000 copies have been requested and distributed within 2 years, showing the need for this information. This publication is provided at no charge, which reflects the commitment of the USDA Forest Service to combating invasive species. The text and photographs were originally developed several years earlier to instruct field crews in the first region-wide survey and monitoring of invasive plants. Valuable data on distribution, frequency and coverage are now coming forth to aid in combating these invasions.

This publication can be requested at pubrequest@srs.fs.usda.gov while it can be viewed and downloaded online at www.srs.fs.usda.gov/pubs/viewpub.jsp?index=5424 and HTML format at www.invasive.org/eastern/srs/.

For more information, contact the author: James H. Miller, Research Ecologist and Team Leader Forest Vegetation Management and Longleaf Pine Research USDA Forest Service, Southern Research Station 520 Devall Drive, Auburn, AL 36849, 334-826-8700 ext. 36 Fax: 334-821-0037, Email: jmiller01@fs.fed.us • <http://www.srs.fs.fed.us/4105>



National Geographic: New Documentary

A new National Geographic documentary series "Strange Days on Planet Earth" premiered in the United States in April. Aiming to create an innovative type of environmental awareness, it focuses on the relationship between what we as humans do to the Earth and what that in turn does to the environment and ecosystems. The

lead episode is an hour-long focus on IAS, entitled "Invaders" with additional episodes on climate change, toxins in water resources and the loss of top predators.

In addition, the March 2005 edition of National Geographic magazine features a 23-page spread on IAS, making a direct connection between impacts and weak policy concluding with this statement: "Many ecosystems are simply changed beyond recognition; for them there is no going back. But what we still have is infinitely precious. To sit by and watch it destroyed would be worse than foolish; future generations will call it unforgivable."

For more, visit <http://magma.nationalgeographic.com/ngm/0503.feature5/index.html>

GISP: Final Regional Workshop Reports published along with Global Synthesis Report

Concluding a series of 10 reports on regional workshops on IAS taking place across the world over the last five years, the GISP Secretariat has recently published the final two reports on South America. Entitled "Prevention and Management of Invasive Alien Species: Forging Cooperation in South America" and "Invasive Alien Species in South America: National Reports and Directory of Resources" these two publications are currently disseminated to all the workshop participants across South America.

Edited by Silvia Ziller, Jamie Reaser, Laurie Neville and Kobie Brand the reports are summarizing the findings of a workshop supported by the United States. For limited free copies of these publications, contact GISP at gisp@sanbi.org or download the reports from the GISP website at www.gisp.org (look under downloads).

In addition, the GISP Seceratariat also published a summary document which synthesizes the findings of eight GISP and other regional IAS workshops across the globe. This summary document, entitled: "Tackling Biological Invasions around the World – Regional Responses to the Invasive Alien Species Threat" was compiled by Drs. Phoebe Barnard and Jeff Waage and is available in limited numbers from the GISP Secretariat and downloadable from the website at www.gisp.org.



IAS events highlights:

SECOND INTERNATIONAL SYMPOSIUM ON BIOLOGICAL CONTROL OF ARTHROPODS, 12-16 SEPTEMBER 2005, DAVOS, SWITZERLAND

This conference follows the first international symposium on the biological control of arthropods held in Hawai'i, January 2002. The aim of these symposia is to provide a meeting for biological control practitioners and a forum for information exchange. They are also events intended to build cohesion among the research community and to foster discussions of issues effecting biological control work, particularly pertaining to the use of parasitoids and predators as biological control agents.

The scientific committee is chaired by Dr. Mark Hoddle, University of California at Riverside (USA) and the local organizing committee is chaired by Dr. Ulli Kuhlmann, CABI Bioscience Switzerland Centre. A symposium web page has been created and provides detailed information. The organizers can be contacted through the ISBCA Symposium Secretary in Switzerland at ISBCA@bluewin.ch or visit the web page at www.cabi-bioscience.ch/ISBCA-DAVOS-2005/



(Information kindly provided by GISP Member: CAB International)

Overview of upcoming IAS events

DATE	EVENT	WHERE	CONTACT DETAILS
6-10 June	IPPC Expert Working Group on Debarking Meeting	Oslo, Norway	http://www.ippc.int/IPP/En/default.htm
6-10 June	International Conference on Current Issues on the Integrated Management of Insect Pests and Disease Vectors in Africa	Accra, Ghana	http://www.icipe.org/aais/
9-11 June	Introduction and Spread of Invasive Species: An International British Crop Protection Council (BCPC) Symposium	Berlin, Germany	www.bcpc.org/invasive
12-16 June	13th International Sclerotinia Workshop	Monterey, California	STKoike@ucdavis.edu
15-17 June	The Prevention and Control of Zoonoses: from Science to Policy	Liverpool, UK	www.hpazonosesconference.org.uk
20-23 June	Thirteenth Symposium European Weed Research Society	Bari, Italy	http://www.ewrs-symposium.com
27-29 June	Joint Global Plan Workshop on Marine Invasive Species	Montreal, Canada	http://www.biodiv.org/default.aspx
11-15 July	CBD Ad Hoc Technical Expert Group Meeting on Marine and Coastal Biodiversity	Montreal, Canada	http://www.biodiv.org/default.aspx
12-14 July	Second International Chronic Wasting Disease (CWD) Symposium	Madison, Wisconsin	http://cwd-infor.org
15-19 July	19th Annual Meeting of the Society for Conservation Biology	Brazilia, Brazil	http://www.scb2005.unb.br/registration.htm
16-20 July	28th World Veterinary Congress	Minneapolis, Minnesota, USA	wvc2005@avma.org

18-22 July	Fifty-third session of the IMO Marine Environment Protection Committee	London, UK	http://www.imo.org/index.htm
25-27 July	Combating Bioterrorism: The Organizational Response	Cambridge, Massachusetts	Sandy Weiner slweiner@mit.edu http://professional.mit.edu/ApplicationFiles/web/WebFrame.cfm?web_id=382
25-29 July	CBD AD Hoc Technical Expert Group on the review of implementation of the Programme of Work on Forest Biodiversity	Bonn, Germany	http://www.biodiv.org/default.aspx
15-18 August	Joint OIE/FAO APHCA WTO-SPS Workshop	Chaing Mai, Thailand	Http://www.oie.int/eng/en_index.htm
21-24 August	International Agricultural /Environmental Conference	Hilo,Hawaii	http://www.dce.ksu.edu/dce/cong/ag&environment/
22-25 August	First International Conference on Health and Biodiversity	Galway, Ireland	www.cohab2005.com
23-26 August	Fourth International marine Bioinvasions Conference	Wellington, New Zealand	Marnie Campbell, marnie.campbell@maf.govt.nz
29-31 August	International Conference on Biological and Pro-Ecological Methods for Control of Diseases, Pests, and Weeds in Orchards and Small Fruit Plantations	Warsaw, Poland	http://www.pomocentre.insad.pl .
18-22 Sept	8th Conference of the OIE Regional Commission for the Middle East	Manama, Bahrain	http://www.oie.int/eng/en_index.htm
29 August to 2 September	IPPC 17th Technical Consultation among Regional Plant Protection Organizations	Sao Paulo, Brazil	http://www.ippc.int/IPP/En/default.htm
5-8 Sept	5th European Vertebrate Pest Management Conference	Budapest, Hungary	www.5evpmc.com
5-12 Sept	Ecology and Management of Alien Plant Invasions (EMAPI) 8th annual meeting	Katowice, Poland	http://www.empi.us.edu.pl/invite_ok.php
12-16 Sept	Second International Symposium on Biological Control of Arthropods	Delemont, Switzerland	http://www.cabi-bioscience.ch/ISBCA-DAVOS-2005/
18-22 Sept	APEC Workshop to Address Invasive Alien Species	Beijing, China	Jeff Fisher fisherjp@state.gov
27 September – 1 October	Invasion of Alien Species in Holarctic (BOROK-2)	Borok, Yaroslavl Province, Russia	www.sevin.ru/borok-2 or www.ibiw.ru/conferences/Borok-2
29-30 Sept	National Congress of Parasitology with International Participation: Parasites and Parasitoses in Humans, Animals, Plants and the Environment	Brasov/Poiana Brasov, Romania	Prof. Gh. Oteanu dsvbv@rdslink.ro
2-7 October	Seventh International Symposium on Aphids	Fremantle, Australia	http://www.aphidsymposium.org
3-5 October	New Diagnostic Technology: Applications in Animal Health & Biologics Controls, Applications in disease surveillance, molecular epidemiology and quality control tests of vaccines	Saint-Malo, France	http://www.oie.int/eng/en_index.htm
23-27 October	The First international Marine Protected Areas Congress	Geelong, Australia	http://www.impacongress.org/
24-27 October	IPPC International Plant Health Risk Analysis Workshop	Niagara Falls, Canada	http://www.ippc.int/IPP/En/default.htm
24-28 October	Second International Conference on Mites in Crops	Montpellier, France	http://www.afpp.net

24-28 October	International Conference on Lepidopterous Cereal Stem and COB Borers in Africa	Nairobi, Kenya	http://www.icipe.org/iclcbal/
26-27 October	Seventh International Conference on Pests in Agriculture	Montpellier, France	http://www.afpp.net
7-11 Nov	20th Asian-Pacific Weed Science Society Conference	Ho Chi Min City, Vietnam	DuongVanChin@hcm.vnn.vn
28 November - 2 December	Eleventh meeting of Subsidiary Body of Scientific, Technical and Technological Advice (CBD SBSTTA-11)	Montreal, Canada	http://www.biodiv.org/default.aspx
5-9 December	IPPC Technical Panel to develop diagnostic protocols for specific pests	Penang, Malaysia	http://www.ippc.int/IPP/En/default.htm

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8-12 January	Ecological Society of American's international conference on "Ecology in an Era of Globalization: Challenges and Opportunities for Environmental Scientists in the Americas".	Yucatan, Mexico	http://www.esa.org/mexico
20-31 March (tentative)	Eighth Meeting of the Conference of the Parties to the Convention on Biological Diversity (COP-8)	Brazil	http://www.biodiv.org
19-25 June	Latin American Botanical Congress	Santo Domingo, Dominican Republic	Brian Boom, The New York Botanical Garden, bboom@nybg.org
30 July to 5 August	XV International Congress of the International Union for the Study of Social Insects	Washington DC	www.iussi.org/IUSSI2006.html
10-15 Sept	Seventh International Symposium on Fruit Flies of Economic Importance and 6th meeting of the Working Group on Fruit Flies on the Western Hemisphere	Salvador, Brazil	http://www.fruitfly.com.br
28-29 Sept	4th International Conference on Biological Invasions: NEOBIOTA from Ecology to Conservation	Vienna, Austria	Frank Klingenstein (Federal Agency for Nature Conservation) Frank.klingenstein@bfm.de

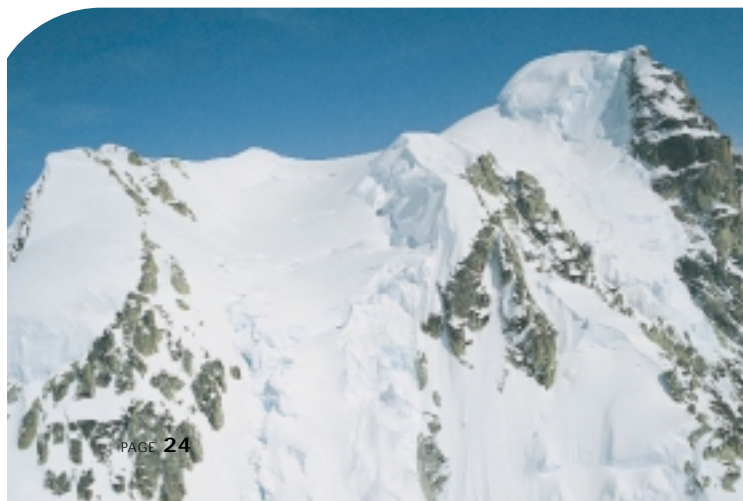
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17-21 Sept	9th International Conference on the Ecology and Management of Alien Plant Invasions	Perth, Australia	http://www.congresswest.com.au/emapi9/
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This list is kindly compiled by Dr. Richard Orr, Assistant Director for International Policy and Prevention of the National Invasive Species Council, Washington, DC. You can contact him at: 1849 C Street, NW, Washington, DC 20240, or Phone (202) 354-1882, Fax (202) 371-1751, or email him at Richard_orr@ios.doi.gov.

You may request free subscription to the mailing list to which updated IAS events lists are distributed on a monthly basis. You are also invited to provide Dr. Orr with any upcoming IAS event information for incorporation in this list.

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