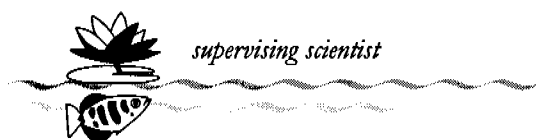


**Report on the Global  
Invasive Species  
Program Phase 1  
Synthesis Conference**

R van Dam

December 2000



# **Report on the Global Invasive Species Program Phase I Synthesis Conference**

**Capetown, South Africa, 17 – 22 September 2000**

**Rick van Dam**

## Contents

Background	1
The Conference	2
Saturday 16 September	2
Sunday 17 September – Registration and welcome drinks	2
Monday 18 September – Day 1: <i>Biological invasions: The knowledge base and the new tools – A Global perspective</i>	2
Tuesday 19 September – Day 2: <i>Assessment, Prevention and Best Management Practices “Early Warning Information Systems”</i>	5
Wednesday 20 September – Day 3: <i>A Global Strategy for Addressing the Problem of Alien Invasive Species</i>	8
Thursday 21 September – Day 4: <i>Phase II Concepts: Future Strategy Development – Looking Forward</i>	11
Friday 22 September – Day 5: <i>Future Strategy – Moving Forward</i>	13
Other issues	13
Concluding remarks	13
Attachments	

## Background

Phase I of the Global Invasive Species Program (GISP) focused on the development of new tools and approaches for dealing with non-indigenous invasive species from a global perspective. The GISP Phase I Synthesis Conference was held in order to present the Phase I products to invited participants, and through active workshops enable participants to provide input, suggest changes, offer contributions prior to their final development. In addition, participants were also asked to provide input and advice for initiation of GISP Phase II.

The conference was held at the Kirstenbosch Botanical Gardens in Capetown. The choice of location was for several reasons: The University of Capetown, most notably through Dr Dave Richardson, has been actively involved in GISP; Capetown and surrounds has an enormous invasive species problem, mostly with Australian acacias and eucalypts; and the native vegetation community around Capetown, known as *fynbos* (fine bush), which is currently under threat from development, fire, and invasive species, is the most biologically diverse in the world, supporting almost 4000 plant species.

### GISP Phase I Products

The two major Phase I products were:

- A Toolkit of Best Prevention and Management Practices for Alien Invasive Species (*The Toolkit*)
- Global Strategy for Addressing the Problem of Invasive Alien Species (*The Global Strategy*)

The contents of these documents were the subject of the workshops throughout the conference (see below). Draft copies are held by Rick van Dam, but once received, final copies will be placed in the *eriss* library.

### Major topics of the Conference

- Evaluating invasive species impacts at local, national and global scales
- Developing and refining the Global Strategy
- Developing management tools and outreach programs
- Establishing new partnerships

### Objectives

- To understand the regional implications of invasive species impacts and develop strong links between research communities and the policy and resource management sectors
- To meet like-minded colleagues from around the world to discuss scientific progress and possibilities for future collaborations
- To identify future research needs and strategies for dealing with invasive species

### Conference structure

The conference was a combination of invited presentations on invasive species issues relating to GISP Phase I and active working discussions on the products of GISP Phase I and priorities for Phase II. The program was altered from day to day to accommodate new issues that arose or were considered of higher priority, or participant fatigue.

Due to the large amount of material to discuss, concurrent workshops dealing with different issues were held, with participants nominating for those they were most interested/concerned. Workshops were usually 1 – 2 hours long.

## **The Conference**

### **Saturday 16 September**

Soon after arriving at the hotel, I was invited by Peter Bridgewater (now with UNESCO) to a meeting he was holding later that afternoon, with Nick Davidson (Ramsar), Ian Creswell (Convention on Biological Diversity Secretariat), and Richard Hobbs (Murdoch University, WA), on “emerging ecosystems”. The meeting was to discuss the possibility of a CBD workshop on the issue. I wasn’t too sure Peter knew exactly what he wanted, or what he meant by “emerging ecosystem”. It seemed he was talking about ecosystems in which invasive species and native species had found some balance, or where invasive species were beginning to establish. Little seemed to be known about the consequences of these scenarios, and the idea was to convene a specialist scientific workshop to discuss it. Peter asked for suggestions of potential attendees. Of course, Max’ name was about the first to be suggested, and not by me. It gives one an understanding of why Max is overseas so often.

It was interesting to sit in this meeting, even if I had very little to contribute, although the topic of discussion did turn to cane toads and Kakadu for a while, and also Mimosa, again, neither of which were initiated by me.

#### **Evening**

Dinner was a lonely one with only Nick Davidson at a great Portuguese restaurant. Amongst other things we discussed the wetland risk assessment framework and case studies, and what Ramsar expected from them, and marvelled at the honesty of the waitress who advised Nick to order something other than the curry because the chef had just tried it and it was terrible.

### **Sunday 17 September – Registration and welcome drinks**

Registration and welcome drinks were held in the evening, a very relaxed affair at Kirstenbosch, around several open fires and with plenty of wine. I caught up with Nick Davidson and Peter Bridgewater again, and also met a Russian fish ecologist, working on aquatic invasive species. He was very pleased to receive a copy of Pidgeon & Walden’s Kakadu fish booklet.

### **Monday 18 September – Day 1: *Biological invasions: The knowledge base and the new tools – A Global perspective***

#### **Plenary session 1**

Monday was a day of Plenary Sessions only, to provide participants with the background to GISP and its products. Some comments on each presentation are provided below.

*Jeff McNeely (IUCN, Switzerland). People and invasive species: dealing with the human dimension of the problem.*

This was the summary of a one day workshop held just prior to the conference to address what was seen as an important but a little overlooked issue. It outlined the human dimension issues that are relevant to invasive species problems, discussing historical, political, cultural, spiritual/religious, philosophical/ethical, sociological, psychological, linguistic, legal,

economical and educational dimensions that determine perceptions about invasive species and have implications for policy setting. The thrust was that invasive species will mean different things to different people, and there needs to be a better understanding of this.

*Marcel Rejmanek (UC Davis). The ecology of invasive plants: State of the art.*

Background was provided on ecological questions such as which taxa invade; how fast do they invade; what is the impact; and how do we control them. It was a difficult presentation to follow. It focused on the first question of which taxa invade, identifying factors such as the number of plantations of the species, the residence time, minimum juvenile period, mean seed mass, leaf area, relative growth rate, genome size, degree of habitat disturbance, and size of native range.

*James Carlton (USA). International pathways of harmful invasive species and their changing nature.*

This presentation discussed the increase in potential pathways for invasive species to spread over the globe, particularly with the increase in global trade. An interesting piece of information was that the Aid Trade (humanitarian aid to developing countries) has become a major vector for invasive species, and one of the hardest to control.

*Richard Hobbs (Murdoch University, Australia). Invasive species in a changing world – the interactions between global change and invasives.*

The major aspects of global change were identified – eg atmospheric composition, climate change, sea level rise, land use change, fire regime change, global commerce and invasive species. The issue here was that invasive species are now a major contributor to global change, but the other global change issues will also have an impact on invasive species. A new book, edited by Harold Mooney and Richard Hobbs, titled *Invasive Species in a Changing World*, was for sale and I purchased a copy. A brief scan indicates it is a very useful text.

*Mick Clout & Sarah Lowe (Invasive Species Specialist Group, NZ). Global Invasive Species Database and Early Warning System.*

The ISSG, on behalf of GISP has developed a database for invasive species, that is now on the Internet and currently being 'populated'. Their aim is to have 100 invasive species listed on the database by December. The web address is <http://www.issg.org/database>. For each invasive species, the database will contain as much information about its ecology, impact, and current distribution (native and introduced) as possible. It will also contain a list of source references. It has attempted to incorporate an Early Warning System, by providing maps of potential distribution of an invasive species, so a particular individual/state/country can see whether their region is at risk. It is a very crude system, and only meant to be a broad screening level prediction. More about the Early Warning System is provided below, under the Geospatial data workshop.

*Richard Mack (USA). Assessing global biotic invasions in time and space – the second imperative.*

This presentation discussed the use of techniques such as GIS and modelling to assess and predict the extent of biological invasions. It promoted the use of software such as CSIRO's BioLink and Climex. Much of what was discussed was relevant to our current efforts at mapping potential distribution of mimosa.

*Charles Perrings (UK). The economics of biological invasions.*

The economics of biological invasions can be seen in terms of both costs and benefits. Benefits are derived from introduced agricultural crops and animals, and biological control

agents. However, costs of many invasive species are great. Data were shown comparing the costs of invasive species control versus the predicted costs if the invasive had not been controlled. In most cases, the benefit lies in spending the funds to control an invasive species, particularly when it affects an economic resource (eg agriculture). The issue of valuing ecological resources is far more difficult. The penalties for introducing invasive species are not sufficient to prompt large corporations to minimise the risks. It was suggested that one solution was to enforce an invasive species insurance bond on corporations. This was met with some interesting discussion relating to difficulties of determining amounts, unfairness to small companies etc.

*Jeff Waage (CABI Bioscience, UK). Assessment, prevention and best management practices.* The Toolkit was summarised during this presentation. It consists of guidance on issues that need to be considered and addressed when dealing with an invasive species management issue. It also provided Case Studies where possible to help demonstrate the issue, point or approach being discussed. The Toolkit provides guidance on *Building Strategy and Policy*, invasive species *Prevention*, *Early Detection*, and *Assessment and Management*. The final draft was a product of contributions from over 25 invasive species specialists, and now was the opportunity for the conference participants to comment. The presentation highlighted that prevention is the ultimate goal but this is not always possible, particularly for unintentional introductions.

*Nattley Williams (IUCN, Germany). Legal and institutional frameworks on alien invasive species.*

This presentation outlined a recent IUCN Environmental Law Centre publication titled “*A Guide to Designing Legal and Institutional Frameworks on Alien Invasive Species*” (2000, Environmental Policy and Law Paper No. 40). The paper was one of IUCN’s contributions to GISP. Appropriately, the cover features a close-up photograph of a cane toad. A copy of the report was obtained and has been placed in the *eriss* library.

*David Andow (USA). Risk assessment.*

This was a presentation on risk assessment that said very little about risk assessment. Instead, it asked, and didn’t really attempt to answer a series of questions relating to risk assessment issues. It should also be pointed out that risk assessment in the context discussed referred to preventative risk assessment – ie assessment of risks of proposed biological introductions, such as would occur as a standard quarantine procedure. There was a brief mention of the difficulties in dealing with accidental introductions. Questions relating to ecological issues included:

- How can ecological science inform the decision process in risk analysis?
- Of the known invasive species, for which are risks unacceptable?
- Removing all known invasives, is it possible to identify pathways, environmental changes or species that are potentially invasive?

The presentation then discussed issues relating to the various International Agreements on invasive species and whether they treat ecological risks of invasives similarly, and whether they can ensure equivalent protection. The need for incorporation of social perspectives into risk assessment was also briefly mentioned.

Alan Holt (USA). *New approaches to education: Engaging communities in invasive species management.*

Alan Holt is one of those scientists who can span the gaps between science, marketing and the community. He has an ability to frame issues in a way that will capture the public's interest. He emphasised that it is all about community involvement, not just education or public awareness. The last two will not necessarily result in the first one. He described a program in which he initiated a large community program to control the introduced brown tree snake (*Boiga irregularis*) in Hawaii. The marketing strategy focused on people's fear of snakes, and the possibility of their children being bitten whilst playing in the backyard, ignoring the fact that the brown tree snake was non-venomous and harmless. The 'real', ecological issues were of little importance to the locals, and were therefore not used to drive the control program. The program was a huge success in controlling an invasive species.

Guy Preston, *Working for Water Program, South Africa*). *The Working for Water Program.*

This was a summary of another highly successful, ongoing community program to control invasive species. The *Working for Water* (WFW) Program is South Africa's most effective and efficient poverty relief instrument of Government. It has, as its Patron in Chief, Nelson Mandela. It currently has over 290 operational programs throughout the country, and in 1999-2000 created over 20,000 jobs for unemployed people, over half of which were women, clearing over 230,000 ha of invasive species in important water catchments. Again, clever marketing allowed the program to be sufficiently funded. The presence of invasive species along river catchments was related to the shortage of water supplies and quality downstream. Invasive species 'drink' more than natives; therefore, by removing the invasives, which often exist in dense infestations along river courses, water discharge and quality will be improved for the public. Funding in 1999-2000 was R241 million, equivalent to about AUD60 million. The goals of the program are not only to control invasives, but to relieve poverty, train, educate and empower people, and bring women and unemployed youth into the workforce. Some further comments on the WFW program are given below, on the Wednesday afternoon field trip to a WFW site.

### Evening

Dinner was back at the Portuguese restaurant with Cynthra Persad (Trinidad & Tobago), Fransisco Espinosa Garcia (Mexico), Jim Space (USA), and John Mauremootoo (Mauritius). The honesty of the waitress was again on display as she advised against a particular dish because one of the ingredients had been 'off'.

## **Tuesday 19 September – Day 2: Assessment, Prevention and Best Management Practices “Early Warning Information Systems”**

The majority of Tuesday comprised workshops on the Toolkit. Jeff Waage and Rüdiger Wittenberg (both of CABI Bioscience) provided another brief overview of the toolkit and how/why it was put together, then invited participants to pull it apart and comment, criticise, compliment and offer contributions and advice for improvement during the workshops.

### **Workshops session 1**

The first series of workshops covered the major topics of the Toolkit: Building Strategy and Policy; Early Detection, Prevention (Pathways), Invasive Species Assessment, Prevention (Pest Risk Assessment), and Invasive Species Management. I chose the Assessment workshop as this section of the Toolkit was the most relevant to our research at *eriss*.



#### *Session 1, Workshop 1: Invasive Species Assessment*

The background and objectives of the workshop can be found in Attachment 1. The session was chaired by Dick Veitch (NZ). About 10 people participated, with good comments for improvement coming from most. Major comments from myself can be found in Attachment 2. I volunteered to contribute two Case Studies: the cane toad assessment as an example of risk assessment for assessing existing invasive species; and Northern Land Council's Caring for Country Program (hopefully kindly supplied by Michael Storrs) as an example of promoting local community involvement in invasive species control programs (see Attachment 2 for Case Studies).

Comments from the group centred around confusion about who the Toolkit was aimed at, the fact that it did not provide details on how to go about tasks, and that it could be presented in a more user-friendly format.

In my opinion, the information contained in this section was highly applicable to the research, other activities (eg training) and expertise of the *eriss* Wetland Ecology & Conservation Branch (WEC) and also the National Centre for Tropical wetland Research (nctwr), although changes I suggested were aimed at making it even more relevant (eg specific reference to risk assessment as a useful tool for assessing existing/established invasive species).

#### *Session 1, Workshop 2: Regional Adaptations of the Toolkit – Asia*

Following morning tea, workshops were held to discuss regional issues relating to the use/application of the Toolkit. I attended the session for Asia (see Attachment 3 for background and objectives). About 8 people participated in the workshop. I was surprised to see that no one from south-east Asia was represented at the conference. Most Asian representatives were from India, Pakistan and China. Major issues related to the need for regional Case Studies, regional workshops to decide on priority invasive species issues, recognition of trans-boundary issues and required cooperation, and the need for training to be tailored to suit the resources, skills and capacity of the country/region/site involved.

We need to ensure that we are kept informed of any Asian regional developments regarding GISP, particularly the holding of workshops.

#### **Plenary Session 2 – Early warning and information systems**

After lunch, were several short presentations relating to early warning systems.

##### *Mick Clout (ISSG, NZ). Early warning and invasive species database introduction.*

This presentation reiterated the major features of the database presented the previous day, with some further focus on the Early Warning capability. The database uses the US Geological Survey Land Cover Classification (GLCC) Scheme. This is further described below, in the summary of Jess Brown's presentation. Early Warning is achieved through habitat matching by relating known distributions of a particular invasive species to the above scheme. As stated above, it is a crude system, that will hopefully be further refined in the future, possibly into a GIS – based system.

##### *Greg Sherley (Samoa). Global invasive species database: A Pacific Island point of view.*

This presentation supported the database concept, by describing its user-friendliness, and how it was envisaged it would be used for the Pacific Islands. It also provided a summary of a recent South Pacific Regional Environment Program (SPREP) publication titled *"Invasive species in the Pacific: A technical review and draft regional strategy"* (edited by G Sherley). A copy of this report was obtained and is currently held in the *eriss* library.

Jess Brown (USGS, USA). *Use of the United States Geological Survey (USGS) Global Habitat Data and future opportunities.*

Jess Brown gave a summary of the habitat data that ISSG used for the Early Warning component of the database. The satellite data chosen for this purpose were the 1km monthly AVHRR (Advanced Very High Resolution Radiometer) NDVI (Normalised Difference Vegetation Index) composites covering 1992-93. NDVI provides an indication of plant potential to use photosynthetically available radiation. The NDVI data were further refined using a number of classification systems, and worked up into Seasonal Land Cover Regions (SLCRs). SLCRs have similar mosaics of land cover types and common seasonal properties. The global land cover database includes 961 SLCRs. A reprint of a recent journal paper was obtained and is held by Rick van Dam (Loveland et al. 2000. Development of a global land cover characteristics database and IGBP DISCover from 1 km AVHRR data. *Int. J. Remote Sensing*, 21(6-7), 1303-1330), and contains further details of the data. Also, some further details/issues are provided below, in the *Geospatial data* workshop summary.

## **Workshops session 2**

This workshops session focused on issues of the Global Invasive Species Database and Early Warning System. Topics covered were *Prediction, Ecological data, Geospatial data* and *Pathways*. I attended the Geospatial data workshop, given our interest in the application of spatial data for risk assessment purposes.

*Session 2, workshop 1: Early warning and information systems – Geospatial data.*

The suggested discussion points for this workshop, and a summary of the Global Invasive Species Database can be found in Attachment 4.

This session mostly dealt with the USGS Global Land Cover Classification used for the Early Warning component of the database. However, a number of people also raised the issue of how information on the presence of invasive species was obtained and screened (for inclusion into the database eg museum collections, observational reports). In addition, it was suggested that as many information sources/references were supplied on the database as possible, to allow users to verify the quality of information.

A major limitation of the GLCC is that it does not incorporate aquatic ecosystems, including many wetlands (although some wetland types are listed in the classification scheme – eg wooded wetlands and swamp; mire, bog, fen; mangrove). In addition, the data are derived from satellite imagery taken during 1992-93, thus represent global conditions during these two years. USGS are currently looking at an alternative approach to mapping aquatic ecosystems, although given the global nature of the database, this could be difficult.

Given its global scale, the Early Warning component is at best a screening level tool, designed to tell users whether a particular invasive species may or may not be suited to establishment in their region, based only on habitat mapping. It does not account for land use, although the ultimate goal is to develop it into a GIS, which will have multiple levels of complexity. For example, a GIS could also house information on land use, protected areas, threatened species distributions etc. As an Australian example, the Matters of National Environmental Significance could be used in conjunction with the habitat matching, to identify any 'hot spots'.

## **Plenary Session 3**

*Roles of relevant international organisations/NGOs – Ramsar & IMO*

Two presentations were given by representatives of Ramsar (Nick Davidson), and the International Maritime Organisation (IMO)(Adnan Awad), basically outlining their

organisations roles and the link to GISP, including how/where GISP fits in to the organisation, and what they can contribute to GISP.

Nick provided background about Ramsar, highlighted the issue of wetland invasive species, the resolution on invasive species from the last COP in Costa Rica, and included some discussion on wetland risk assessment methodologies and case studies being developed by Ramsar (ie the work we are currently doing).

The presentation from the IMO focused on the volume of global shipping trade, associated ballast water being transported around the world, and the implications for biological invasions. The IMO is setting up a pilot/case study program involving a large number of countries, to implement/test measures for minimising the risks of biological invasions through ballast water intakes and releases. They are targeting countries that do not already have a strict system in place. In a later discussion with Adnan, he highlighted that Australia is leading the world in this area, with precautionary measures being above those recommended by the IMO.

#### *GISP synthesis of workshops to date on the Toolkit and Database and Early Warning System*

Jeff Waage summarised some of the major comments, points, and suggestions to come out of the various workshops on the Toolkit, while some further time for open discussion was also allocated. Again, major issues revolved around confusion about the target audience and that the document provided little information on *how* to tackle invasive species issues.

Mick Clout summarised some of the major comments, points, and suggestions to come out of the various workshops on the Database and Early Warning System. The biggest issues to arise during discussion period were the quality control of the database information, and associated with this, the legal implications of a global database and early warning system that could theoretically prompt a jurisdiction to cease or change their interactions with another jurisdiction that was thought to contain a potentially invasive species. Lawyers and other legal specialists became involved, and the soon the idea of a global database was looking very grim. It was agreed that a group would go away for further discussion on this issue.

#### **Evening**

An official GISP African *Brai* (big BBQ) was held at Constantia Groot winery not far from Capetown. A pleasant evening with some interesting conversation over South African wine. Unfortunately, when it came time for one of the two buses to leave, 95% of the diners decided they had had enough for the evening, and the remaining 5%, including Nick Davidson and myself, were forced against our will onto the second bus and promptly driven home. An earlier than expected night.

### **Wednesday 20 September – Day 3: *A Global Strategy for Addressing the Problem of Alien Invasive Species***

#### **Plenary session 4**

The first two presentations were from representatives of two international organisations, the World Trade Organisation (WTO)(Erik Wijkstrom) and the International Plant Protection Convention (IPPC)(Niek van der Graaf). Similarly to the previous afternoon's presentations, they provided background about the organisations and discussed their relevance to GISP. They explained relevant activities and international agreements under their authority that were relevant to invasive species and how they related to GISP. The WTO presentation focused on the SPS Agreement (Application of Sanitary and Phytosanitary Measures), while the IPPC presentation provided some overview of the IPPC Pest Risk Analysis Standard, which I made

a note of accessing on the Internet. Overhead summaries of the two presentations were distributed and are provided in Attachment 5 and 6, respectively.

*Jeff McNeely (IUCN, Switzerland): A global strategy for addressing the problem of alien invasive species.*

Jeff described the origin of the Global Strategy, essentially a momentary lapse of reason on his part as he volunteered his services to GISP. The 'Strategy' comprised a series of chapters describing issues, economic implications, biology and management responses relating to invasive species, followed by another chapter listing 10 strategies for addressing the problem of invasive species. The strategies were:

1. Build capacity to address invasive alien species problems
2. Build research capacity
3. Develop economic policies and tools for addressing problems of invasive alien species
4. Strengthen national, regional and international legal and institutional frameworks to address invasive alien species
5. Institute a system of environmental impact and risk assessment for invasive alien species
6. Build public awareness of the problem of invasive alien species
7. Promote sharing of information about invasive alien species
8. Build responses to invasive alien species into other relevant sectors
9. Build invasive alien species issues into global change programs
10. Promote international cooperation to deal with problems on invasive alien species

Each strategy contained summary text and a series of recommendations or sub-strategies/objectives. As with for the Toolkit, participants were asked to comment, criticise, and offer improvements on the document. Comments were sought on the initial summary chapters (Ch 1-5) as well as the individual strategies (Ch 6).

### **Workshops session 3**

Workshops were held for the 10 strategies listed above. Although initially planning to attend strategy 5, I made a last minute change and attended strategy 9, *Build invasive alien species issues into global change programs*. This was because much of the risk assessment discussion at the conference related to implementing standard preventative pest risk analysis approaches, essentially a quarantine process, and somewhat different to the risk assessment research we undertake. Also, following the Toolkit workshops, I was satisfied that I had ensured the inclusion of risk assessment approaches for assessing invasive species, not just preventing their introduction.

#### *Session 3, workshop 1: Building invasive species issues into global change programs*

This was the smallest group I had worked with – only six people. These included Richard Hobbs (Australia), Harold Mooney (USA) (both Richard and Harold are editors of the book *Invasive Species in a Changing World*), Montserrat Vilà (Spain) and two others whose names I do not recall. Being a small group allowed for plenty of input from anyone willing to offer it, and all involved were. The background and objectives of the workshop can be found in Attachment 7.

The first and major issue was what was global change? Was it simply referring to climate change, or inclusive of other processes such as land use change. It was agreed by all that the

term encompassed a range of issues, one of which was also invasive species. Thus, the strategy had to recognise that invasive species are a component of global change, but that other global change issues may also have a marked impact on invasive species (eg climate change, land use change, increased world trade).

The group then agreed to and set about re-drafting the background paragraph and the sub-strategies/objectives. The revised strategy 9 is provided in Attachment 8. It was the discussion of this issue that resulted in my formulation of a research concept assessing the impacts of global change (most notably climate change and land use change) to a weed such as *Mimosa pigra*, with Tram Chim NP, VietNam, possibly being used as the study site. This idea was further developed during my meeting with Wetlands International Asia-Pacific (27<sup>th</sup> September; see relevant Trip Report).

#### **Afternoon field trip**

The afternoon was spent on a field trip to a working site of the *Working for Water* (WFW) Program. The site, about 1¼ hours drive east, across the Cape Flats (riddled with squatter camps and Australian Acacias) and into the Hottentot Mountains, was a stretch of upland river flowing through a range of land uses, including conifer plantations, apple orchards and nature reserve. Much of the native riparian vegetation had been overtaken by very dense stands of acacias.

Teams of WFW employees are contracted to carry out weed removal programs. The teams consist primarily of women and youth, and have a team leader. They are trained in weed control procedures, but also learn many of their skills on the job. Teams must supply tenders for jobs, although there is no competitive process. The intention is to train them in costing for such jobs. The team must specify the length of time a job will take. The workers get paid for that length of time. If it takes longer, the team only get the agreed fee, unless the delay was out of their control. However, they still receive the same fee if they complete the job earlier than expected. Payment is always at the end of the job. The teams are given their own sets of equipment, including chain saws, machetes, spray packs etc, and they are responsible for their care and maintenance. The intention of the WFW program is to train teams in weed control/land management techniques, so that once adequately experienced, they can form their own independent businesses. Simultaneously, the program is trying to put a substantial dent in the country's weed problem. The success of the latter goal is yet to be determined, although the program as a whole is rated as an enormous success. A copy of the WFW Programs 1999-2000 Annual Report is held by Rick van Dam.

We met with the local WFW Program coordinators and also one of the control teams, spending a good 90 minutes watching the team at work and also talking with them. To get the 'hands-on' perspective was extremely useful, as it cut through the usual, higher level, superficial, political propaganda and glossy annual report style information one often receives. As is usually the case, a range of problems exist at the implementation levels of such large programs. These included complaints of poor conditions and inadequate payment schedules by the workers, and insubordinate workers by the coordinators. However, overall, the mood from both workers and local coordinators was very positive, and a good relationship was evident.

#### **Evening**

By chance, after returning from the field trip and urgently requiring a cold drink, I came across a small group preparing for a night out. I accepted the invitation and we dined at a great African restaurant in the heart of Capetown. The group consisted of Richard Hobbs (Murdoch Uni, Perth), Dave Richardson (Uni of Capetown), Lori Lach (Cornell Uni, studying

a PhD in Capetown), Montse Vilà (Creaf Uni, Barcelona), Marcel Rejmanek (UC Davis), Petr Pysek (Institute of Botany, Czech Republic) and myself. Once again, the meal, wine and hospitality were exceptional. Not content simply with dinner, next stop was an African drumming café, dark and 'dingy', where you hire a drum, buy a beer and join in the seemingly never-ending percussion session. The hands were very sore the next morning, but by early afternoon, the 'drumming' group was the envy of the conference.

## **Thursday 21 September – Day 4: Phase II Concepts: Future Strategy Development – Looking Forward**

### **Workshops session 4**

Jeff Waage introduced the document, *Addressing the Alien Invasive Species Challenge: A GISP Phase II Concept*. This document consisted of a Background/Introduction followed by five global initiatives:

1. Global access to information on alien invasive species threats and their prevention and management
2. Directed action at key pathways of alien invasive species introduction
3. Acceleration of critical research and its dissemination
4. Awareness-raising and support to policy development
5. Building cooperation between institutions towards a global biosecurity platform to mitigate the threat of alien invasive species.

These initiatives were the subject of the workshops. I chose to participate in Workshop 3, *Critical Research*, as this is where future *eriss*/nctwr involvement would exist.

### *Session 4, workshop 1: Critical research*

A decent sized group (~12) participated. The background and objectives of the workshop can be found in Attachment 9. It was highlighted from the beginning that to achieve the objectives would be very difficult given that the re-shuffling of the program had meant we were yet to hear the outcomes of the previous day's Global Strategy workshop on *Building research capacity*. Surprisingly, the necessary research capacity in the Global Strategy did not match up well with the research focus areas identified in the Phase II Concept document. This highlighted the disjointed nature of the compilation of much of the GISP documentation, but by no means detracted from it, remembering that the overall purpose of the conference was to workshop and decide upon the nature of the final documentation.

It was agreed that the workshop could only reasonably aim to provide some general guidance on research needs and directions given the majority of participants were plant ecologists and did not represent the full suite of invasive species issues. In addition, identifying suitable entities to coordinate research needs, identifying potential technical and financial support, and providing timelines for various phases of implementation were agreed to be objectives beyond the scope of the group.

While someone went in search of the revised Global Strategy information, the discussion continued. The major points being raised included:

- The need for an International Invasives Centre that could manage inventory data for invasive species research. This would allow easy access to invasive species research being conducted around the world, would facilitate information sharing, and minimise duplication of research effort.

- Regarding actual research, the need for further taxonomic work appeared to rank as highest priority to those more expert in the field of invasives than I.

The conversation bounced around with little focus, although kept returning to the issue of the International Invasives Centre. There was some confusion about its role. The majority consensus was that it should be a coordinating centre, not a research institute, which provides up-to-date information to researchers on who is doing what (and where/when, etc).

With the revised Global Strategy information in our hands, the task became more focused. Some research priorities from the Global Strategy had not been picked up in the Phase II Concept document and this was immediately rectified. The most notable of these was the omission of taxonomic research in the Phase II Concept document. The revised research priorities will be listed in the final Phase I documentation.

### **Plenary session 5**

*Jo Mulongoy (CBD). Invasive alien species and the CBD*

Jo Mulongoy summarised the Convention on Biological Diversity's relationship to GISP, indicating that invasive alien species will be the CBD's main theme over the next few years. He also called for Case Studies for the meeting of SBSTTA6 (Subsidiary Body on Scientific, Technical and Technological Advice) in Montreal, March. We have since received information regarding this meeting and are contemplating submitting 1-2 posters.

*Jeff McNeely (IUCN). GISP Global Strategy Workshops Synthesis.*

Jeff McNeely had been working overtime to summarise the major comments/suggestions arising from the previous day's workshops on the Global Strategy. Major changes were to be made to the document. The initial chapters of text are to be removed, making a much smaller, more focused document. Substantial changes were also to be made to each of the strategies, following the workshop comments. One major change was that Strategy 9 *Build invasive alien species issues into global change programs* was to be merged with Strategy 2 *Build research capacity*. This makes sense, although I was slightly concerned that the issue of invasives and global change could be lost within Strategy 2. I eagerly await the final documentation to check that this has not occurred.

Regarding discussions of regional issues I noted the following needs identified at the Asian region workshop. They included a regional GISP meeting, a study to document and quantify invasive species impacts in Asia, national surveys, capacity building, and regional assessment.

We (*eriss*/nctwr) need to ensure involvement in any Asian GISP activities. This will need to be done initially by contacting the major Asian representatives at the conference, informing them of our wish/need to be involved in activities.

A copy of the final Global Strategy will be placed in the library once obtained.

### **Evening**

This evening was another dinner at a winery, this time Spier Estate at Stellenbosch. Another fabulous evening of great food and wine. Again, a small contingent of us were herded on to a bus against our wills far too early in the night, although this time we managed to acquire a few bottles of red for the 1 hour bus trip back to the hotel. Unfortunately, the winery would not allow us to take our wine tasting glasses with us, so the bottles had to be passed around and shared.

## **Friday 22 September – Day 5: Future Strategy – Moving Forward**

The Agenda for Friday was changed in recognition that most participants were suffering conference fatigue. Scheduled close was now prior to lunch. The morning was devoted to summing up and clearing any lasting issues.

### **Plenary session 6**

*Hal Mooney (Stanford Uni). Taking stock and looking ahead.*

Hal Mooney was the driving force behind GISP Phase I, and his presentation simply summarised where the Program had come from and where it was today, following the input from the conference. He acknowledged the efforts of the many who contributed to the documentation, and handed over the reins of the Secretariat from Stanford University to the University of Capetown.

*Jeff McNeely (IUCN). Completing the Global Strategy.*

Jeff thanked everyone for their comments on the Global Strategy, noting that it was now more specific about the goal, timing and responsibilities. He also noted that GISP may implement a feasibility study of the major ideas that had flown from the Global Strategy workshops.

*Jeff Waage (UK). Completing the GISP II Concept*

Jeff summarised the outcomes of the Phase II Concept workshops. This summary is provided in Attachment 10.

*Peter Schei (Norway). Meeting Summary*

Peter was given the task of summarising the key issues identified at the meeting. His summary is provided in Attachment 11.

### **Closing ceremony**

The Minister of Water Affairs and Forestry, Ronnie Kasrils, officially closed the conference, thanking all for their efforts and participation.

### **Other issues**

#### **Saturday 23 September – Cooperative Governments Initiative on Invasive Species Meeting**

I was invited to this meeting given that I am a part of Environment Australia. However, other circumstances meant that I was unable to attend. The meeting Agenda and Summary are provided in Attachment 12.

#### **Interim guiding principles for the prevention, introduction and mitigation of impacts of alien species**

This working document arose from the CBD COP5, as Decision V/8, Annex 1. It was discussed as part of a workshop that I did not attend. The content makes it worthwhile to include as Attachment 13.

### **Concluding remarks**

Overall, this was the most productive and stimulating conference I have attended, due solely to its interactive nature. It was exhausting, which is probably half the reason many participants were so reluctant to maximise the social interactions. I made a good number of contacts, and need to actively maintain correspondence.



For *eriss*/nctwr, the major areas of research potential seem to lie with furthering activities that we are currently undertaking, namely the risk assessment projects and also training activities. We have ecological and assessment expertise to develop projects relevant to GISP priorities, and thus, should be able to use GISP as a platform for funding applications. Any activity we undertake on invasive species, be it research or training should acknowledge GISP and outline how it is relevant to GISP Phase II.

## **Attachment 1**

### **Background and objectives of Session 1, Workshop 1: *Invasive Species Assessment***

**Workshop Session 1**  
**A Toolkit of Best Prevention and Management Practices for Invasive Alien Species:**  
**I. Refinement**

**Invasive Species Assessment**

**Background:**

The Best Practices Toolkit is designed to aid in the elaboration and adoption of effective national strategies for addressing the problem of IAS. The toolkit includes suggestions on garnering public support for a national commitment, assessing the current status and impact of invasive exotic species, building institutional support for an effective response to the problem, and putting the strategy on firm institutional and legal bases.

***Session goal:** To obtain feedback from session participants on the six chapters of the Toolkit. GISP will use these comments to further improve the Toolkit before making it widely available in early 2001.*

**Working group objective:**

To evaluate and refine portions of Chapter Five (5.1-5.2, 5.7-5.8) of the Best Practices Toolkit.

Time available: 1 hour

Chapter Five outlines important components of an invasive alien species management programme. This working group focuses on initial assessment of management goals and on securing support for management activities. Sections 5.1-5.2 and 5.7-5.8 address the following topics:

1. Initial assessment of management goals and target areas
2. Setting management priorities
3. Prioritising species and specific infestations for control
4. Case studies illustrating assessment and prioritization schemes
5. Securing resources for prevention and management activities (5.7)
6. Engaging stakeholders in prevention and management activities (5.8)

**Document Reference :** Best Management Practices Toolkit pgs. 99-103, 130-134

## **Attachment 2**

**Comments and contributions for GISP Phase I products**

## Comments and contributions for GISP Phase I products

**Provided by:** Dr Rick van Dam, National Centre for Tropical Wetland Research, Locked Bag 2, Jabiru, NT, 0886, Australia

### The Toolkit

The following comments and contributions deal only with Chapter 5, *Assessment and Management*, as this is where the major expertise of our research group lies. Only those issues that I felt required reinforcement are presented below. Other comments on the Toolkit and Global Strategy were addressed during the course of the conference.

#### General

During the conference, there was some confusion about the role of the Toolkit and who the intended users were. The major issue was that the document did not provide much information on how to go about tasks. Feedback from the GISP team clarified that the Toolkit was not so much a “how to” document, but a “what to” document, with Case Studies to provide insights into how one might go about tackling an alien invasives issue. In my opinion, the cause of much of this confusion may lie with the title of the document, the “Toolkit”. A toolkit implies you have the necessary implements to fix or complete something. This document provides advice on what to do, but does not provide the necessary tools to do it, which is fine, as long as it is not misinterpreted, as it was at the conference. Acknowledging that the title ‘Toolkit’ is attractive and ‘catchy’, perhaps a more appropriate description would be a ‘Guidance document’. Although somewhat staid, it does better reflect the content of the document, and should prevent further confusion by end users.

#### Section 5.1, Initial assessment

1. In section 3.3, *Risk Assessments*, it states that “*Risk assessment is a tool that can be used to support exclusion of invasive species as well as to assess the potential impact of those that have become established.*”. However, in section 5.1, *Initial assessment*, there is no specific mention of risk assessment as a tool for assessing invasive species. In fact, this whole section essentially describes all the major elements of risk assessment, but does not formally recognise it as such. For example, risk assessment can be described as consisting of a number of steps, including the following: identifying the problem; characterising the effects and the exposure/extent; estimating the risks; considering the uncertainty/information gaps; considering alternatives and their risks; and providing recommendations for management and monitoring. Most of the above steps are described in varying detail in section 5.1, further highlighting the fact that there needs to be some formal recognition in section 5.1 that risk assessment approaches are extremely useful ways for assessing invasive species and also for setting priorities (this also flows on into section 5.2, *Priorities for management*).
2. *P. 100, 1<sup>st</sup> paragraph*: Change the sentence beginning “Past control actions ....” to read “Past control actions, their success or failure, *and their ecological risks* should be summarised, too.”.
3. The attached Case Study, *A preliminary risk assessment of cane toads in Kakadu National Park*, to be inserted at end of section 5.1.

## **Section 5.2, Priorities for management**

4. *P. 100, last paragraph:* Point number 1 to be amended to “1. Current and potential extent of the species on or near the site;”.

## **Section 5.3, Management strategies**

5. *Page 103, Section 5.3.1, Eradication:* Experience from attempting to eradicate *Mimosa pigra* in northern Australia has highlighted that all eradication programs need to consider the incorporation of adequate resources for follow-up work. A one-off eradication is pointless if follow-up inspections and/or control are not undertaken to ensure full eradication.
6. *Page 105, 1<sup>st</sup> dot point:* After the second to last sentence, ending “....in a relatively contained area.”, the following sentence could be inserted: “Even in such events, the risks of re-invasion of the pest species is still likely to exist and will require vigilant, long term management.”

## **Section 5.5, Monitoring and follow-up**

7. Ultimately, the success on any invasive species management program will hinge on the effectiveness of its monitoring program. Given this, it was surprising to see that less than one page was devoted to Monitoring issues. This is a major under-representation of the importance of this aspect of a management program, and could be substantially strengthened. This was not pointed out during the conference workshop session on *Assessment and Management* because time restrictions limited the number of issues that could be raised and discussed.

Issues such as how to design an effective monitoring program, providing references to other guidance documents for designing monitoring programs would be a very useful first step. The Ramsar Convention (and I’m sure the Convention on Biological Diversity) has very useful guidance on designing an effective monitoring program (see [www.ramsar.org](http://www.ramsar.org)).

Also, emphasising the need to build an early warning capability into a monitoring program could be discussed.

## **Section 5.7, Securing resources**

8. *p. 132, Section 5.7.2, Tapping of other resources:* The attached Case Study, *The Caring for Country Program on Aboriginal Lands in the Northern Territory*, to be inserted at end of section 5.7.2.

### **A preliminary risk assessment of cane toads in Kakadu National Park**

The cane toad, *Bufo marinus*, introduced to Australia in 1935, will soon arrive in Kakadu National Park (KNP), a World Heritage area with Ramsar-listed wetlands. Cane toads eat a wide variety of prey, have greater fecundity and develop faster than native anurans, and possess highly toxic chemical predator defences. They tolerate a broad range of environmental and climatic conditions, and can occupy many different habitats. To date, no effective control methods for cane toads have been developed. There is concern that the status of KNP could be diminished if any of the Park's natural and cultural values are negatively affected by cane toads. Consequently, an ecological risk assessment was undertaken to predict key habitats and species most likely to be at risk, from which recommendations for new monitoring programs could be made, the relevance of existing programs evaluated, and some management options identified.

The approach, based on a wetland risk assessment framework developed for the Ramsar Convention on Wetlands, involved identification of: *the problem; the (potential) effects; the (potential) extent of the problem; the subsequent risks; and the information gaps*. The outcomes were used to provide advice for monitoring and risk management.

A total of 154 predator species were listed. Ten species were in risk category one (ie the greatest risk category), with northern quoll (*Dasyurus hallucatus*) being assigned highest priority. The nine remaining species were assigned high priority. Twelve species or species groups were in the second risk category, while the third risk category contained 132 species or species groups. Risks to prey species were difficult to predict, but those most likely to be impacted included termites, beetles and ants. Similarly, risks to potential competitor species were unclear, but potential effects to some native frog species and insectivorous lizards were of concern. A great deal of uncertainty surrounded the prediction of risks. Contributing to this was a lack of understanding or quantitative data on i) impacts of cane toads on animal populations; ii) populations, distributions and general ecological information on Kakadu fauna; and iii) cane toad densities within Kakadu.

Seven priority habitat types were identified for monitoring: floodplain communities; swamp communities; monsoon forest; riparian communities; woodland and open forest communities; springs, soaks and waterholes; and escarpment pools. Priority species for monitoring included northern quoll, the varanid lizards, several elapid snakes and dingo. Other species warranting close attention included some small mammals, ghost bat, black-necked stork, freshwater crocodile, and a range of native frogs. With a few exceptions, it was concluded that historical or current monitoring programs within KNP were unsuitable for providing a baseline for the assessment of toad impacts. Finally, monitoring and research recommendations to address critical information gaps were also made.

Cane toad control options were extremely limited. It was suggested that particular, sustained measures may prove effective in localised areas (eg townships, caravan parks), but that broad scale control is not possible, as chemical and biological control methods are insufficiently developed at this stage.

It was recommended that Parks North manage the invasion of cane toads initially by i) ensuring that monitoring efforts are underway to assess impacts of cane toads to Kakadu, and ii) investigating measures by which cane toads can be managed on a localised basis.

*Edited from: van Dam, R.A.; Walden D.; Begg G. (2000) A preliminary risk assessment of cane toads in Kakadu National Park. Final Report to Parks North. Supervising Scientist, Darwin, N.T., 89 pp.*

### **Community-based Aboriginal Weed Management in the 'Top End' of Northern Australia.**

In the northern part of the Northern Territory of Australia, known as the 'Top End', Aboriginal people own a large area of land (over 170 000 km<sup>2</sup>) including approximately 87% of the Northern Territory coastline. They rely heavily on these lands for food, for cultural reasons and, increasingly, for economic independence. Apart from its cultural significance the land is also an important receptacle for a large portion of Australia's biodiversity. There are a number of threats to the integrity of this land such as changing fire regimes and invasion by feral animals and weeds, in particular the rampant Central American floodplain weed *Mimosa pigra* (mimosa).

Unfortunately Aboriginal groups have a low capacity to deal with such new and emerging threats to their land. Traditional ecological knowledge and land management skills do not adequately address such problems and weed control, in particular, has often been given a low priority because the potential environmental impact of particular weeds is not fully recognised. Aboriginal people have limited personal resources and the resources of their representative organisations have been focussed on other priority issues, such as claiming back land and the provision of housing, water, electricity etc.

The Caring for Country Unit (CFCU) of the primary representative organisation for Aboriginal people in the Top End, the Northern Land Council, is using the weed mimosa to 'kick start' formalised weed and land management in a number of key areas on Aboriginal lands across the Top End. The project involves contributions from a range of agencies, and aims at developing a spirit of multi-agency collaboration to strategically address weed management and other land management and community issues. The project could result in major conservation benefits, increased employment in communities and the eventual development of enterprises based on natural resources.

The project focus is on assisting communities build their capacity to undertake land management work for themselves. Participants are employed on the Community Development Employment Program, a Commonwealth Government employment program for Aboriginal people and basic training and resources are brokered to initiate mimosa control work. Emphasis is placed on prevention and early intervention. Over time, with increased experience and confidence and through more broad-based training the work is broadened to include other land management issues.

Attendance at workshops and participation in field trips helps people better understand the concepts of integrated conservation and development. Communities are now investigating enterprise development based on the sustainable use of natural resources that could, in time, help fund land management activities.

CFCU does not seek to develop generic models for land management, recognising that community needs, capacity, aspirations and community structures will vary across the region. The over-arching goal is to assist Aboriginal landowners and communities to develop locally appropriate formal land management programs where informal traditional land management is inadequate to address emerging problems. No single model for a formal land management program has been specified and nor is it intended to develop such. Empowerment is the key.

*Prepared by Michael Storrs, Wetlands Officer, Northern Land Council, PO Box 42921, Casuarina, NT, 0811, Australia.*

*Email: [michael.storrs@nlc.org.au](mailto:michael.storrs@nlc.org.au)*



## **Attachment 3**

### **Background and objectives of Session 1, Workshop 2: *Regional Adaptations of the Toolkit – Asia***

# **Workshop Session I**

## **A Toolkit of Best Prevention and Management Practices for Invasive Alien Species: Regional Adaptations**

### Asia

#### **Background**

The Toolkit is designed to aid in the elaboration and adoption of effective national strategies for addressing the problem of invasive alien species (IAS). The Toolkit includes suggestions on garnering public support for a national commitment, assessing the current status and impact of invasive exotic species, building institutional support for an effective response to the problem, and putting the strategy on firm institutional and legal bases.

**Session goal:** To obtain feedback from participants on how to make the Toolkit more relevant to particular regions and countries. GISP will use these comments to further improve the Toolkit before making it widely available in early 2001.

#### **Working group objective:**

To evaluate Toolkit suitability to Asia and discuss any Asia-specific issues with regard to IAS prevention and management.

The Toolkit provides guidance on six major topics, each of which must be adapted to meet the special needs and situations of Asia.

You may wish to retain these headings:

7. Building a national strategy and policy for addressing the problem of IAS
8. Building an early detection system for new IAS introductions and invasions
9. Pathways-based prevention of new IAS introductions and invasions
- \* 10. Assessment of invasive species management goals and priorities
11. Conducting pest risk assessment to support IAS prevention/~~management~~
12. IAS management tools and techniques

*→ risk assessment → on-ground control teams - training*

We are also interested in identifying important regional case studies and opportunities for regional cooperation.

**Document reference: entire Toolkit.**

## **Attachment 4**

**Background and objectives of Session 2, Workshop 1: *Early warning  
and information systems – Geospatial data***

**&**

**Summary of Global Invasive Species Database**

Individual Workshops: suggested discussion points.

## B: GEOSPATIAL DATA

- ✱ What information do users want to see depicted?
  - Usefulness (and shortcomings) of GLCC system, and the application of it to 'habitat matching' and prediction?
  - Suggestions for improvement (e.g. GIS capacity, "overlays" of information on pathways, protected areas, threatened species distributions etc)?
  - What information is available and potentially useful on pathways etc, and how could it be depicted?
  - Key sources of data, contact points etc (issues of data ownership??)
  - Priorities for added capacity?

# GISP Global Invasive Species Database and Early Warning System

Main data fields:

- **scientific name**
- **taxonomic hierarchy**: kingdom, phylum/division, class, order, family etc
- **summary text** (ca. 200 characters only) to encapsulate a few characteristic points (helps if people aren't familiar with scientific name)
- **distinguishing features**
- **general impacts**
- **nutrition/diet** (obviously more relevant for animals, but could mention nutrient-poor soils for plants etc)
- **reproductive mode**
- **reproductive output**
- **special lifecycle stages**, e.g. larval stage, metamorphosis, migration...
- **general management information** – summary of methods known etc (more detail is found elsewhere)
- **“source”**: the person who supplied the background data
- **synonyms**, with reference
- **common names**, with languages
- **ecological category**, e.g. mammal, reptile... (intended to (a) help form an image of a species shown only as a “scientific name”), and (b) enable retrieval of groups of species by non-specialists).
- **“biomes in which the species would not survive”**
- **range expansion method**. Separated into “long distance” and “local”, and with a descriptive notes field attached.
- For each **“distribution”** (=habitat in location):
  - Status (alien? Native?)
  - Invasive? Yes/No
  - Arrival date
  - Specific local behaviour (in that place)
  - Notes for that location
  - Introduction – whether accidental, illegal, legal etc
  - Impacts in that place – as many as needed, with notes.
- **Contacts**: people's names, addresses, institutions, e-mails, phone numbers...
- **References**: publications, websites... retrievable by species or by location.

## Basis for prediction:

- Experts specify the habitats (with locations) in which species are invasive.
- These habitats (together = “invasive range”) are recorded in the system as invaded habitats.
- All other global instances of those habitats are captured.
- Habitat/locations where the species is either native, or has already invaded, are deleted.
- This leaves a global set of habitat/locations where *a species may invade next*—given that this is based entirely on the idea, that “if a species has invaded a certain habitat before, it is likely to invade that type again” and that no other factors (presence/absence of predators, pathways...) are included.

The GLCC system is manifested in the GISP Database as circa 960 global habitat types.

So far, over 2000 locations are recorded with their habitats. To complete this “listing” of habitat-locations is a huge task, requiring habitat patches from GIS maps to be extracted as text. It is impossible to “name” each geographic location where a tiny habitat patch occurs. A mapping solution is the only way to resolve this properly.

# GLOBAL INVASIVE SPECIES DATABASE



**Microsoft Excel - TDMimosa pigra Annie Darwin.XLW**

File Edit View Insert Format Tools Data Window Help

100% Prompt

Arial 10 B I U

F9 =

Distribution			
Species (Short Scientific Name)			
Mimosa pigra			
Use Lookup (Distribution Lookups)		(N=Native or A=Alien) (1=Yes, 0=No)	
	Status*	Invasive*	Ar
North Australia 2: SAVANNA (WOODS) - Low Open Savanna (Eucalyptus, Melaleuca)	A	Y	
Northern Territory: Water courses and floodplains			
Malaysia 6: FIELDS AND WOODY SAVANNA - Grassland/Woodland/Cropland Mosaic	A	Y	
Papua New Guinea 16: SAVANNA (WOODS) - Tropical Wet Savanna	A	Y	
Java 4: FIELDS AND WOODY SAVANNA - Deforested, Shifting Cultivation, Coffee, Rice	A	Y	
Tanzania 1: SAVANNA (WOODS) - Savanna	A	Y	
Kenya 15: HOT AND MILD GRASSES AND SHRUBS - Grassland with Cropland, Wetland	A	Y	
Ghana 6: FOREST AND FIELD - Degraded Tropical Forest/Cropland	A	Y	

Sheet1 1. Species 2. Distribution Lookup 3. Contacts 4. Reference

Ready

This, and other side, are the TEMPLATE, for copying data from experts.

# GLOBAL INVASIVE SPECIES DATABASE



Microsoft Excel - Eriocheir sinensis.xls

File Edit View Insert Format Tools Data Window Help

100% Prompt

Arial 10 B I U

P42 = Accidental release

	A	B
1	<b>Species (see 'Help' worksheet for assistance)</b>	
2		
3	<b>Short Scientific Name</b>	Eriocheir sinensis
4		
5	<b>Full Scientific Name</b>	Eriocheir sinensis (Milne-Edwards, 1854)
6		
7	<b>Taxonomic Hierarchy</b>	Kingdom=Animalia, Division=Arthropoda, Class=Crustacea, Order=Decapoda, Suborder=Brachyura, Family=Grapsidae,
8		
9	<b>Summary Text</b>	This migrating crab, native to Asia, contributes to local extinction of native invertebrates, modifies habitats due to burrowing activities and costs industries (e.g. fishing and aquaculture) several 100 000s of dollars per
10		
11	<b>Distinguishing Features</b>	The square shaped carapace of adult crabs, distinguishes it from other brachyuran crabs. It can attain a carapace width of 5 cm. Males have a
12		
13	<b>General Impacts</b>	Crabs are preying upon native species and after mass occurrences native species were locally driven extinct. Burrowing activities of crabs result in
14		
15	<b>Nutrition and Diet</b>	Feeds on a wide variety of plants, invertebrates, fishes and also detritus. Algae, snails and clams are the main food.
16		

NEW, line drawing of species 1. Species 2. Distribution Lookup

Ready NUM



# GLOBAL INVASIVE SPECIES DATABASE



## GLOBAL INVASIVE SPECIES DATABASE

100 OF THE WORST

### SPECIES SEARCH

STANDARD

TAXONOMIC

Taxonomic Level

Phylum/Division

Taxonomic Name

Magnoliophyta

SEARCH

### REFERENCE SEARCH

Country or location

Reference Type

reference

SEARCH

14 species found

1. *Acacia farnesiana* (land plant)  
*This thorny, deciduous shrub grows to 4 m in height, sometimes forming impenetrable thickets (Smith, 1985).*  
**Common Names:** cassie, Ellington curse, kolu

2. *Acacia mearnsii* (land plant)  
*This noxious, evergreen tree often reaches 20 m in height. Apart from producing copious numbers of seeds, it generates numerous suckers resulting in monotypic thickets.*  
**Common Names:** black wattle

3. *Chromolaena odorata* (land plant)  
*This big bushy herb or subshrub forms dense stands which prevent establishment of other species, both due to competition and allelopathic effects. It is native to Tropical America, but is common in many tropical regions as a weed.*  
**Common Names:** agonoï, bitter bush, hagonoy, herbe du Laos, huluhagonoi, kesengesil, mahsrihsrihk, masigsig, otuot, Siam weed, trifid weed, wisolmatenrehwei

4. *Cinchona pubescens* (land plant)

Document: Done

# GLOBAL INVASIVE SPECIES DATABASE



## GLOBAL INVASIVE SPECIES DATABASE

### SPECIES SEARCH

**STANDARD** **TAXONOMIC**

Species Name

Country or location

Habitat

all

Ecological Category

all

**SEARCH**

### REFERENCE SEARCH

Country or location

Reference Type

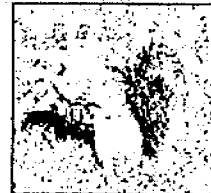
**Document: Done**

## *Sciurus carolinensis* (mammal)

[Distribution](#)

[Habitat Matches](#)

[Refer](#)



**Taxonomic Name:** *Sciurus carolinensis* Gmelin 1788

**Synonyms:**

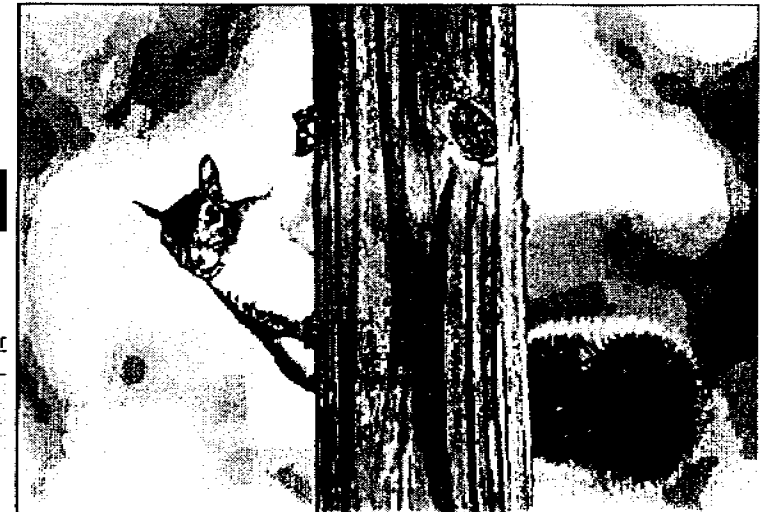
**Common Names:** gray squirrel, grey squirrel, Scoiattolo grig

**Ecological Category:** mammal

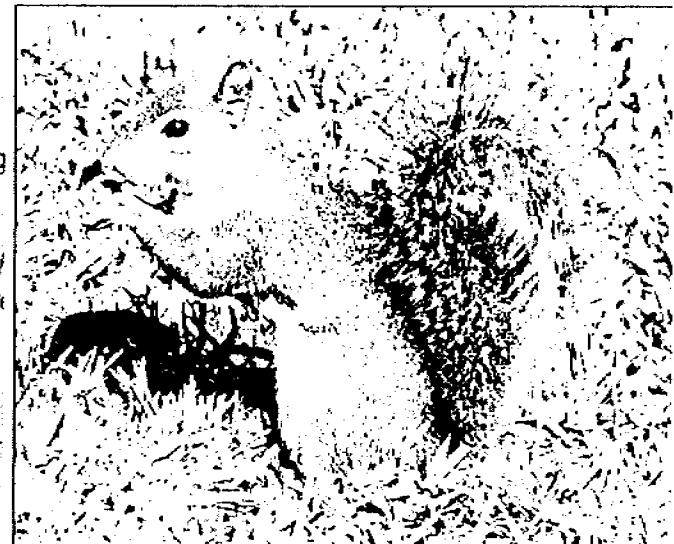
*Imported as a pet from North America to UK, Italy, and South Africa, the species has expanded causing the local extinction of the native red squirrel from the Alps to a large portion of Eurasia is predicted.*

### Distinguishing Features

Grey above, with buff underfur; under-parts paler grey. L. 430-480 mm, weight 400-710 g.



Grey squirrel: general view



Grey squirrel profile

# GLOBAL INVASIVE SPECIES DATABASE



all

Ecological Category

all

SEARCH

REFERENCE SEARCH

Country or location

Reference Type

reference

SEARCH

Select an area: All

Select a status: Native

SEARCH

Canada

Location	Habitat	
Central Quebec	Spruce and Pine Forest	<a href="#">[Details]</a>
Manitoba 3	Cropland/Deciduous Forest (Aspen) Mosaic	<a href="#">[Details]</a>
Manitoba 4	Mixed Forest (Aspen, Birch, Balsam Fir, Jack Pine, Black and White Spruce)	<a href="#">[Details]</a>
Manitoba 5	Needleleaf Boreal Forest (Black and White Spruce, Aspen, Birch)	<a href="#">[Details]</a>

Document: Done

# GLOBAL INVASIVE SPECIES DATABASE



## Italy

Location	Habitat	Status
Italy 6	Oak/Pine Mixed Forest with Cropland	Alien INVASIVE <a href="#">[Details]</a>
Italy 8	Mixed Forest (Aspen, Beech, Oak, Poplar, Spruce)	Alien INVASIVE <a href="#">[Details]</a>

## South Africa

Location	Habitat	Status
South Africa 5	Cropland, Vinyards, Orchards	Alien <a href="#">[Details]</a>
South Africa's South Coast	Subtropical Forest, Forest Plantation	Alien <a href="#">[Details]</a>
West South Africa 1	Shrubland/Irrigated Crops/Tree Crops	Alien <a href="#">[Details]</a>
West South Africa 2	Grassland/Cropland (Wheat, Small Grains)	Alien <a href="#">[Details]</a>

## United Kingdom UK

Location	Habitat	Status
Scotland 2	Cropland (Rye, Small Grains) with	Alien INVASIVE <a href="#">[Details]</a>

ument: Done




## **Attachment 5**

**Erik Wijkström – The World Trade Organisation: The SPS Agreement  
and Invasive species**

**Presentation summary**

## The SPS Agreement and Invasive Species




### "The SPS Agreement"


The Agreement on the Application of Sanitary and Phytosanitary Measures

↓

"SPS Measures"



WTO Slide 1




### Definition

(contained in Annex A of the SPS Agreement)

to protect:	from:
human or animal life	risks arising from additives, contaminants, toxins or disease-causing organisms in their food, beverages, feedstuffs;
human life	plant- or animal-carried diseases (zoonoses);
animal or plant life	pests, diseases, or disease-causing organisms;
✗ a country	damage caused by the entry, establishment or spread of pests

WTO Slide 2




### Definition

(contained in Annex A of the SPS Agreement)

"(d) to prevent or limit other damage within the territory of the Member from the entry, establishment or spread of pests."

WTO Slide 3




### Footnote

(Definitions in Annex A)

"For the purpose of these definitions, "animal" includes fish and wild fauna; "plant" includes forests and wild flora; pests include weeds; and "contaminants" include pesticide and veterinary drug residues and extraneous matter."


WTO Slide 4



### So what does this mean?

policy ⇒ ⇒ trade measure

WTO Slide 5




### Basic Right (Article 2.1)

Article 2.1

"Members have the right to take sanitary and phytosanitary measures necessary for the protection of human, animal or plant life or health, provided that such measures are not inconsistent with the provisions of this Agreement"

WTO Slide 6




## Basic Obligation (Article 2.2)

**Article 2.2**


"Members shall ensure that any sanitary or phytosanitary measure is applied only to the extent necessary to protect human, animal or plant life or health, is based on scientific principles and is not maintained without sufficient scientific evidence, except as provided for in paragraph 7 of Article 5."

Doc 1




## Basic Obligation (Article 2.2)

**shall ensure:**

- applied only to the extent necessary to protect human, animal or plant life or health
- is based on scientific principles 
- is not maintained without sufficient scientific evidence
- except as provided for in paragraph 7 of Article 5

Doc 1



## What is "scientific evidence"?


**Panels on Hormones, Salmon and Varietals**

scientific evidence  
before the panel

↑↓  
Rational or objective  
relationship?

scientific conclusion  
reflected in the measure


Doc 2




## Basic Rights and Obligations

**Article 2.2**

**shall ensure:**

- applied only to the extent necessary to protect human, animal or plant life or health
- is based on scientific principles
- is not maintained without sufficient scientific evidence
- except as provided for in paragraph 7 of Article 5 

Doc 3



## What about the exception to the rule of basing SPS measures on science? (Article 5.7)


Article 2.2

Article 5.7

"Article 5.7 operates as a qualified exemption from the obligation under Article 2.2 to maintain SPS measures without sufficient scientific evidence."

\*various, AD Report para 10

Doc 4




## Article 5.7 "qualified exemption"

**Panel - Japan Varietals**

Allowed to provisionally adopt a measure if:

1. the measure is imposed in respect of a situation where "relevant" scientific information is insufficient
- and
2. the measure is adopted "on the basis of available pertinent information"

Doc 5



## Article 5:7 "qualified exemption"

**Panel – Japan Variegata**

+ additional obligations (on governments):

3


"seek to obtain the additional information necessary for a more objective assessment of risk"; and,

and

4

"review the ... phytosanitary measure accordingly within a reasonable period of time"


WTO Slide 13



## The use of precaution

- Article 5.7 allows for the use of precaution under certain circumstances.
- Individual measures, if challenged, will be looked at on a case-by-case basis.


WTO Slide 14




## Harmonization (Article 3)

"the relevant international organizations"


food safety  
CODEX




animal health  
OIE



plant health  
IPPC




WTO Slide 15



## Harmonization

- "... Members shall base their sanitary or phytosanitary measures on international standards, guidelines or recommendations, where they exist, ..." (Article 3.1)
- SPS measures which "conform to international standards, guidelines or recommendations shall be deemed to be necessary to protect human, animal or plant life or health, and presumed to be consistent with the relevant provisions of this Agreement and of GATT 1994". (Article 3.2)


WTO Slide 16



## Summary

- Where trade is affected, SPS rules may be relevant
- These rules allow for countries to take protective action against invasive species which could cause damage
- They rules apply to all 138 WTO Members, and are legally binding (three disputes).

WTO Slide 17



## reactions...

"Put invasive species more on the WTO radar"


"The WTO should focus more on this!"

how the WTO works

WTO Slide 18



## The SPS Agreement and Invasive Species




### reactions...

"openness (to trade) makes countries more susceptible to invasive species"

Is trade *per se* the problem?

WTO Slide 14




### issues

- Identify existing international fora where issues relating to invasive species are discussed. (Ex: SPS Committee, IPPC, OIE, + other)

⇒ Question: "Are the people representing my government in these organizations sufficiently aware of the problem, and acting accordingly?"


⇒ Question: "Are there gaps in the coverage of issues relating to the threat of invasive species?"

WTO Slide 15




<http://www.wto.org/>

- ✦ About the WTO
- ✦ Site Map
- ✦ Search






- Registration ✦
- Franchise ✦
- Exposition ✦


WTO Slide 16



### WTO Document On-Line

-  "Hormones" (two)  
EC Measures Concerning Meat and Meat Products (Hormones)  
WT/DS26 and 48/ ...
-  "Salmon"  
Australia - Measures Affecting Importation of Salmon  
WT/DS18/ ...
-  "Varietals"  
Japan - Measures Affecting Agricultural Products  
WT/DS76/ ...

WTO Slide 17



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WTO Slide 18

## **Attachment 6**

**Niek van der Graaf – International Plant Protection Convention**

**Presentation summary**

# International Plant Protection Convention

Secretariat of the IPPC  
Food and Agriculture Organization of the UN



## What is the IPPC?

- A multilateral treaty for international cooperation in plant protection
- Established under the FAO Constitution
- 111 Contracting Parties



## Purpose

- **IPPC Purpose:**

"securing common and effective action to prevent the spread and introduction of pests of plants and plant products."



## History

- Original IPPC came into force in 1952
- Established within framework of FAO Constitution
- Amended in 1979 - entered into force 1991
- Amended again in 1997
  - requires 2/3 of members' acceptance



## History--1997 Amendments

- Follow-up to SPS negotiations
- Reflected need for further international action to achieve transparency and technical justification for phytosanitary measures while protecting plant health
  - harmonization of phytosanitary measures
  - technical assistance



## Scope of the IPPC

- Pests of plants including diseases and weeds
  - pest: any species, strain or biotype of plant, animal or pathogenic agent, injurious to plants or plant products.
  - not limited to cultivated plants
- Plants, plant parts, plant products
- Other objects or materials capable of harbouring or spreading pests
  - e.g. packaging material
  - storage places, conveyances, and containers



## IPPC Activities

- Standard-setting (ISPMs)
- Facilitation of information sharing
- Coordination of regional organizations
- Dispute resolution
  - non-binding
  - technical basis
- Technical assistance
  - provided by the FAO



## Nature of Assistance

- Infrastructure and capacity building
  - policy and legislation
  - training
  - equipment
- Dispute avoidance
- Dispute resolution
- Emergencies



## Key National Obligations

### Official NPPO to:

- issue phytosanitary certificates
- survey growing plants
- inspect regulated articles
- disinfection / disinfestation
- protection of endangered areas
- establish pest free areas / areas of low pest prevalence
- conduct pest risk analysis
- protection of phytosanitary security



## Rights --Article VII.1

### *Sovereign authority to regulate entry of plants, plant products and other regulated articles*

- Limitations to rights:
  - applicable international agreements
  - necessary by phytosanitary considerations and technically justified
  - provide information on requirements, restrictions and prohibitions
  - provide on request rationale
  - timely actions



## Rights --Article VII.1

### *Sovereign authority to regulate entry of plants, plant products and other regulated articles*

- Limitations to rights (cont.):
  - information on non-compliance provided
  - technically justified measures
    - measure that is least restrictive
    - removal of unnecessary requirements
    - list regulated pests
    - surveillance and information on pest status



## Rights --Article VII.6

### Appropriate emergency measures for pest posing potential threat; but evaluation as soon as possible.

- Relates to precautionary approach



## International obligations

- Official contact point
- Participate in special campaigns
- Make information available
- Cooperation in regional organizations
- Develop international standards
- Settlement of disputes
- Technical assistance



## Interim Commission on Phytosanitary Measures

- Established 1998
- Interim measure
- Two thirds acceptance of the NRT of the IPPC
- Open to members of FAO and parties to the IPPC



## Interim Standard Setting Committee

- *Ex Committee of Experts on Phytosanitary Measures*
- Meeting annually since 1994
  - two meetings per annum from 2000
- Composed of technical experts
- Review and agreement on harmonized standards (ISPMs)
- Reviews and recommends next steps for ISPMs



## International Standards for Phytosanitary Measures

- Presently: 10
- In development: 15 Reviewed: 2
- Developed by: expert meetings
- Adopted by: Intergovernmental mechanism (*Interim Commission on Phytosanitary Measures*)



## International Standards for Phytosanitary Measures

- **Reference standards**
  - Principles of Plant Quarantine as Related to International Trade
  - Glossary of Phytosanitary Terms



## International Standards for Phytosanitary Measures

- **Concept standards**
  - Guidelines for Pest Risk Analysis
  - Guidelines for Pest Eradication Programmes
  - Code of Conduct for the Import and Release of Exotic Biological Control Organisms
- Additional ISPMs cover 'pest free areas', surveillance, pest status and export certification



## Biosecurity

### *Organization-wide initiative*

- Plant health and life
- Animal health and life
- Food safety



## Biosecurity

- To Committee on Agriculture March 2001
  - common elements
  - legislative framework
  - future activities



## **Attachment 7**

**Background and objectives of Session 3, Workshop 1: *Strategy 9 - Building invasive species issues into global change programs***

## **Workshop Session 3**

### **A Global Strategy for Addressing the Problem of Invasive Alien Species**

#### **Strategy 9: Building Invasive Species Issues into Global Change Programmes**

##### **Background**

Under the Convention on Biological Diversity, the Conference of Parties agreed to a set of interim Guiding Principles (available in Annex 3 to the Global Strategy Document), to which GISP has contributed. With these Guiding Principles in mind, GISP has developed a set of strategies to enable the modern global society to respond to the challenge of invasive alien species (IAS).

*Goal: To obtain feedback from session participants on the Ten Strategies of the Global Strategy Document (GSD) and on Guiding Principles and Definitions. GISP will use these inputs to improve and finalise the GSD and Guiding Principles during the course of the meeting.*

##### **Working group objective:**

To evaluate and refine the specific points contained in Strategy 9 of the Global Strategy for Addressing the Problem of IAS.

Time available: 1 hour 45 minutes

Strategy 9 sets forth the importance both of viewing IAS as an element of global change and of considering potential interactions between the IAS problem and other global changes. It enumerates three responses to address the role of global change in the IAS problem:

- 1) Climate monitoring to improve the fit of adaptive management measures to IAS needs
- 2) Incorporating IAS impacts into projections of climate and land use.
- 3) Developing means to better incorporate uncertainty into projections.

**Document Reference : Global Strategy pg. 39**



## Attachment 8

**Revised Strategy 9 - *Building invasive species issues into global change initiatives***

## **STRATEGY 9. BUILD INVASIVE SPECIES ISSUES INTO GLOBAL CHANGE INITIATIVES**

114. Human activities are currently changing the Earth in unprecedented ways, by altering the atmospheric composition (e.g. CO<sub>2</sub> concentrations, nitrogen deposition), by changing the climate (e.g. rising temperatures, increased incidence of episodic storms), by increasing the utilization of natural resources and changing land use (including fragmentation and altered fire regimes), and by deliberately and inadvertently moving species around the globe. Global change is likely to result in increased opportunities for the transport and establishment of invasive species, which in turn act as a driver of further change. Invasive species are likely to interact with other elements of global change in complex and unpredictable ways. Global change results from the cumulative impacts of local decisions, and hence the issues need to be addressed both at international and local levels. Key actions in response to this will include:

- a. Articulate the interactions between the elements of global change (e.g. climate change, land use change) with IAS, noting that IAS are themselves a driver of global changes.
- b. Quantify the current and anticipated impacts of IAS at global and regional scales, for incorporation into other global change projections.
- c. Use scenario building as a means of incorporating uncertainty into projections of interactions between different elements of global change.
- d. Ensure that relevant international organizations with responsibility for global change issues (e.g. ICSU, WMO, WHO, UNEP, UNESCO, WWF, FAO) include IAS as a component of global change, directly and through their member states.
- e. Respond to global change issues without increasing the risks derived from IAS – e.g. carbon sequestration, biomass energy, mitigation of degraded lands.

## **Attachment 9**

**Background and objectives of Session 4, Workshop 1: *Critical research***

## **Workshop Session 4**

### **Future Strategy Development: Looking Forward**

#### **Group 3: Critical Research**

##### **Background**

Session organizers will provide background on GISP Phase II and Future Concepts during the plenary session immediately preceding this workshop session. Participants will develop concrete statements of future priorities, means of addressing needs identified in earlier sessions, and strategies for developing international tools and implementing regional programmes in the future.

*Goal: To involve session participants directly in the initial elaboration of Phase II concepts of the GISP programme. Inputs will guide Phase II implementation starting 2001.*

##### **Working group objective:**

To develop a concrete set of priorities and plan of action for addressing critical IAS research needs in support of national, regional, and global IAS management and prevention efforts.

The group should address:

- (1) specific research needs
- (2) suitable entities to take the lead on development and implementation
- (3) means of potential technical and financial support for these activities
- (4) feasible timelines for phases of implementation

**Time available: 3 hours**

## **Attachment 10**

### **Summary of output of GISP Phase II Workshops**

## **GLOBAL INVASIVE SPECIES PROGRAMME (GISP)**

### **GISP PHASE II WORKSHOP OUTPUTS, 21 SEPTEMBER 2000**

#### **BUILDING A VISION FOR GISP**

The Global Invasive Species Programme (GISP) is completing a first phase aimed at synthesis and dissemination of information on scientific, technical, legal and educational aspects of invasive alien species (IAS) problems. GISP enters a new phase with a greater focus on implementation, and on providing information, research outputs and expertise to national and regional programmes, as well as to international organizations and conventions. Feedback from the GISP Phase II workshops, as well as the Global Strategy Workshop, suggest the re-organization of the Concept around several headings. The following is an initial synthesis of this output:

##### ***1. Establishment and operation of a Global Clearing House for IAS***

Objective: Provide information on scientific, technical and other aspects of IAS and support to scientific and technical cooperation on IAS issues.

Activities:

- (a) Develop and coordinate a distributed database network on IAS, and disseminate and locally adapt a global invasive species database to include predictive and early warning functions.
- (b) Actively disseminate information, both research and operational, to key stakeholder groups, particularly in the developing world.
- (c) Provide a thematic Clearing House Mechanism for the CBD and act as a dynamic source of information on IAS issues worldwide
- (d) Explore a potential role as a devolved "Centre for IAS", supporting from regions diagnosis of new IAS problems and support to rapid response for eradication and control.

##### ***2. Directed action at key pathways of AIS introduction***

Objective: Prevention of invasions through public/private sector co-operation focused on key sectoral pathways of introduction.

Activities:

- (a) Review existing instruments (e.g. IPPC, OIE) in the context of IAS, identify gaps in them (e.g. invasive alien vertebrates) and help develop new standards or codes of conduct where appropriate.
- (b) Provide government trade representatives to WTO with information on threats posed by IAS and their relevance to trade, with particular emphasis on developing country needs.
- (c) Sector-specific workshops, studies and technical support to identify pathways and mechanisms to reduce introduction of invasive alien species
- (d) Assist key sectors involved in potential introduction of invasive alien species (e.g. horticulture, pets, agricultural aid) to develop voluntary codes of conduct and other regulatory systems to reduce introductions of invasive alien species

### **3. *Promotion of research on critical IAS issues***

Objective: To support the development and communication of research and research capacity in areas presently limiting effective action against invasive alien species.

Activities:

- (a) Establish a multi-disciplinary working group to produce research priorities and identify research gaps.
- (b) Organize workshops bringing together biodiversity researchers and researchers on agriculture and other applied areas to address priority topics.
- (c) Promote research aimed at taxonomic needs, prediction of invasions, impact assessment, detection and monitoring, control methods, sociological (human) dimensions, economic assessment and tools, and habitat restoration

### **4. *National and Regional Capacity Building***

Objective: To improve national capacity to prevent and manage IAS problems and support regional, capacity-sharing initiatives.

Activities:

- (a) Help countries to develop awareness-raising projects, including national and regional workshops, studies and surveys, aimed at informing politicians, managers, technical specialists and the general public.
- (b) Contribute to training programmes on IAS for managers and technical staff from different sectors, involving testing and adaptation of the toolkit
- (c) Contribute material and expertise to educational curricula and to programmes for community education and empowerment in IAS issues.
- (d) Assist the establishment and coordination of regional and inter-country initiatives and networks in IAS, to promote sharing of know-how and capacity

### **5. *Supporting co-operation between international organizations.***

Objective: Foster cooperation and coordination between international institutions involved in IAS

Activities:

- (a) Provide scientific advice and assistance on IAS to international organizations and conventions, e.g. to support guidelines, standards or legal protocols
- (b) Prepare a guide to terminology on IAS in international conventions as a contribution to harmonization

## **Attachment 11**

### **Summary of key issues identified at the GISP Phase I Synthesis Conference**



# **GISP**

## **Key Issues Identified at Phase I Synthesis Meeting** **Cape Town, South Africa**

**18-22 September 2000**

1. Invasive alien species are a threat to biodiversity and threaten food security, health and economic development.

The spread of Invasive Alien Species (IAS) is now recognized as one of the greatest threats to the ecological and economic well being of the planet. These species are causing enormous damage to biodiversity and the valuable natural agricultural systems we are dependent upon. Direct and indirect health effects are increasingly more serious and the damage to nature is often irreversible. The effects are exacerbated by global change and chemical and physical disturbance to species and ecosystems.

Sustained globalization, with increasing trade, travel, and transport of goods across borders, has brought tremendous benefits to many people. It has, however, also facilitated the spread of IAS with increasing negative impacts. The problem is global in scope and requires international cooperative action to supplement the actions of governments, economic sectors and individuals at national and local levels. IAS are found in nearly all major taxonomic groups of organisms. Even though a small percentage of species that spread across borders become invasive, these may have extensive impacts. These effects may be devastating. Assessment in the United States and India shows that the economic costs of IAS in both these countries amount to approximately 130 billion dollars per year.

2. A consolidated action for prevention of the spread of IAS is urgent

Prevention of introduction of potentially invasive alien species is by far the preferred strategy. To prevent spread, every alien species has to be treated as potentially invasive unless and until convincing evidence indicates that this is not so. For deliberate introductions it is recommended that adequate standardized risk analysis (RA) and risk management procedures (RMP) be developed. Here the RA and RMP developed under the Cartagena Protocol under the CBD might serve as a basis. Preventive measures must be taken both at the source and destination.

For inadvertent introductions, new and innovative strategies and actions have to be developed in cooperation with the trade, travel, tourism and transport sectors. Awareness raising, legislation, information, education and training are essential areas to address. Harmonized standards for preventive measures in practical operations in each economic sector should be developed at the international and national level. Cross-sectoral coordination and cooperation are imperative. Mechanisms, procedures and regulatory measures for achieving synergies and efficiency are key strategic tools for achieving the goal of national biosecurity. The authorities responsible for biodiversity management should cooperate with the sectors of health and primary production to seek synergy in preventive actions.

3. Eradication is difficult and expensive, but sometimes possible. Rapid response is crucial.

Because immediate counter action is more cost-effective and likely to succeed, an early warning system (EWS) for IAS is recommended. Containment action is often needed for a successful eradication program. Such a program must be science-based and have a reasonable chance of success. The involvement of all relevant stakeholders is essential, and public support and acceptance of eradication methods are also important. Monitoring and control after conclusion are often necessary, and restoration of affected systems is preferred wherever possible

4. Containment, suppression, and control are second options, but often have more benefits than costs.

Given the high complexity of the ecological characteristics of both IAS and the habitats and species they affect, control measures must be developed and applied on the basis of the best current scientific understanding. Specific cost-benefit analyses should be developed and applied for eradication and control programs for IAS.

\* [ Selection of control methods must also be based on thorough scientific knowledge. For chemical control the possible problem of negative effects on non-target species and the potential development of resistant types and strains must be carefully addressed. For biological control the possibility of the control agent itself becoming invasive must be avoided. Often an integrated management of IAS is recommended. In such cases a combination of mechanical, chemical and biological control measures are applied. Careful monitoring and coordination are needed. Often, very difficult trade-off decisions and risk analysis must be undertaken. Criteria for such decisions should be developed.

5. A comprehensive international and national action is required

A large number of international and regional agreements, regulations, decisions and recommendations are already addressing the problem of IAS. Coordination of implementation and practical cooperation among those responsible for these instruments are, however, highly insufficient. Practical prevention, eradication and control measures are also highly inadequate. A consolidated action plan is recommendable. The Convention on Biodiversity (CBD) and the International Plant Protection Convention (IPPC) could take the lead, but trade, transport, travel, and other economic sectors must be closely involved. The United Nations Environment Programme (UNEP), the World Trade Organisation (WTO), Food and Agriculture Organisation (FAO), and the International Maritime Organisation (IMO) are also key actors at the international level.

At the national level, a consolidated and coordinated action is likewise highly recommended. This could be part of national strategy and action plans, but the close involvement of the economic sectors and of people responsible for operative actions involving potential IAS is a key prerequisite. A clear responsibility for each relevant sector should be identified.

Insurance mechanisms and clear liability regulations for the spread of IAS are almost non-existent and is a major deficiency for controlling the problem. Governments should cooperate with the insurance sector to find solutions. Feasibility studies are needed.

Capacity and expertise to deal with IAS are highly insufficient in many countries. Capacity building and further research on the biology and control of IAS and biosecurity problems should therefore be given attention and priority. This also relates to financial environmental institutions and organizations responsible for environment and development cooperation, at both the national and international levels.

There is an urgent need to build an international information system regarding the biology and control of IAS. Tools, mechanisms, best management procedures, and control resources and techniques should be provided and exchanged here in addition to relevant information on the IAS themselves. The data system must be linked to the Clearing House Mechanism of the Convention on Biological Diversity.

Awareness raising and education regarding IAS should be given high priority in action programmes, and development of economic tools and incentives for preventive action are highly needed.

#### 6. Continuation of GISP

GISP has contributed extensively to the knowledge and awareness of IAS, and has developed and gathered a first basic toolkit to address the problem. Many challenges, however, still need to be further addressed, and a continuation of the program is recommended, particularly regarding:

- identification of research needs and promotion of research on critical IAS issues.
- further development of the database on IAS, preferably into a Global Information Center (a possible thematic focal point or specific CHM for IAS under CBD?)
- further development of mitigation measures and tools for eradication and control of IAS.
- development of informational material, training courses, and assistance to countries for their capacity building.
- analysis of tool and measure efficiency and feasibility studies regarding introduction of new economic and technical control measures.
- actions directed at key pathways for introduction of IAS.
- expert and technical support for international agreements and organizations.

## **Attachment 12**

### **Agenda and Summary of the meeting for the Cooperative Governments Initiative on Invasive Species, 23 September**

# ***Cooperative Governments Initiative on Invasive Species***

**23 September 2000**

**Kirstenbosch Botanical Garden, Research Center  
Cape Town, Republic of South Africa**

- |                    |  |
|--------------------|--|
| <b>0830 -</b>      | <b>Bus departs from Holiday Inn</b>  |
| <b>0900 – 0930</b> | <b>Welcome and scene setting (Preston, Warren, and Yeager)</b>   |
| <b>0930 – 0950</b> | <b>Story of the International Coral Reef Initiative (ICRI)<br/>as a model (Yeager)</b>   |
| <b>0950 – 1045</b> | <b>Case studies of inter-governmental cooperation<br/>on invasive species</b><br><br><b><i>Cote D'Ivoire-Senegal (Philibert)</i></b><br><b><i>New Zealand (Warren)</i></b><br><b><i>South Pacific Regional Environment Program (Sherley)</i></b> |
| <b>1045 – 1100</b> | <b>Break (coffee and snacks served)</b>  |
| <b>1100 – 1130</b> | <b>Reports on inter-governmental efforts in participating<br/>countries: successes, failures, and lessons learned (All)</b>  |
| <b>1130 – 1230</b> | <b>Discussion of practical opportunities for inter-governmental<br/>collaboration (Yeager and Warren facilitating)</b>   |
| <b>1230 – 1330</b> | <b>Lunch (sponsored by the Working for Water Programme)</b>  |
| <b>1330 – 1530</b> | <b>Discussion of the necessary elements of the Initiative and<br/>distribution and review of draft <i>Call to Action</i> document<br/>(prepared by organizing committee based on conclusions and<br/>recommendations of GISP meeting)</b>        |
| <b>1530 – 1545</b> | <b>Break (coffee and snacks served)</b>  |
| <b>1545 – 1615</b> | <b>Summary of comments on elements of the Initiative and<br/>reflections on draft <i>Call to Action</i> (Warren and Preston<br/>facilitating)</b>  |
| <b>1615 – 1700</b> | <b>Discussion of Next Steps (Yeager facilitating)</b>  |
| <b>1700 -</b>      | <b>Bus departs for Holiday Inn</b>   |

## SUMMARY OF MEETING TO DISCUSS A POTENTIAL INTER-GOVERNMENTAL INITIATIVE ON INVASIVE ALIEN SPECIES

September 23, 2000  
Cape Town, South Africa

### Attendance

#### Coordinators

Guy Preston	South Africa	<a href="mailto:gpreston@dwaf-wcp.wcape.gov.za">gpreston@dwaf-wcp.wcape.gov.za</a>
Paula Warran	New Zealand	<a href="mailto:pwarren@doc.govt.nz">pwarren@doc.govt.nz</a>
Brooks Yeager	United States	<a href="mailto:yeagerbb@state.gov">yeagerbb@state.gov</a>

#### Attendees

Mike Cole	Australia	<a href="mailto:michael.cole@affa.gov.au">michael.cole@affa.gov.au</a>
Braulio Dias	Brazil	<a href="mailto:braulio.dias@mma.gov.br">braulio.dias@mma.gov.br</a>
Francisco Espinosa-Garcia	Mexico	<a href="mailto:espinosa@oikos.unam.mx">espinosa@oikos.unam.mx</a>
Elaine Fisher	Jamica	<a href="mailto:efishjam@infochan.com">efishjam@infochan.com</a>
John Hedley	New Zealand	<a href="mailto:hedleyj@maf.govt.nz">hedleyj@maf.govt.nz</a>
Ricardo Antonia Herrera-Peraza	Cuba	<a href="mailto:ecologia@ceniai.inf">ecologia@ceniai.inf</a>
Chagemma John Kedera	Abidjan	<a href="mailto:ciapolvea@globeac.cess.net">ciapolvea@globeac.cess.net</a>
John Mauremootoo	Mauritius	<a href="mailto:cjmaure@intnet.mu">cjmaure@intnet.mu</a>
John Nevill	Seychelles	<a href="mailto:chm@seychelles.net">chm@seychelles.net</a>
Cynthra Persad	Trinidad and Tobago	<a href="mailto:cynthra@tsstt.net.tt">cynthra@tsstt.net.tt</a>
Peter Schei	Norway	<a href="mailto:peter-johan.schei@dirnat.org">peter-johan.schei@dirnat.org</a>
Rashid Ahmed Shad	Pakistan	<a href="mailto:rashidashad@usa.net">rashidashad@usa.net</a>
Greg Sherley	SPREP	<a href="mailto:greg@sprep.org.ws">greg@sprep.org.ws</a>
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### Experience With Inter-Governmental Cooperation

The participants shared a number of examples of successful inter-governmental cooperative initiatives.

The meeting concluded that cooperation is essential in some circumstances (e.g. where there are shared waterbodies suffering from an invasive alien species) and highly desirable in other circumstances. A number of benefits of cooperation were identified, including capacity building, sharing of scarce expertise, allowing more efficient use of available resources, avoiding duplication and conflicting actions, and allowing better use of aid funding.

The meeting recognized that there are a wide range of ways in which cooperation can be achieved. It was agreed that different approaches will suit different circumstances.

## **Barriers to Cooperation**

A number of barriers to cooperation were identified. These included uncertainty about who to contact in another country, lack of capacity to initiate a cooperative arrangement, lack of integration between sectoral agencies within the countries, lack of information on the most appropriate cooperation partners, languages, and funding being held by another agency which might not see the cooperative initiative as a priority.

## **Keys to Success**

The meeting identified a number of factors which have been critical to the success of cooperative initiatives. These include involving the right countries and agencies, commitment to the initiative, adequate resources, and mechanisms to maintain momentum. It was noted that many initiatives are commenced and maintained because of the efforts of individuals, and that personal relationships and enthusiasm by a key person were often keys to success, but that there were also disadvantages in relying on this.

## **Proposal for an Initiative**

The meeting agreed that it was desirable to develop a mechanism to support and encourage cooperative initiatives between governments. This would complement the work of other bodies, including GISP and the CBD.

It was agreed that the initiative should focus on the achievement of actions to address the invasive alien species issue, particularly focusing on on-the-ground management actions and capacity building.

It was agreed that the initiative should focus on the implementation of Article 8(h) of the Convention on Biological Diversity, but build on synergies with other aspects of invasive alien species work (e.g. agriculture-focused work). It would address both bilateral and multilateral initiatives.

It was noted that the meeting could not agree to a particular initiative, as consultation within countries would be required to underpin any agreement. The meeting agreed, however, to a programme of work to progress the proposal.

## **Interim Arrangements**

The NZ and USA representatives agreed to provide interim servicing support for developing the proposal.

It was agreed that the countries present would continue to work together as a core group to develop the proposal, and that other countries would be invited to join.

In the interim, the proposal would be called the “Inter-governmental Invasive Species Initiative”.

### **Meeting in Margins of SBSTTA**

It was agreed that a meeting would be held in the margins of the Convention on Biological Diversity Subsidiary Body meeting in March 2001 (SBSTTA 6). This meeting would discuss details of the proposal, including the potential functions for the initiative, secretariat arrangements, the relationship to other initiatives, etc.

### **Actions Prior to the Meeting**

Representatives agreed that they would pursue the following actions prior to the SBSTTA meeting:

1. Identify a national contact point who would accept enquiries about potential cooperative initiatives from other countries, and identify an appropriate agency to respond. The CBD CHM Focal Points were identified as appropriate people to play this role where the country did not have a central coordinating position for invasive alien species work.
2. Encourage the completion of the national reports and case studies called for by the CBD.

The US representative stated that the US could provide funds for some regional workshops. Possible arrangements for the workshops would be examined by the US, NZ, South Africa, Brazil and Norway.

It was noted that some island countries were preparing a document on island specific issues, arising out of the GISP workshops. Representatives of the Seychelles and Jamaica agreed to examine the possibility of using that material as the basis for developing a shared approach to invasive alien species among island countries. It was agreed that a meeting of island countries would be held at SBSTTA to discuss this initiative and future cooperation.

### **Invitation to Action**

The meeting considered a draft “invitation to action” prepared by the US, NZ and South Africa representatives. NZ and the US agreed to redraft the document, incorporating the comments from the meeting and any further comments provided in writing to NZ, and circulate a further draft for comments.

### **Relationship to Other Bodies**

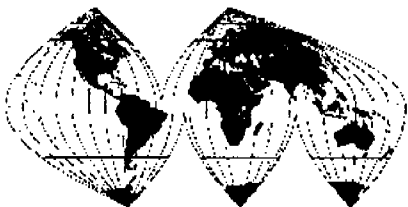
It was agreed that an ongoing relationship with GISP was desirable. South Africa agreed to inform GISP of progress on the initiative, and maintain ongoing liaison prior to SBSTTA 6. GISP representatives would be invited to meeting with the group at SBSTTA 6.



NZ agreed to inform the IPPC meeting in Bangkok in January 2001 of the progress with the initiative.

## **Attachment 13**

**Interim guiding principles for the prevention, introduction and mitigation  
of impacts of alien species – Draft working document for the Convention  
on Biological Diversity**



**GLOBAL INVASIVE SPECIES PROGRAMME (GISP)**  
**(A collaboration between SCOPE, IUCN, CABI and UNEP)**

19 September 2000

Please find attached a working document for workshop group 10 of session III (Wednesday 20 September), concerning the *Interim guiding principles for the prevention, introduction and mitigation of impacts of alien species* (Convention on Biological Diversity (CBD), COP5, Decision V/8, Annex I). The working document has been composed from inputs from several sources, and due to this diversity, the draft comments that are contained in it are not at present uniform in their format. The goal of the workshop group 10 is to have further discussion on the interim guiding principles, as this will assist GISP in the finalisation of its comments to the CBD Secretariat (pursuant to COP5 Decision V/8 (5)).

**DRAFT DRAFT DRAFT NOT FOR CITATION**  
**COMMENTS PROVIDED BY GISP ON THE INTERIM GUIDING PRINCIPLES**  
**FOR THE PREVENTION, INTRODUCTION AND MITIGATION OF IMPACTS**  
**OF ALIEN SPECIES (DECISION V/8, ANNEX I), PROVIDED PURSUANT TO**  
**DECISION V/8 (5)**

**OVERALL COMMENTS**

- (1) Editorial: throughout the text, "States" is used. "Countries" may be preferable (as "states" can also be entities within a country). Another possible source of confusion may be in the use of "guiding principle" which may have different possible interpretations. Another term could possibly be considered (for instance "guidelines").
- (2) Parties may consider clarifying the purpose of these guiding principles.
- (3) Parties may consider whether further guidance is required for each of the guiding principles

**OVERALL CHALLENGE**

- (1) Overall, one of the challenges related to the invasive alien species issue is the variability between different countries and/or regions relating to e.g.
  - Awareness of invasive alien species as an issue
  - Priority of invasive alien species as an issue
  - Legal and institutional frameworks
  - Availability of resources and capacity at their disposal in dealing with the issue
  - Knowledgebase
- (2) The above means that the formulation of the interim guiding principles needs to be done in the awareness that, in reality, countries' practical abilities to deal with the invasive alien species issue will vary considerably, at least in the short and medium term.

***Annex I***  
***INTERIM GUIDING PRINCIPLES FOR THE PREVENTION,***  
***INTRODUCTION AND MITIGATION OF IMPACTS OF ALIEN***  
***SPECIES***

*It should be noted that in the interim guiding principles below, terms are used for which a definition has not yet been developed, pending a decision by the Conference of Parties on the development of a standardized terminology on alien species, as mentioned*

in paragraph 5 of recommendation V/4. In the interim and for the purpose of these interim principles, to avoid confusion the following definitions are used: (i) "alien" or "alien species" refers to a species occurring outside its normal distribution; and (ii) "alien invasive species" refers to those alien species which threaten ecosystems, habitats or species.

### **COMMENT**

At the GISP meeting, possible definitions for these terms will be discussed further. It is hoped that those definitions may be agreeable to the CBD Parties for use in these interim guiding principles. Other terms also need to be defined.

#### **A. General**

##### **Guiding principle 1: Precautionary approach**

*Given the unpredictability of the impacts on biological diversity of alien species, efforts to identify and prevent unintentional introductions as well as decisions concerning intentional introductions should be based on the precautionary approach. Lack of scientific certainty about the environmental, social and economic risk posed by a potentially invasive alien species or by a potential pathway should not be used as a reason for not taking preventative action against the introduction of potentially invasive alien species. Likewise, lack of certainty about the long-term implication of an invasion should not be used as a reason for postponing eradication, containment or control measures.*

### **COMMENTS**

- (1) Because a holistic approach is most effective, it is suggested that wording on the risks for human health should be added when wording on environmental, social and economic risks is used.
- (2) The inclusion of the social, economic (and health risks) makes this application wider than mentioned in Rio Principle 15. The potential breadth of the interpretation may increase the probability of future conflict among trading partners and neighbouring countries.
- (3) The distinction between unintentional and intentional introductions can be quite vague in reality and change over time.
- (4) In practical terms, prevention and control measures must be cost-effective. Additional wording to this effect could be considered.

### **CHALLENGE**

- (1) In addition to lack of knowledge, insufficient exchange of information also potentially contributes to uncertainty. Both will need to be addressed, so that all available information is effectively considered in the decision-making processes.
- (2) A precautionary approach requires strong preventive capacities. At this time, countries lack sufficient information on invasiveness and invasion pathways, as well as a variety of cost-effective technical measures to prevent the movement of invasive

alien species. In the cases where countries that do have such resources, it is often not adequately exchanged. These barriers must be overcome before countries can realistically implement a precautionary approach.

**Guiding principle 2: Three-stage hierarchical approach**

*Prevention is generally far more cost effective and environmentally desirable than measures taken following introduction of an alien invasive species. Priority should be given to prevention of entry of alien invasive species (both between and within States). If entry has already taken place, actions should be undertaken to prevent the establishment and spread of alien species. The preferred response would be eradication at the earliest possible stage (principle 13). In the event that eradication is not feasible or is not cost-effective, containment (principle 14) and long-term control measures (principle 15) should be considered. Any examination of benefits and costs (both environmental and economic) should be done on a long-term basis.*

**COMMENT**

- (1) Prevention of entry of a new invasive alien species is the first line of defence and a variety of tools can be used (see GISP strategy). However, there are significant gaps in our knowledge and there is no perfect system for such prevention. In addition, early detection and rapid action capabilities are crucial components of prevention of establishment of invasive alien species once it has entered.
- (2) Realistically, approaches to minimizing the spread of invasive alien species often need to be integrated, rather than hierarchical. Eradication and control are often employed before targeted prevention measures can be applied to a specific organism and/or pathway (to prevent further entry).
- (3) Many countries may not consider an organism as “invasive” until it has entered the country and caused or threatened to cause harm.
- (4) When setting priorities for overall management, for instance in a country strategy, eradication or control of particular species already in the country may in have to be the top priority short term, even though prevention of further or new invasions may be a priority long term. So, in practice, a country strategy to deal with invasive alien species, as it will be dealing with several species at once, will have to span prevention as well as mitigation in an integrated approach.
- (5) The wording “both between and within States” needs further clarification. The need to be aware that an alien species is defined in relation to biogeographical areas rather than national (i.e. political) areas, and that hence an invasive alien species may be introduced from another biogeographical area within the same country, applies more widely than guiding principle 2, and may need to be expanded on.
- (6) It is suggested to add “invasive” to “alien species” in the third sentence of the principle.

## **CHALLENGE**

- (1) Lack of resources may mean that countries are not able to take a long term approach.
- (2) Rewording may be considered, specifying that any examination of benefits and costs (both environmental and economic) should consider the values of the full suite of stakeholders and incorporate change in values and other variables over time.

### **Guiding principle 3: Ecosystem approach**

*All measures to deal with alien invasive species should be based on the ecosystem approach, in line with the relevant provisions of the Convention and the decisions of the Conference of the Parties.*

## **COMMENT**

- (1) Not all measures can necessarily be based on an ecosystem approach (e.g. border control). Suggested wording may include a change from "All" to "Where relevant"
- (2) This includes agricultural ecosystems and other human managed ecosystems.
- (3) In many instances, ecosystem restoration may usefully be considered in conjunction with mitigation measures to further effectiveness
- (4) Parties should be encouraged to integrate the issue of invasive alien species in national biodiversity strategies

## **CHALLENGES:**

- (1) Many countries lack delineation of their ecosystems and many lack information on what invasive alien species exist in what ecosystems
- (2) Ecosystems are linked and ecosystems can exist across political boundaries
- (3) Most States do not have the ability to administer prevention and/or control measures on an ecosystem scale

### **Guiding principle 4: State responsibility**

*States should recognize the risk that they may pose to other States as a potential source of alien invasive species, and should take appropriate actions to minimize that risk. In accordance with Article 3 of the Convention on Biological Diversity, and principle 2 of the 1992 Rio Declaration on Environment and Development, States have the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction. In the context of alien invasive species, activities that could be a risk for another State include:*

- (a) *The intentional or unintentional transfer of an alien invasive species to another State (even if it is harmless in the State of origin); and*

- (b) *The intentional or unintentional introduction of an alien species into their own State if there is a risk of that species subsequently spreading (with or without a human vector) into another State and becoming invasive.*

#### **COMMENT**

- (1) States need to "think beyond their borders" and take actions that would limit the spread of invasive species to other States. However, it is a concern that the wording used may potentially lead to conflict rather than cooperation between States (for instance through the possible interpretation of "State Responsibility" as implying liability). It is suggested to consider changing "State Responsibility" to another term, for instance "Regional Cooperation" or "State Cooperation". Guiding Principle 9 addresses Cooperation in the section on "Prevention". This concept of cooperation may benefit from consideration in this general section instead.
- (2) In addition specific regional cooperation, based on shared borders, or on transboundary biogeographically areas for instance, can usefully complement national approaches. This could for instance include (as appropriate):
- Joint or concurrent programmes of eradication of control in neighbouring countries where this is likely to be more effective than individual approaches.
  - Joint management strategies for the protection of islands, lakes, watersheds or other vulnerable ecosystems, where such ecosystems are transboundary
  - Developing Regional aspects (notification and/or consultation and/or sharing and/or standardising) to complement the national approaches to border control or risk assessment
  - Research

It is suggested that wording reflecting the above points be considered for inclusion.

#### **CHALLENGE**

Relating to paragraph (b): Including regional aspects in risk assessment will be difficult to develop in the short term. In addition, some instruments (e.g. IPPC) may not allow for measures to be based on considerations about risk to other countries (instead of one's own).

#### **Guiding principle 5: Research and monitoring**

*In order to develop an adequate knowledge base to address the problem, States should undertake appropriate research on and monitoring of alien invasive species. This should document the history of invasions (origin, pathways and time-period), characteristics of the alien invasive species, ecology of the invasion, and the associated ecological and economic impacts and how they change over time. Monitoring is the key to early detection of new alien species. It requires targeted and general surveys, which can benefit from the involvement of local communities.*

#### **COMMENT**

- (1) Many States lack information about the extent and location of invasive alien species and lack an adequate number of trained personnel to conduct the "appropriate" research and monitoring programs.



- (2) Wording: The first sentence could possibly read, "In order to develop..., it is important States document..." And, the second sentence to, "This should document, as possible, the history..."

**Guiding principle 6: Education and public awareness**

*States should facilitate education and public awareness of the risks associated with the introduction of alien species. When mitigation measures are required, education and public-awareness-oriented programmes should be set in motion so as to inform local communities and appropriate sector groups on how to support such measures.*

**COMMENTS**

- (1) Education and outreach efforts for all aspects of the invasive alien species issue need to be facilitated, not just for the risks of introduction.
- (2) Education and outreach efforts need to consider all stakeholders, public and local communities and adequately consider their different values and beliefs with regard to invasive alien species. This may be especially important when mitigation measures focus on large vertebrates.
- (3) Education outreach efforts need to work from "both directions" - they need to be used to inform stakeholders, public and local communities on how to support measures relating to alien invasive species, and they also need to be used to develop measures that will be supported by the beliefs and values of these and motivate them to take responsibility for their actions.

**B. Prevention**

**Guiding principle 7: Border control and quarantine measures**

1. *States should implement border control and quarantine measures to ensure that:*
  - (a) *Intentional introductions are subject to appropriate authorization (principle 10);*
  - (b) *Unintentional or unauthorized introductions of alien species are minimized.*
2. *These measures should be based on an assessment of the risks posed by alien species and their potential pathways of entry. Existing appropriate governmental agencies or authorities should be strengthened and broadened as necessary, and staff should be properly trained to implement these measures. Early detection systems and regional coordination may be useful.*

**COMMENT**

- (1) In addition to controls for movements between nations, some form of internal controls for movement within nations is also required, especially relating to vulnerable or geographically or evolutionary isolated ecosystems.

- (2) Control and quarantine measures should be in place at several levels, for instance at the point of origin/export, release/import, for domestic movement and between regional economic integration organisations
- (3) Many countries currently lack resources and capacity to fully apply such border control and quarantine measures. Rewording could be considered for the first sentence to read, "States should implement, to their fullest capacity, border....."
- (4) It may be useful to clarify in the wording that the government agencies or authorities mentioned would not usually have to be newly created, but that existing governmental agencies or authorities, for instance those implementing phytosanitary or zoosanitary measures are a starting point. They can over time be strengthened and broadened as necessary.

#### **Guiding principle 8: Exchange of information**

*States should support the development of database(s), such as that currently under development by the Global Invasive Species Programme, for compilation and dissemination of information on alien species that threaten ecosystems, habitats or species, to be used in the context of any prevention, introduction and mitigation activities. This information should include incident lists, information on taxonomy and ecology of invasive species and on control methods, whenever available. The wide dissemination of this information, as well as national, regional and international guidelines, procedures and recommendations such as those being compiled by the Global Invasive Species Programme should also be facilitated through, inter alia, the clearing-house mechanism.*

#### **COMMENT**

- (1) The global database under development by GISP will include an Early Warning component. It is important that Early Warning capability is widely and freely available.
- (2) An inventory of pre-existing databases of invasive alien species, as well as an analysis of the gaps in these systems, is needed. Rewording could be considered modifying the first sentence to read, "States should support, as appropriate, an inventory and analysis of existing relevant databases and the development of a comprehensive database..."
- (3) Databases need to be standardized and comparable, as well as comprehensive. They also need to have the flexibility to be updated as new information becomes available and use technologies that can be made widely available.

#### **Guiding principle 9: Cooperation, including capacity-building**

*Depending on the situation, a State's response might be purely internal (within the country), or may require a cooperative effort between two or more countries, such as:*

- (a) *Where a State of origin is aware that a species being exported has the potential to be invasive in the receiving State, the exporting State should provide information, as available, on the potential invasiveness of the species to the importing State. Particular attention should be paid where exporting Parties have similar environments;*

(b) *Agreements between countries, on a bilateral or multilateral basis, should be developed and used to regulate trade in certain alien species, with a focus on particularly damaging invasive species;*

(c) *States should support capacity-building programmes for States that lack the expertise and resources, including financial, to assess the risks of introducing alien species. Such capacity-building may involve technology transfer and the development of training programmes.*

## **COMMENT**

Also see comments under guiding principle 4.

### **C. Introduction of species**

#### **Guiding principle 10: Intentional introduction**

*No intentional introduction should take place without proper authorization from the relevant national authority or agency. A risk assessment, including environmental impact assessment, should be carried out as part of the evaluation process before coming to a decision on whether or not to authorize a proposed introduction. States should authorize the introduction of only those alien species that, based on this prior assessment, are unlikely to cause unacceptable harm to ecosystems, habitats or species, both within that State and in neighbouring States. The burden of proof that a proposed introduction is unlikely to cause such harm should be with the proposer of the introduction. Further, the anticipated benefits of such an introduction should strongly outweigh any actual and potential adverse effects and related costs. Authorization of an introduction may, where appropriate, be accompanied by conditions (e.g., preparation of a mitigation plan, monitoring procedures, or containment requirements). The precautionary approach should be applied throughout all the above-mentioned measures.*

## **COMMENT**

- (1) Wording: it is suggested to add a specification that it is the importing State that would carry out the authorisation procedures.
- (2) The current wording can be interpreted as meaning that Environmental Impact Assessment is part of Risk Assessment, and a clarification should be included that they are separate procedures – ideally both applied.
- (3) It is suggested that fuller Risk Analysis should be used instead of more limited Risk Assessment
- (4) Wording: Guiding Principle 1 clearly places the precautionary approach as an important aspect of the efforts to identify and prevent unintentional or intentional introductions – it may be inconsistent and detracting from clarity to repeat it (when other generally applicable concepts from the general section are not repeated).
- (5) Risk assessment is not a "perfect science." Risk assessments have limitations and need to be specifically tailored to the relevant circumstances (which can change over time).
- (6) Different cultures/communities will have different relationships with alien species and thus different values that are relevant to assessing risk. Countries need to be

able to apply those different values when determining the risks associated with invasive alien species.

- (7) This principle states “anticipated benefits of such an introduction should strongly outweigh any actual or potential adverse effects and related costs.” How would “strongly” be defined?
- (8) Parties may wish to review to what extent their existing phytosanitary and zoosanitary systems provide a basis for the measures described in this principle.

#### **Guiding principle 11: Unintentional introductions**

1. *All States should have in place provisions to address unintentional introductions (or intentional introductions that have established and become invasive). These include statutory and regulatory measures, institutions and agencies with appropriate responsibilities and with the operational resources required for rapid and effective action.*
2. *Common pathways leading to unintentional introductions need to be identified and appropriate provisions to minimize such introductions should be in place. Sectoral activities, such as fisheries, agriculture, forestry, horticulture, shipping (including the discharge of ballast waters), ground and air transportation, construction projects, landscaping, ornamental aquaculture, tourism and game farming, are often pathways for unintentional introductions. Legislation requiring environmental impact assessment of such activities should also require an assessment of the risks associated with unintentional introductions of alien invasive species.*

#### **COMMENT**

- (1) Many Countries currently lack resources and capacity to fully apply such and measures. In first instance, they may wish to review to what extent their existing phytosanitary and zoosanitary systems provide a basis for such measures
- (2) Environmental impacts assessments are not always associated with legal requirements and the phrase “Legislation requiring...” might hence unduly limit the application of assessments. It is to be hoped that such a practice might also be adopted under "codes of conduct" and other "soft law" tools. It is suggested to reflect this in the wording of the principle.

#### **CHALLENGE**

- (1) These measures require a level of awareness of the invasive alien species issue (by the public and policy makers) that is not (yet) common globally.

#### **D. Mitigation of impacts**

##### **Guiding principle 12: Mitigation of impacts**

*Once the establishment of an alien invasive species has been detected, States should take steps such as eradication, containment and control, to mitigate the adverse effects. Techniques used for eradication, containment or control should be cost-effective, safe to the environment, humans and agriculture, as well as socially, culturally and*

*ethically acceptable. Mitigation measures should take place in the earliest possible stage of invasion, on the basis of the precautionary approach. Hence, early detection of new introductions of potentially invasive or invasive species is important, and needs to be combined with the capacity to take rapid follow-up action.*

#### **COMMENT**

- (1) Many States lack a variety of cost-effective techniques for early detection, rapid response, and effective mitigation measures. Where these techniques do exist, they are often not transferred.
- (2) Risk Assessment and Environmental Impact Assessments should be included into the consideration of mitigation measures.
- (3) Mitigation measures should be short term or long term as appropriate
- (4) Restoration of native biodiversity may be usefully considered in conjunction with mitigation measures
- (5) See Comment (4) under principle 10

#### **CHALLENGE**

- (1) There are many cultural and ethical barriers to establishing mitigation programs and this need to be addressed in order for mitigation to be successfully applied. This will usually require participation of all stakeholders, public, and local communities

#### **Guiding principle 13: Eradication**

*Where it is feasible and cost-effective, eradication should be given priority over other measures to deal with established alien invasive species. The best opportunity for eradicating alien invasive species is in the early stages of invasion, when populations are small and localized; hence, early detection systems focused on high-risk entry points can be critically useful. Community support, built through comprehensive consultation, should be an integral part of eradication projects.*

#### **COMMENT**

- (1) Rewording could be considered for the first sentence to read: "Where it is cost-effective and socially acceptable, eradication is often the best course of action to deal with..."
- (2) Rewording could be considered for the final sentence to read: "Community support, built through comprehensive consultation, is an integral part of achieving successes in eradication projects and should be sought as appropriate."
- (3) See Principle 12 (1-4)

#### **Guiding principle 14: Containment**

*When eradication is not appropriate, limitation of spread (containment) is an appropriate strategy only where the range of the invasive species is limited and containment within defined boundaries is possible. Regular monitoring outside the control boundaries is essential, with quick action to eradicate any new outbreaks.*

#### **COMMENT**

- (1) See Principle 12 (1-4)
- (2) The area covered by an invasive alien species is often debatable, changing, and not well demarcated. This needs to be reflected in the guiding principle because it focuses eradication on a relatively subset of the "real world" situations.
- (3) Rewording could be considered for the first sentence to read: "When eradication is not feasible, limitation of spread (containment) is an appropriate strategy though mainly in cases where the range of the invasive species, either entirely or in a population, is small and can be physically restricted."

#### **Guiding principle 15: Control**

*Control measures should focus on reducing the damage caused rather than on merely reducing the numbers of the alien invasive species. Effective control will often rely on a range of integrated techniques. Most control measures will need to be regularly applied, resulting in a recurrent operating budget and the need for a long-term commitment to achieve and maintain results. In some instances, biological control may give long-term suppression of an alien invasive species without recurrent costs, but should always be implemented in line with existing national regulations, international codes and principle 10 above.*

#### **COMMENT**

- (1) See Principle 12 (1-4)
- (2) Rewording may be considered for the first sentence to read: "When designing and implementing control measures it is important to emphasize not only reducing the number of invasive alien species, but also on reducing the damage caused by these species."
- (3) We suggest the following additional wording for clarification: add, "including mechanical control, chemical control, biological control, habitat management and integrated pest management" after "...integrated techniques".