



## BACKGROUND PAPER:

# United Nations Environmental Programme (UNEP) ***Invasive Alien Species Prevention***

---

*An ounce of prevention is worth a pound of cure.*

- Benjamin Franklin

### **Introduction**

Invasive alien species (IAS) are organisms that make their way into non-native eco-systems and disrupt them. They are often able to quickly spread and reproduce due to an abundance of food the fact that natural predators typically do not attack them. Once they are settled into an environment, they pose grave threats to its food production capacity, tourism, biodiversity, and overall well-being. Because IAS are so hard to track and eliminate, even developed countries struggle with them, but developing countries are even worse hit because they do not have the same level of expertise, information, or technology to deal with the issue. Furthermore, many of their economies are largely based on agricultural production and tourism, meaning they stand to lose a much greater share of their GDP to IAS.

There are numerous groups working to address the problem outside of the UN. In 1948, the International Union for Conservation of Nature (IUCN) was founded and is now the oldest and largest global environmental network. As a non-governmental organization (NGO) it works with the UN, where it acts as an official observer, and governments across the world on environmental issues, including IAS. In 2007, it launched the Global IAS Initiative, which works to address the issue and provides information to IUCN subgroups on the matter. In one recently completed project, *Removing Barriers to Invasive Plant Management in Africa*, surveyed four countries, Zambia, Ghana, Ethiopia, and Uganda, to determine what IAS were present, their prevalence, and impact.

In 1997, the Global IAS Programme (GISP) was created to as a central database about IAS and helps to formulate an international strategy to combat them. It also seeks to raise awareness about the issue.

### **Background & History**

There are a countless number of IAS found throughout the globe. They can be mammals, fish, birds, insects, bacteria, and even shrubs and trees. Aquatic IAS are particularly troubling seeing as they are much more difficult to eradicate and are able to move much more quickly. One of the biggest causes of the spread of IAS is increased mobility of humans. This is truer now than ever owing to globalization, which has given mankind an unprecedented level of interconnectedness and ease of movement. Globe trotters often carry IAS with



them. Sometimes the transmission of IAS is accidental, for example, organisms get on ships and travel with them to foreign harbors. Such was the case of Eurasian cheat grass, which, in 1989, ended up mixed in with grain seeds bound for North America and spread. There have even been cases of IAS being unknowingly carried in emergency aid shipments. Other times, ships dumped ballast water in foreign harbors, unwittingly releasing stowaway IAS. For this reason, several countries, such as the United States, New Zealand, and Norway have regulations requiring ships to exchange ballast water out at sea, rather than in port. Even if the ships themselves do not harbor IAS, plants and animals may also escape into the environment when brought abroad by tourists.

In other cases, non-native species are intentionally brought over with unforeseen consequences. The Nile perch was brought into many different countries due to the economic benefits it possesses, but it then on to destroy the local habitats it was introduced into. The *chromolaena odorata* was brought to Cote d'Ivoire as a biological controller, but ended up pushing out native plants. In Seychelles, the *chrysobalanus icaco* plant was first used as a means of fighting soil erosion on steep slopes, but it quickly spread elsewhere.

But IAS are not always bad. The Lantana camara was introduced to Uganda, and while it does suppress local plants, it can be used as firewood, produces fruit, and fertilizes and stabilizes soil. Generally, it is not seen as a problem. The occasional positive effect of invasive species is one reason why it is important to carefully study them and their impacts and make that information public.

The effects of globalization that have led to an increase in IAS cannot be reversed, so a way to counter IAS must be developed and implemented; however, once established in an area, they are extremely difficult and costly to remove.

If a species is already entrenched, there are several options. Physical control is removing the offending species by hand, by machinery, or by creating a barrier, as in the United States, where some have called for the sealing off of ship canals to stop the spread of Asian carp. Quarantines may have to be imposed if the case is severe enough. Chemical control uses toxins to fight IAS, such as injecting the crown-of-thorn starfish in the Great Barrier Reef with sodium bisulphate. Both of these are difficult and tedious, and they most likely will only check the growth of IAS, not eliminate them completely. Lastly, bringing creatures and pathogens that naturally prey on the IAS may be a good way to damage them, but care must be taken as to ensure that the predators do not in turn become a new hazard.

### **Current Situation:**

A troubling new factor in the spread of IAS is global climate change. Environments may be altered by climate change, causing native species to migrate, and thus become invasive. Ecosystems may be changed so that the natural balance of power shifts, such as the dwindling of a predator that kept its prey in check, transforming a local species into one with the same effects as an



invasive alien one. Finally, the stresses of climate change may facilitate the spread of IAS. To make matters worse, climate change exacerbates the effects of IAS by reducing crop yields and lessening biodiversity.

The UNEP created the Convention on Biological Diversity, which serves as a framework for protecting of ecosystems, as well as calling for all contracting parties to prevent the introduction of IAS and eradicate existing ones. This is a good effort, but it tends to simply try to undo the damage done by IAS rather than prevent it in the first place.

In 2001, the GISP proposed 10 strategic responses to control IAS. Much of the list focuses on areas of international cooperation, such as information sharing and building management capacity. Various groups of countries have made regional agreements along these lines (discussed below). Such cooperation is necessary to successfully addressing the problem.

### **The Problem:**

IAS pose a grave threat both to the environment and the economy. The estimated cost to the global economy is one trillion per year, or nearly 5%. The damages occur in a number of ways. One of the most destructive is the scarring of the land itself. The GISP has compiled a list of the 100 World's Worst Invasive Alien Species in terms of most damage to biological diversity and human activities. Coming in at the top of the list is the acacia mearnsii, an Australian shrub that has spread throughout the world after it got into grain seeds shipments. Once in the ground, it displaces local vegetation and depletes the soil. As a result of this kind of IAS is a reduction in the agricultural capacity of the land, bringing output down and labor costs up, causing millions of dollars in economic losses. Additionally, fewer crops can lead to food shortages and starvation.

Aquatic ecosystems are also vulnerable to IAS. The Louisiana crayfish was introduced throughout Africa to be an exportable good as well as to reduce the number of snail. Unfortunately, it escaped from aquaculture sites and proceeded to wreak havoc on water lilies, smaller fish, and even dams and reservoirs, which it can destroy by burrowing through. These actions have a secondary effect in that they reduce tourism as the natural beauty and native wildlife is hurt.

IAS also pose a more direct threat to humans. Rapidly spreading weeds can increase the number and magnitude of fires, and waterways for hydropower generators may be clogged, resulting in power outages. Some IAS, like the Formosan subterranean termite, can even degrade homes and other buildings. Deadlier still, certain IAS, such as the Asian tiger mosquito or Asiatic cholera bacteria, can transmit diseases leading to illness and death.

Possibly the most devastating and long lasting impact of IAS is a disruption of the food chain and natural order of an ecosystem. When the brown tree snake was accidentally introduced into Guam, it killed half of the native small birds and lizards, and two thirds of the bats. This caused a chain reaction in which pollinators were destroyed, resulting in a reduction in plant life. The lizards killed once preyed on insects, but with their demise, the mosquito population rose



and disease quickly followed. Other unchecked insects have gone on to decimate crop yields.

### **Relevant Documents:**

### **Bloc Positions:**

All countries are affected by IAS, but certain groups have made promising steps already to combat them. They may be of use as guidelines for larger plans or strengthening future regional agreements.

The continent of Africa stands to lose as much as any from IAS. Not only do they suffer from standard damages, but many African economies rely heavily on agriculture that is the most vulnerable to IAS. Furthermore, they lack the resources and technology to research invasive species and root them out. The African Convention on the Conservation of Nature and Natural Resources, revised in 2003, mandates that parties control the spread of purposeful and accidental IAS. It is most important that African countries establish a readily available database on IAS in the area.

The members of the Barcelona Convention, which encompasses African, Asian, and European countries that touch the Mediterranean Sea, in collaboration with UNEP published the Action Plan concerning species introductions and invasive species in the Mediterranean Sea. It put forth a number of objectives for the Mediterranean countries to achieve, both domestically and by working together. These include strengthening institutional and legislative frameworks, the collection of scientific data on IAS, and setting up mechanisms for cooperation. It also calls for NGOs to get involved in the process. Such regional agreements are essential to dealing with IAS.

In July 2011, UNEP organized a workshop for Middle Eastern and Northern African states on IAS to help educate policy makers on the issue. This is especially important owing to the liberal trade policy and high levels of tourism, both of which are potential drivers of IAS. The workshop outlined the need for a plan of action as well as regional cooperation. It also made note of several roadblocks, such as lack of financial resources. Such a workshop could serve as a model for other blocs or a follow up.

Organization of American States has worked to create Internet-accessible databases on IAS for several South American countries to aid them in decision making. However, plans for databases only exist for a few countries, such as Brazil, Argentina, Peru, and Colombia.

The Association of Southeast Asian Nations' Centre for Biodiversity has listed six points to deal with the spread of IAS, including information sharing, taking into account IAS in trade agreements, and CEPA (communication, education, and public awareness).



### **Committee Mission:**

This committee is challenged with reducing the impact of IAS. However, to do so, several different strategies may be considered, adopted, and rejected.

Will the committee allow countries to work on their own or establish international coordination? Will it focus on training of experts or community for prevention or will it work to control existing IAS problems?

Financially, prevention is better than responding to existing problems. If the committee works on prevention, how will it create higher quality control without restricting free trade?

More, how will coordination between countries be accomplished? Can they coordinate information, control standards, practices, or expertise? How would this be accomplished? For poorer countries, how can this be accomplished when they lack the infrastructure to pool resources?

To what degree is global climate change impacting the movement and control of IAS?

How will citizens and local farmers be taught not to buy IAS or cultivate it?

The threat of IAS will never be completely eliminated. But with proper preparation and information, its effects can at least be kept under control.

### **Questions to Consider:**

- 1.) What IAS currently afflict your country and how can they be dealt with domestically and multilaterally?
- 2.) What has your country done to prevent or manage IAS?
- 3.) What regional efforts is your country involved with to country IAS?
- 4.) What is the state of your country's technological infrastructure? Could it share information about IAS or is it in need of more of it?

### **Sources for Further Research:**

IAS general overview (African focus)

[http://www.unep.org/DEWA/Africa/docs/en/aeo-2/chapters/aeo-2\\_ch10\\_INVASIVE\\_ALIEN\\_SPECIES.pdf](http://www.unep.org/DEWA/Africa/docs/en/aeo-2/chapters/aeo-2_ch10_INVASIVE_ALIEN_SPECIES.pdf)

Aquatic IAS

[http://www.unep.org/regionalseas/publications/brochures/pdfs/invasive\\_alien\\_brochure.pdf](http://www.unep.org/regionalseas/publications/brochures/pdfs/invasive_alien_brochure.pdf)

Global Invasive Species Database

<http://www.issg.org/database/welcome/>

International Union for Conservation of Nature page on IAS

[http://www.iucn.org/about/union/secretariat/offices/esaro/what\\_we\\_do/invasive\\_species/](http://www.iucn.org/about/union/secretariat/offices/esaro/what_we_do/invasive_species/)



Invasive Species Specialist Group

[http://www.issg.org/about\\_is.htm](http://www.issg.org/about_is.htm)

IAS in South America

<http://vle.worldbank.org/bnpp/files/TF024046BIOLOGICALINVgispSAmerica.pdf>

Plan for IAS Database in Peru

<http://www.oas.org/dsd/IABIN/Component2/Peru/RicardoPalma/I3N/PER-IABINSubprojectAgreement.pdf>

Middle East and Northern Africa IAS Workshop

<http://www.cbd.int/doc/meetings/nbsap/cbwnbsap-nafrme-02/official/cbwnbsap-nafrme-02-02-en.pdf>

Mediterranean Action Plan against IAS

[http://www.rac-spa.org/sites/default/files/action\\_plans/invasive.pdf](http://www.rac-spa.org/sites/default/files/action_plans/invasive.pdf)

Very extensive paper on IAS (US focus)

<http://www.invasivespeciesinfo.gov/docs/council/draft711.pdf>