

Biological Invasions and the IUCN World Conservation Congress

Jeju Island, South Korea, September, 2012

Introduction

Biological invasions are brought about by species of animals and plants that have been introduced to a new ecosystem, area or country where they are not native to the surroundings. This is the origin of the term “Alien Invasive Species” which refers to introduced (= alien) species that are able to establish in a new area, become naturalized in the new surroundings and then spread and cause problems for biodiversity, human development, human health or livelihoods. Invading species can be micro-organisms, lower and higher plants or animals, pathogens, parasites, predators, herbivores, detritivores, omnivores – organisms of all types that have the ability to invade when introduced to an environment that allows their invasibility to become apparent. The process of introduction of alien species is (directly or indirectly) mediated by people as they travel to new areas or trade between places and transport goods around the world.

The World Conservation Congress will bring thousands of people and their belongings into South Korea, the Island of Jeju and so into south-east Asia as a region. At the end of the congress, they will go back to their countries, directly or indirectly, returning straight home or visiting other areas *en route*. IUCN as a responsible conservation union would like to ensure that the Congress does not bring about any biological invasions through its gathering of many people from many lands in Korea, as a result of their initial journey to the congress, during their activities at the Congress, and on their way out again to other lands. IUCN is concerned about the possibility of the Congress adding to invasive species in this way – because we know that alien invasive species can be one of the main threats to endangered species – as has been established by the process of the Red List of Threatened Species (www.iucnredlist.org/).

It is generally agreed that the best, quickest and least expensive way to prevent biological invasions is to stop the introduction of non-native (or alien) species – especially those with a likelihood of becoming invasive in the country or area concerned. Since it is difficult to predict with certainty that any particular species is likely to become invasive (or not), it is better, in a situation like the World Conservation Congress, where there are people coming from diverse parts of the world, to avoid bringing (or taking away) any living organisms – apart from themselves..... intentionally or unintentionally.

What follows is some guidance from IUCN on how the Congress can contribute the minimum of negative impact on global biodiversity by preventing biological invasions during and after the proceedings in Jeju.

Introduction of organisms – intentional and unintentional

Foreign species can be introduced by travelers to a country in the following ways:

- Purposeful (intentional) carriage of animals or plants as gifts,
- Intentional carriage of animals and/or plants or micro-organisms for commerce (or in this case, for display or for illustration of presentations or case studies during the Forum),
- Accidental carriage of animals or plants or micro-organisms in luggage or on clothing,
- Accidental carriage of organisms in soil or other substances present in luggage containers or on shoes,
- Accidental carriage of organisms in packing and wrapping materials that are brought with the travelers or sent by post, or by courier or as freight (and in this case, as materials for display at the Congress).

While these ways (or pathways or vectors of introduction) are described for living whole organisms, the same can be true of the introduction of **propagules** – which are the products or parts of organisms that can grow to become whole organisms – such as spores, seeds, bulbs, corms, plant cuttings, viable plant fragments, eggs, larvae, pupae and other resting or developmental stages of animals.

The modes of travel that will be used by participants to come to the Congress and which can bring alien species from other areas are limited to boat, ship and air travel. These are considered less than in previous IUCN Congresses because the meeting is taking place upon an island. From the point of view of biodiversity (“nature” as in IUCN’s Mission), Jeju is a very special island with a very diverse range of species – many of which are endemic (found only on this island) and so globally as well as nationally precious. This means that the chance that an in-coming live organism is not-native to the island (i.e. “alien”) is very high – which means the first step towards invasions will have been facilitated.

All of these modes of travel can also result in organisms being “picked up” on the way through contamination from vehicles, uptake of organisms on alighting or leaving the transport, and the attachment of propagules to the means of transport (such as vehicle tyres that can carry seeds, aircraft that can attract and carry insects, marine and freshwater organisms that attach to the underwater parts of boats and ships).

While these may sound fanciful, all have been shown to be mechanisms by which some invasive species have been introduced to a new ecosystem resulting in colonization, biological invasions and extinctions.



Eichhornia crassipes, the World’s Worst Water Weed, invasive in many tropical and sub-tropical countries; those flowers each contain many seeds which can last for decades and still produce new plants. Global warming is allowing this plant to move into and invade previously temperate climates. Photo IUCN-G.Howard



Preventing introductions of alien species

There are two main types of action that can prevent the introduction of alien species by travelers, traders, tourists (and participants at international meetings):

1. Voluntary personal action to reduce the chances of carrying or sending any living organism or propagules to another area, or
2. Compliance with regulations on the introduction of species and any living material by local authorities charged with that responsibility.

Below we provide guidance on how to carry out that voluntary action which is expected from the participants at a World Conservation Congress, we will mention the national regulations that pertain to introduction. We will also describe how we hope to reduce the risk of people unintentionally acquiring live organisms or propagules for their return journeys.

National regulations for the importation of live organisms

Many countries (including the Republic of Korea) have regulations that allow or prevent the introduction of some desirable and undesirable species. At present Korea has several categories for alien plants that anyone might want to bring into the country: 1) noxious species which are definitely not wanted so will be refused entry, 2) species that may be allowed in on condition that they are monitored for any signs of invasion, 3) known harmless species that can be allowed in and 4) beneficial species. All plants that anyone is intending to bring into the country should have a "health certificate", called a phytosanitary certificate, that indicates that they have been checked and that they are healthy and not carrying any diseases. If, for some reason, you do need to bring live plants into Jeju, these must be declared to a Customs Officer who will check on their status and decide what, if any, action to take to let the plants into the country. If the species concerned is not on any list then it should be subjected to a Weed Risk Assessment process which will allow an objective decision to be made as to whether the plant can enter or in which category it should be placed.

But for the congress, it is best to make sure that you are not carrying (intentionally or unintentionally) any alien species - whether or not they could be considered to be invasive or potentially invasive. The same applies when you leave Korea and return home – directly or indirectly.

Guidance for the Congress participants in reducing the risk of biological invasion

Your personal commitment to reduce the threat of alien invasive species to biodiversity and human endeavour can be easily demonstrated and be effective if the following actions are taken.

Before leaving home for the Congress, clean the insides and outsides of luggage containers and any packing materials that may be used to transport items for the congress – to eliminate live organisms or their propagules even before packing. Make sure that before you leave home (and before you leave Jeju for the return journey) you are not taking any propagules with you. This can happen so easily if, for example, you go for a stroll across a lawn, through some grassland or pasture, or even along an urban street, you need to check your pockets (trousers, jackets, even skirts) and handbags and brief cases for: seeds, dust, plant fragments, cobwebs, ants, mites, ...) a whole range of things that often are transported in peoples' clothes or carrying bags. To test this at any time, check the insides of your jacket pockets and you will find some dust or other fragments there – and it is so easy for such collections to move with you and then be expelled by motion or your deliberate cleaning of the insides of pockets or the exchanges of things to be carried with you in the aircraft or when travelling far.



Parthenium hysterophorus, Parthenium is a herb from tropical America that has spread in many parts of Asia, Africa and Australia and is highly invasive – causing destruction of native vegetation, and pasture for livestock, making animals and people sick and taking over farms. *Photo IUCN-G.Howard*



During packing for departure (or for sending items to the Congress) make sure that no organisms or their propagules are present amongst your goods, clothes, documents, etc. – either intentionally or unintentionally – and that everything that is packed is free from soil or other contaminants that could carry live micro-organisms or small animals or plant parts. You should resist bringing ornamental plants or cut flowers (bouquets) and certainly no pets or other wild animals. Also ensure that no fresh or otherwise unpreserved foodstuffs (e.g. fresh fruit, meat products, cheeses) travel with you to Jeju Island, as well as objects that could contain, or are made of, viable seeds, fruits, leaves, bark, untreated wood, un-tanned leather, etc. Seeds and plant parts can be part of some types of jewelry, some plant decorations in the form of pictures and in some folk products such as grass skirts, baskets and ornaments.

During travel make sure that no living organisms attach themselves to your person, your clothes, shoes or luggage (including hand luggage).

If you are the driver or the person in charge of a vehicle, boat, etc., try to avoid “picking up” any organisms *en route* to Jeju and, if possible, inspect your vehicle or vessel when you arrive and destroy any “hitchhiking” organisms – before they escape into the environment of Korea or South-East Asia.

During the Congress think about actions that could cause you to move organisms around Jeju and/or take Korean species with you on your next journey and/or return home. IUCN has gone to some effort to ensure that none of the plants in the Conference Centre are likely to be bearing fruits, seeds or reproductive parts – but away from the Centre, it is up to you to avoid loading yourself unintentionally with dust and other substances that could contain organisms or their parasites and pathogens.

When shopping for your return, please avoid buying any of the things that might carry organisms or their propagules to your next destination – including plants and animals themselves – and, especially, pot-plants with soil that could contain invertebrate animals and plant seeds that you might inadvertently introduce to other countries. This has happened many times and brought about disastrous biological invasions as a result.

With a little thought about the movement of alien species and minimum effort we can ensure that the threat of spread of biological invasions is not enhanced by this big and important gathering in Jeju.