



**Small Island  
Developing States  
and Invasive  
Alien Species:**

**PATHWAYS  
AND  
CONTROL  
MEASURES**

**Discussion Draft**

# THE SILENT INVASION

Discussion Draft



**I**ntroductions of non-native plants, animals, and pathogens into small developing island states (SIDS) pose a significant and unrivaled threat to the resources of SIDS. When these species establish and spread, they can adversely impact biodiversity, human health, and economies. Introductions of these invasive alien species (IAS) occur through various channels or “pathways”, both intentionally and unintentionally. Primary pathways of intentional introductions into SIDS include horticultural products, food products, and pets, among others. Pathways of unintentional introductions include ballast water and ballast sediments, shipping hulls, packaging materials and cargo contain-

ers, unprocessed materials, such as timber, and tourists.

Preventing introductions before they occur is the most effective and cost-efficient approach to addressing IAS issues. Removing IAS once they have become established requires significantly more financial, technical, and personnel resources than preventing their introduction; and sometimes complete removal is not even possible. Risks posed by pathways of IAS prior to introduction and establishment should be addressed both before the IAS reach the border and at the border.

Given imperfect information about potential invasives, their impacts and means of arrival, scientists can

rarely predict beforehand which species are likely to constitute a threat to agriculture, the environment or public health. Often a species' invasiveness can only be established after introduction into a member country and damage has occurred. Hence it is very difficult to develop species-specific approaches to IAS. By focusing on the pathways by which IAS arrive, government officials, industries and other stakeholders can take a broader approach that will hopefully prove effective across a range of species.

Pre-border measures engage "pathway actors", people directly responsible for the pathway (e.g., a ship owner responsible for operation of a cargo ship or an exporter of raw timber), in efforts to reduce the potential risks of introduction via that pathway. At-border measures include quarantine procedures and customs regulations, which also vary

significantly among countries. Effective approaches to addressing IAS require mutually supportive pre-border and at-border approaches, which can assess and manage the risks posed by key pathways.

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Legally binding and voluntary pre-border approaches to addressing IAS have been developed for a handful of pathways, including, for example, ballast water and horticultural products. To date there is little global coordination of these initiatives and their coverage, although the Convention on Biological Diversity (CBD) is proposing a

process to identify existing gaps and potential inconsistencies at the international level and an agreement on ballast water is being negotiated under the auspices of the International Maritime Organization (described below).

The success of a pathways approach to preventing introductions requires collective action. Given the significant movement of goods and ships among islands, the introduction to one island of an IAS from outside the region increases the risk to all islands in that region. As a result, the success of measures taken by one island can be adversely impacted by the failure of any other island to act. Additionally, efforts to modify the practices of pathway actors, particularly as they relate to physical changes to a given pathway such as a ballast container, are likely to require regional or international coordination.

## LEGALLY BINDING, PRE-BORDER APPROACHES TO REGULATING PATHWAYS

**Ballast Water:** Concerned about damage inflicted by IAS discharged into the marine environment via ballast water and sediment, and compelled to address risks of future introductions, States began in the mid-1990s to engage ship owners and operators in efforts to develop and implement voluntary guidelines for disposal of ballast water and sediment. Although compliance was inadequate—less than half of the ships to which the guidelines applied actually complied with the guidelines—they paved the way for work under the International Maritime Organization on *The Draft International Convention for the Control and Management of Ships' Ballast Water and Sediments*, which will be presented for adoption at a diplomatic conference in February 2004. The draft treaty's preamble specifically cites the objectives of the



Convention on Biological Diversity (CBD) and a number of its relevant decisions on IAS addressing the sustainable use of biodiversity and marine resources (Decision IV/5) and the

guiding principles on IAS (Decision VI/23). The draft treaty requires, among other measures, that each ship develop and implement a ballast water management plan to control IAS introductions through ballast water and sediment discharge. [<http://globallast.imo.org/>]

### **Solid Wood Packaging Material (SWPM):**

The International Plant Protection Convention (IPPC) develops international standards for phytosanitary measures to prevent the spread and introduction of plant pests. While these measures have generally addressed aspects of risk analysis, quarantine procedures, surveillance/reporting, and certification systems for the assessment of individual species of plant pests or pathogens, the IPPC developed a standard to specifically address the broader pathway of unprocessed wood widely used as packing material, in crates, dunnage and other forms. Such raw wood can carry a host of invasive insects and nematodes, most notably

the Asian longhorned beetle and the emerald ash borer, which can easily escape detection during customs checks. The standard, which has been adopted by a large number of countries, requires that such wooden packaging material be treated through kiln-drying, chemical pressure impregnation or fumigation with methyl bromide. Critics of the standard argue that these methods are not completely effective, and instead support the use of substitute materials (e.g., particle board, plastic, aluminum), which cannot carry IAS and are recyclable. [<http://www.ippc.int/IPP/En/isp.m.jsp>]

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#### **VOLUNTARY APPROACHES TO REGULATING PATHWAYS**

As highlighted in the example on ballast water above, voluntary approaches can serve as useful steps in moving towards legally binding agreements. Such voluntary approaches can also circumvent many of the lengthy delays associated with intergovernmental negotiations. However, despite their utility, non-binding measures are obviously faced with issues of compliance as there are no governmental enforcement mechanism. Additionally, such measures give rise to free-riders who can circumvent a code of conduct or voluntary approach, thereby gaining a commercial advantage by not assuming the same costs or performance criteria of their competitors.

**Horticulture:** Many efforts exist to address plant-related pathways of invasive species. Among these is a U.S.-based global effort, initiated through the St. Louis Declaration, which is developing and implementing voluntary professional codes of conduct for nursery professionals, government agencies, the gardening public (specifically Garden Clubs),

landscape architects, and botanic gardens and arboreta, designed to curb the use and distribution of invasive plant species through self-governance and self-regulation. Working with these respective industries, the process has generally appealed to the responsible use and import of horticultural products by the private sector to minimize the introduction of IAS. [<http://www.mobot.org/invasives/codesN.html>]

Currently the IPPC and its regional bodies are also considering how they can more effectively address this area, particularly IAS, which are hitchhikers on horticultural products but may not be consider plant pests (e.g., spiders, ants).

**Aquaculture:** In the early 1990s, the U.N. Food and Agriculture Organization developed a Code of Conduct for Responsible Fisheries, which was adopted in 1995. The section within the Code of Conduct addressing aquaculture encourages the use of legal and administrative frameworks to promote responsible aquaculture including discussions with neighboring states prior to the introduction of non-indigenous species, minimizing the impacts of non-indigenous or genetically altered fish stocks, as well as minimizing any adverse genetic or disease impacts. [<http://www.fao.org/fi/agreem/codecond/ficonde.asp>]

While the Code of Conduct serves as a useful guide, it is not focused on specific prevention, management and control measures related to IAS within the field of aquaculture and fisheries.



**Clean Cargo, Green Freight:** A group of global companies, including manufacturers, retailers and shippers, has developed the "Clean Cargo, Green Freight" initiative under the umbrella of Business for Social Responsibility. The process has developed an environmental performance survey designed to incorporate environmental criteria into their ocean shipping activities, while also addressing emissions related to climate change. While only a few of the criteria, such as those on ballast water, relate directly to IAS pathways, sections on hull coatings, container management, waste management, facilities, environmental management, and awareness and training, could easily be expanded to include IAS concerns. [<http://www.bsr.org/BSRResources/Environment/EnvResources.cfm>]

**Hull fouling is responsible for 80% of the introduced marine vertebrates in Hawai'i..**

#### **LEGAL GAPS IN PATHWAY COVERAGE**

As the CBD's scientific advisory body (SBSTTA) noted in November 2003, threats posed by several significant pathways of invasive species have not been addressed and even some of the approaches listed above are far from comprehensive<sup>1</sup>. These pathways include the following: the use of non-native organisms in aquaculture and the restocking of marine inland water systems for commercial and recreational fisheries; hull-fouling; packaging material; import consignments; vehicular transport; international assistance programs; tourism; military activities; scientific research; horticulture; trade in pets and aquarium species; biocontrol agents; and ex situ breeding projects.

Many of these are key pathways of IAS into SIDS. For example, hull fouling is responsible for 80% of the introduced marine invertebrates in Hawai'i<sup>2</sup>. Additionally, a pilot assessment, prepared for CBD SBSTTA-9, on pathways of IAS into SIDS highlighted the most significant pathway of terrestrial IAS for islands as "products and supplies", including shipping containers, ships and planes, and other non-living imported goods<sup>3</sup>. The CBD's seventh Conference of the Parties is set to consider this issue of gaps in pathway coverage and hopefully will establish an expert process on ways to proceed within the current international legal framework. [http://www.biodiv.org/programmes/cross-cutting/alien/]

## The success of a pathways approach to preventing introductions requires collective action.

### PATHWAY APPROACHES AND TRADE AGREEMENTS

Given the role of trade in the production and transport of goods, approaches to regulating pathways of invasive species should consider relevant trade rules and agreements. The World Trade Organization's (WTO) Agreement on Sanitary and Phytosanitary Measures (SPS

<sup>2</sup>SBSTTA 9. Recommendation IX/15 Invasive alien species. November 2003.

<sup>3</sup>Eldredge, Lucius, PhD, case study of Hawai'i in *The Ecological and Socio-Economic Impacts of Invasive Alien Species on Island Ecosystems: Report of an Experts Consultation*. 2003.

<sup>3</sup>Pilot Assessments: The ecological and socio-economic impact of invasive alien species on island ecosystems. UNEP/CBD/SBSTTA/9/INF/33. 5 November 2003.

Agreement) defines the basic rights and obligations of WTO members regarding use of sanitary and phytosanitary measures to: protect human, animal or plant life or health from the entry, establishment or spread of pests, diseases, disease carrying organisms; and prevent or limit other damage from the entry, establishment or spread of pests. Members can take measures to the extent necessary provided that they are: based on scientific principles; maintained with sufficient scientific evidence; and consider economic factors while minimizing negative trade effects. [http://www.wto.org/english/tratop\_e/sps\_e/sps\_e.htm]

The WTO recognizes the IPPC, the International Office of Epizootics (OIE), and other relevant international and regional organizations as authoritative standard-setting bodies. To promote harmonization in international trade, the WTO supports use of these standards by its members to facilitate commerce and customs procedures, although countries can establish higher levels if they are scientifically justified. Generally, the IPPC addresses measures regarding pests and any plant, plant product, storage place, packaging, conveyance, container, soil or other potential carrier of pests, which are to be based on a pest risk analysis, addressing both environmental and economic factors. The IPPC also involves a number of regional plant protection organizations, including the Caribbean, Pacific and Mediterranean, which address issues of regional coordination and geographically specific plant pest issues. [http://www.ippc.int]

The OIE addresses measures related to animal health and food safety, which generally serve to: inform states of animal diseases and means to control them; coordinate studies on the surveillance and control of animal diseases; and harmonize regulations for trade in animals and animal products among member states. [http://www.oie.int]

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