



Small Island Developing States and Invasive Alien Species: AN OVERVIEW

Discussion Draft

THE SILENT INVASION

Discussion Draft

The ability of small island developing states (SIDS) to develop sustainably depends on their ability to protect their ecosystems, economies and public health. Unfortunately, invasions of non-native plants, animals, and pathogens into these countries pose a very significant and unrivaled threat to their resources. Invasive alien species (IAS) are those species, subspecies or taxa introduced intentionally or unintentionally outside of their natural distribution that present a potential threat to biodiversity, agriculture, human health, the economy and/or quality of life.

Biological invasions occur primarily through increased trade both between SIDS and non-SIDS countries and among and within SIDS countries themselves. Tourism and transportation are also significant vectors. 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.

Moreover, the success in reducing risks posed by primary channels — or pathways — of invasives, such as ship hulls, requires collective action.

The need for individual and collective action by island countries is clear and many such measures have already been identified. At the intergovernmental level, a number of processes are already addressing the issue or have significant potential to advance the collective position of SIDS.

The following paper outlines the impacts of IAS on island countries and their primary means of introduction. It then addresses tools for the prevention, control and mitigation of impacts, and closes with a brief overview of the international policy context.

IMPACTS ON ISLANDS

Invasive alien species can impose a range of severe impacts on island ecosystems, economies and human health.

Ecological Impacts: IAS, ranging from large vertebrates to small rodents to plants, reptiles, fish, insects and micro-organisms, have devastated a number of island ecosystems. Cats, mongooses and rodents, including Norway and ship rats, present severe threats to native bird and reptiles. Exotic plants, whether they be trees, shrubs, vines or grasses, are key invaders in habitat that has already been disturbed by human activities or the grazing and rooting of cattle, goats and wild pigs. The list of biological invaders threatening islands goes on and on encompassing numerous species of snails, reptiles, fish, ants, wasps and other pathogens, many of which have been introduced intentionally.

Economic Impacts: Aside from environmental damage, IAS can have direct and indirect economic impacts, not all of which can be measured in monetary terms. At a basic level, the destruction of native flora and fauna deplete the abundance of native and endemic species that attract tourist dollars, potential resources for bioprospecting, and the range of biological resources used to develop medicine, food, and other products and used for local subsistence or spiritual ends. IAS can also affect agricultural yields pollination patterns, fire regimes and hydrological cycles that impact available water resources, an important concern for many island states. Socioeconomic impacts on export crops as well as subsistence agriculture are a key threat to food security and fragile local economies.

Human Health Impacts: Beyond direct effects on food security, IAS present a range of potential threats to human health. The rooting of wild pigs can create depressions of standing water, which serve as breeding grounds for mosquitoes and facilitate the spread of malaria and other diseases. Rats, poultry and livestock are renowned vectors carrying a range of plagues and viral diseases, which can be spread to humans or native biota. Large-scale development projects, forest

clearing and other human activities can further exacerbate these impacts and may require the use of expensive and unhealthy chemicals and pesticides.

The list of biological invaders threatening islands goes on and on, encompassing numerous species of snails, fish, ants, wasps and other pathogens, many of which have been introduced intentionally.

PATHWAYS

Invasive alien species arrive on islands through a wide range of pathways. Pathways for the introduction of invasive species can be both intentional (e.g., exotic species used in agriculture, as ornamental plants or pets, or as biocontrol agents to attack pests) and unintentional (e.g., organisms in ballast water or attached to ships hulls or hikers' boots).

Some of the most common pathways include:

- Ships' ballast water
- Fouling of ships' hulls
- Cargo containers and packaging materials
- Unprocessed commodities such as raw timber or other agricultural goods
- Imported food species such as fish
- Horticultural and other plant imports
- Development activities
- Military activities
- Tourists and citizens returning from travel abroad
- Biological control agents used to combat pests, including other invasives.

Via these and other pathways, IAS can proliferate rapidly across island regions as ships, planes and travelers move from one island to another spreading the invasion. Many IAS also encompass multiple islands or archipelagoes, which requires attention not just to the introduction of IAS from other countries, but also inter-island movement of IAS within the country.

PREVENTION, ERADICATION, MANAGEMENT AND CONTROL

While the scale of impacts and range of pathways may be daunting, countries, particularly island states, are increasingly becoming more knowledgeable and adept at countering the introduction and harm of IAS. Experts generally agree that preventing introductions is the most cost-effective means to address the problem, as subsequent efforts to eradicate, control and/or manage IAS become increasingly difficult and expensive. Regulation of pathways, such as ballast water or hull fouling, is generally more effective in addressing an array of potential IAS than individual, species-by-species approaches. Given the uncertainties and difficulties regarding the management of introduced IAS and mitigation of their damages, countries are encouraged to take a precautionary approach to preventing introductions from the start.

Prevention: Prevention efforts can focus on mitigating threats and stopping intentional and unintentional introductions long before IAS can enter a country, through the application of pre-border tools. Requiring ships to exchange their ballast water in open waters instead of in ecologically sensitive marine and coastal ecosystems is a key means of avoiding unintentional introductions. Codes of conduct or national regulations can also be developed to address risks posed by horticultural imports, hull fouling or cargo containers, which require that the exporter take sanitary measures before the commodities or vessels leave their home country. When evaluating intentional introductions—whether for agriculture, aquaculture or forestry, countries can also apply stringent risk assessment standards by developing and accessing regional resources and available models (e.g., Australian Weed Risk Assessment).

Such pre-border activities should be used to supplement, not replace, security measures undertaken at national borders. Quarantine procedures and customs regulations are an additional line of defense against potential IAS, which should also be supported by effective monitoring and enforcement both at the border and within the

country. Resources are often scarce and capacity inadequate, so countries should also avail themselves of educating their publics and visitors to be vigilant against unintentionally bringing in IAS, report sightings of potential invasives and provide relevant volunteer assistance in control and management efforts.

Invasive alien species can have direct and indirect economic impacts, not all of which can be measured in monetary terms.

Eradication: Short of preventing initial introductions, eradication of an IAS is the next best option provided the population has only become established in a manageable area or location. Eradication is also easiest if initiated immediately after the identification of an IAS, particularly through rapid response plans, because efforts and costs increase dramatically the longer a species has to spread. While island ecosystems are especially vulnerable to IAS, they also provide more convenient environments to remove invasives given their relative isolation and smaller territories.

Management and Control: If an IAS has become established beyond a feasible possibility of eradication, government agencies and stakeholders can work to control their spread and mitigate their negative impacts. A range of control methods are available (which can also be applied in some eradication efforts) including removal by mechanical means, chemical controls, habitat management, integrated pest management and biological controls. For the latter category, thorough risk assessment for any biological control organisms is critical, as an organism intentionally introduced to eliminate one IAS can become invasive itself (e.g., flatworms to control the Giant African snail, *Cactoblastis cactorum*).

CAPACITY

Preventing the introduction of IAS and mitigating their impacts requires significant resources and capacity, which is a critical area of concern for many island countries. Financial resources need to be available and allocated to support the necessary institutional and regulatory actors and to fund management responses. Institutional resources and expertise are particularly important in the development of effective policies and legislation, the conduct of risk assessments and the planning and implementation of monitoring, early-detection and rapid-response activities. Government agencies also need a supportive regulatory environment, including efficient enforcement mechanisms, to ensure the effectiveness of border control, quarantine and other sanitary and phytosanitary measures.

Short of external assistance through donor agencies and institutions like the Global Environment Facility and the World Bank's Standards and Trade Development Facility, many island countries will be hard pressed to enact comprehensive systems to address the threat of IAS. Regional cooperation can be invaluable particularly in sharing resources and information regarding risk assessments for particular species or early warning to neighboring islands of detected IAS. The Secretariat of the Pacific Community has served as a resource for existing national quarantine laws and standards. The Global Invasive Species Programme (GISP) is developing a number of IAS information tools and is engaging in national and regional capacity building efforts, including training programs, support for taxonomic work and the development of new management tools. The Cooperative Initiative on IAS on Islands has been established by the government of New Zealand and the Invasive Species Specialist Group (ISSG) of IUCN's Species Survival Commission, under the umbrella of GISP. Its aim is to obtain significant and sustainable conservation outcomes by facilitating awareness and capacity building to effectively manage invasive species on islands. The Global Invasive Species Database, managed by ISSG, supports effective prevention and man-

agement activities by disseminating authoritative knowledge and experience globally to a broad audience. At the regional level, the Nature Conservancy is building a learning network to support government personnel and other stakeholders working on IAS in Pacific island countries and territories. The Inter-American Biodiversity Information Network includes an Invasive Information Network, which involves a number of Caribbean island states.

It is imperative that island states identify and clearly express their capacity needs regarding means to prevent the introduction of IAS and to mitigate their environmental, economic, health and other social impacts. Multilateral fora, including the ten-year review of the Barbados Program of Action, the Convention on Biological Diversity, the Commission on Sustainable Development, as well as follow up on the results of the World Summit on Sustainable Development and the Millennium Development Goals, are key areas to make the issue a priority, focus international attention and press for additional resources and expertise.

Invasive alien species can proliferate rapidly across island regions as ships, planes and travelers move from one island to another spreading the invasion.

INTERNATIONAL LEGAL AND INSTITUTIONAL CONTEXT

As previously mentioned, a number of international agreements and processes address various aspects of IAS. Generally, these can be viewed within the context of trade, environment, transport and development bodies and agreements.

Trade: The World Trade Organization (WTO) sets a framework through its Agreement on the Application of Sanitary and Phytosanitary Measures for how countries can establish national regulations to prevent introductions. Additionally, the International Office of Epizootics and the International Plant Protection Convention develop standards to prevent the introduction and spread of animal diseases and plant pests. Regional trade agreements and plant protection organizations may also address more specific aspects or species within their geographical area of concern.

Countries should educate their publics and visitors to be vigilant against unintentionally bringing in invasive alien species.

Environment: The Convention on Biological Diversity sets an overarching framework for the protection of ecosystems, and has developed a set of guiding principles on how to prevent and mitigate the impacts of IAS. The CBD is considering whether to examine specific pathways and existing gaps in coverage and how they can best be addressed by the international community. The Ramsar Convention on Wetlands of International Importance, the Convention on Migratory Species and the UN Food and Agricultural Organization also address different aspects of IAS within their work.

Regional efforts that address the environmental aspects of IAS and island ecosystems include the South Pacific Regional Environment Programme's project on invasive species management, the Cooperative Initiative on IAS on Islands, and the Global Environment Facility's activities in South America, Africa and Eurasia.

Transport: The International Maritime Organization is currently finalizing an international convention for the control and management of ships' ballast water. The International Civil Aviation Organization and the Convention on the Law of Non-navigational Uses of International Watercourses also recognize their importance in addressing the spread of IAS. Private sector activities are also underway through the development of codes of conduct and best practices regarding shipping, ballast water and cargo containers.

Development: Some international processes span the range of environmental, trade and social issues and include a specific focus on development. More specifically the Barbados Programme of Action on SIDS establishes a framework to address these types of cross-cutting issues, yet to date it has not focused on the problem of IAS. Additionally, the SIDSnet, the Alliance of Small Island Developing States, the Secretariat of the Pacific Community, and some of the U.N. regional economic commissions and specialized agencies also have the potential to be important players in combating the threats of IAS.

It is imperative that island states identify and clearly express their capacity needs regarding invasive alien pests . . .

For further information or to provide comments, please contact:

Stas Burgiel, Ph.D.

Defenders of Wildlife
1130 17th Street NW
Washington, DC 20036 USA
Tel: +1-202-682-9400
Fax: +1-202-682-1331
Email: sburgiel@defenders.org

Anne Perrault, Senior Attorney

Center for International Environmental Law
1367 Connecticut Avenue, NW Suite 300
Washington, DC 20036 USA
Tel: +1-202-785-8700
Fax: +1-202-785-8701
Email: aperrault@ciel.org

Carnet Williams

The Nature Conservancy of Hawai'i
923 Nu'uanu Avenue
Honolulu, HI 96817
Tel: +1-808-587-6266
Fax: +1-808-545-2019
Email: carnet_williams@tnc.org

