POLICY BRIEF No. 1 JAN 2021

CABI Caribbean and Central America • Centre for Agriculture and Bioscience International

INVASIVE SPECIES THREATEN LIVELIHOODS AND VALUABLE BIODIVERSITY IN THE CARIBBEAN

Importance of IAS to Policy Makers
Invasive Alien Species (IAS) are organisms whose introduction and/or spread impacts human health and well-being, disrupts trade and threatens biological diversity.
(https://caribbeaninvasives.org/index.php/about/what-are-ias/)

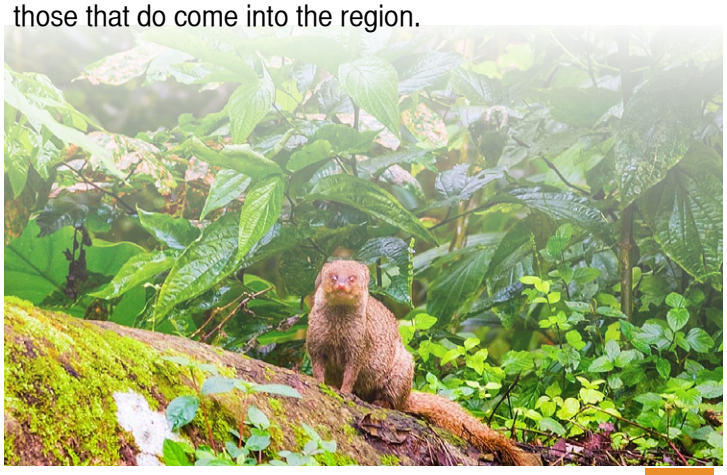
Invasive alien species (IAS) have disastrous environmental and socio-economic impacts. This has been exacerbated by globalization and the concurrent increase in trade, transport, and tourism with negative consequences on food security, human and animal health, as well as in a number of economic sectors including fisheries, agriculture, and tourism.

IAS are a major cause of global biodiversity loss and are considered to be the greatest threat to biodiversity in geographically and evolutionarily isolated systems, such as the Caribbean islands. Twenty years ago, it was estimated that worldwide damage from IAS was US$1.4 trillion dollars per year, representing nearly 5% of global GDP at that time. In 2018, the International Union for Conservation of Nature (IUCN) estimated that the global impact of invasive alien insects alone on agriculture and forestry cost at least US$70 billion/year.

If the natural environment is to be safeguarded and the income-generating sectors of agriculture, forestry and fisheries sectors protected, then the management of IAS must become a priority. The development and implementation of effective polices are required to combat the many negative economic, social and environmental consequences of plant and animal invasions. Among these are the reduced productivity and high costs associated with controlling pests, weeds and diseases; the threat to lives and livelihoods caused by disrupting ecosystems resulting in disease, decreasing food security and a reduction in social and recreational interaction; and competition with native plants and animals that destroys biodiversity and alters habitats; all of which are exacerbated by climate change.

Sound, effective policies are necessary for the management of IAS in the Caribbean. The focus should be on establishing national and regional IAS coordinating mechanisms that will improve biosecurity, mainly at ports of entry, by enhancing measures to prevent IAS entry, with a focus on improving risk analysis capacity and surveillance. All of this must be economically feasible. The GEF-UNEP IAS project being implemented in Barbados and the OECS, will therefore lay the groundwork for establishing a sustainable funding mechanism to ensure the sustainability of management interventions.

A series of policy briefs will focus in on some relevant IAS issues, including recommendations for improving port biosecurity; risks to the marine sector as well as the pet and aquaria trade; risks posed by international trade and passenger travel; and a sustainable funding mechanism for IAS in the Caribbean that would enable the proactive prevention of new introductions and effectively deal with those that do come into the region.



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Some IAS Impacts

ANIMALS (VERTEBRATES)

Small Indian Mongoose (Urva auropunctatus)

The small Indian mongoose was introduced into several oceanic islands, mainly to control rats and snakes. Largely ineffective in controlling the target species, they subsequently started preying on other vertebrates, especially native reptiles and birds. They also carry and spread diseases such as rabies and leptospirosis.

Countries severely affected

Islands in general - At least 25% of known recent island reptile **extinctions and extirpations** have been attributed to mongoose introductions.

Caribbean - Hawksbill turtle, *Eretmochelys imbricata* L. critically endangered.

Jamaica - Jamaica petrel, *Pterodroma caribbaea* Carte. critically endangered and possibly extinct.

Hispaniola - Hispaniola racer, *Hypsirhynchus melanichnus* (Cope) critically endangered and possibly extinct.

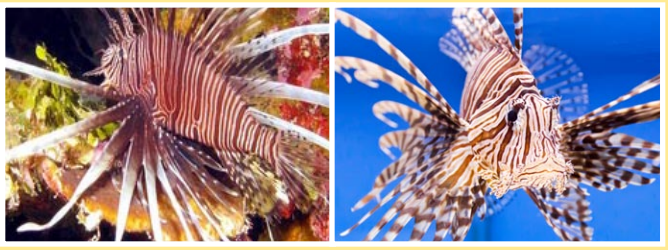
Puerto Rico and Hawaii - Economic losses due to predation on livestock and game species estimated at US$50 million annually.

Mauritius - Extinction of Audubon's shearwater *(Puffinus lherminieri)* and introduced game birds. Decline of endemic species such as the endangered pink pigeon and a decrease in the range of mainland skinks.

Fiji - Extirpation of the bar-winged rail. Negative impact on ground birds *Gallirallus phillipensis* L., *Anas superciliosa* Gmelin and *Porphyrio porhyrio* Brisson.

Amami Õshima Island, Japan - Significant negative impact on the endangered Amami rabbit, *Pentalagus furnessi*, often referred to as a living fossil. Decline of at least seven species of native vertebrates.

Lionfish (Pterois volitans)



The venomous, carnivorous and voracious lionfish has very few predators in Atlantic waters, where it can rapidly increase in number, reducing the abundance of local native fish populations. Lionfish eat reef fish and the young of important commercial fish species.

Countries severely affected

Southeast coast of the United States, the Caribbean, and South America

The lionfish invasion could become the most disastrous in history, devastating coral reef ecosystems and adversely affecting commercial fisheries throughout the Americas.

The invasion reduces commercial fish species including snapper, grouper and parrotfish; herbivorous fishes that consume macro-algae and help protect corals from algal overgrowth; and crustaceans, including juveniles of the commercially important spiny lobster *(Panulirus argus)*.

Tourism is negatively impacted by a decrease in colourful reef fishes and the sharp, venomous lionfish spines, which can result in a painful 'sting', are a deterrent to swimmers, snorkellers, divers, and fishermen.

Some IAS Impacts *(continued)*

ANIMALS (INVERTEBRATES)

Pink Hibiscus Mealybug (Maconellicoccus hirsutus Green*)*

Photo credit: Dale Meyerdirk, APHIS

The polyphagous pink hibiscus mealybug attacks a wide range of native and introduced plant species. It feeds on young growth causing severe stunting and distortion and, in severe cases, leaf-drop and death. Honeydew and sooty mould on fruits reduce their value.

Countries severely affected

Caribbean
First reported in the Caribbean in 1994 in Grenada. By early 2001 it had spread to over 25 countries: from Guyana and Venezuela in the South to The Bahamas in the North as well as to Central America (Belize) and North America (California, USA).

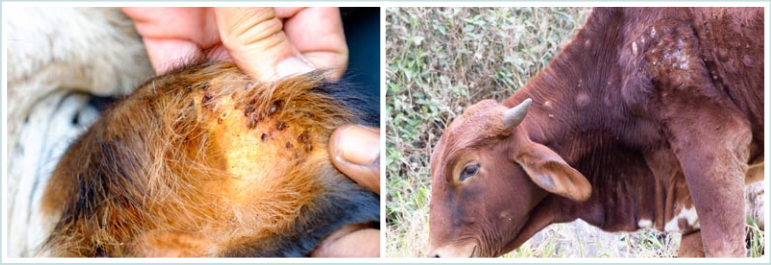
A serious loss of trade resulted because other countries would not accept shipments of agricultural produce.

The overall impact and control costs between 1995 and 1998 were estimated at:

- US$18.3 million in the **Region**
- US$3.5 million in **Grenada** annually, prior to the introduction of an effective biological control agent.
- US$280,000 in **St Kitts** with an additional loss of trade estimated at US$22,000 from 1995 to 1997
- US$67,000 in **St Lucia**
- US$3.4 million in **St Vincent and the Grenadines**

If this pest were to establish in the southern USA losses would amount to US$750 million per year.

Tropical Bont Tick, Senegalese Tick (Amblyomma variegatum Fabricius*)*



The tropical bont tick is now established on many islands in the Caribbean. Its bite causes skin lesions that can lead to acute dermatophilosis caused by the bacteria *Dermatophilus congolensis*, which is the main vector for *Cowdria ruminantium*, a micro-organism that causes heartwater disease in domestic animals. Heartwater results in a loss of milk production, poor quality and often unusable hides, weight loss and sometimes death.

Countries severely affected

Southern Africa
Heartwater costs the livestock industry US$47.6 million per year.

Nevis
90% of cattle and 70% of small ruminants died from dermatophilosis when the tick invaded in the 1980s.

Guadeloupe and Antigua
These are the only Caribbean countries infected with heartwater, placing all of the other Caribbean islands and the American mainland at risk. The cattle egret, *Bubulcus ibis*, is invasive in the Caribbean, and known to spread tick-borne diseases, contributing to the threat.

Some IAS Impacts *(continued)*

PLANTS

Coral Creeper *(Antigonon leptopus)*

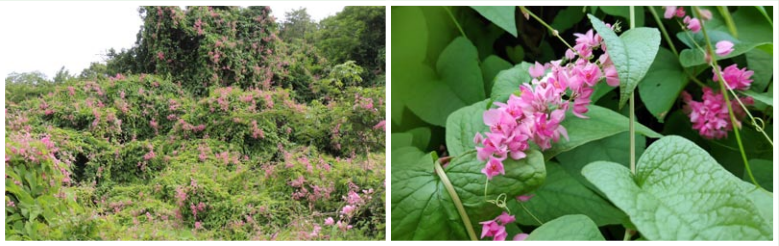


Photo credit: Arne Witt, CABI

This aggressive and invasive vine is relatively drought tolerant and can grow in almost any soil type, including poor soils. It smothers native trees, out-competes understorey plants, and alters fire regimes. Its many tuberous roots enable vegetative propagation and makes it difficult to control.

Countries severely affected

Caribbean - St Eustatius
Estimated 20% of the island covered.

Pacific Ocean – Saipan
Decreased abundance, richness and diversity of flora across all habitat types.

Indian Ocean - Christmas Island
Rampant on sea and inland cliffs and in previously mined areas where it may be hampering the annual migration of crabs and interfering with natural regeneration.

Jumbie Bean, Wild Tamarind *(Leucaena leucocephala)*

L. leucocephala trees form large monocultures, displacing native plant and animal species, preventing the regeneration of indigenous plant species and rendering extensive areas unusable and inaccessible. It is very difficult to eradicate.

Countries severely affected

Pacific Ocean – Hawaii

Pacific Ocean – Ogasawara (Bonin) Islands, Japan

North Pacific Ocean – Guam

South Pacific Ocean – Vanuatu

Southwestern Pacific Ocean – Papua New Guinea

Atlantic Ocean – Fernando de Noronha Island, Brazil

WHAT IS NEEDED

Once an invasive species is established in one country, it is only a matter of time before it spreads to neighbouring countries in the Caribbean. The effective management of IAS in the Caribbean therefore requires coordination and collaboration among stakeholders within countries as well as among countries in the region.

Commitment is vital for the completion of national IAS strategies, along with support for the Caribbean Invasive Alien Species (CIAS) Strategy and Action Plan, which seeks to establish a framework for IAS management in the Caribbean Region by:

- Strengthening existing national and regional programmes that protect the natural resources which are under pressure from the entry and establishment of IAS through increased global trade and travel; and
- Developing new or enhance current national and regional coordination and cooperation mechanisms that will allow a more rapid and efficient response to new and existing alien species invasions.

More specifically, the CIAS-Strategy and Action Plan addresses key challenges by:

- Enhancing collaboration on IAS issues at the national and regional levels;
- Using science and the precautionary principle as the basis for decision making;
- Communicating IAS issues to the public;
- Educating, nationally and regionally, to change behaviours to reduce the impacts of IAS;
- Improving human resource and other capacities;
- Streamlining of regulations and laws governing trade and human movement to minimise the risk of moving IAS into and within the region;
- Instituting cost recovery mechanisms to ensure sustainability of national actions and regional collaboration on IAS issues; and
- Advocating for increased political commitment and support at national, regional and international levels.

Streamlining national efforts with regional plans and actions will make the best use of available resources and lead to reduced environmental degradation, a decrease in losses of native species and improved socioeconomic opportunities for Caribbean communities.

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Key Messages

Although the economic impact of IAS is not clearly quantified in the Caribbean, **the high cost to agriculture, the environment, and human health and livelihoods** demands that this issue is carefully considered in the development of national economic policies and the allocation of resources to prevent their introduction.

Any exotic species entering the Caribbean could present a risk – once it becomes established it can become invasive and spread to neighbouring countries. The effective management of IAS in the Caribbean requires coordination and collaboration amongst countries.

Boosting the regional capacity to reduce the risks associated with the introduction of IAS will depend on: improving risk assessments, upgrading infrastructure where feasible, building human capacity, and adopting best practices for surveillance and early detection.

The updated **Caribbean Invasive Alien Species Strategy and Action Plan** must be adopted and implemented by regional policy makers.

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This policy brief is the first in a series providing information to decision makers on the actions needed to address the problem of invasive alien species. The briefs are produced by the Project, **'Preventing the Costs of IAS in Barbados and the OECS'**, which started in September 2018 and will run to July 2021.

The Global Environment Facility (GEF) funded project is being implemented by the United Nations Environment Programme (UNEP) and executed by the Centre for Agriculture and Biosciences International (CABI) with support from the participating countries (Antigua and Barbuda, Barbados, Dominica, Grenada, St Kitts and Nevis, St Lucia, and St Vincent and The Grenadines).

The project results will support the conservation of biodiversity in the Caribbean region and so contribute to the global efforts to safeguard biodiversity.

For more information on the Project contact the Regional Project Coordinator,

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