

Jamaica's Project Profile: "Mitigating the Threat of Invasive Alien Species in the Insular Caribbean"

Invasive Alien Species (IAS) are a major threat to the vulnerable marine, freshwater and terrestrial biodiversity. IAS are a major interest to the Island of Jamaica as they pose a direct threat to the high level of biodiversity the Island enjoys. Jamaica's industries are centred on the country's biodiversity. As such a decrease in biodiversity threatens the livelihood of fishers, farmers, and persons employed to the tourism industry. Negative impact on these industries as a result of IAS will result in a significant reduction in Jamaica's gross domestic product (GDP).

The project objective is to mitigate the threat to local biodiversity and economy from IAS. This will be achieved through five main initiatives: increasing the national capacity to address potential risks posed to biodiversity of global significance from invasive alien species; increasing regional cooperation to reduce risk posed to biodiversity of global significance from invasive alien species; strengthening access to data and establishment of best practice, and public awareness of IAS; increasing capacity to strengthen prevention of new IAS introductions; and increased capacity to respond, control and manage IAS impacting globally significant biodiversity. The fifth initiative includes the implementation of pilot projects to control and manage the spread of the Lionfish (*Pterois volitans* and *Pterois miles*) in Jamaica; protection of the endemic Jamaican Iguana through monitoring and selective eradication of predators; and control and management of the Melaluca (Paper Bark Tree) and Wild Ginger (*Alpinia allughas*) in the Lower Black River Morass.

Amongst the major outputs of the project in Jamaica are:

1. Development of National IAS Strategy
2. Establishment of Caribbean-wide Cooperation and Strategy
3. Knowledge generation, management and dissemination
4. Increase capacity to detect, respond, control and manage IAS impacts in terrestrial, freshwater, and marine systems

Background

Jamaica's achievements during the Project Preparation Grant (PPG) of the GEF-funded project "Mitigating the Threat of Invasive Alien Species in the Insular Caribbean"

Output/Services in Jamaica during PPG	Description of Output Achieved during PPG
Inception Report	Report outlined the implementation plan for the activities during the PPG Phase
Critical Situation Analysis (CSA)	The CSA captured information on existing legislative, policy and institutional framework within the country, the IAS management capacity of the country and then the identification of gaps in knowledge and management capacity.
Communication and capacity Building Strategies for Jamaica	Outlined intervention and communication strategies to bring about attitude change in major stakeholders towards the introduction of new species into Jamaica's sensitive ecosystem.
Costed Pilot Projects for Jamaica	An outline of the 3 pilot projects to be implemented during the FSP.
Preparation of the Draft National Invasive Species Strategy (NISS)	The Draft NISS will advise the preparation of the NISS during the FSP.

At the end of the PPG phase, the proposal for the Full Size Project (FSP) was submitted to the GEF in January and approved in July 2009. The FSP has five components:

1. Development of National IAS Strategies
2. Caribbean-wide Cooperation and Strategy
3. Information and Knowledge Generation, Management, and Dissemination
4. Prevention of IAS in Terrestrial, Freshwater and Marine Systems
5. Early Detection, Rapid Response and Control of IAS Impacts in Terrestrial, Freshwater and Marine Systems

The **Current Full Size Project (FSP)** is being implemented over a 4 year period and started in October 2009.

Component 1

A draft National Invasive Species Strategy (NISS) was created for Jamaica during the PPG phase of the Project. Jamaica is currently in the process of contracting an Invasive Species Specialist to conduct a review of and complete the draft NISS. The finalization of the NISS will be achieved through conducting IAS risk assessment to inform activities as well as through a series of

stakeholder consultations. Once completed the NISS will be compiled in booklet form (non/semitechnical) and disseminated to stakeholders.

Component 2

Whilst CABI is the lead agency on these activities, Jamaica participates fully in all activities. Jamaica has to date participated in Regional Consultations held to assist in the development of the Regional Invasive Species Strategy (RISS) and has members on each of the 3 ecosystem taskforces (terrestrial, marine, and freshwater) formed to develop the components of the RISS specific to each ecosystem. Jamaica has volunteered to take the lead on the taskforce responsible for developing the marine and freshwater components of the RISS respectively. Andrea Donaldson from the National Environment and Planning Agency will oversee the development of the Freshwater Component while Dr. Dayne Buddo from the University of the West Indies Mona will oversee development of the Marine Component

Component 3

Environmental Education:

Jamaica has committed to focusing on public education as one of the Project's main activities. The project aims to increase the awareness of Jamaicans on general environmental issues as well as those specific to IAS. A collaborative approach is being employed to ensure that the message sent by all impacted agencies to the general public is a consistent unified one. Initiatives such as the formation of the Lionfish Subcommittee bring all impacted agencies/organization under one umbrella and as a single entity all public education material and messages are generated and then shared with the wider society.

A baseline survey will also be conducted and used to further inform the finalization of a Communication, Education and Public Awareness (CEPA) Plan for the project. The CEPA Plan will feature activities targeting educational institutions local nongovernmental organizations (NGO) and community based organizations (CBO) especially those surrounding pilot project sites.

Activities supporting the increase of public awareness have begun with the Project having a presence at expos and exhibitions supporting environmental and agricultural initiatives (e.g. World Environment Day Expo 2010 and Denbigh Agricultural and Industrial Show 2010).

Knowledge Sharing:

Jamaica aims at strengthening access to data and established best practices. This will be achieved through:

- collating data, information and best practice on IAS management in Jamaica;
- documentation of pilot findings, existing and externally funded IAS-related research at national and regional levels;
- establishment of electronic networking systems including linkages to GISP, GISIN and IABIN.

Activities to support these initiatives have begun; there are databases which are now in existence, most notable is the I3N-JA database; those that have just been created (Jamaica Lionfish Database); however they are not exhaustive. In addition there is the need to create and implement measures to increase and improve information availability.

Jamaica participates in the Yahoo Group Carib_IAS_Threat, which seeks to review invasive species issues across the Wider Caribbean Region and has shared articles on IAS in Jamaica as well as summaries of workshops in which the country has participated.

Component 5

IAS Management

The implementation of the 3 Pilots for the Project will also be a collaborative effort between all impacted entities where pilot sites are located. The pilots will be used to build Jamaica's capacity to respond, control, and manage IAS impacting globally significant biodiversity. The pilots correspond with the Regional aim to eradicate terrestrial IAS populations; control and manage marine IAS; and implement protection measures for site of high conservation value respectively.

Monitoring and Selective Eradication of Vertebrate Predators in the last remaining habitat of the Jamaican Iguana (*Cyclura collie*) in the Portland Bight Protected Area.

At 1,876 sq. kilometres (724 sq. miles) the Portland Bight Protected Area (PBPA) is Jamaica's largest protected area. Its 520 sq. km (200 sq. miles) terrestrial area is 4.7% of Jamaica's land mass, and its 1,356 sq km (524sq miles) of marine space is 47.6% of her shallow shelf. The PBPA contains 210 sq km (81 sq miles) of dry limestone forest, 82 sq km (32 sq miles) of wetlands, and an as yet undetermined area of seagrass beds and coral reefs. It is habitat for birds, iguanas, crocodiles, manatees, marine turtles, fish and 50,000 human beings. It contains two ports, a part of three sugar estates, several fish farms, a bauxite-alumina plant, a feed mill, two power plants and other industrial and commercial entities.





The Jamaican iguana is listed as Critically Endangered in the most recent IUCN Red List, and as an Appendix 1 Species under the Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the species is also considered to be Endangered under the U.S. Endangered Species Act (United States Fish & Wildlife Service). Nationally, the species is protected under the Wild Life Protection Act (NRCA, Government of Jamaica) and on Schedule I of the Endangered Species (Protection, Conservation and Regulation of Trade) Act.

As with so many insular endemic species in the Caribbean and elsewhere, the Jamaican Iguana has been decimated by the combination of habitat loss and predation by introduced mammals. Invasive alien species represent the greatest threat to the Iguana where its habitat is still in prime condition.



Iguana nest destroyed

Dogs were brought to Jamaica by the Tianos, and are the only predator capable of killing large adult iguanas. The mongoose (*Herpestes javanicus*) was imported in 1872 to contain damage due to sugar cane pests, and quickly established itself as a major threat to the island's endemic wildlife preying on the eggs of the Iguanas.



Iguana nest and eggs

Feral cats are also virulent predators of small Iguanas, and roam throughout the Hellshire Hills. Wild pigs represent a threat to Iguana nests, and European rats (*Rattus* sp.) may also be a problem but this has not been documented.

The Jamaica Iguana Recovery Group notably through the work of the UWI Mona, Department of Life Sciences' Dr. Byron Wilson has been leading the recovery effort. Through the assistance of the Project work will be done to eradicate the mongoose, feral cats, and goats through trapping and other removal methods. Work will also be done in support of forest regeneration post IAS removal.

The impact of these invasive animals has spread to the Portland Bight Cays where their presence has threatened the existence of sea turtles and nesting sea birds. Preliminary experiments will also be undertaken to safeguard against predation of nests.

Management & Control of the Marine Invasive Species, *Pterois volitans* and *Pterois miles* (Lionfish)

The Jamaican fishery is made up largely of artisanal fishermen operating from open canoe type boats powered by either outboard motors or oars. The artisanal fishery which operates over inshore and offshore areas has been considered by many to be the 'employer of last resort'. The inshore fishery takes place in the coastal waters of the Island shelf and its nine proximal banks. The status of Jamaica's Fisheries is classified as over exploited. This a result of overfishing and the use of environmental unfriendly fishing practices. It is postulated that the fisheries industry in Jamaica is on the verge of collapse. Currently the industry survives on the removal of very young adults which puts pressure on the fecundity of the ecosystem.

The lionfish has been positively identified in the country since 2008 and is currently present in all 14 parishes. The lionfish invasion adds additional pressure on the system by the removal of the juveniles. The lionfish is of particular concern to Jamaica due to the noted deterioration of the marine environment in which the species is present.



Map of Jamaica showing reported sightings during the period April 2008 - September 2009.

The fisheries industry represents a livelihood for many Jamaicans and an explosion of the lionfish in Jamaica could lead to a collapse of the Island's fishing industry.



The Discover Bay Marine Lab (DBML) a division of the University of the West Indies Mona, will be managing this Pilot for Jamaica. The work being done is however a collaborative effort between the Ministry of Agriculture and Fisheries, National Environment and Planning Agency, Food for the Poor, Jamaica Fishermen's Co-op Union, Culinary Federation of Jamaica, Fisheries Advisory Board, Improving Jamaica's Agricultural Productivity Project, Jamaica Tourist Board and the Tourism Product and Development Company. Outline of Jamaica's Lionfish Pilot. See: <http://www.ciasnet.org/2010/08/16/outline-of-the-mitigating-the-threat-of-invasive-alien-species-in-the-insular-caribbean-mtiasic-project-lionfish-pilot-project/>

Control and Management of two invasive plants in the Lower Black River Morass (Ramsar Site) to prevent the further habitat loss

The Black River morass is the largest freshwater wetland ecosystem in Jamaica and the Caribbean. It is a biologically diverse and extremely complex natural wetland ecosystem that supports a large number of plants, animals and natural communities. The Morass support high levels of endemic species which are severely threatened by anthropogenic disturbance owing to their relatively small size and accessibility to human encroachment.



The presence of IAS in the area has resulted in tremendous changes in the freshwater ecosystem and forest fragmentation.



Sections of the Morass being overrun with water hyacinth

Melaleuca quinquenervia is native to Australia and is an aggressive and highly invasive plant. The infestation of this plant results in the degradation of ecosystem structure and

function; it also reduces native species biodiversity. The tree grows very rapidly, typically up to 3-6 feet per year, producing dense stands that displace native plants and animals. Introduction of the *Melaleuca* was deliberate and has been used extensively in landscaping. Two distinctive stands have been identified in the Black River Morass however; the extent of their occurrence has not been mapped.

Alpinia allughas (ginger family) is found to be taking over the natural vegetation of the Black River Morass. The method of introduction is unknown however is observed to have formed large thickets which smother understory plants thus outcompeting native species. The true extent of the spread of this plant is unknown and will be investigated by the Project.



The bank of the Morass overrun with *Alpinia*

The Project will assist the UWI Mona's Dr. Kurt McLaren to develop, test and implement methods of control and management of the 2 freshwater plants in the Lower Black River Morass.

The project is being executed in Jamaica by the:

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The National Environment and Planning Agency ensures that Jamaica's resources are being used in a sustainable way and there is broad understanding of environment, planning and development issues with extensive participation amongst citizens and a high level of compliance to relevant legislation. Among NEPA's core functions is its responsibility for monitoring the natural resource assets and the state of the Jamaican environment and engaging in extensive and continuous public education campaigns. The project is being implemented by NEPA through the Strategic Planning Policies and Projects Division, with close support from the following division/branches:

- Conservation and Protection Sub-division
- Ecosystem Management Branch
- Protected Areas Branch
- Public Education and Corporate Communication Branch

with other Government Departments and Agencies,

- Ministry of Agriculture and Fisheries: www.moa.gov.jm
 - Forestry Department: www.forestry.gov.jm
 - Fisheries Division: www.moa.gov.jm/about/departments/fish.php
 - Veterinary Services Division: www.moa.gov.jm/about/departments/vet.php
 - Research Division: www.moa.gov.jm/about/departments/r&d.php
- Ministry of Health: www.moh.gov.jm
- Ministry of Finance and Public Service: www.mof.gov.jm

- Jamaica Customs Department: www.jacustoms.gov.jm
- Institute of Jamaica, Natural History Division: www.jamaicachm.org.jm

with Educational Institutions

- University of the West Indies Mona: www.uwimona.edu.jm

with Regional Intergovernmental Organizations,

- CABI Caribbean and Latin America: www.cabi.org/?site=170&page=1339#
- Caribbean Agricultural Research and Development Institute:
www.cardi.org/default.asp?id=86