Mitigating the Threats of Invasive Alien Species in the Insular Caribbean

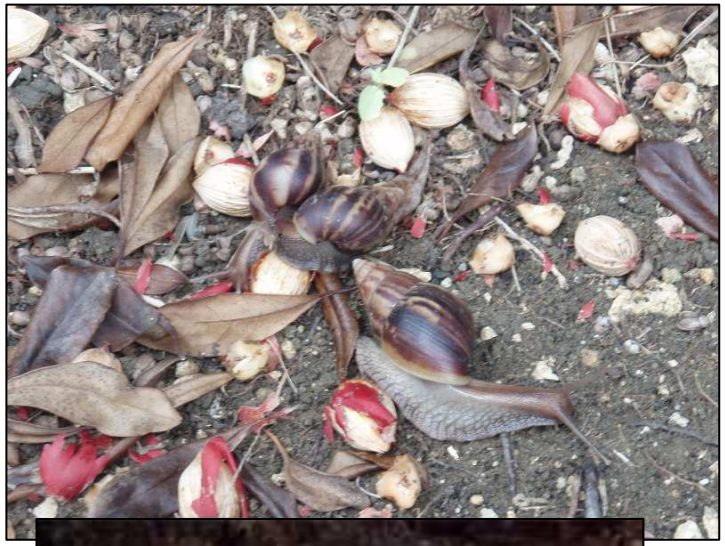
A framework for regional cooperation

Naitram Ramnanan, Project Manager and Lizz Johnson, Regional Director

www.cabi.org
KNOWLEDGE FOR LIFE

Invasive Alien Species – A Major Threat to Biodiversity in the Caribbean

www.cabi.org



Importance of Caribbean Biodiversity

- spans 4.31 million km^2 of ocean and just 0.26 million km^2 of land area
- encompasses most island groups in the Caribbean Sea and extends to southern tip of Florida
- contains habitats of international biodiversity and conservation value

Caribbean 'biodiversity hotspot'

Importance of Caribbean biodiversity cont'd

High level of endemicity

- 60 spp. of corals, ca. 1,500 spp. of fishes recorded, of which nearly 25% endemic

- Regional endemicity of other groups:
  - •60% of flora
  - •85% of herpetiles
  - •30% of mammals
  - •22% of birds

Importance of Caribbean Bio-diversity cont'd

http://www.biodiversityhotspots.org/xp/Hotspots/caribbean/

Hutias are threatened and endemic to Caribbean

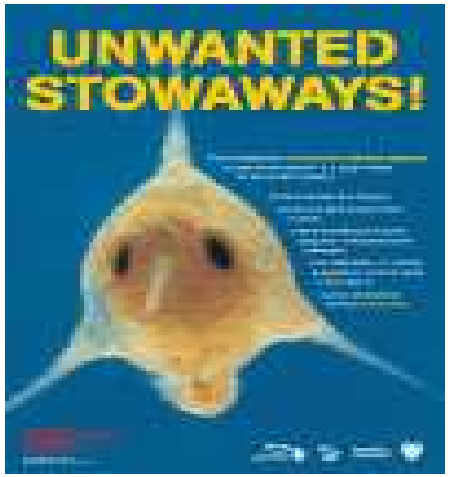
http://www.kingsnake.com

Nariva swamp, Trinidad, a Ramsar site

http://www.ducks.org

- Caribbean 'biodiversity hotspot'
- High level of endemicity
- Ramsar and UNESCO World heritage sites
- Ecosystems provide services, food security and support vital industries, e.g. agriculture, fisheries, tourism
- Global connectivity, especially of marine ecosystems

Caribbean vulnerability to IAS



Complexity of the region:

- Geo-physical and ecological
- Political, social & economic
- Multiplicity of pathways
  - growing numbers of tourists
  - high volume of traded commodities
  - Increase in leisure, commercial, air and sea traffic
  - Deliberate introduction of ornamental plants, pets and aquaculture organisms
- Inadequate capacity and linkages between key stakeholders
- Influence by trading partners

Assessment of Caribbean Alien Species

Kairo et al. (2003) reported 552 alien species in insular Caribbean:

- 449 terrestrial (390 naturalized / invasive)
- 55 freshwater (10 naturalized / invasive)
- 18 marine (16 naturalized / invasive)
- Acknowledged: serious knowledge gaps in all areas, particularly aquatic (marine, freshwater) ecosystems:

Lopez & Krauss (2006) reported 118 marine species (based on a 2006 review of the Wider Caribbean), including:

- 39 fish
- 31 arthropods
- 15 molluscs
- 14 microalgae

IAS Priorities defined

In 2002 - 2003, CAB International (CABI), in collaboration with The Nature Conservancy (TNC) undertook a project 'Invasive Species Threats in the Caribbean Region'

The report (Kairo et al. 2003) identified the following priority areas:

- Development of national and regional policies and strategies
- Specific action plans to deal with present and potential problems in terrestrial, freshwater and marine ecosystems
- A framework for exchange of information, in particular networking with existing / ongoing or proposed projects / activities
- Access to information:
  - Strengthening existing national / regional mechanisms OR
  - Creation / development of a specific initiatives focussed on the Caribbean

IAS Priorities defined …. (cont'd)

- Capacity building (prevention / management of IAS, taxonomy)
- Regulatory and legislative frameworks: awareness-raising among policy and decision makers
- Global linkages (Global Invasive Species Programme (GISP), International Maritime Organization (IMO) etc

Development of a proposal for funding by the Global Environment Facility

Activities began in 2003, with consultations to develop partnerships and linkages

- Global:
  - Organizations involved in global projects dealing with Invasive Alien Species (IAS): GISP (of which CABI is a founding member), IMO, TNC and others
  - United Nations Environment Programme (UNEP): one of the executing agencies for Global Environment Facility (GEF) projects
- Regional agencies, including the Caribbean Invasive Species Working Group (CISWG - formed during the 2003 CFCS Meeting in Grenada)
- National organizations – Ministry of Agriculture / Environment and related agencies, in particular GEF Focal Points in the countries that expressed an interest in participating in the project

Participating countries

- The Bahamas
- (Cuba)
- Dominican Republic
- Jamaica
- St. Lucia
- Trinidad and Tobago

Other countries will be invited to participate: based on willingness to contribute to project objectives and outcomes

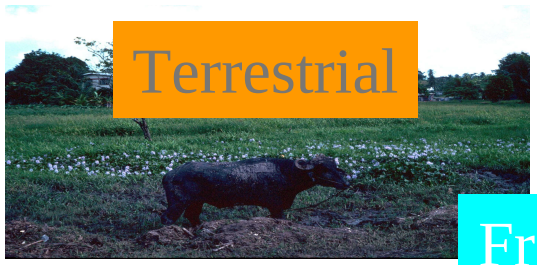
Project Goal and Objective

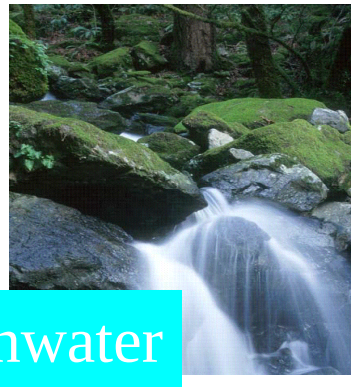
Goal: The project goal is to conserve globally important ecosystems, the species and genetic diversity within the insular Caribbean

Objective: The project objective is to mitigate the threat to local biodiversity and economy from IAS in the Insular Caribbean

Components of Full-size Project

1. Development of National IAS Strategies: Bahamas (revising); Dominican Republic; Jamaica, St. Lucia and Trinidad and Tobago.
2. Establishment of a Caribbean-wide Cooperation and Strategy.
3. Knowledge Generation, Management and Dissemination
4. Increase Capacity to Strengthen Prevention of new IAS Introductions in Terrestrial, Freshwater and Marine Systems.
5. Increase Capacity to Detect, Respond, Control and Manage IAS Impacts in Terrestrial, Freshwater and Marine Systems





Main Stakeholders

Implementing Agency: UNEP. Task Manager, Kristin McLaughlin.

Lead Executing Agency: CABI CLA, Naitram (Bob) Ramnanan, Project Manager.

National Executing Agencies:

Bahamas: Department of Marine Resources

Dominican Republic: Secretaria de Estado de Medio Ambiente y Recursos Naturales (SEMARENA)

Jamaica: National Environmental Management Agency (NEPA)

St. Lucia: Ministry of Agriculture Lands Forestry and Fisheries (MALFF).

Trinidad and Tobago: Ministry of Agriculture Lands and Marine Resources. (MALMR).

Participating Countries Pilot Projects

Bahamas:

1. **Management of the Lionfish *Pterois volitans***

Dominican Republic:

1. **Eradication of alien vertebrate predators and one alien invasive Plant Species from Alto Velo island, species targeted: brown and black rat; cat and neem plant**
2. **Eradication of an alien vertebrate predators and herbivores from Cabritos Island in Lake Enriquillo species targeted: cat; goat; and donkey**

Participating Countries Pilot Projects

Jamaica:

1. **Management and control Lionfish.**
2. **Selective eradication of vertebrate predators in the last remaining habitat of the Jamaican Iguana in the Portland Bight Protected Area. Species targeted: Dog; Goat; Cat; Mongoose; and Feral Pigs.**
3. **Control and management of two invasive freshwater animals and plants in the Lower Black River Morass (Ramsar Site) to prevent further habitat loss. Australian Red Crayfish; Sucker mouth catfish and Paper Bark Tree/Melaleuca.**

Participating Countries Pilot Projects

St. Lucia

1. Protection of Saint Lucia's unique biodiversity through eradication of invasive alien Iguanas.
2. To protect the Maria Island Nature Reserve for the threat of Invasive Alien Species (IAS)

Trinidad and Tobago

1. The maintenance of the native biodiversity of the ecologically sensitive area – Nariva Swamp by the production and transplanting of IAS – free palm seedlings. Species targeted: Red Palm Mite and Coconut Moth
2. Preventing the entry of frosty pod rot of Cocoa)
3. Management and Control of the marine invasive green mussel
4. Mitigating the spread and effects of the invasive green alga

Pathways and Collaboration for IAS in the Caribbean?

Dr. Heike Meissner led a team that evaluated the pathways for exotic plant pest movement into and within the Greater Caribbean. They presented their report to CISWIG in January 2009. The pathways identified were: 1. human movement; 2. airline passenger baggage; 3. international mail; 4. maritime traffic; 5. hitchhikers; 6. wood packaging material 7. forestry 8. propagative materials; and 9. natural spread.

The relative importance of each pathway was rated based on the available data, and recommendations for improved safeguarding were provided

Risks associated with the various identified pathways into the Caribbean for IAS?

The pest risk associated with human movement, hitchhikers, wood packaging materials, forestry, and propagation materials was rated as very high. The pest risk associated with airline passenger baggage, mail, and natural pest spread was rated as medium. None of the pathways assessed was rated as low-risk.

Even though the pathways are discussed separately, there is considerable overlap between them. This must be taken into account in the development of mitigation measures.

Relevance of GEF initiative to wider Caribbean

- Regional approach to tackle IAS issues
- Co-operation and linkages to facilitate information exchange
- Support ongoing/ future IAS initiatives in the region
- Strengthen position to develop national/collective IAS strategies
- Opportunity for countries to contribute to the region-wide IAS strategy to be developed.

Regional and Global Linkages

- UNDP and IMO: GloBallast
- UNDP/GEF: Seychelles IEM Program (Mainstreaming Prevention and Control Measures for IAS into Trade Transport and Travel across the Production Landscape)
- UNDP/GEF: Ecuador – Control of Invasive Species in the Galapagos Archipelago
- UNDP/GEF: Regional – Pacific Invasive Species Management
- UNEP/UNDP/GEF: Regional – Integrating Watershed and Coastal Area Management (IWCAM) in the Small Island Development States (SIDS) of the Caribbean
- UNEP/GEF: Regional Removing Barriers to Invasive Plant Management in Africa

Project Partners and Linkages

- Endorsement by CISWG and CARICOM Council for Trade and Economic Development (COTED) and building on their programme and activities, e.g.:
  - Caribbean Invasive Species Surveillance and Information Program (CISSIP)
  - Caribbean Regional Invasive Species Integrated Strategy (CRISIS)
  - USDA pathway analysis
  - Novel plant health d-groups
- Build on national / regional experiences and programmes, e.g.:
  - Caribbean Environment Programme (CEP) desk study on marine invasive species (Lopez & Krauss, 2006)
  - Apply / adapt regional and global expertise locally as needed and appropriate, such as NOAA and TNC freshwater invasives training and assessment
  - Strengthen existing databases, e.g. GISD, I3N, *etc.*