National Environment and Planning Agency

Disaster Risk Reduction and Climate Change Adaptation within the Local Development - An Ecosystem Based Management Approach

Jamaica's National Launch of the Global Campaign Making Cities Resilient

Hotel Four Seasons

MAY 7-8 2013

Anthony McKenzie & Gregory Bennett

Coastal Protection Structures

US$65,000,000 to raise a section of the Palisadoes an additional 3m a.s.l.

- 3.5km rubble mound revetment is being constructed.
- Beach dunes are being re-established.

CCA and Ecosystem Services

Objective: Demonstrate the importance of natural ecosystems in disaster risk reduction

CCA and Ecosystem Services

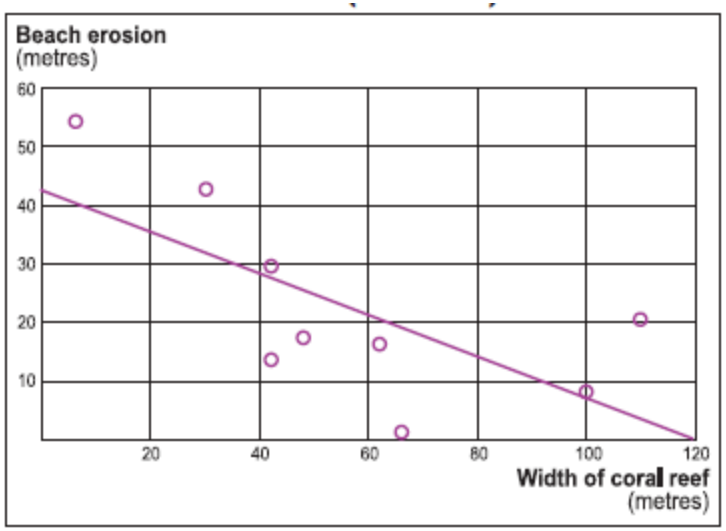
In recent times, people have started to pay attention to the direct and indirect links between climate change risk and the presence of intact and healthy ecosystems (Gilman et al 2008).

Importance of Coastal Ecosystems

Natural Buffers

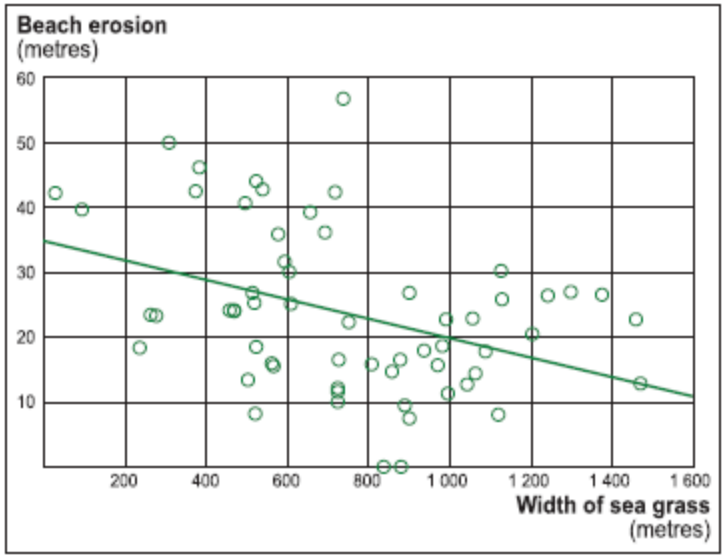
Ecosystems such as mangrove forests, coral reefs, floodplains and forests act as natural, dynamic barriers that can protect vulnerable communities against natural hazards such as floods, hurricanes, and tsunamis (Cahoon and Hensel 2006)

Importance of Coastal Ecosystems



Width of coral versus beach erosion (in metres)

Width of sea grass versus beach erosion (in metres)



Impact on Coastal Ecosystems

Destruction of the environment	Socio-Economic Impacts
• Wetlands • Coral Reefs • Coastal water supply • Beaches	• Loss of life and livelihood • Destruction of social and economic infrastructure • Loss of earnings

Building Natural Resilience
Ecosystems Services

Coral Reef

- The island has 1240 km^2 of coral reef area.
- Fringing, patch and barrier reefs surround just over 50% of Jamaica's shoreline within 50 m from shore.

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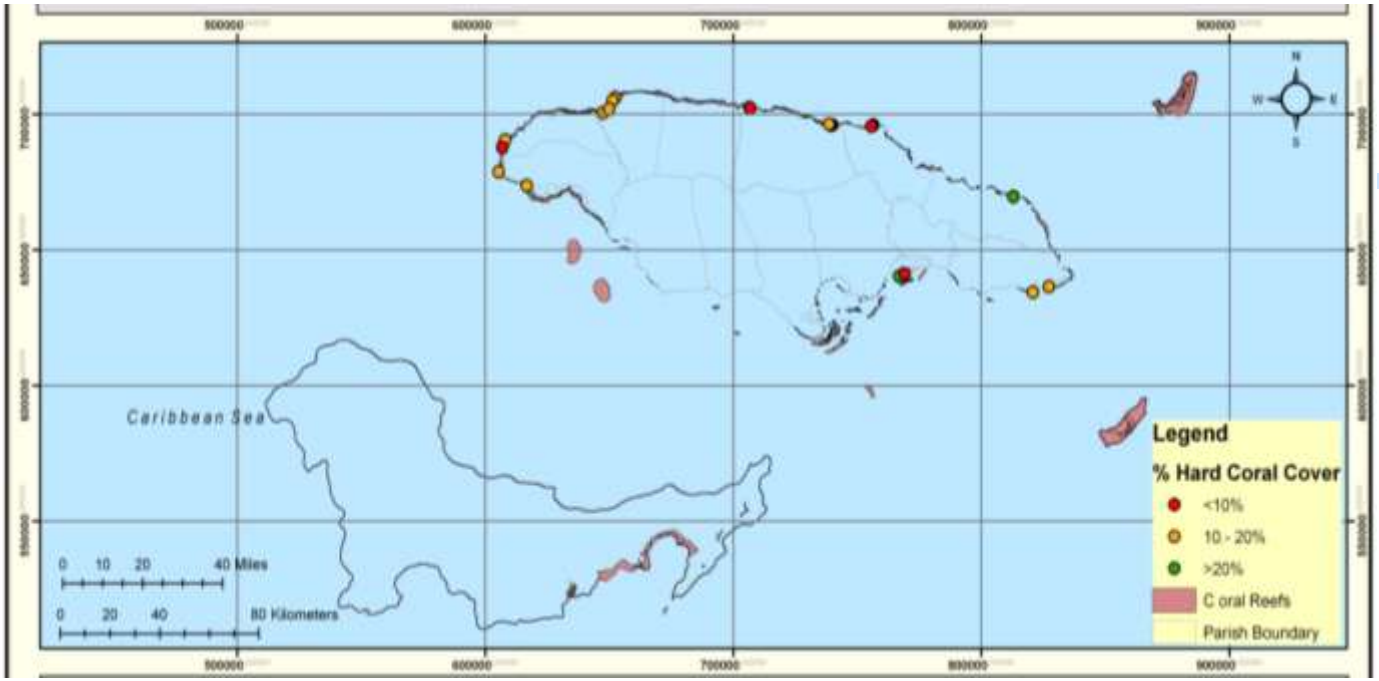
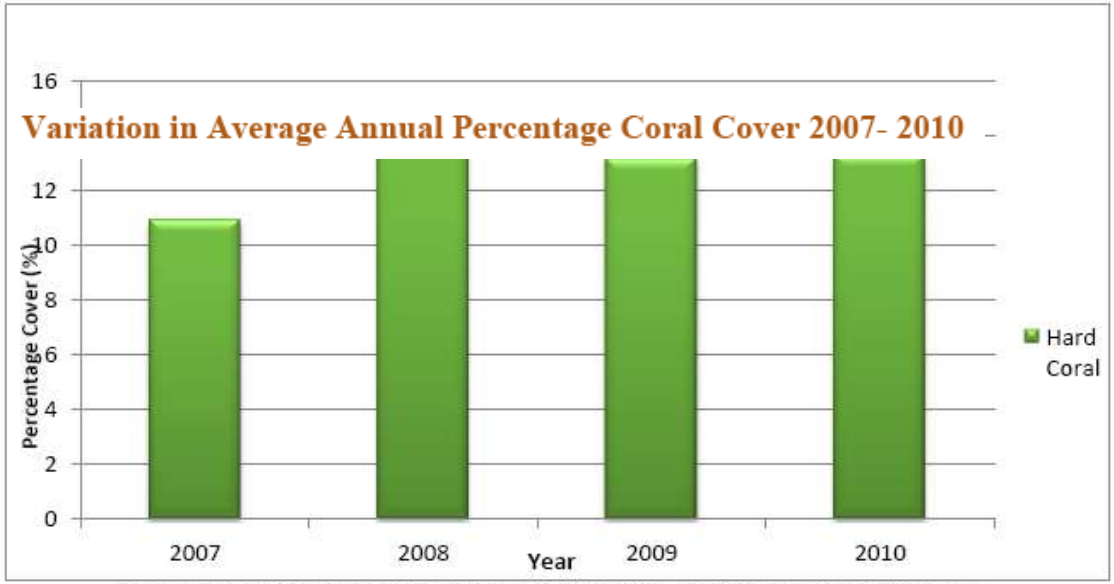
State of Corals and Coral Reefs





Source: National Environment and Planning Agency - Reef Status and Trends 2010

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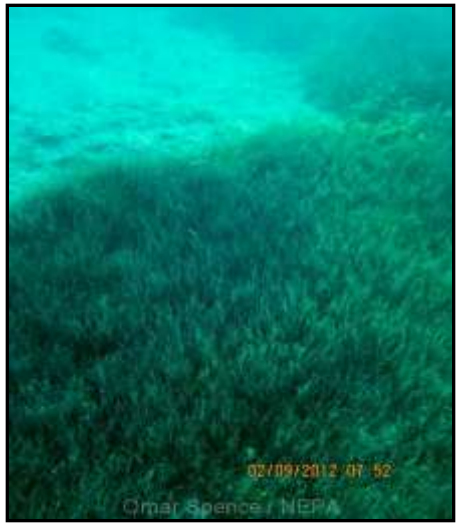
Ecosystems Services

Seagrass



- No complete record of Jamaica's seagrass in terms of abundance, distribution and health estimated at 3500 km^2 .
- During the period 2007 to 2010, 121,326.34 m^2 of seagrass were removed or relocated for approved coastal development.

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Ecosystems Services

Mangroves

- The aerial extent of Jamaica's coastal wetlands is estimated to be 17,700 ha.
- Since 2007, 40.68 ha of mangroves have been removed or relocated for approved development. This accounts for 0.23% of Jamaica's total estimated coastal wetlands.

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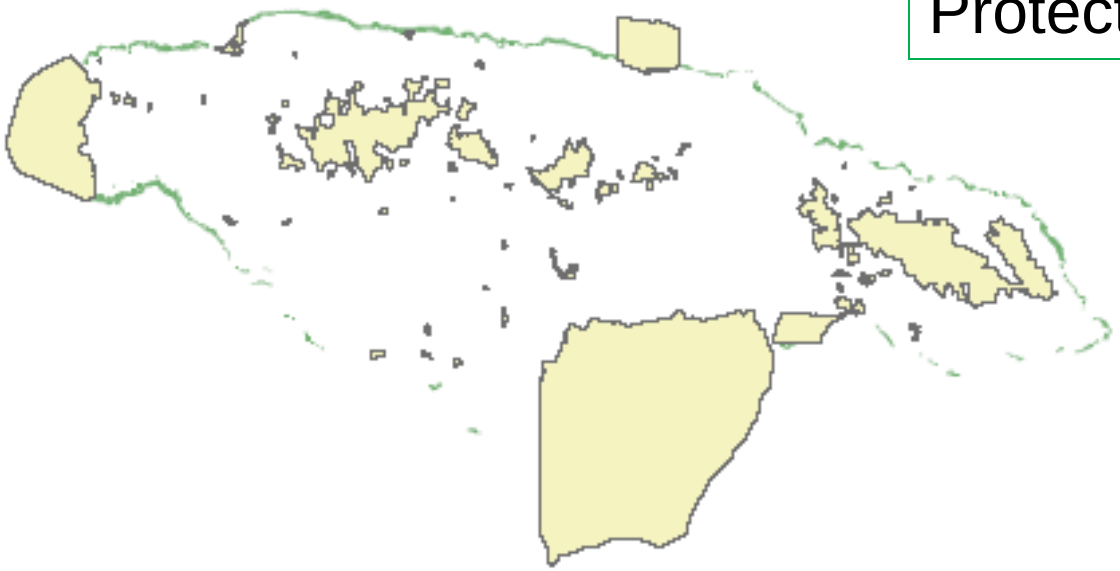
Ecosystems Services



Protected Areas

Terrestrial protected areas represent approximately 200,000 ha or approximately 18% of Jamaica's total land

Marine protected areas account for 180,000 ha or approximately 1.1% of Jamaica's total marine area

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Ecosystems Services

- 26 Watershed Management Units
- 4 are severely degraded
- 10 are categorised as least degraded

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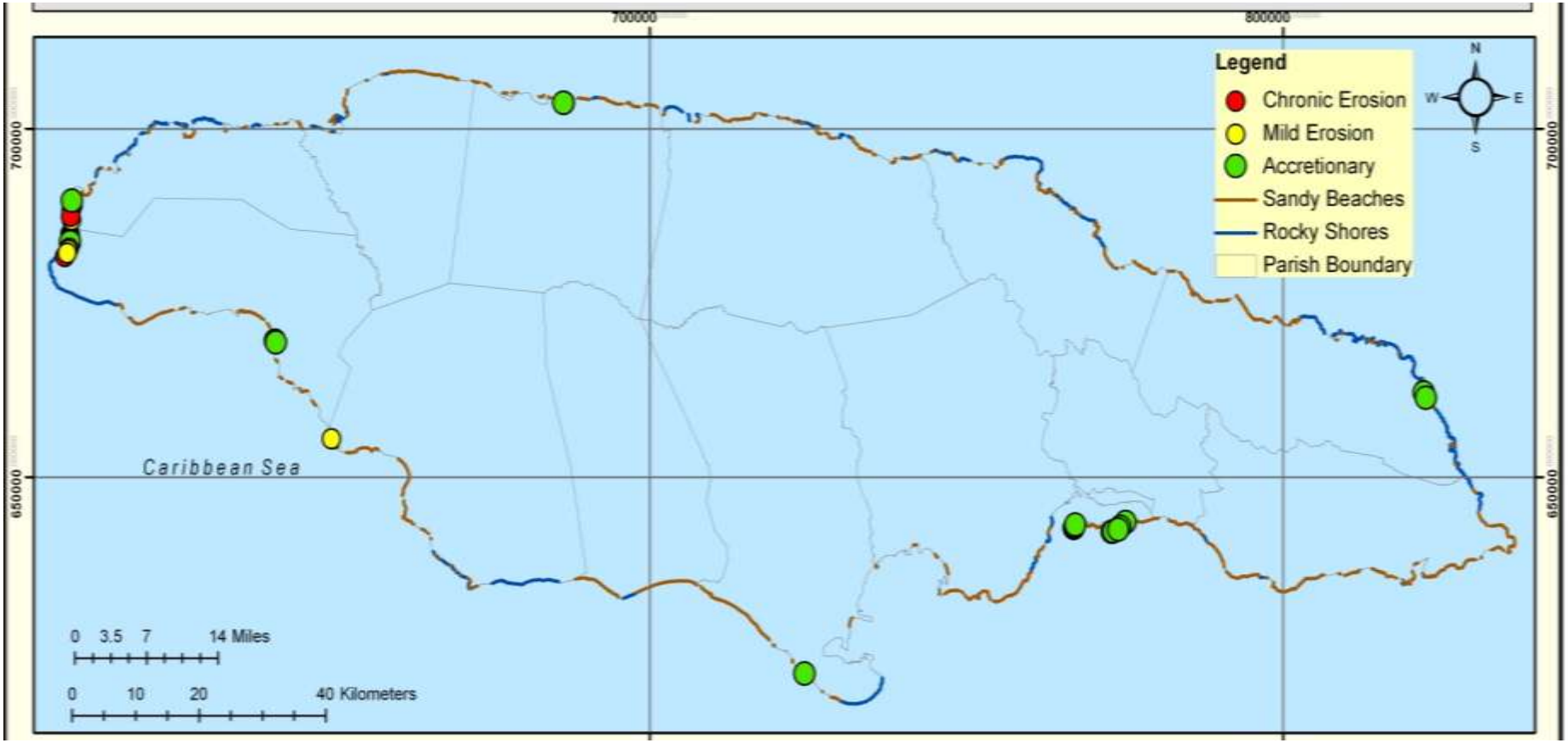
Beach Vulnerability



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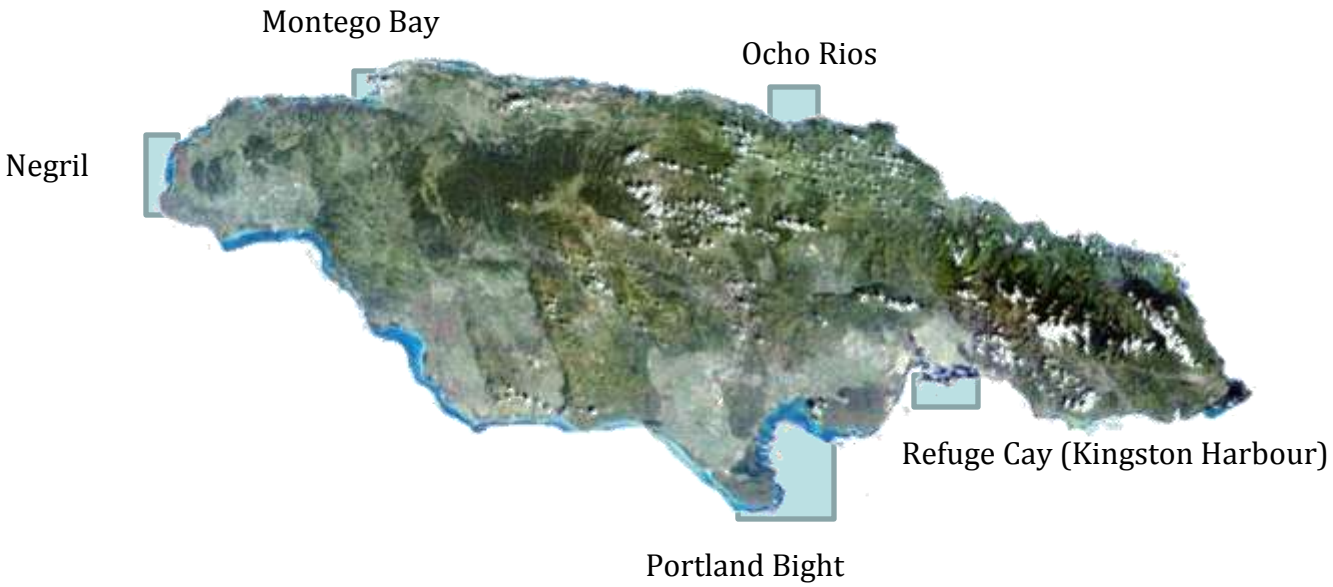
- Project geared towards Increasing Resilience of Coastal Ecosystems

  - Seagrass Restoration
  - Mangrove Restoration
  - Deployment of Artificial Reef Structures
  - Beach Restoration

GOJ/EU/UNEP CLIMATE CHANGE ADAPTATION & DISASTER RISK REDUCTION PROJECT

GOJ EU UNEP

Project Sites



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Seagrass Restoration

- Seagrass restoration being carried out in **Negril** and **Portland Bight**
- The total area in Negril to be restored is approximately **2,970.12m²**

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Mangrove Restoration

- Mangrove Restoration will be carried out in Portland Cottage, Portland Bight and Refuge Cay, Kingston Harbour
- The restoration goal is to restore 45% of the selected degraded area.
- Portland Cottage: 5.09ha; 45% =2.2905ha
- Refuge Cay: 1.962ha ha; 45% =0.8829ha
- Total area to be restored for both areas = **3.1734ha**

GOJ/EU/UNEP CLIMATE CHANGE ADAPTATION & DISASTER RISK REDUCTION PROJECT

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Artificial Reef Structures

Structures being used are Biorock® and Eco-coral ®

- Biorock® - Negril along the Sandals, Negril property.
- Eco- Coral ® - the Montego Bay Marine Park.

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Beach Restoration

ShoreLock™ will be applied to 500 metres of Beach in Negril and 250 metres in Font Hill

Beach Restoration

Wave Attenuation Device (WAD) will be installed in Old Harbour Bay to curb erosion along the most vulnerable area of the coastline

Policy and Institutional Response

- Policy for Jamaica's System of Protected Areas
- Beach Policy for Jamaica
- Coral Reef Protection and Preservation Policy and Regulation,
- Mangrove and Coastal Wetlands Protection Draft Policy and Regulations,
- National Policy for the Conservation of Sea grass, draft
- National Strategy and Action Plan on Biological Diversity in Jamaica,
- National Ocean and Coastal Zone Management Policy
- *Climate Change Policy and Action Plan*

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Options and Technologies for Coastal Adaptation

Protect – (managed) Retreat - Accommodate

Protect

- Hard Structural options
- Soft structural options
- Indigenous options

Retreat

- Set-back zones
- Relocating threatened buildings
- Phased – out or no development in susceptible areas

Accommodate

- Modification of land use
  - development orders and plans
- Modification of building styles

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KEY MESSAGES

- Learn from past experiences
- Invest further in site and hazard specific research – particularly where vulnerable communities are identified
- Sensitise communities and policy-makers on the measurable adaptation and mitigation effects of well-managed ecosystems,
- Natural buffers can offer significant protection, and should be used with other risk management components, such as early warning systems.

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