Jamaica’s marine genetic resources: challenges and opportunities

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United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea
June 25-29, 2007, UN HQ New York

Jamaica

Area: 10,990 km² (4,243 mi²)
Total coastline: 1,022 km (634 mi)
Population: 2.7 million
Planktonic and pelagic communities exist in the offshore water as well as a rich and relatively un-studied deep-water benthic fauna.

What is known

- What is known
  - 3427 species of marine flora and fauna
  - 143 genera from deep sea

- What is unknown
  - Specimens collected, yet to be identified
  - ~1 million species yet to be discovered
Experiences in collections

• Research laboratories
  – Port Henderson
  – Hofstra
  – Port Royal
  – Discovery Bay

• Expeditions
  – *Eastward* and *Gosnold* (1960/70)
  – Research institute from Florida (1990’s)

• On going collections
  – Locally (Ascidians)
  – Overseas

Genetic Resources Policy

• NEPA has responsibility for access to genetic resources

• Protected, endangered & endemic sp - CITES, require MTA

• No Material Transfer Agreement for non-endemic sp

• No policy to regulate access to genetic resources (draft Bio-safety policy 75% complete)
### Relevant Institutions

<table>
<thead>
<tr>
<th>Institute of Jamaica</th>
<th>NGOs</th>
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<tbody>
<tr>
<td>• Taxonomic Collection</td>
<td>• Montego Bay Marine Park</td>
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<td>• Scientific focal point of CBD</td>
<td>• Northern Jamaica Conservation Association</td>
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<tr>
<th>University of the West Indies</th>
<th>Private Sector</th>
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<td>• Centre for Marine Sciences</td>
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<td>• Life Sciences Dept</td>
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<td>• Marine laboratories</td>
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<td>• Chemistry Dept</td>
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<td>• Biotechnology Centre</td>
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<td>• Natural Products Institute</td>
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### Harvesting of Sea Squirts

- Through agreement with PharmaMar.
- Supply 500 kg of the ascidians, frozen and shipped
- One shipment made, analogue of the active compound subsequently synthesized

Contained compounds called *ecteinascidins*

Useful in alleviating certain childhood cancers, leukemia and the treatment for inflammatory conditions

*Ecteinascidia turbinata*
ICBG Programme
New Drugs from Marine Natural Resources from Jamaica reefs Project (UMISS/UWI)

Medicinal potential for marine life in Jamaican coral reefs, has the potential to bring important pharmaceuticals to the marketplace.

Preliminary Grant Application
- Samples collected and exported under a Materials Transfer Agreement.
- Filing of a US Utility Patent Application based on materials collected in Jamaica

Application unsuccessful due to degraded status of Jamaica’s reefs

Restoration of Coral Reefs

- In association with the National Institute of Oceanography in Haifa, Israel
- Reef building coral species susceptible to bleaching
- Extract DNA from the zooxanthallae
- Corals with resistant strains used for rehabilitation
- Training to take place in Israel in 2008
Other on going activities

• **Teaching** - DNA extraction - sea urchin and seagrass (teaching methodology)

• **Research** - Chemical assays of marine algae, fungi, sponges, gorgonians

• **Collection** - by overseas researchers, extraction of bioactive compounds from sponges

Challenges

• Limited knowledge about marine biodiversity,
  – deep sea and
  – extensive EEZ,
  – lack of expertise in species identification
  – Limited knowledge of invasive species

• Limited capacity
  – Facilities
  – Training/knowledge/technology
  – research
  – commercialization
Challenges (cont’d)

• Limited experience with access and benefit sharing, mistrust

• Illegal removal of organisms

• Threat to the livelihood of resources users

Opportunities

• For various types of research
  – Taxonomic/inventory
  – Biological/Ecological
  – Relatedness of species and adaptation potential

• To discover bioactive compounds
  – Treat and cure diseases
  – Food, health and cosmetic etc
  – Economic benefits

• Natural resource management, and enforcement and public awareness & education

• Collaboration/private investment
Thank You

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