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Jamaica's marine genetic resources: challenges and opportunities

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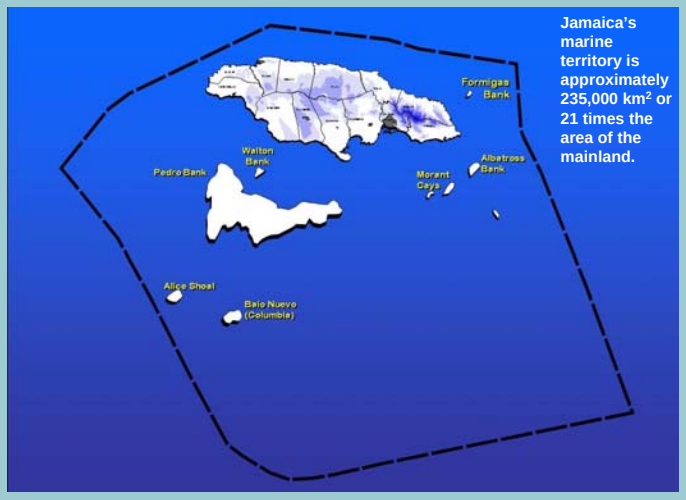
Jamaica

Area:10,990 km² (4,243 m²)
Total coastline:1,022 km (634 m).
Population: 2.7 million

Exclusive Economic Zone



Jamaica's marine territory is approximately 235,000 km^2 or 21 times the area of the mainland.

Planktonic and pelagic communities exists in the off shore 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

Institute of Jamaica
- Taxonomic Collection
- Scientific focal point of CBD

NGOs
- Montego Bay Marine Park
- Northern Jamaica Conservation Association

University of the West Indies
- Centre for Marine Sciences
- Life Sciences Dept
- Marine laboratories
- Chemistry Dept
- Biotechnology Centre
- Natural Products Institute

Private Sector

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 market place.

Preliminary Grant Application

–Samples collected and exported under a **Materials Transfer Agreemen**t.

–**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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