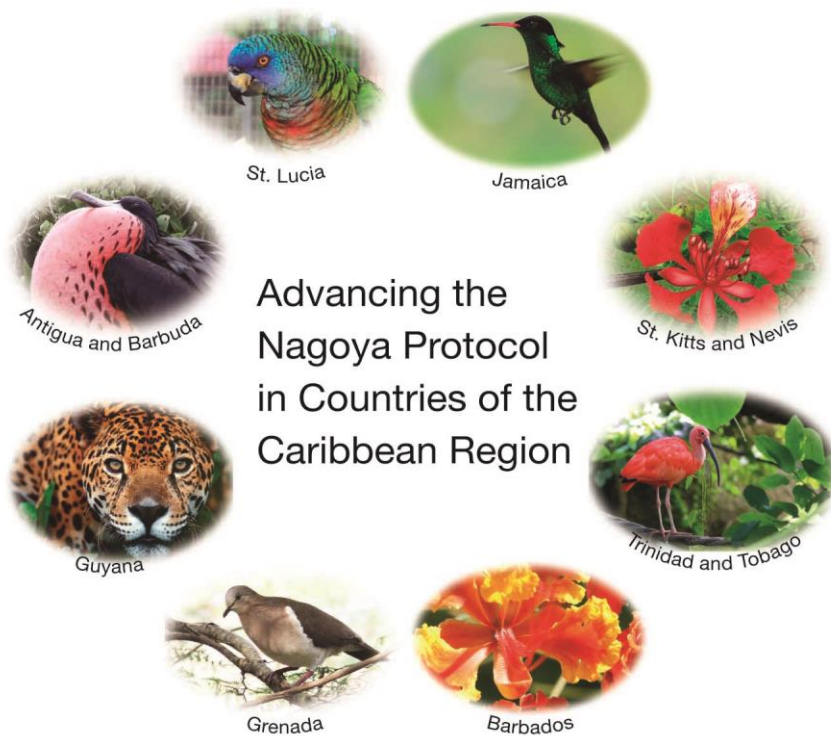




BIO-PROSPECTING IN THE CARIBBEAN REGION

Caribbean ABS Institutional Mapping



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Table 1 Acronyms and Abbreviation

ABS	Access and Benefit Sharing
ACP	Asia-Caribbean-Pacific
CARICOM	Caribbean Community
CBD	Convention on Biological Diversity
CROSQ	CARICOM Regional Organization for Standards & Quality
FAO	Food & Agriculture Organization
GEF	Global Environmental Facility
GIZ	German Technical Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH)
GIZ (ABS-CDI)	German Technical Cooperation (ABS – Capacity Development Initiative)
ILCs	Indigenous and Local Communities
IUCN	International Union for the Conservation of Nature
MAT	Mutually Agreed Terms
MTA	Material Transfer Agreement
MEA	Multi-Lateral Environmental Agreement
NBSAP	National Biodiversity and Action Plan
NC	National Coordinator
NP	Nagoya Protocol
NEAP	National Environmental Action Plan
NGO	Non-Governmental Organization
NMNP	New Marine Natural Product
NP	Nagoya Protocol
OECS	Organization of Eastern Caribbean States
PIC	Prior Informed Consent
PIF	Project Information Form
PIR	Project Implementation Review
RSC	Regional Steering Committee
SMART	Specific, Measurable, Achievable, Relevant, Timely Indicators
TA	Technical Assistance
TK	Traditional Knowledge
TOR	Terms of Reference
TNC	The Nature Conservancy
TRAMIL	Programa de investigación aplicada a la medicina popular del Caribe
UNEP	United Nations Environment Programme
UWI	University of the West Indies

EXECUTIVE SUMMARY

In June 2016, the project team of Anthony Richards, Sylvia Mitchell and Kevel Lindsay were contracted by IUCN to *Advance the Nagoya Protocol in Countries of the Caribbean Region – Access and Benefits Sharing – Bio-prospecting in the Caribbean Region*. This report is one of the key outputs from this initiative, and forms part of the IUCN's efforts to support countries of the Caribbean to facilitate access to their genetic resources and benefit sharing in a fair and equitable way, in line with the Convention on Biological Diversity and the Nagoya Protocol (NP).

This group of reports on *Bio-prospecting in the Caribbean Region*, outlines and summarises the current status of knowledge about biodiversity in the eight profiled countries, stocktaking of traditional knowledge in the Caribbean, and provides several examples of biodiversity research, manufacturing, extraction, products, industry and the interconnections between these and the natural landscapes of the islands.

The Caribbean ABS Institutional Mapping report in particular outlines the local and regional institutions, government and civil, that focus on biodiversity conservation, biodiversity research, studies, reports, that provide management and oversight, and also the staff and key personnel within these agencies. Also included are relevant policies and legislations that are concerned with biodiversity, conservation, research and bioprospecting, medical, health and enterprise development. Eight countries are reviewed in detail: Antigua and Barbuda, Barbados, Grenada, Guyana, Jamaica, St Kitts and Nevis, St Lucia and Trinidad and Tobago.

The report includes descriptions of key online resources, and a bibliography and government resources where biodiversity, bioprospecting and research are available.

This report aims to include as many relevant institutions and expertise available to ABS but does not claim to be comprehensive, not even for the eight countries included in this report. The authors apologize for any errors of omission and will include any relevant institution or expert in subsequent publications. The IUCN website has a roster of experts and countries are invited to nominate experts to this roster.

1.0 BACKGROUND

In June 2016, the project team of Anthony Richards, Sylvia Mitchell and Kevel Lindsay were contracted by IUCN to *Advance the Nagoya Protocol in Countries of the Caribbean Region – Access and Benefits Sharing – Bio-prospecting in the Caribbean Region*. This report is a key output from this initiative, and forms part of IUCN's efforts to support countries of the Caribbean to facilitate access to their genetic resources and benefit sharing in a fair and equitable way, in line with the Convention on Biological Diversity and Nagoya Protocol (NP). More specifically, the effort seeks the uptake of the NP and implementation of key measures to make the protocol operational in Caribbean countries. The project aims to overcome barriers linked to limited understanding of the NP and access and benefits sharing (ABS), and of the implications of protocol ratification and requirements for implementation, so that countries can make progress in ABS negotiations and take an informed decision regarding its ratification.

The Caribbean islands are of critical importance for global biodiversity conservation as large percentages of each species group are endemic to the region, often to particular islands, and even sections of an island, such as the Cockpit country of Jamaica. Levels of endemism are very high in the region: thus, 50 per cent of the plant life of the Caribbean is unique to the region (UNEP, 2010). These high valued genetic resources in the Caribbean are under threat due to land degradation, climate change, pollution from nutrients, unsustainable uses, and invasive alien species. The Nagoya Protocol offers the opportunity to make the best possible use of these genetic resources, generate and share benefits derived from their utilization, and return some of the revenue generated from these activities to the protection of the resources and the development of the countries where they were sourced.

The IUCN project on *Advancing the Nagoya Protocol in Countries of the Caribbean Region – Access and Benefits Sharing – Bio-prospecting in the Caribbean Region* consists of five components aimed at building knowledge between countries of shared assets, generating technical information that can later be used to build cohesive policies at the national level and collaboratively at the regional level, assisting countries to take steps and decisions conducive to ratification of the Nagoya Protocol assisting countries in developing the tools and guidelines required to implement the basic measures and bringing together the participating countries to allow for the maximum level of exchange and networking.

2.0 INTRODUCTION

The purpose of this document is to list the institutions and experts which are involved with activities related to the Convention of Biological Diversity and will be useful for the promulgation and practice of ABS and the Nagoya Protocol in the Caribbean. In summary, this document will cover:

National and regional institutions that contribute to ABS management in eight countries (Antigua, Barbados, Grenada, Guyana, Jamaica, St. Kitts and Nevis, St Lucia, and Trinidad and Tobago) in the Caribbean. The information in this document will include:

- a review of the regulatory institutions involved in ABS management in the project countries.
- IP-related treaties and agreements signed by the eight project countries.
- a detailed case study of St Kitts and Nevis.
- a regional review of the agencies that contribute to ABS capacity building in the region.

Stocktaking of expertise of non-regulatory organizations involved in promoting and/or protection the use of bioresources and associated traditional knowledge (TK) in the eight project countries as well as the wider Caribbean. This includes:

- a review of non-regulatory agencies involved in biological resource monitoring and TK in the Caribbean.
- Identification of expertise in ABS within non-regulatory organizations within the Caribbean region.
- Identification of expertise within non-regulatory agencies on TK within the Caribbean.

This document begins with an introduction to bioprospecting, which for the purpose of this document, begins with biodiversity (plants, animals, microbes) as the base on which bioprospecting begins, and travels through the value-chain to the market-place. While there may be institutions and expertise in the Caribbean relevant to ABS and the Nagoya Protocol along this value-chain, along with the regulators that may be left out, this document does not purport to be complete or all-inclusive. Instead, it attempts to bring together as many as possible relevant institutions and expertise together into one document so as to provide a base which can be built on by others so that we can continue to grow in this area.

3.0 WHAT IS BIOPROSPECTING

Bioprospecting in this document is not limited to the terms of the Nagoya Protocol but instead a value-chain approach is taken from biodiversity to the market-place. Details on the Caribbean hotspot and its biodiversity are in an accompanying document, another document considers the Traditional Knowledge in the Caribbean and a third document reviews bioprospecting in the Caribbean. This document concentrates on the institutions and expertise who have helped assemble knowledge on biodiversity and associated traditional knowledge, the researchers, the regulators including the Government, and the end-users in the market place. In order to do this, we will begin with some definitions (Table 2).

Table 2 Definitions used relevant to ABS and the Nagoya Protocol

Term	Definition
Biodiversity	Total varieties of plant, animal and microbe life in the world or in a particular habitat, a high level of which is usually considered to be important and desirable.
Traditional Knowledge	Knowledge systems embedded in the cultural traditions of regional, indigenous, or local communities? Traditional knowledge includes knowledge about traditional technologies of subsistence, midwifery, ethnobotany and ecological knowledge, traditional medicine, celestial navigation, ethnoastronomy, climate, and others.
Ethnobotany	Study of a region's plants and their practical uses through the traditional knowledge of a local culture and people.
Ethnomedicine	Comparative study of how a traditional or local cultures view disease and how they treat or prevent it using local biodiversity; also, the medical beliefs and practices of indigenous cultures.
Ethnopharmacology	Scientific study of substances used medicinally, especially folk remedies, by different ethnic or cultural groups.
Pharmacognosy	Branch of knowledge concerned with medicinal drugs obtained from plants or other natural sources.
Bioprospecting	The search for plant and animal species from which medicinal drugs and other commercially valuable compounds can be obtained.
Biopiracy	The practice of commercially exploiting naturally occurring biochemical or genetic material, especially by obtaining patents that restrict future use, while failing to pay fair compensation to the community from which it originates.

From this table of definitions, it is very clear that the first and most important group of expertise lies in the local and indigenous communities. This expertise is called traditional knowledge and is highlighted in the sister document on '*Stocktaking of traditional Knowledge in the Caribbean*'. This document highlights the institutions and expertise on biodiversity, those that study traditional knowledge, research on the uses of biodiversity

for health and wellness, those institutions that patent these discoveries and those that carry out clinical trials along the value-chain, to the market-place.

To reduce the incidences of biopiracy, the exploitation of local communities, residents and indigenous people, and reduce corruption, poverty while increasing biodiversity conservation, management and sustainability, advocates began to call for the formalization of the practice of bioprospecting by the development of an international framework under the United Nations (UN). This was first spelled out in the *Convention on Biological Diversity* of 1992 in *Article 15*. Supplemental to the CDB, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (2011) was developed:

"[T]o further advance the implementation of the third objective, the World Summit on Sustainable Development (Johannesburg, September 2002) called for the negotiation of an international regime, within the framework of the Convention, to promote and safeguard the fair and equitable sharing of benefits arising from the utilization of genetic resources (Nagoya Protocol text and appendices, 2011).

The scope of the Nagoya Protocol (NP) applies:

"... to genetic resources within the scope of Article 15 of the Convention and to the benefits arising from the utilization of such resources. This Protocol shall also apply to traditional knowledge associated with genetic resources within the scope of the Convention and to the benefits arising from the utilization of such knowledge." (Nagoya Protocol text and appendices, Article 3, 2011).

The parties to the NP have agreed to the following 28 broad principles, in addition to the facilities for becoming signatories and ratifying the agreement:

- Fair and Equitable Benefit-Sharing
- Access to Genetic Resources
- Access to Traditional Knowledge Associated with Genetic Resources
- Special Considerations
- Contribution to Conservation and Sustainable Use
- Global Multilateral Benefit-Sharing Mechanism
- Transboundary Cooperation
- Traditional Knowledge Associated with Genetic Resources
- National Focal Points and Competent National Authorities
- The Access and Benefit-Sharing Clearing-House and Information-Sharing
- Compliance with Domestic Legislation or Regulatory Requirements on Access and Benefit-Sharing

- Compliance with Domestic Legislation or Regulatory Requirements on Access and Benefit-sharing for Traditional Knowledge Associated with Genetic Resources
- Monitoring the Utilization of Genetic Resources
- Compliance with Mutually Agreed Terms
- Prior Informed Consent
- Model Contractual Clauses
- Codes of Conduct, Guidelines and Best Practices and/or Standards
- Awareness-Raising
- Capacity building
- Technology Transfer, Collaboration and Cooperation
- Non-Parties
- Financial Mechanism and Resources
- Conference of the Parties Serving as the Meeting of the Parties to This Protocol
- Subsidiary Bodies
- Secretariat
- Monitoring and Reporting
- Procedures and Mechanisms to Promote Compliance with this Protocol

SOURCE: THE NAGOYA PROTOCOL. <https://gybinfo.files.wordpress.com/2014/07/2011-01-the-nagoya-protocol-on-abs-an-analysis-ceblaw-brief-gurdial.pdf>

4.0 THE BIODIVERSITY OF THE CARIBBEAN

4.1 The Caribbean countries

The Caribbean is a geographical area that consists of the Caribbean Sea, its islands, some islands bordering both the Caribbean Sea and the North Atlantic Ocean, and the surrounding coastal mainland countries. The region is southeast of the Gulf of Mexico and is located between North, Central and South America (Fig 1). Situated largely on the Caribbean Plate, the region comprises more than 700 islands, islets, reefs and cays (Caribbean, Wiki, accessed 09/11/17).

Land area: 239,681 km²

Population (2016): 43,601,839

Total Area: 2,754,000 km² (Wikipedia)

Geographically, the Caribbean has three groups of islands: Bahamas, Greater Antilles (Cuba, Jamaica, Hispaniola, Puerto Rico) and the Lesser Antilles. Geopolitically, the Caribbean Region includes:

- *The British/Anglophone Caribbean (CARICOM):* Anguilla, Antigua and Barbuda, Bahamas, Barbados, Bay Islands, Belize, Cayman Islands, Dominica, Grenada, Guyana, Jamaica, St Kitts and Nevis, St Lucia, St Vincent and the Grenadines, Trinidad and Tobago, Turks and Caicos Islands.
- *The British Overseas Territories:* Montserrat, British Virgin Islands.
- *The Dutch West Indies:* Aruba, Bonaire, Curacao, Saba, Sint Eustatius, Sint Maarten, Bay Islands, Surinam.
- *French West Indies:* Haiti, French overseas departments of Martinique and Guadeloupe (includes Marie-Galante, La Desirade and Les Saintes) and French overseas collectives of St Barthelemy and St Martin.
- *The Spanish West Indies:* Dominican Republic, Cuba, Puerto Rico (US)
- *Mexico (Yucatan Peninsula)* (fig 1).

According to the Convention of the Sea, each Caribbean country has its own maritime boundary – the EEZ (fig 2). Two thirds of the Caribbean's international maritime boundaries have yet to be the object of an agreed convention between the bordering states in question (<http://atlas-caraibe.certic.unicaen.fr/en/page-122.html>).

- *Maritime (EEZ) boundaries between the Caribbean countries* (fig 2.)



Figure 1. Map showing Countries of the Caribbean (<http://www.slideshare.net/eqfred/definitions-of-the-caribbean>).

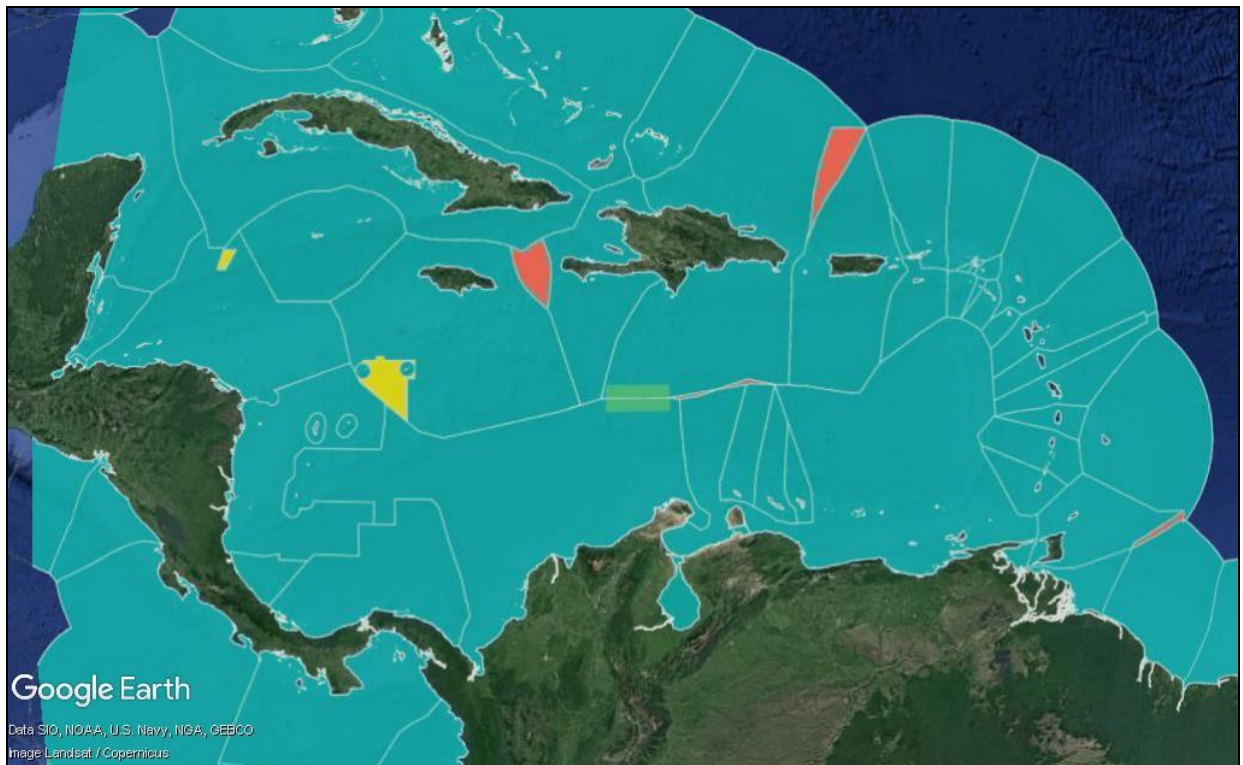


Figure 2. EEZ boundaries in the Caribbean.

4.2 The Caribbean hotspot

The Caribbean hotspot is an area high in biodiversity in danger of overexploitation (<http://www.eoearth.org/view/article/150636/>), [Caribbean Islands biodiversity hotspot – http://www.cepf.net](http://www.cepf.net)). The hotspot spans more than 4,000,000 km² of ocean and covers roughly 230,000 km² of land area, with the four islands of the Greater Antilles: Cuba, Hispaniola, Jamaica and Puerto Rico making up around 90 percent of the land area. It is a prime tourist destination - warm, inviting and clean. Biological diversity in the Caribbean islands is characterized by species richness. This includes about 11,000 plant species, of which 72 % are endemic (CEPT 2009).



Figure 3 Caribbean Island hotspot

The Caribbean Island Biodiversity Hotspot is composed primarily of the Bahamas and Greater and Lesser Antilles. A total of 180 genera (727 spp., ca. 9% of the species endemic to the Antilles) are restricted to this hotspot. Most of these genera are unispecific (51%), a pattern that is also found on other islands of the world. The majority of the endemic genera belong to the “Core Eudicot” clade, and they were published in two time periods (1854–1878 and 1904–1928). There are molecular phylogenies available for 63 of the endemic genera. However, phylogenetic reconstructions of only 21 genera are based on more than one independent DNA region and have well-

supported clades and good taxonomic sampling. Six of the endemic genera form part of early-branching groups. We could not infer biogeographical conclusions from the molecular phylogenies of most of the endemic genera. There is an urgent need for 1) additional field studies to learn the conservation status of these genera, 2) effective protection of the habitats where the most endangered genera occur, and 3) additional biological and systematic studies of the least understood genera (Francisco-Ortega 2007).

When there are areas within a country where there are species that are only found in that area, and it is under threat, this area is referred to as a 'Hotspot within a Hotspot'. An example is the Cockpit country and Blue Mountain range of Jamaica (fig 4a). These areas are also maroon land so could be considered a 'TK hotspot as well (fig 4b).

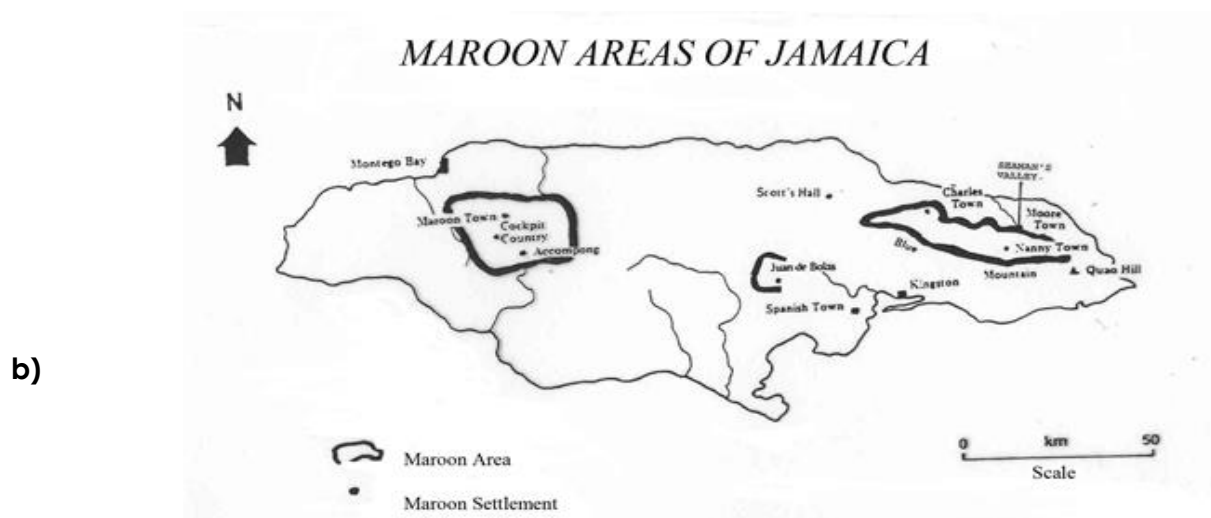
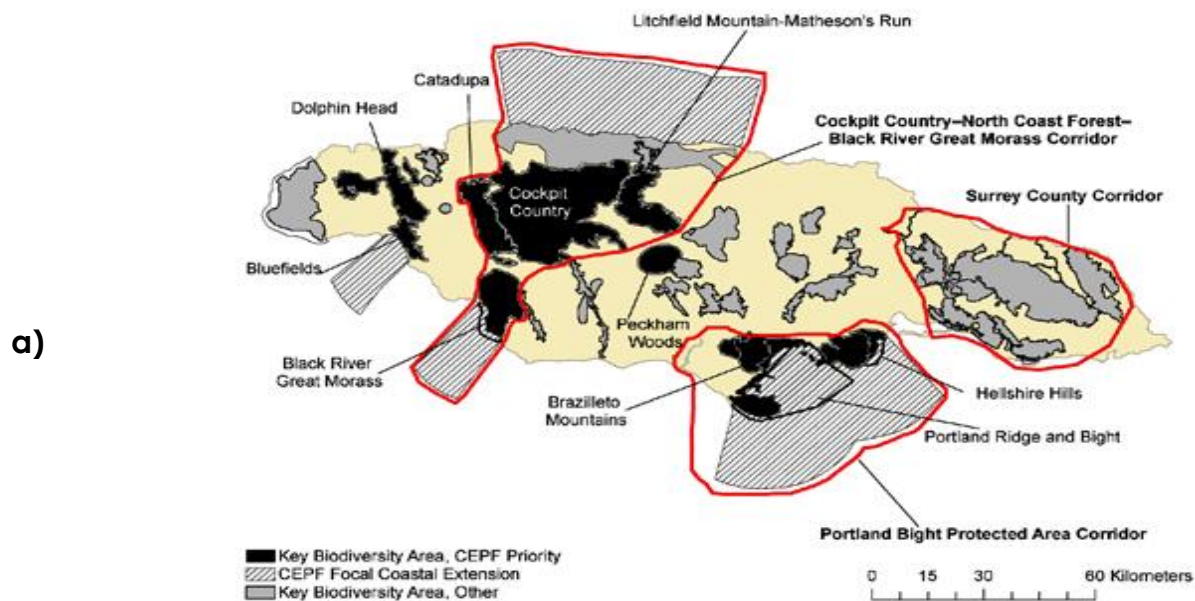


Figure 4 Jamaica hotspots in a hotspot

4.3 Development of an herbal industry in the Caribbean

From as far back as there is evidence of human life in the Caribbean, there is evidence of the use of plants for health purposes (Mitchel et al 2008). Over time, these plants were shared among the islands as the Amerindians travelled between the Caribbean islands and mainlands, and with the wider world when other nationals discovered the Caribbean. Germplasm started moving in both directions – in and out. As institutions were built, these plants were studied, such as at the University of the West Indies, Mona Campus, from its inception in 1948 (Mitchell and Ahmad 2006). Many of these early works resulted in patents that did not benefit the country of origin as those who provided the funds kept the intellectual property that ensued.

The peoples of the Caribbean have bought their cures (and plants) or developed cures in the Caribbean. While this has been predominately oral, it has started to be written down. This wealth of knowledge has been increasing with each generation, and with each wave of settlers. There are now at least 100 herbal enterprises making herbal soaps, lotions, creams, sprays, root tonics, liquors, spa products, nutraceuticals etc (fig 5). There are also some higher end products such as cannasol, amasol, and herbal cough syrups. Research is also increasingly becoming more sophisticated. In 2006, in Jamaica, it was estimated that there were 334 identified medicinal plants of which 193 plants had been studied at the Mona Campus of the University of the West Indies (Mitchell and Ahmad 2006). This University can now carry out anti-bacterial, anti-fungal and anti-cancer screens, drug development (diabetes, etc.) and clinical trials. Similar activities are taking place throughout the Caribbean with Cuba being the most developed.

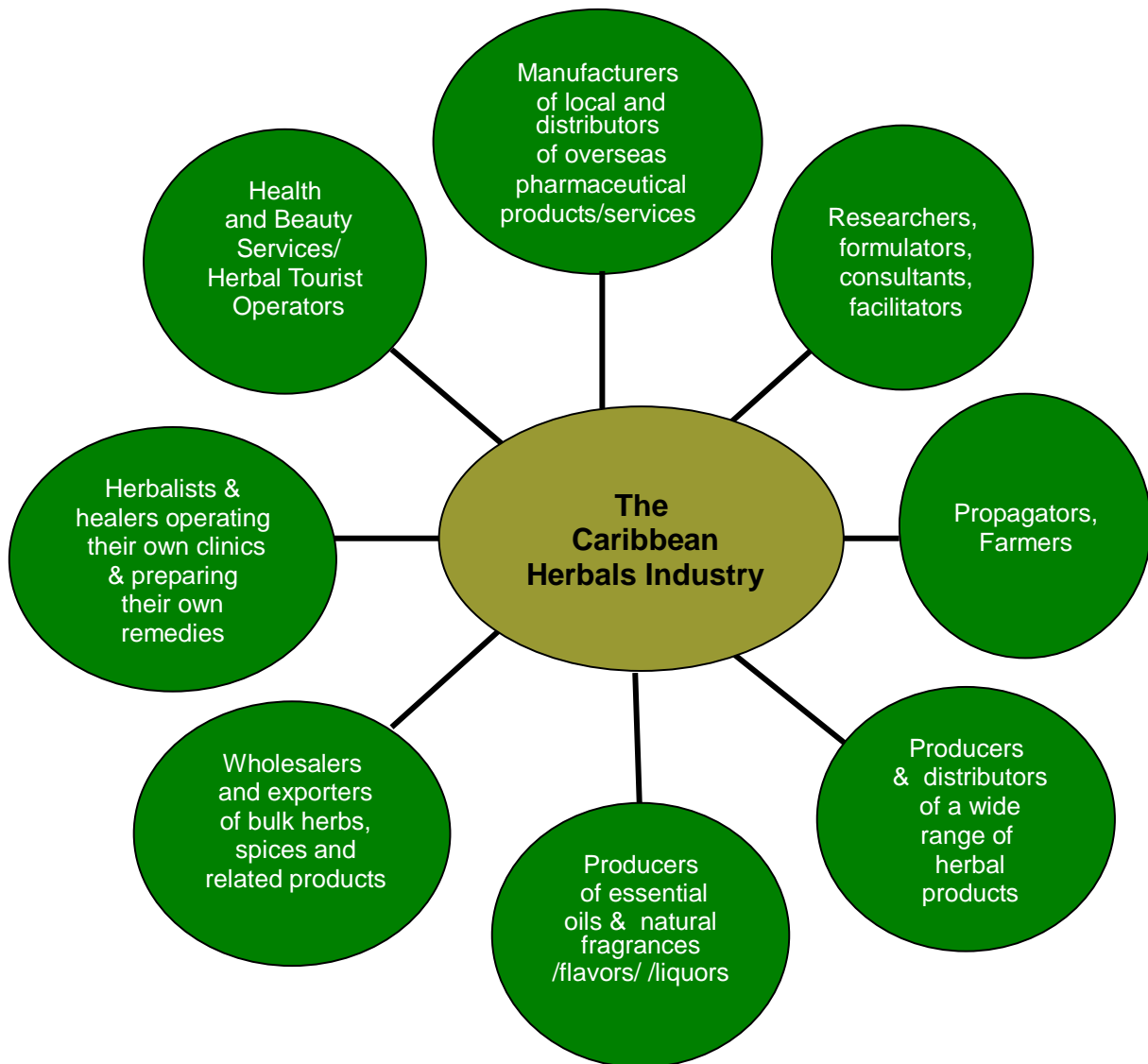


Figure 5 Model view of the herbal bioprospecting industry in the Caribbean.

5.0 CARIBBEAN INSTITUTIONS WITH ABS AND/OR TRADITIONAL KNOWLEDGE (TK) EXPERTISE

5.1 Mapping of Caribbean institutions with ABS / TK expertise

The following types of institutions in the Caribbean were identified during this mapping exercise as being of interest to ABS and the Nagoya Protocol. These include institutions having expertise in ABS and or TK in regulatory and non-regulatory organizations within the Caribbean region.

- A. Government agencies**
 - i. Focal points – ABS, Biosafety,
 - ii. Clearing House Mechanism
 - iii. Environment protectors
 - iv. Intellectual Property Offices
 - v. Plant Quarantine Units
 - vi. Government libraries
 - vii. Data and Monitoring (e.g. Agriculture, Fisheries)
 - viii. Research labs (crops, animals, microbes)
 - ix. Lawyers

- B. Scientific/Agricultural institutions**
 - i. Government research labs – Bodles Research Lab, Coconut Board
 - ii. Umbrella organizations – NCST
 - iii. Scientific institutions – SRC, Coconut Board etc.
 - iv. Universities – country bound (CASE, NCU, UTECH, UTT etc)
 - v. University businesses – CARIGEN, CARITOX
 - vi. Universities, regional - UWI
 - vii. Interregional institutions – CARDI, TRAMIL
 - viii. International – IICA, OAS

- C. Natural History organizations (attached to Govt, Academic or NGOs)**
 - i. Herbaria
 - ii. Botanical Gardens
 - iii. TK and Natural History custodians
 - iv. Marine Labs
 - v. Online medicinal plant databases (Carrington-Barbados, TRAMIL)

- D. NGOs**
 - i. Grantees of funds – EFJ, USAID, IUCN, OAS
 - ii. Environmental NGOs

- iii. Natural fibre NGOs
- 2.
 - E. Businesses (based on Caribbean biodiversity)
 - i. Essentials oils / Aromatherapy
 - ii. Hair care products
 - iii. Cosmeceuticals
 - iv. Household products (cough syrups)
 - v. Nutraceuticals
 - vi. Biopharmaceuticals
 - vii. Medical products

5.2 Institutional Repositories of Caribbean information outside the region

There are repositories inside and outside the Caribbean in possession of information about Caribbean biodiversity. The Caribbean needs links to these sources of information and related expertise about Caribbean biodiversity, guaranteed access to this information, and/or direct repatriation in other cases.

5.2.1 Biodiversity repositories in the Caribbean

Jamaica Invasive Species Database

<https://jis.gov.jm/jamaica-invasive-species-database>

Jamaica Invasive Species Database was launched in 2016. The database, which can be found at: <http://apps.licj.org.jm/jamaica-invasives/>, is the first comprehensive portal of its kind in the island. Invasives represent a major threat to the unique and vulnerable biodiversity found in Caribbean seas, freshwater and land resources, also threaten the livelihood of people who depend on this biodiversity.

TRAMIL (www.tramil.net/en)

An online medicinal plant database. Further detail is elsewhere in these documents.

Dutch Caribbean Biodiversity Explorer (www.dcbd.nl,

<https://www.dcnanature.org/resources/biodiversity-database/>)

In 2011 work began on the development of the Dutch Caribbean Biodiversity Database (DCBD), an information management system for biodiversity in the Dutch Caribbean with the overall goal of supporting monitoring of the status of biodiversity in the region. The Ministry of Economic Affairs is funding the creation and continuous development of the Database. The Dutch research institution ALTEIRA, part of the WUR, is leading its development with input from the key stakeholders. This database includes over 7,500 species, books, reports, etc.

5.2.2 Biodiversity repositories outside the Caribbean with its information

TROPICOS (www.tropicos.org)

An online herbarium database and contains most of the tropical plants.

New York Botanical Gardens (<https://www.nybg.org>)

Has collections from the Caribbean as part of their herbarium.

Biodiversity Heritage Library (<https://www.biodiversitylibrary.org>)

The information is from 1905 to the 1920s. More up to date information need to be gathered. Some examples are given below.

Field books: Jamaica,

Type: Monograph/Item

Volume: Jamaica cryptogams, 1905-1906

By: Wight, Alexander Este, - Farlow, W. G. (William Gilson),

Publication info: 1905

Contained In: William Gilson Farlow Papers.

Series: Biodiversity Heritage Library Field Notes Project.

Holding Institution: Harvard University Botany Libraries

BHL Collections: BHL Field Notes Project | Harvard University Herbarium, Botany Libraries

Field books: Jamaica,

Type: Monograph/Item

Volume: Algae A, Jamaica, 1905-1906

By: Wight, Alexander Este, - Farlow, W. G. (William Gilson),

Publication info: 1905

Contained In: William Gilson Farlow Papers.

Series: Biodiversity Heritage Library Field Notes Project.

Holding Institution: Harvard University Botany Libraries

BHL Collections: BHL Field Notes Project | Harvard University Herbarium, Botany Libraries

Field books: Jamaica,

Type: Monograph/Item

Volume: Jamaica December 1908

By: Wight, Alexander Este, - Farlow, W. G. (William Gilson),

Publication info: 1908

Contained In: William Gilson Farlow Papers.

Series: Biodiversity Heritage Library Field Notes Project.

Holding Institution: Harvard University Botany Libraries

BHL Collections: BHL Field Notes Project | Harvard University Herbarium, Botany Libraries

Plant lists, Jamaica.**Type: Monograph/Item****By: Maxon, William R. (William Ralph), - Killip, Ellsworth P. (Ellsworth Paine),****Publication info: 1920****Contained In: Field notes and plant identification records, approximately 1804-2000.****Series: Biodiversity Heritage Library Field Notes Project.****Holding Institution: Harvard University Botany Libraries****BHL Collections: BHL Field Notes Project | Harvard University Herbarium, Botany Libraries****Bats of Jamaica****Type: Article****By: Genoways, Hugh H - Baker, Robert J - Bickham, John W - Phillips, Carleton J****In: Bats of Jamaica /****Volume: 48****Pages: 1--155****Date: 2005****Publication info: Lubbock TX : [Natural Science Research Laboratory at the Museum of Texas Tech University], 2005****A new species of Turbanellidae (Gastrotricha, Macrotrichida) from Jamaica, with a key to species of Paraturbanella****Type: Article****By: Dal Zotto, Matteo - Leasi, Francesca - Todaro, M. Antonio****Date: 2018****Publication info: Pensoft Publishers 2018****Royal Botanic Kew Gardens (<https://www.kew.org/blogs/archived-blogs/investigating-plants-caribbean-outskirts-london>)**

Investigating the plants of the Caribbean... on the outskirts of London! Royal Botanical Gardens, Kew, is a large botanic garden situated on the edge of London in the UK. With over 250 science staff and over 1 million visitors each year Kew's mission is 'to be the global resource for plant and fungal knowledge, building an understanding of the world's plants and fungi upon which all our lives depend', also bringing authoritative expertise to bear on the critical challenges facing humanity today. Andrew Budden, one of Kew's volunteer interns, describes how information from preserved specimens of Caribbean plants helps to assess the conservation status of plants native to the Caribbean UK Overseas Territories.

GBIF (<https://www.gbif.org>)

A Norwegian data flow established to ensure mobilization of biodiversity data to GBIF from the private sector. Caribbean countries submit information about their plants to this database.

A BIODIVERSITY DATABASE FOR BARBADOS (<http://docs.exdat.com/docs/index-147162.html?page=29>)

Argument for a biodiversity database for Barbados.

Harvard University Caribbean Insect and Plant database (140.247.96.247/Caribbean, http://140.247.96.247/caribbean/search_dr.php)

Caribbean Insect & Plant Database A searchable database (with images) of specimens from collections of the participating institutions in the Dominican Republic and United States.

World database of key biodiversity areas (www.keybiodiversityareas.org/.../reptile-conservation-in-the-caribbean)

World database of key biodiversity areas managed by BirdLife International on behalf of the KBA Partnership. Includes literature and searchable species database for reptiles and birds.

*5.2.3 Marine databases with Caribbean information***OBIS (www.iobis.org)**

The Census of Marine Life (CoML) is an international science program to assess and explain the diversity, distribution and abundance of marine life, past, present and future. The program has three major components which are historical, exploratory and modeling, all of which are integrated into an open source database (OBIS: Ocean Biogeographic information System) for visualization and analysis. OBIS is a global open-access data and information clearing-house on marine biodiversity for science, conservation and sustainable development. The Caribbean has established with the CoML and OBIS adding data on molluscs, nearshore seagrass beds, coral, and microbes.

6.0 TYPES OF EXPERTISE RELEVANT TO ABS, TK AND/OR THE NAGOYA PROTOCOL

6.1 Biodiversity expertise in the Caribbean

Biodiversity experts in the Caribbean include:

- Academics e.g. Universities, TRAMIL
- NGOs
- CARDI
- IICA
- IUCN
- Governments

6.2 Expertise for Traditional Knowledge

- Taino communities
- Caribs in Dominica
-
- Defined communities such as the Maroons (Jamaica), and Black Caribs (St Vincent)
- Local communities
- Government Institutes such as the Institute of Jamaica (Jamaica) and Iwokrama (Guyana)
- Academia

6.3 Expertise for Nagoya Protocol

- Expertise for Nagoya Protocol in ABS found within the Caribbean includes:
 - Government Departments
 - National Strategy and Action Plans
 - National Focal Points
 - Lawyers
 - Natural history experts
 - Plant genetic resources for food and agriculture
 - Scientists (University and other Institutions)
 - for terrestrial plants (agriculture, biotechnology, plant tissue culture, biochemistry, molecular biology etc.)
 - for animal breeding and husbandry
 - for micro-organisms (anti-fungal and anti-bacterial screens, microbiologists,

- for marine biodiversity (identification, genetic analysis, biochemical identification, product development)
- for identification (morphology, phytochemical identification, biochemistry, molecular biology)
- for conservation (conservationists, environmentalists, plant tissue culture)
- for coastal zone management
- for value-chain development (ethnobotany, bioprospecting, plant tissue culture, agriculture, biotechnology, ethnopharmacology, agro-processing, product development, clinical trials)
- Caves and Caving (for islands with caves)
- for intellectual property including patents (regional offices linked to WIPO, patent reviewers, business offices)
- Traditional Knowledge holders (by distinct and local communities)
- Traditional People (Tainos, Caribs, Maroons)
- Herbalists
- Mothers, Fathers, Granmothers, Grandfathers

6.4 Agencies and initiatives that contribute to ABS Capacity Building in the Region

The ABS capacity building effort has been multinational backed by multi-agency financial support. These include CARICOM, GEF through its efforts with NSAPs and small grant funds, CBD and the GIZ. The GIZ is an international cooperation service for sustainable development and international education work based in Germany and has over 50 years of experience in this area. GIZ and its partners such as CBD, ACP MEAS, CARICOM and IUCN have had meetings in the Caribbean since 2012. Invitees to their meetings in the Caribbean have been government officials, CHM focal point persons, academia, legislators etc. The GIZ maintains a website of these meetings:

<http://www.abs-initiative.info/countries-and-regions/caribbean>. The GIZ and its partners is also doing similar work in the Pacific and Africa.

The meetings held in the Caribbean we are aware of include:

2012.09 - Trinidad and Tobago (1st Caribbean ABS workshop, I presented a ppt from UWI, info on workshop is at <http://www.abs-initiative.info/countries-and-regions/caribbean/trinidad-and-tobago/1st-abs-workshop-for-the-caribbean-region/>)

2013.06 - Dominica (Training workshop on drafting legislation, info at <http://www.abs-initiative.info/countries-and-regions/caribbean/dominica/caricom-regional->

[training-workshop-on-drafting-legislation-for-the-implementation-of-the-nagoya-protocol/](#))

2013.11 - Jamaica (2nd Caribbean ABS workshop with a one day symposium at UWI where researchers shared research and how it related to ABS, info on workshop is at [http://www.abs-initiative.info/countries-and-](http://www.abs-initiative.info/countries-and-regions/caribbean/jamaica/2nd-caribbean-abs-workshop/)

[regions/caribbean/jamaica/2nd-caribbean-abs-workshop/](http://www.abs-initiative.info/countries-and-regions/caribbean/jamaica/2nd-caribbean-abs-workshop/))

2014.11 - St Lucia (3rd Caribbean ABS workshop, info on workshop at <http://www.abs-initiative.info/countries-and-regions/caribbean/saint-lucia/3rd-caribbean-abs-workshop/>)

2015.12 - Suriname (Regional workshop on the Negotiation of Mutually Agreed Terms for Access to Genetic Resources to support Effective Implementation of the Nagoya Protocol on Access and Benefit Sharing in Caribbean ACP countries, info at <http://www.abs-initiative.info/countries-and-regions/caribbean/suriname/workshop-on-the-negotiation-of-mats/>)

There is a steering committee made up of representatives from Africa, Caribbean and Pacific. Members of the Caribbean steering committee are representatives from governments (preferably ABS or CBD National Focal Points or Competent National Authorities), regional governmental organizations, indigenous peoples and local communities, stakeholder organizations, and donors. Membership of representatives from governments has been restricted to two years; half of the members should be renewed each year to secure continuity of the work.

GIZ Regional updates – Caribbean:

- Continuing the cooperation with the Secretariats of the Caribbean Community (CARICOM) and the Organization of East Caribbean States (OECS) on regional ABS capacity development, e.g. discussing the development of standard ABS contract clauses and model contracts for their Member States.
- Continuing the cooperation with the regional IUCN office executing a regional GEF-funded ABS project for 10 CARICOM Member States through the participation at its next regional ABS workshop in October 2017 and e.g. supporting the development of ABS public awareness materials, briefs for parliamentarians, and ABS contract trainings.

The present IUCN project, for which these reports are the output has been funded and co-ordinated by IUCN. The website hosted for IUCN for Caribbean ABS is at <http://www.abscaribbean.com/>.

7.0 COUNTRY REPORTS

The countries, islands and territories of the Caribbean Basin are a varied mix of geographies, geologies, cultures and social outlooks, politics and policies, economies, landscapes and biodiversity, each resulting in distinct experiences and outlooks, but with a shared history and interests. The countries and islands also have developed at different paces, with larger and more diverse countries such as Jamaica, and more resources rich countries such as Guyana and Trinidad, outpacing some others in the levels of development, research, science application, data collection, environmental conservation and management, and their readiness for ABS and addressing issues related to bioprospecting.

Country reports are provided for:

- Antigua, Barbuda, Redonda
- Barbados
- Grenada, Carriacou and Petit Martinique
- Guyana
- Jamaica
- St Kitts and Nevis
- St Lucia
- Trinidad and Tobago

7.1 ANTIGUA, BARBUDA AND REDONDA

Geography and Location

Antigua forms part of the independent tripartite state of Antigua, Barbuda and Redonda, and located in the northeastern part of the Lesser Antilles, which is the Leeward Islands, in the Caribbean, some 525 km (326 miles) southeast of the American territory of Puerto Rico. Antigua covers about 280 km² (108 miles²), Barbuda about 161 km² (62 miles²), and Redonda about 2.6 km² (1 mile²). The highest point of Antigua is Mount Obama (formerly Boggy Peak), in the south of the island at 402 m (1,319 ft.), and for Barbuda, 38 m (125 ft.), while Redonda reaches 296 m (971 ft.). According to the 2011 census figures, Antigua has a population of 80,161 persons, Barbuda 1,638, and Redonda is unoccupied.

Regulatory Institutions and Associated Expertise

Antigua and Barbuda ratified the Nagoya Protocol on March 12, 2017. The steps taken towards a NP system is given in Table 3.

Table 3 Institutional mapping houses

Antigua & Barbuda	
Treaty	Ratified December 2016 (instruments deposited) CNA's & NFP being designated PA being designated
Access	Standard application form Model Contract for PIC/MAT Manual/Policy not written Part VIII of EDMA governs access
MAT	Training in negotiations available in government (ABS initiative: GIZ) Officer for inter-agency liaison (not all ministries) Training with community groups on ramifications of ABS No community members trained in procedure No private sector engagement No regulations
Community Measures	Capacity building workshop with NGO's (awareness) No formal engagement with community leaders No identification of holders with TK No system for receiving enquiries

There are at least seven Antigua and Barbuda government agencies directly connected to natural resources management, conservation, and exploitation in Antigua. Of these, at least seven are concerned with ABS and bioprospecting. These include:

- Chemistry and Food Technology Division, Dunbars Lab
- Department of Agriculture, Ministry of Agriculture
- Extension Division; Ministry of Agriculture
- Forestry Division, Ministry of Agriculture
- Livestock Division, Ministry of Agriculture
- Ministry of Health (medical research and care)
- The Department of the Environment, Ministry of Health

Table 19 in *Appendices* provides a summary of agencies, institutions, and the staff responsible for and connected to ABS and bioprospecting.

The Legal Framework

The environmental, conservation and natural trade laws of Antigua and Barbuda that are relevant to ABS and bioprospecting include:

1. Animals (Diseases and Importation) Act
2. Animals (International Movement and Disease) Act
3. Antigua and Barbuda Labour Code, Division D (link is external)
4. Botanical Gardens Act
5. Botanical Gardens Act
6. Co-Operative Societies, Amendment Act, 2013
7. Disaster Management Act (link is external)
8. Environmental Protection Levy Act
9. Exportation of Fruit Act, 1939
10. Fisheries Act (link is external)
11. Forestry Act (link is external)
12. Marine Areas (Preservation and Enhancement Act) (link is external)
13. Maritime Areas Act (link is external)
14. Minerals (Vesting) Act, 1949
15. National Parks Act (link is external)
16. Patents Act, 2003
17. Patents Act, 2012
18. Pesticide Control Act (link is external)
19. Physical Planning Act (link is external)
20. Plant Protection Act (link is external)
21. Public Health Act (link is external)
22. Renewable Energy Act
23. Trade Marks Act, 2003

NP-related Multilateral Treaties

Table 4 provides a list of the international treaties and agreements that Antigua and Barbuda has entered into, and which have local, regional and international implications for ABS and bioprospecting.

Table 4. Antigua and Barbuda international treaties and agreements, and implications for ABS and bioprospecting.

Administration	Treaty/Convention
Main IP Laws: enacted by the Legislature	
1	Patents Act 2003 (2003)
2	Copyright Act 2003 (2003)
3	Geographical Indications Act 2003 (2003)
4	Industrial Designs Act 2003 (2003)
5	Trade Marks Act 2003 (2003)
6	Intellectual Property Office Act 2003 (2003)
IP-related Laws	
1	International Trust Act 2007 (2007)
2	Investment Authority Act 2006 (2006)
3	Customs (Control and Management) Act, 1993 (1993)
4	Unfair Contract Terms Act, 1987 (Cap. 451) (1987)
5	Arbitration Act, 1975 (Cap. 33) (1975)
6	Medical Act 1938 (Cap. 269) (1938)
Intellectual Property	
1	Geographical Indications Regulations 2006 (2006)
WIPO-Administered Treaties	
1	Summary Table of Membership of the World Intellectual Property Organization (WIPO) and the Treaties Administered by WIPO, plus UPOV, WTO and UN
2	Berne Convention for the Protection of Literary and Artistic Works (March 17, 2000)
3	Convention Establishing the World Intellectual Property Organization (March 17, 2000)
4	Paris Convention for the Protection of Industrial Property (March 17, 2000)
5	Patent Cooperation Treaty (March 17, 2000)
6	Protocol Relating to the Madrid Agreement Concerning the International Registration of Marks (March 17, 2000)
IP-related Multilateral Treaties	
1	International Treaty on Plant Genetic Resources for Food and Agriculture (May 29, 2017)
2	Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (March 12, 2017)
3	Convention for the Safeguarding of the Intangible Cultural Heritage (July 25, 2013)

Table 4. Cont'd

Administration	Treaty/Convention
IP-related Multilateral Treaties cont'd	
4	Convention on the Protection and Promotion of the Diversity of Cultural Expressions 2005 (July 25, 2013)
5	Convention on the Protection of the Underwater Cultural Heritage (July 25, 2013)
6	International Plant Protection Convention (January 24, 2006)
7	Kyoto Protocol to the United Nations Framework Convention on Climate Change (February 16, 2005)
8	Stockholm Convention on Persistent Organic Pollutants (May 17, 2004)
9	Cartagena Protocol on Biosafety to the Convention on Biological Diversity (December 9, 2003)
10	United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (September 4, 1997)
11	Agreement establishing the World Trade Organization (WTO) (January 1, 1995)
12	World Trade Organization (WTO) - Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) (1994) (January 1, 1995)
14	United Nations Convention on the Law of the Sea (November 16, 1994)
15	United Nations Framework Convention on Climate Change (March 21, 1994)
17	Convention on Biological Diversity (December 29, 1993)
18	Protocol (I) Additional to the Geneva Conventions of 12 August 1949, and relating to the protection of victims of international armed conflicts (April 6, 1987)
19	Protocol (II) Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts (April 6, 1987)
20	Convention concerning the Protection of the World Cultural and Natural Heritage (February 1, 1984)
21	Convention and Statute on Freedom of Transit (November 1, 1981)
Regional Economic Integration Treaties	
1	Revised Treaty of Chaguaramas Establishing the Caribbean Community Including the CARICOM Single Market and Economy (February 4, 2002)
IP-relevant Bilateral Treaties	
1	Treaty between the Federal Republic of Germany and Antigua and Barbuda concerning the Encouragement and Reciprocal Protection of Investments (February 28, 2001)
2	Agreement between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of Antigua and Barbuda for the Promotion and Protection of Investments (June 12, 1987)

Source: World International Property Organisation (WIPO)

<http://www.wipo.int/wipolex/en/profile.jsp?code=AG>

Non-Regulatory Institutions: Institutional Stocktaking

Institutional arrangements of bioprospecting

For non-government and community-based organisations, the Environmental Awareness Group (EAG), and the Barbuda Research Complex are the two most active in the country. Active research programmes are under the auspices of the EAG and the Barbuda Research Complex. The EAG focuses on the research, management and conservation of the Antigua Racer snake (*Alsophis antiguae*) on the small islands of the North East Marine Management Area (NEMMA) and restoring the ecology of the island of Redonda.

The Barbuda Research Complex focuses on a variety of issues, including food security (aquaponics and fish farming), climate change, sea level rise, archaeology, paleontology, ecology, land-use and land management, amongst others.

One of the major barriers to researching background information for the agencies, individuals and institutions that have some relevance to ABS, bioprospecting, biodiversity, ecology and other related issues, is that it is difficult to access critical information online. Many of the government agencies lack specifics on the focal points, persons, departments, issues and current programmes. This problem underlines the country's readiness for strengthening ABS and building up its capacity for science, research and development. But it is not limited to Antigua and Barbuda and is problematic throughout the region.

Antigua and Barbuda is at the forefront of research and conservation when it comes to biodiversity, but beyond the Antigua Racer, rat eradication efforts, and the priorities of the Department of the Environment, much needs to be done when it comes to expanding the capacity and capabilities of this tripartite state.

The example of lichen research over the last five years is illustrative of an endemic limitation of the country's ability to deal with the issue of science, external research demands, internal research priorities and local research, conservation and environmental management capacity at the national level.

7.2 BARBADOS

Geography and Location

Barbados is the most easterly of the islands of the Eastern Caribbean, located at 13.1939° N and 59.5432° W, or about 168 km (104 miles) east of The Grenadines. The island covers about 439 km² (169 miles²). Its highest elevation is Mount Hillaby at about 343 m (1,115 ft.), located in the parish of St. Andrew, in the northern part of the country. The population of Barbados is about 292,336 according to the World Fact Book.

Regulatory Institutions and Associated Expertise

An analysis of the readiness of Barbados to ratify the Nagoya Protocol is given in Table 5.

Table 5. Institutional mapping houses.

Barbados	
Treaty	<ul style="list-style-type: none"> - No accession to NP - Lack of resources - NP considered a new and emerging issue - After the awareness raising initiatives of the regional project, Barbados may consider the benefits of acceding to the NP
Access	<ul style="list-style-type: none"> - Working group on biodiversity - Multi-sectorial advisory community on all biodiversity matters - Informal permission system for accessing genetic resources - collaboration with UWI - permission letter granted to applicants <p>BUT:</p> <ul style="list-style-type: none"> - No legislation - Depend on “goodwill” and voluntary compliance - No formal agreements between government and community groups on ABS
MAT	<p>Some expertise for ABS matters exists</p> <p>Some training was conducted – more needed</p> <p>Letter of permission system is a rudimentary requirement</p>
Community Measures	<p>No community measures exist for ABS</p>

The Legal Framework

Table 6 provides a list of the international treaties and agreements that Barbados has entered into, and which have local, regional and international implications for ABS and bioprospecting.

NP-related Multilateral Treaties

Table 6. Barbados international treaties and agreements, and implications for ABS and bioprospecting.

Administration	Treaty/Convention
Main IP Laws	
1	Patents Act, 2001 (Cap. 314) (as amended by Act No. 2 of 2006) (2006)
2	Trade Marks Act, Cap. 319 (2006)
3	Protection of New Plant Varieties Act, Cap. 267 (consolidated as of 2002) (2002)
4	Geographical Indications Act (Cap. 320, consolidated as of 2002) (2002)
5	Trade Marks (Amendment) Act, 2001 (Act No. 16 of 2001) (2001)
6	Copyright Act, 1998 (Cap. 300) (as revised up to 2006) (1998)
7	Registration of Business Names Act (Cap. 317, consolidated as of 1989) (1989)
8	Corporate Affairs and Intellectual Property Office, Cap. 21A (1988)
9	Industrial Designs Act, 1981, (CAP. 309A) (as last amended by Act 1988-6) (1988)
10	Intellectual Property Acts (Amendment) Act, 1984 (Act No. 20 of June 22, 1984) (1984)
IP-related Laws	
1	International Commercial Arbitration Act, 2007-45 (2007)
2	Companies Act, 1982 (Cap. 308, as amended up to Act No. 17 of 2007) (2007)
3	Civil Aviation Act, 2004 (Cap. 288B) (2004)
4	The Supreme Court of Judicature Act, 1981 (Cap. 117A) (as amended up to 2004) (2004)
5	Fair Competition Act, Cap. 326C (codified as of 2002) (2003)
6	Consumer Protection Act, 2002 (Cap. 326D) (2002)
7	Caribbean Broadcasting Corporation Act, Cap. 276 (as consolidated 2002) (2002)
8	Telecommunications Act, 2001 (Cap. 282B) (2001)
9	Protection Against Unfair Competition Act, 1998 (Act No. 20 of 1998) (1998)
10	Barbados National Standards Institution (Certification Marks) Act, Cap. 325A (codified as of 1985) (1985)
11	Control of Standards Act, Cap. 326A (consolidated as of 1985) (1985)
12	Arbitration (Foreign Arbitral Awards) Act, Cap. 110A (Consolidated as of 1985) (1985)
13	Publications (Legal Deposit) Act, 1982 (Cap. 301A) (1982)
14	National Emblems and National Anthem of Barbados (Regulation) Act, 1969 (Cap. 300A) (as amended up to Act No. 1 of 1982) (1982)
15	Arbitration Act, Cap. 110 (1967)

Table 6. Cont'd

Administration	Treaty/Convention
Intellectual Property	
1	Copyright (Amendment) Act, 2006-1 (2006)
2	Intellectual Property (Miscellaneous Provisions) Act, 2006-2 (adopted on 15-02-2006) (2006)
3	Trade Marks Regulations 1984 (2006)
4	Patents (Priority Protection) Order, S.I. 2005, No. 158 (2005)
5	Copyright (Amendment) Act, 2004-17 (2004)
6	Copyright Tribunal Regulations, 2004 (2004)
7	Copyright (Prohibited Imports) Regulations, 2004 (2004)
8	Geographical Indications Regulations, 2001 (Regulations No. 132) (2001)
9	Integrated Circuits Regulations, 2001 (2001)
10	Protection of New Plant Varieties Order, 2001 (2001)
11	Protection of New Plant Varieties Regulations, 2001 (2001)
12	Proclamation S.I. 2001, No 21 of February 16, 2001 of the Integrated Circuits Act (Act 1998-21) (2001)
13	Proclamation S.I. 2001, No. 20 of February 16, 2001 of the Protection Against Unfair Competition Act (Act 1998-20) (2001)
14	Broadcasting Regulations, 2000 (CAP. 274B) (2001)
15	Proclamation S.I. 1998, No. 106 of August 11, 1998 of the Copyright Act, 1998 (Act 1998-4) (1998)
16	Proclamation S.I. 1984, No. 180 of November 20, 1984 of the Industrial Designs Act, 1981 (Act 1981-57) (1984)
17	Proclamation S.I. No. 178 of November 20, 1984 of the Patents Act, 1981 (Act No. 55 of 1981) (1984)
18	Proclamation S.I. No. 179 of November 20, 1984 of the Trade Marks Act, 1981 (Act No. 56 of 1981) (1984)
19	Industrial Designs Regulations No. 83 of April 17, 1984 (1984)
20	The Patents Regulations, 1984 (No. 84 of April 17, 1984) (1984)
21	Proclamation S.I. 2001, No. 22 of February 16, 2001 of the Geographical Indications Act, (Act 1998-22) (2001)
WIPO-Administered Treaties	
1	Summary Table of Membership of the World Intellectual Property Organization (WIPO) and the Treaties Administered by WIPO, plus UPOV, WTO and UN.
2	Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks (March 12, 1985)
3	Paris Convention for the Protection of Industrial Property (March 12, 1985)
4	Patent Cooperation Treaty (March 12, 1985)
5	Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations (September 18, 1983)
6	Berne Convention for the Protection of Literary and Artistic Works (July 30, 1983)
7	Convention for the Protection of Producers of Phonograms Against Unauthorized Duplication of Their Phonograms (July 29, 1983)
8	Convention Establishing the World Intellectual Property Organization (October 5, 1979)

Table 6. Cont'd

Administration	Treaty/Convention
IP-related Multilateral Treaties	
1	Convention on the Rights of Persons with Disabilities (March 29, 2013)
2	Convention for the Safeguarding of the Intangible Cultural Heritage (January 2, 2009)
3	Convention on the Protection and Promotion of the Diversity of Cultural Expressions 2005 (January 2, 2009)
4	Convention on the Protection of the Underwater Cultural Heritage (January 2, 2009)
5	Protocol to the Convention for the Protection of Cultural Property in the Event of Armed Conflict (January 2, 2009)
6	Second Protocol to The Hague Convention of 1954 for the Protection of Cultural Property in the Event of Armed Conflict (January 2, 2009)
7	International Plant Protection Convention (October 2, 2005)
8	Kyoto Protocol to the United Nations Framework Convention on Climate Change (February 16, 2005)
9	Cartagena Protocol on Biosafety to the Convention on Biological Diversity (September 11, 2003)
10	Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property (July 10, 2002)
11	Convention concerning the Protection of the World Cultural and Natural Heritage (July 9, 2002)
12	Convention for the Protection of Cultural Property in the Event of Armed Conflict (July 9, 2002)
13	United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (August 12, 1997)
14	Agreement establishing the World Trade Organization (WTO) (January 1, 1995)
15	World Trade Organization (WTO) - Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) (1994) (January 1, 1995)
16	United Nations Convention on the Law of the Sea (November 16, 1994)
17	United Nations Framework Convention on Climate Change (June 21, 1994)
18	Convention on Biological Diversity (March 10, 1994)
19	Universal Copyright Convention as revised on 24 July 1971, with Appendix Declaration relating to Article XVII and Resolution concerning Article XI (June 18, 1983)
20	Universal Copyright Convention of 6 September 1952, with Appendix Declaration relating to Article XVII and Resolution concerning Article XI (June 18, 1983)
21	Protocol to the Agreement on the Importation of Educational, Scientific or Cultural Materials (January 2, 1982)
IP-related Multilateral Treaties Cont'd	
22	International Covenant on Economic, Social and Cultural Rights (January 3, 1976)
23	Agreement on the Importation of Educational, Scientific and Cultural Materials (November 30, 1966)

Table 6. Cont'd

Administration	Treaty/Convention
Regional Economic Integration Treaties	
1	Revised Treaty of Chaguaramas Establishing the Caribbean Community Including the CARICOM Single Market and Economy (February 4, 2002)
2	Panama Convention establishing the Latin American Economic System (SELA) (June 7, 1976)
3	The Georgetown Agreement (formally establishing the African, Caribbean and Pacific Group of States, the "ACP Group"), since 1975 (ACP) (January 14, 1976)
IP-relevant Bilateral Treaties	
1	Agreement between the Government of Barbados and the Federal Republic of Germany for the Promotion and Protection of Investments (May 11, 2002)
2	Agreement between the Government of Barbados and the Republic of Cuba for the Promotion and Protection of Investments (August 13, 1998)
3	Agreement between the Government of Canada and the Government of Barbados for the Reciprocal Promotion and Protection of Investment (January 17, 1997)
4	Agreement between the Swiss Confederation and Barbados on the Promotion and Reciprocal Protection of Investments (December 22, 1995)
5	Agreement between the Government of Barbados and the Government of the Republic of Venezuela for the Promotion and Protection of Investments (October 31, 1995)
6	Agreement between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of Barbados for the Promotion and Protection of Investments (April 7, 1993)

Source: World International Property Organisation (WIPO)

<http://www.wipo.int/wipolex/en/profile.jsp?code=bb>

Non-Regulatory Institutions: Institutional Stocktaking

Ministry of Environment and Drainage

The Ministry of Environment's function is to promote and facilitate the sustainable use of our resources by encouraging the involvement of all citizens and the integration of environmental considerations into all aspects of national development.

Contact Information

Address: Ministry of Environment, and Drainage, 9th & 10th Floor, Warrens Tower 2, St. Michael, Barbados, W. I., S P Musson Building Hincks Street

Telephone: 1 (246) 622-1601/1 (246) 424-8859

Email: envirobdos@barbados.gov.bb

Coastal Zone Management Unit

The Coastal Zone Management Unit Performs a variety of coastal management functions inter alia: coral reef monitoring, updating the inventory of coastal resources, consultations with the Town and Country Development Planning Office (TCDPO) regarding all coastal development,

beach erosion and accretion monitoring and control, updating the inventory of coastal structures, regulation of marine research, public education of ICZM, coastal conservation project designs and management, and the review of any coastal projects.

Contact Information

Address: 8th floor Warrens Tower 11, St. Michael, Barbados, W.I.

Telephone: 1 (246) 622-1611/1 (246) 228-5956

Email: director@coastal.gov.bb/

Dr. Lorna Inniss (Director AG)

Fisheries Division (Ministry of Agriculture Barbados)

The function of the Fisheries Division of the Ministry of Agriculture is to ensure the optimum utilization of the fisheries resources in the waters of Barbados for the benefit of the people of Barbados through management and development.

Contact Information

Fisheries Division

Ministry of Agriculture

Princess Alice Highway

Bridgetown

Barbados

Telephone: (246) 426-3745, (246) 426-5973

Fax: (246) 436-9068

SENIOR MANAGEMENT

Chief Fisheries Officer: Stephen Willoughby

The Soil Conservation Unit (Ministry of Agriculture - Barbados)

The Soil Conservation Unit was established in 1957 with its main function being to address the many special land conservation and stability problems occurring in the Scotland District of Barbados.

Contact Information

Postal Address: Soil Conservation Unit

Ministry of Agriculture

Haggatts, St. Andrew, BB25090, Barbados

Telephone: (246) 422-9030, (246) 422-9192 or (246) 422-9910

Fax: (246) 422-9833

E-mail: scu@agriculture.gov.bb

Senior Agricultural Officer

Mr. Glenn Marshall, BSc., MSc.

Tel. (246) 422-9030, (246) 422-9192 or (246) 422-9910

Fax: (246) 422-9833

National Conservation Commission, Ministry of Environmental and Drainage

The Plant Nursery, located at Codrington House, covers approximately 50,000 sq. ft. The Nursery caters to the requirements of the commercial landscape Department, sites maintained by the Commission and public demands for ornamental plants and trees.

Contact Information

National Conservation Commission, Ministry of Environment & Drainage, Government of Barbados.

Telephone: (246) 425 1200

Email: ncc@caribsurf.com

Bellairs Research Institute

Initially founded as a marine biology field station, The Bellairs Research Institute was founded in 1954 as a field-station for McGill, Canada. Bellairs and runs numerous McGill University field-courses and workshops throughout the year. It is also currently used for undergraduates to partake in a Barbados Field Study Semester (BFSS). Environmental Engineering, International Development Studies and Environmental Studies are some of the areas it caters to. The diversity of communities encountered inshore offers research opportunities on live and fossil coral reefs, rocky shores, mangroves, sandy beaches, brackish water ponds and areas of shallow sea water flats of sand, mud or grass. The corals found on the fringing reefs along the western coast of Barbados are complemented by varied populations of sponges, anemones, molluscs, polychaetes, sea urchins and cucumbers, and colourful reef fish.

Contact Information

Address: Folkestone, St. James

P.O Box: BB24017

Tel.: 246-422-2087

Fax: 246-422-0692

Email (Accommodations): enquiries@bellairs-mcgill.org

Email (Other enquiries): admin@bellairs-mcgill.org

Director: Susan Mahon

Caribbean Institute for Meteorology and Hydrology (CIMH)

The Caribbean Institute for Meteorology and Hydrology (CIMH) is a training and research organization formed by the amalgamation of the Caribbean Meteorological Institute (CMI) and Caribbean Operational Hydrological Institute (COHI). The Caribbean Meteorological Institute was established in 1967 by the member states of the Caribbean Meteorological Organization (CMO) while the Caribbean Operational Hydrological Institute (COHI) was established in 1982. The role and mission of the CIMH is to improve the meteorological and hydrological services and to assist in promoting the awareness of the benefits of these services for the economic well-being of the CMO countries. This is achieved through training, research and investigations, and the provision of specialized services and advice.

Address

Caribbean Institute for Meteorology and Hydrology

P.O. Box 130, Bridgetown, Barbados. Tel: 246-425-1362/3/5; Fax: 246-424-4733

Experts:

David A. Farrell (P.G, PhD, MSc, BSc) Principal

Dr. Farrell became the Principal of CIMH on May 1, 2006. Dr. Farrell brought approximately 15 years of experience working in various areas of Hydrogeology and approximately 8 years of experience working in various areas of Applied Geophysics. In addition to his administrative responsibilities, Dr. Farrell is involved in various Caribbean and international scientific projects related to Hydrogeology, hydrology and geophysics.

- PhD Geological Science (Hydrogeology) University of Manitoba, Winnipeg, Manitoba, Canada
- MSc Geological Sciences (Hydrogeology) University of Manitoba, Winnipeg, Manitoba, Canada
- BSc (Hons. Applied Geophysics) University of Western Ontario, London, Ontario, Canada

Email Address: dfarrell@cimh.edu.bb

Kathy-Ann Caesar (MSc, BSc) Chief Meteorologist

Email Address: kacaesar@cimh.edu.bb

Education:

- Master of Science Student in Meteorology Texas A&M University
- Bachelor of Science Degree in Meteorology (with Honors), minor in Mathematics - State University of New York at Brockport

Research Projects:

- Squall lines over the Southern Caribbean and their relationship to low level wind maximum (near 700mb).
- Low Level Wind surges and their impact on weather over the Eastern Caribbean.
- Development of for stability index for the region.
- Factors associated with the development of Tropical Cyclones over the lower Caribbean.

Other Meteorologists

- Magarette Mayers-Als (MSc, BSc)
- Lawrence Pologne (MSc, BSc)
- Andrea Sealy (PhD)
- Ashford Reyes (PhD)

University of the West Indies, Cave Hill Campus

University of the West Indies is a regional university with three main campuses – Cave Hill, Mona and St Augustine (Barbados, Jamaica and Trinidad & Tobago respectively) and an Open Campus with offices in 11 other countries in the Caribbean.

Website: <https://www.cavehill.uwi.edu//>

Centre for Resource Management and Environmental Studies (CERMES)

CERMES is an institution within the University of the West Indies with a primary focus on tropical island environmental management. The mission of CERMES is to make a significant contribution to sustainable development in the Caribbean region by:

- Providing graduate students with advanced training in policies, mechanisms and techniques for sustainable use and management of natural resources;
- Conducting research that is relevant to natural resource and environmental management;
- Providing guidance, consultancy and professional services to regional governments, NGOs and the private sector on environmental matters;
- Taking the lead in hosting and coordinating regional environmental initiatives and projects;
- Heightening public awareness on matters of environmental importance through outreach activities; and
- Building capacity of private-sector and government decision-makers through short courses and training workshops.

Contact Information

Tel: (246) 417-4316

Fax: (246) 424-4204

Email: cermes@cavehill.uwi.edu

Mailing Address:

Centre for Resource Management and Environmental Studies (CERMES)

The University of the West Indies

Cave Hill Campus

St Michael

Barbados, W.I

BB11000

Tel: (246) 417-4000 | Fax: (246) 425-1327

Central Agronomic Research Station

Central Agronomic Research Station (CARS) is the primary facility for Crop Research in Barbados where Research and Developmental work on field and vegetable crops are conducted. Crop Research in the past included work on onions, white potatoes, tomatoes, cassava, peanuts and many others. At present research is being conducted on sweet potatoes, tomatoes, culinary herbs and condiments, sweet peppers, pumpkin, onions, cabbages and greenhouse production of tomatoes and cucumbers.

Expert

Leslie Brereton, Senior Agricultural Officer

Contact Information

Ministry of Agriculture

Address: The Ministry of Agriculture, Christ Church, Barbados

Telephone: 246-535-5100

Fax: 246-535-5257/8

Caribbean Agricultural Research and Development Institute (CARDI)

The Caribbean Agricultural Research and Development Institute (CARDI) carries out research and development for agriculture in the Caribbean region. Its headquarters are on the campus of the University of the West Indies (UWI), at St. Augustine in Trinidad and Tobago and it also has national offices throughout the region.

Contact Information

CARDI HEADQUARTERS

Address: University of the West Indies, University Campus, St. Augustine, Trinidad and Tobago.

Phone: 1 (868) 645 1205/6/7

Fax: 1 (868) 645 1208

E-mail: infocentre@cardi.org

GIZ. Germany

Dr. Andreas Drews

Manager ABS Capacity Development Initiative

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH,

Dag-Hammarskjöld-Weg 1-5, 65760 Eschborn

Tel: +49 6196 79-1363

E-mail: andreas.drews@giz.de, abs-initiative@giz.de

Inter-American Institute for Cooperation on Agriculture

As the specialized agency of the Inter-American System for agriculture, the Inter-American Institute for Cooperation on Agriculture (IICA) supports the efforts of the Member States to achieve agricultural development and rural well-being.

Contact Information

Inter-American Institute for Co-Operation on Agriculture

Ottawa, ON, Canada

+1 613-230-1044

Inter-American Institute for Cooperation on Agriculture

Agricultural Association

San José Province, San Isidro, Costa Rica

+506 2216 0222

Walkers Reserve

The owners of Walker's Quarry, located in St. Andrews, Barbados have focused their attention on transforming the area into a reserve with the aim of restoring Biodiverse health and climatological resilience. Walker's Reserve uses a Permaculture design to restore the natural ecological functions of the quarry by introducing different "perennial food systems". The project started implementation in 2015 and is expected to run over a 5-year period and will result in the planting of 100 different species in 12 different planting patterns with approximately 52 different planting plots. Revegetation will be mainly of native species, especially those known to grow in the area.

To date, through the project, several plant species have been established including: fat pork (*Chrysobalanus icaco*); Cashew (*Anacardium occidentale*); Khus-Khus grass (*Vetiveria zizanioides*); Agave (Agave Rigida Var. Sisalana/ *Agave barbadensis*); various legumes; coconut (*Cocos nucifera*); almond (*Terminalia catappa*) and Loofah (*Luffa aegyptiaca* or *Luffa acutangula*).

Expert

Ian McNeel is a social entrepreneur, impact investor, permaculturalist and responsible business leader. Always challenging the limits of what's possible, Ian is leveraging his 21 years as an entrepreneur and successful international business executive to lead the transition of Walker's Sand Quarry into Walker's Reserve.

Contact Information

Office Address

#2 Kyro Rockley Terrace

Christ Church, Barbados, WI

Barbados Natural Fibres Network

The Barbados Natural Fibres Network (BNFN) is a not-for-profit organization which evolved seamlessly out of a Global Environment Facility Small Grants Programme-funded project that promoted the use of natural fibres and seeds in the development of new products by craft artisans. That project received financial and administrative assistance from the Barbados Investment & Development Corporation also.

Expert:

Dr. Sandra Browne, Director of Natural Fibres Network, CEO and Consultant - Caribbean Crafts Network Consultancy Inc

Contact Information

Telephone: (246) 836-3864

Email: naturalfibresbarbados@gmail.com

Barbados Wildfowlers Association

The Barbados Wildfowlers Association (BWFA) was established in 1981 and of 2014 consisted of 80 members. In 2008 the BWFA collaborated with the Birdlife International, Canadian Wildlife Services and the U.S. Fish and Wildlife Service on an initiative to ensure sustainable harvesting and management of shorebirds in Barbados. Members have committed to the following actions:

- Limiting the gross annual harvest on the island to 22,500 shorebirds;
- Allowing no more than 2,500 shorebirds to be shot per swamp each year;
- Shooting no more than 300 birds in each day per swamp;
- Limiting the Lesser Yellowlegs harvest per swamp to 1,250 birds annually; and
- Restricting the shooting of American Golden Plovers to 100 birds in any swamp on any given day.
- No use of speakers to lure shorebirds;
- No use of shotgun extension magazines; and
- Restricting the number of hunters such that no more than three hunters present arms in each swamp at one time.

Barbados Marine Trust (BMT)

The Barbados Marine Trust (BMT) was formed in May 2000 and is dedicated to promoting environmentally and socially sustainable use of the Marine areas of Barbados. This includes addressing unsustainable and polluting activities on land, which affect the marine environment.

Contact Information

Barbados Marine Trust,
Carlisle Bay Hwy 7,
Bridgetown, Barbados
E-mail: admin@barbadosmarinetrust.org

The Barbados Marine Trust's Undersea Heritage Museum

The Barbados Marine Trust [BMT] has been placing reef balls in the sea off the South Coast of Barbados in an effort to support coral reef regeneration and as well as to provide habitats for fishes and other marine animals- [thus ensuring bio-diversity] - and to protect the shoreline from climate change. Recognizing the need for support for alternative livelihoods for fisher folk, the BMT is now proposing to use sculptures as has been successfully done in Grenada, where local fishermen provide water taxi services out to the sculpture sites to tourists, and thus giving the fisher folk a sense of ownership/desire to protect them for their own long-term gains.

Contact Information

Barbados Marine Trust,
Carlisle Bay Hwy 7,
Bridgetown, Barbados
Phone: N/A
E-mail: admin@barbadosmarinetrust.org

Collections and Inventories**Botanical Gardens*****Andromeda Botanic Gardens***

Andromeda Gardens has over six hundred different species of plants adapted to a range of tropical environments and six Acres of tropical gardens.

Contact Information

Address: 3 Hwy, Bathsheba, Barbados
Phone Number: +1 246-433-9384

Expert: Sharon Cooke

Sharon Cooke completed her post graduate diploma in garden design from the University of Wales while studying at the prestigious Inchbald School of Design in London. She founded Garden Wall Designs in 2009 and Passiflora Ltd in 2014.

Welchman Hall Gully

Welchman Hall Gully, located in the parish of St. Thomas, is a three-quarter mile long gully which is home to a number of tropical plants and trees, including nutmeg, bamboo, clove and palms.

Contact Information

Telephone: (246) 438-6671.

Website: <http://www.welchmanhallgullybarbados.com>

Expert: Debra Branker

Debra Branker has been working in the field of environmental education since 1998. When the lease came up for Welchman Hall Gully, Debra jumped at the chance to develop it as a biodiversity and education centre and as a prime nature-based tourist attraction.

Orchid world

Orchid World & Tropical Flower Garden is located on a 2.43-hectare (6 acres) property, surrounded by sugarcane fields in the heart of the Barbadian countryside with more than 1,000 Orchids currently on display as well as the thousands of Caribbean plants and flowers. Vandas, Phalaenopsis, Calanthes, Cattlyeas, Ascocendas and Dendrobiums, just to name a few, can be found throughout.

Contact Information

Telephone: 1.246.433.0306; Address: Orchid World, Sweet Vale, Barbados

Hunts Gardens

Hunts Gardens is a botanical garden centrally located in lush hills of St. Joseph's, are conveniently accessible from all around Barbados. They offer to garden and nature lovers one of the finest experiences one can find on East Caribbean islands. Their placement is really most unusual - in the center of Barbados' rain forest, in a sink-hole-like gully.

Contact Information

+246- 433-3333

Address: Hunte's Gardens and Nursery

Castle Grant, St. Joseph, Barbados, W.I.

Email: huntesgardens@gmail.com

Expert: The owner of this garden is legendary horticulturist Anthony Hunte who created the garden himself in the 1950s.

Graeme Hall Collection of Fruit Trees

During April and May 2014, the Soil Conservation Unit (SCU) carried out a program of de-bushing and planting of primarily fruit trees at the Central Agronomic Research Station (CARS), Graeme Hall. Some 384 trees were planted and consisted of thirty (30) different species. The more traditional included Avocado, Ackee, Cherry, Carambola, Dunks, Golden Apple, Guava, Mango, and Soursop. There are lesser known types such as Bilimbi and Mulberry. There is also the iconic Baobab Tree.

Contact Information

The Ministry of Agriculture, Christ Church, Barbados

Telephone: 246-535-5100; Fax: 246-535-5257/8

Plants of The Eastern Caribbean - Online Database

An online photo database devoted to the native and naturalized flowering plants of the islands of the Eastern Caribbean. The database comprises about two thousand flowering plants, mainly those found in the wild, although a few commonly cultivated plants are included. It encompasses as its starting point those species listed in the late Richard Howard's six-volume Flora of the Lesser Antilles, as well as those signaled for inclusion by more recent publications and by a network of regional experts.

Contact Information

Broome, R, Sabir, K, Carrington, S. (2007) "Plants of the Eastern Caribbean".

<http://ecflora.cavehill.uwi.edu/index.html>

Email: sean.carrington@cavehill.uwi.edu.

Faculty of Pure & Applied Sciences

University of the West Indies, PO Box 64

Bridgetown, Barbados

Caves

Animal Flower Cave

The Animal Flower Cave is located under the cliffs at North Point, St. Lucy, Barbados and it is the island's lone accessible sea cave. Down in the cave there are colourful Sea-anemones, locally called 'Animal Flowers' from whence the cave got its name, while others are filter-feeding tube worms that are otherwise known as seafeathers or Sabellastarte Magnifica. The cave now stands some 6ft. above the high tide water mark, even though it was formed at sea level (photo 1).



Photo 1. Animal Flower Cave in Barbados.

Expert

Since 1927 the cave has been in the Ward Family. Animal Flower Cave is operated by third generation family member Manuel Ward and his wife who have numerous years in the restaurant business on the island.

Contact Information

Address: Animal Flower Cave, North Point, St Lucy

Telephone: (246) 439 8797; Email: animalflowercave@yahoo.com

Harrisons Cave

Harrison's Cave is a crystallized, limestone cave is characterized by flowing streams, deep pools of crystal-clear water and towering columns. Its large caverns and phenomenal crystallized formations make it a world-class attraction (photo 2).

Contact Information

Phone: +1 246-417-3700

Email: reservations@harrisonscave.com

Address: Welchman Hall, Barbados

<http://www.HarrisonsCave.com>



Photo 2. Harrisons Cave in Barbados

Projects***National Biodiversity Strategy and Action Plan (NBSAP)***

The National Biodiversity Strategy and Action Plan (NBSAP) is intended to define the current status of biodiversity, the threats leading to its degradation and the strategies and priority actions to ensure its conservation and sustainable use within the framework of the socio-economic development of the country. The main objectives of the Strategy and Action Plan are achieving mobilization of adequate financial resources for the management and conservation of Barbados biodiversity, developing the human resource base and strengthen institutional capacity for biodiversity conservation and management and improving public awareness and education.

Barbadian Medicinal Plants: Development of College Land, St. John Into an Herbal Health and Wellness Tourism Destination

This planning grant seeks to highlight the efforts of a collaborative team from The University of the West Indies, Cave Hill Campus and Codrington College to archive, preserve and cultivate medicinal plants that are currently and historically used to treat ailments in Barbados.

Project Number: BAR/SGP/OP5/Y4/CORE/BD/16/01

Grantee: Codrington College

Focal Area: Biodiversity

Start Date: 2/2016

End Date: 5/2016

Grant Amount: US\$ 5,000.00

Contact Information

Address: Marine Gardens, Hastings, Christ Church

Mr. David Bynoe, National Coordinator

Tel: (246)-467-6011; Fax: (246)-429-2448

Email: david.bynoe@undp.org

Ms. Katherine Blackman, Programme Assistant
 Tel: (246)-467-6037; Fax: (246)-429-2448
 Email: katherine.blackman@undp.org

Engaging the community and building capacity for the Coral Reef Restoration Alliance (CORALL)

The project seeks to engage the Barbadian community to foster conservation and restoration of coral reef ecosystems in Barbados for the well-being of all and to build the capacity of the Secretariat of CORALL.

Project Characteristics and Results:

- Promoting Public Awareness of Global Environment
- Education and outreach activities are to be developed.

Grantee: Bellairs Research Institute
 Country: Barbados
 Area of Work: Biodiversity
 Operational Phase: Phase 5
 Grant Amount: US\$ 4,900.00
 Co-Financing in-Kind: US\$ 4,280.00
 Project Number: BAR/SGP/OP5/Y4/STAR/BD/16/03
 Start Date: 6/2016
 End Date: 8/2016

Grantee Contact

Ms. Susan Mahon
 Address: Bellairs Research Institute
 Folkestone, St. James

Participatory Management for the Barbados Marine Management Area (BMMA)

The project objectives are as follows:

- To develop a zonation map for the BMMA, with input from at least the major marine stakeholders (Fishers, Divers, Swimmers, Catamaran, Jet ski and other pleasure craft operators) by month 4.
- To establish the Stakeholder Advisory Committee (SAC), with representation from each of the major stakeholder groups, to ensure that a participatory approach is adopted for the development and management of the BMMA by month 3 of the project.
- To establish the BMMA Fisher's Consortium, with membership from the Fishers (minimum of 10) who operate within the Management Area by month 5 of the project.
- To obtain baseline information on fish biomass via a participatory approach, designed to improve trust and build better relations between Fishers and BMMA operators from month 1 to 6.

Project Snapshot

Grantee: Coenostrium Inc.
 Country: Barbados
 Area of Work: Biodiversity
 Operational Phase: Phase 5

Grant Amount: US\$ 46,540.00
 Co-Financing Cash: US\$ 7,800.00
 Co-Financing in-Kind: US\$ 33,020.00
 Project Number: BAR/SGP/OP5/Y4/CORE/BD/16/09
 Start Date: 12/2016
 End Date: 12/2017

Grantee Contact

Ms. Angelique Brathwaite
 Address: Talking Trees, Foster Hall, St. John

Sargassum Cleanup: Restoration & Upgrade of Beaches (SCRUB)

The Sargassum Cleanup: Restoration & Upgrade of Beaches (SCRUB) project which seeks to develop a strategy to remove seaweed from the beaches, process, package and sell it to retail stores as mulch while sensitizing the Barbadian society.

Project Number: BAR/SGP/OP5/Y4/CORE/Y4/BD/15/11
 Grantee: Barbados Association of Tourism Employees
 Focal Area: Biodiversity
 Start Date: 7/2015
 End Date: 9/2015
 Grant Amount: US\$ 2,512.50

The Development of the Apiculture Industry in Barbados through the revival and strengthening of the Barbados Beekeeping Association

The project focuses on developing the apiculture industry in Barbados. Its objectives focus on

- developing/enhancing a system for effective project implementation and information dissemination,
- drafting a National Policy for the Apiculture Industry,
- building the capacity of the nine members of the Barbados Beekeeping Association and 20 beekeepers,
- building/strengthening community support and ensuring women and youth involvement and
- establishing 11 demonstration sites to initiate an Entrepreneur- Beekeeping Pilot Project and the promotion of a centralized honey processing facility.

Project Details

Grantee: Barbados Beekeeping Association
 Country: Barbados
 Area of Work: Biodiversity
 Operational Phase: Phase 5
 Grant Amount: US\$ 50,000.00
 Co-Financing Cash: US\$ 10,000.00
 Co-Financing in-Kind: US\$ 40,000.00
 Project Number: BAR/SGP/OP5/Y4/CORE/BD/14/04
 Start Date: 12/2014
 End Date: 10/2015

Grantee Contact

Mr. David Small; Email: DavidSnous@yahoo.com

Address: c/o Barbados Agricultural Society, Beckles Road, St. Michael, Bridgetown

Permaculture Research Institute of Barbados

A Permaculture Research Institute (PRI) is a center for the demonstration and education of sustainability. They are internationally recognized centers set up to both demonstrate sound design in a specific region and climate of the world and populate the local and global community with sustainable leaders and permaculture designers.

Contact Information

Email: office@cpribarbados.com

Lorraine Ciarallo

Site Manager, Designer and Consultant

Caribbean Permaculture Research Institute (CPRI) of Barbados

Graeme Hall, Christ Church

The Barbados Renewable Energy Association (BREA)

The Barbados Renewable Energy Association (BREA) is a Non-Governmental Organization (NGO) focused on Renewable Energy and Energy Efficiency at the residential, commercial, industrial and national Levels.

Expert: Aidan Rogers

Aidan Rogers is current President of the Barbados Renewable Energy Association (BREA) having served in this position since 2013 after joining the association in 2012 and previously serving as public relations officer. Aidan, has been a vocal advocate for the development of the island's Sustainable Energy Policy, legislative and regulatory frameworks both across the print and electronic media.

Contact Information

Address: Level 2, Tom Adams Financial Centre, Church Village, St Michael, Barbados

E-Mail: info@brea.bb

Tel: + 1246-622-2017

Fax: +1 246-622-2017

Caribbean Conservation Association

The Caribbean Conservation Association (CCA) "exists to enhance the quality of life for present and future generations of the Caribbean by facilitating the development and implementation of policies, programmes and practices, which contribute to the sustainable management of the region's natural and cultural resources

Contact Information

Address: Chelford Bush Hill St. Michael West Indies, Barbados

Email: admin@Caribbeanconservation.org

Website: www.caribbeanconservation.org

Region: Americas

Type of Organisation: NGO, Interest in Forestry: peripheral

Caribbean Water & Sewerage Association Inc

The Caribbean Water & Sewerage Association Inc (CAWASA) is a regional organization of water utilities dedicated to serving the growth and development of its members. CAWASA is the successor organization to the Caribbean Basin Water Management Programme Inc. (CBWMP Inc.) which was incorporated in St Lucia on November 30, 2001 under the Companies Act of Saint Lucia No. 2001/237. CBWMP Inc. was the successor organization to the Caribbean Basin Management Project which was incorporated in Barbados in 1996.

Future Centre Trust (FCT)

Future Centre Trust (FCT), also known previously as Counterpart Caribbean, is an environmental organization based on the Caribbean island of Barbados. FCT aims to work with wider organizations such as UNCED to concentrate on economic and tourist activity in Barbados that is based on sustainable development for future generations on the island, the region and the wider world.

Expert: Vivian-Anne Gittens

As of September 2009, the organization is chaired by Mrs Vivian-Anne Gittens and pays specific attention to the education of children in the environment of Barbados. Vivian-Anne Gittens was the Publisher & CEO of the Nation Publishing Co. Limited and the CEO of the Nation Corporation. Mrs. Gittens chaired a number of Nation outreach projects including Greening Barbados, and the Healthy Lifestyle Project. Mrs. Gittens retired from the Nation Group in November 2015.

Contact Information

Address: Little Edgehill, St Thomas, Barbados. West Indies.

Telephone: +1 246 625 2020+; 1 246 620 2021

info@futurecentretrust.org

Barbados National Union of Fisherfolk Organizations

The Barbados National Union of Fisherfolk Organizations (BARNUFO) is a secondary, or umbrella, fishing industry organization for its primary members. It is not a trade union, but an alliance or federation. BARNUFO's objective, according to the written constitution, is to fulfil the requirements of its member fisherfolk organizations with a view to improving their socio-economic conditions based on sustainable development of fisheries.

Expert: Vernel Nicholls – President

Presently completing a Certificate Course in NGO Management at the Open Campus UWI.

Contact Information

Princess Alice Highway, Bridgetown, Barbados

Call (246) 426-5189

barnufo@caribsurf.com, <http://www.barnufo.org>

Non-governmental organisation (NGO)

The Barbados Cactus and Succulent Society

The Barbados Cactus and Succulent Society was formed on Thursday, 2nd February 1961. At the Annual Flower and Garden Show of the Barbados Horticultural Society (2011) there were 482 entries represented by 599 specimens from 23 competitors, 17 of which were members of the society.

Contact Information

info@bdscss.org

Barbados Cactus & Succulent Society

C/O President, Mr. Jeff Chandler

1st Ave. Goodland, St. Michael.

Tel: (246) 425-7744

Barbados Society of Technologists in Agriculture

The Barbados Society of Technologists in Agriculture was formed with the aims of discussing matters concerning agriculture, disseminating information to its members and offering advice to the Barbadian government and other interested agencies.

Contact Information

Telephone: 427-3111

Email: marinahlaurie@gmail.com

Barbados Blackbelly Sheep Association International (BBSAI)

The Barbados Blackbelly Sheep Association International (BBSAI) is the international registry for Barbados Blackbelly sheep and American Blackbelly sheep.

President

Rita Jean Guill

Bush Creek Farm

198 Bush Creek Road

Elma, WA 98541

253-448-7290 or 253-448-7290

Email: president@blackbellysheep.org

Contact Information

Barbados Blackbelly Sheep Association International

198 Bush Creek Road

Elma, Washington 98541

United States of America

Barbados NGOS List

https://bangoonline.igloocommunities.com/ngo_register/ngos_of_barbados/horticulture

Educational Institutions/Libraries

University of The West Indies Sidney Martin Library

Contact Information

Phone: (246) 417-4440

Fax: (246) 417-4460

Email: smlibrary@cavehill.uwi.edu

Address: Cave Hill Rd, Wanstead, Barbados

Codrington College Library

Codrington College is an Anglican theological college in St. John, Barbados. Codrington College Library plays a central role in the college with over 20,000 volumes, about 90 periodical subscriptions and a fledgling multimedia collection to support the mission of the college. The library is also a specialised resource of theological materials for the Anglican Church

Contact Information

Address: Sargent Street, Barbados

Telephone: +1 246-416-8051

Website: <http://www.codrington.org/site/>

Contact: Senior Library Assistant Miss Beverley Barton

Email: beverley.barton@codrington.org/

Tel: 416-8063

Barbados Community College Library

The Barbados Community College is a tertiary institution located on Eyrie Howells' Road, St. Michael, Barbados. The college has a library of over 26,000 volumes including periodicals. It caters to all Divisions and membership is open to all members of the academic and administrative staff and to all registered students upon the completion of a library registration card obtainable at the circulation desk. The library contains 30, 000 volumes and is continually growing with more material being added by way of special and multimedia collections. The purpose of the College Library is to meet the information needs of all sections of the diverse and expanding College community. It services all the bachelor's degree, associate degree, diploma and certificate programmes offered by the college, as well as the research needs of the teaching and non-teaching staff.

Contact Information:

Address: Eyrie Howells' Road, St. Michael, Barbados, W.I.

Telephone: (246) 426-2858

Fax: (246) 429-5935

Samuel Jackman Prescod Polytechnic

Contact Information

Mailing Address: Wildey, St. Michael, Barbados

Telephone Number: (246) 5352200; Fax Number: (246) 4260843

Website: <http://sjpp.edu.bb>

American University of Barbados

American University of Barbados of Medicine (AUB), founded in 2011, is one of the premier Caribbean medical schools. AUB offers a diversity of students a high-quality medical education.

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Barbados Soil Conservation Unit Fruit Tree Propagation

The Agronomy Section of the Ministry of Agriculture has a collection of fruit trees as part of a fruit tree planting programme intended for sale to farmers and sale at calendar events such as Agrofest and Village fairs.

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Stray Livestock Capture Program

The Ranger Service is a unit of the SCU of the Ministry of Agriculture. It is set up primarily for Stray Livestock Capture across the island, to reduce overgrazing and damage to crops. During the early years the Ranger Service was unable to give the control anticipated and eventually even motorists began to express concern for their safety on the roads.

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Bellairs Research Institute

Bellairs Research Institute is Canada's only teaching and research facility in the tropics. Located in Hometown, Barbados, Bellairs Research Institute is a McGill University facility which maintains an open-door policy to all researchers with academic interests in tropical terrestrial and marine environments.

Director: Susan Mahon

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Biologists

Andre Miller

Andre Miller is a marine scientist, PADI Dive Center owner and Master Scuba Diver Trainer, and a passionate leader of the conservation movement in Barbados. Andre was recently named a PADI AmbassaDiver.

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Barry H. Krueger

Barry Krueger studies Environmental Sciences, Biological Sciences, and Coastal and Marine Spatial Planning. Barry worked as a project manager for the Barbados Sea Turtle Project at the University of the West Indies at Cave Hill, Barbados · Department of Biological and Chemical Sciences.

Nikola Simpson

Nikola Simpson is a Marine Biologist and Director at Slow Fish Barbados (Slow Food Barbados). She studied at the University of Guelph and received her master's degree from the University of the West Indies.

Angelique Brathwaite

Angelique Brathwaite works at the Coastal Zone Management Unit's (CZMU) Marine Research section.

Prof Winston F Tinto

Winston F. works at The University of the West Indies, Cave Hill Campus, Bridgetown, Barbados where he works on Biofuels Research <https://www.cavehill.uwi.edu//fst/bcs/resources/biofuels-research-at-cave-hill.aspx>.

7.4 GRENADA, CARRIACOU AND PETIT MARTINIQUE

Geography and Location

Grenada is southernmost of the Lesser Antillean chain of islands in the Eastern Caribbean. It is approximately 166 km (103 miles) northwest of Trinidad and Tobago. It covers an area of about 348.5 km² (134.6 miles²). The highest elevation is Mount St. Catherine in the central northern mountain range, at 840 m (2,760 ft.). The population is about 109,100 (2012).

A number of smaller islands fall within Grenada's jurisdiction, and the two largest are Carriacou and Petit Martinique. Carriacou is about 34 km², and lies about 47.3 km off the northern coast. It has a population of 7,200. The highest point on the island is Point North Peak at 291 m (956 ft). Petit Martinique is about 2.4 km² (0.9 miles²) in area, and sits about 8.4 km northeast of Carriacou. Its highest point is the Piton at about 227 m (~745 ft.), and has a population of 950 persons.

Regulatory Institutions And Associated Expertise

Table 19 in *Appendices* represents the key local institutions and individuals important to ABS, bioprospecting and natural resources management and biodiversity conservation in Grenada.

NP-related Multilateral Treaties

The international treaties and agreements entered and agreed upon by the country of Grenada, Carriacou and Petit Martinique, and which may have some impacts implications for ABS and bioprospecting are listed in table 8.

Table 8 Grenada, Carriacou and Petit Martinique international treaties and agreements, and implications for ABS and bioprospecting

Administration	Treaty/Convention
Main IP Laws	
1	Copyright Act (Cap. 18.08) (2002)
2	Marks, Collective Marks and Trade Names Act (Cap. 18.22) (2002)
3	United Kingdom Designs Protection Act (Cap. 331) (1928)
4	Registration of United Kingdom Patents Act (Cap. 283) (1924)
5	Patents Act (Cap. 18.25) (2002)

Table 8. Cont'd

Administration	Treaty/Convention
WIPO-Administered Treaties	
1	Summary Table of Membership of the World Intellectual Property Organization (WIPO) and the Treaties Administered by WIPO, plus UPOV, WTO and UN
2	Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks (October 27, 2005)
3	Patent Cooperation Treaty (October 27, 2005)
4	Convention Establishing the World Intellectual Property Organization (November 16, 1995)
5	Berne Convention for the Protection of Literary and Artistic Works (April 9, 1995)
6	Paris Convention for the Protection of Industrial Property (April 9, 1995)
IP-related Multilateral Treaties	
1	Convention on the Protection and Promotion of the Diversity of Cultural Expressions 2005 (July 26, 2016)
2	Convention for the Safeguarding of the Intangible Cultural Heritage (July 15, 2016)
3	Convention on the Protection of the Underwater Cultural Heritage (March 3, 2010)
4	Kyoto Protocol to the United Nations Framework Convention on Climate Change (July 7, 2008)
5	International Plant Protection Convention (October 2, 2005)
6	Cartagena Protocol on Biosafety to the Convention on Biological Diversity (September 11, 2003)
7	United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (September 28, 1997)
8	Agreement establishing the World Trade Organization (WTO) (February 22, 1996)
9	World Trade Organization (WTO) - Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) (1994) (February 21, 1996)
10	United Nations Convention on the Law of the Sea (November 16, 1994)
11	United Nations Framework Convention on Climate Change (March 21, 1994)
12	Convention on Biological Diversity (December 29, 1993)
13	Convention concerning the Protection of the World Cultural and Natural Heritage (October 10, 1986)
14	Protocol (I) Additional to the Geneva Conventions of 12 August 1949, and relating to the protection of victims of international armed conflicts (September 14, 1986)
15	Protocol (II) Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts (August 14, 1986)
Regional Economic Integration Treaties	
1	Revised Treaty of Chaguaramas Establishing the Caribbean Community Including the CARICOM Single Market and Economy (February 4, 2002)

Source: World International Property Organisation (WIPO)

<http://www.wipo.int/wipolex/en/profile.jsp?code=GD>

NON-REGULATORY INSTITUTIONS: INSTITUTIONAL STOCKTAKING

How non-regulatory intuitions may influence and impact ABS and bioprospecting in country is exemplified by the local conditions in Grenada's sister but smaller island of Petit Martinique.

Petit Martinique (PM) and the loss of native biodiversity, landscape degradation and benefits from ABS

How might the loss of native species, ecological decline, invasives and dysfunction impede benefits sharing and a country's ability to benefit from such mechanisms? Take the case of Petit Martinique (photo 3). Though relatively small, with a high density of people per km² about 394, most of the residents are concentrated in a small area on the western coast of the island. However, the island is experiencing a considerable amount of soil and coastal erosion, and the Grenada Government has made many attempts at arresting this problem, but without success. Additionally, the island has lost all its original forest cover, and residents rely solely on cisterns for their water supply. Rainfall is seasonal, and the residents annually perform a rites ceremony where they hike to the summit and offer prayers, sacrifice and enticements to the ancestors and God to bring them rain and good fortune each year.



Photo 3. From the summit of Piton, Petit Martinique, looking northeast downslope for several dozen metres, free-roaming goats have completely cleared the undergrowth of the forest.

The biggest contributing factor to the loss of soil and forest cover has been the presence of thousands of sheep, goats, cattle and donkeys farmed on the island for many generations. Even today, goats and then sheep, remain an important dynamic in the lives of residents. Rampaging free-roaming goats eat away at the undergrowth of the forest (photo 3).

On the summit of Piton, Petit Martinique, Kevel Lindsay encountered a species of shrub (photo 4), which he couldn't identify. Subsequent outreach to local and international botanical and plant experts have not been fruitful. Is this species local or introduced? Goats do not eat it; is it another undescribed species or a major invasive? See photo 4 for this mystery plant. Also present at the summit of Petit Martinique are many native hold-overs, just hanging on to mere threads of existence as the goats ravage the island. Two such animals include native Mabuyid skinks, one of which may be a mystery skink species (photos 5 and 6).



Photo 4 The unidentified mystery shrub (immediate left) of the Piton, highest point on Petit Martinique, with Dexter Miller, local PM resident and activist



Photo 5 The rare native skink, *Copeoglossum auae*, Piton, Petit Martinique

But Petit Martinique problems are not just due to its small size, lack of freshwater and rampaging goats (see photo 3 showing how goats have eaten away all the forest undergrowth even at the summit of the island).

With the decline of native species, introduced exotic plants have made enormous inroads, and soon began to dominate. One such species, the Purple Allamanda (*Cryptostegia madagascariensis*), now dominates the island. Kevel Lindsay estimated that most of the plant stems on Petit Martinique consist of this species. When the plant first arrived on the island and how it came to dominate needs to be researched, but it seems to have been there for some time since residents seem to accept its presence as ubiquitous, meaning, the norm.

But the plant is more than just visually a nuisance. It is toxic to most animals, and so persists and dominates. It provides little to native animals and the environment and so native flora and fauna decline. Residents, when asked about native species, seem unaware of what those actually are, and in fact, many animals native or endemic to that part of the Grenada archipelago go completely unnoticed by residents. The

impacts of this plant, along with erosion, loss of native forests, the sheep, goats and other livestock, has created an impression in the resident's minds that there are few or no native species of reptiles, because they are rarely seen and understood.

So, if the residents are not more attuned to non-native species and ecological frameworks, then they will lose their indigenous culture and knowledge, and the ability to recognize foreign from native and vice versa.



Photo 6 Unknown large skink (center of photo), Piton, Petit Martinique

A similar occurrence happened with the Jesus Bird, the Manx shearwater, (*Puffinus puffinus*), a pelagic species that only came to land to nest. There are now no nesting colonies in the Caribbean, but fishermen have long described collecting eggs and nestlings for many generations before they ceased breeding in the region. They are called Jesus Birds because of the habit of dangling the tips of its feet in the waves when flying just above the surface of the ocean.

TRADITIONAL KNOWLEDGE ASSOCIATED WITH BIODIVERSITY

Traditional Knowledge Stocktaking

As such an iconic species as the Jesus Bird or the Manx shearwater has declined and disappeared, so too has tremendous local knowledge, understanding, concern and awareness about a native species and ecosystem. Most fishermen, who relied on the species to tell where schools of fish were, do not know of this history, and its old haunts on many of the cays remain silent today, only place names suggest a former association. Without such vast knowledge being recorded, there is a tremendous loss of critical species, ecological, environmental, cultural use and heritage knowledge to any country.

Without local knowledge, environmental conservation, management, advocacy, effective research, control of many of the invasive species, and restoration of native habitats, the benefits from bioprospecting many be elusive and seem unimportant to many locals, and remain a challenge for many Caribbean countries and territories. There first must be a critical understanding (though not comprehensive) of the local natural environment to meet the needs of the 21st Century if ABS is to work.

7.3 GUYANA

Geography and Location

The Republic of Guyana is located in northeastern South America, wedged between the countries of Venezuela to the west and Surinam to the east. To its south is Brazil. It covers about 214,969 km² (83,000 miles²). Its highest elevation is 2,835 m (9,301 ft.), Mount Roraima, located in the southeastern part of the country on the border with Brazil. The population of Guyana is about 735,909 according to the World Fact Book.

Regulatory Institutions And Associated Expertise

The Legal Framework

The national policy on access to genetic resources and the fair and equitable sharing of benefits arising from their utilisation was published by the Environmental Protection Agency, Georgetown, Guyana in April 2007 (EPA 2007). The Government of Guyana (GoG) has designated the Environmental Protection Agency (EPA) as the National Focal Point for the Convention of Biological Diversity and the National Authority for regulating ABS. An ABS Sub-Committee of the National Biodiversity Committee (NBC) is the national body for making recommendations on ABS to the EPA. The NBC can also make recommendations to the EPA for matters referred to it for further consideration by the ABS Sub-Committee. EPA gives effect to the recommendations of the ABS Sub-Committee or the NBC in granting research approval to applicants. The EPA's Natural Resource Management Division (NRMD) acts as the Secretariat of the ABS Sub-Committee (EPA 2007).

Competent Authorities recommended by the ABS Sub-Committee and accredited by the EPA can include agencies with direct and indirect mandates that consist of, or relate to, genetic resources - including knowledge - and/or ABS. Subject to national laws and mandates, Competent Authorities may include, but are not restricted to, authorities in research, economic and social development, education, land use (including coastal and marine), culture, health, diplomacy, finance or law enforcement, including district or local authorities, or authorities targeted at specific subsets of the population such as gender, religion, youths, the elderly or ethnic groups.

Subject to national laws and mandates, the type of the research on genetic resources requested shall determine the specifics of ABS arrangements, such as the scope of agreements, consultations, and inclusion of relevant competent authorities in ABS negotiations. The GoG recognises that Guyana can benefit from collaborative research activities with foreign researchers and companies and that it is the

responsibility and right of all Competent Authorities and other Guyanese stakeholders to initiate and follow up on these collaborative research activities.

NP-related Multilateral Treaties

Table 7 provides a list of the international treaties and agreements that Guyana has entered into, and which have local, regional and international implications for ABS and bioprospecting.

Table 7 The Republic of Guyana international treaties and agreements implications for ABS and bioprospecting

Administration	Treaty/Convention
Main IP Laws	
1	Geographical Indications Act 2005 (2005)
2	Trademarks Act (Cap. 90:01) (as amended by Act No. 4 of 1972) (1973)
3	Patents and Designs Act (Cap. 90:03) (1973)
4	Merchandise Marks Act, 1888 (Cap. 90:04) (as amended by Act No. 4 of 1972) (1972)
5	Copyright Act 1956 (Cap. 74) (1956)
IP-related Laws	
1	Competition and Fair-Trading Act 2006 (2006)
2	Business Names (Registration) Act (Cap. 90:05) (2000)
3	Deeds Registry Authority Act (Cap. 5:11) (1999)
4	Law Revision Act 1972 (Cap. 2:02, Act No. 4 of 1972) (1972)
IP Laws	
1	The Copyright (British Guiana) Order 1966 (Order No. 79 of 1966) (1966)
Intellectual Property	
1	Patents Regulations (1970)
2	Trade Marks Rules (R. 1/1955 No. 4 of 1972) (1955)
3	Designs Regulations (Reg. 14/9/1947) (1937)
WIPO-Administered Treaties	
1	Summary Table of Membership of the World Intellectual Property Organization (WIPO) and the Treaties Administered by WIPO, plus UPOV, WTO and UN
2	Berne Convention for the Protection of Literary and Artistic Works (October 25, 1994)
3	Convention Establishing the World Intellectual Property Organization (October 25, 1994)
4	Paris Convention for the Protection of Industrial Property (October 25, 1994)
IP-related Multilateral Treaties	
1	International Treaty on Plant Genetic Resources for Food and Agriculture (March 30, 2016)
2	United Nations Convention on Contracts for the International Sale of Goods (October 1, 2015)
3	Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (October 12, 2014)

Table 7. Cont'd

Administration	Treaty/Convention
IP-related Multilateral Treaties cont'd	
4	Convention on the Rights of Persons with Disabilities (October 10, 2014)
5	Convention on the Protection of the Underwater Cultural Heritage (July 28, 2014)
6	Protocol (III) additional to the Geneva Conventions of 12 August 1949, and relating to the adoption of an additional distinctive emblem (March 21, 2010)
7	Convention on the Protection and Promotion of the Diversity of Cultural Expressions 2005 (March 14, 2010)
8	Cartagena Protocol on Biosafety to the Convention on Biological Diversity (June 16, 2008)
9	International Plant Protection Convention (October 2, 2005)
10	Kyoto Protocol to the United Nations Framework Convention on Climate Change (February 16, 2005)
11	United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (September 24, 1997)
12	Agreement establishing the World Trade Organization (WTO) (January 1, 1995)
13	World Trade Organization (WTO) - Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) (1994) (January 1, 1995)
14	Convention on Biological Diversity (November 27, 1994)
15	United Nations Framework Convention on Climate Change (November 27, 1994)
16	United Nations Convention on the Law of the Sea (November 16, 1994)
17	Convention concerning the Protection of the World Cultural and Natural Heritage (September 20, 1977)
18	International Covenant on Economic, Social and Cultural Rights (May 15, 1977)
Regional Economic Integration Treaties	
1	Revised Treaty of Chaguaramas Establishing the Caribbean Community Including the CARICOM Single Market and Economy (February 4, 2002)
2	Global System of Trade Preferences among Developing Countries (May 4, 1989)
3	Panama Convention establishing the Latin American Economic System (SELA) (June 7, 1976)
4	The Georgetown Agreement (formally establishing the African, Caribbean and Pacific Group of States, the "ACP Group"), since 1975 (ACP)(February 12, 1976)

Source: World International Property Organisation (WIPO)

<http://www.wipo.int/wipolex/en/profile.jsp?code=GY>

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ABS policy

The application pathway proposed by Guyana is outlined in fig 5. Applicants from international research and business companies will send their research applications on access to genetic resources to the EPA . Research applications delivered to other Competent Authorities, communities or other stakeholders will be forwarded to the EPA. Depending on the content or interdisciplinary nature of the research application, the EPA shall consult with the relevant stakeholders, to process the application (fig 5).

EPA, through its Secretariat, will forward the application to the ABS Sub-Committee to review the research proposal, and for guidance on benefit-sharing. Negotiations will be conducted by the Secretariat and applicant. The EPA will report to the ABS Sub-Committee for deliberations on the proposed benefit-sharing regime, and any relevant issues. The final contract will be negotiated by the EPA, through its Secretariat, with the applicant. When more stakeholders are involved, the Secretariat and applicant shall, for instance, include an Amerindian community in the negotiations. This will be on the basis of free and prior informed consent and in accordance with the provisions of the Amerindian Act and other relevant national laws and regulations. Stakeholders can choose to be advised by the ABS Sub-Committee but may also seek external advice in the negotiations. Stakeholders are also free to directly negotiate research proposals with applicants. These guidelines will be followed by national and overseas applicants.

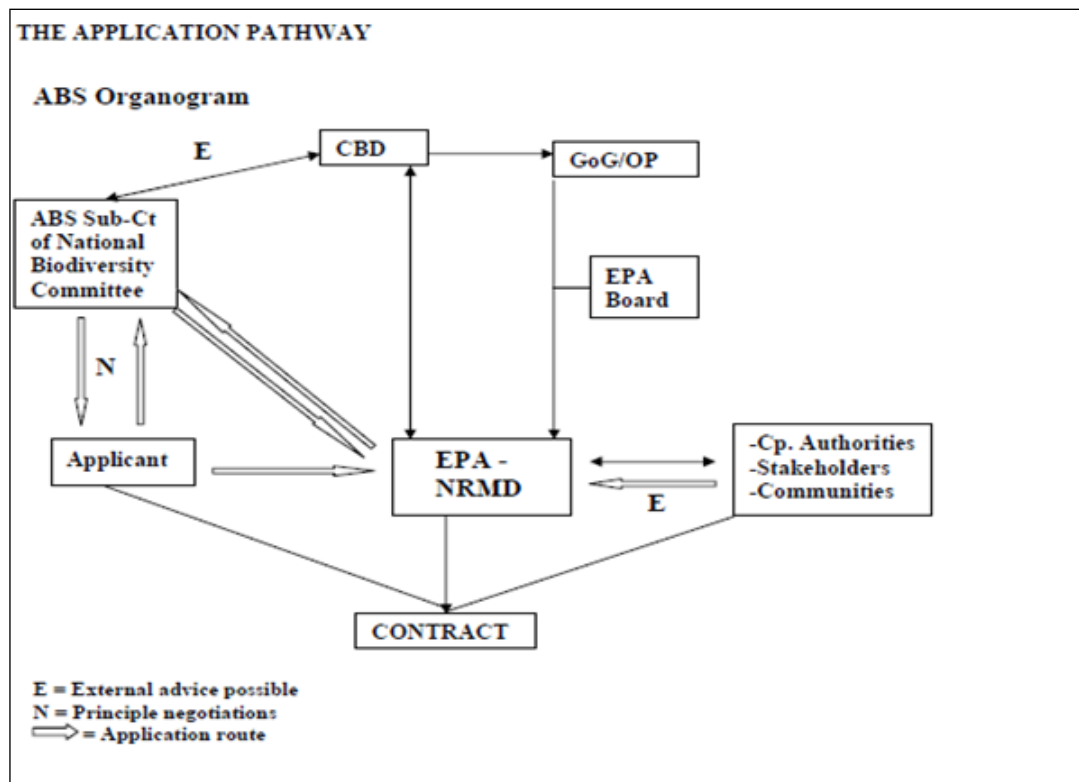


Figure 5 ABS Organogram showing Authorities, Structures and Application Pathway in Guyana

Tourists are not allowed to collect biodiversity specimens, even for home-based ornamental purposes. These include, but are not limited to, samples of herbarium material, feathers, seeds or minerals. When seeds are in local craft work, propagation is forbidden. No species from one area is to be transported to any other area. Amerindian culture is to be respected and not shared unless under an ABS-compliant agreement.

NON-REGULATORY INSTITUTIONS: INSTITUTIONAL STOCKTAKING

NARI

The National Agricultural Research Institute (NARI) is the national focal point for the management of plant and animal genetic resources for food, forage and agriculture in Guyana. NARI is also the focal point for the International Conference and Programme for Plant Genetic Resources (ICPPGR). NARI's mandate does not include Sugar Cane and Rice. These mandates are with Guyana Sugar Corporation (GUYSUCO) and Guyana Rice Development Board (GRDB) respectively, and include other genetic resources related to Sugar Cane and Rice production, such as genetic resources for integrated pest management.

Iwokrama International Centre

The Iwokrama International Centre was created in 1989 for Rain Forest Conservation and Development. Iwokrama is in central Guyana, on 371,000 hectares of pristine forest set aside by the Government for research and other purposes. The Centre is an autonomous non-profit institution established by Guyana and the Commonwealth (Iwokrama 2004).

Caribbean Agricultural Research and Development Institute (CARDI)

The Caribbean Agricultural Research and Development Institute (CARDI) carries out research and development for agriculture in the Caribbean region. Its headquarters are on the campus of the University of the West Indies (UWI), at St. Augustine in Trinidad and Tobago with national offices throughout the region.

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Experts

Dr. Ard Lengkeek, Ms. Fiona Handl, and Mr. Cleveland Paul, provided invaluable technical inputs.

ABS/IPR Sub-Committee

Includes representatives from the EPA, University of Guyana, Ministry of Amerindian Affairs, Ministry of Agriculture, Guyana Forestry Commission, Ministry of Legal Affairs, Ministry of Foreign Affairs, Amerindian Peoples Association, National Biodiversity Advisory Committee, IWOKRAMA, Wildlife Division, and the Guyana Rice Development Board.

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Inter-American Institute for Cooperation on Agriculture

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7.5 JAMAICA

Geography and Location

Jamaica, at 10,911 km², is the third largest by area and the largest English-speaking island in the Caribbean Sea. Jamaica is 145 km south of Cuba, 160 km west of Haiti and 710 km north of Cartagena, Colombia. Kingston, the capital of Jamaica, is located at latitude of 18° N and longitude 78° W. The island measures 230 km from east to west and varies in width between 35 and 82 km north to south. A mountain range runs through the interior from east to west, with the highest point reaching 2,256 m at Blue Mountain Peak. Over half the country is above 305 m with narrow coastal plains surrounding the mountain range comprising 20% of the land area. Jamaica experiences a maritime tropical climate with a hurricane season from June through November and two rainy seasons in May and October/November respectively. Average temperatures are 28° C at sea level and 15°C at 2,000 m.

The current population of Jamaica is 2,810,691 (2016 estimate), with approximately 54% living in urban areas; half of these urban dwellers are concentrated in the capital, Kingston. The Kingston Metropolitan Area overlaps three parishes (Kingston, Saint Andrew and Saint Catherine) and has a population of 700,000 and a population density of approximately 1,528 persons per km². The average population density of the country is 256 persons per km².

REGULATORY INSTITUTIONS AND ASSOCIATED EXPERTISE

The readiness of Jamaica for the Nagoya Protocol, that is to be ABS-compliant is summarized in Table 9.

The Legal Framework

The Legal Framework that covers the areas that impact the Nagoya Protocol include international biodiversity related conventions (RAMSAR Convention), World Heritage Convention, Treaty on PGRFA, CITES and Convention on Migratory Species. There is a local ABS committee co-ordinated by the Ministry of Economic Growth and Job creation. A white paper has been produced detailing the legal framework as it presently exists in Jamaica (Panton 2017).

Table 9. ABS institutional mapping houses.

Jamaica	
Treaty	<p>Not yet ratified the Nagoya Protocol Legislation not yet in place to allow for ratification Support required to assist with process – work is currently ongoing to determine how/what legislative actions need to be/needed are Laws exist that may be applied but no comprehensive overarching legislation or specific reference to ABS in existing laws Environmental framework does not mention ABS</p>
Access	<p>Procedures MTA through NEPA) for access is in place; however, nothing is in place in terms of commercialization contracts Individual PIC required for ethics Approval but not community PIC. Access may be granted by different governing agencies with differing responsibilities, e.g. forestry, fisheries, marine Potential exists for unauthorized access in territorial waters and without country's knowledge</p>
MAT	<p>Capacity to negotiate is available in country but needs to be improved No process for benefit sharing Inter-agency communication at times does not occur Many different entities with responsibility for managing and protecting biological resources Material Transfer Agreements (MTA) required for permits for wildlife research involving endemic species MTA templates available for agriculture</p>
Community Measures	<p>No formal structures currently in place Several different communities exist in country (distinct & local) How to define “local community” for purposes of ABS? What are the criteria for being identified as a local community? Potential for distrust of government NGO’s exist which work in local communities; potential for collaboration? Capacity of local communities needs to be strengthened Structures for interface to be strengthened Local Patents have to state where plant obtained and any TK associated with it</p>

NP-Related Multilateral Treaties

Table 10 provides a list of the international treaties and agreements that Jamaica has entered into, and which have local, regional and international implications for ABS and bioprospecting.

Table 10 Jamaica international treaties and agreements, and implications for ABS and bioprospecting

Administration	Treaty/Convention
Constitution / Basic Law	
1	The Constitution of Jamaica (1999)
Main IP Laws	
1	The Protection of Geographical Indications Act. 2004 (act No.5 of 2004) (2004)
2	The Jamaica Intellectual Property Office Act (2002)
3	The Layout-Designs (Topographies) Act, 1999 (Act No. 30 of 1999) (1999)
4	The Trade Marks Act, 1999 (1999)
5	The Copyright Act (Act No. 5 of 1993) (1993)
6	The Merchandise Marks Act (1985)
7	The Designs Act (1976)
8	The Patents Act (1975)
9	The Broadcasting and Radio Re-Diffusion Act, 1949 (1949)
IP-related Laws	
1	Trade Marks (Amendment Act 2013) (2013)
2	The Consumer Protection (Amendment Act 2012) (2012)
3	The Customs (Amendment) Act 2009 (2009)
4	The Consumer Protection Act 2005 (as consolidated in 2006 (2006)
5	The Registration of Business Names Act 1934 (as consolidated in 2006 (2006)
6	The Customs Act (2005)
7	The Companies Act, 2004 (Act 10 of 2004) (2004)
8	The Customs Regulations, 1955 (as consolidated in 2004 (2004)
9	The Customs Duties (Dumping and Subsidies) Act 1999 (Act 22 Of 1999 (1999)
10	The Fair Competition Act (1995)
11	The Investment Disputes Awards (Enforcement) Act 1967 (as consolidated in 1974 (1974)
12	The Cinematograph Act 1913 (as consolidated in 1969 (1969)
13	The Printers Act 1939 (1939)
Intellectual Property	
1	The Protection of Geographical Indications Regulations, 2009 (2009)
2	The Companies Rules, 2006 (2006)
3	Legal Deposit Regulations, 2004 (2004)
4	The Designs Rules (2004)
5	The Copyright (Designation of National Cultural Events) Order, 2003 (2003)
6	The Trade Marks Rules, 2001 (2001)
7	The Customs Duties (Dumping and Subsidies) (Determination of Fair Market Price, Material Injury and Margin of Sumping) Regulations, 2000 (2000)
8	The Fair Competition Act (Notices and Procedures) Regulations, 2000 (2000)
9	The Television and Sound Broadcasting Regulations, 1996 (1996)
10	The Copyright (Specified Countries) (No. 2) Order, 1994 (1994)
11	The Copyright (Specified Countries) Order, 1994 (1994)
12	The Copyright (Educational Establishments) Order, 1993 (1993)
13	The Copyright (Librarians and Archivists) Copying of Copyright Material) Regulations, 1993 (1993)
14	The Copyright (Recording for Archives) Designated Bodies) Order, 1993 (1993)

Table 10. Cont'd

Administration	Treaty/Convention
WIPO-Administered Treaties cont'd	
1	Summary Table of Membership of the World Intellectual Property Organization (WIPO) and the Treaties Administered by WIPO, plus UPOV, WTO and UN
2	Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks (February 6, 2006)
3	Vienna Agreement establishing an International Classification of the Figurative Elements of Marks (February 6, 2006)
4	WIPO Copyright Treaty (June 11, 2002)
5	WIPO Performance and Phonograms Treaty (June 11, 2002)
6	Brussels Convention Relating to the Distribution of Programme-Carrying Signals Transmitted by Satellite (January 11, 2000)
7	Paris Convention for the Protection of Industrial Property (December 23, 1999)
8	Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations (January 26, 1994)
9	Convention for the Protection of Producers of Phonograms Against Unauthorized Duplication of Their Phonograms (January 10, 1994)
10	Berne Convention for the Protection of Literary and Artistic Works (December 31, 1993)
11	Nairobi Treaty on the Protection of the Olympic Symbol (March 16, 1984)
12	Convention Establishing the World Intellectual Property Organization (December 24, 1978)
13	Cartagena Protocol on Biosafety to the Convention on Biological Diversity (December 23, 2012)
14	Convention on the Protection of the Underwater Cultural Heritage (November 8, 2011)
15	Convention for the Safeguarding of the Intangible Cultural Heritage (December 26, 2010)
16	Convention on the Rights of Persons with Disabilities (May 2, 2008)
17	Stockholm Convention on Persistent Organic Pollutants (August 29, 2007)
18	Convention on the Protection and Promotion of the Diversity of Cultural Expression 2005 (August 3, 2007)
19	International Treaty on Plant Genetic Resources for Food and Agriculture (June 11, 2006)
20	WHO Framework Convention on Tobacco Control (October 4, 2005)
21	International Plant Protection Convention (October 1, 2005)
22	Kyoto Protocol to the United Nations Framework Convention on Climate Change (February 15, 2005)
23	United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (February 9, 1998)
24	Convention on Biological Diversity (April 5, 1995)
25	United Nations Framework Convention on Climate Change (April 5, 1995)
26	Agreement establishing the World Trade Organization (WTO) (March 8, 1995)
27	World Trade Organization (WTO) – Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS Agreement) (1994) (March 8, 1995)
28	United Nations Convention on the Law of the Sea (November 15, 1994)
29	Vienna Convention for the Protection of the Ozone Layer (June 28, 1993)

Table 10. Cont'd

Administration	Treaty/Convention
WIPO-Administered Treaties cont'd	
30	Protocol (I) Additional to the Geneva Convention of 12 August 1949, and relating to the protection of victims of international armed conflicts (January 28, 1987)
31	Protocol (II) Additional to the Geneva Convention of 12 August 1949, and relating to the protection of victims of international armed conflicts (January 28, 1987)
32	Convention concerning the Protection of the World Cultural and Natural Heritage (September 13, 1983)
33	International Covenant on Economic, Social and Cultural Rights (January 2, 1976)
34	Convention on International Civil Aviation (April 24, 1963)
35	Convention (I) for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field (August 5, 1962)
36	Convention (II) for the Amelioration of the Condition of the Wounded, Sick and Shipwrecked Members of Armed Forces at Sea (August 5, 1962)
37	Convention (III) relative to the Treatment of Prisoners of War (August 5, 1962)
38	Convention (IV) relative to the Protection of Civilian Persons in Time of War (August 5, 1962)
Regional Economic Integration Treaties	
1	Revised Treaty of Chaguaramas Establishing the Caribbean Community Including the CARICOM Single Market and Economy (February 3, 2002)
2	Panama Convention establishing the Latin American Economic System (SELA) (June 6, 1976)
3	The Georgetown Agreement (formally establishing the African, Caribbean and Pacific Group of States, the "ACP Group"), since 1975 (ACP) (February 11, 1976)
IP-relevant Bilateral Treaties	
1	Treaty between the United States of America and Jamaica concerning the Encouragement and Reciprocal Protection of Investment (March 6, 1997)
2	Agreement between the Government of Jamaica and the Government of the Argentine Republic on the Promotion and Reciprocal Protection of Investments (November 30, 1995)

Source: World International Property Organization (WIPO)

<https://wipolex.wipo.int/en/legislation/profile/JM>

Institutions engaged in the conventional regulation of research and exchange of genetic resources

National Environmental Protection Agency (NEPA)

NEPA is the institution tasked with the regulation of the exchange of genetic resources through the use of Material Transfer Agreement (MTA). The Institute of Jamaica houses the Clearing House Mechanism (CHM) for CITES and biosafety as well. In 2017, the Ministry of Economic Growth and Job Creation initiated an ABS working group with the aim to lead to country to ratify the Nagoya Protocol. Presently a project proposal is being produced with the help of a UNDP expert to submit to GEF to help in this process.

Recent developments

Recent developments with relevance to this discourse are:

- Plans to upgrade the country's patent law (law of 1857 with minor changes in 1974). In preparation, patent examiners are being trained. Also, since the early 1990s, Jamaica has steadily revised and replaced outdated intellectual property laws. Jamaica has new and modern legislation in copyright, trademarks, layout designs of integrated circuits and most recently, geographical indications.
- One of the adjustments to the patent regulations, is that all patents filed in Jamaica must state where the plant was obtained from, and any traditional knowledge associated with the invention.
- Initiation of a local ABS committee in 2017 charged with preparing the country for signing the Nagoya Protocol.
- Adding a new ministry, the Ministry of Economic Growth and Job Creation (MEGJC) in March 2016. This Ministry initiated an ABS working group in 2017.
- The ABS working group led by the MEGJC produced a white paper entitled '*Position Paper: The Nagoya Protocol on Access and Benefit Sharing – A look at the current legal framework and the steps to be taken to ratify the Protocol*' (Panton 2017).
- A bamboo industry being led by the Bureau of Standards (standards led, market driven) with input from a wide array of ministries, local government, companies and academia since 2015. New standards and products developed under this project need intellectual property protection.
- The Ministry of Agriculture has been joined with the Ministry of Commerce and Industry to push agriculture as a business and to facilitate agro-processing.

Issues and Challenges

- The GOJ spent approximately 1% of its 2014-15 national budget on STI related activities. This in relation to an expenditure increase on R&D from 0.1 to 0.3 % of GDP representing a 57 per cent increase between 2001 and 2004. Jamaica spends about 0.1 percent of its GDP on R&D compared to nearly 0.6 percent of their GDP by other Caribbean countries. T&T spent 0.05% of GDP on its R&D in 2012. It is suggested that countries should spend at least 1 percent of their GDP on R&D to optimally benefit from STI. Jamaica ranks 82 of 143 countries on the Global Innovation Index (*Villavicencio & Ponce, 2009*).
- Average Scores for Mathematics and Science in the GSAT examinations over the 2010-15 have both bordered around 60%. In 2014, the average score for Science was 69%. (the point here is that they are static or stagnant). At the CXC level, the past 5 years show that less than half of the students attain 1-3 grades in Mathematics and the percentage of students attaining 1-3 Grades in the Sciences was outpaced by that of the Technical, Vocational, Business and the Arts (Ivey 2012).

- Low level of patents requested and granted. The existing patent system is used by an overwhelming majority (over 90 per cent) of foreign entities mainly as a means of re-registering existing foreign patents. Local entities including academic centres are not producing patents to any large degree. Between 2001 and 2003, seven patents (12 in 2014) were granted to Jamaican inventors in the fields of pharmaceuticals, furniture building, construction and information technology (WIPO).

***Protecting Folklore, Traditional Healing Arts and Indigenous Biological Assets
(written in 2000)***

There are certain national assets that cannot be directly or comprehensively protected or exploited under any of the existing systems of intellectual property protection. Examples are folklore, traditional methods of healing, and aspects of the ecosystem that can be used as "starting material" and then modified for use in biotechnological inventions. This does not mean, however, that Jamaica cannot create mechanisms to control their exploitation and require that Jamaicans receive compensation for their use. Indeed, the right to control unique biological assets is specifically recognized in the Convention on Biodiversity. As a sovereign state, Jamaica has the right to control access to its territory. Any visitor to Jamaica seeking to do research in the country's folk traditions, traditional healing arts or in its unique biology can be required as a condition of entry into Jamaican territory to agree to share the financial and other fruits of discoveries arising out of such research with Jamaicans. The Office of Intellectual Property should conduct a study of the legal options available to implement such a policy.

http://www.iatp.org/files/Modernizing_Jamaicas_Intellectual_Property_Sys.htm

NON-REGULATORY INSTITUTIONS: INSTITUTIONAL STOCKTAKING

Institutional Arrangements of Bioprospecting

The institutional arrangements for bioprospecting in Jamaica are poorly defined and are not binding. The government monitors MTSs through NEPA but there is no defined system and what exists is not ABS-compliant. The universities (local, regional and overseas, locally-based universities) and research institutes carry out research that is also not ABS-compliant. Only the University of the West Indies (UWI) has an ethics committee but this is also not ABS-compliant. At times, outside institutions such as Fairchild Gardens (Miami, USA), New York Botanical Gardens (New York, USA), National Geographic, Kew Gardens (UK) will approach NEPA for permission to search for plants (not ABS-compliant).

Institutions, laboratories, experts and their related expertise have been listed in the appendix table. Expertise is present for all activities along the value-chain: exploration of biodiversity, ethnobotany, ethnomedicine, ethnomedicine, ethnopharmacology, pharmacognosy, efficacy and toxicity testing, biochemistry (liver enzymes p450, anti-

oxidant etc.), phytochemical identification, bioactivity screens (antibacterial, antifungal, antiviral, anticancer, cell tests, preclinical, clinical trials for various human diseases such as diabetes), molecular biology, plant tissue culture and product development (e.g. nutraceuticals, drugs). Outside of Science and Technology, there is also training for lawyers, business, social sciences and the humanities. Only the University of the West Indies, Mona Campus in Jamaica has the capability for clinical trials. Training from Bachelor to PhD in all areas listed is also available at these institutions.

The institutions with capacity for research are (SRC), (UTECH), (NCU) and UWI. The UWI has three campuses – in Jamaica, Trinidad and Barbados. It also has an Open Campus with online courses with offices in most islands in the Caribbean ([Anguilla](#), [Antigua & Barbuda](#), [Bahamas](#), [Barbados](#), [Belize](#), [British Virgin Islands](#), [Cayman Islands](#), [Dominica](#), [Grenada](#), [Jamaica](#), [Montserrat](#), [St. Kitts and Nevis](#), [St. Lucia](#), [St. Vincent & the Grenadines](#), [Trinidad & Tobago](#), [Turks & Caicos](#)), The University of the West Indies (The UWI) has broken into the *Times Higher Education (THE) World University Rankings* for the first time. *The 2019 Times Higher Education World University Rankings* has ranked The UWI among the top 1,258 universities in the world for 2019. This puts The UWI in the elite band of the top 5% of universities worldwide. The UWI is the only Caribbean institution on the world-wide list. It was also the only Caribbean university ranked earlier this year in *THE's 2018 Latin America University Rankings*, in the region that is home to over 100 universities contributing to sustainable development.

In Jamaica, marine research is only being conducted by UWI, especially at its marine stations. Research is reasonable for the level of staff and funds available (Mitchell and Ahmad 2006) but a bigger push will be needed to make the sector take off. Signing the Nagoya Protocol and an updated Patent Law will help move the industry forward.

Jamaica Science and Technology Policy

Jamaica's first S&T Policy was promulgated in 1960 and gave rise to the Scientific Research Council (SRC). The important national function of coordination never took place. The second S&T Policy was established in 1990 to ensure national S&T coordination and management by creating the National Commission on Science and Technology (NCST). The third policy (not yet promulgated) emphasizes Science, Technology and Innovation within a National Innovation System (NIS), as an integrated systems-based approach. This system includes Governmental Institutional Integration and a Growth and Innovation Engine (comprised of R&D, Business Development Agencies and Capability Enhancers). The idea is that the NIS converts information into knowledge which is then applied to develop innovative solutions that entrepreneurs then utilize to generate the greatest possible value through commercial ventures (Ivey 2012). The S&T policy does not mention the Nagoya Protocol or Access and Benefit Sharing.

Institutions involved in Genetic and Value-added Research

Seeds of most commercial food and agricultural varieties are bred outside of Jamaica. There are a few exceptions – such as the sorrel variety Bashment (*Hibiscus sabdariffa*), pumpkin (McGlashan *et al*, 2008) and cannabis. Local breeding activities are confined to the Ministry of Agriculture and UWI.

Active genetic resource research is being undertaken by all major universities in Jamaica such as University of the West Indies (UWI), University of Technology (UTECH), Northern Caribbean University (NCU) and other research institute such as the Scientific Research Council (SRC) and Coconut Board. The links between this research and the governmental ministries is not strong, so opportunities are being missed. The UWI has an Ethics Committee from which any project that has to do with human research including field questionnaires has to get acceptance. However, only individual PICS are required, and it is not presently ABS compliant. Also, the universities need to be more aware of the Nagoya Protocol, PIC and MATs. As local communities are becoming more aware of their rights, they are demanding proper respect for their TK and GR before allowing access.

There is a data base maintained by the SRC on Jamaica Science and Technology Skills and Expertise (<http://www.src.gov.jm/information-services/databases/skills-bank/>). It is searchable by name and science area but needs to be populated with information. The National Commission on Science and Technology (NCST) also gathers information on the science and innovation system of Jamaica. All the major universities and institutions in Jamaica have molecular biology experts and courses. These include but are not limited to UWI, NCU, UTECH, SRC and Coconut Board. Capacity (labs and trained staff) is in place for molecular biology. At the UWI, is Caribbean Genetics (CARIGEN) that is a company that provides genetic services (<http://caribbeangenetics.com/>), Caribbean Toxicology (CARITOX) that provide independent forensic DNA and toxicology services to citizens and the judicial system.

Institutions involved in Marine Research

Marine research has been conducted by various departments of the Faculty of Science and Technology, University of the West Indies, Mona Campus. The Department of Life Sciences conducts research mainly through its faculty members and postgraduate students on both terrestrial and aquatic topics. The Centre for Marine Science (CMS) that is within the Department of Life Sciences conducts and facilitates marine research out of two of the three marine laboratories located in Jamaica: the Discovery Bay Marine Laboratory (DBML) and the Port Royal Marine Laboratory (PRML). The DBML is the hub for research on the north coast of the island conducted by the UWI as well as international universities. The first studies done to describe coral reef ecology were

conducted at this laboratory. The PRML in association with government and non-governmental organizations (NGO) conducts research on the south coast. Research topics include the biological composition of Jamaican benthic and pelagic waters, coral reef studies (such as assessment, monitoring, nursery and restoration), plankton and fish species composition studies as well as the impact of invasive species and the sustainable use of commercial fisheries. The Centre for Marine Sciences in collaboration with NGOs such as the Inter-American Development Bank have mainly focused on coral reef and fishery restoration, that is increasing coral cover and fish abundance. The main tool for fishery restoration is fish sanctuaries. They create a refuge for fish to reproduce, increase in numbers and "spill over" into the neighboring unprotected areas for fishermen to catch. The rule behind fish sanctuaries is that you cannot remove any fishable organism from within the sanctuary. If selected wisely, fish sanctuaries could operate as a genetic repository for certain species, those that tend to stay within the general area.

Coral Nurseries are the main tool used in coral restoration where various methods are used to grow coral to a viable size which are then out planted on to the reef. The Centre for Marine Sciences, Alligator Head Foundation, Caribbean Coastal Area Management (CCAM) Foundation and The Nature Conservancy are the major players that seek funding to carry out this work (conservation).

Dr. Winklet Gallimore of the Chemistry Department UWI Mona has focused on identifying commercially viable natural products from marine plants and sponges. The Biotechnology Centre and the Department of Life Sciences have conducted research on the genetic diversity of the queen conch in Jamaica's Exclusive Economic Zone and the wider Caribbean in association with the Smithsonian Marine Station in Fort Pierce, Florida. The Natural Products Institute, UWI and Scientific Research Council, on the other hand, have been interested in assessing the bioactivity of marine phytochemicals.

There are currently no private companies nationally or internationally that are actively searching for commercially viable marine natural products in Jamaican waters. The ability to develop bioactive compounds into commercial products is extremely difficult to carry out in Jamaica as the necessary infrastructure needed is too expensive to acquire especially as it relates to genetic resources. Due to the vast size of Jamaica's Exclusive Economic Zone, it has become increasingly difficult to monitor an area that is more than twice the size of mainland Jamaica allowing for illegal collection to take place unnoticed. The Government of Jamaica has very recently obtained a surveillance plane that will be commissioned soon to combat this issue.

Organizations with offices in Jamaica involved with R&D and testing(list available at ncst.gov.jm/s-t-institutions/)

Organization	Website
Agricultural Development Corporation	http://www.agroinvest.gov.jm/About_Us/history.html
Banana Board	http://thebananaboard.org/
Biotechnology Centre	http://www.mona.uwi.edu/biotech/
Bodles Research Centre	Principal Research Director – 876-983-2106 Deputy Research Director - Crop/Plant – 876-745-2956
Bureau of Standards of Jamaica	https://www.bsj.org.jm
Caribbean Food & Nutrition Institute	http://www.cfni.paho.org
CARDI	http://www.cardi.org
Caribbean Food & Nutrition Institute	http://www.cfni.paho.org
Caribbean Institute for Health Research	https://www.uwi.edu/caihr
CARIGEN, FMS, UWI	caribbeangenetics.com/ c/o FMS, UWI
CARITOX, FMS, UWI	
Centre for Marine Sciences	https://www.mona.uwi.edu/cms/
Citrus Growers Association	http://www.icgja.com/index.php?action=home
Cocoa Industry Board	http://www.moa.gov.jm/agencies&stat-bodies/CocoaBoard.php
Coconut Industry Board	http://www.coconutindustryboardjm.org/
Coffee Industry Board	http://www.ciboj.org/
College of Agriculture and Science Education (CASE)	http://www.case.edu.jm
Environmental Control Division	http://moh.gov.jm/divisions-agencies/divisions/environment-health-unit/
Faculty of Engineering	https://www.mona.uwi.edu/engineering
Faculty of Social Sciences	https://www.mona.uwi.edu/socsci
Faculty of Medical Sciences, UWI,	https://www.mona.uwi.edu/fms/
<ul style="list-style-type: none"> • Basic Medical Science • Microbiology • Molecular Biology • Dentists • Nutritionists 	
Faculty of Science and Technology, UWI	https://www.mona.uwi.edu/fst/
<ul style="list-style-type: none"> • Chemistry • Life Sciences • Mathematics • Computing • Physics 	
Fisheries Division, MICAF	http://moa.gov.jm/Fisheries/
Food Storage and Prevention of Infestation Division	http://www.fspid.gov.jm/

Forensic Laboratories	https://www.mona.uwi.edu/fms/department-pathology https://www.mns.gov.jm/content/institute-forensic-science-and-legal-medicine
Forestry Department, MICAF	www.forestry.gov.jm
Mines & Geology Division, MGD	http://www.mgd.gov.jm/
International Centre for Environment and Nuclear Sciences (ICENS)	http://www.icens.org
Institute of Jamaica	http://www.instituteofjamaica.org.jm
Inter-American Institute for co-operation in Agriculture (IICA)	www.iica.int/en/countries/jamaica
Jamaica Bauxite Institute	www.jbi.org.jm
Jamaica Intellectual Property Office	http://www.jipo.gov.jm/
Jamaica National Agency for Accreditation	https://www.janaac.gov.jm/accredited-cabs/labs.html
JAMPRO	www.jamaicatradeandinvest.org/landingpage
Lab Information System, FMS, UWI	https://www.mona.uwi.edu/fms/lis/
<i>Laboratory Services Offered:</i>	
Haematology	
Chemical Technology	
Blood Banking	
Histopathology	
Cytology	
Bacteriology	
Parasitology/Enteric	
Mycology	
Immunology	
Virology	
Ministry of Economic Growth and Job Creation (MEGJC)	https://megic.gov.jm
Ministry of Industry, Commerce, Agriculture and Fisheries (MICAF)	http://www.moa.gov.jm
Ministry of Health (MOH)	http://www.moh.gov.jm
Ministry of National Security	https://www.mns.gov.jm
Ministry of Science, Energy and Technology (MSTEM)	http://www.mset.gov.jm/
Ministry of Water, Land, Environment and Climate Change (MWLECC)	http://www.mwh.gov.jm/
National Commission on Science and Technology (NCST)	http://ncst.gov.jm/
National Environmental Protection Agency (NEPA)	http://www.nepa.gov.jm
National Meteorological Service)	http://www.metservice.gov.jm/
National Irrigation Commission	http://www.nicjamaica.com
National Water Commission quality assurance lab	http://www.nwcjamaica.com
Natural Products Institute, FST, UWI	c/o FST, UWI, Mona
Northern Caribbean University	https://ncu.edu.jm
Organization of American States	http://oas.org/en/about/offices_detail.asp?sCode=JAM

(OAS)	
Petroleum Corporation of Jamaica	http://www.pcj.com/dnn/
Planning Institute of Jamaica	http://www.pioj.gov.jm/
Rural Physical Planning Division	http://www.rppdjm.com/land-use-gallery.html
Rural Agricultural Development Authority	http://rada.gov.jm/
Sugar Industry Research Institute	http://www.jamaicasugar.org/SIRISection/SIRIMain.php
Scientific Research Council	http://www.src-jamaica.org
United Nations Development Programme (UNDP)	registry.jm@undp.org
UN offices in Jamaica	https://www.un.int/jamaica/jamaica/un-offices-jamaica
University of the West Indies, Mona Campus	https://www.mona.uwi.edu/
University of the West Indies, Open Campus	https://www.open.uwi.edu/
University of the West Indies, Headquarters	https://www.open.uwi.edu/ 14 campuses, 17 nations
University of the West Indies, Western campus	https://www.mona.uwi.edu/wjc/
University of Technology (UTECH)	http://www.utech.edu.jm
Veterinary Division	http://www.moa.gov.jm/VetServices/index.php
Vector Control Unit	https://www.moh.gov.jm/updates/vector-control/
Virology lab, Department of Microbiology, FMS, UWI	c/o FMS, UWI Mona
Vision 2030	http://www.vision2030.gov.jm/

University of the West Indies, Mona Campus

University of the West Indies is a regional university with three main campuses – Cave Hill, Mona and St Augustine (Barbados, Jamaica and Trinidad & Tobago respectively) and an Open Campus with offices in 11 other countries in the Caribbean.

Website: <https://www.mona.uwi.edu/>

Inter-American Institute for Cooperation on Agriculture

As the specialized agency of the Inter-American System for agriculture, the Inter-American Institute for Cooperation on Agriculture (IICA) supports the efforts of the Member States to achieve agricultural development and rural well-being.

Contact Information

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Inter-American Institute for Cooperation on Agriculture
Agricultural Association
San José Province, San Isidro, Costa Rica, +506 2216 0222

Caribbean Agricultural Research and Development Institute (CARDI)

The Caribbean Agricultural Research and Development Institute (CARDI) carries out research and development for agriculture in the Caribbean region. Its headquarters are on the campus of the University of the West Indies (UWI), at St. Augustine in Trinidad and Tobago and it also has national offices throughout the region.

Contact Information

CARDI HEADQUARTERS

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NGO list for Jamaica: <https://jamaicans.com/nfpo/>

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The Honourable Mr. Justice – Puisne Judge

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EXPERTISE IN THE MARKETPLACE

Fresh and Dried Herbs

Herbs and spices are used for flavoring, morning teas, for preventative and curative purposes. They are used fresh or dry, mainly as infusions and decoctions. Herbs can be bought at the market, and supermarkets – fresh, dry, teas, or as powder.

Herb markets, trade in local medicaments

Root tonic manufacturing (table 11) is the closest Jamaica gets to an indigenous, locally initiated manufacturing sector. All plant material is obtained from the forest areas of Jamaica. All inputs are locally obtained (Mitchell 2011). A study undertaken to identify companies in the sector using Jamaican grown plants, indicated the sale of wide number of dried medicinal herbs and spices, essential oils, cosmeceuticals, nutraceuticals (table 12). However, most pharmaceuticals are not made locally, most are only repackaged and distributed.

Table 11 Local root tonic manufacturers

Name Of Product	Manufacturer Name	Manufacturers Address
Roots Drink Staminizer	Zion Organic	Magazine Lane, Bog Walk, St. Catherine, Ja W
Roots Drink Staminizer	Zion Hard Drive	Jericho District, Linstead, St. Catherine, Jamaica
Natural Roots Drink	Natural Vibes	Main Street, Bog Walk, St. Catherine, Jamaica WI
Rootsta Roots Drink	Roxy Industries LTD.	Browns Town P.O., St. Ann, Jamaica
Fisherman's Roots Malta	Big City Brewing Company	7 Peacon St., Kingston Jamaica
Magnum Tonic Wine	J Wray & Nephew Ltd For Lascelles Merchandise Ltd	Second St. Newport West, Kingston 11, Jamaica
Put It een Wine Roots Tonic Wine	Brewed And Bottled By SamSons Herbal Products. Marketed and Distributed by House Of Honour Distributors	Scott's Pass, Clarendon, Jamaica 29 Burlington Avenue, Kgn 10, Jamaica
Pump it Up Wid Big Man Roots Tonic Wine	Brewed and Bottled By Samsons Herbal Products. Marketed By Chonwhit Distributors Ltd.	5 East Oakridge, Kingston 8, Jamaica
Moon Bran Roots Man Power Wine Tonic	Moon bran roots limited	28 Ellastowe Avenue, Kgn 11, Jamaica

Table 12 Selected Companies selling botanical, nutraceutical and cosmeceutical products made with locally grown plants

Companies	Website	Items
Jamrow Trading MD - Pepon Roddock	http://jamrow.com.jm/ Spices and seasonings, raw material for root tonics and other uses	exports hot pepper sauce, jerk seasoning, root wines, sarsaparilla, etc.
PA Benjamin MD - Christopher Powell	http://www.pabenjamin.com/ PRESENTLY UNDERGOING EXPANSION	Bay rum Spicy Jamaican Jerk seasoning Vanilla Herbal teas
Perishables Jamaica Limited MD - Norman Wright	TOPS brand http://topsjamaicanteas.com/	100% Jamaican teas - sorrel, ginger, turmeric, ginger-mint, neem, moringa, vervain, etc.
Sangster, MD, Mr. Sangster	https://www.my-island-jamaica.com/sangsters_rum_cream.html	Liquors - Mint
Baba roots	http://www.angelfire.com/planet/nicholasvariety/babaroots.html	Root tonics
Herbal Renaissance, MD – Mr. Fudail		Wide range of dried, capsuled herbal products
Technosol – Dr. Lyndon Johnson	http://www.technosolltd.com/	produces pimento and lemon grass oil
De La Enzie Essentials, MD - Chenielle Delahaye- Mckenzie	https://www.delaenzieessentials.com/	Locally produced essential oils and herbal product line (soaps, lotions, creams, aromatherapy)
Castor oil: Shirley Lindo, St Catherine	http://www.jamaicaobserver.com/agriculture/castor-oil-8212-jamaican-black-gold-producer-argues-that-country-is-losing-out_102191?profile%3D1373	Castor oil products
Starfish Oils MD - Stella Rosen	14 Bell Rd Kingston 11 http://starfishoils.com/ , http://dobusin.essjamaica.com/blog/the-starfish-oils-success-story/	Candles, Mosquito spray
Blue Mountain Aromatics, Portland	https://www.facebook.com/bmaromatics	Company is working in Beauty professionals, Natural skincare, Beauty products, Organic skincare, Skincare business activities.

Source: S. Mitchell.

Formal pharmaceutical sector

There are several pharmaceutical companies, but most of the activity is buying and selling of drugs imported from abroad. Research in this area is weak due to the high cost. However, research is being undertaken at the Natural Products Institute and the Biotechnology Centre in the Faculty of Science and the Faculty of Medical Science, UWI. The FMS also has capability for clinical trials. There is also research in this area occurring at SRC, UTECH and NCU. A few companies sell products made from Jamaican biodiversity, these include Federated Pharmaceuticals, PA Benjamins and Eden Gardens. All other pharmaceuticals sold in Jamaica are imported. The Pharmacy Council decides if they are List 1 or List 2 drugs.

Products Available in the Marketplace

In table 13 an idea is given of products available in Jamaica, that have made using Jamaica's biodiversity. The percentage use of local plants is not known. There are presently only a few companies making essential oils locally, most are imported.

Table 13. Products manufactured from Jamaican biodiversity.

Chemicals, Cosmetics & Pharmaceutical Products Group

- **Aromatic oils** – Starfish Oils
- **Candles** – Aisha Marie Products; Starfish Oils
- **Cosmetics** – La India Cosmetics; PA Benjamin Manufacturing Company Ltd; Jencare Skin Farm; Cosmetics International Ltd; Associated Manufacturers Ltd; Yono Industries Ltd
- **Fuels/Lubricants** – Cool Petroleum Ltd; Jamaica Biofuels Ltd; Petroleum Company of Jamaica Ltd
- **Hair products** – La India Cosmetics; Leon's Beauty Products; Orion Sales Ltd; Jamaica Cosmetics Ltd; MDRM International Ltd; Yono Industries Ltd
- **Perfumes** – Parfums Jamaica Ltd; La India Cosmetics; Fantastic Cosmetics
- **Personal Care Products (body wash, lotions, soap, shampoo, mouthwash, etc)** – Windsor Laboratorie; Supreme Chemicals Ltd; PA Benjamin Manufacturing Company Ltd; Mac's Pharmaceuticals & Cosmetics; EW Abrahams and Sons Ltd; Cosmetics International Ltd; Barco Caribbean Ltd; La India Cosmetics; Yono Industries; Jencare Skin Farm; Latin America Exporters Ltd; Leon's Beauty Products; Hi-Gene Industries Ltd; Tropitopia Ltd
- **Pharmaceuticals** – Mac's Pharmaceuticals & Cosmetics; Supreme Chemicals Ltd; PA Benjamin Manufacturing Company Ltd; Windsor Laboratories; Federated Pharmaceuticals
- **Soaps** – Advanced Chemicals Laboratories Ltd; Jencare Skin Farm; Pretti Slippery; Starfish Oils; Zep Products Ltd; Blue Power; Wynlee Trading Company Ltd; Yono Industries Ltd.

Food & Agro

- **Alcoholic beverages** – Big City Brewing; J Wray & Nephew Ltd; Red Stripe; Value Manufacturing Company Ltd; Everglades Farms Limited; Irie Vibes; Appleton Estate
- **Baked products** – Baking Enterprises/Yummy Bakery; Breads & More; Captain's Bakery Ltd; Chocolate Dreams; Consolidated Bakeries (Ja) Ltd; Continental Baking Company Ltd; Cost

- Cub Ltd; Dolci Jamaica Ltd; Honey Bun (1982) Ltd; International Biscuits Ltd; (Seprod Group); Jamaica Biscuit Company Ltd; Jamaica Flour Mills Ltd; Poly Foods Ltd; Loybar Jameric; Tortuga Caribbean Rum Cake Jamaica Ltd; Caribbean Flavours & Fragrances Ltd; Peoples Favourite Baking Company Ltd; Tyco Foods Ltd; Signature Cakes & Desserts Ltd
- **Biscuits/Cookies** – Captain's Bakery Ltd; Continental Baking Company Ltd; International Biscuits Ltd (Seprod Group); Jamaica Biscuit Company Ltd; Restaurants of Jamaica Ltd
 - **Bottled/Canned foods** – West Best Foods Ltd; Musson Jamaica Ltd; Grace Food Processors (Canning) Ltd
 - **Canned ackees** – Sunshine Food Processors Ltd; Canco Ltd
 - **Chips** – Poly Foods Ltd; Restaurants of Jamaica Ltd; Trinjam Food Processors Ltd; JP Tropical Foods; Nature's Way Products
 - **Coffee** – Greenwich Mountain Estate Ltd; Jamaica Standard Products Company Ltd; Mavis Bank Coffee Factory Ltd; Salada Foods; Bloxburgh Gourmet Creations Ltd
 - **Essential oils/Flavourings** – Caribbean Flavours & Fragrances Ltd; Flavorlan Ltd; Easispice Manufacturers Ltd; Island Spice Ltd; PA Benjamin Manufacturing Company Ltd; International Ingredients Ltd; Virginia Dare Jamaica Ltd
 - **Food supplements** – Immuno Venture Products Ltd
 - **Honey** – Honeykist Apiaries Ltd; Sue Tru Caribbean Manufacturers & Distribution Ltd
 - **Jams** – Roberts Products Company Ltd; King Pepper Products Ltd; A Taste of the Caribbean; Nature Vine Nectar
 - **Juices** – Tyco Food Ltd; Coldfield Manufacturing; Econo Products Jamaica Ltd; Golden St Mary Traders Ltd; Grace Food Processors (Canning) Ltd; Jamaica Citrus Growers Ltd; O Jay Coolers Ltd; Roberts Products Company Ltd; RST Industries Ltd; Spike Industries Ltd; Serge Island Dairies Ltd; Trade Wind Citrus Ltd; Caribbean Producers (Jamaica) Ltd; Ramble Enterprise Ltd; Mr Cane; Nature's Way Products
 - **Puree/Juices** – Food Essentials Ltd
 - **Roots/ Energy drink** – Roxy Industries Ltd; BABA Ltd; Nature Fresh
 - **Seasoning/Spices/Sauces** – Associated Manufacturers Ltd; Easispice Manufacturers Ltd; Fachoy Foods Ltd; Grace Food Processors (Canning) Ltd; Gray's Pepper Products Ltd; Island Spice Ltd; King Pepper Products Ltd; Nestle (Jamaica) Ltd; PA Benjamin Manufacturing Company Ltd; Roberts Products Company Ltd; Spur Tree Spices Jamaica Ltd; Walkerswood Caribbean Foods Ltd; J3R Food Product; Jamaica Standard Product Company Ltd; Parang Industries Ltd; The Pickapeppa Company Ltd; Spicy Hill Farms Ltd; A Taste of the Caribbean; Bloxburgh Gourmet Creations Ltd; Ripple Effect; Spring Vale Enterprise; The Jerk Place & Restaurant Ltd
 - **Soups** – Spicy Hill Farms Ltd; Nestle-JMP (Ja) Ltd; National Processors Ltd (Grace Kennedy & Company Ltd)
 - **Tea** – Perishables Jamaica Ltd., Salada Foods Jamaica Ltd., Jamaican Teas Ltd.
 - **Vinegar** – Tropical Syrup Manufacturing Company Ltd; Tyco Food Ltd; Vap Ltd; Cal's Manufacturing Ltd; The Pickapeppa Company Ltd
 - **Wines** – J Wray & Nephew; Roxy Industries; Vap Ltd; Pings Distributors Ltd; Bloxburgh Gourmet Creations Lt; Journey's End; World Water Enterprise Ltd
 - **Yogurts** – Dairy Industries (Ja) Ltd.

SOURCE: Made in Jamaica (full list at <http://digjamaica.com/blog/2013/06/24/list-more-than-100-things-made-in-jamaica/>).

7.6 ST. KITTS AND NEVIS

Geography And Location

The Federation of St. Christopher and Nevis, or St. Kitts and Nevis, as it is more commonly called, is located in the northern Lesser Antilles, about 417 km (259 miles) southeast of the United States Territory of Puerto Rico, and about 104 km (65 miles) northwest of the island of Antigua. St. Kitts is 180 km² in area, with its highest point being Mount Liamuiga at 1,156 m (3,792 ft.). Nevis has an area of 93 km². The highest elevation on Nevis is Nevis Peak at 985 metres (3,232 ft.).

The capital of the country is Basse-Terre, though Nevis runs semi-autonomously with its own Island Assembly and Administration, a Premiere and a Deputy Governor General. The Federation has a single federal parliament and Prime Minister. The population of St. Kitts is 34,983, and the population of Nevis is 11,415, based on 2101 census data (<https://www.citypopulation.de/StKittsNevis.html>).

Regulatory Institutions and Associated Expertise

St Kitts and Nevis signed the Nagoya Protocol on December 3, 2018. Below is a summary of institutional issues and legal structure that govern or would influence issues to do with bioprospecting in St. Kitts and Nevis. Much of the institutional infrastructure on St. Kitts and Nevis lies within and under the auspices of the Government. As of the end of 2016, there are 16 ministries and offices, each with its own departments and units (table 14).

Of the current ministries and office, the following are those that are or will likely be concerned with issues of natural resources management, conservation, science and research, access and benefits sharing (ABS), bio-prospecting and natural resources exploitation:

- Ministry of Agriculture
- Ministry of Finance
- Ministry of Foreign Affairs
- Ministry of Health
- Ministry of International Trade
- Ministry of Justice/Legal Affairs
- Ministry of National Security
- Ministry of Sustainable Development

Table 14 Ministry and offices of governance in the Federation of St. Kitts and Nevis

No.	Ministry/Office
1	Ministry of Agriculture, Human Settlement, Cooperatives & Environment
2	Ministry of Community Development, Gender Affairs & Social Services
3	Ministry of Education
4	Ministry of Finance
5	Ministry of Foreign Affairs & Aviation
6	Ministry of Health
7	Ministry of International Trade, Industry & Commerce
8	Ministry of Justice, Legal Affairs & Communications
9	Ministry of National Security
10	Ministry of Nevis Affairs, Labour, Social Security & Ecclesiastical Affairs
11	Ministry of Public Infrastructure, Posts, Urban Development & Transport
12	Ministry of Sustainable Development
13	Ministry of Tourism
14	Ministry of Youth, Sports & Culture
15	Office of Attorney General
16	Office of Prime Minister

Given the fact that Nevis has an internal self-governing arrangement, any natural resources exploitation there would be managed by the Nevis Island Administration (NIA). The NIA has 14 offices and ministries under its umbrella. Of these, the relevant ministries and offices concerned with natural resources management, and therefore, bio-prospecting, include:

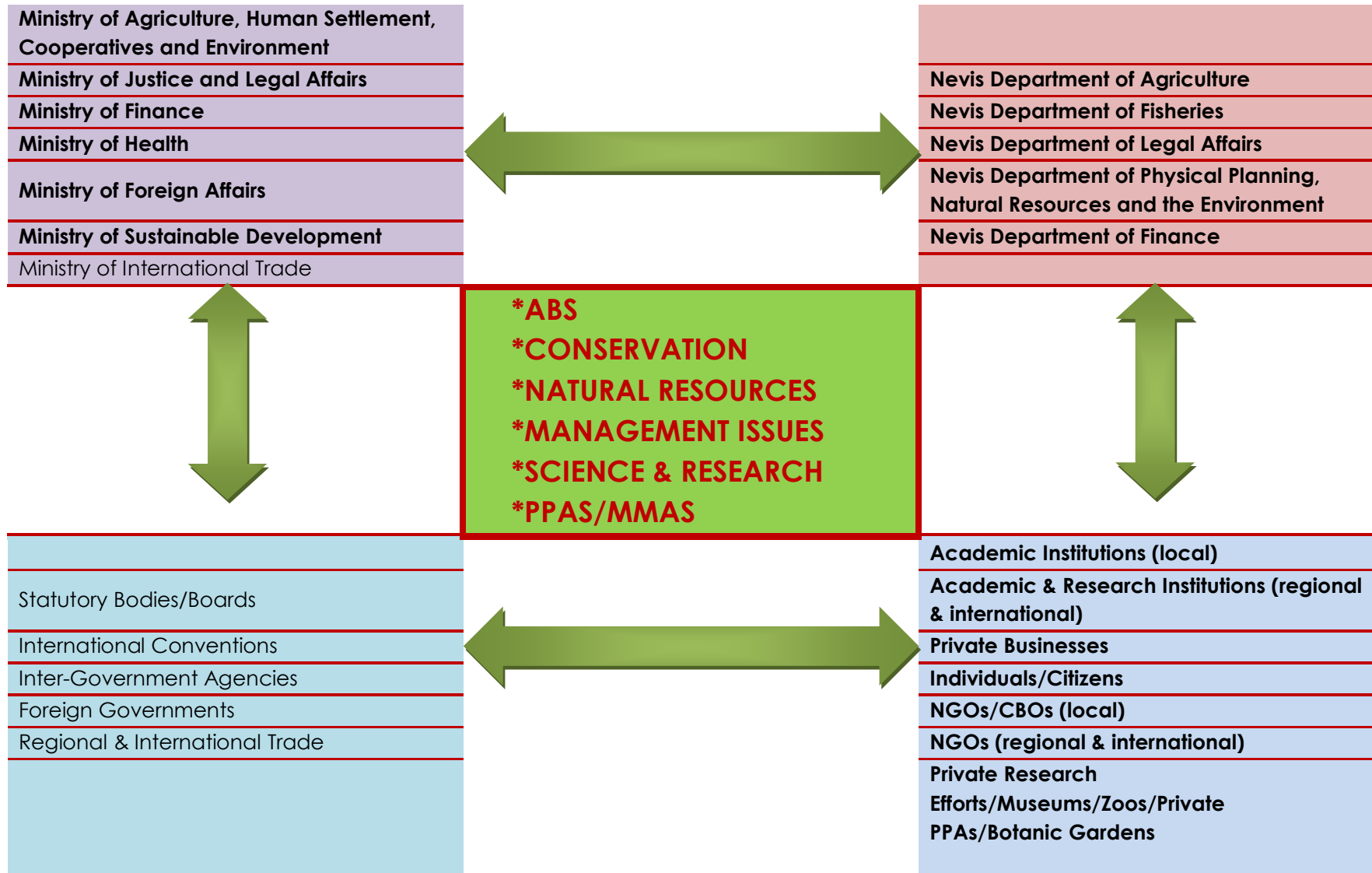
- Ministry of Agriculture
- Ministry of Finance
- Ministry of Health
- Ministry of Legal Affairs

As it currently stands, responsibility for the exploitation, protection and management of the country's natural resources, lands and seascapes, as well as the management of actions and activities such as research and production, are vested with and across many of these ministries, departments and divisions, and their embedded agencies, but are held primarily by the Ministry of Agriculture, and the Department of Planning.

The following illustration provides a visual representation of the interrelationships of the various government, inter-government, statutory, international, private, non-government, community-based, commercial, and academic found across St. Kitts and Nevis (fig 6).

ABS-RELATED CARIBBEAN INSTITUTIONS AND EXPERTISE

Figure 6. ABS and Natural Resources Institutional Framework for St. Kitts and Nevis.



Most of the responsibilities for ABS, natural resources conservation, agriculture, science, research, permitting and parks and protected areas rest with the Ministry of Agriculture, which houses several departments, divisions, boards, committees, agencies, national projects, oversight, management, and other related mechanisms. The embedded departments, boards, committees, projects and divisions within the Ministry of Agriculture, responsible for natural resources management and conservation include:

- Department of Agriculture
- Department of Environment
- Department of Marine Resources
- Livestock Division
- Pesticide Board; and
- United Nations Development Programme (UNDP) – Conserving Biodiversity Project

For Nevis, the key government agencies responsible for natural resources management conservation, management, permitting and oversight include:

1. Department of Agriculture, Nevis
2. Department of Environmental Health, Ministry of Health, Nevis
3. Nevis Department of Agriculture
4. Nevis Department of Fisheries
5. Nevis Department of Legal Affairs
6. Nevis Department of Physical Planning, Natural Resources and the Environment
7. Pesticide control, Nevis

In the Federation, there are two statutory bodies concerned with the management, conservation and advocating for the protection of the natural environment in the Federation, and these are:

1. Brimstone Hill Fortress National Park Society (BSHFNPS), and
2. St. Christopher National Trust (SCNT)

Science and research capacity of St. Kitts

In the recent past this has mainly centered around agriculture and farming, including cane, crops, livestock, improving varieties, stocks, breeds, yields, trials, marketing, land practices and so on. This responsibility fell mainly under the purview of the Ministry of Agriculture and the sugar industry. With the decline and then complete collapse of local sugar production in 2004-05, the government shifted away from agriculture to

tourism and other sectors. As sugar went, so did the research activities and foci of the Ministry of Agriculture.

On Nevis, research also centered mainly on agriculture, and fell under the management of the Department of Agriculture. This focus remains today, though not as robust and vibrant as it once was.

From the 1970s onward, the country exported African Green Monkeys to various research labs around the world for medical and other experiments, and during this period, Dr. Frank Irvin, a former professor at the Department of Psychiatry at UCLA Neuropsychiatric Institute, set up the country's first monkey research station. The use of monkeys in medical research continues today at the St. Kitts Biomedical Research Foundation.

Despite the presence of major academic and research institutions such as Ross University, the medical school on Nevis and the Biomedical Research Foundation, the country's capacity for scientific inquiry seems quite limited. Discussions with various individuals within and outside of government, suggests that there is no center of focus, management, control and interest in building up local research needs and priorities, especially those institutions such as the Department of the Environment to move the nation's capability far ahead of what it is today. This is illustrated by the confusion surrounding sarsaparilla (see Box summary and Fig 7).

The Legal Framework

The following are the current legislations that govern natural resources management in St. Kitts and Nevis:

- A.** National Conservation and Environmental Protection Act, 1987
- B.** Development Control and Planning Act, 2000.
- C.** Nevis Development Control and Planning Ordinance 2005
- D.** Solid Waste Management Corporation Act
- E.** National Housing Corporation Act
- F.** Whitegate Development Corporation Act, No. 15 of 1999
- G.** Forestry Ordinance 1904
- H.** Water Courses Ordinance 41/56
- I.** Public Health Act No. 22 of 1969 Pesticide and Toxic Chemicals Control Act 1999
- J.** Agricultural Development Act 1973

In addition, two other Acts may have implications for ABS and bioprospecting, and these are:

IP Laws:

- A.** Copyright Act (Cap. 18.08) (2002)
- B.** Marks, Collective Marks and Trade Names Act (Cap. 18.22) (2002)
- C.** Patents Act (Cap. 18.25) (2002)

In 2013, the Government of St. Kitts and Nevis entered into agreement with the United Nations Development Programme (UNDP), to assist the country in further developing its capacity to better manage its natural resources and protected areas. UNDP has since created the following mechanism, *Conserving Biodiversity and reducing habitat degradation in Protected Areas and their areas of influence*, with the following expected outcomes:

- Improved governance and regulation of environmental and energy issues for more resilient economies by 2016.
- Enhanced capacity of national, sub-regional and regional institutions and stakeholders to: effectively manage natural resources; build resilience to the adverse impacts of climate change and natural and anthropogenic hazards; improved energy efficiency and use of renewable energy; improved policy, legal, regulatory and institutional frameworks for environmental and energy governance.
- Knowledge and good practices disseminated and capacity development in the areas of natural resource management, disaster risk reduction, climate change, renewable energy, energy efficiency, low carbon emissions, biosafety and adherence to international standards and norms.

The project has the following outputs:

Primary Output: Solutions at local level for sustainable management of natural resources, ecosystems and environmental services, for expanded jobs and livelihoods; and 3.5. Transparent and non-discriminatory legal and regulatory frameworks and policies enabled for sustainable management of natural resources, biodiversity and ecosystems (in line with international conventions and national legislation).

Secondary Output: Unlocking the potential of protected areas (PAs), including indigenous and community conserved areas, to conserve biodiversity while contributing to sustainable development.

To this end, the project has drafted national legislation to consolidate much of the existing natural resources management and protected areas laws and regulation and replace these with one encompassing bill, the *National Conservation and Environmental Management Bill, 2016*, which as of February 2017, is in its third draft, and continues through rounds of consultations and reviews. Eavin Parry, the ABS Country Focal Point for St. Kitts and Nevis, who sits in the Department of St. Kitts and Nevis, has

indicated that he hopes to have legal and policy experts in ABS and bioprospecting from the International Union for the Conservation of Nature (IUCN) review the NCEM Bill before final government consultations and review, and expects a visit of these experts to the Federation before June 2017.

The current draft legislation includes mechanism to manage the exploitation of plants and animals, including for genetic and bioengineering resources, though it does not yet include explicit language on bio-prospecting.

The project was housed under the Ministry of Sustainable Development until later 2017, but is now moved to the Ministry of Agriculture, along with the Department of the Environment, and is in the process of being moved to the Ministry of Agriculture.

Eventually, protected areas on both islands will be managed in the Protected Areas Agency within the Department of the Environment, Ministry of Agriculture. The UNDP project has already produced logos, set up aspects of the institution, hired staff for both St. Kitts and for Nevis, including four forest guards, and will be hiring other staff in the coming year.

Additionally, the Environmental Awareness Group (EAG), Antigua, has been contracted by UNDP, Barbados, to conduct an ecological inventory of the Central Forest Reserve on St. Kitts, Booby Island Marine Park, and the Nevis Peak/Camps Watershed Protected area, and the first field season will begin in February 2017. The aim of this consultancy is to update the baseline information on flora, fauna, issues and opportunities within and adjacent to these areas, as well as provide training for the forest rangers in field survey, sampling and monitoring techniques.

Table 21 in the *Appendices* provides a detailed breakdown of national, international, inter-government, local, NGO/CBO, private citizen and commercial interest that are relevant to the conservation of natural resources, heritage, parks and protected areas management, conservation, exploitation, science, research, education and awareness.

NP-Related Multilateral Treaties

International treaties and agreements entered and agreed upon by The Federation of St. Kitts and Nevis, and which may have some impacts implications for ABS and bioprospecting are listed in table 15.

Table 15. Federation of St. Kitts and Nevis international treaties and agreements, and implications for ABS and bioprospecting.

Administration	Treaty/Convention
Constitution / Basic Law	
1	The Constitution of Saint Christopher and Nevis (1983)
Main IP Laws	
1	Copyright Act (Cap 18.08) (2002)
2	Marks, Collective Marks and Trade Names Act (Cap 18.22) (2002)
3	Patents Act (Cap 18.25) (2002)
IP-related Laws	
1	Interception of Communications Act of 2011 (Act No 3 of 2011) (2011)
WIPO-Administered Treaties	
1	Summary Table of Membership of the World Intellectual Property Organization (WIPO) and the Treaties Administered by WIPO, plus UPOV, WTO and UN
2	Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks (October 27, 2005)
3	Patent Cooperation Treaty (October 27, 2005)
4	Convention Establishing the World Intellectual Property Organization (November 16, 1995)
5	Berne Convention for the Protection of Literary and Artistic Works (April 9, 1995)
6	Paris Convention for the Protection of Industrial Property (April 9, 1995)
7	Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (December 3, 2018)
IP-related Multilateral Treaties	
1	Convention on the Protection and Promotion of the Diversity of Cultural Expressions 2005 (July 26, 2016)
2	Convention for the Safeguarding of the Intangible Cultural Heritage (July 15, 2016)
3	WHO Framework Convention on Tobacco Control (September 22, 2011)
4	Convention on the Protection of the Underwater Cultural Heritage (March 3, 2010)
5	Kyoto Protocol to the United Nations Framework Convention on Climate Change (July 7, 2008)
6	International Plant Protection Convention (October 2, 2005)
7	Cartagena Protocol on Biosafety to the Convention on Biological Diversity (September 11, 2003)
8	United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (September 28, 1997)
9	Agreement establishing the World Trade Organization (WTO) (February 21, 1996)
10	World Trade Organization (WTO) - Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) (1994) (February 21, 1996)
11	United Nations Convention on the Law of the Sea (November 16, 1994)
12	United Nations Framework Convention on Climate Change (March 21, 1994)
13	Convention on Biological Diversity (December 29, 1993)

Table 15. Cont'd

Administration	Treaty/Convention
IP-related Multilateral Treaties cont'd	
14	Convention concerning the Protection of the World Cultural and Natural Heritage (October 10, 1986)
Regional (Caribbean) Economic Integration Treaties	
1	Revised Treaty of Chaguaramas Establishing the Caribbean Community Including the CARICOM Single Market and Economy (February 4, 2002)

Source: World Intellectual Property Organisation (WIPO)

<http://www.wipo.int/wipolex/en/profile.jsp?code=KN>

NON-REGULATORY INSTITUTIONS: INSTITUTIONAL STOCKTAKING

Institutional Arrangements of Bioprospecting

There are several civil society groups, organizations and institutions that provide the non-government framework for natural resources management, exploitation and commercial enterprise, including sale and trade of these resources, import and export, research and fostering greater capacity and support for businesses and individuals involved in these areas:

1. Nevis Historical and Conservation Society (NHCS)
2. St. Kitts and Nevis Chamber of Commerce (SKNCC)
3. St. Kitts Sea Turtle Monitoring Network (SSTMN)
4. Nevis Sea Turtle Group (NSTG)
5. The Ripple Institute (RI)/Caribbean Youth Environment Network (CYEN)
6. Riches of the Earth (RE)
7. St. Kitts and Nevis Biodiversity Foundation

In 2012, the Nevis Island Administration proposed the conversion of the NHCS to the Nevis Historical Conservation Trust, through the Nevis Historical Conservation Trust Ordinance, which would have established a Nevis Island conservation and heritage trust similar to the St. Christopher Heritage Trust on St. Kitts. However, this remains incomplete to date. However, under the Ordinance, the NHCS has been given responsibilities and oversight for a number of sites, including the Bath Spring and Hotel, Nelson's Spring, The Bath Bog, and Saddle Hill Fort.

Local academic and private research institutions in the Federation include:

1. Medical School of the Americas, Nevis
2. Ross University of Veterinary Medicine, St. Kitts
3. St. Kitts Biomedical Research Foundation

TRADITIONAL KNOWLEDGE (TK) ASSOCIATED WITH BIODIVERSITY

Much of the TK associated with biodiversity on St. Kitts remains diffused and fragmented in various forms. One such local person, Nature Man, who lives in the valley east of Monkey Hill, lamented to Kevel Lindsay and Carolyn Thomas, the lack of formal engagements between key government agencies and local “experts” such as himself. He professed that he, and many others he knew, hold local knowledge about the forests, species, landscapes, culture and history, but they have yet to be formally approached.

Traditional Knowledge Stocktaking

During January to March 2017, and May to June 2017, a biodiversity team traversed both St. Kitts and Nevis and engaged many local residents on issues, including locations of caves, species, local names, hunting, harvesting of local forest products and uses. There was some reluctance by many to openly discuss what they knew and how they came to know these things, but usually, the first contact would refer the interviewer to another person, and that person to another, creating a network of TK informants. However, it was apparent that much more work needs to be done to capture much of this knowledge before it is lost.

One expert working to capture the local knowledge on the uses of wild plants and herbs is Dr. Milton Whittaker, who has written two books on the medicinal plants and their uses, of St. Kitts and Nevis. Dr. Whittaker, while he headed the Bureau of Standards in the Ministry of Agriculture, undertook extensive research on the traditional knowledge primarily of the people of St. Kitts, and to a lesser extent, Nevis.

The local National Trust and Museum, and National Archives also store and catalogue materials, both formally published and unpublished, by various residents and agencies. Nevertheless, there are few other such examples of the formal capture of TK knowledge by others in The Federation.

Original People(s): Caribs

The original inhabitants of St. Kitts and of Nevis when the British first arrived were the Caribs, a name given to them by the new arrivals. These First Peoples were decimated in a series of target raids and battles. By the 1700s, most were gone, and the remaining individuals were shipped out to Dominica.

Local Communities

The local communities use their TK to harvest forest products, hike trails, for recreation, farming, the harvesting of marine resources, prepare and shelter from storms, and the use of local herbs. There are no formal statistics on the number of persons from each community engaged in the trade and use traditional knowledge, though the number of local fishermen and an estimate of their annual catch is known.

Maroon Communities

There are no Maroon communities on St. Kitts or Nevis.

Special Study in TK

There currently no studies/research into traditional knowledge on either island of The Federation.

EXPERTISE IN THE MARKETPLACE

Herb Markets and Trade in Local Medicaments

The case of the harvesting and use of the sarsaparilla, *Asplundia* spp. (photo 7) to make local drinks and for medicinal purposes is highlighted below.

Given the long history of use of these two species, *Asplundia insignis* and *A. rigida*, there is surprisingly little that is understood about the industry. In speaking with staff at the Department of Agriculture, the Bureau of Standards, the Department of the Environment and with locals, there is no monitoring of the harvesting of the species, their status, the impact of their harvest on the ecology of forest ecosystems, on the potential effects of the plants on humans, of the economic value of the industry, the exact ingredients in the drink or its many applications. The Bureau does not monitor nor have standards for the processing, bottling and sale in stores. Photo 7 shows *Asplundia rigida* growing on the stems of tree ferns on the slopes of Mount Liamuiga on St. Kitts.

The St. Kitts and Nevis “sarsaparilla” is not the same name given to the drink made in other parts of the Caribbean and in England, which is derived from the roots of a completely unrelated plant, *Smilax balbisiana*.

The case of sarsaparilla, *Asplundia* spp.: In St. Kitts and Nevis, several herbs, trees, shrubs, vines and other plants, are harvested and used in local herbal remedies, drinks, for craft and other uses. Dr. Milton Whittaker, local biochemist, has written two books on the uses of many of the islands' plants, and has worked tirelessly for many decades to document them. One plant, *Asplundia* spp., is used to make a popular local drink, in folk medicine and other applications. Fibres are also used to make rope on St. Lucia. Two species occur on the islands — *A. insignis* and *A. rigida*, and are members of the family Cyclanthaceae. Both are found at higher elevations in lower montane and upper montane forests. *A. rigida* is harvested, and the stems of the plant are processed for making the drink "sarsaparilla", and for other local uses. Some of the dried plants are sold by vendors and persons across the islands.



The drink is made by soaking the pieces in water, and to this is added spices and other plants, such as the root of the vine *Chiococca alba*, or cacanda, another key forest product of the islands. The drink is made in homes, served at restaurants, bars and hotels, and is also bottled and sold in supermarkets, the roadside and stores. Dried *Asplundia* stems are also exported to Antigua and other islands.

Photo 7. Photo of *Asplundia rigida*, sarsaparilla (with palm-like fronds), Mt. Liamuiga, St. Kitts.



Photo 8. The Public Market, Basseterre, St. Kitts. It opens on Friday to Monday.

Fresh and Dried Herbs

Fresh and Dried Herbs on St. Kitts are sold at the Public Market (photo 8) on the Bay Front in downtown in the capital Basseterre, or at small stalls set up on the sidewalk just along that thoroughfare. During May and June 2017, Kevel Lindsay, and on two occasions, accompanied by colleague, Carolyn Thomas, visited the market on three separate days to investigate what was being sold, and what herbs, roots and other products were on offer. Vendors indicated that most of the vegetables and materials offered at the market were imported from the island of Dominica. In fact, during one of those visits, boxes of the imports were being offloaded and made available while the boat was docked at the port across from the market. The only three local herbs being sold were the dried *Chiococca alba* roots, dried sarsaparilla roots, as well as fresh turmeric roots, what the locals call “dye ginger” on account of the yellow color and stains that result.

When vendors were asked about local herbs and roots, they indicated that there was not much trade in local herbs in the market and in the City. Whatever trade occurs is done between individuals in the villages and towns and in informal ways.

A similar situation exists on Nevis, where most of the produce sold on the island is imported from the island of Dominica. Only one species of the sarsaparilla plant exists on Nevis, so they import the dried roots from vendors on St. Kitts.

Local Manufacturers of Root Tonics

Several residents make the sarsaparilla drink, and these are marketed and sold in local supermarkets, restaurants, bars and roadside stall. The drink is used casually, and as a tonic, especially by local men, who swear that it increases stamina. Inquiries at the Department of the Environment on St. Kitts showed that there is no regulation, research or supervision of the harvesting of the plant, drying of the roots or the manufacture of the drinks. The Director of the Department of Agriculture has indicated that he would like to see more oversight and study of the harvesting of wild roots, and the manufacture of the drink, since it such an important part of the local culture and expression.

Formal Pharmaceutical Sector

There are no pharmaceutical companies in The Federation, although the Primate Research Center on St. Kitts does undertake drug testing. However, outside of this, there is only the sale of drugs, and no ongoing research into local herbs and resources for use in healthcare and medicine, whether on humans, livestock or for veterinary medicine.

Products Available in the Marketplace

There are a few local entrepreneurs engaged in the manufacture, promotion, trade and sale of “local products”. The raw material does not or may not necessarily come from the forests, farms, or the wilds of St. Kitts and Nevis. From discussions of some persons, some raw materials must be imported to produce some articles and items. The products include:

- Aromatic and body oils
- Candles
- Cosmetics
- Chutneys, jams, jellies and dried fruits
- Hair and skin products
- Insect repellants
- Pastries, cakes and pies
- Spices
- Soaps
- Teas, liqueurs, local drinks

One local manufacturer, markets and sells much of her products on both St. Kitts and Nevis, as well as online. She, along with her partners, also market online, including on Facebook via the web portals of two companies, these being Yaphene:

<https://www.facebook.com/Yaphene/>, and Flauriel:

<https://www.facebook.com/Flauriel/>, as well as her personal page.

7.7 ST. LUCIA

Geography and Location

The island of St. Lucia makes up part of the Lesser Antillean chain of islands in the Eastern Caribbean. It is situated 81.5 km (50.6 miles) south of Martinique, and 108 km (67 miles) south of St. Vincent and The Grenadines. St. Lucia covers about 616 km² (238 mile²), and rises to at its highest point, Mount Gimie, at 950 m (3,120 ft.). Geologically, it is primarily of volcanic origin. St. Lucia is a parliamentary democracy, modeled on the Westminster System. Its parliament consists of 17 members. It has a population of about 178,015 (2016, World Population Prospects). The economy is largely based on tourism, offshore banking, manufacturing and agriculture.

Regulatory Institutions and Associated Expertise

A review of the ABS-compliant status of St Lucia is given in Table 16.

Table 16. ABS institutional mapping houses.

St Lucia	
Treaty	Advancing toward ratification of NP Financial implications, not funded Draft legislation needed An analysis of the implications of ratifying the NP may be needed to convince policy makers; succinct analysis of implications, policy implications, etc.
Access	There is an existing system requiring permits for marine and terrestrial research. No checkpoints Room for negotiating MAT The process must be institutionalized, not ad hoc Clear roles to be described for responsible agencies MOU's if necessary Training for responsible parties/agencies/officers
MAT	Some basic training needed in negotiating MAT; some trained personnel (50%) no longer employed in government More training needed for legal persons, technicians, communicators, negotiators Network of legal persons with experience of IP, contract law, patent law, resource conservation Training in negotiation and research
Community Measures	Public education campaigns with paraphernalia, brochures, public service announcements, drama, etc.

Table 20 in *Appendices*, provides a summary of agencies, institutions, and the staff responsible for and connected to ABS and bioprospecting.

NP-related Multilateral Treaties

Table 17 provides a list of the international treaties and agreements that St. Lucia has entered into, and which have local, regional and international implications for ABS and bioprospecting.

Table 17. St. Lucia international treaties and agreements, and implications for ABS and bioprospecting.

Administration	Treaty/Convention
Main IP Laws	
1	Trade Marks Act 2001 (2001)
2	Patents Act 2001 (2001)
3	Industrial Designs Act 2000 (2001)
4	Protection Against Unfair Competition Act 2001 (2001)
5	Copyright (Amendment) Act, 2000 (Act No. 7 of 2000) (2000)
6	Layout-Designs (Topographies) of Integrated Circuits Act 2000, No. 3 of 2000 (2000)
7	Copyright Act, 1995 (Act No. 10 of 1995) (1995)
IP-related Laws	
1	Customs (Control and Management) Act (Chapter 15.05) (2005)
2	Criminal Code (Chapter 3.01) (2005)
3	Customs (Control and Management) Act (Chapter 15.5) (2005)
Intellectual Property	
1	Geographical Indications Regulations 2003 (2003)
2	Industrial Designs Regulations 2003 (2003)
3	Layout-Designs (Topographies) of Integrated Circuits Regulations 2003 (2003)
4	Trade Marks Regulations 2003 (2003)
5	Copyright (International Organizations) Order, 2000 (2000)
6	Eastern Caribbean Supreme Court Civil Procedure Rules 2000 (2000)
Laws/Regulations	
1	Geographical Indications Act 2000 (2000)
WIPO-Administered Treaties	
1	Summary Table of Membership of the World Intellectual Property Organization (WIPO) and the Treaties Administered by WIPO, plus UPOV, WTO and UN
2	WIPO Performances and Phonograms Treaty (May 20, 2002)
3	WIPO Copyright Treaty (March 6, 2002)
4	Vienna Agreement Establishing an International Classification of the Figurative Elements of Marks (December 25, 2001)
5	Convention for the Protection of Producers of Phonograms Against Unauthorized Duplication of Their Phonograms (April 2, 2001)
6	Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks (March 18, 2001)

Table 17 Cont'd

Administration	Treaty/Convention
WIPO-Administered Treaties cont'd	
7	Patent Cooperation Treaty (August 30, 1996)
8	Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations (August 17, 1996)
9	Paris Convention for the Protection of Industrial Property (June 9, 1995)
10	Berne Convention for the Protection of Literary and Artistic Works (August 24, 1993)
11	Convention Establishing the World Intellectual Property Organization (August 21, 1993)
IP-related Multilateral Treaties	
1	Convention on the Protection of the Underwater Cultural Heritage (January 2, 2009)
2	Convention for the Safeguarding of the Intangible Cultural Heritage (May 1, 2007)
3	Convention on the Protection and Promotion of the Diversity of Cultural Expressions 2005 (May 1, 2007)
4	WHO Framework Convention on Tobacco Control (February 5, 2006)
5	International Plant Protection Convention (October 2, 2005)
6	Cartagena Protocol on Biosafety to the Convention on Biological Diversity (September 14, 2005)
7	Kyoto Protocol to the United Nations Framework Convention on Climate Change (February 16, 2005)
8	International Treaty on Plant Genetic Resources for Food and Agriculture (June 29, 2004)
9	United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (September 30, 1997)
10	Agreement establishing the World Trade Organization (WTO) (January 1, 1995)
11	World Trade Organization (WTO) - Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) (1994) (January 1, 1995)
12	United Nations Convention on the Law of the Sea (November 16, 1994)
13	United Nations Framework Convention on Climate Change (March 21, 1994)
14	Convention on Biological Diversity (December 29, 1993)
15	Convention concerning the Protection of the World Cultural and Natural Heritage (January 14, 1992)
IP-relevant Bilateral Treaties	
1	Agreement between the Government of the United Kingdom of Great Britain and Northern Ireland and Saint Lucia for the Promotion and Protection of Investments (January 18, 1983)

Source: World International Property Organisation (WIPO)

<http://www.wipo.int/wipolex/en/profile.jsp?code=LC>

7.8 TRINIDAD AND TOBAGO

Geography and Location

Trinidad lies just 11 km (6.8 miles) off the northeast coast of Venezuela, and 166 km (103.1 miles) south east of the Lesser Antillean island of Grenada. Tobago, northeast of Trinidad, lies about 30 km (19 miles) away. Trinidad covers 4,768 km² (1,841 mi²), and Tobago is 298 km² (115 mi²) in area. The highest point of Trinidad is El Cerro del Aripo, at 940 m (3,084 ft.), situated in the middle of the Northern Range mountains in the extreme north of the island. The highest point of Tobago is 640 metres (2,100 ft.), found in the central spine of the island. The capital of Trinidad is Port of Spain, located on the western shore in the northern third of the island. The capital of Tobago is Scarborough, located on the southwestern end of the island.

Trinidad and Tobago, once a British colony, became a republic within the Commonwealth in 1976, with the head of state being a President, and is officially called the Republic of Trinidad and Tobago. It has a parliamentary democracy based on the Westminster System, and has 41 members in its House of Assembly. Tobago is semi-autonomous, and is administered by the Tobago House of Assembly, which has a unicameral legislature is a legislature, which means that the Assembly consists of one chamber instead of the Upper and Lower Houses more typical in the Westminster System. The Tobago Assembly consists of a Presiding Officer, 12 elected, and four appointed council members.

The national economy of the Republic is largely industrial, this dominated by petroleum, with strong input from manufacturing and tourism. Tobago's local economy is largely dependent on tourism.

Regulatory Institutions and Associated Expertise

The Legal Framework

In Trinidad and Tobago, there are over 50 laws, policies, plans, strategies and programmes which seek to address biodiversity issues resulting in multiple government agencies having responsibility for management of biodiversity resources. Many gaps in biodiversity management, sustainable use and community livelihoods were identified. Also identified was a general lack of provision for a research function in existing laws, which in turn also lack mechanisms to integrate recent knowledge into management. See the Fourth national report of Trinidad and Tobago to the Convention on Biological Diversity (<https://www.cbd.int/doc/world/tt/tt-nr-04-en.pdf>) and Fifth National Report in October 2016 (<file:///C:/Users/sylvi/Downloads/tt-nr-05-en.pdf>) for more details. Neither

of these plans mention the Nagoya Protocol. The Fourth reports gives a low grade to knowledge about Traditional Knowledge. The Fifth report does mention Biodiversity supporting local livelihoods such as farming including oysters, local tourism and crafts. Also, there is no formal recognition given to the implementation of access and benefit sharing over genetic resources in existing laws. Activities in relation to the National Biodiversity Target 16 and 18 directly apply to this report.

The EPPD of the Ministry with responsibility for the environment, is the National Focal Point for the CBD. A National Biodiversity Information System (NBIS) is in the process of being established by the EPPD on behalf of the GoRTT for the purpose of gathering and managing biodiversity data and information in order to share it efficiently with all stakeholders, so as to ensure better decision making. While training is taking place in relation to readiness for implementation of the Nagoya Protocol, activities in terms of traditional knowledge lag behind.

NP-related Multilateral Treaties

Table 18 provides a list of the international treaties and agreements that Trinidad and Tobago has entered into, and which have local, regional and international implications for ABS and bioprospecting.

Table 18. Trinidad and Tobago international treaties and agreements, and implications for ABS and bioprospecting.

Administration	Treaty/Convention
Main IP Laws	
1	Copyright (Amendment) Act No. 5 of 2008 (2008)
2	Copyright Act, Cap. 82:80 (2008)
3	Protection of New Plant Varieties Act, Cap. 82:75 (2007)
4	Industrial Designs Act, Cap. 82:77 (2007)
5	Layout-Designs (Topographies) of Integrated Circuits Act, Cap. 82:79 (2007)
6	Patents, Designs, Copyright and Trade Marks (Emergency) Act, Cap. 82:84 (2007)
7	Patents and Designs Act, Cap. 82:83 (2007)
8	Intellectual Property (Miscellaneous Amendments) Act of May 5, 2000 (2000)
9	Patents Act, 1996 (2000)
10	Trade Marks (Amendment) Act 1997 (Act N° 31 of 1997) (1997)
11	Trade Marks Act (1997)
12	Trade Marks (Amendment) Act 1996 (Act No. 25 of 1996) (1996)
13	Trade Marks (Amendment) Act 1994 (Act No. 17 of 1994) (1994)
14	Publications (Legal Deposit) Act, Cap. 82:74 (1985)
IP-related Laws	
1	Criminal Procedure Act (Chapter 12:02)
2	Criminal Procedure Corporations Act (Chapter 12:03)
3	Customs Act (Chapter 78:01)

Table 18 Cont'd

Administration	Treaty/Convention
IP-related Laws cont'd	
4	Chutney Foundation of Trinidad and Tobago (Incorporation) Act No. 6 of 2000 (2000)
5	Protection Against Unfair Competition Act, 1996 (2000)
6	Trade Descriptions Act (Act No. 7 of 1984) (1984)
Intellectual Property	
1	The Protection of New Plant Varieties Regulations, 2000 (2000)
2	Copyright (Customs) Regulations 2000 (2000)
3	Trade Marks (Amendment) Rules 1997 (1997)
4	Industrial Designs Rules 1996 (1996)
5	Layout-Designs (Topographies) of Integrated Circuits Rules 1996 (1996)
6	Patents Rules 1996 (1996)
7	Trade Marks (Amendment) Rules 1994 (1994)
8	The Copyright (International Conventions and Organizations) Order, 1989 (1989)
9	Trade Marks Rules (1979)
Laws/Regulations	
1	Geographical Indications Act, 1996 (2000)
2	Geographical Indications Regulations 1996 (1996)
Laws/Decrees	
1	Caribbean Community (CARICOM) Dominican Republic Free Trade Act, Cap. 81:06 (2001)
WIPO-Administered Treaties	
1	Summary Table of Membership of the World Intellectual Property Organization (WIPO) and the Treaties Administered by WIPO, plus UPOV, WTO and UN
2	WIPO Copyright Treaty (November 28, 2008)
3	WIPO Performances and Phonograms Treaty (November 28, 2008)
4	Trademark Law Treaty (April 16, 1998)
5	Strasbourg Agreement Concerning the International Patent Classification (December 20, 1996)
6	Brussels Convention Relating to the Distribution of Programme-Carrying Signals Transmitted by Satellite (November 1, 1996)
7	Locarno Agreement Establishing an International Classification for Industrial Designs (March 20, 1996)
8	Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks (March 20, 1996)
9	Vienna Agreement Establishing an International Classification of the Figurative Elements of Marks (March 20, 1996)
10	Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure (March 10, 1994)
11	Patent Cooperation Treaty (March 10, 1994)
12	Convention for the Protection of Producers of Phonograms Against Unauthorized Duplication of Their Phonograms (October 1, 1988)
13	Berne Convention for the Protection of Literary and Artistic Works (August 16, 1988)
14	Convention Establishing the World Intellectual Property Organization (August 16, 1988)

Table 18 Cont'd

Administration	Treaty/Convention
15	Paris Convention for the Protection of Industrial Property (August 1, 1964)
IP-related Multilateral Treaties	
1	Convention on the Protection of the Underwater Cultural Heritage (October 27, 2010)
2	Convention on the Protection and Promotion of the Diversity of Cultural Expressions 2005 (October 26, 2010)
3	Convention for the Safeguarding of the Intangible Cultural Heritage (October 22, 2010)
4	International Plant Protection Convention (October 2, 2005)
5	Convention concerning the Protection of the World Cultural and Natural Heritage (May 16, 2005)
6	WHO Framework Convention on Tobacco Control (February 27, 2005)
7	Kyoto Protocol to the United Nations Framework Convention on Climate Change (February 16, 2005)
8	International Treaty on Plant Genetic Resources for Food and Agriculture (January 25, 2005)
9	Stockholm Convention on Persistent Organic Pollutants (May 17, 2004)
10	Cartagena Protocol on Biosafety to the Convention on Biological Diversity (September 11, 2003)
11	United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (September 6, 2000)
12	International Convention for the Protection of New Varieties of Plants (UPOV) (January 30, 1998)
13	Convention on Biological Diversity (October 30, 1996)
14	Agreement establishing the World Trade Organization (WTO) (March 1, 1995)
15	World Trade Organization (WTO) - Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) (1994) (March 1, 1995)
16	United Nations Convention on the Law of the Sea (November 16, 1994)
17	United Nations Framework Convention on Climate Change (September 22, 1994)
18	Universal Copyright Convention as revised on 24 July 1971, with Appendix Declaration relating to Article XVII and Resolution concerning Article XI (August 19, 1988)
19	Universal Copyright Convention of 6 September 1952, with Appendix Declaration relating to Article XVII and Resolution concerning Article XI (August 19, 1988)
20	International Covenant on Economic, Social and Cultural Rights (March 8, 1979)
21	Agreement on the Importation of Educational, Scientific and Cultural Materials (August 31, 1962)

Table 18 Cont'd

Administration	Treaty/Convention
Regional Economic Integration Treaties	
1	Revised Treaty of Chaguaramas Establishing the Caribbean Community Including the CARICOM Single Market and Economy (February 4, 2002)
2	Panama Convention establishing the Latin American Economic System (SELA) (June 7, 1976)
3	The Georgetown Agreement (formally establishing the African, Caribbean and Pacific Group of States, the "ACP Group"), since 1975 (ACP) (February 12, 1976)
IP-relevant Bilateral Treaties	
1	Agreement between the Government of the Republic of India and the Government of the Republic of Trinidad and Tobago for the Promotion and Protection of Investments (October 7, 2007)
2	Agreement between the Government of the Republic of Trinidad and Tobago and the Government of the People's Republic of China on the Reciprocal Promotion and Protection of Investments (May 24, 2004)
3	Agreement between the Government of the Republic of Korea and the Government of the Republic of Trinidad and Tobago for the Promotion and Protection of Investments (November 27, 2003)
4	Treaty between the Government of the United States of America and the Government of the Republic of Trinidad and Tobago concerning the Encouragement and Reciprocal Protection of Investment (December 26, 1996)
5	Agreement between the Government of Canada and the Government of the Republic of Trinidad and Tobago for the Reciprocal Promotion and Protection of Investments (July 8, 1996)
6	Agreement between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the Republic of Trinidad and Tobago for the Promotion and Protection of Investments (October 8, 1993)

Source: World International Property Organisation (WIPO)

<http://www.wipo.int/wipolex/en/profile.jsp?code=TT>

Ministry of Agriculture, Land and Fisheries(MALF)

The Ministry of Agriculture's main purpose is the conservation of biodiversity and sustainable development of food and nonfood systems.

Forestry Division

The goal of the Forestry Division is to sustainably manage of the forest resources of Trinidad and Tobago to provide for the social, economic, ecological, cultural and spiritual needs of present and future generations; contribute to the sustainable development of the country; enhance the quality of human life while at the same time protecting biological diversity and ecological processes.

Head of Forestry: Mr. Courtenay Park

Forestry Division, Ministry of Agriculture, Land and Fisheries

Address Long Circular Road, P.O. Box 30, St. James, Port of Spain

Email cpark24@yahoo.com

Telephone: (1-868) 622-5214/4521/5658, direct: 622-4860, Fax: (1-868) 6285503

Contact Information

Horticultural Services Division

Botanic Gardens, Cotton Hill, St. Clair

Tel: 622-1221 Ext 1101-1104, 622-6494; Fax: 622-9131

Forestry Division Head Office

Long Circular Road, St. James

Secretary to Conservator of Forests – 225-3868

Secretary to Deputy Conservator of Forests – 225-3861

Receptionist – 225-3865

International Cocoa Genebank Trinidad At University Cocoa Research Station

The International Cocoa Genebank, Trinidad (ICGT) is one of the world's most diverse collections of cacao germplasm. Designated a Universal Collection by Biodiversity International (Formerly IPGRI*), the ICGT is situated on about a 40.47-hectare (~100-acre) site, which was originally part of the La Reunion Estate at Centeno/La Chaguaramas.

Contact Information

Kersha Guevara-Jackson - Research Assistant

Pollination project. ICGT team support.

662-2002 Extension 83332; kersha@cocoacentre.com

Agricultural Services Division of The Trinidad and Tobago Ministry of Agriculture, Land and Fisheries

The Agricultural Services Division provides services for the Production and sale of the agricultural Commodities listed below.

- Orchard Nursery plants - cocoa, coffee, breadfruit, citrus, mango, avocado, assorted minor fruit crops (guava, carambola, cherry, pommerac, pommecythere, plum etc.).
- Herbs and spices – thyme, basil, tarragon, mint, neem, clove etc.
- Ornamentals – allamanda, ixora, duranta, croton, dracaena etc.
- Seeds: corn, pigeon pea, bodi, sorrel, pumpkin, ochro, melongene, hot pepper.
- Root Crop Planting Material: cassava, yam, sweet potato
- Banana planting material - Plantain, soucier, silk

Contact Information

La Reunion Plant Propagation Station

Contact Numbers: Tel. 646-2651 / 646-8200

Marper Farm, Manzanilla

Contact Numbers: Tel. 691-2846 / Fax. 691-2847

St Augustine Nurseries, Curepe

Contact Numbers: Tel. 662- 2692 / 645- 6552/ fax 662-7515

El Carmen Seed Unit, Centeno

Contact Numbers. Tel. 669-8402 / 669-8508

NON-REGULATORY INSTITUTIONS: INSTITUTIONAL STOCKTAKING

Institutional Arrangements of Bioprospecting

Educational Institutions/Academics

The Caribbean College of Natural Health

The Caribbean College of Natural Health is focused on teaching others how to achieve and maintain good health and well-being, through the integration of body, mind, and spirit.

Expert: Donna Carter-Cupid is the Principal of the College. She holds a Bachelor of Business Administration (BBA) degree from Andrews University, Berrein Spring MI. She is a graduate Master Herbalist from the Trinity College of Natural Health Warsaw, Indiana. Donna is a currently enrolled at the Trinity College of Natural Health, as a candidate on the Doctor of Naturopathy (N.D.) program.

Contact Information

Caribbean College of Natural Health Limited

P.O. Box 9123

National Mail Center, Piarco, Trinidad, West-Indies

Dr. Yuri Clement, Department of Paraclinical Sciences,

Telephone: 1-868-465-3719 / 1-868-336-9820 / +592-682-4089

University of The West Indies, St. Augustine

The UWI St. Augustine campus is situated 15km from the bustling capital of one of the Caribbean's most rapidly developing island states with 7 faculties, professional schools offer more than 200 programs to some 15,000 graduates, undergraduate and continuing studies students.

Contact Information:

The University of the West Indies

St. Augustine, Trinidad and Tobago

Tel: (868) 662-2002

Fax: (868) 663-9684

The University of the Southern Caribbean (USC)

The University of the Southern Caribbean is a private university owned and operated by the Caribbean Union Conference of Seventh-day Adventists.

Contact information

P.O. Box 175, Port of Spain, Trinidad
 Tel: (868) 662-2241
 Fax: (868) 662-1197
 E-mail: info@usc.edu.tt

Forde Library (The University of the Southern Caribbean)

The Forde Library is the main academic library of USC.

Contact Information

Address: Royal Road, Maracas Valley; PO Box 175
 Port of Spain,
 Trinidad and Tobago
 Phone: 868--662--2241 Ext-410-41
<https://librarytechnology.org/library/29960>

The University of Trinidad and Tobago (UTT)

The University of Trinidad and Tobago (UTT) is a state-owned university in Trinidad and Tobago established in 2004.

Contact Information

CAMDEN CAMPUS, Telephone: (868) 642-8888 / (868) 223-4888

UTT Eastern Caribbean Institute of Agriculture and Forestry Campus Library (ECIAF)

The Eastern Caribbean Institute of Agriculture and Forestry, popularly known by its acronym ECIAF, is synonymous with Agriculture throughout the islands of the Eastern Caribbean. The Mission of the Eastern Caribbean Institute of Agriculture and Forestry is to improve the standard of Living in the Agricultural Sector in the Eastern Caribbean by providing quality training for nationals of Trinidad and Tobago and other Eastern Caribbean States at the sub professional level in the fields of Agriculture, Forestry and Agriculture Teacher Education.

Contact Information

Address: Caroni North Bank Road Centeno
 Librarian: Arima Sunita Gobin
 Telephone: 642-8888
 Ext 23057
 Ext 21424
 Email: libraryeciaf@utt.edu.tt

The Caribbean Herbal Medicine Research Institute (CaHMRI)

CaHMRI is an institute within The University of Trinidad and Tobago. Its primary function is to integrate research and education on Trinidad and Tobago's indigenous medicinal plants with a view to identifying and validating opportunities for disease management and therapeutic purposes.

Contact Information

The Herbal Institute at UTT

Telephone: 640 0641

Email: compton.seaforth@utt.edu.tt/jennifer.paul@utt.edu.tt

Caribbean Association of Researchers and Herbal Practitioners (CARAPA)

CARAPA's primary function is to establish with all Caribbean national authorities the recognition that certain medicinal plants may possess therapeutic value in the treatment and prevention of disease in man and animals and support the development of a sustainable herbal industry.

Contact Information

Address: Lucia Division, Lower Clarke Street, Vieux Fort, St Lucia, WEST INDIES.

Telephone/Fax: (758)454-8737

E-mail: gsr@candw.lc

National Herbarium of Trinidad and Tobago

The National Herbarium of Trinidad and Tobago currently houses more than 50,000 botanical specimens. The earliest specimen is a Crueger collection dated 1842.

Contact Information

Tel: 1-868-224-3704 or UWI St. Augustine PBX: 1-868-662-2002 Ext. 84499 (Curator), 83326 (Secretary), 84498 (Collection Room) or 84500 (Library)

Fax No. 1-868-663-9686; E-mail: HerbariumUnit@sta.uwi.edu

Contact List

Mrs. Yasmin Baksh-Comeau – Curator (Yasmin.Baksh-Comeau@sta.uwi.edu)

Mrs. Prudence Roberts – Senior Secretary (Prudence.Roberts@sta.uwi.edu)

Mrs. Beverley Adams-Baptiste – Library Assistant (Beverley.Adams-Baptiste@sta.uwi.edu)

Miss. Keisha Manaure – Research Assistant (Keisha.Manaure@sta.uwi.edu)

Mrs. Necheia Falby-Peters, Technical Assistant (Necheia.Falby@sta.uwi.edu)

Experts***Mrs. Yasmin S. Baksh-Comeau***

Mrs. Yasmin S. Baksh-Comeau is a lecturer in Plant Science at The University of The West Indies St. Augustine and a Curator at the National Herbarium of Trinidad & Tobago. She obtained her M.Phil. At the University of the West Indies, St. Augustine, 1999.

Contact Information

National Herbarium of Trinidad & Tobago
 c/o Department of Life Sciences
 The University of The West Indies
 St. Augustine, Trinidad and Tobago
 Location: Herbarium, Frank Stockdale Building
 Tel: UWI ext. 83326
 1(868) 645-3509 (Direct Line)
 Fax: 1(868) 663-9686

Gregor Barclay

PhD, Botany, U. of Aberdeen
 The University of the West Indies, Trinidad and Tobago
 Department of Life Sciences
 Port-of-Spain, Trinidad and Tobago

Contact Information:

Natural Sciences Building, Old Wing, Room 324
 Telephone: UWI ext. 83112
 Fax: 1(868) 663-524

Mr. Mike G. Rutherford

Zoology Curator

Education

- Ph.D. Zoology, University of the West Indies, St. Augustine (ongoing)
- Certificate in Biological Recording and Species Identification, University of Birmingham, England (2007)
- M.App.Sc. Conservation Biology, James Cook University, Townsville, Australia (2001)
- B.Sc. Zoology (with Honours), University of Glasgow, Scotland (1998)

Contact Information:

Department of Life Sciences
 The University of The West Indies
 St. Augustine, Trinidad and Tobago
 Location: Ground Floor, Natural Sciences Building, New Wing
 Tel: UWI ext. 82231
 Fax: 1(868) 663-5241

Dr. Compton Seaforth

Professor Compton Seaforth is the Programme Professor at the Caribbean Herbal Medicine Research Institute of the University of Trinidad and Tobago being set up to advance scientific knowledge about herbal remedies, including their efficacy and risks when taken by human volunteers

Contact Information

Dr. Compton E. Seaforth
 Email: c4rag@tstt.net.tt

Botanical Gardens/Zoos

Royal Botanic Gardens

Royal Botanic Gardens is one of the oldest Botanic Gardens in the world. The landscaped site occupies 61.8 acres (25 hectares) and contains some 700 trees, of which some 13% are indigenous to Trinidad and Tobago, whilst others are collected from every continent of the world.

Contact Information

Address: Circular Rd, Port of Spain, Trinidad and Tobago

Telephone: +1 868-622-1221

Emperor Valley Zoo & Botanical Gardens

The Emperor Valley Zoo is the biggest zoo in Trinidad and Tobago. It is located north of the Queen's Park Savannah and West of the Royal Botanic Gardens in Port of Spain and has a collection of over 2300 individuals and over 200 species.

Contact Information

Address: Northern side of Queen's Park Savannah, Port of Spain, Trinidad, Trinidad and Tobago

Phone: 868-622-3530; 868-622-5343

Website: www.zstt.org

The Zoological Society of Trinidad and Tobago (ZSTT Inc.)

The Zoological Society of Trinidad and Tobago Inc. (ZSTT Inc.) was founded on 23rd April 1947. In 1952, by Ordinance No. 12 of 1952 dated 5th April 1952, the Society was constituted as a body corporate.

Expert: Mr. Narine Gupte Lutchmedial, H.B.M.

The president of ZSTT Mr. Lutchmedial is well-known for his accomplishments in the environmental sector, as founder and immediate past President of the Manatee Conservation Trust (MCT) and President of the Zoological Society of Trinidad and Tobago (ZSTT).

Tobago Main Ridge Forest Reserve

The Tobago Main Ridge Forest Reserve is home to a number of flora and fauna; it is estimated that the rainforest provides habitats for twelve to sixteen species of mammals out of the nearly ninety mammal species in the Caribbean region, twenty-four non-poisonous snakes, sixteen lizards and two hundred and ten species of birds, the most outstanding being the bird species *Campylopterus curvipennis* - the White-tailed Sabrewing Hummingbird - that is both rare and endemic to Tobago.

Eco Safari Park

Safari Eco Park Located in Chaguaramas sits on 40 acres of land on the northwestern peninsula and is one of 22 leases which the CDA and Planning and Development Minister Camille Robinson-Regis have deemed illegal. The park has approximately 100 safari animals.

Contact Information

Address: Tucker Valley, Chaguaramas
 First Right after Church/Graveyard
 Call: +1 868-733-8920

Nariva Swamp

The Nariva Swamp is the largest freshwater wetland in Trinidad and Tobago and has been designated a Wetland of International Importance under the Ramsar Convention. The swamp is located on the east coast of Trinidad, immediately inland from the Manzanilla Bay through Biche and covers over 60 square kilometres (23 mi²). The Nariva Swamp is extremely biodiverse. It is home to 45 mammal species, 39 reptile species, 33 fish species, 204 bird species, 19 frog species, 213 insect species and 15 molluscs species. All this contained in just 60 square kilometers.

Caves***Gasparee Caves***

Gasparee Caves is a natural system of limestone caverns and caves created by millions of years of wave action and slightly acid rain on the island of Gaspar Grande in Trinidad.

Cumaca Cave

The Cumaca Cave has several names; called the Cumaca Cave because it is near the village of Cumaca in eastern Trinidad, it is also known as the Oropouche Cavern as the Oropouche River emerges from this cave and the Guarcharo Cave as it is the home of the Guarcharo bird.

Aripo Cave

Aripo Cave is a cave in the Northern Range, in Trinidad and Tobago, with 862 m length and 160 m depth. It is one of several caves created by recrystallised limestone.

Tamana Caves

Tamana Caves is a cave system located on the northern slope of Mount Tamana in eastern Trinidad. Mount Tamana is a 307-metre flat topped hill of Miocene Guaracara Limestone of the Tamana Formation in the eastern Central Range.

Soho Cave

The upper Aripo Valley, between the peaks of El Cerro del Aripo and Chagramal, contains the largest known cave systems in Trinidad. These include the Aripo #1 (or Main) Cave, the linked Aripo #2 and #3 Caves and Soho Cave.

Regional associations

Caribbean Poultry Association

The CPA is the strongest Caribbean regional livestock association and one of the strongest regional agribusiness associations. The CPA has high visibility both within and outside the region. The CPA is a member of the Latin American Poultry Association (ALA) / CISA (Animal Health Commission in Latin America) and the International Poultry Council.

President: Patrick De Groot

Contact Information

Secretariat

3 Ragbir Street

St. Augustine

TRINIDAD & TOBAGO

West Indies

Tel. 868 662 8704

Email: desmondali@caribbeanpoultry.org

Address: Head Office

C/o JB Group Ltd

McCook's Pen, St. Catherine

JAMAICA, West Indies

Tel. 876 943 4376

Fax. 876 943 4322

Environmental Management Authority (EMA) of Trinidad and Tobago

The Environmental Management Authority make recommendations for a National Environment Policy and develops and implements policies and programmes for the effective management and wise use of the environment of Trinidad and Tobago.

Contact Information

Address: Head Office

#8 Elizabeth Street, St. Clair, Port of Spain

Tel: (868) 628-8042 / 8044-5, Help Desk: ext. 2254, Fax: (868) 628-9122

Email: ema@ema.co.tt.

Environment Research Institute Charlottesville

The main function of the Environment Research Institute Charlottesville in Tobago is the sustainability for the people and ecosystems of North East Tobago.

Keith William Gibson, PhD, MSc, BSc - Chairman

Keith has worked with people and animals in the wild, community halls, classrooms and conference rooms from the Canadian prairies to the Caribbean Sea. He has almost a decade of experience in Tobago and Trinidad including completion of his doctoral thesis work supporting community groups in northeast Tobago.

Ryan Mohammed, MPhil, BSc - Secretary

Ryan has an MPhil in Environmental Biology and BSc in Zoology and Botany, and is currently completing his PhD in Aquatic Ecology at University of the West Indies. He has a working relationship with Cardiff University, Wales, and Adam Mickiewicz University, Poland, and has co-authored several articles on aquatic ecology in local, regional and international journals.

Contact Information

Environmental Research Institute Charlotteville, ERIC
Northside Road, Campbleton, Charlotteville, Tobago, W.I.
Ph: +1-868-788-3550
Ph: +1-868-497-9705
Email: info@eric-tobago.org

Institute of Marine Affairs

The Institute of Marine Affairs (IMA) is a multi-disciplinary marine and environmental research organization. The research block includes 15 labs for marine chemistry, fisheries and aquaculture, and environmental research. The information block includes the library, IT offices, and children's education facilities.

Contact Information

Address: Hilltop Lane Chaguaramas, Trinidad and Tobago
Telephone: (868) 634-4291/4292/4293/4294
Fax: (868) 634-4433

The Caribbean Industrial Research Institute

The Caribbean Industrial Research Institute (CARIRI) has been a reputable name in the Region, an invaluable Caribbean asset which is a multifaceted Institution providing service in the areas of Laboratory and field testing, Consulting, Research and Development, and Training.

CARIRI houses multimillion-dollar, modern laboratories with state-of-the-art equipment and highly trained specialist professionals, technologists, technicians, consultants and researchers.

Caribbean Food Safety Centre (CFSC)

The main mission of the CFSC is to create greater awareness of food safety principles and improve food safety management practices in the Caribbean.

The Food Technology Unit at CARIRI, CFSC works with other agencies locally, regionally and internationally in a collaborative effort to improve the food industry and align the Caribbean region to the competitive international arena.

Contact Information

Headquarters Address: University of the West Indies, St Augustine Campus
Trinidad and Tobago
Phone: (868) 299-0210
Fax: (868) 662-7177
Email: mail@cariri.com

Expertise In The Marketplace

Herbalists

Trevor Sayers

Herbalist Trevor Sayers has a degree in natural medicine and owns 13 naturalized Herbs outlets throughout Trinidad, Tobago, Grenada and St. Lucia, the Herbs Natural manufacturing company in Santa Cruz and the Save the Youth Foundation, with bases in Miami and Trinidad.

Contact Information:

Address: Cor 6th Avenue
Barataria Eastern Main Road
Port of Spain, Trinidad & Tobago
Phone: +1 868-638-438

Dr. Anna Maria Pouchet

Naturopathic practitioner Dr. Anna Maria Pouchet founded the Hope and Wellness Clinic and practices various forms of naturopathic medicine.

Phillip Franco

Philip Franco, the owner of the Natural Balance shop, who says he is a qualified naturopath/herbalist registered with the Australian Traditional Medical Society, and also a Member of the Ontario Herbalist Association

Contact Information:

25 Alexandra Street, St. Clair, Trinidad and Tobago
Tel. #: 628-5659

Dr. Kandice Pereira

After completing her bachelor's degree in Biology pre-medicine, Dr. Kandice Pereira went on to earn a doctorate in Naturopathic Medicine from Bastyr University, the leader in naturopathic medical education.

Contact Information:

Dr. Kandice Pereira, ND
Address: 2A Roberts St., Woodbrook, Port of Spain
Email: integrativewellness@yahoo.com or drpereira@integrativewellnesstt.com
Telephone: (868) 395-4398

Nisha Ojar (Aromatherapist)

Francis Morean

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Sustainable Institute of Jamaica: <http://statinja.gov.jm/maps.aspx>

An Overview of Jamaica's Science Sector: <http://mset.gov.jm/overview-jamaicas-science-sector>

Newspaper articles

UWI principal hails CARIGEN lab: <http://www.jamaicaobserver.com/news/UWI-principal-hails-CARIGEN-lab>

Sustainable use of the lansan tree in Saint Lucia:

<http://globaltrees.org/projects/sustainable-use-lansan-tree-saint-lucia/>

Online Resources

Caribherp, Amphibians and Reptiles of Caribbean Islands:

http://www.caribherp.org/index.php?is=West_Indies&so=class,%20ord,%20subord,%20family,%20species&vw=y&dd=y&mob=y

Evaluated publications containing records of lichens and lichenicolous fungi of Guyana: http://www.lichens.uni-hamburg.de/lichens/south-america/guyana_p.htm

Fungi of Trinidad & Tobago: <http://www.cybertruffle.org.uk/trinfung/eng/index.htm>

Lichens of the Caribbean Islands: <http://www.herbarium.msu.edu/CARIBBEAN/>

Living Treasures: <http://lntreasures.com/index.html>

Plants of the Eastern Caribbean: <http://ecflora.cavehill.uwi.edu/index.html>

The IUCN Red List of Threatened Species: <http://www.iucnredlist.org/>

The Reptile Database: <http://www.reptile-database.org/>

PROJECT TEAM

Anthony Richards: Antiguan by birth, MD. Richards has a PhD in enzyme & microbial biotechnology and a Postgraduate Certificate in Territorial Heritage Management. He has extensive experience in agricultural & environmental heritage management, tools for cognitive mapping of traditional knowledge including soundscape mapping; digital storytelling, grassroots comics, individual project on mapping of medicinal plants in traditional healing yards of Arima, Trinidad, and practical community engagement of young people on interpretation of heritage trees and sacred spaces in the urban landscape of Barbados. Dr. Richards has served as ethnobotanical advisor to the Board of the Caribbean Lexicography Project, which produces the Caribbean dictionaries, as secretary to Society for Economic Botany-Caribbean Chapter and as local focal point and researcher for the TRAMIL survey. Anthony Richards currently resides in Barbados.

Sylvia Mitchell: A Jamaican national, Dr. Mitchell has a BSc in Botany and Geography and a PhD in Biotechnology. She is presently a Senior Lecturer at the Biotechnology Centre, UWI. She completed the first review of medicinal plant research carried out by the Mona Campus of the University of the West Indies, produced a botanical references of plants used in Jamaican root tonics, undertook a prefeasibility study and business plan for the Charles Town Maroons, Portland, Jamaica, and is a member of the Jamaican team of TRAMIL, an ongoing programme of ethnobotanical surveys and laboratory-based validation of traditional medicine uses in the Caribbean basin, <http://www.tramil.net/> and is a member of the Caribbean ABS steering committee.

Kevel Lindsay: Born and raised on Antigua, Mr. Lindsay has a degree in environmental biology from Columbia University, and an associate degree in forestry from the Eastern Caribbean Institute of Agriculture and Forestry in Trinidad (now University of Trinidad and Tobago). He is a regional expert on Caribbean biodiversity, ecology, watershed management, environmental systems, organizational management and planning, community development and development planning. He headed the Island Resources Foundation's (IRF) regional Biodiversity Conservation Program (initially based in Antigua) from 1995 to 2016, as its Caribbean coordinator. Kevel has over 27 years of experience natural resources conservation, environmental and ecological surveys, protected areas issues and management, field surveys and research, archival and document research, resource profiling, characterization and reporting, having worked on protected areas planning and writing management plans, in watershed, terrestrial and coastal issues on Antigua, Barbuda, St. Kitts, Nevis, the US Virgin Islands, the British Virgin Islands and Grenada. Mr. Lindsay is recognised as one of the region's leading experts on Caribbean plant ecology and faunal species, particularly birds. As Coordinator of the IRF's biodiversity research and conservation programmes, Mr. Lindsay emerged as a regional leader in natural history, protected area planning, tropical forestry and Caribbean botany, vegetation classification systems, and wildlife species research.

9.0 APPENDICIES

Table 19. Key agencies, institutions and persons responsible for natural resources management and conservation in Antigua and Barbuda.

Person	Agency/Organization/Group	Position/Role	Issue/Interest/Resources	Agency/Organisation Type	Island	Tel Contact Details	Email Address
Adriel Thibou	Forestry Division, Ministry of Agriculture	Forestry Officer	Forestry; flora and fauna; biodiversity; research; science; policy and legislation; enforcement; outreach; agriculture; land management	Government	Antigua		athibou@gmail.com
Arlene Lake	WinterLake Stables and Farm	Person	Livestock; stables; horses; animal protection; farming	Private	Antigua		annmarialake@Hotmail.com
Barbara Japal	Antigua and Barbuda Horticultural Society	President	Plants; gardens; gardening; beauty and landscapes; botanical; rare plants; conservation; the environment	NGO	Antigua and Barbuda	268-562-1031/4681	japalb@candw.ag
Cheryl Appleton	Fisheries Division, Ministry of Agriculture	Chief Fisheries Officer	Fisheries; marine resources; policy; enforcement; marine trade	Government	Antigua and Barbuda		chieffisheriesofficer@gmail.com
Craig Thomas	Inter-American Institute for Cooperation on Agriculture (IICA), Antigua and Barbuda	Technical Specialist	Agriculture; crop farming; livestock; agricultural research; economic development; food security	Inter-Government Agency	Antigua and Barbuda	268-462-6119/724-0889	
Diann Black-Layne	Department of the Environment, Ministry of Health	Chief Environmental Office/Ambassador	Environmental management oversight for Antigua and Barbuda; policy; enforcement; funding; international conventions	Government	Antigua and Barbuda	268-462-4625	dcblack11@gmail.com
Eli Fuller	Antigua Conservation Society	President	Environmental conservation and awareness; flora and fauna; conservation; science and research; policy and legislation; community development	NGO	Antigua and Barbuda	268-720-6955	mdclovis@gmail.com
Elliott Lincoln	Thema Bio Fuel		Energy; alternative energy; environment	Private	Antigua		elliottlincoln@me.com
Evelyn Weekes	Aquaponics and Agroecology society of Antigua and Barbuda		Fish farming; fisheries; aquaponics/aquaculture; food security; community development; agriculture	CBO	Antigua and Barbuda		gunthropesecogardens@hotmail.com
George Lake	WinterLake Stables and Farm	Person	Livestock; stables; horses; animal protection; farming (husband of Arlene Lake)	Private	Antigua		annmarialake@Hotmail.com
Gregory Robin	Caribbean Agricultural and Rural Development Institute (CARDI), Antigua & Barbuda	Country Representative	Agriculture; crop farming; livestock; agricultural research; economic development; food security	Inter-Government Agency	Antigua and Barbuda	268-462-0661	cardi@candw.ag / cardi_antigua@yahoo.com
Janil Gore-Francis	Plant Protection Division, Ministry of Agriculture	Chief Plant Protection Officer	Plant protection; vector control; agriculture; policy	Government	Antigua and Barbuda	268-764-1255	Janil.Gore.Francis@ab.gov.ag
Jeddiah Maxim	Department of Agriculture	Director	Agriculture; forestry; livestock; flora and fauna; farming; pest management and invasive species; plant and vector control; environment; forestry	Government	Antigua		

ABS-RELATED CARIBBEAN INSTITUTIONS AND EXPERTISE

Jerome Henry	Antigua and Barbuda Beekeepers Association		Bee keeping; farming; food security; community development; agriculture	NGO	Antigua and Barbuda		jayhenry14@hotmail.com
Linroy Christian	Chemistry and Food Technology Division, Ministry of Agriculture	Director	Chemical Analysis; Drugs/Medical/Hormone; Microbiological; Wastewater; Water quality	Government	Antigua and Barbuda	268-462-4502/268-764-5706	
Mable Francis	Barbuda Council	Secretary of Council	Local affairs; Barbuda development; regulation; legislation; policy; oversight; agriculture; farming; livestock; land management; research and science; the environment; marine resources	Government	Barbuda	268-460-0077	
Malvern P. Spencer	Pesticides and Chemicals Board		Oversight; chemical imports; pesticides; policy; advisory	Government	Antigua and Barbuda		enrevlam@gmail.com
Mervin Samuel	Fishermen's Alliance		Fisheries; marine resources; policy; enforcement; marine trade	CBO	Antigua and Barbuda		bird6625@yahoo.co.uk
Michele Henry	Antigua and Barbuda Museum/Historical and Archaeological Society	Curator	History; archaeology; culture; architecture; preservation; art; biodiversity; the environment; outreach and empowerment; museum and archives; Betty's Hope	NGO	Antigua and Barbuda	268-462-1469	museum@candw.ag
Michelle George	Island Gourmet Products	Person	Food; entrepreneur; local manufacturing	Private	Antigua		michaele@candw.ag
Nurse Alexandrina Wong	Women Against Rape	Executive Director	Gender issues; women; community development and outreach; empowerment; policy	NGO/CBO	Antigua and Barbuda		womenagainstrapeab@gmail.com
Oona Edwards	Veterinary & Livestock Division Ministry of Agriculture	Chief Veterinary Officer	Livestock; farming; livestock research; pet control; pasture management	Government	Antigua	268-460-1759	
Pamella Thomas	Climate Smart Agriculture		Agriculture; food security; farming; energy; alternative energy; environment; climate change; development	Private	Antigua		Samoth32@yahoo.com
Rhonda Sealey	Chief Medical Officer	Ministry of Health	Medicine; healthcare; medical research; science; hospital; clinics; labs; development	Government	Antigua and Barbuda		
Roberta Williams	Gilberts Agricultural and Rural Development Center	Executive Director	Agriculture; gender issues; empowerment; outreach; training; community development; entrepreneurship; youth development	NGO	Antigua		Rwilliams@gardc.org
Roslyn Simon	Person		Herbal medicine; wild plants; entrepreneur		Antigua	268-462-8216/729-0242	Rosmacsherbs@live.com

ABS-RELATED CARIBBEAN INSTITUTIONS AND EXPERTISE

Ruth Spencer	UNDP GEF Small Grants Programme	GEF UNDP National Coordinator	GEF Small Grants; project funding and development; environment and conservation; natural resources management; capacity-building; community development	Inter-Government	Antigua and Barbuda		ruthspencer5@gmail.com
Sereno Benjamin	Extension Division, Ministry of Agriculture	Chief Extension Officer	Crop farming; vegetables and fruits; crop research; pest control; land management; food security; outreach; community development; poverty alleviation	Government	Antigua		
Sophia Pedikaris	Barbuda Research Complex		Archaeology; paleontology; biodiversity; conservation; protected areas; climate change and sea level rise; policy; governance; community development and outreach; science and research; fossils; history; landscapes; ecology	NGO	Barbuda		sperdikaris@gmail.com
Tahambay Smith	Environmental Awareness Group	President	Environmental conservation and awareness; flora and fauna; conservation; science and research; policy and legislation; community development	NGO	Antigua and Barbuda	268-462-6236	eagantigua@gmail.com/vasky29@live.com
Wingrove Spencer	Precision Center		Community development; conservation; environment; empowerment	CBO	Antigua		winspence@candw.ag

Table 19. Key agencies, institutions and persons responsible for natural resources management and conservation in Grenada, Carriacou and Petit Martinique.

Person	Agency/Organization/Group	Position/Role	Issue/Interest/Resources	Agency/Organisation Type	Island	Tel Contact Details	Email Address
Government/Statutory							
Acarlijuan Fleary	Ministry of Carriacou and Petite Martinique Affairs	Forestry Officer	Bluggo Flour	Government	Petit Martinique		
Aden Forteau	Forestry Department, Ministry of Agriculture	Chief Forestry Officer/CITES National Contact	Forestry; land management; farming; parks and protected areas; flora and fauna; outreach; botanical	Government	Grenada	473-440-2708/2934	adenforteau@yahoo.com
Anthony Jeremiah	Forestry Department	Forest Conservation Officer (Wildlife)/CITES National Contact	Forestry; land management; farming; parks and protected areas; flora and fauna; outreach; botanical	Government	Grenada	473-440-2934	
Aria St. Louis	Environment Division	Head/CDB Inquiry Point	Environmental conservation and management; genetics; conservation genetics; outreach; environmental education; community development; food security	Government	Grenada, Carriacou and Petit Martinique	473-440-2708	ariastlouis@gmail.com
Bernadette Lendore - Sylvester	Ministry of Carriacou and Petite Martinique Affairs	Permanent Secretary	Government; the environment; agriculture; development; Fisheries; marine; coastal; coastal erosion; climate change and sea level rise; history and culture; community development; food security	Government	Carriacou and Petit Martinique	473-443-6026/6028/7358	
Bertrand Munro	Pest Management Unit, Ministry of Agriculture		Biosafety Clearing House National Focal Point	Government	Grenada, Carriacou and Petit Martinique	473-440-2708	rolandwellington.2010@gmail.com
Bowen Louison	Veterinary and Livestock Division, Ministry of Agriculture	Chief Veterinary Officer	Livestock; veterinary medicine; farming; pest management and control; invasive species; breeds; food security; development	Government	Grenada	473-440 3195/2708	bowen.louison88@gmail.com
Byron Campbell	Market Access and Rural Enterprise Development Programme (MAREP)	Programme Manager	Economic development; poverty reduction; youth empowerment	Government	Grenada, Carriacou and Petit Martinique	473-442-0100/0105	marepgrenada@gmail.com
Christopher Husbands	National Water and Sewage Authority of Grenada (NAWASA)	General Manager	Water provision; waste management; watersheds; watercourses; forests; planning and development	Government	Grenada	473-440-2155	
Daniel Lewis	Ministry of Agriculture, Lands, Forestry, Fisheries and the Environment	Chief Agricultural Officer	Cartagena Protocol Primary National Focal Point	Government	Grenada, Carriacou and Petit Martinique		

ABS-RELATED CARIBBEAN INSTITUTIONS AND EXPERTISE

Fabian Purcell	Physical Planning Unit, Planning and Development Authority	Senior Planner Officer	Physical planning; development; mapping; GIS	Government	Grenada	473-440-2471/4635	
Gordon Paterson		RAMSAR Focal Point		Government	Grenada, Carriacou and Petit Martinique	473-440-2934	massaiman2004@yahoo.com
Guido Marcelle	Produce Chemist Laboratory, Ministry of Agriculture			Government	Grenada, Carriacou and Petit Martinique	473-440-0105	
Joyce Thomas Peters	National Biosafety Project			Government	Grenada, Carriacou and Petit Martinique	473-440-5452/414 5829	
Justine Rennie	Chief Fisheries Officer, Ministry of Agriculture, Lands, Forestry, Fisheries and the Environment	Protected Areas, National Focal Point	Protected Areas	Government	Grenada, Carriacou and Petit Martinique	473-440-2708	justinar7368@hotmail.com
Malachy Dottin	Biotechnology and Research Division, Ministry of Agriculture		Biosafety; tissue culture; food technology; national standards; medicine; research; Agriculture; farming; livestock	Government	Grenada, Carriacou and Petit Martinique	473-440-4460	
Maxan Francis	Ministry of Carriacou and Petite Martinique Affairs	Chief Coordinator of Petite Martinique	Government; the environment; agriculture; development; Fisheries; marine; coastal; coastal erosion; climate change and sea level rise; history and culture; community development; food security	Government	Petit Martinique		
Merina Jessamy	Ministry of Agriculture, Lands, Forestry and Fisheries	Permanent Secretary	Agriculture; crop farming; livestock; agricultural research; economic development; food security	Government	Grenada, Carriacou and Petit Martinique		
Mervin Haynes	Economic and Technical Cooperation Ministry of Finance, Planning, Economy, Energy and Cooperatives	Director	Resource Mobilisation, Focal Point	Government	Grenada, Carriacou and Petit Martinique	473-440-9480	

ABS-RELATED CARIBBEAN INSTITUTIONS AND EXPERTISE

Paul Graham	Pest and Disease Management Division, Ministry of Agriculture	Pest Management Officer	Pest management; pest control; farming; agriculture; border security; disease prevention; invasive species control and management; botanical; flora; fauna; crop farming; agricultural research; economic development; food security	Government	Grenada, Carriacou and Petit Martinique	473-440-0019/2708/3386/3078	paulgraham1957@gmail.com
Paul Graham	Pest Management Unit, Ministry of Agriculture		Global Taxonomy Initiative, National Focal Point	Government	Grenada, Carriacou and Petit Martinique	473-440-2708	
Randolph Shears	Extension Division, Ministry of Agriculture	Chief Extension Officer	Crops; farming; agricultural outreach; pest management and control; best farming practices; land management; development; food security	Government	Grenada		
MR. Ronald O'Neale	Spice Research, Ministry of Agriculture		Research; spice farming; crops; farming; agricultural outreach; pest management and control; best farming practices; land management; development; food security	Government	Grenada, Carriacou and Petit Martinique	473-442-2708	agriculturegrenada@gmail.com
S. Sally Anne Bagwhan Logie	Ministry of Agriculture, Lands, Forestry, Fisheries and the Environment	Permanent Secretary	Convention on Biodiversity, Primary National Focal Point, ABS Competent National Authorities	Government	Grenada, Carriacou and Petit Martinique	473-440-3386/2708/3078	sbagwhan.logie@gov.gd/sonya.bagwhan@gmail.com
Simeon Collins	Grenada Bureau of Standards	Director		Government	Grenada, Carriacou and Petit Martinique	473-440-5886	
Simone Lewis	Ministry of Agriculture, Lands, Forestry, Fisheries and the Environment	Senior Environment Officer	Intergovernmental Committee for the Nagoya Protocol on Access and Benefit-Sharing National Focal Point	Government	Grenada, Carriacou and Petit Martinique	473-440-2101	simonelewis2011@gmail.com
Spencer L. Thomas	Ministry of Agriculture, Lands, Forestry, Fisheries and the Environment	Ambassador and Special Envoy for MEA's	Clearing House Mechanism, CHM Informal Advisory Committee	Government	Grenada, Carriacou and Petit Martinique	473-435-6872	
		Senior Land Officer		Government	Grenada		
	Tissue Culture Laboratory, Ministry of Agriculture			Government	Grenada, Carriacou and Petit Martinique		
Andrew Hastick	Grenada Cocoa Association (GCA)	General Manager		Statutory Body	Grenada, Carriacou and Petit Martinique	473-440-2933	gca@spiceisle.com
Darryl Brathwaite	Grenada National Trust (GRT)	President		Statutory Body	Grenada, Carriacou and Petit Martinique	473-440-3725/9538	
Maricia Cameron	The Grenada Food and Nutrition Council (GFNC)	Executive Secretary		Statutory Body	Grenada, Carriacou and Petit Martinique	473-440-7991	

ABS-RELATED CARIBBEAN INSTITUTIONS AND EXPERTISE

Marlon Clyne	Grenada Cooperative Nutmeg Association (GCNA)	General Manager		Statutory Body	Grenada, Carriacou and Petit Martinique	473-440-2117	
Milton Gabriel	Minor Spices Cooperative			Statutory Body	Grenada, Carriacou and Petit Martinique	473-443-2604	
International/Inter-Government/Regional							
Simone Lewis	UNDP GEF Small Grants Programme	GEF UNDP National Coordinator	GEF Small Grants; project funding and development; environment and conservation; natural resources management; capacity-building; community development	Inter-Government	Grenada, Carriacou and Petit Martinique	473-416-1425	simonele@unops.org
Derek Charles	Inter-American Institute for Cooperation on Agriculture (IICA), Grenada, Carriacou and Petit Martinique	National Specialist	Agriculture; crop farming; livestock; agricultural research; economic development; food security	Inter-Government Agency	Grenada, Carriacou and Petit Martinique	473-440-5547	
Reginald Andall	Caribbean Agricultural and Rural Development Institute (CARDI), Grenada, Carriacou and Petit Martinique	Country Representative	Agriculture; crop farming; livestock; agricultural research; economic development; food security	Inter-Government Agency	Grenada, Carriacou and Petit Martinique	473-443-5459	
CBOs/NGOs							
Benson Patrice	Carriacou Environmental Committee			CBO	Carriacou	473-443-8977	carriacouenvironmentalcommittee@yahoo.com
Matthias Joseph	St Andrew's Peoples Maroon Association			CBO	Grenada	473-442-8262/6346	matthiasjos@hotmail.com
Danessa Joseph	Grenada Rural Enterprise Project			NGO	Grenada	473-442-0100	goldenstar21@gmail.com
Denyse Ogilvie	People in Action			NGO	Grenada	473-231-5354	denyse.ogilvie@gmail.com
Dexter Miller	Petite Martinique Fishermen Cooperative (PMFC)		Fisheries; marine; coastal; coastal erosion; climate change and sea level rise; history and culture; community development; environmental conservation and management; erosion; invasive species management; land management; outreach; environmental education; community development; food security	NGO	Petit Martinique		dextermiller42@gmail.com

ABS-RELATED CARIBBEAN INSTITUTIONS AND EXPERTISE

Ellen Radix	Grenada Horticultural Society (GHS)	President	Horticulture; plants; gardens; flora; landscaping and landscapes; flowering plants; botanical	NGO	Grenada, Carriacou and Petit Martinique	473-440-7949	
Sandra Ferguson	Inter-Agency Group of Development Organisations (IADGO)		Umbrella organisation for Grenada NGOs	NGO	Grenada, Carriacou and Petit Martinique		iagdo01@gmail.com
Stephen Alexander	Carriacou Historical Society				Carriacou	473-443-8288	carriacoumuseum@gmail.com
Tyrone Buckmire	Grenada Fund for Conservation, Inc.	Executive Director		NGO	Grenada	473-231-7622	tysazoiosy@yahoo.com/gfcinc1@gmail.com
Valma Jessamy	Grenada Association of Beekeepers	President		NGO	Grenada		viessamy@jecocaribbean.com
Bernadette Browne	Seventh Day Adventist Church	Personal	Health and wellbeing	Religious	Petit Martinique		
	Grenada Banana Cooperative Society				Grenada, Carriacou and Petit Martinique	473-440-2473/2486	
Individual/Private							
Dianne Roberts	Environmental Consultant		Environmental conservation; land management; social and cultural issues; consultancies	Consultant	Grenada		
Academic/Education							
Charles R. Modica	St. George's University	Chancellor	Academic; educational; graduate studies; medicine; veterinary medicine	Academic/Commercial	Grenada	473-444-4175	regmail@sgu.edu
Jeffrey Briton	T. A. Marryshow Community College	Principal	Academic; local community college; educational	Academic	Grenada	473-440-1389	

Table 20. Key Agencies, institutions and persons responsible for natural resources management and conservation in St. Lucia.

Person	Agency/Organization/Group	Position/Role	Issue/Interest/Resources	Agency/Organisation Type	Tel Contact Details	Email Address
Government/Statutory						
Adams Toussaint	Forestry Department			Government		adams.toussaint@govt.lc
Alfred Prospere	Forestry Department			Government		
Anita James	Ministry of Sustainable Development, Energy, Science and Technology			Government		anitavja@gmail.com
Anita Joshua	Ministry of Agriculture, Food, Production, Fisheries, Cooperatives and Rural Development			Government		anthia.joshua@govt.lc
Bonaventure Henry	Ministry of Commerce, Industry and Business Development			Government		bonaventure.henry@govt.lc
Crispin D'Auvergne	Ministry of Sustainable Development, Energy, Science and Technology			Government		cdauvergne@sde.gov.lc
Jannel Gabriel	Ministry of Sustainable Development, Energy, Science and Technology			Government		jannelrgabriel@gmail.com
Lydia Atkins	Ministry of Health			Government		lydia.atkins@health.gov.lc
Sallyane Cotter	Ministry of Sustainable Development, Energy, Science and Technology			Government		sallyane.cotter@govt.lc
Sarah Leon	Ministry of Agriculture, Food, Production, Fisheries, Cooperatives and Rural Development			Government		sarah.leon@govt.lc / sarah_leon@msn.com
Shanna Emmanuel	Ministry of Agriculture, Food, Production, Fisheries, Cooperatives and Rural Development			Government		shanna.emmanuel@govt.lc

Terrence Gilliard	Ministry of Sustainable Development, Energy, Science and Technology			Government		terrence.gilliard@gmail.com
Bishnu Tulsie	St. Lucia National Trust			Statutory Body		
International/Inter-Government/Regional						
Giles Romulus	GEF Small Grants Project UNDP	GEF UNDP National Coordinator	GEF Small Grants; project funding and development; environment and conservation; natural resources management; capacity-building; community development	Inter-Government		GilesR@unops.org
Norma CherryFevrier	Organisation of Eastern Caribbean States (OECS) Commission			Inter-Government		nfevrier@oecs.org
CBOs/NGOs						
Gilbertha St. Rose	Caribbean (CAPSICUM)e, Industry, Commerce and Use in Medicine Caribbean			NGO		gsr@candw.lc
Laurent Jean-Pierre	Traditional Medicine of The Islands Programme (TRAMIL)			NGO		jeanpierrel79@hotmail.com / Laurentjean.pierre@gmail.com
Matthew Morton	Durrell Wildlife Conservation Trust c/o - Forestry Department		Fauna; wildlife; forestry; conservation; rare and endangered species	NGO	758-453-4866/719-8966	mmorton@fastmail.fm
Individual/Private						
Ulrike Krauss	Maison du Soleil			Consultant	758-713-4308/9547	
Academic/Educational						
	Diamond Falls Botanical Gardens		Botanical garden; spa; trails; history; natural landscapes; conservation	Commercial	758-459-7155	soufestate@candw.lc
International/Inter-Government/Regional						
Matthew Morton	Durrell Wildlife Conservation Trust (c/o - Department of Forest and Lands Resources Development Ministry of Agriculture, Fisheries, physical Planning, Natural Resources and Co-operative)		Conservation; biodiversity; iguana conservation; flora and fauna	Inter-Government	758-453-4866/758-719 8966	
Sophia Steele	Fauna and Flora International (FFI)	Eastern Caribbean Project Coordinator	Conservation; biodiversity; iguana conservation; flora and fauna	NGO	268 728 1003	

Table 21. Key agencies, institutions and persons responsible for natural resources management and conservation in The Federation of St. Kitts and Nevis.

PERSON	AGENCY/ORGANIZATION/ GROUP	POSITION/ROLE	ISSUE/INTEREST/RESOURCES	AGENCY/ORGANISATION TYPE	ISLAND	TEL CONTACT DETAILS	EMAIL ADDRESS
Alexis Nisbett	St. Kitts Biomedical Research Foundation	Director	Stem cell therapy, research and medical science	Research/Commercial	St. Kitts	869-465-7382	
Alistair Yearwood	St. Christopher and Nevis Biodiversity Foundation		The environment; sustainable development; conservation; policy; funding	NGO	St. Kitts	869-467-1390	
Allister Edwards	Ministry of Agriculture, Human Settlement, Cooperatives and Environment	Permanent Secretary	Agriculture; natural resources conservation; enforcement; planning; flora and fauna; policy and legislation; development issues; permitting; research	Government	St. Kitts	869-467-1025	psagricultureskn@gmail.com compsagricultureskn@gmail.com
Ana Ephraim Elliot	Person	Local entrepreneur	Herbal products	Individual/Citizen	St. Kitts	869-763-3241	anastashae@gmail.com
Antonio Maynard	UNESCO-St. Kitts-Nevis, Ministry of Education	Secretary General of the National Commission for UNESCO, St. Kitts and Nevis	St. Mary's Biosphere Reserve, UNESCO	Government/ International Agency	St. Kitts	869-466-8581	agridep8@gmail.com
	Livestock Division, Ministry of Agriculture	Chief Veterinary Officer, Department of Environment, Ministry of Agriculture, Human Settlement, Cooperatives and Environment	Livestock; monkey control; livestock research	Government	St. Kitts	????	
Augustine Merchant	Inter-American Institute for Cooperation on Agriculture (IICA)	Coordinator	Agriculture; crop farming; livestock; agricultural research; economic development; food security	Inter-Government Agency	St. Kitts-Nevis	869-465-5104/465-9325	
Cheryll Jeffers	Ministry of Agriculture, Human Settlement, Cooperatives and Environment	Senior Conservation Officer, Department of Environment	Natural resources management; oversight and enforcement; wetlands and coastal issues; flora and fauna; policy and legislation; environmental education and awareness; climate change	Government	St. Kitts		jeffers31@gmail.com

ABS-RELATED CARIBBEAN INSTITUTIONS AND EXPERTISE

			issues				
Christi Douglas	The Botanical Gardens of Nevis	Director	Gardens; Botanical Gardens; Environmental Education	Commercial/Tourism	Nevis	869-469-3509	
Claudia Drew	UNDP St. Kitts and Nevis	National Project Coordinator	Protected Areas; Institutional development and legislation; Natural Resources Management	Inter-Government Agency	St. Kitts-Nevis	869-466-8535	claudia.drew@undp.org
Colin Tyrell	Nevis Department of Legal Affairs		Legislation and policy	Government	Nevis	869-469-1081	
Dawson	Kittitian Hill	Kittitian Hill	Housing; gardens; tourism; nursery; farming	Private	St. Kitts	869-763-21017	
Delisle Walwyn Group of Companies	Fairview House and Garden	Operation owner	Guest house; old plantation and gardens; plants	Private	St. Kitts	869-465-2098	
Department of Agriculture	Pesticide control, Nevis	Permanent Secretary, Eric Evelyn Permanent Secretary	Pesticide oversight and control	Government	Nevis		
Eavin Parry	Ministry of Agriculture, Human Settlement, Cooperatives and Environment	Environmental Scientist, Department of Environment	ABS Focal Point	Government	St. Kitts		elvinparry@hotmail.com
Emile Greene	Person; UNDP St. Kitts and Nevis	UNDP St. Kitts and Nevis	Science; chemistry; chemist; retired teacher	Government	St. Kitts		egreene.eg49@gmail.com
Eugene Hamilton, Honourable	Pesticide Board, Ministry of Agriculture, Human Settlement, Cooperatives and Environment, St. Kitts	Minister of Agriculture, St. Kitts	Pesticide oversight and control	Government	St. Kitts-Nevis		
Kistian Flemming	Caribbean Agricultural and Rural Development Institute (CARDI), St Kitts & Nevis	Country Representative	Agriculture; crop farming; livestock; agricultural research; economic development; food security	Inter-Government Agency	St. Kitts-Nevis	869-465-1498/2846	
Floyd Liburd	Department of Agriculture, Nevis	Forestry Officer	Forestry; agriculture; flora and fauna; farming; monkey control	Government	Nevis	869-664-9299	liburd46@hotmail.com
Germaine Mike	Bureau of Standards, Ministry of International Trade	Chemist	Food safety/standards/food testing; Patents	Government	St. Kitts	665-8344	
Government of St. Kitts/Taiwanese	Taiwanese Agro-processing		Agro-processing; agriculture	Inter-Government	St. Kitts-Nevis	869-763-4673	

ABS-RELATED CARIBBEAN INSTITUTIONS AND EXPERTISE

Embassy & Government							
Helen Douglas	Caribbean Legal & Environmental Consultancy Services	Consultant	Biosafety; genetically modified foods	Individual/Citizen	St. Kitts		genesis738@yahoo.com
Hyrarn Williams	Bureau of Standards, Ministry of International Trade	Director	Food safety/standards/food testing; Patents	Government	St. Kitts	869-465-5279	
Ilis Watts	UNDP GEF Small Grants Programme	GEF UNDP National Coordinator, St. Kitts-Nevis	GEF Small Grants; project funding and development; environment and conservation; natural resources management; forestry	Inter-Government Agency	S. Kitts-Nevis	869-662-3135/869-664-4547	lliswatts@unops.org
Jennifer Archibald	Ministry of Justice and Legal Affairs		Legislation and policy	Government	St. Kitts-Nevis	869-467-1013/869-465-2521 ext.: 1086	
Joel Williams	Nevis Department of Physical Planning, Natural Resources and the Environment	Director	Natural resources conservation; enforcement; planning; flora and fauna; policy and legislation; development issues; permitting; research	Government	Nevis	869-660-1670/469-5522/21 ext.: 2026	nevplan@yahoo.com / joellw85@gmail.com
Joshua Jeff Salters	Ministry of Agriculture, Human Settlement, Cooperatives and Environment	Conservation Officer, Department of Environment	Natural resources management; oversight and enforcement; wetlands and coastal issues; flora and fauna; policy and legislation; environmental education and awareness	Government	St. Kitts	869-466-8535	
June Hughes	Ministry of Agriculture, Human Settlement, Cooperatives and Environment	Director, Department of Environment	Natural resources conservation; enforcement; planning; flora and fauna; policy and legislation; development issues; permitting; research	Government	St. Kitts	869-466-8535	ccodoe@sisterisles.kn
Kashief Hynes	Ministry of Agriculture, Human Settlement, Cooperatives and Environment	Conservation Officer, Department of Environment	Natural resources management; oversight and enforcement; wetlands and coastal issues; flora and fauna; policy and legislation; environmental education and awareness	Government	St. Kitts		kashiefhynes@gmail.com
Kate Orchard	Person; Retired	St. Christopher National Trust; Brimstone Hill Fortress National Park	Environmental; biodiversity	Individual/Citizen	St. Kitts	869-763-7568	orchards@sisterisles.kn

ABS-RELATED CARIBBEAN INSTITUTIONS AND EXPERTISE

Keithley Amory	Nevis Department of Agriculture	Director	Agriculture; forestry; livestock; flora and fauna; farming; monkey control; plant and vector control	Government	Nevis	869-469-5521 ext. 2040	doanevis@hotmail.com
Kimberly Stuart	St. Kitts Sea Turtle Monitoring Network		Sea turtle conservation and management; marine and coastal	NGO/CBO	St. Kitts	869-764-6664	skturtles@gmail.com / cturtlegirl@gmail.com
Laurel Arthurton	Nevis Department of Fisheries	Director	Fisheries; marine resources conservation and management	Government	Nevis	????	fisheries@nia.gov.kn
Lavern Queeley	Department of Economic Affairs	Director	Operational GEF Focal Point	Government	St. Kitts	869-467-1255	lavern.queeley@govt.kn
Leighton Naraine	Clarence Fitzroy Bryant College		Academic; education; environmental conservation; marine; coral reefs	Academic	St. Kitts	leightonnaraine@yahoo.com	
Lemuel Emile Pemberton	Nevis Sea Turtle Group	Founder	Sea turtle conservation, research and management; marine	NGO/CBO	Nevis		mugabe@hotmail.com
Lexington Bedford	Parks and Beaches, Unit, Ministry of Health	Director	Urban Parks and Beaches/Gardens	Government	St. Kitts	869-665-8049	
Marc Williams	The Department of Marine Resources, Ministry of Agriculture	Director	National marine resources	Government	St. Kitts	869-465-8045	marcwill3@aol.com
Marty Lowell	Ottley's Plantation Inn	Manager	Old plantation and gardens; tourism	Private	St. Kitts	869-465-7234/800-772-3039	
Maurice Widdowson	Caribelle Batik, Romney Manor	Manager and Owner	Old plantation and gardens; batik making; tourism	Private	St. Kitts	869-465-6253	
Melvin James	Ministry of Agriculture, Human Settlement, Cooperatives and Environment	Director, Department of Agriculture	Agriculture; IPPC; CITES Focal Point; Plant Protection	Government	St. Kitts	869-467-1842	agridep8@gmail.com / planthealth.james8@gmail.com
Milton Whittaker	Person; Retired	Author; former head of Bureau of Standards	Medicinal plants; author; biochemistry; botany	Government/Private	St. Kitts	869-765-7992	
Nicole J. Liburd	Nevis Historical and Archaeological Society	Executive Director	Heritage conservation; natural resources conservation; policy; flora and fauna; history; science and research	NGO	Nevis	Office: 869 469 5786/Cell: 869 661 4148	nliburd@nevisheritage.org
P' Della 'P Stanley	Executive Director, Ripple Institute		Youth environment Education; conservation; natural resources; flora and fauna; bats	NGO	St. Kitts	869-465-7500	elvinparry@hotmail.com / rippleskn@sisterisles.kn
Pauline Ngunjiri	Nevis Historical and Archaeological Society	Deputy Director	Heritage conservation; policy	NGO	Nevis	Office: 869 469 5786/Cell: 869 661 4148	pauline.skn@gmail.com

ABS-RELATED CARIBBEAN INSTITUTIONS AND EXPERTISE

Percival Hanley	Brimstone Hill National Fortress National Park Society	General Manager	Heritage conservation; protected areas; policy	Statutory			
Randolph Edmead	Department of Physical Planning, St. Kitts	Director	Planning; natural resources management; national GIS issues and mapping; former focal point for ABS, climate change, biodiversity and other issues. Planning is housed within the Ministry of Sustainable Development.	Government	St. Kitts	869-465-2277	raedmead@yahoo.com / phyplskb@sisterisles.kn
Ryllis Percival	St. Christopher National Trust	Executive Director	National Heritage Resources	Statutory	St. Kitts	869-465-5584	
Sean Callanan	Ross University	Dean	Medical and Livestock Tertiary Education and Research	Academic/ Commercial	St. Kitts	855-767-7838	
Sydney "Cuppie" Berkeley	Riches of the Earth	Person	Farming; holistic medicine; plants (husband of Victoria Baucom)	Individual/Citizen	St. Kitts	869-667-4248/764-0808	richesoftheearthskn@gmail.com
Sylvester Bell	Ministry of Agriculture, Human Settlement, Cooperatives and Environment	Chief Conservation Officer, Department of Environment	Natural resources management; oversight and enforcement; wetlands and coastal issues; flora and fauna; policy and legislation; environmental education and awareness; Biodiversity issues and Convention	Government	St. Kitts		sylbelle44@gmail.com
Thema Ward	Nevis Department of Physical Planning, Natural Resources and the Environment	Environmental Officer	Natural resources conservation; enforcement; planning; flora and fauna; policy and legislation; development issues; permitting; research	Government	Nevis	869-660-1670/469-5521	
Toni Frederick-Armstrong	St. Christopher National Trust Museum	Director	National Heritage Resources	Statutory	St. Kitts		
Victoria Baucom	Person	Herbalist	Herbal teas; farmer; farming; plants	Individual/Citizen	St. Kitts		
Gorden J. Green	Medical University of the Americas		Academic; education	Academic/Commercial	Nevis	869-469-9177	
	Department of Environmental Health, Ministry of Health, St. Kitts		Health; the environment; disease vectors	Government	St. Kitts		
	Department of Environmental Health, Ministry of Health, Nevis		Health; the environment; disease vectors	Government	Nevis		