



Dominica's 5th National Biodiversity Report
to the
Convention on Biological Diversity

2014



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EXECUTIVE SUMMARY

The Commonwealth of Dominica's performance as to its obligations under the Convention of Biological Diversity (CBD) in the Fifth National Communication to the Conference of Parties is captured therein.

During the period under review, the commitment of the Government of the Commonwealth of Dominica is featured as unwavering despite the fact that its previously stated objectives in some instances may have fallen short.

Financial constraints created by contracting economy and other unforeseen natural events have influenced the degree of success that Dominica would have recorded. Dominica continues to promote its image as 'The nature Isle of the Caribbean' and espouses the principles of a green development strategy.

Dominica has made and continues to make strides however small since the last report. Its many agencies and programs on stream have raised the level of public awareness as to the importance and the need to conserve the nation's biodiversity.

Issues pertinent to impacts on biodiversity remain the same while the human resources, legal instruments and public awareness approaches which are requisite tools, are all within a developing framework forecasted for the implementation and attainment of the national targets.

In pursuit of the Aichi targets and the 2020 target mandates Dominica has reviewed same and determined to set five of these as goals it will work towards within the set time limit.

INTRODUCTION

The Commonwealth of Dominica, as a Small Island Developing State, despite of, and, in response to continued global economic challenges and their direct effects, is engaged in several initiatives aimed at achieving its sustainable development aspirations while meeting critical social development and poverty reduction goals.

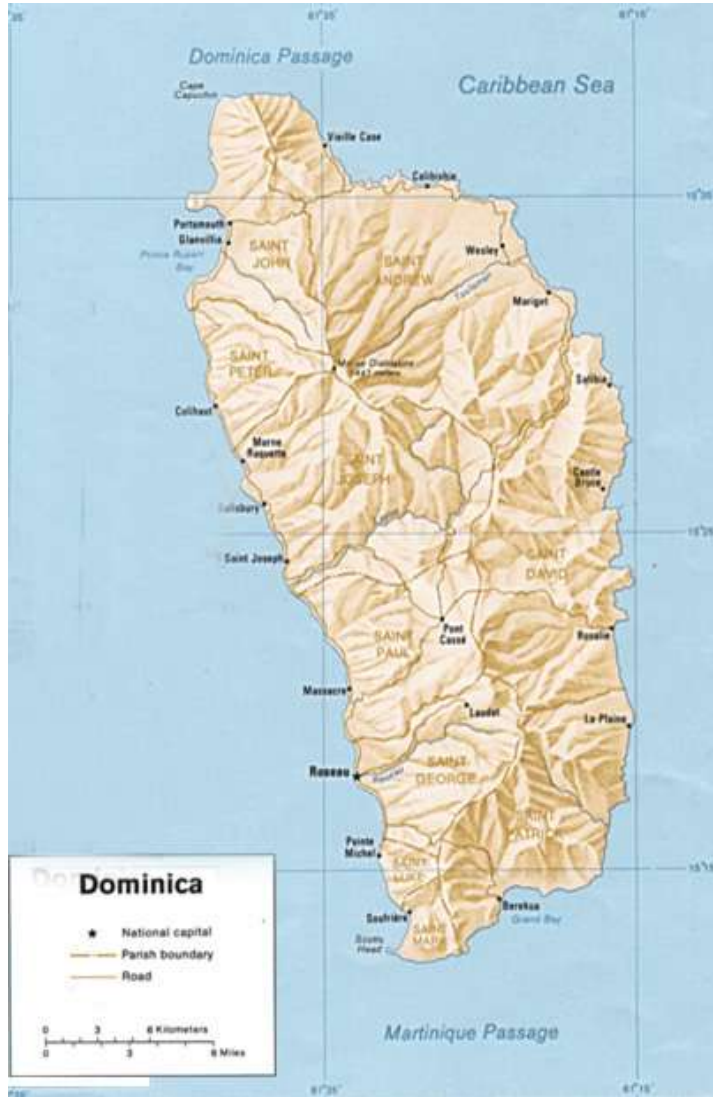
In Dominica's sustainable development quest, the island's biodiversity is always a paramount feature. Diverse strategies, mechanisms and synergies with other global protocols bring into focus aspects of climate change vulnerabilities and risks and measures taken by the Government of Dominica to address these concerns as well as the government's vision and agreed approach in transforming to a low carbon climate resilience development pathway are all tailored to maintain Dominica as the nature Isle of the Caribbean.

Among the major features that influence the strides Dominica undertakes towards its obligations under the Convention of Biological Diversity institutional strengthening and capacity building as well as finance are foremost.

This report attempts to depict the country's situation as it relates to the most recent years as well as forecast the proposed program for investments, including activities for finance as it progresses towards a green economy along its quest to conserve the nation's biodiversity.

PART 1. ASSESSING THE STATUS AND TRENDS OF, AND THREATS TO, BIODIVERSITY AND IMPLICATIONS FOR HUMAN WELL-BEING

The Commonwealth of Dominica is the largest and most mountainous of the Windward Islands grouping in the Eastern Caribbean with an area of approximately 750 square kilometres and an



estimated population of 71 000 people. Close to 40 percent of the population live in and around the main towns of Roseau (its capital) and Portsmouth. The total land area is approximately 75 000 hectares of which over 30 percent is covered with forests.

The island is volcanic in origin. Its topography is characterized by very rugged and steep terrain with the ground steeply rising from the sea, mountains extends from the northern interior to the south, rising to a maximum of 1447 meters which is the summit of Morne Diablotin, the islands highest peak. Very limited gentle sloping lands are available; these are restricted to the narrow coastal strips along the northeastern

part of the island. About 70% of the population lives on the low lying coast strip. Level ground for agriculture production is scarce and largely confined to river flood plains and coastal strips.



Dominica is located between longitude $61^{\circ} 29'$ and $61^{\circ} 14'$ west and latitude $15^{\circ}39'$ and $15^{\circ}12'$ north between two French departments; Guadeloupe to the north and Martinique the south. It shares delimited maritime boundaries with its French neighbours resulting in a 20 miles corridor extending to 200 miles into the Atlantic to the east and approximately 60 miles on the west.

The island is central within the pathway of the seasonal tropical cyclonic features that sweep the Eastern Caribbean region. Its location renders it quite susceptible to onslaughts of inclement weather patterns that have the tendency to create substantial havoc to the island's biodiversity, its economy, property and people thus bringing to bear critical hardship on the country as a whole.

Dominica's 'humid tropical marine' climate averages temperatures of 27°C (80°F) is influenced by the island's elevated rugged topography, the high moisture content of the northeasterly trade winds from the Atlantic Ocean and Caribbean Sea. Rainfall in Dominica is relatively high averaging in excess of 7,620 mm (300 in) in the interior and 2000 (in) along the west coast annually. Highest rainfall occurs between June and November which is also the peak period of

cyclonic activity. The drier period extends from January to May. High rainfall renders the island susceptible to landslides particularly in the mountainous areas.

For the current reporting period, Dominica did not suffer any direct hit from tropical storms / hurricanes however heavy rains of hurricane Ophelia in 2011 caused substantial damage to property and agricultural crops communities on the west coast.

In the latter part of 2013, Dominica experienced an extended period of moisture and instability associated with trough systems which generated heavy rains and isolated thunderstorms across several portions of the island. These resulted in massive landslides, community isolations,



fatalities, loss of land and biodiversity.

The impacts of such events carry the signature of loss biodiversity from poor land use and management and bad farming practices. The prevailing consequences and costs of these events have caught the attention of the authorities such that in his 2011 Budget Address, Hon. Roosevelt Skerrit, Prime Minister of Dominica, stated *“We will pay close attention to the realities of climate change and so create an (agricultural) sector that is climate smart given our experiences with hurricanes and drought, both of which affected output in 2009/2010. This strategy will*

*ensure food and nutrition security, food safety and the overall competitiveness of the agrobusiness sector”.*¹

Dominica is susceptible to frequent seismic activity being located on a series of volcanic mounts and has one of the highest concentrations of potentially active volcanoes in the world. It has eight (8) volcanoes; six (6) of which are located in southern Dominica within 10 km of the capital, Roseau. There is evidence that these volcanoes are 'live' and that there will be an eruption here in the future, possibly within the next 100 years.²

The Economy

The island is dubbed the ‘nature isle of the Caribbean’ and thus great emphasis is placed on the preservation and conservation of its environmental features despite the many challenges such endeavor presents. Much of its development policy fosters the advancement of that cause.

Until the close of the last millennium agriculture was the mainstay of the economy. Economic growth thrived progressively then but this was curtailed in the early years of the last decade by a conjuncture of un-favourable developments, particularly with trade which included the removal of preferential treatment for Windward Island bananas on the UK market. Banana production has declined considerably since, creating closure of many small farm holdings thus generating displacement of a very substantial sector of the labour force.

The value of agriculture as % of GDP for the past 4 years has almost stagnated as in the tables below and growth in that sector continues to spiral a downward trend:

	2009	2010	2011	2012
Agric. (valued added) % of GDP	14	13	14	14

³

¹ R. Skerrit, Budget Address, Dominica, 2011

² ODM, Dominica

³ World Bank

	2009	2010	2011	2012
Agric. annual % Growth	1.3	-10.4	6.0	0.7

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There had been longstanding underlying weaknesses in the economy, in particular its overriding dependence on the banana industry. The slow pace of economic diversification exacerbated the economy's vulnerability to economic shocks.

Such situation has had serious implication for the rural population and adversely influence poverty in these respective areas where agriculture once flourished. The primary causes of poverty in Dominica are stated as being unemployment and under-employment due to slow economic growth since the mid-1990s and contraction of the economy in subsequent years. This situation had been building up for some time and is apparent from the 1996 Poverty Assessment that identified the same poverty related issues and characteristics as the later studies.

The 2009 Country Poverty Assessment (CPA) recorded a decrease in indigence (extreme poverty) from 10% in 2003 to 3% in 2009. This reflected a more than 50% drop in the indigence rate. The MDG indicator calls for halving the proportion of people living on less than US\$1 per day.⁵

Poverty Headcount by Parish

Parish of Residence	Poverty Headcount (%)
City of Roseau	12.5
Rest of St. George	16.3
St. John	10.2
St. Peter	23.7
St. Joseph	47.2
St Paul	32.6

⁴ Ibid

⁵ GSPS Medium Term Report, Dominica, 2011

St. Luke	17.5
St. Mark	27.3
St. Patrick	42.7
St. David	40.4
St. Andrew	38.1
TOTAL	28.8

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According to most recent compiled data, poverty is at its highest in rural areas. The parishes where the poverty levels are recorded as being above 40% are areas where banana cultivation once flourished. Difficulties in the rural economy have prompted many to re-locate to the urban communities in the west of the island

The government has developed a three-year (2011 -14) Growth and Social Protection Strategy (GSPS) which articulates a broad medium term strategic framework for growth and poverty reduction. Priorities set in the GSPS makes poverty reduction the focus of the government economic and social policy. The GSPS represents Government’s Strategy for pursuing growth and poverty reduction going forward and for doing this in a comprehensive manner, with its three-fold focus on

- Fiscal policy and administrative reform, including creating an enabling environment for private enterprise and investment attraction;
- Sectoral strategies for growth; and
- Strategies for poverty reduction and social protection.⁷

Dominica struggles with limited options to provide diverse forms of livelihoods to its population other than by way of engagement in tilling the soil. The number of persons still directly engaged in agriculture as farmers is 5000 notwithstanding that the number of farmers who were engage in banana production have dropped by 60%. Many have no other form of livelihood and have to revert to other forms of farming. This according to some schools of thought should augur well for an increase in production of food crops, an increase in inter-island trade and a consequential reduction of the food import bill.

⁶ Ibid

⁷ Ibid

With the decrease in banana production it is assumed that there should be a reduction *in* the introduction and use of fertilizer and other agro-chemicals which were extensively utilized in that sector. The impact of such situation is still under close scrutiny as some schools of thought are anticipating a shift to more cash food crop farming which may require agro-chemicals of a different nature.

The focus for continued impetus within the agricultural sector will take a new turn following the development of a new agriculture policy which is earmarked to be in place by mid-2014.

With the low ebb within the agricultural sector there is a likely increase in the number of persons who will impact on the marine environment as fishers. In the rural communities during the reign of banana farming as a major employment medium, there was a prevailing trend of fishers being part-time farmers. Now with the current diminished banana sector, more rural part-time fishers are returning to the sea as full fledged fishermen or spending more time fishing than normal. This shift in economic activity should likely result in increased fish landings and at the same time bring to bear on the respective authorities the implementation of more robust fisheries resource management regimes. Currently there is a rigid mechanism of admission through certification of persons into the fishing sector.

Tourism

Tourism as the sector which replaces agriculture as a major contributor to the national economy is mainly cruise-ship visitors oriented. Stay-over visitor arrivals in Dominica is less than 15% of the total number of tourists to the island. Thus the importance of the cruise sector is very critical and is expected to be a source of employment to alleviate the job situation.

One of the major features of the tourism sector in Dominica is the biodiversity of the island; its vegetation (forests and wilderness), rivers and waterfalls, mountains (hiking trails), natural features (sulphur springs, boiling lake, marine life and dive sites) and wildlife (birds..). Nature tourism referred to as eco-tourism, is the major feature that is being promoted in Dominica's tourism thrust. This is indicative that biodiversity of the land and waters are an integral part of that sector and must be given appropriate attention.

For the last five years there has been a steady increase (with intermittent dips) in the number of cruise visitor arrivals. The projected arrival figures for this current (2013 -14) season is an increase of 20%. Figures in the ensuing table indicate the trend in tourist arrivals over the past years with a serious drop in the last three years as of the result of a withdrawal of a cruise line that made regular calls in and out of the normal cruise season as well as an overall reduction in vessel calls. The local agency responsible for tourism affairs in Dominica, the Discover Dominica Authority (DDA) is hopeful about the future for stay-over visitor arrivals. The agency projects that by 2015 with new promotion strategies, the number of stay-over visitors should reach 90,000.

The ensuing tables give an indication of the most recent trends in visitor arrivals in Dominica. ⁸

Visitor Type	2008	2009	2010	2011
Stay Over	81,000	75,000	77,000	76,000
	2008	2009	2010	2011
US\$ Receipts	82,000,000	86,000,000	96,000,000	98,000,000

⁸ World Bank report

Alternative Energy Supply Sources

The development of alternative electricity sources in Dominica is a priority for energy security and economic development. Hydropower currently provides for approximately 40% of the installed electricity capacity. Wind power is an option but the only serious proposal for wind development has been at one private entity although small. The wind resources in the region are moderate, but not consistent year round. Biomass is an option of interest in Dominica, but its potential is limited by the relatively small agricultural sector. Solar water heating systems are not uncommon but their increased use is likely to assist in off-setting the demand for power.

Geothermal power offers the only base load renewable energy alternative in the Dominica (given that it may have exhausted all significant hydro reserves). The existence of potential geothermal resources has been known in Dominica for many years, but there are challenges that prevent the geothermal development option from being commercially viable.

Geothermal Exploration in Dominica

The Government of Dominica has been engaged in deliberations and activities that are aimed at harnessing geothermal energy for the generation of electricity for domestic usage in the first instance and for export to the neighbouring French territories of Martinique and Guadeloupe via submarine cables. Exploratory drilling that is intended to locate the geothermal reservoir and determine its size has begun. This phase will thus help to ascertain the amount of energy that can be produced. Preliminary works already identified the area of interest for such activity.

The Government of Dominica, BRGM-CFG Services, French Environment and Energy Management Agency (ADEME), Conseil Regional of Guadeloupe and of Martinique are collaborating in order to develop an energy production project consistent with the global aims of sustainable development. The 'Geothermal Energy in the Islands' or 'Geothermie Caraibes' project in the Roseau Valley in Dominica is part of the European cooperation programme INTERREG III-B 'Caribbean Space' being implemented at present.

In 2013 the Government convened a forum with partners to deliberate on Dominica's overall strategy for developing geothermal energy and outline plans for establishing a small power to supply electricity to the domestic market. These included financing geothermal and other renewable resource projects and delved into the legal institutional and regulatory arrangements that underpin the development and commercialization of the resource. The following excerpt from the presentation to that forum best surmises the situation.

“..... this forum has been convened to share information on the technical, legal, environmental, economic and financing dimensions of developing the geothermal resource in the Roseau valley. The purpose for doing so, is to garner the interest and commitment of Dominica's friends and potential investors in providing financial and technical support to construct two geothermal plants. One of these plants will be designed to produce up to 20 megawatts to supply electricity to the domestic market, and the other, of 100 megawatts, to supply electricity to Guadeloupe and Martinique via submarine cable.”⁹

The studies for this work began in the second half of 2011. Test wells have been drilled with positive results.

⁹ Hon. Roosevelt Skerit, Prime Minister, Dominica, Sept 26, 2013

Changes in Status and Trends since Last Report

General Overview.

Conservation of biodiversity in Dominica is an ongoing activity. There continues to be a gradual gain in the level of commitment from the policy directorates and an effective degree of promotion of awareness targeting the populace. The impacts of these activities have been rewarding, though small in certain instances. At the institutional level the rate of implementation still waives due to a lack of the requisite tools and manpower resources that are essential for the challenges that are to be encountered.

The major features that influence conservation of biodiversity still remain consistent as in the past. The table (1) below depicts a comparative view of the status of trends now vis-à-vis the situation at the time of the last report. Some areas which may have required a more elaboration is captured in the ensuing text.

The work of some lead agencies (both government and civil) in their respective areas have progressed in the face of much adversity influenced by the same factors enlisted in the previous report. The work of the Environmental Coordinating Unit (ECU) in promoting and coordinating synergies among various State agencies has led to increased public relation measures to sensitize the masses on conservation of biodiversity.

New concerns in some areas have emerged with shifting paradigms, as is the case of;

- Reduced threat of deforestation for banana cultivation versus an increase in activity for tourism related sites and housing on lands designated for agriculture.
- With a diminishing banana sector, a reduction of lands being cleared for new banana fields was anticipated. This was viewed as a positive since such condition then would render many areas as prime sites for rejuvenation of secondary forest.¹⁰

¹⁰ Per comm, Director of Agriculture, Dominica, 2013

- A new dispensation emerges whereby new lands are being cleared (in most cases by slash and burning techniques) on virgin soil for short term food crops. This may prove to be a budding threat and driver to soil erosion and loss of biodiversity. Authorities are concerned that such practices are as a result of the entrance of foreign labour into the agricultural sector.
- Introduced alien species with serious negative consequences are showing up in sectors with concerns in sectors such as; forestry (cane frog), agriculture (black sigatoka disease) and fisheries (lion fish and sea grasses).
- With the decline in banana cultivation, wildlife officials are reporting that game animals / wildlife (terrestrial and aquatic) exploitation has escalated, driven by loss of employment and increased product demands in the neighbouring French territories.¹¹

The moratorium on all forms of harvest of an indigenous species of frogs, *Leptodactylus fallax* (mountain chicken), a national delicacy and symbol, decimated to 20% of its population remains in place. Impact of moratorium has since been considered as positive. Heavy exploitation, loss of habitat and a fungal disease threatened the wild population. The Forestry Division in collaboration with other interests continues to be engaged in research activities aimed at increasing that species' population.¹²

¹¹ Per comm. Forestry and Parks

¹² Ibid

Stated Threats	Ratings		Action
	THEN	NOW	
Deforestation	Decline	Unchanged	A slight reduction in clearing land for agricultural activities with the demise of the banana industry. Creating new areas for housing and tourism remain a concern. Programmes to arrest latter is gradual
Over-exploitation of wildlife	Decline	Concerned	Wildlife exploitation on the rise with declined farming engagement. Continued works in public awareness and community-based resource conservation. Review of relevant laws proposed. Species specific moratorium is in place.
Encroachment	Decline	Decline	Monitoring works by the respective agencies are rewarding. These are particularly relevant to State Lands.
Unregulated development	Problematic om	Unchanged but encouraging	New areas for housing and tourism remain a concern. Man power resources remain an impediment. Regulatory and institutional mechanisms in address issue in progress.
Introduction of foreign species	Problematic	Increased	Trans-boundary movements continue to be a source of problem species. New marine and terrestrial invasive species have been identified. Resources to counter these beefed up. Awareness drive ongoing
Loss of agro-biodiversity	Problematic	Unchanged	More awareness required. Legal instrument for implementation of strategy lacking.
Impacts from climate change	Concerned	Unchanged	Comprehensive multi-sectoral policy being developed. Sensitization in trend. Expressed need to put strategy in place. Alternative sources of energy works, progressing.
Uncontrolled use of bio-technology	Being addressed	Improving	Work in progress by various agencies
Pollution	Being addressed	Improving	Measures being introduced to address concern. Recycling initiative is on.
Natural Disasters	Increasing	Increasing	Increase in cyclonic, flooding and seismic activities. Disaster Mitigation measures implementation is ongoing.
Loss of traditional knowledge	Decline	Unchanged	Awareness building ongoing. Legislative support initiated but await enactment
Inappropriate legal/institutional frameworks	Concerned	Slight improvement	Manpower resources required. Training and legal support initiated. Designation of the ECU as a full fledge department to be implemented

Fig.1. Comparison of threats since last report and now

Initiatives	Description	Duration
<p>1. A collaborative initiative between the Special Programme for Adaptation of Climate Change (SPACC) program and the GEF-funded <i>Sustainable Land Management (SLM)</i> project, which began in 2011</p> <p>2. Low Carbon Climate Resilient Strategy</p>	<p>Dominica has pioneered:</p> <p>(a) vulnerability mapping of the country’s National Parks and World Heritage Site and “climate proofing” of the World Heritage Site Management Plan and National Parks Management Plans; and</p> <p>(b) Community-based vulnerability mapping and development, through community engagement and input, of community adaptation plans.</p> <p>The SPACC project has made considerable advances in “climate proofing” Dominica’s forests and protected areas upon which the country’s tourism industry relies. This has been achieved by mapping vulnerability of these areas from encroachment and consulting with communities to establish an appropriate buffer area that will reduce threats from human encroachment.</p> <p>Investments under the Climate Resilient Development Pathway of Dominica’s <i>Low-Carbon Climate Resilient Strategy</i> build on these pioneering adaptation initiatives and will support the transition to improved climate resilience in Dominica.¹³</p>	<p>3-year project. Project completed</p> <p>In progress</p>
<p>3. National Land Use Policy</p>	<p>The contract to engage a consultant to undertake that task is now in place as of 2014. The Inception Mission has met with stakeholders and the National Land Use Policy and National Physical Development Plan is expected to be process soon.</p>	<p>In progress</p>

¹³ Dominica Low-carbon Resilience Strategy

4. Banana Accompanying Measures	An EU initiative that will see to the rehabilitation of the agriculture sector to address among others issues that will impact climate change features.	Ongoing
5. National Agriculture Policy (NAP)	Structure to see to the development of that policy document is in place. An initial stakeholders meeting has been held. Accompanying features such as a national farmers' census will precede the policy document. The NAP will delve into aspects of biodiversity and climate change as they relate to agriculture.	In progress
6. Clearing House Mechanism	The ECU will be instituting a clearing house mechanism through its website to make available to, and, sensitize stakeholders and the public on matters dealing with the islands biodiversity	In progress

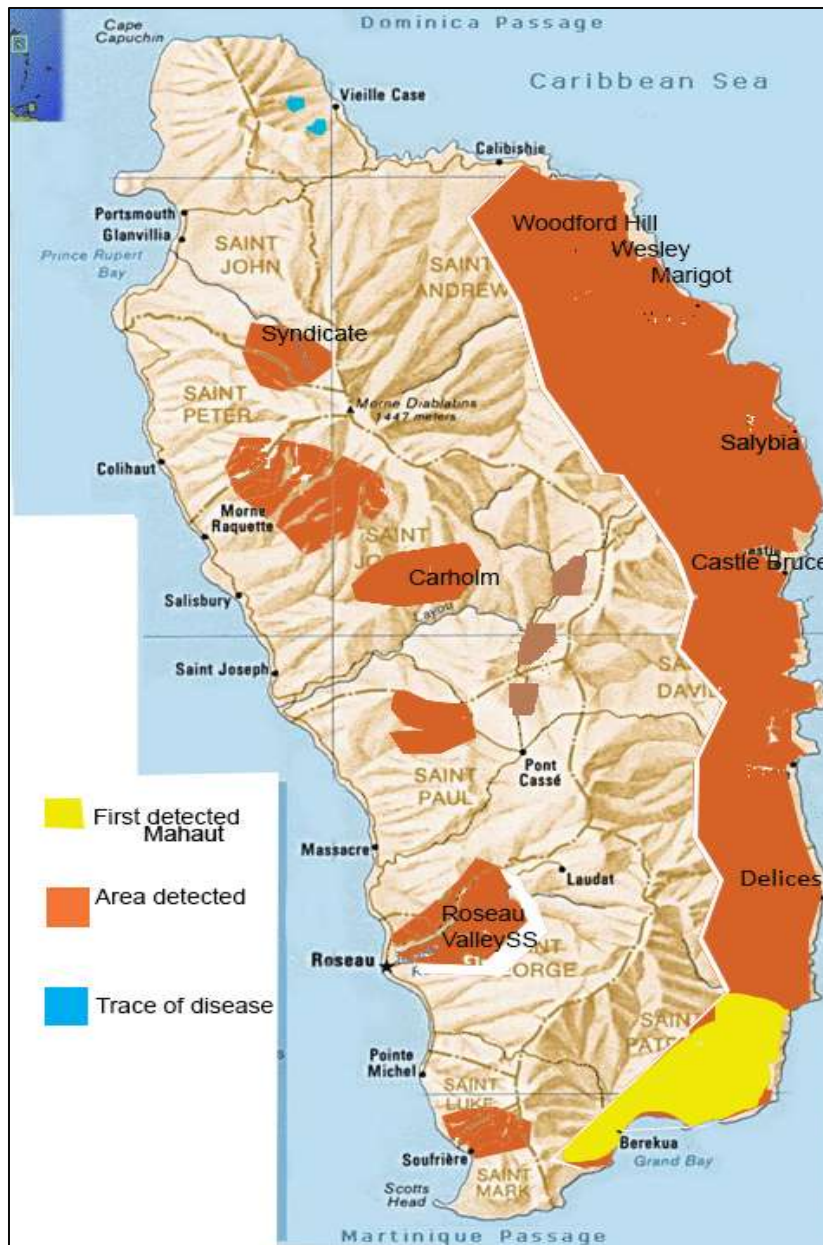
Fig. 2. New initiatives

Introduction of foreign species with the potential to offset the balance of biodiversity has taken an upward trend of late and has been cause for concern. The species of concern at present are listed below:

Species	Affected Sector	Impact
<i>haunlongbing-HLB</i> Citrus greening disease	Agriculture.	Wiped out citrus plantation in various parts of State
<i>Tristeza</i> virus disease	Agriculture	Affect citrus. Species detected in isolated pockets. Measures taken to defeat breeding
<i>Mycphaerella fijiensis</i> Black sigatoka disease	Agriculture	Attack banana plantations. Island wide threat
<i>Pterois volitans</i> Lion fish	Fisheries	Prey on coral reef species.
<i>Sea grass</i> <i>Halophila stipulacea</i>	Fisheries	Out compete shallow water indigenous sea grass populations
<i>Bufo marinus</i> Cane toad	Forestry	Pest

Black sigatoka virus is assumed to have reached epidemic proportions in some areas. This trans-boundary species is deemed to have been introduced by natural features such as wind and rain and by man moving contaminated plants and plant parts from Martinique and Guadeloupe. The disease was first sighted on the south east coast of the Dominica between the communities of Grand Bay and Delices.

The disease only attacks banana and banana like stocks. To date several programmes and initiatives are in place to sensitize farmers and other traders as to the measures that have to be followed to reduce the spread and help manage the diseases.



Map of reported cases of black sigatoka virus

Aerial spraying of suspected areas, though expensive is being undertaken in certain areas.

Other measures in addition to spraying are being promoted by Agriculture authorities since spraying may have side effects on other biodiversity stock.

This virus threatens the demise of the already diminished banana sector which is still important for many farmers.



There are also concerns for the marine sector as to the presence of a foreign fish species, the lion fish, in the coastal waters of the State. There is growing potential for the species to threaten reef fishery because of its cannibalistic characteristics and reduce the scope of livelihoods in the sector as well as food security. Several initiatives are ongoing to address the impact of that predator

species on the nation's fishery resources.

A seagrass species *Halophila stipulacea*, (pictured above) foreign to Dominica, first reported on island in 2008 has been spreading over areas of the west coast on the island and threatening the indigenous species. "Dominica is losing its sea grass population to an invasive species named *halophilia stipulacea*."¹⁴ Indications are that this foreign specie is out-competing the native west coast sea grass *Syringodium. Filiforme*, and causing them to recede to deeper depths.

Commercial and recreational (yachting) maritime traffic, are the probable sources of the introduction of the species, most likely through fragments transported by commercial and recreational shipping.

The presence of this sea grass species in Dominica brings to bear the need to develop that requisite maritime and fisheries protocols that could curtail its spread, particularly at a time when intensive energies are being put into increasing cruise tourism vessels and yachting facilities.

What is left to be seen is the impact these may have on fish species and other marine organisms that are known to be prolific along the coast as part of the food chain the attract coastal fish stocks.

¹⁴ Steiner

In spite of the challenges that have been exposed in the foregoing, several initiatives as those listed in the table above have been in process or progress and should be noted.

Main threats to biodiversity

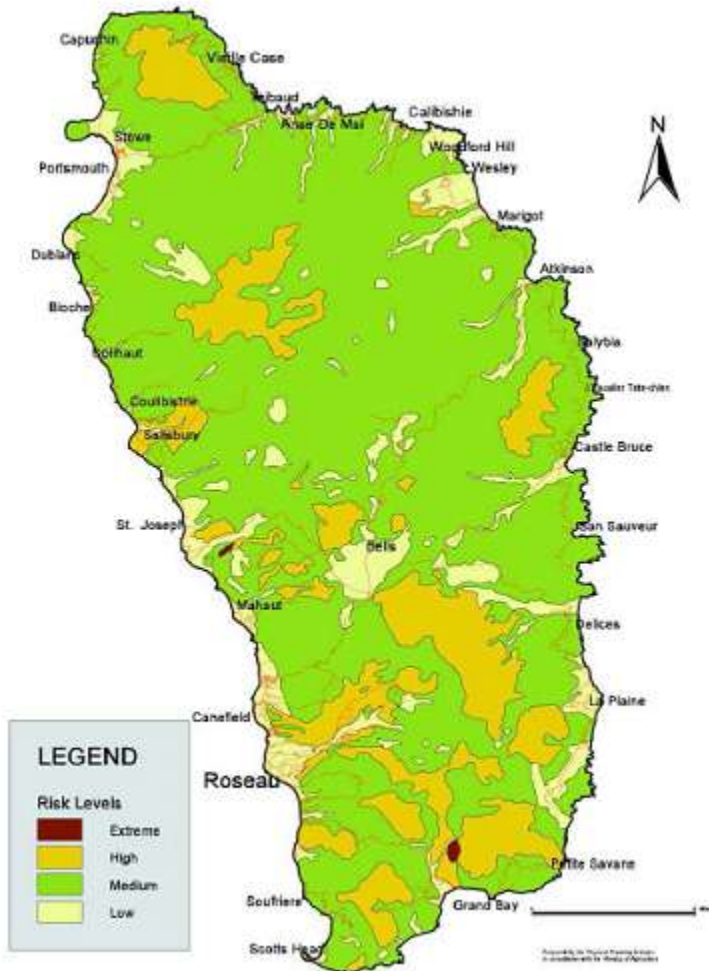
In Dominica factors such as deforestation, pollution, over-exploitation of natural resources, unregulated development, natural disasters, and impacts from climate change as of the last national communication, are still considered as the main threats to biodiversity. Invasive species (both marine and terrestrial) currently are added to that list of priority factors.

Of late a combination of these factors seems to be presenting constant reminders of their combined and related impacts on both biodiversity and human well-being. Deforestation and

unregulated land use have given rise to the frequent landslides, erosion, siltation and clogging of rivers and waterways at an alarming rate.

Disaster mitigation and risk management are now measures given serious consideration in certain parts of the island that are quite vulnerable. A recently concluded Food and Agriculture Organization (FAO) Project (FAO/DMI/ 3401) made inroads into raising awareness in these areas.

In 2011, the Government of the Commonwealth of Dominica had to respond to flooding and landslides brought upon by



Map showing landslide vulnerable areas

unseasonable intense rainfall events – causing in excess of US\$100 million in damage. The Commonwealth of Dominica suffered the most severe drought followed by a late Hurricane in 2010. These events combined, present a severe shock to the farming communities which currently employs 25% of the labour force, generating on average 15% of our Gross Domestic product.¹⁵

These threats have impacted on the island’s biodiversity and livelihoods.

Figure IV. Table of drivers of threats and impact

Threats	Impact	Root causes /Drivers	Rating
Deforestation	Loss of biodiversity, soil, landslides, erosion, clog waterways & rivers	Man/ heavy rains, contour	Severe
Pollution	Destroys Biodiversity, -ive to health and aesthetics	Man, Indiscriminate dumping/ Inadequate facilities, education	Potentially threatening
Overexploitation of resources	Destroys resource base and genetic material (terrestrial and Marine)	Man /lack of management options/ economics	Severe
Unregulated Development	Land degradation, loss of biodiversity	Inadequate laws and enforcement resources.	Increasing
Impacts from Climate Change	Threaten economic development, human life	Environmental degradation/nature	Alarming, require monitoring
Natural Disasters	Loss of resources (natural and economic)	Nature/ Man/ lack of preparedness	Severe
Foreign Species	Destruction of biodiversity, loss of livelihoods	Man & vectors/ trans-boundary movement	Severe

An analysis of these impacts reveals a cause for concern to authorities as indicated in the table above.

¹⁵Dr. K. Darroux, Min. of Natural Resources, Dominica, 2013

The various agencies have been burdened with the task of initiating measures and mechanisms to address these threats. Besides the various awareness programmes that are in place there persist the issue of manpower resources to be ever present as well as the political will to enact timely measures that would guide the various trends that are needed to counter the current threats.

Impacts of biodiversity changes on human well-being

Dominica's natural resources have a reputation within the sub region as one which seems to have been the least tampered with or altered. Substantial levels of its natural features are still intact. Much of the island's economic activities are linked to nature and by extension the island's biodiversity. The island once known to be ably sustained by a thriving banana industry is now dependent on an eco-tourism driven economy. Livelihoods, employment and cultural practices are likely to be affected by any substantial displacement of the island's biodiversity because of the two main activities that drives the economy.

Tourism like agriculture is intertwined with the biodiversity of the island. In the absence of large sandy beaches, Dominica can boast of its rugged terrain, many rivers and streams, wildlife and natural vegetation as the features of attraction to the islands. This augurs well for one of the reasons to ensure the conservation of the biodiversity.

Dominica has a thriving inter-island trade route for its other agricultural produce. On a weekly basis agricultural products are shipped from Dominica to the Leeward Islands north of it, to as far as St. Maarten.

The island has a strong tendency towards utilization of natural products from the land particularly as it relates to their usage in herbal medicines, food and other cultural practices. The island also has a vibrant subsistence level and commercialized cottage-type agro-processing sector.

Dominica has made great strides in the area of ensuring that the gains from use of its biodiversity are for the benefit of its people and is well underway to implementing legislation that will address the Access Benefit Sharing (ABS) protocol to preserve and officially harness benefits from biodiversity particularly among the members of the Kalinago (Carib) Territory. Works and

the many activities within that territory also relate to tourism by way of the crafts weaved and construct from trees and other plant material.

Dominica is faced with the challenge to balance development in the rural environs for access roads and related infrastructure to lands in the hinterland, and the consequential loss of biodiversity that results. The same applies to the improvement of the island's main airport and the adjoining road network that is required to make that facility meaningful. These undertakings though required, have the capacity to alter the landscape and impact biodiversity. Therefore the appropriate planning and ancillary features that are meant to mitigate any adverse impact must always be factored in. Another feature in landscape adjustment with critical impacts is the large number of sea-defense structures, although necessary for the protection of the coastline, is known in some instances to impede migration route of many land-based species that interact with the marine space.

The marine environment particularly on the west coast has over the past decade been an area which has had its ecology altered. This has been as a result of massive slides in the interior of the island transported via rivers to the coast. Fishing operations in these areas are affected when biodiversity is altered and fishers (particularly those who target coastal pelagics) have had to seek new grounds for their livelihood.

Possible scenarios for change.

The importance of the island's biological diversity is fairly well accepted by all. A policy articulating efforts to ensure that all matters that are adversely affecting the natural environment must be considered in any developmental undertaking. For this and other reasons, provisions are in place reduce the impacts of factors that are detrimental to the island's biodiversity. Notwithstanding the lack of appropriate legislation, agents adopt policies that promote best practices in any undertaking that may affect the biodiversity. One instance is the requirement for all major projects to include an Environmental Impact Assessment (EIA) report.

Dominica's natural resources are not in great abundance to the extent that the resource must be considered inexhaustible. Neither is there a wide array of its variation. Therefore its carrying

capacity must always be given due consideration to avoid overexploitation and overcapitalization. Measures to address these are being promoted but need to be strengthened. The tourism and fisheries sectors are two these implications are to be sternly adhered to.

Despite such policies there is a demand for revision and upgrading of appropriate legislation that would empower the respective responsible agency. Dominica has a fair number of laws and regulations that address areas within the ambit of the Convention on Biological Diversity. Though these are not too old, but within the realm of a changing paradigm some do fall short and need constant upgrading and redress.

PART 2. IMPLEMENTATION OF NATIONAL BIODIVERSITY STRATEGIES AND ACTION PLANS AND MAINSTREAMING OF BIODIVERSITY

1. How are national targets linked to the Aichi targets?

National Targets; priorities

The Commonwealth of Dominica is pursuit of a ‘green’ development path in keeping with the government’s declaration of Dominica as the ‘Nature Isle’ of the Caribbean. In keeping with this aspiration, Dominica is aligning its development agenda and biodiversity conservation strategy with global biodiversity objectives. All of the goals and targets of the 2011-2020 Strategic Plan are therefore considered relevant and will be addressed to the extent possible within the development framework and as far as they amplify the Nature Isle concept and influence biodiversity management in Dominica. However, the country has selected five targets as national priorities which it hopes will be fully realized by 2020.

Policies

The Government of Dominica has made provision for the conservation and sustainable use of its biological resources through the development and implementation of several legal instruments and has crafted accompanying policies. These instruments were developed at different times driven by varying circumstances that are quite dynamic and therefore the reality to which they speak differ. Inevitably, there is some overlap, obsolescence, and general weakness as there has been changes in focus. There is now a need for harmonization and commitment to updating and upholding these protective legislations. The in-exhaustive table below highlights the efforts of the Government to protect its biodiversity while depicting the current legislative challenges.

Document Title	Brief Description	Implementing Agency	Status
Laws on Access and Benefit Sharing	To all citizens access to the benefits of Biodiversity resources	Min. of Legal Affairs, ECU, Forestry, Agriculture, Fisheries	Before Cabinet of Ministers (2009)
National Agriculture Policy	Provide direction to Agricultural development	Ministry of Agriculture	On track to be finalized by 07/2014
Biosafety and Biotechnology	Support the Cartagena Protocol	Min. of Legal Affairs, Min. of Trade,	Past in 2004. Amendment sent

Management Bill		Agriculture	to Parliament 2009
EIA Regulations	To control the Environmental Impact of Development	Physical Planning	Part of Nat'l Physical Dev. Plan
Forestry Policy	Regulate the use of forest resources	Forestry Department	Pending approval
Forestry Act 1959 Forest and Wildlife Act 1976	Protection of Forest Biodiversity	Forestry Department	Enforcement challenges
Marine Pollution Management Bill 1999	Monitor maritime pollution in EEZ	Maritime Unit	Enforcement challenges
National Parks and Protected Areas Act 1975	Provision for the designation of protected areas	Physical Planning, Agriculture, Forestry	Functional
Physical Planning Act -National Physical Development Plan/ National land use policy (NLUP)	Act to regulate physical Development	Physical Planning	In progress. Inception mission 2014
Pond Case Land Use	Area Management plan	Physical Planning	Part of NLUP
Protected Areas Bill	To provide for the designation and management of areas of biological importance	Forestry, ECU	Sent to Parliament
Trade in Endangered Species Bill 2004	Bill to support the implementation of CITES	Min. of Trade and Legal Affairs	Functional
Quarry and Mining Bill	To control the development of quarries and mining	Min. of Environment	Functional
Fisheries Regulations	Marine resource conservation	Fisheries Department	Sent to Parliament
Waste Management Act	To manage the collection and safe disposal of solid and liquid waste.	Ministry of Health, Solid Waste Management corporation	Functional

Table xxx. Legal Instruments that protect Biodiversity

The formulation of Dominica's National Agriculture Policy (NAP) (2014-2018) is in top gear following a forum early this year of technical and stakeholder personnel aimed at enhancing food security, growth and development of the agricultural sector through the sustainable utilization of human, natural and other resources. The policy is being developed under the

theme “Creating a Platform for Food and Nutrition Security”¹⁶. It will have to address a matter which past policies have been silent on, one such being the issue of “cultural invasion on food”. The influx of persons from diverse cultural background and different food preferences is putting pressure on traditional food.

The policy will place great emphasis on the relationship and of the impact of agricultural practices on climate change. This intends to look at the issue of zonal farming and areas suitable for specific crops. A precursor to the development of the NAP is a new agricultural census which will provide the necessary data base for the shaping of the national policy. The census is due to begin in early 2014 and the NAP will be ready by July of that same year.

Dominica is working towards the Aichi targets in several areas. With regards to targets for Strategic Goals A, every effort is being made to mainstream biodiversity among all sectors of government and society. Several public awareness initiatives have been in place to sensitize the public as to the importance of biodiversity and the reasons to conserve it. The work of the various sectors of government namely the ECU, Forestry and Wildlife Department, Fisheries Division and Physical Planning Division are leading in that thrust.

2. Implementation of old and or new NBSAP –

A review of the NBSAP was undertaken in July 2013. This review looked at the strategies as intended under the 2000-2040 NBSAP with the full knowledge that strategies are intended to achieve targets and concrete outcomes and should address principles, priorities and policies. The findings indicate that:

- All strategies are still valid though not to the same extent.
- Some strategies have been achieved through other initiatives and projects.
- Some strategies can be combined, for instance, all public awareness activities can be listed as one strategy, but have different focal areas (e.g. marine, terrestrial) as necessary

¹⁶ Douglas, Permanent Secretary, Min. of Agriculture, 2014.

Stakeholders contend that the strategic activities that have not been undertaken are as a result of a combination of constraints

- Dedicated financial resources
- Limited/dedicated staff
- Lack of sufficiently trained personnel
- Lack of continuity of Projects beyond the lifetime of the MEA Project Activity
- Need for capacity building within responsible institutions.

Recommendations:

- Strategies that overlap in terms of their main output should be combined. This would allow for both financial and technical resources to be utilized more efficiently.
- When strategies/activities are identified in the conception/planning stages of a Project, the lead institution that would be responsible for actual implementation should also where possible, be identified. This would allow for greater continuity of activities after Project planning has ended.
- Activities identified under such Projects as the NBSAP should be integrated into the work plan of the institutions identified in the planning stages to allow for implementation beyond the life of the initial Project.
- The Government of Dominica is committed to ensuring sustainable development in sync with economic and social development. This is clearly articulated in the Third Medium – Long Term “Growth and Social Protection Strategy” (GSPS) – Redoubling the efforts towards a Sustainable Development Pathway, 2012 – 2014. This document reviews government efforts in all sectors and outlines further plans, projects and policies for improvement. This document would actually set the stage for activities identified under various MEA Projects to be integrated into the work plan of the various government institutions. The challenge then would be to allocate the necessary financing for implementation and capacity building within these institutions.

- To employ a dedicated public education/awareness officer at the ECU who would be responsible for developing and coordinating a comprehensive public awareness strategy, through linking all relevant awareness activities from the various government departments. This awareness programme should move beyond information dissemination to providing stakeholders with cause and effect scenarios, alternatives and solutions.

Strategy 1 - Develop a comprehensive national land use plan / legislation with the involvement of all key stakeholders

The process towards achieving this strategy was realized in October 2012 when the vacancy was announced for Project Coordinator/National Land Use Policy and National Physical Development Plan. This is being implemented through the Ministry of Environment, National Resource, Physical Planning and Fisheries, Government of Dominica.

It is expected to provide an explicit policy and physical planning framework conducive to long-term economic and tourism development. It is expected to include clear land-use zoning and associated physical development plans which would permit a more efficient and sustainable use of land resources. Environmental management capacity building would provide support for technical evaluation, regulation and monitoring of development projects. The plan will address hazard reduction and climate change adaptation; integrated land use planning and watershed management; and will be supported by environmental management tools and practices. It will also provide for a balanced distribution of the limited land resource base into the long-term, taking into account all the considerations that are relevant to Dominica's circumstances¹⁷.

Presently, work has commenced on the development of this Plan.

Strategy 2 - Review / amend existing legislation, and as appropriate develop new legislation with respect to:

¹⁷ Growth and Social Protection Strategy 2012 - 2014

- *Conservation and management of terrestrial biodiversity;*
- *Regulation of the introduction of alien species;*
- *Protection of indigenous species/ ecosystems;*
- *Protection of watersheds, stream bank reserves, and riparian ecosystems;*
- *The implementation and enforcement of the Convention on the International Trade in Endangered Species of Flora and Fauna (CITES);*
- *Forestry / wildlife and national parks management;*
- *Management of solid and liquid waste (industrial, agriculture, urban);*
- *Conservation and protection of agro-biodiversity.*

Enforcement of existing and proposed legislation through empowerment of all relevant agencies and community groups

Several reviews of Dominica’s environmental and resource management legislation over the past 15 years have all come to the conclusion that comprehensive environmental and natural resource management legislation is an urgent priority in order to prevent irreversible environmental damage to the natural resources upon which Dominica relies for sustained economic and social development¹⁸. In July 2012 Cabinet approved the drafting of comprehensive Environment and Natural Resource Management Legislation in line with recommendations from National Consultative Workshops. At present there is a Public Consultation Paper (the Layperson’s version) which is available for review.

Strategy 3 - Develop and implement a comprehensive public education, awareness and training programme on issues of environmental protection and conservation of terrestrial natural resources/biodiversity

The Environmental Coordinating Unit has since its establishment been involved in Public Awareness activities with key Partners and Stakeholders. Many other Government Departments also have public awareness activities included in their work programme. However, these activities are department specific. Even though some issues do overlap, the

¹⁸ Public Consultation Paper

public awareness activities tend to occur within each department without much interagency linkages in the programming.

At the ECU, such activities are done through the programmes of the various MEAs. It is recommended that a dedicated person be identified to work at the ECU to coordinate the public awareness activities of all the MEAs, making one comprehensive public awareness programme. This person would then have the responsibility to coordinate with the various government departments to ensure that there is no duplication of effort with regards to public awareness activities related to environmental issues. This would maximize efficient use of resources, both financial and technical and ensure maximum benefit to all involved.

Strategy 4 - Identification and protection of sensitive / fragile / threatened ecosystems with priority given to the Indian River wetland among others, and Dry Scrub Woodland, and the identification and protection of buffer areas required to protect and conserve threatened flora/fauna and ecosystems.

The Ministry of Forestry and Agriculture has responsibility for Dominica's flora and fauna. Of Dominica's approximately 300 square miles, 65% (195 square miles) are considered to be forested. Since 20% (60 square miles) of Dominica's forested land is protected by law, this means that 135 square miles of forest are in private hands¹⁹. The implication of this is that the Forestry Act does not cover protection on private land. Physical Planning is responsible for development projects, therefore any protection and conservation could be covered under a land use plan, with requisite legislation. Within the Tourism Master Plan there is provision for the 'maintenance and protection of the Indian River at Portsmouth.'

There is a draft National Forest Policy document which seeks to guide the sustainable management of forest resources, while maintaining or improving the present area of forest cover. The Policy covers all of Dominica's forested areas. These include: forest reserves, national parks, unallocated State lands, the Kalinago Territory and privately owned land. It concerns natural as well as plantation forests, and includes land that has been deforested or

¹⁹ Participatory Forest Management Project: Improving Policy and Institutional Capacity for Development, June 2006

degraded and agro-forests. The goal is to guide the conservation, protection, management and use of the nation's forest resources, while ensuring that the productive capacity of the forests for goods, products and services is maintained or enhanced for present and future generations.

Strategy 5 - Research to develop wildlife farming technology to reduce stress on wild populations

The Forestry Division was engaged in the Dominica Parrot Captive Breeding programme, which included the endangered Sisserou Parrot, in order to replenish their numbers. There have been discussions, but no programme is in place as yet for farming of wildlife for consumption. There are open and closed seasons and this helps to ensure sustainability of the wild species.

There have been attempts to breed the mountain chicken, which is affected by a fungus leading to declining populations.

Strategy 6 - Research, inventory and monitoring to develop a comprehensive database and meta-data on:

- *Terrestrial/ Aquatic fauna and flora;*
- *Species and ecosystem distribution description;*
- *Medicinal Plants.*

This is a very important strategy and it covers all focal areas within the NBSAP, marine, coastal and terrestrial. Concrete steps still have to be put in place to ensure that this becomes a reality. It is quite evident that Dominica needs a lot more structured research into various aspects. To go along with that a comprehensive inventory and monitoring system needs to be

established. Dominica has recognized that a database or archiving system needs to also be put in place. There is still no central repertoire to store or access any type of data.

The Government is continuously improving this central Information Technology Department. There is now a central government website which is maintained by this department. A similar approach can be used to set up a database which would be maintained by this IT Department. However, each other responsible Ministry would need to have the requisite research done in relevant areas to be able to provide accurate and reliable data.

Strategy 7 - Develop a national policy on water use, conservation and extraction

Steps have been taken towards the development of a National Water Policy in Dominica. In May 2013, a three day workshop which focused on Integrated Water Resource Management was held. This was coordinated by the Ministry of Lands, Housing, Settlements and Water Resource Management. It sought to promote the goal of ensuring a sustainable, adequate and secure water supply for the country and guide the development of policies across all sectors that promote efficient use and equitable distribution of water in an environmentally and economically sustainable manner. According to the Permanent Secretary of the Ministry, “It is my hope therefore that this workshop will serve as a further catalyst to moving the policy process forward that the Ministry is currently engaged in and shortly that the final draft policy document can be submitted for consideration to cabinet.”

The Ministry is in the process of reviewing the draft national policy on integrated water resource management which was prepared with the assistance of the Caribbean Environmental Health Institute (CEHI), the Organization of American States (OAS) and the Integrated Watershed and Coastal Areas Management (IWCAM) Project.

“This policy, we hope, will serve as a framework for guiding activities in the sector and will seek to define more clearly roles for all relevant stakeholders in water resource management,” he stated.

Strategy 8 - Develop and implement a comprehensive public education, awareness and training programme on issues of environmental protection and conservation of coastal and marine resources/biodiversity

This Strategy can be linked to Strategy 3, which speaks to the same public awareness.

The Fisheries Division is involved in several educational activities. These focus on conservation measures, safety within the industry for fishermen, for schools and the general public. These include the ‘Kids Hooked on Fishing Programme,’ ‘Eat Fish Day’ and ‘SSMR-Day’ event .

With the likelihood of invasive fish species possibly replacing some local species, awareness of the use of these invading species could be highlighted to both the fishermen and consumers.

Strategy 9 - Review/amend existing legislation, and as appropriate develop new legislation with respect to:

- *Conservation and management of coastal and marine biodiversity*
 - *Protection of vulnerable/fragile/indigenous marine species and ecosystems*
 - *Coastal zone management*
 - *Coastal and marine parks and protected areas*
 - *The implementation and enforcement of the Convention on the International Trade in*
 - *Endangered Species of Flora and Fauna (CITES)*
 - *Local and community participation in coastal and marine conservation/management*
 - *Management of solid and liquid waste (industrial, agriculture, urban).*
- Enforcement of existing and proposed legislation through empowerment and strengthening of all relevant agencies and community groups.*

This strategy can be linked to strategy 2, which speaks to review and development of relevant legislation. There is generally high compliance with sustainable use of the resource given that fisheries in Dominica are generally to supply local demand.

Legislation does exist for the Soufriere Scotts Head Marine Reserve (SSMR). Wardens are employed to police the reserve and there is a user fee system in place.

Strategy 10 - Identification and protection of sensitive/fragile/threatened coastal and marine ecosystems and establishment of coastal and marine protected areas and restocking of endangered species where necessary

Dominica has two marine protected areas, the SSMR and the Cabrits Marine Reserve which is included as part of the Cabrits National Park.

Recently, there have been more reports about sightings of the invasive lionfish species, in Dominica as well as some other Caribbean countries. Observations made based on fish landings have also shown that there is a shift in seasonality of some species, as well as more of an abundance of previously unavailable species. Unfortunately, with a resource such as fisheries it is quite difficult, if not impossible to curtail the spread of invasive species, countries generally have to adapt to making use of the species if possible.

More definitive research would be needed to accurately quantify this observation, as well as to explore the possibility of fish farming.

Strategy 11 - Involve community participation in coastal and marine management and to provide alternatives to unsustainable exploitation of resources (coastal and marine)

Dominica's small scale fishing industry generally supports a high compliance of open/closed seasons. Within the marine reserves, the Wardens ensure that compliance is maintained as much as is practical. Scuba divers and other authorized users have been used to physically hunt and kill any lionfish found within the SSMR.

Strategy 12 - Research, inventory, mapping and monitoring to develop a comprehensive database and meta-data on:

- *Coastal and marine species and ecosystems*
- *Species and ecosystem distribution description*
- *Marine and coastal medicinal species*

This strategy can be linked to strategy 6 which speaks to the same database development.

However, it must be noted that within Dominica's relatively small fishing industry a stock analysis is somewhat impractical. This is mainly because many islands in the Caribbean share the same resource and the fishing industry is multi-species. Dominica do participate in regional resource assessment program.

Data of fish that is landed is collected by data collectors at about sixteen landing sites, where random sampling is done for about 60% of vessels.

Minimal mapping of some sea grass beds and coral reefs were done by a private enterprise, which indicated that some species of sea grass has invaded. It would be useful to have mapping of the entire coastal area of Dominica to determine exactly what is the composition of the near shore region, i.e. what can we find along which coastline in terms of sea grass, coral reefs or sand.

Additionally, research would be needed to determine whether the invasive species are beneficial or detrimental, and how best to make use of or control any invasive species, whether fish or sea grass.

Strategy 13 – Develop a comprehensive national land use plan/legislation with the involvement of all key stakeholders.

This strategy can be linked to strategies 1 and 2. See strategy 1 for details.

Strategy 14 - Develop germplasm/gene banks

The Biosafety/biotechnology project will examine the possibility of the development of gene banks. For instance, storage of seeds to ensure food security if crops are destroyed from climatic events and natural disasters.

Strategy 15 - Increase agricultural productivity and "value added" through the maximization of the use of appropriate technology.

According to the GSPS 2012, the promotion of sustainable growth in the sector would be achieved mainly through implementation of an EC\$18.5 million agriculture investment plan to boost crop production in practical and productive ways. Other supporting mechanisms would include providing irrigation infrastructure, rehabilitating farm access roads, improving micro-credit in existing financial institutions for small-scale operators and re-cropping of idle lands.

Strategy 16 - Conserve and improve Agriculture Land Base through sound agricultural/conservation practices

Government continues to make progress towards improving agricultural practices. Through the Agricultural Investment Unit (AIU), funds were disbursed to farmers in 2010, the main focus was on crops, fisheries and livestock. Farmers have had access to zero interest loans at the AID Bank and banana farmers to 50/50 loan/grant financing at the same bank.

It is also planned to promote sustainable development of natural resources by increasing the number of agroforestry farmers by 50 per cent. Irrigation has been introduced into a number of places in Dominica, including Calibishie, Castle Bruce, Penville and Syndicate. Efforts will continue to provide technical expertise to the sector, as done with the availability of an expert to support increased production per acre through fertigation technology.

Strategy 17 - Research, inventory and monitoring to develop a comprehensive database and meta-data on:

- *Agro-Biodiversity;*
- *Species distribution description (crops and livestock);*
- *Medicinal Plants;*
- *Traditional agricultural practices.*

This strategy can be linked to strategy 6.

Government is continually seeking to further modernize the agricultural sector. One aspect of this will be the improved utilization of the agricultural information system, the hardware for which has already been installed²⁰.

Strategy 18 - Develop and implement a comprehensive public education, awareness and training programme on issues of environmental protection and conservation of agro-diversity.

This strategy can be encompassed within strategy 3.

Each government department has their own awareness programmes, however, linkages need to be established to maximize resource use. The Division of Agriculture is working with about 70 farmers to rehabilitate cacao trees. Efforts are also being made to increase vegetable production and farmers are being encouraged (and supported) to use greenhouses.

Strategy 19 - Develop and implement a comprehensive and integrated framework (i.e. legislation, institutional structures, etc.) for natural resource management and physical planning.

This strategy can be encompassed within strategy 2.

²⁰ GSPS 2012

Strategy 20 - Develop and implement a comprehensive public education, awareness and training programme on issues of environmental protection and conservation of natural resources.

This strategy can be encompassed within strategy 3.

Strategy 21 - Review/amend existing legislation, and as appropriate develop new legislation with respect to:

- *Integrated natural resource management and physical planning;*
 - *Environmental management and protection;*
 - *Environmental impact assessments (EIAs);*
 - *Environmental assessment, monitoring and auditing;*
 - *Local and community participation in environmental and natural resource management, and physical planning;*
 - *Pollution control and the management of solid and liquid waste (industrial, agriculture, urban);*
 - *Environmental quality standards, certification and licensing programs;*
 - *Engineering and architectural standards to reduce impact on natural resources.*
- Enforcement of existing and proposed legislation through empowerment and strengthening of all relevant agencies and community groups.*

This strategy can be encompassed within strategy 2.

Strategy 22 - Protect, develop and encourage cultural traditions and traditional knowledge.

It is apparent that work on this issue is being done through a regional framework.

According to the Traditional Knowledge Policy paper which is under review, this Policy was convened within the framework of the Cooperation Agreement executed by the World

Intellectual Property Organization (“WIPO”) and the Governments of the Caribbean, and based on a resolution adopted during the 2006 WIPO Ministerial Level Meeting for Caribbean Countries related to the establishment of a Regional Framework for the Protection of Traditional Knowledge, Folklore/Traditional Cultural Expressions and Genetic Resources (“Caribbean Regional Framework”).

A WG was mandated to conduct research (legal and non-legal), engage in consultations with governments, non-governmental organizations and regional organizations, and private and public stakeholders (including cultural institutions, indigenous and local communities, cultural and ethnic communities, and user communities) with the objective of defining and determining the scope of a regional framework for the protection of traditional knowledge (“TK”), traditional cultural expressions/folklore and Genetic Resources.

One of the outcomes of the work of the WG was the development of a Policy Paper which was reviewed and revisions to the paper were recommended. The development of the Policy Paper will inform the implementation of a Caribbean Regional Framework. The principle form of legal protection which may potentially provide protection for TK and TCEs/F is intellectual property law. This paper is now available for public review.

Strategy 23 - Develop inter-agency and inter-sectoral communication and information exchange programmes in support of improved environmental protection and integrated resource management.

Presently, the ECU serves as this link to foster interagency and inter-sectoral collaboration on environmental issues. However, the ECU does not have the legal mandate for this. Over the years this informal collaboration has increased. The recent (PPCR) climate resilience project has helped in strengthening this relationship.

Strategy 24 - Provide incentives in support of improved environmental protection and integrated resource management.

It is hoped that the proposed Environment and Natural Resource Management Legislation, as well as the National Land Use Policy will provide incentives for encouraging and supporting environmental protection and sustainable resource management.

Strategy 25 - Develop inventory of biomaterials and their traditional uses.

Some work was done in this regard under a biodiversity phase two project that reviewed traditional knowledge with special attention to ex situ and in situ conservation. This effort needs to be strengthened and the data made available to all.

Strategy 26 - Ministry of Community Development shall develop (through broad consultation) and implement a policy and strategy for the protection, encouragement, enhancement, and conservation of traditional knowledge, culture and values.

Please see strategy 22 since these are closely related.

Strategy 27 - Formulate and implement a Development Plan for the Carib people that shall be fully integrated into the national development planning process.

The Government of Dominica has clearly demonstrated a commitment to the inclusion of Dominica's indigenous peoples in the development of the country. This was further evident when the Department of Carib Affairs was established in the year 2000 to address the needs of the local Kalinago people in the Carib Territory and by extension, Dominica.

In 2005, the Department was changed to the Ministry of Carib Affairs. The mission statement is, "To work towards the improvement of the socio-economic condition, the preservation and promotion of the cultural heritage of the people of the Carib Territory and Atkinson, and to facilitate the vigorous promotion of the integration of Dominica's Indigenous People into the socio-economic life of the wider Dominican society." Objectives include: Facilitating community participation in the decision making process re the development of the communities, and increasing the awareness of the traditional and cultural heritage of the Carib people.

Strategy 28 - Adopt and implement Dominica's Climate Change Adaptation Policy and Action Plan that will, amongst other matters, establish programs for:

- *Monitoring and research on the potential effects of climate change on biological diversity;*
- *Implementation of both in situ and ex situ measures to conserve species likely to be affected by climate change;*
- *Implementation of measures to maintain the maximum possible biological diversity;*

- *Implementation of measures to conserve sufficient natural habitats to enable natural adaptive mechanisms to function;*
- *Establishment of measures (e.g. pollution control) to enhance the resilience of natural systems.*

Through the ECU there is significant work being done in the area of Climate Change in keeping with Dominica's commitment to the UNFCCC. Dominica is presently preparing to commence the stocktaking exercise which would lead to the development of the Third National Communication. A project through the 5C's is proposed in the area of water management. The Climate Resilience Project is to begin implementation soon. All these activities are aimed at preparing Dominica to be prepared to adapt to the impacts of climate change.

Strategy 29 – Sign and ratify the Cartagena Protocol on Biosafety.

This was ratified on 13th July 2004.

Strategy 30 - Develop comprehensive national biotechnology legislative regime to guide the implementation of bio-safety measures and to ensure protection and use of cultural knowledge that can yield optimal benefit to Dominica. This legislation must seek to compliment the international conventions to which Dominica is signatory.

The comprehensive Environment and Natural Resource Management Legislation, which is presently being drafted, should encompass this aspect.

Strategy 31 - Establish technical committee to:

- *Co-ordinate national biosafety program;*
- *Foster greater alliance and cooperation with regional and international institution;*
- *Work with government, Non-Governmental Organization's (NGO's), other agencies and*
- *Institutions to foster a national culture of awareness on biosafety;*

- *Co-ordinate the development and implementation of public education, awareness and*
- *Training programmes at all levels on issues of biotechnology and biosafety.*
- *Develop and implement a national policy on biotechnology.*

In April 2003, Cabinet appointed nine (9) members of a multi-disciplinary, multi-sectoral committee to advise and guide the preparation of the Biosafety framework. Recently, this Committee was re-appointed to continue the work in Biosafety and biotechnology. The approach has been taken to establish small technical working groups that would examine specific areas. These WGs would be chaired by the relevant institution that has lead responsibility for the particular issue.

Strategy 32 - *Develop Regional Biosafety Strategy to regulate biotechnology in the CARICOM region, through amongst other things, the establishment of a regional centre to establish the basis for the introduction of standards for inspection, monitoring and use of biotechnology, to facilitate and co-ordinate the establishment of a "clearing-house" mechanisms to track the importation of biotechnology and GMO's, and to foster greater alliance and co-operation with regional and international institution.*

In Dominica, the Biosafety programme is being developed. Issues of Access and Benefit sharing are to be discussed at a workshop set for June 2013. Decisions have to be made regarding whether there is a local or regional testing facility, where it would be housed, capacity needs etc. This work is ongoing. Refer to strategy 22

PART 3. ASSESSING PROGRESS TOWARDS THE 2020 BIODIVERSITY TARGETS AND RELEVANT TARGETS OF MDGS

National plans to reach the 2020 targets

The initial plans to realize set targets have been reviewed, stock taken and new benchmarks set in keeping with the new paradigm. The overall global targets developed present challenges and in the face of inevitable and persistent external shocks. The number of targets set for 2020 had to be reduced to five. This was arrived at through several stakeholder and agencies consultations.

The agreed selected targets are:

1. By 2020 at the latest, all of the Commonwealth of Dominica will be aware of the value of biodiversity and the steps they can take to conserve and use it sustainably.
2. By 2020, areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.
3. By 2020, pollution, including from excess nutrient, has been brought to levels that are not detrimental to ecosystem function and biodiversity.
4. By 2020, at least 15% of terrestrial, inland water and 15% of coastal and marine areas especially areas of particular importance for biodiversity and ecosystem service, are conserved through comprehensive ecologically representative and well-connected systems of effectively managed protected areas and other means and integrated into the wider land and seascape.
5. By 2020, ecosystem resilience and the contribution of biodiversity to carbon stock has been enhanced, through conservation and restoration, including restoration of at least 15% of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.

As a first step in reaching these targets, Dominica has developed a biodiversity/land degradation project entitled Supporting Sustainable Ecosystems by Strengthening the Effectiveness of Protected Areas System. The emphasis of this project is the development of a protected area system management plan that strengthens national institutional and systemic structures, protected areas network, protected areas enabling environment and civil society role on biodiversity

management. This project will specifically address Targets 4 and 5 above. Additionally, Dominica has signed on to the UNEP lead Caribbean Challenge Initiative (CCI) that call for the protection of 20% of terrestrial and near shore marine and coastal resources by 2020.

This initiative will find synergy and some financial support from the Banana Accompanying Measures for the Commonwealth of Dominica; a €15.27 million project funded by the European Union. This project makes provision for Enterprise Development, Information Systems, Physical Infrastructure, Technology Development and Innovation and Standards all relevant to agriculture biodiversity and supporting Targets 2 and 3 above.

Dominica has agreed to and developed the Low-carbon Climate-resilient Development Strategy 2012-2020, by Climate Investment Funds, aimed at furthering Dominica's efforts in the transformation to a green economy. The strategy recognizes the challenges that Small Island Developing States face with regard to the impacts of climate change. In response to this, the low-carbon strategy puts forward a plan to achieve the island's sustainable development goals whilst meeting critical social development and poverty reduction targets.

The strategy begins by setting the development context for the island, which documents the existing development plans and programs, before analyzing the policy, legal and institutional elements of low-carbon development. Following this, the strategy identifies implementation plan for the Council for Environment, Climate Change and Development, accountable for the delivery of the low-carbon development strategy.

Implementation of the national targets

Dominica did not get its stated national targets implemented as fluid as were intended. The availability of finance as well as technical and human resource limitations influenced implementation. Technology transfer under the Convention has been very limited and there was insufficient scientific information for policy and decision making. During the implementation phase lessons were learnt by biodiversity management authorities. Some significant milestones were attained as some major challenges were exposed which dictated changes to the initial strategies. These are represented in the table below.

BD Strategic Focus	Success	Challenges	Gaps
Conservation and sustainable use	Exceed 20% conservation set by Caribbean Challenge	Legally establishing and Enforcing the exclusive economic zone	Need to ratify the Cartagena LBS protocol
Legislation review and development	Environmental legislation drafted. Land Use management plan and legislation being developed	Human and financial resource to enforce legislation. Legal authorization of ECU as coordinating entity.	Absence of comprehensive environmental legislation
Public education and awareness	Several public education program on going	Often supported by project funds therefore lack consistency. Not coordinated	Some resource not addressed
Stakeholder involvement	Over 15 non-government entity involved in NBSAP review	Groups longevity and consistency	Absence of non-state actors in policy development
Research and Knowledge management	Several research permits per year granted by Forestry & Fisheries Divisions between since last report and 2012	Retaining data locally and receiving appropriate remuneration for use of resource	Link between Research and development not made

1. Table 1 Summary of strategic review.²¹

The shortfall indicated above was attributed to the dynamics of development including politics, economics, demographics and globalization including climate change. Dominica's economic challenges did not allow the government to invest in biodiversity management as anticipated.

There continues to be an urgent need to mainstream biodiversity through institutional strengthening and planning with committed financing. The Environmental Coordinating Unit (ECU) can be a good vehicle to lead the mainstreaming process but its role must be clearly

²¹ NBSAP Review, 2014

defined and financed. The public education carried out by the ECU needs to be amplified and infused into other education programs nationwide.

The institutional structure for biodiversity management needs to be strengthened using financial and policy instruments. It was clear that the financial support had to come from external sources given the current economic plight of the government. Partnerships with external agencies must be vigorously pursued since Dominica's biodiversity is of global significance.

The NGO community has been at the forefront in conservation of biodiversity in Dominica for decades but the efforts and support to them are still inadequate. This state of affairs can be attributed to lack of funds, need for enabling policies, lack of attention or priority and lack of advocacy and awareness at some levels.

Regarding the capacity to implement the 2014-2020 Strategy and Action Plan there was uncertainty. Many issues were tabled surrounding the appropriateness of the strategies and action plans and the ability of Government to implement them without institutional strengthening. It was clear that some issues from 2000 are still current and may require different treatment.

Biodiversity is of significant economic value to Dominica but that accurate dollar value cannot be stated due to lack of data and an absence of environmental economic skills in the relevant Ministries of Government.

As a commitment to BD conservation in Dominica, the Government of Dominica through its Environmental Coordinating Unit has set its local targets cognizant of the Aichi targets.

The greatest risk to Dominica not meeting its commitment and stated national targets is the possibility that the anticipated financial resources projection may not be accomplished. There is willingness among relevant stakeholders and a commitment by the national biodiversity steering committee to make the strategy and action plan work towards achieving the 2020 targets.

ANNEX I - LIST OF ACRONYMS

ABS – Access Benefit Sharing

ADEME – French Environment and Energy Management Agency

AID – Agricultural and Industrial Development

AIU –Agriculture Investment Unit

BRGM-CFG –

CAP- Country Poverty Assessments

CCI – Caribbean Challenge Initiative

CDB- Convention on Biological Diversity

CEHI – Caribbean Environmental Health Institute

CITES –Trade in Endangered Species of Flora and Fauna

DDA – Discover Dominica Authority

DMI –

ECU – Environmental Coordinating Unit

EIA – Environmental Impact Assessment

FAO – Food and Agriculture Organization

GSPS – Growth and Social Protection Strategy

INTERREG – European Cooperation Programme

IT – Information Technology

IWCAM - Integrated Watershed and Costal Areas Management

MDGs –Millennium Development Goals

MEA – Multilateral Environmental Agreements

NAP – National Agriculture Policy

NBSAP – National Biodiversity Strategy and Action Plan

NGO – Non- Governmental Organization

OAS – Organization of Americans States

PPCR – Pilot Programme on Climate Resilience

SSMR – Soufriere Scotts Head Marine Reserve

TK – Traditional Knowledge

UNEP – United Nations Environment Programme

UNFCCC – United Nation Framework Convention on Climate Change

WG – Working Group

WIPO – World Intellectual Property Organization

ANNEX II - DATA ON TOURISM ARRIVAL TRENDS

PASSENGERS	2012	2011	Actual CHG 12 V 11	% CHG 12 V 11	2010	2009	2008	2007	2006	2001	% CHG 12 v 08	% CHG 12 V 06	% CHG 12 V 01
JANUARY	61,598	70,340	(8,742)	-12.4%	79,604	67,022	55,070	53,377	56,038	32,521	11.9%	9.9%	89.4%
FEBRUARY	53,441	57,243	(3,802)	-6.6%	67,487	77,816	55,781	44,974	52,536	28,318	-4.2%	1.7%	88.7%
MARCH	50,015	66,498	(16,483)	-24.8%	80,201	71,587	49,547	42,892	42,020	30,827	0.9%	19.0%	62.2%
APRIL	26,707	41,120	(14,413)	-35.1%	60,613	45,340	30,471	32,434	32,924	27,930	-12.4%	-18.9%	-4.4%
MAY	0	435	(435)	-100.0%	15,097	24,009	11,984	13,539	15,375	2,378	-100.0%	-100.0%	-100.0%
JUNE	0	0	0	#DIV/0!	21,781	23,175	12,902	12,712	13,201	7,492	-100.0%	-100.0%	-100.0%
JULY	0	0	0	#DIV/0!	21,350	23,968	15,817	16,238	13,410	9,040	-100.0%	-100.0%	-100.0%
AUGUST	0	0	0	#DIV/0!	18,464	16,491	12,507	9,527	15,979	6,930	-100.0%	-100.0%	-100.0%
SEPTEMBER	0	0	0	#DIV/0!	23,027	22,062	2,849	12,164	12,361	6,090	-100.0%	-100.0%	-100.0%
OCTOBER	4,248	7,010	(2,762)	-39.4%	24,097	25,916	10,496	24,526	27,337	12,697	-59.5%	-84.5%	-66.5%
NOVEMBER	26,439	33,464	(7,025)	-21.0%	42,847	48,962	43,704	40,932	50,291	23,965	-39.5%	-47.4%	10.3%
DECEMBER	43,730	65,391	(21,661)	-33.1%	63,411	86,004	85,286	51,200	48,171	19,439	-48.7%	-9.2%	125.0%
TOTAL CRUISE PASSENGERS	266,178	341,501	(75,323)	-22.1%	517,979	532,352	386,414	354,515	379,643	207,627	-31.1%	-29.9%	28.2%
CRUISE CALLS	2012	2011	Actual CHG 12 V 11	% CHG 12 V 11	2010	2009	2008	2007	2006	2001	% CHG 12 v 08	% CHG 12 V 06	% CHG 12 V 01
JANUARY	42	36	6	16.7%	45	44	36	48	53	38	16.7%	-20.8%	10.5%
FEBRUARY	36	33	3	9.1%	38	47	34	39	53	34	5.9%	-32.1%	5.9%
MARCH	34	38	(4)	-10.5%	48	46	30	41	50	37	13.3%	-32.0%	-8.1%
APRIL	15	20	(5)	-25.0%	29	24	16	28	23	26	-6.3%	-34.8%	-42.3%
MAY	0	2	(2)	-100.0%	8	8	5	5	6	6	-100.0%	-100.0%	-100.0%
JUNE	0	0	0	#DIV/0!	7	7	4	4	9	10	-100.0%	-100.0%	-100.0%
JULY	0	0	0	#DIV/0!	7	7	5	7	9	10	-100.0%	-100.0%	-100.0%
AUGUST	0	0	0	#DIV/0!	6	5	4	3	8	4	-100.0%	-100.0%	-100.0%
SEPTEMBER	0	0	0	#DIV/0!	8	7	1	4	6	4	-100.0%	-100.0%	-100.0%
OCTOBER	3	5	(2)	-40.0%	9	9	6	11	17	10	-50.0%	-82.4%	-70.0%
NOVEMBER	20	24	(4)	-16.7%	25	26	20	28	38	24	0.0%	-47.4%	-16.7%
DECEMBER	33	38	(5)	-13.2%	42	43	52	34	42	28	-36.5%	-21.4%	17.9%
TOTAL CALLS	183	196	(13)	-6.6%	272	273	213	252	314	231	-14.1%	-41.7%	-20.8%

VISITOR TYPE	2012P	2011	Actual CHG 12 V 11	% CHG 12 V 11	2010	2009	2008	2007	2006	% CHG 12 v 10	% CHG 12 v 08	% CHG 12 V 06
Stay Over	78,965	75,546	3,419	4.5%	76,518	74,924	81,119	77,809	84,041	3.2%	-2.7%	-6.0%
Cruise	266,178	341,501	(75,323)	-22.1%	517,979	532,352	386,414	354,515	379,643	-48.6%	-31.1%	-29.9%
Same Day/Excursionists	2,104	764	1,340	175.4%	783	780	958	901	939	168.7%	119.6%	124.1%
Yacht - Portsmouth/North	7,556	7,186	370	5.1%	6,240	6,378	7,580	7,821	7,717	21.1%	-0.3%	-2.1%
Yacht - Roseau/South†	4,207	3,152	1,055	33.5%	318	3,154	3,522	3,376	379	1223.0%	19.4%	1010.0%
TOTAL	359,010	428,149	(69,139)	-16.1%	601,838	617,588	479,593	444,422	472,719	-40.3%	-25.1%	-24.1%

CRUISE SHIP ARRIVALS 2001 – 2012 SUMMARY OF VISITOR ARRIVALS