Keeping Biodiversity Issues in the News

A Tool Kit

for Media in the OECS

OECS PROTECTED AREAS AND ASSOCIATED LIVELIHOODS PROJECT

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FOREWARD

By Keith Nichols

Head of the Environmental Sustainable Development Unit (ESDU)

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` Few people in the Caribbean region are aware that we live in one of the world's most important "biodiversity hot spots". The entire Caribbean region is recognized as the world's fifth most critical biodiversity hot spot – which means that many of the unique plants and animals that exist only in our region – and no where else – are under serious threat of extinction unless strong action is taken to protect them ***no***w. In fact our region has already lost some critically important species, the majority of which have disappeared within the last few decades.

The eyes of the world are watching what we do.

In order to halt the extinction of our rare species, we all need to get involved. Indeed, as human beings, we are as intricately a part of biodiversity as are all other creatures. We definitely "***Depend on nature to survive***" and therefore need to ask "***Can nature depend on us?"***

Since it was established in 1986 as the then Natural Resources Management Unit, the Environment and Sustainable Development Unit (ESDU) of the Organisation of Eastern Caribbean States (OECS) has been pivotal in supporting biodiversity protection through the provision of technical assistance in sustainable natural resource management to OECS Member States. In recent years, the focus has been on protected areas through the *OECS' Protected Areas and Associated Livelihoods (OPAAL)* project and the *Protecting the Eastern Caribbean Region's Biodiversity (PERB)* project – both of which have helped in building the capacity of regional governments, state agencies, and local communities to manage biodiversity resources in ways that enhance and maintain critical livelihoods while also protecting endemic species that are clearly at risk.

Until now however, one key missing faction has been the mainstream media. The OECS recognises that vibrant public awareness is vital to ensuring that all stakeholders are informed of the role they need to play in biodiversity protection and management. The media are needed in order to keep OECS governments accountable and to keep biodiversity issues in the forefront of public consciousness. Without an aware, fully sensitized and committed professional media to aid in information broadcasting, the public will not have a clear understanding of what the real stakes are with our biodiversity, nor will they know what strides are being made nor their own role in the management of these important resources.

At the same time, the OECS recognizes that the media in our region face many challenges and obstacles.

Our media face huge competition from foreign conglomerates that have far greater resources to cover environmental issues as part of their regular reporting. Biodiversity issues are often considered dry and not newsworthy enough to be given adequate and appropriate treatment, and Park specialists and civil servants whose job it is to promote biodiversity are not sufficiently media savvy to attract the attention of mainstream media. There is often a lack of trust or misunderstanding of each others' jobs on both sides.

More often than not, the discussion landscape surrounding biodiversity issues is complex and overly scientific, making it difficult for journalists to navigate effectively through the technical maze. Getting expert input from credible sources can also be very challenging. All of these factors present serious obstacles to accomplishing effective, newsworthy, accurate and timely coverage of biodiversity issues.

The intent of this tool kit is to make it easier for media houses and personnel in the OECS to bring biodiversity stories to the forefront without necessarily using words such as "biodiversity" or "environment" in headlines. It is meant to serve as a first stop for journalists in the region and to provide a solid starting point for understanding and covering issues from a wide variety of angles, while also pointing the media to credible research, sources of data, and regional experts.

Most importantly, the tool kit is meant to forge a new way for the media and biodiversity experts and protected area managers to work together as partners.

Without the media, biodiversity protection may be far from effective. If this is the result, then not only will our flora and fauna be at risk, so too will our livelihoods and quality of life of our people in the OECS region.

This tool kit is not meant to be a static document, but a dynamic and evolving handbook. We at the OECS hope that, through this instrument and the media seminars that contributed to its development, a mutually supportive biodiversity partnership will continue to evolve and strengthen overtime.

Keith Nichols

Head of Unit, OECS-ESDU

ACKNOWLEDGEMENTS

The finalisation of this tool kit has been an evolving process. Several people have contributed to the tool kit in its present form and the OECS wishes to acknowledge them.

The OECS thanks Dr. Maria Protz, Lead Consultant for the Media Awareness Initiative. The primary responsibility for the compilation and design of the tool kit was hers. She was also responsible for leading a series of six seminars with journalists and persons who work in the field of biodiversity in the OECS Member States of Antigua and Barbuda, Dominica, Grenada, St Kitts and Nevis, Saint Lucia and St Vincent and the Grenadines.

Additionally, the OECS thanks Ms Tecla Fontenard, OPAAL Communication Specialist, whose detailed eye was vital to both the tool kit's development and the success of the media awareness seminars that provided essential input to its final content.

As the intended audience and users of the tool kit, all of the participants in the media seminars that took place in January and February of 2011, also provided demand-driven feedback and input to this handbook. The complete list of participants is too numerous to mention here, but all were very instrumental in shaping the final output.

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- Indi Mclymont Lafayette - Panos Caribbean
- Wesley Gibbings – Association of Caribbean Media Workers
- Peter I Richards – Association of Caribbean Media Workers

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- Keith Nichols - Head of Unit, OECS-ESDU
- Peter A Murray - Programme Officer, Education, Training and Awareness
- David Popo - Programme Officer, Disaster Management and Sustainable Development
- Susanna Scott - Project Coordinator, OPAAL
- Joan Norville - Programme Officer, Disaster Management
- Cornelius Isaac – Project Co-ordinator, Mainstreaming Disaster Management Risk Project
- Melissa Mc Lawrence – Administrative Assistant, OPAAL

Without the help of all of these individuals, this handbook would not have been possible.

This Tool Kit is a compilation of material from several sources. A list of all sources cited is included as Appendix F for easy reference.

ACRONYMS AND ABBREVIATIONS

ACM	Association of Caribbean Media Workers
AIDS	Acquired Immune Deficiency
ANB	Antigua and Barbuda
BBC	British Broadcasting Corporation
CANARI	Caribbean Natural Resources Institute
CBD	Convention on Biodiversity
CCCCC	Caribbean Community Climate Change Centre
CEP	Caribbean Environment Program of UNEP
CERMES	Centre for Resource Management and Environmental Studies
CI	Conservation International
CITES	Convention on the International Trade in Endangered Species
COP	Conference of Parties
DOM	Commonwealth of Dominica
EA	Environmental Awareness
EBA	Endemic Bird Area
ENGO	Environmental Nongovernmental Organisation
EPC	Environment Policy Committee
ESDU	Environment and Sustainable Development Unit (OECS)
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FFEM	Fond Français pour l'Envioronnement Mondial
GEF	Global Environment Facility
GEF	Global Environmental Facility
GMOs	Genetically Modified Organisms
GND	Grenada
HIV	Human Immune Deficiency
IBA	Important Bird Area
IBI	Index of Biological Integrity
IPR	Intellectual Property Rights
IUCN	International Union for the Conservation of Nature
KAP	Knowledge, Attitudes and Practices

LH	Livelihoods
MAB	Unesco's Man and Biosphere Program
MPA	Marine Protected Area
MS	Member States
NEMMA	North East Marine Management Area
NGO	Non-Governmental Organization
NPA	National Parks, Rivers and Beaches Authority (SVG)
OAS	Organization of American States
OECS	Organisation of Eastern Caribbean States
OPAAL	OECS Protected Areas and Associated Livelihoods Project
PA	Protected Area
PERB	Protecting the Eastern Region's Biodiversity Project
PMS	Participating Member States
PMS	Participating Member States
PSEPA	Pointe Sable Environmental Protection Area
RACs	Regional Activity Centres
RRS	Really Simple Syndication
SGD	St. George's Declaration of Principles for Environmental Sustainability in the OECS
SIDs	Small Island Developing States
SKN	St. Kitts and Nevis
SLU	Saint Lucia
SPF	Small Project Facility
SVG	St. Vincent and the Grenadines
TCMP	Tobago Cays Marine Park
TEEB	The Economics of Ecosystems and Biodiversity study
TNC	The Nature Conservancy
TPA	Terrestrial Protected Area
UK	United Kingdom
UN	United Nations
UNCED	UN Conference on Environment and Development
UNEP	United Nations Environment Program
UNESCO	United Nations Education, Science and Cultural Organization

UNFCC	United Nations Framework for Climate Change
USAID	United States Agency for International Development
UWI	University of the West Indies
WB	World Bank
WCR	Wider Caribbean Region
WDPA	World Database on Protected Areas
WRI	World Resources Institute
WWF	World Wildlife Foundation

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Section One

Introduction and Overview

1. Background for a Media Awareness Initiative on Biodiversity and Protected Areas

In support of the St. George's Declaration (SGD), the Organisation of Eastern Caribbean States (OECS) between 2004 and 2011 implemented the OECS Protected Areas and Associated Livelihoods (OPAAL) Project in partnership with the International Bank for Reconstruction and Development (the World Bank), the Fond Français de l'Environnement Mondial (FFEM); and the Organisation of American States (OAS).

The OPAAL project, with its strong focus on biodiversity conservation and sustainable livelihoods through community participation supported a wide range of protected area (PA) sites namely the North East Marine Management Area (NEMMA) in Antigua and Barbuda, the Cabrits National Park in Dominica, the Annandale and Grand Etang Forest Reserves in Grenada, the Central Forest Reserve in St Kitts and Nevis, the Point Sable Environmental Protection Area (PSEPA) in Saint Lucia, and the Tobago Cays Marine Park (TCMP) in St Vincent and the Grenadines.

Under a related USAID supported project called Protecting the Eastern Caribbean Biodiversity (PERB), additional sites supported were the Wallings Forest and Watershed Area in Antigua, Cordrington Lagoon in Barbuda, Sandy Island/Oyster Bed Marine Protected Area in Carricou, Levera Mangrove Wetland, in Grenada, the Millet Nature Trail in Saint Lucia and Kings' Hill Forest Reserve in, St Vincent.

In implementing OPAAL, the OECS recognises that raising public awareness is essential to ensuring PA sustainability. For this reason, the project in 2009 developed a regional public awareness strategy in fulfillment of its Public Awareness Programme "Component 3B". This Awareness Strategy also included six (6) national awareness action plans – one for each of the six Participating Member States (PMS) of OPAAL.

Following completion of the strategy, several of the recommended priority activities were implemented. These included the creation of a new campaign slogan, a jingle, production and broadcast of a series of public service announcements and a television documentary, the creation and distribution of various items of memorabilia (carrying the slogan – **"You depend on nature for Survival and for the benefit of your Life, Can nature Depend on You?"**) and the development of new exhibits on protected areas which were mounted at relevant expositions.

The OECS also recognizes that the mainstream media have a critical role to play in the public awareness process. Accurate, timely and evidence-based reporting (EBR) is vital to maintain PA sustainability, to encourage civil society involvement in PA management and to monitor related government policy and performance.

To this end, the OECS Secretariat undertook ***A Media Awareness Initiative,*** targeted especially at educating and lobbying media persons about protected areas. This media awareness kit is the principle output of this process.

Media persons are singled out in the Strategy as a target group with great influence that can assist with meeting two key OPAAL objectives *"to achieve behavioural change among local populations living in and adjacent to Protected Areas"* and *"to increase public support for biodiversity conservation and sustainable management of Protected Areas"*. This particular media initiative was specifically set out in the OPAAL Awareness strategy to achieve Objective Number 3 as follows:

OBJECTIVE NUMBER 3

Within Year One, 40 percent of the mainstream professional media within the OECS will be fully informed as to the nature of protected areas, the types that exist within the OECS countries, and their economic and natural resource benefits and will be actively engaged in correctly reporting and promoting stories about protected areas in the OECS

In addition to production of the Tool Kit, the initiative also sensitised more than 70 media professionals from all six of the OPAAL participating member states and catalyzed an estimated 50 news stories during the months of January and February, 2011. The initiative has also established a roster of regional experts on PAs for media interviews and interventions.

1.1 Rationale for a Media Tool Kit

In order for the media to play an educated and effective role in the promotion of protected areas within the OECS, they first need to be sensitized and educated. The media need to understand why biodiversity is important and why protected areas are needed to manage biodiversity sustainably. A capacity building process is required because there are several constraints that media within the OECS face and these challenges limit the extent to which they can cover Protected Area (PA)-related news stories effectively.

Most media houses within the region are very small and operate on limited budgets. This means that they cannot always afford to hire professional journalists who have been trained at officially recognized institutions such as the Caribbean Institute of Media and Communication (CARIMAC) at the University of the West Indies (UWI) or other reputable training institutions. New recruits learn their skills on the job .

The small size of many media houses also means that individual journalists/reporters can rarely specialize or focus on specific beats or news topics – such as the environment, agriculture, or health. Without this specialization, they may not always ask the right questions to get at the real news behind biodiversity issues or events.

A further constraint that affects all media houses within the OECS is the fierce competition they face from international news sources. According to the Knowledge, Attitudes and Practices (KAP) survey that was done by OPAAL in 2007 (http://www.oecs.org/doc-lib/environment/cat_view/28-environment-and-sustainable-development/33-opaal) , the consumption of foreign media mirrors that of local media. The internet has also made tremendous inroads into regional media choices. Local journalists therefore have a tough time competing unless their stories are connected to some type of crisis, scandal or political issue. With only their skills to rely on, journalists are not likely to go out of their way to create the type of 'buzz' and 'sizzle' to make protected area issues news worthy.

1.2 Strengthening Relationships between the Protected Area Managers and the Media

An additional challenge is the sometimes inadequate communication skills of those who manage protected areas and who wish to have their activities better covered by the media. The news releases they generate may be too scientifically written or include too much "protected area" jargon to capture the attention of local editors and journalists. In essence, PA news releases do not always compete with other stories that the media are also expected to cover. As a result, when faced with the choice of covering a controversial political news story for example, or the launch of an activity within a protected area, local journalists are more likely to choose the juicier story of the two.

There are also possibilities that when editors and journalists desire to publish or follow-up with news releases from PA staff, they rarely have the time to translate, rewrite and edit news releases sent in by PA officers. Without clearly written, news worthy stories from PA managers – and especially if these are submitted without action photographs – even sympathetic editors will ignore PA press releases.

PA managers also need to invest time and energy to foster and create relationships with the media on a regular basis through events such as press conferences, media breakfasts or lunches, banquets, and field trips to keep them informed of PA issues and when milestones are reached. Identifying and courting sympathetic media champions are equally important to the process.

As a result, if the news media within the OECS are to do a better job of covering PA related issues and events – their task needs to be made much easier on several fronts. They not only need to better understand PA terminology, but they also need to be able to communicate PA issues in everyday language. Better resources, facts and figures, briefing notes, contacts, expert quotes, research links, photographs and other information need to be "at their finger tips" so that they can be easily accessed as PA news unfolds.

In addition, the OECS Secretariat recognises that increasing the capacity of the media is a two-way process that helps make PA managers more media savvy while making media professionals more aware . Both PA managers and media professionals need to think 'outside the box' and explore opportunities beyond traditional media by looking at possibilities associated with some of the new emerging media (My Space, Face Book, Twitter) as well as the value-added that community and alternative media can bring. The OECS Media Awareness Initiative on PAs must therefore result in improved relationships and partnerships among PA managers and a range of local and regional media providers. The tool kit identifies strategies for strengthening these relationships.

1.3 Building on What Exists

In compiling and developing this media tool kit, we acknowledge the myriad of resources and sources of information at both the global and regional level from which the media can draw when covering biodiversity issues. Considerable work has already been done in the region with regards to environmental communication and journalism. For instance, within the region we already have:

1. The "***Climate Change Handbook for Caribbean Journalists***" produced in 2005 by the Association of Caribbean Media Workers (ACM) and the Mainstreaming Adaptation to Climate Change (MACC) project of the Caribbean Community Climate Change Centre (5Cs). http://www.acmediaworkers.com/multimedia/pdf/20050000-Climate_Change_Handbook_for_Caribbean_Journalists.pdf, and

2. The late John Maxwell's (2000) seminal work "***How to Make Our Own News: A Primer for Environmentalists and Journalists***", CARIMAC and UNEP, Kingston, Jamaica.

Both of these are excellent resources on environmental journalism and are specifically tailored for the English speaking Caribbean region. At the global level, we can also make use of two other key resources:

3. From IPS Inter Press Service, "**Putting Life on the Front Page: Biodiversity Reporting Guidelines**" (Rome, Italy) http://ipsnews.net/_adv/Biodiversidad2010.pdf , and

4. From Panos' **"Reporting Research: Using Evidence for Effective Journalism"** (http://www.panos.org.uk/download.php?id=1004).

For those professionals who work in the field of protected area and biodiversity management and who want to improve their ability to attract the media's attention to their work, John Maxwell's book is also very helpful as is the handbook done by the Caribbean Natural Resources Institute (CANARI) and Christian Aid (2009) ***"Addressing Climate Change in the Caribbean: A Toolkit for Communities"***. It includes tips for natural resource managers and community groups on how to prepare news releases that will attract the media's attention, and it offers advice for planning media events to get better coverage.

The intent of this OECS tool kit therefore is not to duplicate past efforts, but to look at them through the specific lens of biodiversity and protected areas management. This tool kit seeks to complement and support the tools that these other resources offer and address some of the gaps that relate specifically to biodiversity and PA management. It also discusses the potential of new media to which less attention was given in some of these slightly older tools.

Throughout the kit, specific reference is made and clear credit given, to sections in these other resources as well as links to their specific web sites. Preparation of the tool kit has further involved a process of trawling through a diverse range of sources, sites, research, links, tools and resources and has involved a clear critique and assessment of their use for our region.

1.4 Who Is the kit for?

The tool kit is envisaged for two main users.

First - for Caribbean journalists and especially those who live and work within OECS member countries.

Second - for natural resource managers and professional staff involved with biodiversity protection who will also greatly value its use as guide to their media management approaches.

The tool kit seeks to address the need for PA staff to tell their stories better – and to present their work to make it as news worthy as possible.

The tool kit is organized in five (5) main sections:

Section One	Introduction and Overview
Section Two	Overview of Biodiversity Facts and Figures, Key Terms, Key Protocols and Conventions
Section Three	Biodiversity in the OECS
Section Four	Evidence-Based Journalism and Its Role in Biodiversity and PA Management—Tips, skills, media formats, opportunities and outlets
Section Five	Appendices (Glossary, Roster of Experts, Key Resources and Links)

Ultimately, it is hoped and anticipated that the tool kit will not be a static document, but that it will serve as living tool for the region's media. It is further hoped that it will be updated by OECS media partners such as the Association of Caribbean Media Works (ACM), Panos-Caribbean or the Caribbean Institute of Media and Communications (CARIMAC), University of the West Indies (UWI) as needed.

Section Two

Biodiversity Facts & Figures

Commonly Asked Questions

2.1 Biodiversity - Commonly Asked Questions & Facts and Figures

Before the media can cover biodiversity and protected area management issues effectively, they first need to know what it is and how to talk about it. This section of the tool kit covers commonly asked questions and introduces journalists to key ***"need to know terms"*** as well as to the key discussions that are taking place and the international conventions that deal with these issues. It draws heavily from Hood's excellent article **"Biodiversity: Facts and Figures"** (2010), which gives a very comprehensive overview of all the reasons why biodiversity is so important.

In the next section, the tool kit outlines the conventions and activities that pertain to the Caribbean region in general and to the OECS in particular.

2.1.1 What is biodiversity?

According to the IUCN, (http://www.iucn.org/what/tpas/biodiversity/about) biological diversity - or biodiversity - is a term used to describe the variety of life on Earth. It refers to the wide variety of ecosystems and living organisms: animals, plants, their habitats and their genes. Hood (2010) argues that biodiversity " is crucial to **human wellbeing**, **sustainable development** and **poverty reduction.**" However, although human beings are themselves part of biodiversity, in many instances we have become so far removed from it, that we no longer realize just how much we depend on it for our own health and well-being. We both affect biodiversity and are also affected by the changes we make to our natural resources.

2.1.2 Why do we need biodiversity?

The benefits we gain from biodiversity go far beyond the mere provision of raw materials, or water and fresh air, says Hood (2010). Our food security depends on biodiversity and is currently being threatened as we continue to lose many plant species that provide us with food. Healthy biodiversity can also lessen our vulnerability to natural hazards such as fires and flooding. With biodiversity loss, our health suffers, as does our spiritual well-being. Nature inspires music and art in all cultures . How we relate to one another is also influenced by the biodiversity around us and the state of our natural environment.

Whenever human beings disrupt or alter eco-systems for short-term benefit, we create a domino effect that changes other eco-systems. Increasing food production , for example, through the cutting of trees can reduce water supply for other purposes or harm fisheries down stream. Filling in wetlands for a building development can trigger losses in fishing resources.

Box 2.1 Biodiversity Facts Laura Hood (October 2010) ***Biodiversity: Facts and Figures***. http://www.scidev.net/en/features/biodiversity-facts-and-figures-1.html
• Biodiversity is essential to global food security and nutrition and also serves as a safety-net to poor households during times of crisis.
• Increased diversity of genes within species e.g. as represented by livestock breeds or strains of plants, reduces risk from diseases and increases potential to adapt to changing
• More than 70,000 plant species are used in traditional and modern medicine.
• The value of global ecosystem services is estimated at US $16-$64 trillion.

2.1.3 Where is biodiversity and how can we measure it?

Although biodiversity is everywhere, Hood (2010) stress that, "...it remains hard to measure precisely even though many tools and data sources have been developed to do so." It is not known for example, how many species may actually exist on earth. Estimates vary. The **Millennium Ecosystem Assessment** for example, estimates the total numbers of species on Earth to range from 5 to 30 million but of these only 1.7–2 million species have been formally identified.

Table 2.1 Types of Biodiversity

Laura Hood (October 2010) ***Biodiversity: Facts and Figures***. http://www.scidev.net/en/features/biodiversity-facts-and-figures-1.htm

Species	**Number**
Bacteria	4,000
Protoctists (algae, protozoa)	80,000
Animals – vertebrates	52,000
Animals – invertebrates	1,272,000
Fungi	72,000
Plants	270,000
Total described species	**1,750,000**
Possible total of all species (including unknown species)	14,000,000

Other estimates suggest the number of species on Earth varies from three million to 100 million. The UN Convention on Biological Diversity (CBD) says there are some 13 million species, of which 1.75 million have been described. A more updated figure comes from an analysis of the IUCN's 2008 **Red List of Threatened Species** which states that 1.8 million species have been described out of an estimated 5 million to 30 million in existence.

2.1.4 Where is biodiversity greatest?

The Southern Hemisphere has the greatest density of biodiversity. Hood (2010) notes that 70 per cent of the world's species is found in just 12 countries: Australia, Brazil, China, Colombia, Costa Rica, the Democratic Republic of Congo, Ecuador, India, Indonesia, Madagascar, Mexico and Peru. Overall, tropical rainforests are thought to contain 50–90 per cent of all species. Some 2,600 bird species (about 30 per cent of the total) depend on tropical forests.

2.1.5 What is a 'biodiversity hotspot'?

A biodiversity hotspot is an area of rich endemic biodiversity that faces serious threats to its existence. Table 2.2 provides a list of the world's hot spots at a glance.

2.1.6 What is extinction?

The IUCN classifies a species as extinct if a "single individual member cannot be found despite exhaustive surveys over a long period of time." Occasionally, a species that has previously been declared exist will be reclassified if scarce samples are found.

2.1.7 What are the current rates of extinction?

Estimates based on the fossil record suggest that among mammals and birds, one species has been lost every 500 to 1,000 years. But current rates of extinction are many times higher than what has normally taken place in natural, geological time and perhaps even as high as 10,000 times the natural rate, according to the IUCN.

2.1.8 What is 'mass extinction'?

Mass extinction refers to the "permanent loss of large numbers of species over a relatively short period of geological time " (Hood, 2010). According to the fossil record, there have been five historical mass extinctions but most of these have occurred because of natural changes in the Earth's atmosphere and environment. Many scientists now believe that the Earth is facing a sixth mass extinction, in part because of human activities and climate change.

Table 2.2 Hotspots at a glance

Source: Conservation International cited in Laura Hood (October 2010) ***Biodiversity: Facts and Figures***. http://www.scidev.net/en/features/biodiversity-facts-and-figures-1.html

Area	Original hotspot area (sq km)	Hotspot area today (sq km)	Protected area (sq km)	Total plant species	Total terrestrial vertebrate species	Endemic bird species under threat	Endemic mammal species under threat	Endemic amphibians under threat	Extinct species since 1500*
Atlantic Forest	1,233,875	99,944	50,370	20,000	1,509	55	21	14	1
Brazilian Cerrado	2,031,990	438,910	111,051	10,000	1,027	10	4	2	0
California Floristic Province	293,804	73,451	108,715	3,488	566	4	21	8	2
Cape Floristic Region	78,555	15,711	10,859	9,000	514	0	1	7	1
Caribbean Islands	229,549	22,955	29,605	13,000	1,195	48	18	143	38
Caucasus	532,658	143,818	42,721	6,400	595	0	2	2	0
Chilean Winter Rainfall Valdivian Forests	397,142	119,143	50,745	3,892	335	6	5	15	0
Coastal Forests of Eastern Africa	291,250	29,125	50,889	4,000	1,085	2	6	4	0
Guinean forests of West Africa	620,314	93,047	108,104	9,000	1,315	31	35	49	0
Indo-Burma	2,373,057	118,653	235,758	13,500	2,221	18	25	35	1
Madagascar and Indian Ocean Islands	600,461	60,046	18,482	13,000	849	57	51	61	45
Mediterranean Basin	2,085,292	98,009	90,242	22,500	945	9	11	14	5
Mesoamerica	1,130,019	226,004	142,103	17,000	2,245	31	29	232	7
Mountains of Southwest China	262,446	20,996	14,034	12,000	940	2	3	3	0
New Caledonia	18,972	5,122	4,192	3,270	184	7	3	0	1
New Zealand	270,197	59,443	74,260	2,300	242	63	3	4	23
Philippines	297,179	20,803	32,404	9,253	939	56	47	48	2
Polynesia and Micronesia	47,239	10,015	2,436	5,330	372	90	8	1	43
Southwest Australia	356,717	107,015	38,379	5,571	521	3	6	3	2
Succulent Karoo	102,691	29,780	2,567	6,356	395	0	1	1	1
Sundaland	1,501,063	100,571	179,723	25,000	1,601	43	60	59	4
Tropical Andes	1,542,644	385,661	246,871	30,000	2,904	110	14	363	2
Tumbes-Chocó-Magdalena	274,597	65,903	34,338	11,000	1,502	21	7	8	4
Wallacea	338,494	50,774	24,387	10,000	1,091	49	44	7	3
Western Ghats and Sri Lanka	189,611	43,611	26,130	5,916	865	10	14	87	20

Table 2.3 Mass extinctions

Source: BBC cited **in** Laura Hood (October 2010) ***Biodiversity: Facts and Figures***. http://www.scidev.net/en/features/biodiversity-facts-and-figures-1.html

Extinction	Cause and effects
Late Cambrian (~500 million years ago)	Changing sea levels
Late Ordovician (440 million years ago)	Glaciation (ice age)
Late Devonian (~365 million years ago)	Global cooling
End Permian (245 million years ago)	96 per cent of marine species and 75 per cent of terrestrial vertebrate families became extinct during this, the largest, mass extinction, which was caused by fluctuations in sea level and ocean salinity resulting from climate change
Cretaceous-Tertiary (K-T) (65 million years ago)	Famed for the extinction of the dinosaurs and widely thought to have been caused by a meteor impact

2.1.9Why is biodiversity threatened?

The leading threats to biodiversity are: conversion of land to agriculture, clearing forests, climate change, pollution, unsustainable harvesting of natural resources, and the introduction of so-called alien species to areas where they are not native. The importance of each factor varies from place to place. One study of animal extinctions since the year 1600 found that 39 per cent arose mainly from the introduction of alien species, 36 per cent from habitat destruction, and 23 per cent from hunting or deliberate extermination. Secondary causes of biodiversity loss include human population growth, unsustainable patterns of consumption, increasing production of waste, urban development and international conflict (Hood, 2010).

2.1.10 How many species have become extinct recently?

According to the IUCN's 2009 *Red List of Threatened Species.* at least 803 species have become extinct since the year 1500. The actual number of extinctions may be higher still as many extinctions have either not been detected or belong to a taxonomic group that has not been evaluated by IUCN's *Red List.* For example, the Global Amphibian Assessment recently added 29 extinct species to the list. By comparison, the 2000 edition of the *Red List of Threatened Species* identified 766 species that have become extinct whereas the 1997 edition identified only 380 species.

2.1.11 How many species are currently threatened with extinction?

The 2008 *Red List of Threatened Species* states that the number of species threatened with extinction is 16,928. This includes one in four mammals, one in three amphibians, and one in eight birds (Hood, 2010) and the number is increasing. In 2000, the *Global Biodiversity Outlook*, published by the UN Convention on Biological Diversity, reported that 11,046 species are currently threatened with extinction.

2.2 Caribbean Biodiversity

As the fifth most important "biodiversity hot spot", the wider Caribbean is home to some of the world's most unique and threatened species of plants and animals. Table 2.4 from Conservation International provides an overview of the types of plants and animals that are unique to the region.

2.2.1 Plants

According to Conservation International, an estimated 13,000 species of plants are endemic to Caribbean Islands, including more than 6,500 which are endemic to single-islands alone "… with 205 plant genera and one plant family, the Goetziaceae, found nowhere else on Earth."

Some particularly valuable plants that are considered by the IUCN to be especially endangered include Caribbean mahogany (*Swietenia mahagoni*, EN), a cousin of the big-leaf mahogany (*Swietenia macrophylla*, VU) of South and Central America, which has been heavily harvested for timber. Other economically valuable timber species in the Caribbean Islands include walnut (*Juglans jamaicensis*, VU), West Indian ebony (*Brya ebenus*), and poui (*Tabebuia heterophylla*).

Table 2.4 – Biodiversity in the Caribbean

Source: Conservation International. August 22, 2008. "Threatened Species in the Caribbean".

http://www.eoearth.org/article/Biological_diversity_in_the_Caribbean_Islands

Taxonomic Group	Species	Endemic Species	Percent Endemism
Plants	13,000	6,550	50.4
Mammals	89	41	46.1
Birds	604	163	27.0
Reptiles	502	469	93.4
Amphibians	170	170	100.0
Freshwater Fishes	161	65	4

2.2.2 Vertebrates

2.2.2.1 Birds

Conservation International further estimates that "there are more than 600 bird species in the Caribbean Islands, of which roughly 160 are endemic". Some of these species can only be found within very particular sites of a single islands. It is estimated that at least 36 different genera of birds are endemic to the region, as well as two endemic families: the palmchat (*Dulus dominicus*) of the family Dulidae and the todies (family Todidae).

BirdLife International acknowledges six primary and two secondary Endemic Bird Areas (EBAs) within the Caribbean hotspot. They determine that 48 species endemic to the hotspot are threatened with extinction, including the Puerto Rican nightjar (*Caprimulgus noctitherus*, CR), Zapata rail (*Cyanolimnas cerverai*, EN), Zapata wren (*Ferminia cerverai*, EN), and Grenada dove (*Leptotila wellsi*, CR).

Estimates by Conservation International (2008) indicate that "thirteen bird species have already gone extinct; six of those species were of the genus *Ara*, the large and brightly-feathered macaws. Other extinct birds include the Cuban macaw (*Ara tricolor*), and the ivory-billed woodpecker (*Campephilus principalis*)" .

Several parrots in the OECS region are also endangered and are considered high priorities for conservation. These include the the St. Vincent parrot (*Amazona guildingii*, VU), the Saint Lucian parrot (*Amazona versicolor*, VU), and the imperial parrot (*Amazona imperialis*, EN) of Dominica. Without adequate forest habitat, these species will not survive.

The world's tiniest bird is also found in the Caribbean hot spot. The bee hummingbird (*Mellisuga helenae*) of Cuba is only 5.5 centimeters (cm) long and weighs 1.95 grams

2.2.2.2 Mammals

There are approximately 90 mammal species in the Caribbean and of these, more than 40 are endemic. These endemic species include two rodent families: Solenodontidae and Capromyidae. The family Solenodontidae includes two surviving species, the Cuban solenodon (*Solenodon cubanus*, EN), and Hispaniolan solenodon (*S. paradoxus*, EN) which, Conservation International (2008) says "… are rare giant shrews threatened by human exploitation and invasive species such as mongooses, feral cats, rats and dogs." The Capromyidae includes 20 species of rodents that have traditionally been prized for their meat and food value.

In addition, the Caribbean is also home to 15 endemic mammal genera , including the fruit-eating bat genus *Brachyphylla*.

One highly endangered marine mammal is the West Indian manatee (*Trichechus manatus*, VU) which is rarely seen . The Caribbean monk seal (*Monachus tropicalis*, EX), which was once very prevalent throughout the Caribbean has gone extinct due to over-hunting.

2.2.2.3 Reptiles

The Caribbean region is globally recognized as being especially rich in species of reptiles "…with over 500 reptile species, almost 470 of which (94 percent) are endemic." These include:

1. Several large evolutionary radiations of lizards, such as the anoles (*Anolis*; 154 species, 150 endemic)
2. Dwarf geckos (*Sphaerodactylus*; 86 species, 82 endemic);
3. Curly tails lizards (*Leiocephalus*; 23 species, all endemic)
4. As well as the smallest lizards in the world, *Sphaerodactylus ariasae* from the Dominican Republic and *S. parthenopion* from the U.S. Virgin Islands.

The region also boasts the world's smallest snake, *Leptotyphlops bilineata*, which, according to Conservation International (2008), "*could slither through a pencil if the lead were removed.*" But larger snakes are also endemic including the species *Leptotyphlops* with large boas (*Epicrates*, nine species); a genus of *Tropidophis* (26 species, all endemic); and fast moving racers (*Alsophis*; 13 species, all endemic). A total of six snake genera are endemic to the hotspot including the most threatened rattlesnake in the world - the endemic Aruba rattlesnake (*Crotalus unicolor*, CR) of which only 250 individuals are thought to still be alive.

Nine species of the region's endemic rock iguanas (from the genus *Cyclura)* are also under threat, including some that measure more than one meter in length. These include the Jamaican iguana (*Cyclura collei*, CR) and the Cuban crocodile (*Crocodylus rhombifer*, CR) which is the most threatened species of New World crocodilians.

2.2.2.4 Amphibians

In addition to its reptile populations, the region is also globally recognized as having very high amphibian endemism. All of the approximately 170 native species are endemic and are from four families of frogs (the Bufonidae, Dendrobatidae, Hylidae, and Leptodactylidae) while more than 80 percent of all the region's amphibians belonging to the large genus *Eleutherodactylus*, - "forest frogs that lay eggs on land and hatch into miniature adults with no tadpole stage". Interestingly, according to Conservation International, "all but a few species are endemic to single islands."

The second largest frog found in the Western hemisphere is the *Leptodactylus fallax*, otherwise known in Dominica as "mountain chicken" and considered a delicacy. Habitat loss, disease and over hunting have seen rapid decline in its numbers in recent years.

2.2.2.5 Freshwater Fishes

There are more than 160 species of freshwater fish in the Caribbean such as gars, killifishes, silversides and cichlids of which 65 are endemic to one or a few islands, and in some cases Conservation International (2008) notes, "are found only in a single lake or springhead".

2.3 Which ecosystems are under threat?

The loss of forests and coral reef ecosystems are particularly devastating to biodiversity. Today, just one-fifth of the world's original forest cover remains in large tracts of relatively undisturbed forest — what the World Resources Institute (WRI) calls 'frontier forest'. An estimated 58 per cent of the world's coral reefs, some of which rival tropical rainforests for biodiversity, are at risk from human activities (WWF, 2008 cited in Hood, 2010).

The extinction of one species can precipitate a domino effect triggering the extinction of others. These are known as "**keystone**" species.

2.2.4 How is agriculture affecting biodiversity?

Clearly, plant biodiversity is essential to food production. Table 2.5 illustrates the wide variety of plant species that are used for food.

Table 2.5 Plant species used as food by humans

UN Food and Agriculture Organization cited in Laura Hood (October 2010) ***Biodiversity: Facts and Figures***. http://www.scidev.net/en/features/biodiversity-facts-and-figures-1.html

Human use/classification	Plant species
Total described species	250,000
Edible	30,000
Cultivated	7,000
Important on national scale	120
Making up 90% of world's calories	30

Agriculture is a major contributor to loss of biodiversity. The conversion of forests to agriculture is one of the largest contributors to biodiversity reduction as is seen in Table 2.6 which illustrates the massive increase in conversion to agricultural lands since 1961.

Table 2.6 Area of agricultural land by region (1900–1980) in sq km

Source: International Institute for Environment and Development/World Resources Institute cited in Laura Hood (October 2010) ***Biodiversity: Facts and Figures***. http://www.scidev.net/en/

	1961	2007	% change
North America	5,175,730	4,789,970	+7.5
South America	4,409,030	5,801,850	+31.6
Europe	7,829,225	4,742,735	-39.4
World	44,571,055	49,318,620	+10.7
Eastern Africa	2,839,540	3,025,553	+6.6
South Asia	3,088,590	3,101,290	+0.4
South-East Asia	842,210	1,176,602	+39.7
China	3,432,480	5,528,320	+61

2.5 What is the value of biodiversity? How much is Biodiversity Worth?

Although biodiversity provides us with several essential services such as water and clean air, the true economic value of these services is difficult to assess because most of these have no price tag attached. As a result, the real value is largely ignored and grossly undervalued. However, as Hood (2010) notes, "If the full economic value of these services was taken into account in decision-making, the degradation of ecosystem services could be significantly slowed down or even reversed."

For example, ten of the world's 25 top-selling drugs in 1997 were derived from natural sources. The global market value of pharmaceuticals derived from genetic resources is estimated at US$75 billion to US$150 billion annually. Some 80 per cent of the world's population relies for healthcare on traditional medicines, which are derived directly from natural sources. More than 40 per cent of all prescriptions written in the United States contain one or more drugs that originated from wild species of fungi, bacteria, plants and animals (Hood, 2010).

A new study, the Economics of Ecosystems and Biodiversity (TEEB), is working towards establishing economic values on biodiversity. The study aims at developing mechanisms to assess the value of nature, drawing attention to the global economic benefits of biodiversity and highlighting the growing costs of its loss.

2.6 How much of the planet is protected?

The 2003 *United Nations List of Protected Areas* lists 102 sites covering 18.8 million km^2. Of the total area protected, it is estimated that 17.1 million km^2 is in terrestrial protected areas, or 11.5 per cent of the global land surface. Marine areas are significantly under-represented in this global system of protected areas. Approximately 1.64 million km^2 is in marine protected areas— an estimated 0.5 per cent of the world's oceans, and less than one-tenth of the overall extent of protected areas worldwide.

At least 300 critically endangered, 237 endangered and 267 vulnerable bird, mammal, turtle and amphibian species have no protection in any part of their ranges, according to the most comprehensive analysis of its kind, published in *Nature* in 2004 (Hood, 2010).

2.7 The 2010 target and beyond

in 2002, at the World Summit on Sustainable Development, the international community pledged to slow down the rate of global biodiversity loss by 2010. Unfortunately, this the target was not met despite the fact that the UN declared 2010 the International Year of Biodiversity. Yet hope remains high that these targets will be achieved by 2020 as years from 2011 to 2020 have been designated as the United Nations Decade for Biodiversity.

2.8 What is a Protected Area?

A protected area is:

> *"A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values".*

Although all protected areas meet the general purposes contained in this definition, in practice, the precise purposes for which protected areas are managed differ greatly.

2.8.1 Why do We Need Protected Areas?

Protected areas are essential tools in conserving biodiversity. When a government declares a place protected, it is ensuring that there is a continued flow of environmental processes, of economic benefits to surrounding communities and moreover, the government is fulfilling an ethical responsibility to value life on earth by providing opportunities for people to treasure nature and history (Hood, 2010).

2.8.2 Protected Area Management Categories

IUCN has defined a series of six protected area management categories, based on their primary management objectives. Table 2.7 summarises the type of PAs that can be established.

TABLE 2.7

The categories of protected areas are defined in detail in the Guidelines for Protected Areas Management Categories published by IUCN in 1994 from Guidelines for Protected Areas Management Categories	
CATEGORY IA:	Strict Nature Reserve: protected area managed mainly for science
Definition	Area of land and/or sea possessing some outstanding or representative ecosystems, geological or physiological features and/or species, available primarily for scientific research and/or environmental monitoring.
CATEGORY IB	Wilderness Area: protected area managed mainly for wilderness protection
Definition	Large area of unmodified or slightly modified land, and/or sea, retaining its natural character and influence, without permanent or significant habitation, which is protected and managed so as to preserve its natural condition.
CATEGORY II	National Park: protected area managed mainly for ecosystem protection and recreation
Definition	Natural area of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible.
CATEGORY III	Natural Monument: protected area managed mainly for conservation of specific natural features
Definition	Area containing one, or more, specific natural or natural/cultural feature which is of outstanding or unique value because of its inherent rarity, representative or aesthetic qualities or cultural significance.
CATEGORY IV	Habitat/Species Management Area: protected area managed mainly for conservation through management intervention
Definition	Area of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats and/or to meet the requirements of specific species.
CATEGORY V	Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation
Definition	Area of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological and/or cultural value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area.
CATEGORY VI	Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems
Definition	Area containing predominantly unmodified natural systems, managed to ensure long term protection and maintenance of biological diversity, while providing at the same time a sustainable flow of natural products and services to meet community needs.

2.9 What types of Protected Areas Exist in the OECS?

There are several types of protected areas within the OECS. Most protected areas fall in two categories: (1) marine (sea-based) protected areas (MPA) or (2) terrestrial (land-based) protected areas (TPA). Protected Areas can also be a combination of both types.

Marine PAs include marine parks and marine reserves while TPAs include forest reserves, nature parks, and nature reserves. There are also historical and cultural protected areas as well as heritage sites that are protected.

The World Database on Protected Areas (WDPA) **http://www.wdpa.org** keeps track of all the types of protected areas around the world. it is important to note, however, that new PAs are established from time to time and therefore, it is best to check the WDPA for updates on a regular basis.

2.10 Using Biodiversity Terms – A Glossary to Keep Things Simple

Scientists and biodiversity professionals use a wide range of terms when discussing biodiversity. Many of these can be difficult to understand and journalists need to avoid using overly complicated jargon in order to ensure that the general public understands biodiversity issues when they are covered in the news. To assist journalists, a glossary is included as **Appendix A** in this tool kit. Compiled from several different sources, the glossary is a comprehensive, alphabetical list of most biodiversity terms in alphabetical order, and also provides standard definitions for each. Wherever possible, without diluting the meaning of the word, the glossary also offers alternatives for the media to consider when writing for the general public.

Use of these alternatives should be done judiciously however, and journalists are expected to discern wisely as to their appropriateness for different audiences.

2.11 Setting the Policy Context - Key Conventions and Related Protocols on Biodiversity

As a journalist covering issues related to biodiversity protection, you need to be aware that there are key international conventions, protocols, agreements and intergovernmental policy documents that set the political and institutional context. It is important for you to be familiar with these and to know what government commitments have been made.

2.11.1 The St. George's Declaration (SGD)

In the OECS region, the most important guiding document is the St George's Declaration (SGD) of Principles for Environmental Sustainability in the OECS.

Initiated at the Third Meeting of the Organisation of Eastern Caribbean States (OECS) Environment Policy Committee (EPC) in September 1999, OECS Ministers of the Environment requested an "OECS Charter for Environmental Management" and "a regional strategy... (to) become the framework for environmental management" in the region. In accordance with the Ministers' request, the SGD was signed in April 2001.

The Declaration sets out the broad framework to be pursued for environmental management in the OECS region. The SGD is structured around 21 Principles as set out in Box 2.3.

As signatories of the SGD, member countries of the Organisation of Eastern Caribbean States (OECS) are committed to putting in place a number of strategic actions to improve the environmental management of their natural resources. There are a total of four goals set out in the SGD. Goal 1 deals with Capacity Building and Goal 2 deal with Partnerships and Participation. Goal 3 of the SGD is aimed at managing natural resources and eco-systems effectively so that they remain healthy and productive while Goal 4 is aimed at enhancing the economic and social benefits associated with sustainable natural resource management.

Box 2.2

Goal #3 of the St. George's Declaration

In pursuit of this goal, Member States hope that natural resources of the sub-region will be managed effectively so that the eco-systems remain healthy and productive; that biodiversity is protected; the indiscriminate disposal of waste pollution does not destroy natural and cultural resources; the new approach to energy conservation will include use of new and alternative energy sources.

Goal #4 of the St. George's Declaration

Natural resources can contribute to social and economic development but it is the goal of the SGD to ensure that these benefits are shared equally and that the costs of maintaining the resources are also shared equally among all groups in the society.

Box 2.3	
Principle 1:	Foster Improvement in the Quality of Life
Principle 2:	Integrate Social, Economic and Environmental Considerations into National Development Policies, Plans and Programmes
Principle 3:	Improve on Legal and Institutional Frameworks
Principle 4:	Ensure Meaningful Participation by Civil Society in Decision
Principle 5	Ensure Meaningful Participation by the Private Sector
Principle 6:	Use Economic Instruments for Sustainable Environmental Man-
Principle 7:	Foster Broad-based Environmental Education, Training and
Principle 8:	Address the Causes and Impacts of Climate Change
Principle 9:	Prevent and Manage the Causes and Impact of Disasters
Principle 10:	Prevent and Control Pollution and Manage Waste
Principle 11:	Ensure the Sustainable Use of Natural Resources
Principle 12:	Protect Cultural and Natural Heritage
Principle 13:	Protect and Conserve Biological Diversity
Principle 14:	Recognise Relationships between Trade and Environment
Principle 15:	Promote Co-operation in Science and Technology
Principle 16:	Manage and Conserve Energy
Principle 17:	Negotiate and Implement Multilateral Environmental Agree-
Principle 18:	Co-ordinate Assistance from the International Donor Community towards the Organisation of Eastern Caribbean States Region
Principle 19:	Implementation and Monitoring
Principle 20:	Obligations of Member States
Principle 21:	Review

2.11.2 Additional Conventions and Agreements

There are also several other international conventions and protocols that guide government institutional frameworks and actions. Chief among these are:

1. The Convention on Biological Diversity (Nairobi, 1992) http://www.cbd.int/

2. The Cartagena Protocol on Biosafety http://bch.cbd.int/protocol/background/

3. The CITES Convention on the International Trade in Endangered Species of Wild Flora and Fauna http://www.cites.org/

4. The Convention on Wetlands of International Importance Especially as Waterfowl Habitat. http://www.ramsar.org

5. The Cartagena Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena Convention, 1983) http://www.cep.unep.org/cartagena-convention/cartagena-convention.pdf and its subsequent protocols:

   - Land Based Sources (LBS) of Pollution Protocol http://www.cep.unep.org/pubs/legislation/lbsmpnut.html
   - Specially Protected Areas and Wildlife (SPAW) protocol http://www.cep.unep.org/pubs/legislation/spawnut.html
   - Protocol Concerning Co-operation and Development in Combating Oil Spills in the Wider Caribbean Region http://www.cep.unep.org/pubs/legislation/oilspillnut.html

6. The Law of the Sea convention . http://www.un.org/Depts/los/convention_agreements/convention_overview_convention.htm

7. MARPOL Convention on the Prevention of Marine Pollution by Dumping Wastes and other Matter (1973) as amended by the Protocol of 1978. http://www.imo.org/About/Conventions/ListOfConventions/Pages/Convention-on-the-Prevention-of-Marine-Pollution-by-Dumping-of-Wastes-and-Other-Matter.aspx

8. Framework Convention on Climate Change (1992) http://unfccc

9. The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1989) http://www.basel.int/

10. International Treaty on Plant Genetic Resources for Food and Agriculture http://www.planttreaty.org/index_en.htm

Also important in order to understand how biodiversity relates to sustainable livelihoods and poverty eradication are the Millennium Development Goals, otherwise known as the MDGs: http://www.un.org/millenniumgoals/.

2.11.3 Understanding Key Terms in the UN Treaty Collection

Before discussing each of the above conventions, agreements and protocols, it is useful to get a handle on the terminology that the U.N. system uses to describe the process used to create them. The United Nations Treaty Collection Reference Guide is useful in this respect (http://untreaty.un.org/English/guide.pdf).

Treaties

The term "treaty" can be used to refer to a set of instruments that are binding in international law or can refer to a title of an international binding instrument.

Agreements

Agreements" are usually less formal and deal with a narrower range of subject-matter than "treaties". There is a general tendency to apply the term "agreement" to bilateral or restricted multilateral treaties. It is employed especially for instruments of a technical or administrative character, which are signed by the representatives of government departments, but are not subject to ratification.

Conventions

This generic use of the term "convention" embraces all international agreements, in the same way as does the generic term "treaty" but is generally used for formal multilateral treaties with a broad number of parties.

Charters

The term "charter" is used for particularly formal and solemn instruments, such as the constituent treaty of an international organization.

Protocols

The term "protocol" is used for agreements less formal than those entitled "treaty" or "convention". The term can also involve the interpretation of particular clauses of the treaty and outlines precise steps for how conventions and treaties are to be implemented.

Declarations

The term "declaration" is used for various international instruments. However, declarations are not always legally binding. The term is often deliberately chosen to indicate that the parties do not intend to create binding obligations but merely want to declare certain aspirations. An example is the 1992 Rio Declaration.

Adoption

"Adoption" is the formal act by which the form and content of a proposed treaty text are established. As a general rule, the adoption of the text of a treaty takes place through the expression of the consent of the states participating in the treaty-making process.

Acceptance and Approval

The instruments of "acceptance" or "approval" of a treaty have the same legal effect as ratification and consequently express the consent of a state to be bound by a treaty.

Accession

"Accession" is the act whereby a state accepts the offer or the opportunity to become a party to a treaty already negotiated and signed by other states. It has the same legal effect as ratification. Accession usually occurs after the treaty has entered into force.

Act of Formal Confirmation

"Act of formal confirmation" is used as an equivalent for the term "ratification" when an international organization expresses its consent to be bound to a treaty.

Definitive Signature

When the treaty is not subject to ratification, acceptance or approval, "definitive signature" establishes the consent of the state to be bound by the treaty. Most bilateral treaties dealing with more routine and less politicized matters are brought into force by definitive signature, without recourse to the procedure of ratification.

Entry into Force

Typically, the provisions of the treaty determine the date on which the treaty enters into force. Where the treaty does not specify a date, there is a presumption that the treaty is intended to come into force as soon as all the negotiating states have consented to be bound by the treaty.

Ratification

Ratification defines the international act whereby a state indicates its consent to be bound to a treaty if the parties intended to show their consent by such an act. The institution of ratification grants states the necessary time-frame to seek the required approval for the treaty on the domestic level and to enact the necessary legislation to give domestic effect to that treaty.

Precautionary principle

The **precautionary principle** states that if an action or policy has a suspected risk of causing harm to the public or to the environment, in the absence of scientific consensus that the action or policy is harmful, the burden of proof that it is *not* harmful falls on those taking the action.

2.11.3.1 Convention on Biological Diversity (CBD)

The **Convention on Biological Diversity** (**CBD**), known informally as the **Biodiversity Convention**, is an international legally binding treaty with three main goals:

1. Conservation of biological diversity (or biodiversity);
2. Sustainable use of its components; and
3. Fair and equitable sharing of benefits arising from genetic resources

The objective for the CBD is to develop national strategies for the conservation and sustainable use of biological diversity. The Convention was opened for signature as part of the Agenda 21 - the Earth Summit in Rio de Janeiro on 5 June 1992 and entered into force on 29 December 1993.

2010 was the International Year of Biodiversity. At the 2010 10th Conference of Parties (COP) to the Convention on Biological Diversity in October in Nagoya Japan, the Nagoya Protocol was adopted. On 22 December 2010, the UN declared the period from 2011 to 2020 as the UN-Decade on Biodiversity.

The convention recognized for the first time in international law that the conservation of biologi-

cal diversity is "a common concern of humankind" and is an integral part of the development process. The agreement covers all ecosystems, species, and genetic resources. It links traditional conservation efforts to the economic goal of using biological resources sustainably. It sets principles for the fair and equitable sharing of the benefits arising from the use of genetic resources, notably those destined for commercial use. It also covers the rapidly expanding field of biotechnology through its Cartagena Protocol on Biosafety, addressing technology development and transfer, benefit-sharing and biosafety issues. Importantly, the Convention is legally binding; countries that join it ('Parties') are obliged to implement its provisions.

Caribbean Parties

The following countries are parties to the CBD: Antigua and Barbuda, Bahamas, Barbados, Belize, Costa Rica, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, St Kitts and Nevis, Saint Lucia, St Vincent and the Grenadines, Suriname, Trinidad and Tobago.

Most of the Parties have established National Biodiversity Strategies and Action Plans (NBSAP) to implement the convention.

2.11.3.2 Cartagena Protocol on Biosafety

The Cartagena Protocol on Biosafety of the Convention on Biodiversity, also known as the Biosafety

Protocol, was adopted in January 2000. The Biosafety Protocol seeks to protect biological diversity from the potential risks posed by living modified organisms resulting from modern biotechnology.

The Biosafety Protocol makes clear that products from new technologies must be based on the precautionary principle and allow developing nations to balance public health against economic benefits. It will for example let countries ban imports of a genetically modified organism (GMO), if they feel there is not enough scientific evidence that the product is safe and requires exporters to label shipments containing genetically altered commodities such as corn or cotton.

The required number of 50 instruments of ratification/accession/approval/acceptance by countries was reached in May 2003. In accordance with the provisions of its Article 37, the Protocol entered into force on 11 September 2003.

Caribbean parties to the protocol include: Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, St Kitts and Nevis, Saint Lucia, St Vincent and the Grenadines, Suriname, Trinidad and Tobago.

2.11.3.3 CITES

CITES (the **Convention on International Trade in Endangered Species of Wild Fauna and Flora**, also known as the **Washington Convention**) is an international agreement between governments, drafted as a result of a resolution adopted in 1963 at a meeting of members of the International Union for Conservation of Nature (IUCN). CITES entered into force on 1 July 1975. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival and it accords varying degrees of protection to more than 33,000 species of animals and plants.

CITES is one of the largest conservation agreements in existence. Participation is voluntary, and countries that have agreed to be bound by the Convention are known as Parties. Although CITES is legally binding on the Parties, it does not take the place of national laws. Rather it provides a framework respected by each Party, which must adopt their own domestic legislation to implement CITES at the national level. Often, domestic legislation is either non-existent (especially in Parties that have not ratified it), or with penalties incommensurate with the gravity of the crime and insufficient deterrents to wildlife traders.

CITES works by subjecting international trade in specimens of listed species to certain controls. These require that all import, export, re-export and introduction from the sea of species covered by the Convention has to be authorized through a permitting system.

Caribbean parties include: Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, St Kitts and Nevis, Saint Lucia, St Vincent and the Grenadines, Suriname, Trinidad and Tobago.

2.11.3.4. RAMSAR

The **Ramsar Convention** (**The Convention on Wetlands of International Importance, especially as Waterfowl Habitat**) is an international treaty for the conservation and sustainable utilisation of wetlands, (i.e., to stem the progressive encroachment on and loss of wetlands now and in the future, recognising the fundamental ecological functions of wetlands and their economic, cultural, scientific, and recreational value). It is named after the town of Ramsar in Iran.

The Ramsar List of Wetlands of International Importance now includes 1,888 sites (known as *Ramsar Sites*) covering around 1,853,000 km², up from 1,021 sites in 2000. Presently, there are 159 contracting parties, up from 119 in 2000 and from 18 initial signatory nations in 1971. Contracting countries in the Caribbean include: Antigua and Barbuda, The Bahamas, Bermuda, Dominican Republic, Jamaica, Saint Lucia, Suriname, Trinidad and Tobago.

2.11.3.5 **Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region (Also known as the Cartagena Convention)**

The Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region (WCR) is a comprehensive, umbrella agreement for the protection and development of the marine environment. This regional environmental convention provides the legal framework for cooperative regional and national actions in the WCR.

The Convention is supplemented by three Protocols:

- Protocol Concerning Co-operation in Combating Oil Spills in the Wider Caribbean Region which was also adopted in 1983 and entered into force on 11 October 1986.
- Protocol Concerning Specially Protected Areas and Wildlife (SPAW) in the Wider Caribbean Region which was adopted on 18 January 1990. The Protocol entered into force on 18 June 2000.
- Protocol Concerning Pollution from Land-Based Sources and Activities (LBS) which was adopted on 6 October 1999 which came into force in October 2010.

Although the Contracting Parties designated the United Nations Environment Program –Caribbean Regional Unit (UNEP-CAR/RCU) as the Secretariat of the Cartagena Convention, Contracting Parties may use Regional Activity Centres (RACs) for the coordination and implementation of activities in support of the Cartagena Convention and its Protocols and Regional Activity Networks (RANs) for the provision of expertise.

The legal structure of the Convention is such that it covers the various aspects of marine pollution for which the Contracting Parties must adopt measures. Thus, the Convention requires the adoption of measures aimed at preventing, reducing and controlling pollution of the following areas:

- pollution from ships
- pollution caused by dumping
- pollution from sea-bed activities
- airborne pollution
- pollution from land-based sources and activities

In addition, the Parties are required to take appropriate measures to protect and preserve rare or fragile ecosystems, as well as the habitat of depleted, threatened or endangered species and to develop technical and other guidelines for the planning and environmental impact assessments of important development projects in order to prevent or reduce harmful impacts on the area of application.

Caribbean parties include: Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, St Kitts and Nevis, Saint Lucia, St Vincent and the Grenadines, Suriname, Trinidad and Tobago.

2.11.3.6 MARPOL 73/78

Marpol 73/78 is the **International Convention for the Prevention of Pollution From Ships** ("Marpol" is short for marine pollution and 73/78 short for the years 1973 and 1978.)

Marpol 73/78 is one of the most important international marine environmental conventions. It was designed to minimize pollution of the seas, including dumping, oil and exhaust pollution. Its stated object is: to preserve the marine environment through the complete elimination of pollution by oil and other harmful substances and the minimization of accidental discharge of such substances.

The original MARPOL Convention was signed on 17 February 1973, but did not come into force. The current Convention is a combination of 1973 Convention and the 1978 Protocol. It entered into force on 2 October 1983. As of 31 December 2005, 136 countries, representing 98% of the world's shipping tonnage, are parties to the Convention.

Caribbean parties include: Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, St Kitts and Nevis, Saint Lucia, St Vincent and the Grenadines, Suriname, Trinidad and Tobago.

2.11.3.7 UNFCCC

The **United Nations Framework Convention on Climate Change** (**UNFCCC** or **FCCC**) is an international environmental treaty produced at the United Nations Conference on Environment and Development (UNCED), informally known as the Earth Summit, held in Rio de Janeiro from June 3 to 14, 1992. The objective of the treaty was to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous interference with the climate system.

The treaty itself sets no mandatory limits on greenhouse gas emissions for individual countries and contains no enforcement mechanisms. In that sense, the treaty is considered legally non-binding. Instead,

the treaty provides for updates (called "protocols") that would set mandatory emission limits. The principal update is the Kyoto Protocol, which has become much better known than the UNFCCC itself.

The UNFCCC was opened for signature on May 9, 1992. It entered into force on March 21, 1994. As of December 2009, UNFCCC had 192 parties.

Parties to UNFCCC are classified as:

- Annex I countries – industrialized countries and economies in transition
- Annex II countries – developed countries which pay for costs of developing countries
- Developing countries.

Developing countries are not required to reduce emission levels unless developed countries supply enough funding and technology. Setting no immediate restrictions under UNFCCC serves three purposes:

- it avoids restrictions on their development, because emissions are strongly linked to industrial capacity
- they can sell emissions credits to nations whose operators have difficulty meeting their emissions targets
- they get money and technologies for low-carbon investments from Annex II countries.

  Developing countries may volunteer to become Annex I countries when they are sufficiently developed.

Non-Annex 1 parties from the Caribbean include Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, St Kitts and Nevis, Saint Lucia, St Vincent and the Grenadines, Suriname, Trinidad and Tobago.

2.11.3.8 Basel Convention

The **Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal**, usually known simply as the **Basel Convention**, is an international treaty that was designed to reduce the movements of hazardous waste between nations, and specifically to prevent transfer of hazardous waste from developed to less developed countries (LDCs). It does not, however, address the movement of radioactive waste. The Convention is also intended to minimize the amount and toxicity of wastes generated, to ensure their environmentally sound management as closely as possible to the source of generation, and to assist LDCs in environmentally sound management of the hazardous and other wastes they generate.

The Convention was opened for signature on 22 March 1989, and entered into force on 5 May 1992. Of the 175 parties to the Convention, only Afghanistan, Haiti, and the United States have signed the Convention but not yet ratified it.

Caribbean parties include Antigua and Barbuda, Bahamas, Barbados, Belize, Cuba, the Dominican Republic, Dominica, Haiti, Jamaica, Guyana, St Kitts and Nevis, Saint Lucia, St Vincent and the Grenadines, and Trinidad and Tobago.

2.11.3.9 International Treaty on Plant Genetic Resources for Food and Agriculture (International Seed Treaty)

The **International Treaty on Plant Genetic Resources for Food and Agriculture**, popularly known as the **International Seed Treaty**, is a comprehensive international agreement in harmony with Convention on Biological Diversity, which aims at guaranteeing food security through the conservation, exchange and sustainable use of the world's plant genetic resources for food and agriculture, as well as the fair and equitable benefit sharing arising from its use. It also recognizes farmers' rights: to freely access genetic resources, unrestricted by intellectual property rights; to be involved in relevant policy discussions and decision making; and to use, save, sell and exchange seeds, subject to national laws.

The treaty was approved on 3 November 2001, with 116 votes and 2 abstentions (USA and Japan). By 4 November 2002, 77 countries and the European Union had signed the treaty and on 31 March 2004, on which date 13 instruments (including the European Community) were deposited with the Director-General of FAO, the date of entry into force was on 29 June 2004.

2.11.310 The Law of the Sea

The **United Nations Convention on the Law of the Sea** (**UNCLOS**), also called the **Law of the Sea Convention** or the **Law of the Sea treaty**, is the international agreement that resulted from the third United Nations Conference on the Law of the Sea (UNCLOS III), which took place from 1973 through 1982. The Law of the Sea Convention defines the rights and responsibilities of nations in their use of the world's oceans, establishing guidelines for businesses, the environment, and the management of marine natural resources. Caribbean parties include Antigua and Barbuda, Bahamas, Barbados, Belize, Cuba, the Dominican Republic, Dominica, Grenada, Haiti, Jamaica, Guyana, St Kitts and Nevis, Saint Lucia, St Vincent and the Grenadines, Suriname, and Trinidad and Tobago.

Section Three

The Biodiversity Programme and Initiatives in the OECS

3.1 Why Do We Need Protected Areas in the OECS?

The reefs, seagrass and mangrove systems of the OECS region are recognized as among the most productive in the world. It is therefore of extreme importance in the global strategy for biodiversity conservation that biodiversity within the region is managed sustainably.

The OECS sub-region also boasts high rates of biodiversity endemism (ecology that is native to this region), and in addition, provides vital habitat and nesting sites for migratory marine animals, turtles and birds.

The main ecosystems of the OECS region include:

- Dry and humid tropical forests
- Wetlands
- Beaches
- Coral reefs
- Seagrass beds
- Mangrove forests and
- Offshore islets.

Recognizing the importance of the sustainable management of its natural resources and rich biodiversity, the Governments of the OECS Participating Member States (PMS) have made significant commitments to protecting their countries' resources. Some of these include:

a. their status as signatories to a wide variety of international conventions such as the Convention on Biodiversity

b. the formulation and adoption of policy statements

c. legal and institutional instruments

d. environmental programs and projects, and

e. financial support of conservation activities through budget allocations.

At the sub-regional level, the OECS Member States in the year 2000 issued and subsequently endorsed the St. George's Declaration (SGD) of Principles for Environmental Sustainability in the OECS, which includes a commitment to the conservation of biological diversity and the protection of areas of

outstanding diversity and the protection of areas of outstanding ***scientific, cultural,*** and ***spiritual, ecological*** and ***scenic*** and ***aesthetic*** significance.

3.2 Environmental Management in the Eastern Caribbean

The Environment and Sustainable Development Unit (ESDU) of the OECS is the department within the OECS Secretariat which is responsible for the provision of natural resource and environmental management services to the Member States of the OECS.

> The ***mandate*** of the OECS-ESDU is to: "*Assist Member States in all matters pertaining to the sustainable use of natural resources to ensure the sustainability of livelihoods of the peoples of the OECS.*"
>
> The ***mission*** of the OECS-ESDU is: "*To be a dynamic facilitator for effective management of natural resources for sustainable development in the OECS sub-region through collaboration with and among Member States*".

The functions of the ESDU include proving funding for small projects that promote natural resource and environmental management solutions through the creation of local partnerships among the public sector, private sector and wider civil society. It also:

a. Implements a range of programmes in support of the natural resources and environmental management objectives of the Member States;

b. Develops harmonised policy, legal and planning frameworks;

c. Provides technical assistance to individual Member States in support of country-specific natural resource environmental management issues.

This Unit also implements the biodiversity programme on behalf of Member States of the OECS.

3.3 OECS Biodiversity Programme

Between 2004 and 2011, the OECS Secretariat implemented two major projects on biodiversity :

1. The OECS Protected Areas and Associated Livelihoods (OPAAL) Project; and
2. Protecting the Region's Biodiversity (PERB) Project

The main thrust of both projects was to promote biodiversity conservation and sustainable development. The projects demonstrate strategic consistency with approaches embodied in various strategies in the region and the world (including the OECS Development Charter, the SGD of Principles and Environmental Sustainability, and the CBD).

3.3.1 The OPAAL Project

The OPAAL project, described as the beginning of a fifteen year developmental plan, focused on the conservation of the biodiversity of global importance in the six independent states of the OECS by removing barriers to the effective management of protected areas (PAs) and through increased involvement of civil society and the private sector in the planning, management and sustainable use of these areas.

The OPAAL project represents a significant first step in fostering a number of critical common elements which could evolve over time into an integrated regional PA system. This could be achieved through:

1. Promoting the development of a common or similar institutional framework governing protected areas;
2. Strengthening of institutions with shared mandates and;
3. Supporting regional training and public awareness of the importance of conserving the region's biodiversity.

Through the OPAAL project, six protected areas received support to facilitate their development and/or improved management. These protected areas, also known as demonstration sites are as follows:

1. *North East Marine Management Area (NEMMA), Antigua & Barbuda*
2. *Cabrits National Park, Dominica*
3. *Annandale and Grand Etang Forest Reserves, Grenada*
4. *Central Forest Reserve, St Kitts and Nevis*
5. *Point Sable EnvironmentProtection Area (PSEPA), Saint Lucia*
6. *Tobago Cays Marine Park (TCMP), St Vincent and the Grenadines*

The OPAAL demonstration sites will in the long-term, reveal the benefits and opportunities for natural resources management.

The project received financial support from the World Bank which acts as the implementing agency of the Global Environment Facility (GEF), the Organization of American States (OAS) and the Fonds Francais pour l'Environment Mondial (FFEM).

3.3.2 The Protecting the Eastern Region's Biodiversity (PERB) Project

In October, 2007, the OECS entered into an agreement with the United States Agency for International Development (USAID), facilitating access to donor funds to continue work in the region on biodiver-

sity conservation. Biodiversity conservation is a priority for the USAID since healthy, bio-diverse systems form the foundation for economic and social development, - a high priority for this agency.

Under the PERB Project, six protected areas were also supported as follows:

1. *Wallings Forest and Watershed Area, Antigua*
2. *Cordrington Lagoon, Barbuda*
3. *Sandy Island/Oyster Bed Marine Protected Area, Carricou*
4. *Levera Mangrove Wetland, Grenada*
5. *Millet Nature Trail, Saint Lucia*
6. *Kings' Hill Forest, Saint Vincent*

These sites benefited from PERB interventions, through management plans, infrastructure such as signs, board walk, and interpretation centres.

3.3.3 Sites supported under the OECS biodiversity programme

The 14 sites supported so far under the OECS biodiversity initiative are considered among the best examples of protected areas in the sub-region.

3.3.3.1 The North East Marine Management Area (NEMMA) -Antigua

The North East Marine Management Area (NEMMA) is considered a refuge for endemic, rare and globally important wildlife, the area includes a large marine area on the north-east coast of Antigua that stretches from Beggar's Point in the north to Friar's Head in the south. The north east coast is known in particular for its beauty, its luminous waters and dense patches of mangrove forests, fringing reefs and limestone rock formations.

NEMMA includes 28 named islands and a number of other unnamed rocks and cays. With few exceptions, the islands and islets remain uninhabited. Visitors to NEMMA can enjoy encounters with such creates as stingrays or hawksbill turtles that enjoy its waters.

Dense dry forests provide a refuge for a number of endangered and vulnerable bird species including the brown pelican, the red billed tropicbird and the West Indian whistling duck. The islands of North Sound are also known to support at least five different species of endemic lizards, as well as the endemic and critically endangered Antiguan racer snake and the endemic ground lizard.

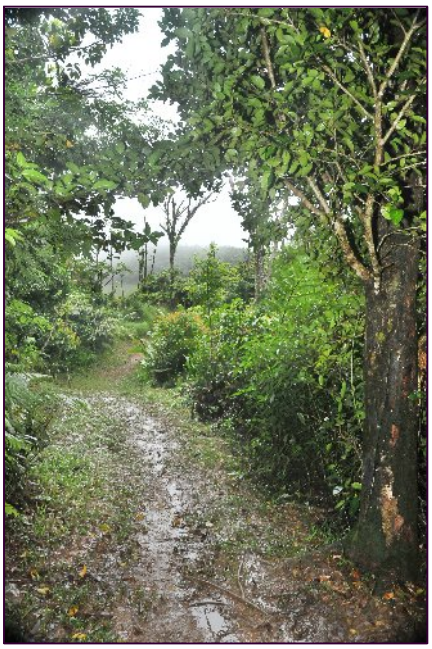
3.3.3.2 The Cabrits National Park - Dominica

The Cabrits National Park (CNP) is an area that includes both land and sea. The park measures a total area of 1,313 acres of which more than 70% is the marine and underwater park.

The CNP was established in 1986 and is located in the picturesque, rural district of Portsmouth in the north end of the country. The park's uniqueness is presented in a dramatic saddle-shaped peninsula between two towering natural rock features known as the East and West Cabrits – each of which plunge to a depth of more than 100 feet below sea level.

The park offers visitors the marvellous 18th Century Prince Rupert's Garrison, a large dry forest, a freshwater swamp and the adjacent marine wonderland, diverse in flora and fauna. The marine portion of the park supports productive coral reefs and seagrass beds and sustains important fishing and tourism livelihoods. The beaches in turn provide nesting sites for the endangered hawksbill and green turtles.

The park boasts a cruise ship berth, a visitor interpretation centre, a reception facility and a restaurant. On the eastern coastal area of the park a wetland provides refuge for migrating herons, egrets, ducks and waders. The dry scrub woodland within the park is the largest and best examples of this type of forest ecosystem in the country and has the one of the highest densities of reptiles recorded anywhere in the world with an abundance of Anolis, lizards (of many varieties), snakes (including the boa constrictor and Alsophis) and a wide variety of butterfly species.



3.3.3.3 The Grand Etang and Annandale Forest Reserves, Grenada

Grenada boasts two demonstration sites which are being supported by OPAAL. These include the Grand Etang and Annandale Forest Reserves. Both are nestled in the heart of Grenada and sit back-to-back. The two forests share a significant portion of their boundaries and together cover a land area of about 20 square kms. They contain four of Grenada's highest mountains – the Southeast Mountain (712m), Mount Sinai (700m), Mount Qua Qua (713m) as well as an unnamed peak which rises over 760m.

With the best examples of four of Grenada's six major forest communities – cloud forest, montane thicket, secondary tropical forest and lower montane rainforest – the Reserves contain some of the most ecologically diverse habitats on Grenada.

Common sights in the reserve include fascinating amphibians (the piping frog and giant toad), reptiles (the tree boa), birds (broad winged hawk – known as the 'gree-gree" -, blue-ground dove and gray kingbird) and mammals (like the nine-banded armadillo or "tattoo", the Mona monkey and Burmese mongoose).

Grand Etang's flora include towering mahogany and giant gommier trees as well as a multitude of ferns, tropical flowers, rare orchids and other indigenous plants. The two forests provide the core of the island's forest conservation, reducing the level of threat to a range of plants and animals found in their precious ecosystem.

3.3.3.4 Central Forest Reserve (CFR) - St Kitts and Nevis

The Central Forest Reserve (CFR) includes all land above 1000ft (305m) and occupies almost one quarter of the entire land mass of St Kitts. The area consists of a mountain cluster dominated by three volcanic centres and a chain of residual hills. The highest peak, Mount Liamuiga, reaches to a height of 1,156 metres and has a very wide, deep crater at its top. Slopes extend steeply down from the central peaks, and deep, steep sided openings (called ghauts) allow water from the forest to flow down towards the shimmering sea.

The largely forested area is rich in floral biodiversity, with the major ecosystems comprising rainforest, elfin woodland and palm breaks. The CFR represents the last remaining tropical forest in St Kitts and is therefore of considerable national importance, both from a cultural and biodiversity stand point. It is home to a remarkable 926 different plant species, 45 of which are considered to be endemic to the Lesser Antilles or the West Indies, and provides for the protection of vital water resources for the country.

The forest also provides habitats for birds – such as the brown trembler or the Antillean Euphonia (feeding at higher elevations), the bridled quail-dove, the lesser Antillean fly-catcher, the purple- or green-throated Carib and the Antillean crested hummingbird, among others – making it a bird lovers paradise. Hikers can tour the Forest, which consists of a criss-crossing network of nature and scenic trails.

3.3.3.5 The Pointe Sable Environmental Protection Area - Saint Lucia

The Pointe Sable Environmental Protection Area (PSEPA) is a 250 hectare stretch of land that is set along the South-eastern part of the island of Saint Lucia. The site is made up of a narrow coastal strip and a large off-shore area. "Pointe Sable" is of French origin and quite simply means 'Sandy Point".

One of the area's most dominant features is the beautiful and unspoilt Maria Islands Nature Reserve, home of two endemic reptiles – the St Lucia Whiptail (a lizard) and the Saint Lucia Racer (one of the rarest snake species in the world).

The large off-shore area encompassed within Pointe Sable includes an offshore sand band, the Savannes Bay and the Mankote mangroves (both of which have been declared as marine reserves and recognized sites under the Ramsar Convention on Wetlands), Scorpion and Maria Islands (renowned for their many endemic species) and the stunning Moule-a-Chique Penninsular.

Pointe Sable is also known for its beautiful and unspoilt beach - "Anse de Sable", which includes almost 2 km of soft, white sand and is lined with broad leaf sea grape trees, coconut palms and other beach vegetation.

A system of patch reefs extends southward from Saltibus Point to the Maria Islands and, along with extensive seagrass beds and healthy mangrove forests, provides an ideal nursing ground for juvenile lobsters and other marine species.

The area also boasts spots of historical and cultural significance to Saint Lucia: the Amerindian sites

at Pointe de Caille and Anse de Sable;, ruins originating from the sugar era and World War II, and a striking lighthouse at Moule-a-Chique.

3.3.3.6 The Tobago Cays Marine Park (TCMP)

St Vincent and the Grenadines

The Tobago Cays Marine Park (TCMP) is best described as a green string of cays and associated coral reefs located in the Southern Grenadines. Used as a film location of the deserted island scenes of "Pirates of the Caribbean", this protected Marine Park surrounds six main islands, including five uninhabited cays (Petit Rameau, Petit Tabac, Baradal, Jamesby, and Petit Bateau) in addition to the populated island of Mayreau. The 14 beaches found in the park are breathtakingly beautiful and over the years have attracted many yachters, snorkelers, divers and others in search of serenity and peace and quiet.

The area's coral reefs, dry forest and resilient beach vegetation together provide important habitats for several threatened and rare species such as the iguana, the red-necked pigeon, and the hawksbill turtle. Over 80 species of fish, sea fans and a variety of corals also live and can be seen by snorkelers and scuba divers alike.

3.3.3.7 Wallings Forest and Watershed Area, Antigua

This area is characterised by moist semi-evergreen forest, which consists of a wide diversity of tropical tree species, shrubs, lichens, ferns and orchids. It supports a wide range of fauna which includes over 31 species of resident and migratory birds. The Wallings Forest receives an annual average of 10,000 cruise and stay over visitors, along with local individuals and groups.

3.3.3.8 Codrington Lagoon, Barbuda

The Codrington Lagoon is the largest wetland in the State of Antigua and Barbuda. It is also recognised as the nesting site for the second largest colony of Magnificent Frigate Birds in the western hemisphere. The island's pristine beaches, lagoon and bird sanctuary constitute some of the most environmentally sensitive areas of Antigua and Barbuda. The Codrington Lagoon was declared a National Park on 3rd March 2005, giving this area special protection.

3.3.3.9 Levera Mangrove Wetland, Grenada

The Levera mangrove wetland is a basin mangrove system that supports a number of resident and transient birds, and a variety of aquatic species. The wetland is part of a wider proposed protected area, namely the 450-acre Levera National Park. The wetland forms part of a complex system of coastal habitats, which includes nearshore coral reefs and beaches.

3.3.3.10 Sandy Island/Oyster Bed Marine Protected Area, Carriacou

This protected area comprises an area of 787 hectares on the southwest coast of Carriacou. The area contains an extensive reef system, mangroves and seagrass beds. The mangroves are renowned as a critical habitat for a large population of mangrove oysters, and also serve as nursery grounds for several reef species. The prtotected area supports 2 species of sea turtles, namely the hawksbill turtle (*Eretmochelys imbricata*) and the green sea turtle (*Chelonia mydas*). The mangrove wetland, located along the north coastline of Carriacou, also forms part of the protected area and is home to numerous mangrove oysters.

3.3.3.11 Millet Nature Trail, Saint Lucia

The Millet Nature Trail is a protected area that is contiguous with the Central Forest Reserve and forms part of the water catchment area for the Roseau Dam, the largest in the eastern Caribbean. The area is home to a number of Saint Lucia's endemic birds, including the Saint Lucian parrot, Saint Lucian Pewee and Saint Lucian Oriole.

3.3.3.12 King's Hill Forest, Saint Vincent

The King's Hill Forest Reserve is located on the south-eastern part of Saint Vincent and occupies a total area of 20 hectares (52 acres) on a sugarloaf hill reaching a maximum elevation of 600 ft. It protects one of the oldest intact climax semi-deciduous coastal forest types in the Caribbean. The top of the hill is characterised by an almost closed canopy 60 feet above the ground, formed by trees with flat spreading crowns. Epiphytes are abundant in the crowns of the large trees and include several species of fern, orchids and bromeliads. The prickly palm (*Aiphanes erosa*) is a feature of the lower layer. The reserve is also home to a number of the island's endemic vegetative species, endemic reptiles and micro-faunal species such as spiders and scorpions.

Section Four

Improving Media Coverage Through Evidence-Based Journalism

4. Evidence-Based Journalism (EBJ) and its Role in Covering Biodiversity Issues and Events

This section outlines the principles of evidence-based journalism and emphasises its importance when covering issues related to biodiversity.

4.1 What is Evidence Based Journalism and why do we need it in this region?

Solid journalism is reporting that:

- Presents facts
- Is based on credible research
- Avoids bias
- Is mature and thorough
- Is issue-based, timely and current
- Is locally relevant; and
- Allows the reader to draw their own conclusions from what is presented.

Evidence-based research can enrich media coverage and potentially draw in wider audiences. This is absolutely critical for making biodiversity coverage dynamic and relevant. Far too often editors and media houses may perceive biodiversity as being boring or not interesting to their main audiences.

An excellent guide to evidence-based journalism (EBJ) is produced by Panos' called ***"Reporting Research: Using Evidence For Effective Journalism"*** which can be downloaded for free from www.panos.org.uk at this link: http://www.panos.org.uk/?lid=30034. This tool kit draws from many of these same Panos recommendations. According to Panos (2008) the advantages of evidence-based research are that:

- It provides vital information for audiences
- It is the basis for effective reporting that results in accountability and credibility
- It draws in new audiences and provokes responses from policy makers
- It provides sound evidence and hard-hitting facts that provoke debate, action and government accountability

Biodiversity can be viewed through a wide range of lenses and from a variety of perspectives, each of which may be of interest to slightly different audiences. Story ideas can be generated by looking at biodiversity through the lenses of:

1. Progress and updates on International Agreements on Biodiversity and related conventions
2. Current State of Caribbean Biodiversity – current threats and positive measures being under-taken
3. Governance and Biodiversity Protection
4. Sustainable livelihoods
5. Caribbean culture and biodiversity protection
6. The science of biodiversity – new research
7. The spiritual side of biodiversity protected areas
8. Disaster Risk Mitigation perspectives
9. Climate change impacts
10. Sustainable Fisheries management
11. Coastal Zone Management
12. Tourism and Biodiversity
13. Medical Science and Biodiversity
14. Agriculture and Biodiversity
15. Forestry and biodiversity protection
16. Economics and accounting biodiversity value
17. The potential of biodiversity in recreation and wellness
18. Watershed management
19. Other angles and perspectives

As a spring board or starting point for covering biodiversity issues from these perspectives, some potential lines of questioning have been prepared for each of these topics/lenses as Appendix C.

4.2 Diversifying Coverage

Media professionals do not have to be limited to traditional outlets and can share their stories through a variety of channels provided their story is credible, evidence-based, timely and news worthy. Evidence from sound research enables journalists to look outside the box and provides the ability to package the same story in a variety of ways for different audiences. This enables the journalist to

sell the story through different channels. Some of these possible options are discussed a little later on.

Panos (2010) recommends the following steps when using research as evidence to enrich coverage:

1. Gather research and data from more than one source, if possible
2. Check and verify both the status and accuracy of the data. Cross check information and do not automatically assume that academic research is impartial or that findings from biodiversity organizations are always accurate
3. Corroborate claims and allegations made by contributing sources
4. If possible, present a diversity of opinions and views and seek balance and impartiality
5. Identify sources of the research unless anonymity is requested. In these instances, accurate notes of such agreements should be made and kept on file. Make sure consent is received for inclusion of expert quotes. In the tool kit, a sample release form is included as Appendix E.
6. Be precise and accurate in presenting the research facts. If different sources of research have different findings, the range of findings should be presented, or only the source with the greatest authority to ensure that the story has credibility
7. Be unbiased and avoid speculating what the research "proves" if it does not in fact prove anything but rather **suggests** or shows **findings**. Likewise make sure that one's coverage is straightforward and a truthful representation of what the research and experts have said.

Kenneth Friedman (1999) in "***Problems in Environmental Journalism***" notes that journalists can sometimes find it hard to remain objective and can thus over simplify research findings that were not stated by the scientific researchers themselves. There is a temptation for journalists to dilute or remove uncertainty from information that scientists report when research can not yet show results in concrete terms

This point is discussed in much more detail in the 1999 book ***Communicating Uncertainty,*** by Sharon M. Friedman, Sharon Dunwoody and Carol L. Rogers. They cite research that shows that "journalists tend to transform provisional findings into certain findings" so that there is a difference between what appears in science journals and what appears in the popular press. Further research in the book indicates that journalists reporting on natural and man-made hazards tend to minimize uncertainties. This needs to be avoided when reporting on biodiversity issues.

4.3 Where can sound research and evidence be found to support reporting on biodiversity in our region?

There are several rich sources of research and information that the media can use when covering biodiversity and protected area issues. These sources include:

1. University research centres
2. International biodiversity centres and institutions

3. Individual scientists and experts
4. Professionals working in PA management from both the public and private sectors
5. Environmental consultants
6. Regional government centres
7. Environmental Non-governmental Organisations (ENGOs)
8. Donor and funding agencies
9. U.N. organizations

Several of these are listed as important sources of information and links in Appendix D.

4.3.1 Important Sources of Institutional Research and Data

Some sources of research are also valuable to the media. These include:

1. **Environment and Sustainable Development Unit (ESDU) of the OECS**. http://www.oecs.org/esdu/

2. **United Nations Environmental Program-Caribbean Environmental Program** http://www.cep.unep.org/ is the cornerstone UN organization in the region that is responsible for the LBS protocol and SPAW – two key UNEP programs that deal with biodiversity protection. Their website has a wealth of information, reports and resources that journalists can access to provide scientific depth to their stories.

3. **Centre for Resource Management and Environmental Studies (CERMES)** promotes and facilitates sustainable development in the Caribbean and beyond through graduate education, applied research, innovative projects, professional training, involvement in the national regional and global initiatives. It also provides advisory services to governments, NGOs and the private sector, offers applied consulting services related to environmental issues and conducts outreach and awareness raising. CERMES UWI – Cave Hill Barbados http://www.cavehill.uwi.edu/cermes/.

4. **University of the West Indies'**s Institute for Sustainable Development http://www.uwi.edu/isd/default.aspx also provides relevant information for journalists. Current research projects at the ISD include:

    - *Risk mapping strategies for national development, innovation and trade,*

- *Mapping Disaster Risk from natural hazards*
- *Waste Management and recycling*
- *Economic valuation of natural resources*
- *Ecosystems and risk reduction*
- *Policing strategies, and the impact and cost of crime*
- *Scenario planning, foresighting and technology road-mapping*
- *Climate change adaptation strategies*
- *Planning and regulation*
- *Urban planning and housing policy*
- *Integrated Assessment and Integrated Policy Development*

5. CARIBSAVE is a partnership between the Caribbean Community Climate Change Centre (CCCCC) and the University of Oxford**.** The CARIBSAVE Partnership addresses the impacts and challenges surrounding climate change, tourism, the environment, economic development and community livelihoods across the Caribbean Basin. The region is one of the most vulnerable in the world to the impacts of climate change including sea level rise, biodiversity loss and impacts on human health. The CARIBSAVE program includes research studies and activities that impact biodiversity protection. http://www.caribsave.org/

6. The Nature Conservancy's (TNC) Caribbean programme (http://www.nature.org/wherewework/caribbean/) is also another key partner in biodiversity protection and its site also provides important sources of information for journalists to utilize. Recently, TNC has launched its Caribbean Challenge program which is encouraging countries to expand their marine protected area systems to include at least 20 percent of their near shore area by 2020; to develop conservation finance mechanisms (such as park entrance and user fees, and concessions) to create sustainable funding for national protected area systems and to promote strategies to help corals adapt to increasing stresses caused by climate change. For more information check: http://www.nature.org/ourinitiatives/regions/caribbean/caribbeanchallenge/howwework/Caribbean-Challenge-How-it-Works.xml

7. **The Caribbean Natural Resources Institute (CANARI)** http://www.canari.org/ is a non-profit organisation whose geographic focus is the islands of the Caribbean but its research findings are often relevant and disseminated to the wider region. It's mission is to: "to promote equitable participation and effective collaboration in managing the natural resources critical to development." CANARI seeks to achieve its mission through:

- applied and action research on, and analysis, monitoring and evaluation of, innovative policies, institutions and approaches to participation and governance;

- sharing and dissemination of lessons learned, including capacity building; and
- fostering partnerships, particularly those that build on regional assets and talents and contribute to closer regional cooperation.

8. The International Council for Science's Regional Office for Latin America and the Caribbean is a source of biodiversity knowledge, and recently completed an assessment for Latin America and the Caribbean". http://www.icsu-lac.org/rc_lac/rclac6/Final%20Report_biodiversity_final_completo.pdf

9. The Latin America and Caribbean page on the SciDevNet http://www.scidev.net/en/latin-america-and-caribbean/ is also very useful. It provides several resources for journalists in particular.

10. Conservation International (CI) applies innovations in science, economics, policy and community participation to protect the Earth's richest regions of plant and animal diversity and demonstrate that human societies can live harmoniously with nature. Founded in 1987, CI works in more than 40 countries on four continents to help people find economic alternatives without harming their natural environments. For more information about CI, visit www.conservation.org.

11. The World Conservation Union (IUCN) The World Conservation Union is the world's largest conservation network and brings together 84 States, 108 government agencies, more than 800 non-governmental organizations (NGOs), and some 10,000 scientists and experts from 181 countries in a unique worldwide partnership. The Union's mission is to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable. www.iucn.org. The **IUCN's Red List** of endangered species is a particularly important resource http://www.iucnredlist.org/

12. **The Global Marine Species Assessment (GMSA)** The Global Marine Species Assessment began in late 2005 and is based in the Department of Biological Sciences at Old Dominion University. This Assessment is providing the first global review of the conservation status of every marine vertebrate species, and of selected invertebrates and plants. They are compiling and analyzing all existing data on approximately 20,000 marine species, and will determine the risk of extinction according to the IUCN Red List Categories and Criteria. Visit www.sci.odu.edu/gmsa

13. **The World Database on Protected Areas (WDPA)** http://www.wdpa.org provides a complete list of the world's PAs including those in the Caribbean.

4.3.2 Additional Valuable Related Links and Sources of Research

In addition to the above sites that the media can access for research on biodiversity, the following sites are also extremely valuable.

- Convention on Biodiversity http://www.cbd.int/ has the most information on biodiversity, globally.
- Green facts: http://www.greenfacts.org/en/biodiversity/index.htm; http://www.greenfacts.org/en/biodiversity/l-2/6-conserve-biodiversity.htm#0 \
- World Resources Institute - http://www.wri.org/ecosystems

Appendix D includes all of these same links as a quick reference guide.

4.4 A Roster of Regional Experts

In this tool kit, a roster of 33 experts from some of the above organisations has been compiled and is included as Appendix B. The roster includes their names, organizations, as well as their main area of expertise regarding biodiversity and/or protected areas. They each bring an appreciation of biodiversity protection from a particular perspective and will offer different views and sources of research for the journalist to consider.

Each of these individual experts have agreed to be contacted by the media on an as needs basis according to their specific area of speciality and have agreed to be quoted as a representative of their organisation. As mentioned, in Appendix C a set of guiding questions is also provided as a guide for contacting these persons or others if you so choose.

4.5 When Are Biodiversity Issues News Worthy? - A Look at the Environmental Calendar

Given the wide variety of angles from which biodiversity stories and issues can be covered, it should be clear that they can be made newsworthy just about any time of the year. In fact, biodiversity will be newsworthy for the next 10 years since 2011 to 2020 has been dedicated as the "**United Nations Decade of Biodiversity**". There are however particular times when journalists may be looking for stories and when it is easier to pitch stories to editors. See Environmental calendar for these calendar dates.

Event	Calendar Date	Angle
World Wetlands Day	February 2	Wetland biodiversity, RAMSAR progress
World Forest Day	March 21	Forest Biodiversity, Carbon Sequestration, Accounting of Biodiversity
World Water Day	March 22	Fisheries, marine biodiversity, coastal zone issues
World Meteorological Day	March 23	Climate change, weather impacts
Caribbean Spiny Lobster Closed Season	April 1 to June 30 (but may vary in specific states)	Endangered species, livelihoods
World Health Day	April 7	Medicinal value of biodiversity, cultural and spiritual values and mental health
Earth Day	April 22	All angles
International Compost Awareness Week	2nd week of May	Human and behaviour change,
World Migratory Bird Day	9 to 10 May	RAMSAR progress
International Day for Biological Diversity	May 22	All angle, current status of progress
Disaster Preparedness Month	June 1 to 30 (may vary in specific states)	Climate change angle, disaster reduction
World Environment Day	June 5	All perspectives, milestone achievements
World Oceans Day	June 8	Fisheries, marine angle, coastal zones
World Day to Combat Desertification	June 17	Forestry angle
Hurricane Season	June 1 to November 30	Climate change, disaster reduction
World Population Day	July 11	Livelihoods, health, well being, culture

Event	Calendar Date	Angle
International Ozone Day	September 16	Climate change
International Coastal Clean-up	3rd Saturday in September	Marine, tourism angle
Maritime Week	Check if this is applicable to your state	Marine, fisheries
World Tourism Day	September 27th	Tourism, sustainable live-lihoods
International Day for Natural Disaster Reduction	1st Monday in October	Climate change
World Food Day	October 16	Agricultural issue
Earth Science Week	3rd week of October (check in your state if applicable)	Science of biodiversity, progress made
GIS Day	3rd week of November (check in your state if applicable)	Science of biodiversity, progress made
International Day for Prevent-ing Exploitation of the Environ-ment in War and Armed	November 6	Governance, conflict

4.6 Maximizing Your Resources to Get the Story – Creating a Network of "Eye" Reporters

In today's digital world, "eye" reporters are making a major impact in the way news is covered glob-ally. Many large international media houses like CNN and BBC rely on eye reporters to get breaking news as it happens for two main reasons. Journalists cannot be in all places at all times and sometimes there are real difficulties covering news if it happens in remote places. As the people who are there, eye reporters provide the immediacy that is the very stuff of "breaking news". Secondly, because eye reporters are often being directly affected by whatever event is taking place, they not only report the facts as they happen, but also present a human face and voice for the story.

Building a network of credible, trustworthy eye reporters is critical. Media managers in the OECS should explore creating a solid eye reporter network of individuals who are credible and eager to keep their "eyes" open for stories when they unfold. Doing this will take a two-way relationship of trust between the media organisation and/or the journalist and the community people you invite to be part of your network.

Eye reporters may also need basic training in reporting, digital phone photography & video recording, as well as how to post items on your FaceBook page or send them to you. This requires an investment on your part as well as theirs.

In the U.K., the organization **Community News: Reporting by the People** http://www.citizenseye.org/about/ works in partnership with the Leicshester Mercury newspaper to training community eye reporters on a regular basis through various workshops and training sessions. Their model is a useful approach to consider for any media house. They offer short courses not only in "eye" reporting, but also for:

1. Setting up social media channels
2. Making short films
3. Taking photos
4. Writing news articles, and
5. How to develop broadcast skills so community people can get their voices heard

4.7 What if You Can't Sell Your Story to Your Editor?

Sometimes reporters have a hard time getting stories about the environment published or broadcast because they have a tough time pitching their stories to their own editors. In 2007, a panel from the **Society of Environmental Journalists** (SEJ) discussed these challenges and came up with a set of tips for convincing editors that there is demand for environmental stories. Among their tips:

Box 4.1

Anisa Abid, Knight Center for Environmental Journalism.

http://ej.msu.edu/selling.php) .

In the workplace:

- List people who have expressed concern for environmental issues. They will be good to go back to when you need a different perspective
- Your job title doesn't have to contain the word 'environmental' for you to report on the environment. Use whatever title allows you to cover that niche. Good reporting on the environment is done by business and development reporters and others
- If your co-workers get promotions and their reporting style is popular, watch how they work and apply those techniques to the environment beat

Box 4.1, Continued: Covering stories

- Look for opportunities to do local stories and interview local researchers
- Don't differentiate coverage of an environmental story from other subjects. The term 'environmental' tends to typecast you and send away your audience
- However, when your coverage is solid, the political associations of "environmental" tend to vanish and the story is heard
- Use small stories about the environment to remind readers of broader issues. A feature on a local farmer's market can remind people of the environmental benefits of purchasing locally grown products
- Watch the agendas of industry and report what they are saying/doing and the opposing views
- Don't hesitate to say, "Prove it!" You'll get through a lot of sticky areas and editors will respect you
- To overcome an apathetic audience, try piggy-backing on popular stories
- Consider placing a story about the shrinking arctic ice caps after a movie review of Happy Feet
- Get to know your audience. The environmental story may be on the inside, but first and foremost it's a people story
- Don't conclude your story at the beginning. Organize it with the description first, explanation second, and analysis third.

4.8 Free Lancing Options

In addition to promoting stories through existing media houses in the OECS and wider Caribbean region, as a journalist you should also be thinking of freelancing and selling your stories independently. In this section of the tool kit we have compiled a variety of resources and options for you to check out if you want to go this route.

One of these is the ***Knight Centre for Environmental Journalism*** http://ej.msu.edu/resources.php. The Knight Centre has a variety of tip sheets to make your stories marketable and to support environmental journalists and will also be interested in the stories you produce, if done well.

Box 4.2 Freelancing Tips

From The Knight Centre for Environmental Journalism

http://ej.msu.edu/resources.php

Think visually – Suggest art. Even better, take your own pictures and include them in your query. Photos are critical and are more likely to be published than entire stories or news releases.

Think fresh – "Your job as a freelancer is to solve editors' problems. Think of what's new, what's fresh," says Hal Clifford, executive editor of Orion Magazine. "If you can solve my problem, I'll come back to you again and again."

Know what's been published – Don't make the mistake of pitching a story that the magazine published last month. Be familiar enough with the publication you're querying to suggest a unique article. Read what's been written before and think creatively.

Localize – Readers can comprehend a large-scale issue when you show how it affects them. How does global warming affect local strawberry farmers ? Your job is to ask, "What are the visible effects of the [larger] process," asks Dennis Dimick, executive editor of National Geographic Magazine. A local story with national applications is ideal.

Break it down – Are you writing about a big, clunky environmental issue? Use one character as an example and to invite readers into the story. If you're interested in stream restoration, focus on the initiatives and characters in a specific watershed.

Sections are your friend – Magazines with sections like a science column or a news page can be a great place for freelancers. Pitches tailored for niche pages have a better chance of getting published than general queries.

Split it up – If you have to spend a lot of time writing an article, rewrite and repackage it for a variety of publications to make as much money as you can.

Provide a solution – It's no secret environmental journalists deal with depressing subjects. A story that suggests solutions shines brighter than other queries.

Policy – Government and state initiatives are complicated, boring and tricky to pitch. Find a character/source to narrate the story and build scenes. If you can show the effect of policy through the eyes of the people on the ground, you'll also connect with the editor reading your pitch

Another source, as mentioned, is the "***Society for Environmental Journalists***" - http://www.sej.org/ which both buys and provides excellent resources for environmental journalism.

4.8.1 Blogging about Biodiversity

You can also consider starting your own blog about biodiversity issues and can sell stories to other blog sites that are interested in the Caribbean precisely because it is the world's 5th biodiversity hotspot.

An example of how to make money as environmental blogger with your own blog site is that of Adam Vaughan's **Freelance and Environment and Technology Blog**: http://adamvaughan.name. His site covers a wide variety of topics and issues and is regularly quoted in mainstream press.

You can also sell stories to environmental blogs that are recognized as being the top sites on biodiversity. Several exist. The **Biodiversity Media Alliance** site vets a wide variety of blogs on biodiversity. Getting on their list gives your own blog a strong stamp of approval. http://biodiversitymedia.ning.com/

The **Pimm Group** http://thepimmgroup.org/ has also ranked a number of biodiversity blogs from a wide range of perspectives and regions and the Caribbean is not yet well represented on their site.

Under the Banyan http://underthebanyan.wordpress.com/ is another site that has assessed a variety of biodiversity blogs that you can consider pitching and selling stories to as well.

A search of "biodiversity" on the site **"Networked Blogs"** http://networkedblogs.com/search?q=biodiversity also gives a long list of biodiversity blogs that currently exist – some good and some without a lot of followers.

Word Press will help you to set up and start your own blog, if you wish. Check **http://en.wordpress.com/tag/caribbean-environment/**

4.8.2 Selling Stories to Trade Sites

Outside of setting up your own blog or your own page on FaceBook you can also consider selling stories about biodiversity in the Caribbean to a whole range of trade magazines both within and outside of the region. Many of these listed here are travel magazines but some are newspapers in the home countries that many of our tourists come from. Most included here are interested in both stories and photographic submissions.

1. HighBeam Research: http://www.highbeam.com/doc/1G1-45755592.html
2. Island vibes - http://www.islandvibesmag.com/caribbean-coral-reef-erosion/
3. Beat http://findarticles.com/p/articles/mi_m1594/is_1_16/ai_n8686455/
4. The Pelican UWI http://sta.uwi.edu/pelican/archives/jd06/article1.asp
5. Earth Conscious E-magazine http://earthconsciousmagazine.com/unep-report-addresses-environmental-degradation/
6. "Adventures Great and Small" gives a long list of travel sites looking for new stories.
7. http://www.great-adventures.com/know/plan/publish.html and suggests exploring the following magazines and e-sites:
8. Caribbean and Cruise Travel Magazine accepts travel stories with or without photographs about the Caribbean and Caribbean area cruises. http://www.visitorinfo.com/caribbean/travel.htm
9. Caribbean Beat, the inflight magazine for Caribbean Airlines, needs lively, entertaining writing combined with a serious and informative approach, and top-quality photos and illustrations. http://www.meppublishers.com/resources/index.php?pid=4007
10. The editors of Caribbean Travel and Life are always open to ideas from writers. They are looking for behind-the-scenes stories, off-the-beaten-path destinations and ahead-of-the-curve knowledge about the Caribbean. http://www.caribbeantravelmag.com/article/Writers-Guidelines
11. Continental, the inflight magazine of Continental Airlines, is geared toward frequent travelers, whether they're traveling for business or leisure. http://magazine.continental.com/archive/content/media-kit/editorial/guidelines.html
12. DestinWorld.com aims to provide quality travel literature and publications by enlisting travellers from around the globe who research and provide content, which is as up-to-date as possible and always available. http://www.destinworld.com/contribute.htm

13. Discover Diving features articles and photographs of interest to diving enthusiasts. Safety, health, techniques, travel narratives and other related matters such as underwater photography are welcome. Guidelines for submission are provided upon request. Write to: Discover Diving, PO Box 83727, San Diego, CA 92138, USA, Tel: (619) 697-0703,Fax: (629) 697-0123

14. Dive Travel accepts articles and photographs about diving destinations worldwide. Safety, health, techniques and environmental issues are also featured. Send your inquiries and submissions to: editors@divetravel.com

15. E, The Environmental Magazine accepts articles for their 'Going Green' section which highlights trends and destinations in the eco-tourism industry. http://www.emagazine.com/view/?1512

16. enRoute, Air Canada's inflight magazine accepts queries for long and short travel features. http://enroute.aircanada.com/

17. Escape From America magazine wants stories, photographs and articles about living abroad and unusual lifestyles. http://www.escapeartist.com/Article_Submission/

18. Travel writers' guidelines for The Globe and Mail newspaper. http://www.theglobeandmail.com/life/article821526.ece

19. GoNOMAD is always looking for talented, dedicated travel writers, photographers and researchers. http://www.gonomad.com/corp/writerguidelines.htm

20. Grand Tour: The Journal of Travel Literature accepts submissions covering a wide range of travel stories. Inquiries may be addressed to: Jennifer Fisher, Grand Tour, PO Box 66, Thorofare, NJ 08086, USA

21. Healthcare Traveler encourages submission of manuscripts for consideration. http://healthcaretraveler.modernmedicine.com/healthcaretraveler/static/staticHtml.jsp?id=46815

22. Literary Traveler is seeking travel articles that capture the literary imagination. http://www.literarytraveler.com/contact/writers_guidelines.aspx

23. Become a Lonely Planet author. http://www.lonelyplanet.com/jobs/work-at-lonely-planet-authors/

24. National Geographic Adventure Magazine covers the world of adventure, from exciting travel destinations and outdoor pursuits to accounts of cutting-edge expeditions and profiles of modern-day explorers. Writers' and photographers' queries are accepted. National Geographic Traveler Magazine accepts writers' queries and photographic portfolios for consideration. http://traveler.nationalgeographic.com/writer-guidelines.html

25. New Age Travel is looking for non-fiction articles about purposeful travel to sacred sites and places of power. http://www.newagetravel.com/guides.shtml

26. Outdoor Photographer accepts queries for article and photograph submissions. http://www.outdoorphotographer.com/submissions.html

27. Open Travel Info offers a place for people to submit their adventure travel articles and photographs with full control over the layout, allowing you to drive visitors to your own website. http://www.opentravelinfo.com/add_stuff

28. Outpost is a Canadian travel publication that steers away from the cozy and coddled to take a more adventurous and realistic look at the world and how people travel through it. http://www.outpostmagazine.com/contributor.php

29. Planeta.com accepts articles about environmental issues and/or ecotravel in the Americas. http://www.planeta.com/ecotravel/search/guide.html

30. Pology, a magazine dedicated to travel and cultural exploration, is currently accepting submissions from both writers and photographers. http://pology.com/guidelines/

31. Scuba Diving magazine accepts members' trip reports as well as submissions of underwater photographs for their online gallery.

32. Sea Kayaker Magazine publishes their Photography Guidelines and Writers' Guidelines online.

33. Skywest Magazine strives to inform more than 3 million passengers about unique lifestyle, business and recreational opportunities in destinations served by Delta Connection and United Express. http://www.skywestmagazine.com/EDIT/editGuidelines.htm

34. SOA Photo sponsors photo galleries for selected professional and advanced amateur photographers as well as a monthly photo contest. http://www.soaphoto.com/info/howitworks.asp

35. Sunset Magazine, Western America's largest-circulation regional magazine, is looking for well-written travel stories that offer their readers reliably satisfying travel experiences that can be successfully accomplished in a day or weekend outing, or included as part of a vacation. http://www.sunset.com/

36. The Intrepid Traveler is actively seeking new manuscripts and book proposals for our expanding line of award-winning travel books. http://www.intrepidtraveler.com/writers-guidelines.html

37. Submission guidelines for travel articles are also possible with The New York Times. http://www.nytimes.com/ref/travel/SUBMISSION.html

38. The Travel Itch is looking for non-fiction stories on international, Canadian and BC travel destinations. http://www.thetravelitch.ca/guidelines.pdf

39. Travel article submission guidelines for The Washington Post travel section. http://www.washingtonpost.com/wp-dyn/content/article/2005/10/31/AR2005103100911.html

40. Travel + Leisure Magazine accepts queries for editorial and photography submissions. http://www.travelandleisure.com/contact

41. Traveler's Tales accepts submissions of personal, non-fiction travel essays. Visit their site for guidelines and remuneration information. http://www.travelerstales.com/guidelines/

42. Travel Insights strives to give amateur travel writers a voice. It welcomes submissions about travel anywhere in the world, generally looking for articles with a sharp focus rather than guidebook or diary accounts. http://www.travelinsights.org/Submission.html

43. Travelmag is a comprehensive forum for real travel writing by real travellers. Submissions of travel tales and photos are welcome. http://travelmag.co.uk/cat_index_16.shtml/

44. Travel Notes is looking for original travel content and photographs. http://www.travelnotes.org/travel-write/writers_guidelines/

45. Travel Post Monthly has been developed to give a forum for publication to the International Travel Writers & Photographers Alliance (ITWPA) members and other freelance writers and photographers to showcase their work. But that's not its only purpose, you see, behind the scenes the publication works as a wire service for editors that are looking for articles and images to publish in their own newsletters and magazines. Writer's Guidelines http://www.travelpostmonthly.com/writers_guidelines/ and Photographer's Guidelines http://www.travelpostmonthly.com/photographers_guidelines/ are available.

46. TravelWise welcomes submissions of articles, tips, advice and ideas from readers. http://www.travel-wise.com/about.aspx

47. 21st Century Adventures seeks non-fiction travel articles and photographs that focus on exotic locations and/or adventure travel. http://www.21stcenturyadventures.com/guidelines.html

48. Wanderlust, the magazine for people with a passion for travel, aims to cover all aspects of independent, semi-independent and special-interest travel. Guidelines for writers and photographers are available online Caribbean Travel and Life http://www.caribbeantravelmag.com/

49. Condenast Traveler http://www.condenet.com/mags/trav/

50. Islands Magazine http://www.islands.com/

51. Vacations Magazine http://www.vacationsmagazine.com/

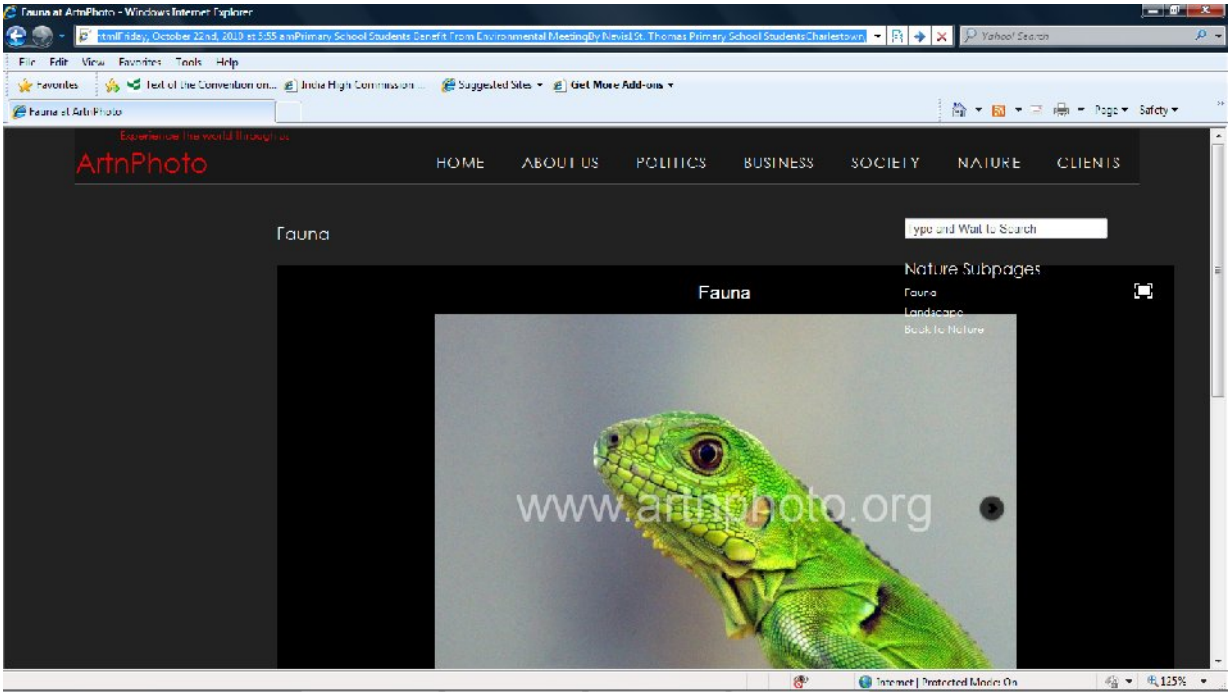
52. Caribbean Business http://www.caribbeanbusinesspr.com/

53. The Bahamas Weekly http://www.thebahamasweekly.com/publish/caribbean-news/American_Media_Group_to_forge_partnership_with_Caribbean_Journalists13181.shtml

54. Caribbean360 is also always looking for stories. http://www.caribbean360.com/

4.8.3 Selling Photographs

Another very powerful way to cover biodiversity issues is through photo-journalism. The same outlets looking for stories are often looking for strong photographs that can make an impact. Consider the work of Edward Troon and Ranu Abhelakh from Suriname. Their photo website (www.artnphoto.org) offers a variety of amazing photographs for sale on several topics, including nature and biodiversity.



4.8.4 Radio

Also consider selling your stories to radio stations abroad that are looking for stories from the Caribbean. One example of an independent radio site that focuses on the environment and biodiversity, and which is interested in stories from the region, is the "Living on earth Radio" site http://www.loe.org/

4.9 Getting News Out - Tips for Managers of Protected Areas

Journalists are not the only biodiversity actors who need to cover biodiversity. PA managers also need to do a better job of getting the word out to the public. Tips for them are included here. Like much of the rest of the tool kit, the media tips for environmental managers and scientists are drawn from other sources including Maxwell's (2000) book. Additional sources are also included, specifically:

1. The CBD/IUCN/CEC (2007) "Communication, Education and Public Awareness (CEPA) Toolkit for National Focal Points and NBSAP Coordinators http://www.cepatoolkit.org/
2. Brown, N.A. 2009. ***Addressing Climate Change in the Caribbean: A Tool Kit for Communities.*** Christian Aid (Caribbean) and CANARI http://www.canari.org/documents/CAtoolkitEnglish.pdf
3. David Meerman Scott's (2010) "The New Rules of Marketing and PR", 2nd Edition. John Wiley and Sons, Inc., Hoboken, New Jersey. http://www.davidmeermanscott.com/documents/New_Rules_of_PR.pdf

PA and environmental professionals need to check all of these sources out for themselves.

4.9.1. What Is News? What Makes a Story News Worthy?

Before PA managers can write news releases that the media will actually pick up and publish, they first need to know what "news" is and what makes a story news worthy. So what exactly is news? Maxwell (2000) offers two definitions:

1. News is information about some change in, or interruption of the 'normal course' of events, something unexpected. News must be new.
2. News is information people need to make rational decisions in their lives. News should be useful in some way.

Traditional Criteria for Assessing Newsworthiness (Maxwell, 2000:39):

1. **Significance** – may have effects or repercussions on the lives of a significant number of people (importance, weight) – what is the degree of impact that will result from the event?
2. **Unusual/Phenomenal Events** – those that are strange, bizarre, out of the ordinary, etc. has it happened be for?
3. **Timeliness** – or immediacy – freshness, unexpectedness
4. **Prominence** – is a celebrity involved? A well-known person? A significant person (such as a government official?) – but note, this does not mean that trivia associated with prominent people counts as news
5. **Proximity** – people are interested in things that happen near to them. (good example in the book…)
6. **Conflict** – events that reflect extreme differences or clashes are news – they represent a diversion from the 'ordinary' workings of life or because they symbolize struggle
7. **Human interest** – people's stories make news…. People are moved to laughter, tears, outrage, sympathy, and to wonder and pity at stories about ordinary people and how they do or do not cope with unexpected situations
8. **Topicality** – if there is buzz or sizzle about a particular topic – and many people are talking about it – it's news
9. **Audience** – different people are interested in different things – what is news for some is not news to others… so stories need to be pitched to different audiences in different ways
10. **Policy** – need to know how different media define themselves and what their policies are – tabloids won't publish the same thing that a 'newspaper of record' will
11. **Pressure** – news is sometimes repressed or magnified depending on the views of publishers, advertisers, governments or political parties
12. **Competition** – if another medium is selling more stories on certain topics (sports, celebs, etc.) competitors may increase the number of similar stories in their features just to compete

Maxwell (2000:37) reminds us that people will feel news is relevant if it:

- affects them personally or people nearby, their neighbours, family and friends
- concerns people they know or know about
- is about dramatic human events, conflicts, quarrels, murders, wars, love affairs, dramatic rescues, terrible accidents
- is about dramatic events such as hurricanes, earthquakes, and droughts
- is about the organization of their lives, government action – new regulations, new laws
- evokes emotion – sympathy disgust or pity, or
- is so odd it makes them curious, wonder or marvel.

Box 4.3 Maxwell (2000:42-43)

Analyzing Newsworthiness: A Checklist of "news values"

- Is the news 'good' or 'bad'?
- What makes the news 'good' or 'bad'?
- How significant are the good or bad effects?
- Is anyone in danger? Will anyone benefit?
- Who is in danger? Who will benefit?
- How serious is the danger? How much good will be done?
- Does it affect your audience personally, their families and friends, their neighbours, people they know, people they know about and are concerned about?
- Will some people or class of people be more affected than others?
- Does it affect their chances for survival?
- Will it mean lifestyle changes for anyone?
- What sorts of changes?
- For whom?
- Does it affect their jobs, their homes, their health, their wealth, their comfort or general feeling of well-being and security, their short-term or long-term prospects?
- How soon will the facts in your story begin to affect identifiable people or classes of people?

Maxwell (2000:9) also advises what the media look for in a story:

> *"all mass media will pick up and carry news that they consider is important. What you consider important may not be what the news media consider to be important. If their ideas of what is important is different from yours, perhaps you might need to try and change their minds. What is ultimately important in any news room is what the editor in charge of that news room considers to be important."*

He further suggests that there are two main ways to go about changing their minds:

1. Make yourself and your cause so important to so many people that you cannot be ignored;
2. Become known to the media (especially the editors)

Since 2000 when Maxwell's book was first published, and especially with the advent of the internet, a lot has changed on the media landscape, and new social media have made a profound difference in how "news" gets picked up. PA managers need to exploit new social media opportunities as much as possible.

According to Scott (2010) before the web, these old rules applied:

- In the old days, a press release was actually a release to the press.
- Before the Web, everybody knew that the only reason you issued a press release was to get the media to write about you.
- Nobody saw the actual press release except a handful of reporters and editors.
- You had to have significant news before you were allowed to write a press release.
- A release had to include quotes from third parties, such as analysts and experts.
- The only way your buyers would learn about the press release's content was if the media wrote a story about it.
- The only way to measure the effectiveness of press releases was through "clip books," which collected every time the media deigned to pick up your release.

4.9.2 New Rules

In his best selling book, Scott (2010) emphasizes the importance of web-based promotion as the best way to word out about what you doing. The Web, Scott argues, has turned all kinds of organizations into self-publishers that deliver useful information directly onto the screens of their audiences.

Box 4.4

David Meerman Scott's (2010) "The New Rules of Marketing and PR

1. Determine who your audience is and communicate with them directly.
2. Write your own content. Content generates action.
3. Set up a twitter account and regularly send out tweets about what is happening and what you are doing. Invite the media to follow you on twitter. That is an easy way for them to follow what you are doing. The more they hear about what you are doing, the more they are likely to want to connect with you.
4. Don't wait on the media to write about you. Connect directly with the audiences you want to reach. Get out there. Get your protected area on Face Book, LinkedIn and My Space, Flicker and other sites.
5. If you don't have your own website, get a page on one someplace else. Make sure the site has personality and is dynamic and easy to browse.
6. Share photos and videos of what you are doing on YouTube, Flicker and Vimeo.
7. Blog about your site and make sure you are included on other sites that list blogs about biodiversity and protected areas.
8. Sign up on related chat rooms and message boards and other on-line meeting places. Join discussions and share what you are doing.
9. Sign up for listserves.
10. Use social bookmarking sites like Digg and Delicious to allow your own audiences to suggest content and to vote on what makes your activities interesting.
11. Create your own wiki page.
12. If the reporters you want to establish a relationship with have their own blogs – read them regularly and interact with them. You'll be in the minds on a regular basis as a result.
13. Find bloggers that are interested in what you are doing and send them news releases regularly.
14. Generate your own audio podcasts

Box 4.4 Continued

The new rules of press releases

- Don't just send press releases when "big news" is happening; find good reasons to send them all the time.
- Instead of just targeting a handful of journalists, create press releases that appeal directly to your audiences. Journalists will follow the buzz….
- Write releases replete with keyword-rich copy. Use your audiences' words and use action words.
- Create links in releases so audiences check out your website and other sites that you want them to visit.
- Optimize press release delivery for searching and browsing.

4.9.3 Let the world know about your expertise. Reach your audience directly

Scott further argues that PA managers should send out press releases on a regular basis, not only when big news happens. He argues that, "you are what you publish. Write about anything that you are doing ."

- **CEO speaking at a conference?** *Write a release.*
- **Win an award?** *Write a release.*
- **Have a new take on an old problem?** *Write a release.*
- **Publish a white paper?** *Write a release.*
- **Having a field trip?** *Write a release.*

4.9.4 To bypass the media, think like they do

For Scott (2010) good, well-written content is critical, so PA managers need to apply the same rules for evidence-based journalism in their own work that journalists do. They should develop quarterly or annual "content" plans or strategies based on what they know they will be doing and what activities they will be having in upcoming weeks. "Decide what it is you want your audiences to know in each case. Later you can figure out how to say it," he advises.

4.9.5 Publish your press releases through a distribution service

The best way to publish press releases is to simultaneously post a release to your own Web site and send it to one of the press release wires. In the Caribbean, Panoscope is one useful distribution list to be part of.

The Association of Caribbean Media Workers (ACM) also has a service. Scott points out that by using a distribution service your release will be sent to the online news services such as Yahoo!, Google, Lycos, and others such as:.

- **PRWeb** www.prweb.com
- **PRNewswire** www.prnewswire.com

All you have to do to get your press releases to appear on the online news services, Scott suggests, is to get your release onto a basic press release "*circuit*" offered by a press release distribution service.

4.9.6 Use RSS feeds to display your press releases

Many press release distribution services, Scott further suggests, also offer RSS *(Really Simple Syndication)* feeds , which in turn makes them available to other sites, blogs and individuals. This means that every time you publish a press release with RSS it will be seen by thousands of people who have subscribed to the RSS content feeds. Online news services such as Google News have RSS feed capability too, allowing people to receive feeds based on keywords and phrases. So each time your release includes a word or phrase of importance, people will receive your press releases directly and in near real-time. For more information, check: http://www.whatisrss.com/

4.9.7 Simultaneously, publish your press releases to your Web site

Scott next recommends that you post your own press releases to an easy to find section of your own Web site and keep it alive for as long as the content is appropriate. For many organisations, the press release section of the Web site is one of the most frequently visited parts of the site. "Check out your Web site statistics," he argues, "you may be amazed at how many visitors are already reading your press releases. When the press release is posted on your site, search engine crawlers will find the content, index it, and rank it based on words and phrases and other factors. To achieve high rankings, pay attention not only to the words and phrases, but also to other search engine optimization factors such as the URL used, the words in the headline and first paragraph."

4.9.8 Optimize your press releases for searching and for browsing

Another very important recommendation that Scott (2010) makes is to design content as browser friendly as possible. Check out what questions are being used in search engines. This will attract people who are looking for what you have to offer. A second way, Scott suggests, is to generate content by telling people something that they do not already know. He stress that this "is why **browseability** is so important; it allows users to "stumble" across useful information they didn't know they were looking for.

4.9.9 The importance of links in your press releases

A further tip Scott emphasises is to always create links from your press releases to content on your website. In this way, each time your press release is posted on another site, such as an online news site, the inbound link from the online news site to your Web site helps to increase the ranking of your site. So when your press release has a link to your site, you actually increase traffic to your own website.

4.9.10 Become a Trusted Media Source

Another good strategy for getting better coverage from journalists, Maxwell argues, is for PA managers and experts, is to become a good, respected and reliable "source" for the media directly. According to Maxwell, (2000:12) "Journalists judge their sources in the same way they are trained to pay attention to people who are not likely to mislead them… the credibility of a story depends very much on the credibility of who is telling the story." Tell your story as factually and as completely as you can, Maxwell suggests. "Journalists tend to trust people who":

1. Know what they are taking about
2. Are straightforward, having no hidden agendas
3. Are generous in sharing their knowledge
4. Are willing to explain exactly why they cannot say more than they need to
5. Are neither overbearing nor ingratiating.

4.9.11 Use Photographs

When you send out news releases directly to the media, make sure you always include a powerful photograph and a strong headline. If the story can't be published in full, your photograph might be and people will still know what you are doing.

4.9.12 Invite the Media to Regular Events

Always invite the media to any events and activities that you are doing, especially for any special environmental calendar dates. Draw their attention to the importance of the date and let them know that you have a story for them. Invite key people for them to interview and make sure they are there. Pick the media up if necessary to make sure they get there.

4.9.13 Be available to Radio and Television Shows – Call in Regularly

Get your staff invited to radio and television talk shows, especially around key events and dates. Your chances of getting on the show will also be better if you call in often and make yourself a regular guest.

4.9.14 Thank the Media (Written, Banquets and Awards)

Always thank the media who do come to your events and use your releases. Even better, host an annual media thank you breakfast or event and commend the coverage they give you. An environmental media award is one way to do this.

Box 4.5—A checklist for PA managers

Adapted from Maxwell (2000:11)

Who are you trying to reach?

What is the size of your audience?

- Where do they live?
- Where do they work?
- What sort of work do they do?
- Why are they likely to be interested in what you have to say?
- Is your message likely to be thought important by them? If not, why not?
- How will it affect them?
- How will you know whether or not your message has reached most of the people you want it to reach?
- What kind of response do you hope to get?
- What kind of response do you expect to get?
- How will you measure the response?

What do you do next?

APPENDIX A - GLOSSARY

This glossary includes the most accurate definitions of key terms related to biodiversity and protected areas, and is compiled from several different sources as below:

1. **The United Nations Environment Program – World Conservation Monitoring Centre**

   http://sea.unep-wcmc.org/reception/glossaryA-E.htm;

2. **The Business and Biodiversity Organisation, http://www.businessandbiodiversity.org/glossary.html and**

3. **The IUCN Glossary on Biodiversity http://www.iucn.org/iyb/about/bio_glossary**

The official definitions of each term are included but where simpler terms are available, these are also suggested for your consideration. Journalists are advised to use their own best judgement and to avoid reductionism wherever possible.

TERM	DEFINITION	SUGGESTED WORD
Accession	A sample of a plant or animal variety collected at a specific location and time; may be of any size. In plant and animal collecting, an accession is a record in a database that represents an item in a collection. It can be a description of the item, or a sample of it. Some accessions are stored in protected "banks" at low temperatures to keep them viable.	variety
Acclimation	A response by an organism that enables it to tolerate a change in a single factor (e.g. temperature) in its environment under laboratory conditions.	
Acclimatization	The process by which an organism adjusts to changes in its environment. In acclimatization the adjustment is made under natural conditions when the organism is subject to the full range of changing environmental factors.	
Acid Deposition	A complex chemical and atmospheric phenomenon that occurs when emissions of sulfur and nitrogen compounds and other substances are transformed by chemical processes in the atmosphere, often far from the original sources, and then deposited on earth in either wet or dry form. The wet forms, popularly called "acid rain", can fall as rain, snow, or fog. The dry forms are acidic gases or particulates.	Acid Rain
Adaptation	Adaptation is the evolution process whereby a population becomes adjusts and becomes better suited to its habitat. The adjustments may occur by natural selection, as individuals with favorable genetically acquired traits breed more prolifically than those lacking these traits (genotypic adaptation), or they may involve non-genetic changes in individuals, such as physiological modification (e.g. acclimatization) or behavioral changes (phenotypic adaptation).	

TERM	DEFINITION	SUGGESTED WORD
Aerobic	Life or processes that can occur only in the presence of oxygen.	
Agricultural Pollution	The liquid and solid wastes from all types of farming, including runoff from pesticides, fertilizers and feedlots; erosion and dust from plowing, animal manure and carcasses and crop residues and debris.	Farm waste / agricultural waste
Algae	Simple rootless plants that grow in sunlit waters in proportion to the amount of available nutrients. They can affect water quality adversely by lowering the dissolved oxygen in the water. They are food for fish and small aquatic animals.	
Algal Bloom	An episode of excessive nutrient content in a river, stream or lake, which causes a proliferation of living algae. The end result is a depletion of much needed oxygen in the water. Excessive algae blooms can lead to the death of the fish and aquatic organisms of the given waterbody through oxygen deprivation called a "fish kill".	Excess algae
Alkaline	The condition of water or soil that contains a sufficient amount of alkali substance to raise the pH above 7.0.	
Alien species	A species occurring in an area outside of its historically known natural range as a result of intentional or accidental dispersal by human activities (also known as an exotic or introduced species).	Non indigenous, non native
Anaerobic	Life or processes that occur in the absence of oxygen.	Life without oxygen
Anthropogenic	Relating to, or resulting from the influence of human beings on nature	Man-made, made by humans, caused by human beings
Aquatic Assemblage	A group of interacting organisms in a given waterbody, for example; fish assemblage or a benthic macroinvertebrate assemblage.	Water animals, aquatic animals
Aquatic Biota	Collective term describing the organisms living in or depending on the aquatic environment.	
Aquatic Community	Association of interacting assemblages in a given waterbody, the biotic component of an ecosystem (see also aquatic assemblage).	
Aquatic Plants	Plants that grow in water either floating on the surface, growing up from the bottom of the body of water or growing under the surface of the water.	Water plants
Aquifer	An underground bed or stratum of earth, gravel or porous stone that contains water.	Underground water source
Attribute	A measurable component of a biological system	Life feature
Background Extinction Rate	Background extinction rate varies, but estimates based on the fossil record suggest that in mammals and birds, one species has been lost every 500 to 1,000 years.	Extinction rate

TERM	DEFINITION	SUGGESTED WORD
Bacteria	Single-celled microorganisms that lack chlorophyll. Some bacteria are capable of causing human, animal or plant diseases, others are essential in pollution control because they break down organic matter in the air and water.	
Bioaccumulants	Substances that increase in concentration in living organisms as they take in contaminated air, water, or food because the substances are very slowly metabolized or excreted. (See: biological magnification.)	Bio wastes (?)
Biochemical Oxygen Demand (BOD)	A measure of the amount of oxygen consumed in the biological processes that break down organic matter in water. The greater the BOD, the greater the degree of pollution.	
Biodegradable	Capable of decomposing rapidly under natural conditions.	
Biodiversity	The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.	Biological diversity, Life forms
Biological control, biocontrol	The use of natural enemies to cope with pests and pathogens in, especially, food crops. The natural enemies can be bacteria, fungi, parasites, and predator insects. Their use keeps the enemy populations under control. Growers who use biocontrol don't really want to wipe out the enemies completely, because that would leave nothing for the biocontrol agents to eat.	Natural pest control
Biological Integrity	The ability of an aquatic ecosystem to support and maintain a balanced, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of natural habitats within a region.	
Biological Monitoring or Biomonitoring	Use of a biological entity as a detector and its response as a measure to determine environmental conditions. Toxicity tests and ambient biological surveys are common biological monitoring methods.	
Bioregion	Any geographical region characterized by a distinctive flora and fauna (see also ecoregion).	Eco-region
Biological resources	Includes genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity.	Eco-resources

TERM	DEFINITION	SUGGESTED WORD
Biological Survey or Biosurvey	Collecting, processing, and analyzing a representative portion of the resident (terrestrial or aquatic) community to determine its structural	Bio Survey
Biosafety	Steps taken in the use of biotechnology and the creation of genetically altered organisms	
Biotechnology	Originally, this meant the use of technology — pretty much any technology — in connection with living organisms. Today it is more likely to refer to the techniques of molecular biology (the study of biology at the molecular level) and DNA technology to create plants and animals	Bioengineering
Biotic functions	The functions performed by the living organisms in a specific area, which can be as small as a mud puddle or as big as a mountain range. Those organisms are referred to as the region's biota	Life functions
Biome	A major portion of the living environment of a particular region (such as a forest or grassland), characterised by its distinctive vegetation and maintained by local climatic conditions. OR Entire community of living organisms in a single	Eco-region
Bioregion (bioregional planning)	A territory defined by a combination of biological, social, and geographic criteria, rather than geopolitical considerations; generally, a system	Eco-region
Biosphere reserves	Established under UNESCO's Man and the Biosphere (MAB) Program, biosphere reserves are a series of protected areas linked through a global network, intended to demonstrate the relationship between conservation and devel-	
Biota	The living organisms of a region.	Plants and animals in a specific area
Biotic	Pertaining to any aspect of life, especially to characteristics of entire populations or ecosystems.	living
Biotic Community	A naturally occurring assemblage of plants and animals that live in the same environment and are mutually sustaining and interdependent.	Life community
Brackish	Mixed fresh and salt water	
Breed	A group of animals or plants related by descent from common ancestors and visibly similar in most characteristics. Taxonomically, a species	
Buffer	A solution or liquid whose chemical makeup neutralizes acids or bases without a great change in pH.	
Buffer Strips	Strips of grass or other erosion-resisting vegetation between or below cultivated strips or fields.	Border

TERM	DEFINITION	SUGGESTED WORD
Buffer zone	The region near the border of a protected area; a transition zone between areas managed for different objectives.	Border
Captive breeding	The propagation or preservation of animals outside their natural habitat, involving control by humans of the animals chosen to constitute a population and of mating choices within that population.	
Carbon cycle	The cycle created by the movement of the essential element carbon. Great quantities of carbon reside (are sequestered) in forests, stored in the tissues of plants. (The Amazon basin holds about 20 percent of Earth's forest-based carbon.) When a forest is cut down or burned, carbon escapes into the atmosphere, disrupting an important global balance. This distortion of the carbon cycle has been named as a major factor in global warming and climate change	The breakdown and reuse of natural carbons
Carrying Capacity	The maximum number of people, or individuals of a particular species, that a given part of the environment can maintain indefinitely.	Maximum number
Center of origin	The place where an organism, usually a plant, is believed to have originated	Places of origin
Channel	A stream or riverbed	Water channel
Channelization	The straightening and deepening of streams to permit water to move faster, to reduce flooding or to drain marshy acreage for farming. However, channelization reduces the organic waste assimilation capacity of the stream and may disturb fish breeding and destroy the stream's natural beauty	Straightening and deepening of streams and rivers
Chlorophyll	A chemical mixture or compound found in the chloroplasts of plant cells and gives plants their green color. Plants use chlorophyll to convert the energy of sunlight to food in the process known as photosynthesis	Energy food source for plants
Classification, classify	The sorting of organisms, both plant and animal, into categories, based on their relationships. The groups are named taxa (plural) or taxon (singular), then kingdom (for animals) or division (for plants), then classes, then families, then genus, then species	sort
Clean Water Act (CWA)	An act passed by the U.S. Congress to control water pollution (formerly referred to as the Federal Water Pollution Control Act of 1972). Public Law 92-500, as amended. 33 U.S.C. 1251 et seq.	
Climax community	The end of a successional sequence; a community that has reached stability under a particular set of environmental conditions.	Stable Life form

TERM	DEFINITION	SUGGESTED WORD
Clone	An individual organism with an identical genetic makeup to another individual. Clones descend from an individual parent. Several of the foods we eat (potatoes, bananas, plantains, citrus, pineapples) are clones. When a clone contains a variant from the original, which can result from a change in a single gene, it is called a mutant.	Genetically identical copy
Coliform Organisms	Microorganisms found in the intestinal tract of humans and animals. Their presence in water indicates fecal pollution and potentially adverse contamination by pathogens.	Micro-organisms in animal and human faeces
Co-management	The sharing of authority, responsibility, and benefits between government and local communities in the management of natural resources.	
Community	A group of ecologically related populations of various species of organisms occurring in a particular place and time; An integrated group of species inhabiting a given area; the organisms within a community influence one another's distribution, abundance, and evolution. (A Human Community is a social group of any size whose members reside in a specific locality.)	Group
Complementarity	The concept of achieving conservation efficiently by ensuring that a set of areas is assembled with due regard to the additional species that each brings into the network.	Balance
Conservation	The management of human use of the biosphere so that it may yield the greatest sustainable benefit to current generations while maintaining its potential to meet the needs and aspirations of future generations: Thus conservation is positive, embracing preservation, maintenance, sustainable utilisation, restoration, and enhancement of the natural environment.	
Conservation of biodiversity	The management of human interactions with genes, species, and ecosystems so as to provide the maximum benefit to the present generation while maintaining their potential to meet the needs and aspirations of future generations; encompasses elements of saving, studying, and using biodiversity.	
Convention on Biodiversity	The international convention to conserve biodiversity	
Consumer	A heterotrophic organism in a food chain that ingests other organisms or organic matter. An individual or household that uses resources, goods and services generated within a community.	Eater, resource user

TERM	DEFINITION	SUGGESTED WORD
Coral Bleaching	The death of corals due to anthropogenic or natural variations in the reef environment including sunlight exposure.	
Country of origin of genetic resources	The country which possesses genetic resources	Country of origin
Criteria	Statements of the conditions presumed to support or protect the designated use or uses of an ecosystem such as a waterbody. Criteria may be narrative or numeric.	Conditions for protection
Critical habitat	A technical classification of areas that refers to habitats essential for the conservation of endangered or threatened species. The term may be used to designate portions of habitat areas, the entire area, or even areas outside the current range of the species.	
Cross	The mating of a female and male of an animal or plant species. If the parents are unrelated, the offspring is called a hybrid	Mating between species; hybrid
Cultivar	A cultivated variety (genetic strain) of a domesticated crop plant. International term denoting certain cultivated plants that are clearly distinguishable from others by one or more characteristics and that when reproduced retain their distinguishing characteristics	variety
Current	The segment of a stream, river, or other waterbody that moves with a velocity much greater than the average of the rest of the water	River flow /stream flow
Cutting	Plant piece (stem, leaf, or root) removed from a parent plant that is capable of developing into a new plant.	Plant sample
Deforestation	The clearing of forested land to make way for agriculture or settlement or to produce lumber	Cutting of forests
Desertification	The conversion of once-productive land into desert. The process can be brought on by natural events, such as drought, or by human inter-	
Designated Use	Classification specified for each type of habitat describing the level of protection afforded by the regulatory programs. The designated use established by the state set forth the goals for restoration and/or baseline conditions for maintenance and prevention from future degradation..	
Dredging	A method for deepening streams, swamps or coastal waters by scraping and removing solids from the bottom. The resulting mud is usually deposited in marshes in a process called filling. Dredging and filling can disturb natural ecological cycles. For example, dredging can destroy oyster beds and other aquatic life; filling can destroy the feeding and breeding grounds for many fish species.	

TERM	DEFINITION	SUGGESTED WORD
Domesticated or cultivated species	Species in which the evolutionary process has been influenced by humans to meet their needs.	
Domestication	The adaptation of an animal or plant to life in intimate association with and to the advantage of man.	Taming of wild animals by humans
Ecology	A branch of science concerned with the interrelationship of organisms and their environment.	Study of life forms
Ecological Integrity	The condition of an unimpaired ecosystem as measured by combined chemical, physical (including physical habitat), and biological attributes.	
Eco-regions	A relatively homogeneous ecological area defined by similarity of climate, landform, soil, potential natural vegetation, hydrology, or other ecologically relevant variables (see also bioregions).	
Ecosystem	The interacting system of a biological community and its non-living environment.	
Ecosystem diversity	The variety of ecosystems that occurs within a larger landscape, ranging from biome (the largest ecological unit) to microhabitat.	
Ecotourism	Travel undertaken to witness sites or regions of unique natural or ecologic quality, or the provision of services to facilitate such travel.	Nature tourism
Effluent	A discharge of pollutants into the environment, partially or completely treated or in its natural state. Generally used in regard to discharges into waters.	Waste, especially waste dumped into water systems such as rivers and streams
Emission	A discharge of pollutants into the environment, partially or completely treated or in its natural state. Generally used in regard to discharges into the air.	Waste released into air, air pollution
Endangered species	A technical definition used to refer to a species that is in danger of extinction throughout all or a significant portion of its range. IUCN, The World Conservation Union (1994) definition, defines species as endangered if the factors causing their vulnerability or decline continue to operate.	
Endemic	Restricted to a specified region or locality.	Found only in a specific area
Endemism	The occurrence of a species in a particular locality or region.	The extent to which a species is found only in a single area
Environment	The sum of all external conditions and influences affecting the life, development and, ultimately, the survival of an organism.	
Environmental Impact Assessment (EIA)	A method of analysis which attempts to predict the likely repercussions of a proposed major development (usually industrial) upon the social and physical environment of the surrounding area.	
Environmental indicator	Something (in some cases a living organism) that serves as an indicator of the health of an ecosystem, community of organisms, or defined area.	

TERM	DEFINITION	SUGGESTED WORD
Equilibrium theory	A theory of island biogeography which maintains that greater numbers of species are found on larger islands because the populations on smaller islands are more vulnerable to extinction. This theory can also be applied to terrestrial analogues such as forest patches in agricultural or suburban areas or nature reserves where it has become known	A theory of island biodiversity
Erosion	The wearing away of the land surface by wind or water. Erosion occurs naturally from weather or runoff but is often intensified by	
Estuaries	Areas where the fresh water meets salt water. For example, bays, mouths of rivers, salt marshes and lagoons. Estuaries are delicate ecosystems; they serve as nurseries, spawning and feeding grounds for a large group of marine life and provide shelter and food for	
Eutrophication	The normally slow aging process by which a lake evolves into a bog or marsh and ultimately assumes a completely terrestrial state and disappears. During eutrophication the lake becomes so rich in nutritive compounds, especially nitrogen and phosphorus, that algae and other microscopic plant life become superabundant, thereby "choking" the lake, and causing it eventually to dry up. Eutrophication may be accelerated by human activities	Nutrient choking of lakes
Evaporation	The changing of a substance from a liquid to a gas; evaporation generally occurs when the molecules of a liquid are broken apart by heat. In the water cycle, water evaporates from land, plants and waterbodies and enters	Change of a liquid to a gas
Evolve, evolution	"Evolve" comes from a Latin word meaning "to unroll," and "evolution" refers to the change of species, which could be thought of	Change and adaptation of species
Exotic species	An organism that exists in the free state in an	Non-native species; foreign species

TERM	DEFINITION	SUGGESTED WORD
Extinct	As defined by the IUCN, extinct taxa are species or other taxa that are no longer known to exist in the wild after repeated search of their type of locality and other locations where they were known or likely to have	No longer living species
Fauna	Organisms of the animal kingdom.	animals
Fecal Coliform Bacteria	A group of organisms common to the intestinal tracts of man and of animals. The presence of fecal Coliform bacteria in water is an indicator of pollution and of potentially dangerous bacterial contamination.	Bacteria found in human waste
Feral	A domesticated species that has adapted to existence in the wild state but remains distinct from other wild species (ex: deer in	Non-native domestic animals that now live in the wild
Fish Kill	When aquatic life within a river, lake, or	Mass killing of fish (through pollution, chemi-
Floodplain	A strip of relatively level land bordering a stream or river subject to flooding. Floodplain build up over time by deposits of sediment	Level land alongside streams and rivers
Flora	Organisms of the plant kingdom	Plants
Fungi	Small, often microscopic plants without chlorophyll. Some fungi infect and cause disease in plants or animals; other fungi are useful in stabilizing sewage or in breaking down wastes for compost.	Plants that do not live on sunlight
Game Fish	Those species of fish sought by sports fisherman (trout, bass, salmon, etc). Game fish are usually more sensitive to environmental changes and water quality degradation than "rough" fish	Fish hunted by sports fishermen
Gene	A chemical unit of hereditary information that can be passed from one generation to another.	DNA
Gene bank	A facility established for the ex situ conservation of individuals (seeds), tissues, or reproductive cells of plants or animals.	Storage Facility for Plant and Animal genetic material.
Genetic diversity	The variety of genes within a particular spe-	
Genetic erosion	A decline of genetic diversity. It can be brought on by the destruction of forests or pollution of waterways or any of many other	Genetic decline, decline of genetic quality or integrity
Genetic material	Any material of plant, animal, microbial or other origin containing functional units of heredity.	DNA
Gene pool	The collection of genes in an interbreeding	Variety of genes within a specific population
Genetic resources	Genetic material of actual or potential value.	Genes recognized to have value
Genus	A category of biological classification ranking	Gene type
Grassroots (organisations or movements)	People or society at a local level, rather than at the centre of major political activity. The ordinary people in a community.	

TERM	DEFINITION	SUGGESTED WORD
Groundwater	The supply of freshwater under the earth's surface in an aquifer or soil that forms the natural reservoir for man's use	Underground water supply
Groundwater Runoff	Groundwater that is discharged into a stream channel as spring or seepage water.	
Habitat	The environment in which an animal or plant lives, generally defined in terms of vegetation and physical features.	Area in which a plant or animal lives
Habitat change	Change in the local environmental conditions in which a particular organism lives.	
Heredity	The movement of an organism's characteristics (such as eye color, size, and the like) from one generation to a succeeding generation. The transmission is done by genes and chromosomes.	Passing on of genes
Hotspot	An area on earth with an unusual concentration of species, many of which are often endemic to the area.	Area with high numbers of endemic species
Hybrid	An offspring of a cross between two genetically unlike individuals.	Cross
Hydrologic Cycle	The movement of water in all of its phases (gas, liquid, solid) from the Earth to the atmosphere and back to the Earth	Water cycle
Hydrology	The science dealing with the properties, distribution and circulation of water	Science of the water cycle
Impact	Change in the chemical, physical (including habitat) or biological quality or condition of a location or area as a result of external influences.	Change caused by an external source
Invasive Alien Species	A species introduced outside its normal distribution. Its establishment and spread modify ecosystems, habitats, or species	Foreign or non-native species that may threaten native species.
Infiltration	The flow of a fluid into a substance through pores or small openings. Commonly used in hydrology to denote the flow of water into soil material.	Flow of a liquid into other material
Irrigation	Applying water or wastewater to land areas to supply the water and nutrient needs of plants.	Watering of plants and crops
Inbreeding	Mating of close relatives resulting in increased genetic uniformity in the offspring.	Mating among relatives
Indicator species	A species whose status provides information on the overall condition of the ecosystem and of other species in that ecosystem.	

TERM	DEFINITION	SUGGESTED WORD
Indigenous people	People whose ancestors inhabited a place or country when persons from another culture or ethnic background arrived on the scene and dominated them through conquest, settlement, or other means and who today live more in conformity with their own social, economic, and cultural customs and traditions than with those of the country of which they now form a part.	Native peoples
Intellectual Property Rights (IPR)	Rights enabling an inventor to exclude imitators from the market for a certain period of time.	Rights for the protection of ideas and knowledge
Interspecies	Between different species	Among species
Intrinsic value	The value of creatures and plants independent of human recognition and estimation of their worth.	
Introduced species	See 'Alien species'.	Non-native species
Invertebrate	Animals that have no backbones. They include many microscopically small creatures such as nematodes, as well as spiders, earthworms, and many insects.	Animals without backbones
In vitro	(Literally 'in glass'). The growing of cells, tissues, or organs in plastic vessels under sterile conditions on an artificially prepared medium.	
Keystone species	A species whose loss from an ecosystem would cause a greater than average change in other species populations or ecosystem processes.	
Lagoon	A shallow pond where sunlight, bacterial action, and oxygen work to purify wastewater; also used for storage of wastewater or spent nuclear fuel rods. Shallow body of water, often separated from the sea by coral reefs or sandbars.	
Limnology	The study of the physical, chemical, meteorological and biological aspects of fresh waters.	Study of fresh water
Littoral	Of, relating to, or existing on a shore	On-shore
Land Cover	The physical coverage of land, usually expressed in terms of vegetation cover or lack of it. The human use of a piece of land for a certain purpose (such as irrigated agriculture or recreation) influences land cover	Soil cover; plants covering an area of land
Landrace	Primitive or antique variety of plants or animals usually associated with traditional agriculture and often highly adapted to local conditions. They are well-adjusted to their environment, and they contain much biological diversity.	A local variety of plant or animal developed over thousands of years by farmers selecting for favourable characteristics within a species. Groups of traditional farming varieties grown in one place over years and years
Land Quality (LQ)	A complex attribute of land, which acts in a manner distinct from the actions of other land qualities in its influence on the suitability of land for a specified kind of use.	

TERM	DEFINITION	SUGGESTED WORD
Land Utilisation Type (LUT)	Described in terms of necessary inputs and expected results, based on a number of key attributes obtained from land use data; produce, capital input, labour input, farm size, land tenure, technical know how, level of mechanism etc. LUTs relate to the physical social and economic conditions of the area and according to the development of objectives; description of the key attributes, reflecting biological, socio-economic and technical aspects of the production environment and which are relevant to the productive capacity of a LMU.	Best land use type
Marsh	A type of wetland that does not accumulate appreciable peat deposits and is dominated by herbaceous vegetation. Marshes may be either fresh or saltwater, tidal or non-tidal. (See: wetlands.)	Swamp, bog, wetland
Marine Protected Area (MPA)	An area of sea (or coast) especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.	Marine park
Micro-organisms	In practice, a diverse classification of all those organisms not classed as plants or animals, usually minute microscopic or submicroscopic and found in nearly all environments. Examples are bacteria, cyanobacteria (blue-green algae), mycoplasma, protozoa, fungi (including yeasts), and viruses.	Non-plant or animal living organisms such as bacteria, fungi and viruses
Mitigation	Measures taken to reduce adverse impacts on the environment.	Steps taken to reduce harm
Monoculture	A planting, usually large, of a single species of food crop. Such a setup may be efficient, allowing the farmer to plant, fertilize, and harvest on a set schedule, but it leaves the entire field vulnerable to attack by a single variety of pest or pathogen.	Single crop farming
Multiple use	An on-site management strategy that encourages an optimum mix of several uses on a parcel of land or water or by creating a mosaic of land or water parcels, each with a designated use within a larger geographic area.	Mixed land or water management strategy
Native	A plant or animal indigenous to a particular locality.	
Native species	Plants, animals, fungi, and microorganisms that occur naturally in a given area or region.	
Neutralization	Decreasing the acidity or alkalinity of a substance by adding alkaline or acidic materials, respectively	Balancing of pH values in a substance
Nitrate	Plant nutrient and inorganic fertilizer that enters water supply sources from septic systems, animal feed lots, agricultural fertilizers, manure, industrial waste waters, sanitary landfills and garbage dumps	Source of nitrogen that enters a water supply

TERM	DEFINITION	SUGGESTED WORD
Nitrification	The process whereby ammonia in wastewater is oxidized to nitrite and then to nitrate by bacterial or chemical reactions.	
Non-Governmental Organisation (NGO)	A non-profit group or association organised outside of institutionalised political structures to realise particular social objectives (such as environmental protection) or serve particular constituencies (such as indigenous peoples). NGO activities range from research, information distribution, training, local organisation, and community service to legal advocacy, lobbying for legislative change, and civil disobedience. NGOs range in size from small groups within a particular community to huge membership groups with a national or international scope.	
Nutrients	Any substance assimilated by living things that promotes growth.	Any substance that feeds plant or animal growth
Nutrient Pollution	Contamination of water resources by excessive inputs of nutrients. In surface waters, excess algal production is a major concern.	Water contamination; water pollution
Organic Chemicals/Compounds	Animal or plant-produced substances containing mainly carbon, hydrogen, nitrogen, and oxygen	Organic substances
Organic Matter	Carbonaceous waste contained in plant or animal matter and originating from domestic or industrial sources.	Carbon waste from farming or industry
Organism	Any living thing. All organisms are comprised of one or more cells, eat, and reproduce.	Life form
Parasite, parasitize, host, vector, saprophyte	A parasite is an organism that lives at the expense of another organism. A host is the organism on which the parasite lives. A vector is an organism that transmits a parasite. A certain species of mosquito, for example, is the vector for the tropical disease malaria; the human who is infected by the parasite and its vector is the host. A tick is a parasite that receives its nutrition from human and other animal blood. A saprophyte is an organism that lives off dead or decomposing material.	Parasite: An organism that lives off of another; Host: An organism that feeds another; Vector: An organism that carries another; Saprophyte: An organism that feeds on dead matter
Participatory Rural Appraisal (PRA)	Also known as Rapid Rural Appraisal, PRA is a relatively new and different approach for conducting action-oriented research in developing countries. PRAs are used to help involve villagers and local officials and leaders in all stages of development work, from the identification of needs and decision making to the assessment of completed projects. The term can be used to describe any new methodology which makes use of a multidisciplinary team.	Data collection using local people and participatory methods, qualitative data collection
Patent	A government grant of temporary monopoly rights on innovative processes or products.	

TERM	DEFINITION	SUGGESTED WORD
Pathogen	A disease causing microorganism, bacterium or virus. An organism (such as some bacteria and viruses) that causes disease	A disease causing organism
Percolation	The passage of liquids, powders or small particles through a porous substance. Water percolates through soil in the water cycle.	The seepage of water or powders through porous matter
Pesticide	An agent used to control pests. This includes insecticides for use against harmful insects; herbicides for weed control; fungicides for control of plant diseases; rodenticides for killing rats, mice, etc.; and germicides used in disinfectant products, algaecides, slimicides, etc. Some pesticides can contaminate water, air or soil and accumulate in man, animals and the environment, particularly if they are mis-used. Certain of these chemicals have been shown to interfere with the reproductive processes of predatory birds and possibly other animals	A chemical substance used to control insect pests
Pests	Creatures, often insects, that humans consider harmful. Bugs that compete with farmers for their crops are invariably called "pests."	Harmful organisms
pH	A measure of the acidity or alkalinity of a material, liquid or solid. pH is represented on a scale of 0 to 14 with 7 representing a neutral state, 0 representing the most acid and 14, the most alkaline	A measure to assess levels of acidity or alkanlinity
Photosynthesis	The process in plants, usually employing chlorophyll, that uses light to turn inorganic molecules into organic ones.	Processing of sunlight (chlorophyll) by plants for food
Point Source	Origin of a pollutant discharge from a discrete conveyance typically thought of as an effluent from the end of a pipe.	Origin of a pollutant
Pollutant	Any introduced gas, liquid or solid that makes a resource unfit for a specific purpose.	
Pollution	The presence of matter or energy whose nature, location or quantity produces undesired environmental effects	
Population	A group of individuals with common ancestry that are much more likely to breed with one another than with individuals from another such group. An aggregate of individuals of a biological species that are geographically isolated from other members of the species and are actually or potentially interbreeding	
Potable Water	Water suitable for drinking or cooking purposes from both health and aesthetic considerations	Drinking water, water safe for human use and consumption
Precipitation	Water droplets or ice particles- in the form of rain or snow, condensed from atmospheric water vapor	Rain or snow fall
Predator	An animal that obtains its food primarily by killing and consuming other animals.	Meat eaters, carnivors

TERM	DEFINITION	SUGGESTED WORD
Protected Area (PA)	An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.	Eco park
Raw Sewage	Untreated domestic or commercial waste water	Human or industrial waste water
Rehabilitation	The recovery of specific ecosystem services in a degraded ecosystem or habitat.	Recovery of ecosystems and habitation
Reservoir	A pond, lake, tank or basin, natural or man-made, used for the storage, regulation and control of water.	Water storage area
Restoration	The return of an ecosystem or habitat to its original community structure, natural complement of species, and natural functions.	Return to natural habitat state
Runoff	The portion of rainfall, melted snow or irrigation water that flows across ground surface and eventually is returned to streams. Runoff can pick up pollutants from the air or the land and carry them to the receiving waters	
Salinity	The degree of salt in water	
Sedimentation	Letting solids settle out of wastewater by gravity during treatment.	Settling of solids in waste water
Sediments	Soil, sand, and minerals washed from land into water, usually after rain. They pile up in reservoirs, rivers and harbors, destroying fish and wildlife habitat, and clouding the water so that sunlight cannot reach aquatic plants. Careless farming, mining, and building activities will expose sediment materials, allowing them to wash off the land after rainfall.	Solids and minerals from water runoff
Seepage	Water that flows through the soil.	
Sewage	The total of organic waste and waste water generated by residential and commercial establishments.	Waste water
Silt	Finely divided particles of soil or rock. Often carried in cloudy suspension in water and eventually deposited as sediment.	
Species	A group of organisms capable of interbreeding freely with each other but not with members of other species.	
Species diversity	The number and variety of species found in a given area in a region.	
Species richness	The number of species within a specified region or locality.	
Streambed	The channel through which a natural stream or river runs or once ran through.	
Stressors	Physical and biological factors that adversely affect living organisms.	Stress factors / agents
Subspecies	A distinct form or race of a species.	
Succession	The more or less predictable changes in the composition of communities following a natural or human disturbance.	Expected changes following an impact

TERM	DEFINITION	SUGGESTED WORD
Surface Runoff	Precipitation or irrigation in excess of what can infiltrate the soil surface and be stored in small surface depressions; a major transporter of nonpoint source pollutants.	
Surface Water	All water naturally open to the atmosphere (rivers, lakes, reservoirs, ponds, streams, impoundments, seas, estuaries, etc.) and all springs, wells, or other collectors directly	
Sustainable development	Development that meets the needs and aspirations of the current generation without compromising the ability to meet those of future generations.	
Sustainable use	The use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future	Use of today's natural resources without jeopordizing future use
Systematics	The study of the historical evolutionary and genetic relationships among organisms and of their phenotypic similarities and differences.	History of biodiversity relationships
Taxonomy	The classification of animals and plants based upon natural relationships.	
Threatened species	A species that is likely to become endangered within the foreseeable future, throughout all or a significant portion of its range. These species are defined as vulnerable taxa by the	
Topography	The physical features of a surface area including relative elevations and the position of natural and man-made features. The graphic depiction of the shapes and features, and especially the elevations, of an area. This is usually depicted on maps and charts, using printed lines that represent the contours of the surface. Biodiversity is strongly linked to the elevation of the environment, so a knowledge of topography is essential to research-	
Toxicity	The quality or degree of being poisonous or harmful to plant or animal life	Level of toxins or poisons
Toxic Pollutants	Materials that cause death, disease, or birth defects in organisms that ingest or absorb them. The quantities and exposures necessary to cause these effects can vary widely.	Substances that cause illness or death
Transpiration	The loss of water vapor by plants through tiny holes in their leaves called stomata. In some areas, an actively growing plant may transpire as much as ten times the amount of water it can hold at once within a twenty-four	

TERM	DEFINITION	SUGGESTED WORD
Tributary	A stream or other body of water, surface or underground, which intermittently contributes its water in small quantities to another larger stream or body of water.	Branch of a water body
Urban Runoff	Storm water from city streets and adjacent domestic or commercial properties that carries pollutants of various kinds into the sewer systems and receiving waters.	
Vector	See "parasite"	
Viable	Living. Viability refers to the chances an organism has of remaining alive	
Virus	A microbe that comprises nucleic acid (DNA or RNA), usually surrounded by a coating of protein. Viruses infect other organisms and thus can control the organisms' lives, sometimes for the better and often for the worse	
Waste Water	Water carrying wastes from homes, businesses and industries that is a mixture of water and dissolved or suspended solids	
Water Cycle	See hydrologic cycle.	
Water Pollution	The addition of sewage, industrial wastes or other harmful or objectionable material to water in concentrations or in sufficient quantities to result in measurable degradation of water quality	
Water Quality Standards	The standards prescribe the use of the water body and establish the water quality criteria that must be met to protect designated uses.	
Water Table	The level or depth below the ground that is saturated with water.	
Water Vapor	Water diffused as a gas in the atmosphere	steam
Watershed	The area of land from which rainfall drains into a stream or other water body. Watersheds are also sometimes referred to as drainage basins or drainage areas. Ridges of higher ground generally form the boundaries between watersheds. At these boundaries, rain falling on one side flows toward the low point of one watershed, while rain falling on the other side of the boundary flows toward the low point of a different watershed.	
Wetlands	Area that is saturated by surface or ground water with vegetation adapted for life under those soil conditions, as swamps, bogs, fens, marshes, and estuaries.	Swamp, bog, marsh
Wild species	Organisms captive or living in the wild that have not been subject to breeding to alter them from their native state.	Never altered species
Wildlife	Living, non-domesticated animals.	Wild animals

Appendix B

Roster of Experts

The following individuals

have agreed to be contacted by the media

for the areas of expertise indicated.

Name & Title:	Contact email(s):
Alessandra Vanzella-Khouri Senior Programme Officer	avk@cep.unep.org
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Area of Expertise associated with Biodiversity Protection:

International Agreements on Biodiversity and related conventions

Current State of Caribbean Biodiversity – current threats and positive measures being undertaken

Governance and Biodiversity Protection

Climate change impacts

Coastal Zone Management

Tourism and Biodiversity

Economics and accounting biodiversity value

Biography and Professional Background:

Alessandra Vanzella-Khouri, Colombian marine microbiologist for the last twenty-five years has been working on coastal and marine environmental issues in Latin America and the Caribbean and currently as Programme Officer for the Caribbean Environment Programme (CEP) of the United Nations Environment Programme (UNEP) in Kingston, Jamaica. Through her projects and activities she promotes and coordinates activities with governments and organisations in the Wider Caribbean on biodiversity conservation, sustainable use of coastal and marine resources, marine protected areas, coral reef management, threatened and endangered species and other related issues. She is a member of the World Commission on Protected Areas and has been founder and active member of the Caribbean Marine Protected Area Management Network and Forum (CaMPAM), which promotes better practices, capacity building, collaboration and exchange among MPAs throughout the region. She also functions as the responsible officer within the UNEP-CEP Secretariat for the regional biodiversity treaty on Specially Protected Areas and Wildlife for the Wider Caribbean (SPAW Protocol) and serves in a number of committees of regional environmental initiatives and projects. Her work has also included the development of sustainable tourism activities in collaboration with CTO, CHA/CAST, Blue Flag and other organisations.

Additional Resources and Sources of Information:

http://www.cep.unep.org/about-cep/spaw

Name & Title:	**Contact email(s):**
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Area of Expertise associated with Biodiversity Protection:

Governance and Biodiversity Protection

Sustainable livelihoods

Disaster Risk Mitigation perspectives

Climate change impacts

Coastal Zone Management

Tourism and Biodiversity

The potential of biodiversity in recreation and wellness

Biography and Professional Background:

Between 1996 and 2005 served as the Chief Sustainable Development and Environment Officer, Government of Saint Lucia with responsibility for policy, projects and programmes in Energy, Science and Technology, Environment and Sustainable Development. Also responsible for compliance with Multilateral Environmental Treaties and Conventions. From 2005 appointed Director of the Saint Lucia National Trust with responsibility to conserve the natural, cultural and Historic Patrimony of Saint Lucia.

Name & Title: **Mr. Chris Corbin** **AMEP Programme Officer**	**Contact email(s):** **cjc@cep.unep.org**
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Area of Expertise associated with Biodiversity Protection:

Governance and Biodiversity Protection

Disaster Risk Mitigation perspectives

Coastal Zone Management

Needed changes in human behaviour and practices

Impacts of Pollution on Biodiversity

Biography and Professional Background:

Christopher Corbin is a Programme Officer within UNEP's Division of Environmental Policy Implementation (DEPI) and based at UNEP's Caribbean Regional Seas Programme (CEP) in Kingston, Jamaica. He is responsible for the sub-programme for the Assessment and Management of Environmental Pollution (AMEP) and coordinates the development and implementation of national and regional projects and activities for two legally binding regional Agreements. These are the Protocols on Oil Spills and Land Based Sources of Marine Pollution respectively. Mr. Corbin has been employed with UNEP and based in Jamaica for the last 6 (six) following his recruitment in September 2004. He has worked on several regional projects including regional GEF funded projects for Pesticide Reduction in Central America and Integrating Watersheds and Coastal Area Management in Caribbean SIDS.

Mr. Corbin, a Saint Lucian national born in Barbados, has over 24 years of experience in the development, implementation and evaluation of environment and sustainable development policies and projects. His substantive professional training is in environmental monitoring and analysis with a first degree in natural sciences (double major in Biology and Chemistry) and post graduate research in environmental toxicology. He has been involved in the development of and implementation of national environmental strategies and plans, and regularly represented the Government of Saint Lucia at technical and policy meetings relating to environmental management, coastal zone management and resource conservation.

Name & Title:	**Contact email(s):**
David Popo **Social Scientist – Disaster Management and Livelihoods - OPAAL**	**dpopo@oecs.org**
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Area of Expertise associated with Biodiversity Protection:

Current State of Caribbean Biodiversity – current threats and positive measures being undertaken

Governance and Biodiversity Protection

Sustainable livelihoods

Caribbean culture and biodiversity protection

The spiritual side of biodiversity protected areas

Disaster Risk Mitigation perspectives

Needed changes in human behaviour and practices

Biography and Professional Background:

Mr. David Popo is a development sociologist and environmental/natural resources programme manager. He has worked in natural resources/environmental management development within a community development framework since 1996. For the last 14 years, he has worked in the OECS region on a number of site specific community-based projects related to watershed management, sustainable livelihoods development associated with parks and protected area management, and community-based risk reduction. Prior to working with the Secretariat, he worked as the regional coordinator with the Catholic-based Caritas Antilles and managed projects related to the provision of legal aid for the disadvantaged, retrofitting of houses in the informal sector through small revolving loans, community-based participatory techniques, and facilitated the implementation of community-based skills training capacity building programmes for unemployed youths in Saint Lucia. His principal professional responsibility at the Secretariat is to manage the OECS Small Projects Facility which provides small grants to a number of small and medium livelihoods enterprises operating in and around protected areas in the OECS region, and the Disaster Response and Risk Reduction Management programme activities.

Mr. Popo was part of the OECS-ESDU team which facilitated the formulation of the St.George's Declaration on Environmental Management in the OECS region. He has tremendous experience in strategic planning, project management, proposal writing and resource mobilization, programmatic management, social and environmental impact assessment, social research, and distant education at the tertiary level. He has facilitated the development of management tools and participatory techniques related to the monitoring and control of environmental management and risk reduction community- based projects. Mr. Popo played a lead role in the development of the OECS Vulnerability Benchmarking Tool. He has also facilitated a number of public consultations and capacity building training workshops across the OECS region. As a programme officer with the OECS Secretariat, he has gained an in-depth understanding of procurement procedures associated with the World Bank, CIDA, USAID, UNDP, GTZ, and DFID. For the last 10 years, Mr. Popo was also a part time tutor and marker in Industrial Sociology with the Continuing Education Department of the University of the West Indies. He has served on a number of national institutions and was a founding member of the Saint Lucia Folk Research Centre.

Mr. Popo holds a BSc in Development Studies and Sociology from the Faculty of Economic and Social Studies, University of Wales Swansea, U.K, and an MPhil from the same university. He also holds a certificate in Disaster Management and Development from the University of Wisconsin-Madison, USA, and a Diploma in Development Studies from the Holy Ghost Missionary College, Dublin, Ireland. Prior to these studies, Mr. Popo studied Philosophy and Theology at the St. John Vianney Regional Seminary in Trinidad and Tobago.

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Area of Expertise associated with Biodiversity Protection:

Governance and Biodiversity Protection

Sustainable livelihoods

Sustainable Fisheries management

Biography and Professional Background:

Dr. McConney engages mainly in applied marine science research related to fisheries and marine protected areas (MPAs) in the Wider Caribbean region. His emphasis is on management planning, socio-economics, social-ecological systems, resilience and governance. Elements of outreach and capacity building are often incorporated into his work.

His previous professional experience includes many years as Chief Fisheries Officer with the government of Barbados. He has also worked with regional, national and local level non-governmental organizations, as well as regional and international inter-governmental agencies.

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Area of Expertise associated with Biodiversity Protection:

Governance and Biodiversity Protection

Disaster Risk Mitigation perspectives

Climate change impacts

The potential of biodiversity in recreation and wellness

Biography and Professional Background:

David received his PhD. In Zoology from the University of the West Indies. He has 22 years post-doctoral experience in academia, civil society, the private sector and the UN; focussing on Environmental Conservation and Disaster Risk Reduction. He is a Senior Fellow of the Synergos Institute. Currently, David is the coordinator of the UCSIS, and the Institute of Sustainable Development (ISD) at the University of the West Indies.

Before joining UWI, he was the Assistant Resident Representative (Programme) in the Jamaica Office of UNDP where he was responsible for the programme in Environment and Disaster Management in the Bahamas, Turks and Caicos Islands, Cayman Islands and Jamaica. Other responsibilities included being the Monitoring and Evaluation Focal Point, Disaster Focal Point, the OCHA/UNDAC Focal Point and deputy chair for the UN technical team on emergencies for Jamaica. He mobilized resources from the **GEF** for Government clients and worked to establish the GEF Small Grants Programme for Jamaica and in the Bahamas. During his tenure, UNDP was executing agency for several projects that addressed management of Biodiversity, Climate change, community-level environmental management, improving capacity to meet international obligations for the Rio conventions and biodiversity conservation.

David was UNDP focal point for the response to Hurricane Ivan in Jamaica and Cayman Islands, Hurricane Dean and Tropical Storm Gustav in Jamaica as well as Hurricanes Jeanne and Frances in the Bahamas and Tropical Storm Hanna and Hurricane Ike in the Turks and Caicos Islands and several flood events. He developed proposals to fund early recovery and capacity building and managed implementation of relief and recovery work post Ivan, Dean, Gustav and Ike, including repair of 14 school roofs damaged in Hurricane Dean (funded by DfID) and a school feeding and back to school programme following Ivan.

Dr Smith served on the Board of the Caribbean Conservation Association for five years and was President in 1995. He was an IUCN Regional Councillor for North America and the Caribbean and the Chair of the Business Committee of IUCN's Council as well as a member of the steering committees of the IUCN commissions on Species Survival, Protected Areas, and Communications and Education. He oversaw the development of the Jamaican Protected Areas System Plan and contributed to the National Forestry Management Plan. He has consulted on small business management and the design of environmental financing mechanisms in Jamaica, Uganda, Guyana and Trinidad and Tobago.

David was the Executive Director of the Jamaica Conservation and Development Trust for ten years, and during this time was appointed to two Government tribunals, sat on several policy development committees and the Council of the Private Sector Organization of Jamaica. During this time he managed a debt-for-nature swap and helped to establish the Environmental Foundation of Jamaica and the Jamaica National Parks Trust Fund. Privately, he has consulted on verification of Carbon emission reductions, several Environmental Assessments and Environmental Management Systems. He has authored several technical publications and was an opinion journalist in the *Jamaica Herald* newspaper.

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Area of Expertise associated with Biodiversity Protection:

Sustainable livelihoods

Coastal Zone Management

Needed changes in human behaviour and practices

Tourism and Biodiversity

Watershed management

Biography and Professional Background:

Sylvester Clauzel is an applied researcher and practitioner in sustainable tourism development working in the English-speaking Caribbean. He has directed successful projects on heritage and community-based tourism in St. Lucia. He co-produced the Saint Lucia Heritage Tourism Programme and was its Programme Co-ordinator for three years. He also worked as the Chief Executive Officer of the Tobago Hospitality and Tourism Institute for a period of two years. He has served on the Board of the Caribbean Natural Resources Institute for many years as well as on the Council of the Saint Lucia National Trust.

Currently he is the Managing Consultant of his own company, Scribal Consultancy Services which specialises in sustainable development planning with a primary focus on Tourism, Environmental Responsibility and Sustainable Livelihoods. He is also a Part-time Lecturer at the University of the West Indies, St. Augustine Campus in a post-graduate course entitled "Tourism Planning in Developing Countries".

He holds a Master of Science degree in Tourism, Conservation and Sustainable Development from the University of Greenwich, England (2002); a Bachelor of Arts in History and Political Science from the University of the West Indies, Cave Hill Campus, Barbados (1992); and a Certificate in Environmental and Resources Management from the Nipissing University, Ontario, Canada (1993).

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Area of Expertise associated with Biodiversity Protection:

International Agreements on Biodiversity and related conventions

Current State of Caribbean Biodiversity – current threats and positive measures being undertaken

Governance and Biodiversity Protection

Sustainable livelihoods

Caribbean culture and biodiversity protection

Needed changes in human behaviour and practices

Tourism and Biodiversity

Medical Science and Biodiversity

Agriculture and Biodiversity

Forestry and biodiversity protection

The potential of biodiversity in recreation and wellness

Watershed management

Biography and Professional Background:

Andrew A Lockhart is the Superintendent of Marine and Terrestrial Parks with the National Parks Rivers and Beaches Authority (NPA) of St. Vincent and the Grenadines (SVG). A mere seven (7) years old, the NPA is itself a statutory body responsible for the preservation, protection, management and development of the natural, physical and ecological resources, and the historical and cultural heritage of SVG. His duties include the compilation of the management and operational plans for the various sites, attractions, parks and protected areas within the national parks and protected areas system. Before joining the NPA, he was a Forestry Officer with the Forestry Department, Ministry of Agriculture, Forestry and Fisheries for over two decades. As a Forester, he coordinated, facilitated and participated in biennial census of the St. Vincent Parrot *Amazona guildingii,* the flagship species for conservation in SVG. He is a foundation member of AvianEyes, the lone birding organization in SVG. AvianEyes itself has conducted several studies and birding and bird watching tours in various ecosystems and habitats including rainforest, coastal scrub land and mangroves in SVG. Its mission is "*Supporting nature conservation through birding.*" Apart from AvianEyes, his other fraternal interests include membership with the St. Vincent and the Grenadines National Trust and the Junior Chamber International St. Vincent, Inc.

Additional Resources and Sources of Information:

Birdlife International http://www.birdlife.org

Royal Society for the Protection of Birds http://www.rspb.org.uk

Environmental Defence Fund http://www.edf.org/page.cfm?tagID=445

Name & Title:	**Contact email(s):**
Mr. Peter Espeut	pespeut@gmail.com
Organization: Private consultant	Mobile Phone: (876) 383-1219
Postal Address: 21 Hopefield Avenue, Kingston 6, Jamaica, West Indies	
Skype address : nil	**Website**: nil

Area of Expertise associated with Biodiversity Protection:

International Agreements on Biodiversity and related conventions

Current State of Caribbean Biodiversity – current threats and positive measures being undertaken

Governance and Biodiversity Protection

Sustainable livelihoods

Caribbean culture and biodiversity protection

The spiritual side of biodiversity protected areas

Disaster Risk Mitigation perspectives

Climate change impacts

Sustainable Fisheries management

Coastal Zone Management

Needed changes in human behaviour and practices

Tourism and Biodiversity

Agriculture and Biodiversity

Forestry and biodiversity protection

Economics and accounting biodiversity value

Watershed management

Additional Resources and Sources of Information:

Few Fellow

http://www.pewmarinefellows.org/fellows/pespeut/fellows-dir-profile.php?pfID=3655

UNESCO

http://www.unesco.org/csi/act/jamaica/fishmngt.htm

Silver Musgrave Medal

http://www.instituteofjamaica.org.jm/Docs/citations08/PETER%20_ESPEUT.pdf

Biography and Professional Background:

Born in Jamaica in 1953.

Graduate of University of the West Indies (Mona) 1977 – B.Sc. Chemistry and Zoology Graduate of University of the West Indies (Mona) 1983 – B.A. Theology and Philosophy Graduate of University of the West Indies (Mona) 1990 – M.Phil. Development Studies

High School Teacher 1977-1980, 1982-1984

Research Fellow, Institute of Social and Economic Research, UWI (Mona) 1990-1993

Executive Director, South Coast Conservation Foundation 1993-1997

Executive Director, Caribbean Coastal Area Management Foundation, 1997-2008

Part Time Lecturer UWI (Mona) Department of Sociology, 1993-1994

Visiting Lecturer, College of Agriculture, 1989-1990

Roman Catholic Deacon, 1996-present

Part Time Lecturer, St. Michael's Seminary, 1996-2000

Part Time Lecturer, United Theological College, 1997

Full-Time Pastoral Administrator, Roman Catholic Church, 2008-2010

Director of Formation, Deacon Training Programme, Montego Bay, Jamaica 1996-now

Director of Formation, Deacon Training Programme, Kingstown, St. Vincent 2006-now

Consultant on Rural Development, 1984-present

Consultant on Fisheries Management, Natural Resources Management, 1990-present

Consultant to CARICOM Fisheries, 1992-1997, 2009

Consultant to OECS (OPAAL), 2006

Consultant to USAID, CIDA, ICOD, DFID, JICA, UNEDCO, FAO, TNC, GoJ.

Delivered papers to conferences in CARICOM countries, Haiti, USA, Canada, France, Australia, Philippines, Western Samoa, Colombia

Papers published in Books and Journals.

Weekly columnist in the Jamaica **Daily Gleaner** since 1993

Specialist in survey research and analysis

SCUBA diver and Instructor (BS-AC)

Powerboat Instructor (RYA)

CPR and Lifesaving Instructor (RLSS)

Musician (Guitar), toured overseas with a band.

Member, Society of Genealogists, London

Awarded Pew Fellowship in Conservation and the Environment (1996)

Awarded Silver Musgrave Medal for National Contribution to the Environment, GOJ

Name & Title:	**Contact email(s):**
Mr. Robert Weary Senior Conservation and Finance Policy Advisor, Caribbean	rweary@tnc.org
Organization: The Nature Conservancy	**Phone Number:** (434) 977-1656 **Fax:** (434) 977-1656
Address: 4590 Deer Bonn Road, Keswick, Virginia, VA 22947 United States	
Skype address : RobertWeary	**Website :**

Area of Expertise associated with Biodiversity Protection:

International Agreements on Biodiversity and related conventions

Current State of Caribbean Biodiversity – current threats and positive measures being undertaken

Governance and Biodiversity Protection

Climate change impacts

Coastal Zone Management

Tourism and Biodiversity

Economics and accounting biodiversity value

Biography and Professional Background:

In his twelfth year with the Conservancy, Mr. Weary is responsible for developing and implementing the Conservancy's conservation finance and policy work in the Caribbean, with a primary focus of ensuring long-term sustainability of conservation areas and developing mitigation strategies for regional scale threats. Rob's experiences include work on numerous Tropical Forest Conservation Act debt-for-nature swaps in Latin America and the Caribbean (Belize, Costa Rica, Guatemala, and Jamaica), the development of an eight country regional endowment (Caribbean Biodiversity Fund) and associated national level protected area trust funds, and the development of carbon sequestration projects (Belize, Dominican Republic). Prior to serving in his current position, Rob served as the Conservancy's Eastern Caribbean Program Director for three years and was responsible for designing, funding and implementing the Conservancy's conservation projects in the Eastern Caribbean region. He joined the Conservancy after working with the World Bank as a Financial Analyst in the Investment Management Department of the Treasury. Rob also spent three years in Guatemala with the Peace Corps. Masters in Public and International Affairs (Economic and Social Development) and Certificate, Latin American Studies – University of Pittsburgh, Graduate School of Public and International Affairs; BA (Foreign Affairs) and Summer Business Institute Certificate – University of Virginia.

Name & Title:	**Contact email(s):**
Susanna De Beauville-Scott Marine Biologist	sscott@oecs.org
Organization: Organisation of Eastern Caribbean States (OECS)	**Phone Number:** (758) 455-6327 **Fax:** 452-2194
Address: P o Box 1383, Morne Fortune, Castries, Saint Lucia	
Skype address : nil	**Website:** www.oecs.org

Area of Expertise associated with Biodiversity Protection:

Current State of Caribbean Biodiversity – current threats and positive measures being undertaken (threats to coastal and marine resources)

Climate change impacts (coastal and marine impacts)

Sustainable Fisheries management

Coastal Zone Management

Biography and Professional Background:

Ms Susanna De Beauville-Scott holds a Bachelor's Degree in Biology and Masters Degree in Natural Resource Management. She served 15 years as a fisheries biologist (Public Service-Saint Lucia) and was responsible for numerous programmes, including coral reef monitoring; beach monitoring; fishery assessments; protected areas; environmental impact assessments; and mangrove assessments. Ms Scott is also a certified project manager and has been responsible for a number of projects over the years, including an EU funded Coastal Zone Management (CZM) Project which led to the current CZM institutional arrangements in Saint Lucia; and USAID funded OECS Protecting the Eastern Caribbean Region's Biodiversity Project, which sought to contribute to biodiversity conservation in the region. Ms Scott currently coordinates the OECS Protected Areas and Associated Livelihoods Project, which aims to contribute to the establishment of a system of protected areas in the OECS.

Additional Resources and Sources of Information:

Biodiversity of the Caribbean: A learning Resource (based on the CXC curriculum and available at www.oecs.org Biodiversity – The Spice of Life (booklet available at the OECS Secretariat and through Ministries with responsibility for environment in each OECS State)

Four 5-minute television features; 4 television PSAs and 4 radio PSAs, all featuring various biodiversity issues and aimed at promoting conservation of biological resources. Prepared under the USAID funded OECS Protecting the Eastern Caribbean Region's Biodiversity (PERB) Project – available from the OECS Secretariat (Morne Fortune, P O Box 1383, Castries, Saint Lucia. Tel. 758 455 6391; Fax. 758 452 2194).

Name & Title:	**Contact email(s):**
Vincent Sweeney IWCAM Regional Project Coordinator	vincent.sweeney@unep.org
Organization: UNEP/ Integrating Watershed and Coastal Areas Management (IWCAM) Project	**Phone Number:**(758) 452-2501, 452-1412 **Fax:** (758) 453-2721
Address: IWCAM -- Project Coordination Unit, Caribbean Environmental Health Institute (CEHI), The Morne, Castries, Saint Lucia	
Skype address : vinceslu	**Website :** http://www.iwcam.org/

Area of Expertise associated with Biodiversity Protection:

Coastal Zone Management

Needed changes in human behaviour and practices

Watershed management

Pollution prevention/Waste Management/Water Resources Management

Biography and Professional Background:

Regional Project Coordinator, United Nations Environment Programme

Mr. Sweeney holds both a Bachelor's and Master's Degree in Civil Engineering from the Technical University of Nova Scotia and a Diploma in Engineering from Dalhousie University. He was admitted to the Association of Professional Engineers of Nova Scotia (APENS) as a full Member in 1989.

In May of 2006 Vincent was appointed Regional Project Coordinator for the GEF-funded project on "*Integrating Watershed & Coastal Area Management in Caribbean Small Island Developing States*". Prior to that he served for 10 years as Executive Director of the Caribbean Environmental Health Institute (CEHI) and previously served for four years as Sanitary Engineer at CEHI. He has also worked as a Senior Engineer with the Antigua Public Utilities Authority (APUA).

He has sat on a number of Advisory Bodies within the region, including the National Water & Sewerage Commission in Saint Lucia and the Board of Directors of the Caribbean Basin Water Management Program (Inc.), as well as Technical Advisory Committees for a number of regional and international projects.

Name & Title:	**Contact email(s):**
Nicole Leotaud	nicole@canari.org
Organization:	**Phone Number:** (868) 626-6062
Caribbean Natural Resources Institute	**Fax:** (868) 626-1788

Address:

CANARI

Fernandes Industrial Centre, Administrative Main Road, Laventille

Trinidad and Tobago, West Indies

Skype address: nicole.leotaud	**Website:**

Area of Expertise associated with Biodiversity Protection:

Governance and Biodiversity Protection

Sustainable livelihoods

Biography and Professional Background:

Nicole Leotaud is currently Executive Director of the Caribbean Natural Resources Institute (CANARI), a regional technical non-profit institute working to promote and facilitate stakeholder participation in natural resource management. Nicole is a conservation biologist with twenty years experience working in natural resource management in the small islands of the Caribbean. She has successfully facilitated numerous participatory and multi-disciplinary processes involving government agencies, NGOs, CBOs, communities and private business interests from different sectors. This includes facilitating participatory processes for protected area management planning, review and development of legislation and policy, analysis of environmental mainstreaming needs and appropriate tools, building enabling institutional arrangements for participatory management, and action learning groups. Recent research has been primarily in the areas of forests and livelihoods. She has conducted capacity building and professional training for government and civil society stakeholders from around the Caribbean in participatory natural resource management, organisational development, strategic planning, project management, monitoring and evaluation, proposal development and facilitation. She is particularly interested in developing appropriate monitoring and evaluation systems for natural resource management initiatives in the Caribbean. (February 2011)

Name & Title:	**Contact email(s):**
Peter A. Murray Programme Officer Environment and Sustainable Development Unit (ESDU)	pamurray@oecs.org
Organization: Organisation of Eastern Caribbean States (OECS)	**Phone Number:** (758) 455-6327 **Fax:** 452-2194
Address:	
Skype address (if available): nil	**Website if available:** www.oecs.org

Area of Expertise associated with Biodiversity Protection:

International Agreements on Biodiversity and related conventions

Governance and Biodiversity Protection

Climate change impacts

Sustainable Fisheries management

Coastal Zone Management

Needed changes in human behaviour and practices

The potential of biodiversity in recreation and wellness

Biography and Professional Background:

Peter A. Murray has a Master of Philosophy degree in Biology. He has taught Biology, Chemistry, and Physics and was involved in the development of the curriculum for CXC Integrated Science. Peter A. Murray worked as the senior Fisheries Biologist at Saint Lucia's Department of Fisheries, Data Management Officer at the OECS Fisheries Unit and currently is a Programme Officer with the OECS Environment and Sustainable Development Unit. He is primarily responsible for marine resource management, climate change matters; as well as coordinating public education and environmental awareness activities. Mr. Murray is active in facilitating strategic planning and training in project proposal writing and is also a member of the OECS Secretariat's Post Disaster Macro-socioeconomic Assessment team. Peter A. Murray has been a member of the Network of Tropical Fisheries Scientists since 1984 and has served on the Board of Directors of the Gulf and Caribbean Fisheries Institute. He is currently pursuing a Diploma in International Environmental Law with UNI-

Additional Resources and Sources of Information:

OECS Environment and Sustainable Development Unit: www.oecs.org/esdu

International Institute for Sustainable Development: info@iisd.ca

United Nations Environment Programme: www.unep.ch/conventions

Secretariat of the Convention on Biological Diversity: www.biodiv.org

UK Department for Environment, Food and Rural Affairs: www.defra.gov.uk

WorldFish Centre: www.worldfishcenter.org

Name & Title:	**Contact email(s):**
Mr. Anthony Sammie	asammie63@hotmail.com
Organization:	**Phone Number:** (758) 713-3235
Address: Pointe Sable Environmental Protection Area Saint Lucia National Trust, Southern Office, Vieux Fort , SAINT LUCIA	
Skype address: nil	**Website if available**: nil

Area of Expertise associated with Biodiversity Protection:

Sustainable livelihoods

Tourism and Biodiversity

Biography and Professional Background:

Anthony Sammie holds an MA in Sustainable Development from the University of Leeds and a BA in Media and Communications from the University of the West Indies. He was recently employed with the Saint Lucia National Trust as a Communications and Advocacy Officer where he was substantively responsible for developing and executing communication and advocacy plans and proposals on behalf of the Trust. He is also a member of the Trust and a key member of the Southern Chapter of the Trust.

Over the years, he has played a significant role in mobilising communities, promoting sustainable livelihoods especially within the PSEPA and promoting sustainable tourism. He also recently undertook a short consultancy examining the economic value of reef related tourism in the Soufriere area to the tourism industry in Saint Lucia as a whole.

Name: Debbie Reyes	**Contact email(s):**
Organization:	**Phone Number**:
Address: 62 EASTERN MAIN ROAD, ST. AUGUSTINE, TRINIDAD & TOBAGO	
Skype address: nil	**Website: nil**

Area of Expertise associated with Biodiversity Protection:

International Agreements on Biodiversity and related conventions

Governance and Biodiversity Protection

Tourism and Biodiversity

Forestry and biodiversity protection

Biography and Professional Background:

Ms. Reyes holds a Bachelor's Degree in Zoology and Botany (First Class Honours) and a Master's Degree in Natural Resource Management; both from the University of the West Indies. Ms. Reyes has worked as an environmental consultant for over 10 years on a wide range of projects including EIAs for tourism, infrastructure development and industry on greenfield sites as well as ecology studies for a coastal zone management plan, a protected areas systems plan, demonstration sites for two OPAAL sites and other tourism projects. Ms. Reyes has worked throughout her native Trinidad and Tobago as well as throughout the Caribbean and Suriname.

Name & Title: Maurice U Mason	**Contact email(s):** maurice.mason@uwimona.edu.jm mauricemason@gmail.com (preferred)
Organization: Environmental Economist Institute for Sustainable Development	Phone Numbers: Work: 876-977-1659 Fax: 876-977-1858 Cell: (876) 296-9219
Address: Institute for Sustainable Development, The University of the West Indies, Mona Campus, Kingston 7, JAMAICA	
Skype address: nil	**Website if available**: nil

Area of Expertise associated with Biodiversity Protection:

Disaster Risk Mitigation perspectives

Climate change impacts

Economics and accounting biodiversity value

Natural Resource Valuation and sustainable financing of management plans

Cost Benefit Analysis

Name: Sarah N George	**Contact email(s):**
Organization: Department of Fisheries	**Phone Number:** (758) 468 4135/43
Address: Ministry of Agriculture, Lands, Forestry and Fisheries, Point Seraphine, Castries, Saint Lucia	
Skype address: nil	**Website if available: nil**

Area of Expertise associated with Biodiversity Protection:

International Agreements on Biodiversity and related conventions

Current State of Caribbean Biodiversity – current threats and positive measures being undertaken

Governance and Biodiversity Protection

Sustainable livelihoods

Climate change impacts

Sustainable Fisheries management

The potential of biodiversity in recreation and wellness

Biography and Professional Background:

Sarah George has a broad technical background ranging from fisheries management, marine and coastal resource use issues, community-based approaches to sustainable resource management, as well as a strong familiarity with a number of multilateral environmental agreements including the Convention on International Trade of Endangered Species of Fauna and Flora (CITES). She holds a MSc in Biology with emphasis on marine management, and a Honours BSc in Marine Biology with a minor in Oceanography; both degrees undertaken at Dalhousie University in Canada. At the Department of Fisheries of the Ministry of Agriculture, Forestry and Fisheries in Saint Lucia since 1982, she initially served as a Fisheries Assistant, then as Fisheries Biologist and, more recently she held the position of Deputy Chief Fisheries Officer and currently is Chief Fisheries Officer. Between 2000 and 2004, she coordinated efforts on behalf of Saint Lucia in its capacity as representative of the Caribbean sub-region on the Standing Committee of CITES. She also spent four years on secondment to the Organisation of Eastern Caribbean States (OECS) where she was technical officer and then Project Coordinator for the OECS Protected Areas and Associated Livelihoods (OPAAL) Project.

Additional Resources and Sources of Information:

Fisheries documentation on Ministry of Agriculture, Lands, Forestry and Fisheries website: http://www.slumaffe.org

Name: E. Crispin d'Auvergne	**Contact email(s):** cdauvergne@sde.gov.lc
Organization: Sustainable Development & Environment Division	**Phone Number**: 1-758-451-8746; 468-5803
Address: Ministry of Physical Development & the Environment, Graeham Louis Building, Waterfront, Castries, Saint Lucia	
Skype address: nil	**Website**: nil

Area of Expertise associated with Biodiversity Protection:

Climate change impacts

Other relevant areas of expertise: Energy, Environment, Resource Management

Biography and Professional Background:

BSc Development Studies (Natural Resources); MSc Natural Resources (Climate Change. Worked with Department of Fisheries, ENCORE Project and Sustainable Development & Environment Division (1999-present). Have represented Saint Lucia at several UN and other Climate Change Conferences.

Additional Resources and Sources of Information:

Official GOSL Climate Change Website: www.climatechange.gov.lc.

Name:	**Contact email(s):**
Organization: The Trust For Sustainable Livelihoods	**Phone Number:** 868 687 5979
Address:	
Skype address: nil	**Website if available:** ww.sustrust.org

Area of Expertise associated with Biodiversity Protection:

International Agreements on Biodiversity and related conventions

Governance and Biodiversity Protection

Sustainable livelihoods

Climate change impacts

Needed changes in human behaviour and practices

Agriculture and Biodiversity

Forestry and biodiversity protection

The potential of biodiversity in recreation and wellness

Biography and Professional Background:

Experience over the past 20 years has been through the coordination and implementation of international and national programmes in the Caribbean and Latin American region. These programmes involved resource and land use issues related to forests, wetlands and coral reefs.

The target groups for these activities are governmental agencies and NGOs, as well as community based organisations in 18 countries, involved in the management of terrestrial and marine resources.

Additional Resources and Sources of Information:

Homer, F. (2010). Implementation of General Measures for the Conservation and Sustainable Use of Biodiversity in St Kitts and Nevis. Government of St Kitts and Nevis.

Homer, F. (2008). Anguilla Biodiversity Strategy and Action Plan. Government of Anguilla.

Homer, F. and K. Collins (2008). Strategic Action Plan for the Clifton Harbour, Union Island. Union Island Environmental Attackers/SUSTRUST.

Homer, F. (2003). Building political support for financing marine protected areas. A paper prepared for the Second International Tropical Marine Ecosystems Management Symposium, Manila, Philippines.

Homer, F. and Bryan, D. (2001) Biodiversity interest among Anguillians. The Anguilla National Trust, Anguilla

Name: Keith E. Nichols	**Contact email(s):**
Organization: OECS Secretariat	**Phone Number**: (758) 455-6362
Address: The Morne, P. O. Box 1383, Castries, Saint Lucia	
Skype address: nil	**Website:** www.oecs.org

Area of Expertise associated with Biodiversity Protection:

Current State of Caribbean Biodiversity – current threats and positive measures being undertaken

Governance and Biodiversity Protection

Sustainable livelihoods

Caribbean culture and biodiversity protection

Climate change impacts

Needed changes in human behaviour and practices

Tourism and Biodiversity

Biography and Professional Background:

Keith E. Nichols, Head of Unit of the Environmental and Sustainable Development Unit of the OECS Secretariat is a national of Saint Lucia and pursued secondary education at St. Mary's College. He received his first degree (BSc) in Natural Sciences from the University of the West Indies in 1981, followed by a Post Graduate Diploma in Marine Affairs in 1992,from Dalhousie University in Nova Scotia, Canada, in which he majored in Law of the Sea and Marine Management. He further attained a Masters of Marine Management Degree from the University of Rhode Island, Rhode Island, USA in 1993, in which Coastal Zone Management was a major area of focus.

Mr. Nichols worked as a Marine Biologist with the Department of Fisheries, Ministry of Agriculture, Forestry and Fisheries from 1981 up until 1997 and played an integral role in projects such as the Seamoss project, Artificial Reefs, Aquaculture, Queen Conch and Coral reef surveys, and others. His training in Scuba Diving helped facilitate the many sea going programmes, including his pivotal role in establishing, among others, two of St. Lucia's best known artificial reefs, the Lesleen M and the Daini Koyomaru. He took Leave of Absence from his post of Deputy Chief Fisheries Officer to join with the OECS Secretariat as a Programme Officer with specialization in Coastal Zone Management, a programme he helped design. He was instrumental in developing the now established philosophy of Island Systems Management.

Mr. Nichols has written extensively on many areas relating to natural resources management and has also played a very integral role as a life member of the Saint Lucia Naturalists Society and the St. Lucia National Trust. Mr. Nichols has sat of many national committees over time and more recently served as a member of the Development Control Authority of the Ministry of Planning in Saint Lucia. Mr. Nichols has recently attained professional certification as a Project Management Professional (PMP) from the Project Management Institute (PMI) in Pennsylvania, USA.

Name: Ruth Blyther	**Contact email(s):**
Organization: The Nature Conservancy	**Phone Number:** 1-340-626-7452
Address: 3052 Estate Little Princess, Christiansted, VI 00820	
Skype address : Ruth.blyther	**Website:** www.nature.org

Area of Expertise associated with Biodiversity Protection:

International Agreements on Biodiversity and related conventions

Current State of Caribbean Biodiversity – current threats and positive measures being undertaken

Sustainable finance mechanisms for PA

Restoration of natural resources in PA, and effective management of PA,

PA systems planning

Marine spatial planning and zoning

Building partnerships for effective management

Project management, grant writing, grant management

Biography and Professional Background:

Ruth Blyther is the Eastern Caribbean's Country Representative. Since 2006 she has worked out of the St. Croix, US Virgin Islands office, building cooperative relationships with partner governments and organizations in the Eastern Caribbean to conserve biodiversity and build regional capacity for sustainable management of the environment, especially in and surrounding protected areas. Ruth is currently managing a diversity of projects in the region including mangrove restoration, community livelihood development, multiple use marine zoning, radio drama (soap opera) with conservation themes, and implementation of protected area management plans. Ruth has over 20 years experience developing, managing and sustaining local and regional conservation programs with strong stakeholder buy-in. Prior to joining the Conservancy, she spent fourteen years with the Natural Resources Services Division (NRS) Redwood Community Action Agency, a regional leader in northern California community development, watershed management, and habitat restoration.

Name: Lavina Alexander	**Contact email(s):** lalexander@slunatrust.org lavina.alexander@gmail.com
Organization:	**Phone Number:**
Address: P.O. Box 595, Castries, Saint Lucia, W.I.	
Skype address: nil	**Website:** http://www.slunatrust.org

Area of Expertise associated with Biodiversity Protection:

International Agreements on Biodiversity and related conventions

Current State of Caribbean Biodiversity – current threats and positive measures being undertaken

Governance and Biodiversity Protection

Sustainable livelihoods

Needed changes in human behaviour and practices

The potential of biodiversity in recreation and wellness

Biography and Professional Background:

Ms. Lavina Alexander is a Programme Officer with responsibility for Natural Heritage Conservation at the Saint Lucia National Trust. Ms. Alexander holds a Bachelor's degree in Chemistry (University of the West Indies), and a Masters degree in Water Resources Technology and Management (University of Birmingham, UK). She also earned a Certificate in Environmental Impact Assessment from the University of London, and has attained Project Management Professional (PMP) certification from the Project Management Institute.

At the frontline in protected areas management at the Saint Lucia National Trust, Ms. Alexander is responsible for the implementation of the OECS Protected Areas and Associated Livelihoods project in Saint Lucia, and other initiatives geared towards natural resource conservation. Her work currently focuses on the review of environmental impact assessments, wetlands conservation, protected areas management, monitoring and evaluation, and sustainable livelihoods initiatives.

Name: Aden Forteau	**Contact email(s):**
Organization: Forestry Department	**Phone Number:** 1-473-440-2934 /405-4355
Address: Forestry and National Parks Department, Ministry of Agriculture, Forestry and Fisheries Botanical Gardens, Tanteen, St. George's, Grenada	
Skype address: nil	**Website: nil**
Area of Expertise associated with Biodiversity Protection: International Agreements on Biodiversity and related conventions Governance and Biodiversity Protection Sustainable livelihoods Forestry and biodiversity protection Economics and accounting biodiversity value The potential of biodiversity in recreation and wellness	
Biography and Professional Background: Obtained BSc degree in General Forestry at the University of Bangor Wales. Worked with the Forestry and National Parks Department for 25years. Have expertise in Corporate Resource Management Planning, monitoring and evaluation. Also have great knowledge and experience in bio-diversity management and collaborative and participatory forestry management. Focal Point for CITES, Forest Resource Assessment (FRA) and United Nations Forum on Forest (UNFF). Chairman of the National Implementation Support Partnership Committee (NISP). Member of the Natural and Cultural Heritage Advisory Committee. Acting Chief Forestry Officer for two years.	

Name:	**Contact email(s):**
Lloyd Gardner	lsg_jr@hotmail.com
Organization:	**Phone Number:**
Environmental Support Services, LLC	340-714-0936
Address:	
P.O. Box 305031, St. Thomas, VI, 00803-5031, U.S.A.	
Skype address : nil	**Website:** http://www.ess-caribbean.com

Area of Expertise associated with Biodiversity Protection:

Current State of Caribbean Biodiversity – current threats and positive measures being undertaken

Governance and Biodiversity Protection

Climate change impacts

Needed changes in human behaviour and practices

Tourism and Biodiversity

Biography and Professional Background:

Lloyd Gardner is an environmental planner who has been involved in environmental management in the Caribbean for more than 28 years. Mr. Gardner's experience spans both the public and private sectors, starting with the Government of Jamaica in 1982. As a Director in the Natural Resources Conservation Authority (1988-1991), he was responsible for policy development and program planning in coastal zone management, national parks, and development control. Since joining the private sector as an environmental planning consultant in 1992, Mr. Gardner has provided consulting services to a wide range of regional and international private, inter-governmental, civil society, bilateral, and multilateral organizations. Mr. Gardner maintains active involvement in regional and international non-governmental organizations.

Name: Harold Guiste	**Contact email(s):** hguiste@hotmail.com
Organization: Fisheries Division Fisheries Biologist	**Phone Number:** 767 245 4465
Address: Morne Daniel , P.O. Box 1078, Roseau, Dominica	
Skype address: nil	**Website**: nil

Area of Expertise associated with Biodiversity Protection:

International Agreements on Biodiversity and related conventions

Current State of Caribbean Biodiversity – current threats and positive measures being undertaken

Governance and Biodiversity Protection

Sustainable livelihoods

Caribbean culture and biodiversity protection

Disaster Risk Mitigation perspectives

Climate change impacts

Sustainable Fisheries management

Coastal Zone Management Tourism and Biodiversity Agriculture and Biodiversity

Biography and Professional Background:

Mr. Guiste is from the Commonwealth of Dominica and is currently employed with Government of Dominica in the Ministry of the Environment, Physical Planning, Natural Resources and Fisheries in the capacity of Senior Fisheries Officer in the Fisheries Division.

He is also involved in aquaculture development and management, development and management of Marine protected area, turtle conservation initiatives and general marine resources. He is presently involved with the Cabrits National Park in Dominica as a marine and fisheries resource person as it pertains to biodiversity conservation and alternative livelihoods.

Other professional achievements include doing consultancies for the Food and Agricultural Organization and the Caribbean Regional Fisheries Mechanism, participating in international conferences relating to the biodiversity convention, the Cartagena Convention and its protocols, Framework Convention on Climate Change and the project on adaptation to climate change in the Caribbean among many other environmental treaties and conventions.

He represents Dominica on the Caribbean Environment Programme of UNEP and involved with integrating watershed and coastal area management project in Dominica. He is also trained in assessment of environmental impact assessments and in making recommendations for mitigation to reduce negative impact on biodiversity. Mr Guiste's work has also involved marine and coastal biodiversity protection and tourism development and setting up of appropriate guidelines for whale watching, turtle watching and tourism.

He possesses a Diploma in agricultural science, a Certificate in advanced aquaculture from the Taiwan Fisheries Research Institute, a BSc in Fisheries Science and Technology and an MSc in Fisheries Science from Hull University in England.

<table>
<tr><td>Name & Title:

Mr. Guy Symes

Managing Director</td><td>Contact email(s):

guysymes@gmail.com</td></tr>
<tr><td>Organization:

The Forest Conservancy</td><td>Phone Number:

1-876-756-1886

Cell: 1-876-426-1041 (please delete this if you are not comfortable with the media having your cell number)</td></tr>
<tr><td colspan="2">Address: 12 Hopeton Mews, Kingston 8, Jamaica</td></tr>
<tr><td>Skype address: nil</td><td>Website:</td></tr>
<tr><td colspan="2">Area of Expertise associated with Biodiversity Protection:

Forestry and biodiversity protection

Forest policy & management; plantation forestry; agro-forestry; watershed management.</td></tr>
<tr><td colspan="2">Biography and Professional Background:

Education & TRAINING
BSc (Forestry) University of Edinburgh, Edinburgh, Scotland

MF (Forest Management) University of California, Berkeley, California

Experience Profile

More than forty years local and international experience in forestry and forest industry development, environment and natural resources management, involving project preparation and implementation, drafting and evaluation of consultancy terms of reference and proposals, supervision of international experts, training and deployment of technical staff. In 2003, co-founder of The Forest Conservancy and 2005, Jamaica Tree Growers Association: promoter/manager pilot Teak plantation project with private sector; consultant to Grenada Hurricane Ivan damage assessment, St Lucia forest policy and legislation, CIDA-Jamaica Trees for Tomorrow project evaluation, NPF Hope Gardens; reforestation consultant to watershed groups in Reckford and Yallahs; SGP-GEF project manager Technical Capacity Building for Community-based Watershed Management. Currently project director Project CARE, Annotto Bay</td></tr>
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Area of Expertise associated with Biodiversity Protection:

Disaster Risk Mitigation perspectives

Climate change impacts

Needed changes in human behaviour and practices

Biography and Professional Background:

Dr Fletcher-Paul, a national of Trinidad and Tobago and Saint Lucia, holds a B.Sc. (First Class Honours) in Agriculture, University of the West Indies, St. Augustine, Trinidad, and a Ph.D. in Biometrics and Plant Physiology, University of British Columbia, Vancouver, Canada. She started her career in 1985 as Lecturer in the Faculty of Agriculture, University of West Indies, St. Augustine, Trinidad. From 1988 to 1989, she worked at the Inter-American Institute for Cooperation on Agriculture (IICA), first as National Professional in Trinidad and then as Junior Professional in Costa Rica. From 1990 to 1995, she worked as Biometrician for the Caribbean Agricultural Research and Development Institute, St. Lucia. She joined FAO in 1995 as Technical Officer (Data Processing and Biometric Modelling), Water and Land Division, AGL, Rome. In 1998, she was appointed Integrated Natural Resources Officer, Sub-regional Office for the Caribbean, Barbados. Subsequently, in 2008, she assumed higher level responsibilities as Land and Water Officer. In 2009 she was appointed as the FAO Representative of Guyana.

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APPENDIX C

QUESTIONS FOR EXPERTS & STORY ANGLES

1 International Agreements on Biodiversity

Aim:

To establish the significance of globally established protocols for biodiversity and protected areas and why what happens in the OECS matters.

Background Information

The recent COP 10 Convention on Biodiversity that ended in October 2010 in Nagoya, Japan made significant advances with regards to biodiversity protection, especially with respect to how genetic resources will be valued and how benefits from their use will be shared. It now makes provisions for developing countries to be compensated from the use of their national genetic resources and for the protection of these same resources within their own borders.

According to Achim Steiner, "Executive Director of the UN Environment Programme (UNEP), "*This is a day to celebrate in terms of a new and innovative response to the alarming loss of biodiversity and ecosystems, and a day to celebrate in terms of opportunities for lives and livelihoods in terms of overcoming poverty and delivering sustainable development*."

"*The new Nagoya Protocol will outline how benefits – for example, from when a plant's genetics are turned into a commercial product, such as medicine – will be shared with countries and communities who conserved and managed that resource, in some cases for millennia.*"

"*It also lays out rules on how substances and compounds derived from genetic resources will be dealt with, as well as on the issue of pathogens, including how developed countries could obtain a flu virus in emergency situations to develop a vaccine to counter a possible epidemic.*"

"*In Nagoya, governments also adopted a new strategic plan, including targets for addressing biodiversity loss to be met by 2020.*"

"*Countries agreed to increase land-based protected areas and national parks to 17 per cent of the Earth's surface from 12.5 per cent now, and to raise the percentage of marine protected areas from 1 per cent currently to 10 per cent.*"

"*The plan also calls for lifting the extinction risk from known threatened species by 2020.*"

Line of questioning:

1. In light of this new global development, what, in your view - do these advances mean for states in the Caribbean and for the Eastern Caribbean states in particular? Will they make any difference to how our protected areas and biodiversity are presently managed?

1. As parties to the COP10 agreement, what will it require of governments in the region? What are they committed to and what will mean?

2. GOVERNANCE AND POLICY LENS

Aim:

To explore how well countries in the OECS have been living up to the principles outlined under the SGD.

Background Information:

The overall aim of the St Georges' Declaration (SGD) is to ***"Foster Equitable and Sustainable Improvement in the Quality of Life in the OECS Region"***. In doing so, the SGD seeks to fulfill four main goals as follows:

Goal 1: Build the Capacity of Member States and Regional Institutions to Guide and Support Processes of Sustainable Development

Goal 2: Incorporate the Objectives, Perspectives, Resources and Talents of all of Society in Environmental Management

Goal 3: Achieve the Long-term protection and Sustained Productivity of the Region's Natural Resource Base and Ecosystem Service it Provides

Goal 4: Ensure that Natural Resources Contribute Optimally and Equitably to Economic, Social and Cultural Development

Achievement of these goals is further based on 21 fundamental principles which members of the OECS have all agreed to uphold. These include striving for:

1. Foster improvement in the quality of life
2. Integrated development planning
3. More effective laws and institutions
4. Civil society participation in decision-making
5. Meaningful participation of the private sector
6. Economic opportunities from environmental management
7. Broad-based environmental education and awareness
8. Preparation for climate change

9. Integrated disaster management
10. Preventing air, water and land pollution using available resources wisely
11. Ensuring Sustainable Use of Natural Resources
12. Protecting cultural and natural heritage
13. Protecting plant and animal species
14. Cooperation in Sensible and sustainable trade
15. science and technology
16. Using energy efficiently
17. Joint decision-making on international environmental agreements
18. Coordinated work with the international community
19. Putting the principles to work
20. Obligations of member states
21. Review

These goals and these principles have formed the rationale for many environmental programmes and projects in Member Countries and in the OECS Secretariat, including the OPAAL project.

Line of questioning:

1. As signatories of the St. George's Declaration (SGD) of Principles for Environmental Sustainability, member countries of the Organization of Eastern Caribbean States (OECS) are committed to putting in place a number of strategic actions to improve the environmental management of their natural resources. Goal 3 of the SGD is aimed at managing natural resources and eco-systems effectively so that they remain healthy and productive, while Goal 4 is aimed at enhancing the economic and social benefits associated with sustainable natural resource management. To what extent have the OECS countries advanced these goals?
2. From your point of view, what have been the main successes and achievements?
3. Goals 2, 3, and 4 specifically speak to good governance and participatory planning with civil society to achieve SGD objectives. In your view, are there any steps that governments within the OECS have taken which contradict or undermine these objectives and SGD principles? If so, why has this occurred?
4. How well have the OECS states been doing at engaging civil society in decision-making and management of the environment? What evidence exists that this level of involvement has been taking place?

3. Conflict/Crisis Lens

Aim:

To establish that just because agreement has been reached and commitments made under both the COP10 and the SGD, doesn't mean that taking steps to protect biodiversity is easy to implement. There are real challenges facing biodiversity protection in the region. Hard choices sometimes have to be made about how natural resources are used. Also, there are various constraints – at the national, regional and global level that can limit the extent to which commitments can be realized by member states.

Line of questioning:

1. While the SGD talks about striking a balance between poverty reduction, wealth generation and care and preservation of the environment, in practice – this is often difficult to achieve. From your point of view, what are some of the challenges that are involved in finding and maintaining this balance?
2. Are there any examples from the region that you think are particularly good cases of countries that have been able to get this balance right? If so, how did they do so?
3. Are there any instances where conflicts have emerged over resource use that could not be resolved? Or where they could have been avoided or handled and managed differently?
4. What in your view are the steps to be taken to avoid or reduce such conflicts?
5. Some challenges and constraints to realizing the SGD commitments are at the member state level while others may be influenced by regional events. What specifically are the challenges at the individual member state level in your view? What about challenges at the regional level?
6. What current challenges and conflicts at the global level might limit implementation?
7. What do you consider to be the challenges that will be facing biodiversity protection in the future? Are new challenges likely to emerge? Please elaborate.

4. Political Lens

Aim:

To establish that biodiversity protection and PA management sometimes force politicians to make hard choices and to take steps that are not politically popular, while others may make choices that are politically expedient, but which harm natural resources.

Line of questioning:

There are several challenges and conflicts that can be associated with protected area management. Many of these come with a political price tag and involve political trade-offs – sometimes between different sectors in the economy, short-term growth versus long-term sustainability, or between keeping one's constituents happy even if a choice is environmentally unsustainable. In your view, what are some of the specific challenges that face politicians when it comes to biodiversity protection?

1. What are the views generally of politicians in the region when it comes to protected areas and biodiversity?
2. In your view, how well have the region's politicians managed these issues, when they've emerged?
3. Do you know of any 'champions' in the region that have taken political risks?
4. Can you provide an example of a politician who's own popularity was threatened because they made a choice in favour of biodiversity protection? What happened in this case? How was it resolved? What were the trade-offs?

5. **BUILT ENVIRONMENT LENS**

Aim:

To establish that factors related to our built environment impact biodiversity and that this impact is often harmful, but there are steps which can mitigate these effects.

Line of questioning:

1. 'Development' in the form of construction, manufacturing, urbanization and building can have disastrous effects on biodiversity and natural resources if not properly planned and managed. What are some of the impacts that have resulted from poor planning, or no planning of our built environment in the region? What has been lost with regards to our biodiversity? What has been the human impact in some instances?
2. Given that we, as human beings, cannot avoid the creation of built environments, what are some of the mitigating steps that can be taken to reduce biodiversity loss or avoid it altogether? (policy choices, legal frameworks, new building standards, new building technology, etc.)
3. Are some of these steps being implemented? If so, where? What have been the results?
4. How can positive mitigating steps be replicated and scaled up throughout the region? How should this be encouraged?

6. HUMAN INTEREST LENS

Aim:

To put a human face on protected areas and to show that the PAs do not only have scientific, environmental or tourism value by highlighting personal stories of unique individuals and people who either make their living from protected areas, or who are benefitting from the resources that are being protected.

Line of questions for Beneficiaries of Protected Areas:

1. How do you feel about this area being a protected Area?
2. In what ways do you or have you benefitted from this Protected Area?
3. What are some of the things that you would like to see changed here to strengthen the area
4. What do you like most about the Area

***Note**: the line of questioning here will really depend on the individuals who are to be interviewed. Therefore, this line of questioning may not be of relevance to the experts on the roster.*

7. LIVELIHOOD/POVERTY REDUCTION LENS

Background Information

According to the CBD, over three billion people depend on marine and coastal biodiversity for their livelihoods, including many people in developing countries for whom fishing is a main subsistence and commercial activity

Some 1.6 billion people rely on forests and non-timber forest products for their Livelihoods yet approximately 45% of the Earth's forests have been cleared, and other ecosystems, including wetlands and coral reefs, are also threatened

Habitat degradation and loss of biodiversity threatens the livelihoods of more than 1 billion people living in dry and sub-humid lands.

The agricultural role of pollinators, of which more than 100,000 species are known, is worth over US $50 billion per year.

70% of the world's poor live in rural areas and depend directly on biodiversity for their survival and wellbeing .

Biodiversity contributes to development by supplying material used for small income generating activities, such as the sale of craft items, local foods or traditional medicines.

A shortage of resources increases the workload of poor families, including children, which makes it harder for them to attend school.

Gender equality and women's empowerment are important prerequisites for the conservation of biodiversity and sustainable development.

Hiking through tropical forests, scuba diving, observing wildlife, and many other tourist activities depend on biodiversity.

Aim:

To make the link between sustainable and robust livelihoods and sustainable use of natural resources and to show how they go hand in hand.

Line of questioning:

1. There is much discussion globally that biodiversity protection is essential to human livelihoods. Within our Caribbean region, which livelihoods and economic sectors are most dependent on natural resources and biodiversity in particular?
2. What would happen if these resources are not managed sustainably? What would the economic impact be? What would be the impact of biodiversity loss on the environment?
3. What role do protected areas play then in helping to maintain sustainable use of these resources?

4. What in your view are the key livelihood issues that are associated with PAs in the OECS?
5. How do certain livelihood practices negatively impact the integrity of protected areas?
6. What types of livelihood practices, if any, help support and sustain PAs?

8. Scientific Research/Technology Lens

Aim:

To illustrate that biodiversity protection can be strengthened through sound research by: (1) documenting specie loss and resource use; (2) proving the economic value of biodiversity; and (3) that science and technology can help to find solutions for better biodiversity protection and PA management. However, more needs to be done to make the results of research and their significance known so that it is used effectively.

Line of questioning:

1. Everyday scientific research identifies new species that have never before been seen or tells us that more species are endangered or at risk of extinction. Clearly, science plays an important role in biodiversity protection. How important is this role and what should science be doing in this regard? What benefits does science bring?
2. What has science revealed about biodiversity in our region? What is the scientific state of our biodiversity? What is being lost? Saved? At what rate, and so on?
3. Is this research being done by our own scientists or by researchers from other countries?
4. What are our own scientists working on with respect to our biodiversity? What types of research are relevant to us here?
5. What challenges do they face?
6. What will happen if research on our biodiversity and natural resources are not done?
7. Who is setting the biodiversity research agenda for our region?
8. Can people whose livelihoods depend on natural resources in protected areas be engaged in scientific research? If so, how should they?
9. How can and should the results from research be better shared and understood by everyone who needs to play a role in biodiversity protection?

9. *Spiritual or Wellness Lens*

Aim:

To establish that human beings are part of creation and are morally and spiritually responsible for the protection of biodiversity and the sustainable use of natural resources, but to also stress that caring for biodiversity can lead to spiritual fulfilment and wellbeing. Protected areas provide important places for rejuvenation and reflection.

Line of questioning:

1. Sometimes the protection of biodiversity is presented as a one-way responsibility and something of a heavy burden or onerous task. But in your view, can caring for biodiversity be spiritually uplifting and contribute to wellness? If so, how and is there any scientific data to support that it can?
2. How can visits to protected areas contribute to spiritual wellbeing?
3. How can they contribute to a healthy society?
4. Do human beings have a spiritual or moral obligation to respect biodiversity? And if so, what is our duty in your view?

10.Cultural Lens

Aim:

*To i*llustrate that cultural views and understanding of biodiversity can vary from culture to culture and place to place. The Caribbean has a very vibrant and unique culture that in turn must shape our views on our own biodiversity. Therefore, to enhance biodiversity protection, we must consider the role that culture plays.

Line of questioning:

1. What do you think most people in Caribbean think of when they hear the words (1) 'biodiversity' and (2) 'protected areas'?
2. To what extent do you think these views are shaped by our unique Caribbean culture?
3. In your view, what role does culture play in biodiversity/PA sustainability? What is the relationship between culture and biodiversity protection?
4. To what extent has biodiversity influenced our culture?
5. In what ways do culture, cultural beliefs and cultural practices add to biodiversity loss? Can you give examples or evidence? How widespread might these views/practices be?

6. What, in our culture, supports biodiversity protection? What examples exist?
7. What would you suggest most needs to be considered about our culture when promoting biodiversity protection and the management of protected areas?

11. Disaster Risk Mitigation (DRM) Lens

Aim:

*To e*stablish that biodiversity is often severely threatened during natural disasters and that much of this damage is often the result of poor infrastructural development, but to also indicate that proper care and management of biodiversity – through mechanisms such as protected areas – can go a long way to mitigating natural resources. In short, protecting biodiversity can help Disaster Risk Mitigation (DRM).

Line of questioning:

1. How is biodiversity affected by natural disasters in our region? What currently happens to our biodiversity, and especially our endangered species, when natural disasters – such as hurricanes, droughts or floods - are experienced? What evidence is there to confirm these impacts?
2. What are the root causes of these impacts and which are the most important to consider?
3. What needs to be done about these root causes?
4. What is the relationship between biodiversity protection, the role of protected areas, and mitigation of natural disasters? Can protected areas reduce the type of negative impacts that we currently experience?

12. Climate Change Lens

Aim:

*To e*stablish that the preservation of biodiversity, through the adoption of key practices, may greatly mitigate the negative impact of climate change in our region.

Background/preamble:

According to the CBD, levels of greenhouse gases in the atmosphere are rapidly increasing, warming the Earth's surface and lower atmosphere. Higher temperatures lead to climate change that includes effects such as rising sea levels, changes in precipitation patterns that can produce floods and droughts, and the spread of vector-borne diseases such as malaria. Some areas may benefit from changes in the climate.

Others, including those in least developed countries and small island developing states, may suffer greatly.

There is ample scientific evidence that climate change affects biodiversity. Climate change, according to the Millennium Ecosystem Assessment, is likely to become the dominant direct driver of biodiversity loss by the end of the century. It is already forcing biodiversity to adapt either through changing habitat, life cycles, or development of new physical traits. This, in turn, will affect vital ecosystem services for all humans, such as air and water purification, pollination and production of food, decomposition and nutrient cycling, carbon sequestration, etc.

Biodiversity can also help reduce the effects of climate change. The conservation of habitats, for example, can reduce the amount of carbon dioxide released into the atmosphere. Moreover, conserving mangroves can reduce the disastrous impacts of climate change such as flooding and storm surges. By acting now to mitigate greenhouse gas emissions and identifying systems-based adaptation priorities, we can reduce the risk of species extinctions and limit damage to ecosystems.

By preserving intact habitats, especially those sensitive to climate change; biodiversity may emerge as a solution to climate change.

Line of questions:

1. How is biodiversity being affected by climate change in our region? What is currently happening to our biodiversity, and especially our endangered species, as a result of climate change? What evidence is there to confirm these impacts?
2. What are the root causes of these impacts and which are the most important to consider?
3. What needs to be done about these root causes?
4. Can protected areas play a role in reducing the impact of climate change and if so, how?

13. Behaviour Change Lens

Aim:

*To e*stablish that if biodiversity is to be protected, a number of our current behaviours and habits will need to change.

Line of questioning:

1. In your view, what are the specific behaviours and habits that we need to change here in order to support biodiversity and to also manage our protected areas sustainably?

2. Behaviour changes usually involves more than just changing people's attitudes and perspectives. It also involves re-skilling and retooling people so that they can adopt improved practices. What exactly do you think the people in our region need to KNOW about biodiversity, in order to support positive practices?

3. What do they need to know about the roles and functions of protected areas?

4. Likewise, what do they need to do, or stop doing, in order for biodiversity to be sustained?

5. And what do they need to do, or stop doing, in order for our protected areas to be managed effectively?

6. What are some of the challenges related to positive behaviour change in support of biodiversity?

14. TOURISM/RECREATIONAL LENS

Aim:

To reinforce how important biodiversity protection is to our critical tourism industry, but to also stress that protected areas are not only for 'tourists' to enjoy, but are treasures for everyone living in the region and to encourage their enjoyment by local people.

Background/pre-amble

The CBD has strong recognition of the value biodiversity plays in tourism development.

Tourists are attracted by natural landscapes which harbour significant biodiversity. Tourists in coastal areas enjoy swimming in clean waters among the fish and coral reefs, and watching whales and seabirds. Others hike to see birds or to watch wildlife. All these activities require intact and healthy ecosystems. National parks rely on functioning ecosystems to provide visitors recreation, education, culture and fun.

Tourism is one of the fastest growing industries and can be a sustainable alternative to economic activities that would be damaging to biodiversity. It can be a sustainable alternative to more damaging industries. The money that tourists spend can serve nature, society and culture in the form of protected areas and other attractions. Sustainable tourism can also make communities proud of maintaining and sharing their traditions, knowledge, and art, which contribute to the sustainable use of local biodiversity.

But, tourism can have a variety of negative impacts on biodiversity, particularly when there is no adequate management. Irresponsible and unsustainable tourism can damage nature through habitat destruction, overexploitation of local resources, waste and pollution, invasive alien species, infrastructure development, and greenhouse gas emissions. Tourists expect a clean environment and they will not

return to polluted or degraded destinations, which will cause economic losses.

Travellers, the tourism industry, governments and investors all have an interest in the conservation and sustainable use of resources. Biodiversity keeps tourism going, not to mention that it meets our most basic needs by supplying food, drinking water and medicines. Sustainable tourism is in everybody's interest.

Line of Questioning:

1. Tourism is undoubtedly one of the most important sectors to our Caribbean economies. In your view, what is the relationship between biodiversity, PAs and tourism in the region?
2. If biodiversity and PAs are not sustained, what difference will it make?
3. Where are PAs and tourism working in harmony? What are the results?
4. What do PAs offer in the way of recreation and relaxation for our own people? Who can benefit?

15. EDUCATIONAL LENS

Aim:

*To e*stablish that education is critical for improving behaviours and for building appreciation on the importance of biodiversity and the role of protected areas among our people.

Line of Questioning:

1. How do biodiversity and PAs contribute to education and character development?
2. To what extent are our education systems incorporating learning and teaching about biodiversity and sustainable natural resource management? Is it enough? What else needs to be done?
3. How can learning and education about biodiversity be better designed?
4. What support will teachers need?
5. If biodiversity is left out of the curriculum, will it make any difference? What evidence exists to support this assertion?
6. Are there any good case examples from our region where biodiversity has been successfully mainstreamed into learning? If so, what are the results?

16. MEDICAL LENS

Aim:

One of the most important topics for debate and discussion during the most recent COP10 in Japan, focused on the use of biodiversity and genetic resources for medicinal purposes and how to compensate countries for the use of these resources. These questions should elaborate on this importance and illustrate what new agreements have been made and what it will mean for the region.

Background/Preamble:

Background notes from: http://www.cbd.int/iyb/doc/prints/factsheets/iyb-cbd-factsheet-health-en.pdf

We all rely on biodiversity to stay healthy. Healthy ecosystems prevent human illness by providing food and clean water, and by breaking down and recycling wastes In addition, many plants and other organisms are useful in medical research or contain substances used for medicines.

In the venom of one cone snail, for example, a new painkiller was found that is far stronger than morphine, but unlike morphine, continues to be effective with chronic use. Paclitaxel, used in treating breast, ovarian, and other cancers, comes from the Pacific Yew tree. Polar bears may hold cures for osteoporosis, kidney failure, and type II diabetes. If species such as these disappear, they will take their secrets with them.

Clearing new land, especially in the tropics, for agriculture or settlement may exact a serious toll on human health. It brings people into closer contact with wildlife that may transmit their diseases, and it may reduce populations of predators that hold disease-carrying organisms in check.

HIV entered humans via infected primates, which remain essential models for studying* the disease. Many primate species are endangered because of habitat loss, the bushmeat trade, and other causes. Losing them will decrease our chances of finding a cure for AIDS.

Influenza viruses from pigs, birds and humans routinely swap genetic material. It is the exchange of genes between species that triggers pandemics such as H1N1. As habitat shrinks for wild species, they are more likely to come into contact with each other, domesticated animals, and people, possibly increasing the chance that infections may spread between them and us.

The first records of traditional medicines, such as the oils of cedar, cypress, licorice, myrrh and poppy, date back to 2600 B.C., and they're still being used today.

Antibiotics now come almost exclusively from microbes, with the first being penicillin, isolated from the Pencillium fungus.

Microbes hold vast medicinal potential, yet most are unknown, though they are extremely abundant. In one millilitre of seawater there may be 1 million bacteria; in soil more than 100 million per gram.

Artemisinin, from the sweet wormwood plant is one of the most effective antimalarial drugs used today.

Sharks contain substances that may be able to treat macular degeneration, the leading cause of blindness in the Western world. Sharks also help us understand how our kidneys and immune systems work.

Amphibians produce unique anti-microbial compounds that may lead to our using more effective antibiotic treatments without the development of antibiotic resistance.

Worldwide, there are more than 150 million cases of type 2 diabetes, most of which are related to obesity. These numbers are growing rapidly. The study of denning bears could lead to new, more effective treatments for this dreaded disease.

Schistosomiasis is a parasitic disease afflicting over 200 million people annually. It's carried by freshwater snails. Overfishing may reduce populations of snail predators, resulting in a greater risk of human schistosomiasis.

Deforestation in the tropics tends to favour snails that carry schistosomiasis and mosquitoes that carry malaria.

Line of questioning:

1. Globally, the discovery and development of new medicines has been possible through scientific exploration of biodiversity and the use of genetic resources. And with the advances recently made at COP10, provisions are being designed for the compensation of developing countries when the use of their genetic resources lead to medicinal discoveries. Prior to COP10, these resources were often exploited with no property rights or allowances made for the host country involved. In our region, what types of genetic resources are being considered for medicinal development? Which of our species hold potential for development?
2. What will their development mean for the region? How can we benefit?
3. What use have our traditional medicines made of biodiversity and genetic resources?
4. What role can Protected Areas play in the protection of intellectual property rights with respect to medicinal development of our genetic resources?

17. Intellectual Property Rights

Aim:

To establish that biodiversity protection not only holds promise for medicinal development, but for several other types of innovations for which our intellectual property needs to be protected.

Background/Preamble

The CBD considers traditional indigenous knowledge (IK) as the knowledge, innovations and practices of indigenous and local communities around the world. IT is experience that has been gained over cen-

turies, usually transmitted orally from generation to generation, taking the form of stories, songs, proverbs, beliefs and culture, most often linked to agriculture, animal husbandry, fisheries, health, horticulture, forestry and nature in general.

This knowledge is vital for the conservation of plants and animals, their genetic diversity and for managing the local environment. It can make a solid contribution to sustainable development and allow a sustainable future for all humans.

Traditional knowledge is also widely used by the aromatic, flavouring, food, cosmetic and health industries. Plant-based traditional medicine has often been used to identify and fast-track the development of modern medicines and drugs, not to mention the vast array of cosmetic products.

Most of the world's population relies on traditional knowledge for health needs, whether this is in health shops in developed countries, or in the services of traditional healers in many developing countries.

Unfortunately, new agricultural and industrial products are often developed using traditional knowledge without the prior informed consent of the knowledge holders or without ensuring fair and equitable sharing of the benefits with them.

The Parties to the Convention on Biological Diversity recognize the crucial importance of traditional knowledge to the objectives of the Convention and are considering specific laws, policies and programmes to protect and to promote it, and to ensure that indigenous and local communities obtain a fair and equitable share of the benefits arising from the use of their knowledge.

Line of questioning:

1. Besides developing traditional health knowledge, people in our region have also developed traditional knowledge about agriculture, food production, fishing, craft and other activities that make use of biodiversity and genetic resources. What role can protected areas play in preserving and supporting this knowledge?
2. How can this knowledge be made more visible and receive greater recognition?
3. What specific traditional practices are in danger if our biodiversity is not protected?
4. Who stands to lose the most? What will happen to them?

18. AGRICULTURAL LENS

Aim:

*To m*ake the link between food security, food sovereignty and biodiversity in the region.

Background/Preamble

Biodiversity is the foundation of agriculture. Agricultural biodiversity includes ecosystems, animals,

plants and microorganisms related to food and agriculture. Today most species of crops and domesticated livestock are the result of thousands of years of human intervention such as selective breeding and other farm practices.

Agricultural biodiversity provides food and raw materials to produce goods. Moreover, every plant, animal and microorganism plays its part in the regulation of essential ecosystem services, such as water conservation, decomposition of waste and nutrient cycling, pollination, pest and disease control, climate regulation, erosion control and flood prevention, carbon sequestration and many more.

While modern agriculture has enabled food production to increase, contributing much to improving food security and reducing poverty, it has also been responsible for considerable damage to biodiversity, primarily through land-use conversion but also through overexploitation, intensification of agricultural production systems, excessive chemical and water use, nutrient loading, pollution and introduction of alien species.

It is better to use and manage agricultural landscapes wisely and sustainably. Although farmers' traditional knowledge is central to both sustaining biodiversity and ensuring global food security, today it is as well considered by many to be part of the much-threatened global commons.

Farmers are requested to both preserve biodiversity and contribute to meet the nutritional needs of a growing population. However, they do not control all factors involved including those related to agricultural policies, incentives, markets or consumption patterns, and therefore need support from government policy.

To ensure food security, adequate nutrition and stable livelihoods for all human beings, we must adopt sustainable and efficient agriculture, sustainable consumption and preserve biodiversity.

Line of questioning:

1. What role do biodiversity and protected areas play with regard to agriculture, food security and food sovereignty?
2. in what ways is agriculture and our food security at risk from biodiversity loss?
3. In what ways do our agricultural practices harm biodiversity protection? How does agriculture need to change to facilitate biodiversity protection?
4. In what ways can agriculture help biodiversity protection?
5. What examples do we have from the region of how agriculture is helping?

19. Economic Accounting Lens

Aim:

To illustrate that the real economic value of biodiversity has been under-accounted or missing altogether from national and global accounting of gross domestic product.

Background/Preamble

Background notes from: http://www.cbd.int/iyb/doc/prints/factsheets

The CBD clearly states that biodiversity is the basis for ecosystem services, and is essential for human well-being and economic development. Biodiversity and ecosystem services therefore are of tremendous economic value. However, many ecosystem services are not traded on markets and their value is not properly reflected in existing market prices for other goods and services. Markets, when left alone, do not tell the 'ecological truth' and will therefore provide insufficient, if any, incentives to individuals, companies and governments to use biodiversity, and related ecosystem services, in a sustainable manner.

The reason for this market failure is simple. Most biodiversity components are considered "public goods", belonging to everyone and to no one. Consequently there is little concern in economic decision-making for their conservation and sustainable use. The economic work under the Convention seeks to elucidate this 'hidden' economic value of ecosystem services and the underlying biodiversity, and incorporate it into market prices through the use of incentive measures that favour the conservation and sustainable use of biodiversity.

Work under the Convention, in partnership with the World Trade Organization, also looks at the relationship between its provisions and international trade rules. This is part of a broader effort by the international community to ensure harmony and mutual support between international trade rules and international environmental law, in order to both maintain biodiversity and promote international trade, for the common goal of sustainable development. An important goal of the Convention is that no species of wild flora and fauna should be endangered by international trade hence the CBD is closely cooperating with the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

Positive incentive measures are economic or legal measures that encourage beneficial activities, such as payments for organic farming, agricultural land set-aside schemes, and the promotion and commercialization of biodiversity-based goods which are produced in a sustainable manner ('biotrade'), through,

for example, certification and eco-labelling. Negative incentive measures (or 'disincentives') aim to discourage harmful or unsustainable activities through user fees, pollution taxes etc.

The Convention addresses policies or practices that generate "perverse" incentives which accelerate biodiversity loss, for example, public subsidies that support unsustainable farming, forestry or fishery. The CBD encourages policymakers to identify such perverse incentives and remove them or mitigate their adverse effects on biodiversity.

Line of questioning:

1. What in your view is the real value of biodiversity?
2. What is the current global thinking in this regard and what debates are being discussed?
3. In our region, to what extent do you think we have really valued the economic value of biodiversity? How are we currently quantifying its economic value?
4. What role do protected areas play in securing this economic value? What other 'values' do protected areas contribute to?
5. What constraints and challenges do our governments face in accounting for the value of biodiversity?
6. What can be done to increase recognition of its value and bring it in line with national accounting?

20. ***CELEBRITY LENS***

Aim:

To explore the role that celebrities can play in promoting biodiversity protection and to look at opportunities for linking with existing opportunities that may make it easier.

Background links on Harrison Ford's work:

- Harrison Ford Chides US for Spurning Biodiversity Treaty http://news.mongabay.com/2010/1028-hance_harrison_ford.html
- July 2002 "Harrison Ford Puts Spotlight on Protecting Species". http://www.conservation.org/newsroom/pressreleases/Pages/harrison_ford_spotlight_on_species.aspx
- Youtube plea: http://www.youtube.com/watch?v=LPqMYXBm3mE

Line of questioning:

1. Since the early 2000s, movie star Harrison Ford has launched a campaign to stop biodiversity loss and he recently re-activated his petitions in support of the COP10 on the CBD. In fact, he attended the convention and publicly scolded his own country for not supporting the treaty. While he is not a Caribbean personality, how effective do you think he would be at promoting biodiversity in our region? (note: Harrison Ford is currently sponsoring a major campaign now related to biodiversity protection)
2. Would it be useful to join his efforts and partner with his own campaign?
3. What other celebrities could play a role in this effort, whether international and regional celebrities?
4. Which celebrities have actually visited protected areas in the OECS or own property here? For example, Nicholas Cage reportedly owns a home in Soufriere, Saint Lucia and could be enlisted to support the marine park there. Who else might have similar vested interests in biodiversity protection?
5. Which regional celebrities care? What celebrities may have visited protected areas in the region?
6. Which celebrities care about biodiversity and protected areas? Why? What are they doing?

Appendix D

IMPORTANT LINKS

The Environment and Sustainable Development Unit (ESDU) of the OECS. http://www.oecs.org/esdu/

The **United Nations Environmental Program-Caribbean Environmental Program** http://www.cep.unep.org/ is responsible for the LBS protocol and SPAW – two key UNEP programs that deal with biodiversity protection. Their website has a wealth of information, reports and resources that journalists can access to provide scientific depth to their stories.

CERMES UWI – Cave Hill Barbados http://www.cavehill.uwi.edu/cermes/. The Centre for Resource Management and Environmental Studies (CERMES) promotes and facilitates sustainable development in the Caribbean and beyond through graduate education, applied research, innovative projects, professional training, involvement in the national regional and global initiatives.

The Institute for Sustainable Development of the University of the West Indies, Mona, http://www.uwi.edu/isd/default.aspx

CARIBSAVE is a partnership between the Caribbean Community Climate Change Centre (CCCCC) and the University of Oxford. The CARIBSAVE Partnership addresses the impacts and challenges surrounding climate change, tourism, the environment, economic development and community livelihoods across the Caribbean Basin. The CARIBSAVE program includes research studies and activities that impact biodiversity protection. http://www.caribsave.org/

The Nature Conservancy's (TNC) Caribbean programme (http://www.nature.org/wherewework/caribbean/) is also another key partner in biodiversity protection and its site also provides important sources of information for journalists to utilize Recently, TNC has launched its Caribbean Challenge program which is encouraging countries to expand their marine protected area systems to include at least 20 percent of their near shore area by 2020 ; to develop conservation finance mechanisms (such as park entrance and user fees, and concessions) to create sustainable funding for national protected area systems and to promote strategies to help corals adapt to increasing stresses caused by climate change. http://www.nature.org/ourinitiatives/regions/caribbean/caribbeanchallenge/howwework/Caribbean-Challenge-How-it-Works.xml

The **Caribbean Natural Resources Institute (CANARI)** http://www.canari.org/ is a non-profit organisation who's geographic focus is the islands of the Caribbean but its research findings are often relevant and disseminated to the wider region.

The **International Council for Science**. Regional Office for Latin America and the Caribbean. (March 2009). Biodiversity Knowledge, scope of research and priority areas: an assessment for Latin America and the Caribbean". http://www.icsu-lac.org/rc_lac/rclac6/Final%20Report_biodiversity_final_completo.pdf

The Latin America and Caribbean page on the **SciDevNet** http://www.scidev.net/en/latin-america-and-caribbean/ which is kept very up to date and which provides several resources for journalists in particular.

Conservation International (CI) applies innovations in science, economics, policy and community participation to protect the Earth's richest regions of plant and animal diversity.CI works in more than 40 countries on four continents to help people find economic alternatives without harming their natural environments. www.conservation.org.

The World Conservation Union (IUCN) The World Conservation Union is the world's largest conservation network and brings together 84 States, 108 government agencies, more than 800 non-governmental organizations (NGOs), and some 10,000 scientists and experts from 181 countries in a unique worldwide partnership. The Union's mission is to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable. www.iucn.org. The IUCN's Red List of endangered species is particularly important resource http://www.iucnredlist.org/

The Global Marine Species Assessment (GMSA) The Global Marine Species Assessment began in late 2005 and is based in the Department of Biological Sciences at Old Dominion University. This project will be the first global review of the conservation status of every marine vertebrate species, and of selected invertebrates and plants. The project involves a range of partners in compiling and analyzing all existing data on approximately 20,000 marine species, and will determine the risk of extinction according to the IUCN Red List Categories and Criteria. www.sci.odu.edu/gmsa

The World Database on Protected Areas (WDPA) http://www.wdpa.org**.**

Birdlife International http://www.birdlife.org

Royal Society for the Protection of Birds http://www.rspb.org.uk

Environmental Defence Fund http://www.edf.org/page.cfm?tagID=445

Green facts: http://www.greenfacts.org/en/biodiversity/index.htm; http://www.greenfacts.org/en/biodiversity/l-2/6-conserve-biodiversity.htm#0 \

World Resources Institute - http://www.wri.org/ecosystems

Living on earth Radio site " http://www.loe.org/ "

The Knight Centre for Environmental Journalism http://ej.msu.edu/resources.php

Edward Troon and Ranu Abhelakh**'s** photo website: www.artnphoto.org

Additional Valuable Related Links and Sources of Research

1. The Convention on Biodiversity http://www.cbd.int/ has the most information on biodiversity, globally.
2. Green facts: http://www.greenfacts.org/en/biodiversity/index.htm; http://www.greenfacts.org/en/biodiversity/l-2/6-conserve-biodiversity.htm#0 \
3. The Law of the Sea convention . http://www.un.org/Depts/los/convention_agreements/convention_overview_convention.htm
4. The World Resources Institute - http://www.wri.org/ecosystems Excellent Sources of Research Data – Global
5. The Cartagena Protocol on Biosafety http://bch.cbd.int/protocol/background/
6. The CITES Convention on the International Trade in Endangered Species of Wild Flora and Fauna http://www.cites.org/
7. The Convention on Wetlands of International Importance Especially as Waterfowl Habitat. http://www.ramsar.org
8. The Cartagena Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena Convention, 1983) http://www.cep.unep.org/cartagena-convention/cartagena-convention.pdf and its subsequent protocols:

    - Land Based Sources (LBS) of Pollution Protocol http://www.cep.unep.org/pubs/legislation/lbsmpnut.html
    - Specially Protected Areas and Wildlife (SPAW) protocol http://www.cep.unep.org/pubs/legislation/spawnut.html
    - Protocol Concerning Co-operation and Development in Combating Oil Spills in the Wider Caribbean Region http://www.cep.unep.org/pubs/legislation/oilspillnut.html

9. The MARPOL Convention on the Prevention of Marine Pollution by Dumping Wastes and other Matter (1973) http://www.imo.org/About/Conventions/ListOfConventions/Pages/Convention-on-the-Prevention-of-Marine-Pollution-by-Dumping-of-Wastes-and-Other-Matter.aspx
10. Framework Convention on Climate Change (1992) http://unfccc
11. The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1989) http://www.basel.int/
12. International Treaty on Plant Genetic Resources for Food and Agriculture http://www.planttreaty.org/index_en.htm

APPENDIX E

Organization of Eastern Caribbean States (OECS)

OECS Protected Areas and Associated Livelihoods project (OPAAL)

RELEASE FORM

I, _____, hereby grant the Organization of Eastern Caribbean States (OECS) and the OECS' Protected Areas and Associated Livelihoods project (OPAAL) , and those acting pursuant to its authority to use (full or in part), exhibit or distribute all photographs, videotapes taken of me, and/or recordings made of my voice and or/written extract, in whole or in part, without restrictions or limitations for any educational or promotional purpose which the OECS, and those acting pursuant to its authority, deem appropriate.

Name: .....

Signature: .....

Address: .....

Telephone: .....

Email Address: .....

Witness Signature: .....

Date: .....

APPENDIX F

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