



Caribbean Regional Conference

“Integrating Climate Adaptation Planning into Coastal Zone Management using Ecosystem Services”

*Belize City, BELIZE
October 9-11, 2012*

Conference Report

Summary

The Belize Coastal Zone Management Authority and Institute, in partnership with the Natural Capital Project, and with support from the World Wildlife Fund, Inter-American Development Bank, Caribbean Community Climate Change Center and the Nature Conservancy hosted a regional conference on integrating climate change adaptation planning into coastal zone management using the framework of ecosystem services in Belize City, Belize from 9 to 11 October 2012. This report outlines the proceedings of the conference and summarizes the feedback and recommendations from the participants on the scientific, economic, social and institutional issues relating to the identification of climate change adaptation management strategies options relevant to coastal and small-island developing states within the Caribbean region.



Contents

	<i>Page</i>
I. Proceedings of the Conference	
A. Opening of the Conference	3
B. Organization of the Conference	4
II. Summary of Presentations	5
III. Climate Change Adaptation Recommendations	7
IV. Feedback and Recommendations	10
V. List of Participants	13



I. Proceedings of the Conference

A. Opening of the Conference

The Caribbean Regional Conference on integrating climate change adaptation planning into coastal zone management using ecosystem services was organized by the Belize Coastal Zone Management Authority and Institute (CZMAI) in collaboration with the Natural Capital Project. Dr. Wendel Parham, Chief Executive Officer of the Ministry of Forestry, Fisheries and Sustainable Development under which the CZMAI falls, delivered the opening address in which he welcomed participants and underscored the importance of climate change in national development planning for Belize. He also stated his Ministry's support for such initiatives.

Following Dr. Parham's address CZMAI's Chief Executive Officer, Mr. Vincent Gillett, presented opening remarks to the conference participants in which he discussed CZMAI's current utilization of ecosystem services as an approach for the development of its coastal and marine zoning scheme that should balance competing interests among human uses within the coastal zone while meeting national sustainable development objectives. He also stated that prior to 2008, scant regard was given to addressing the matter of climate change adaptation planning in Belize's previous coastal zone management efforts. There is now recognition that to exclude climate change from planning and management is impossible, especially since the impacts of climate change on coastal resources are already occurring. He encouraged participants to participate fully in the interactive discussions and to use the conference as an opportunity to learn from the experiences from the countries represented.

Dr. Mary Ruckelshaus, Managing Director of the Natural Capital Project at Stanford University, outlined the goals of the conference. The goals of the conference included the following:

- (a) To showcase the Belize Integrated Coastal Zone Management Plan as a regional model for sustainable planning;
- (b) To share lessons and innovation across the Caribbean in developing and implementing coastal zone management and climate change adaptation plans;
- (c) To explore the importance of ecosystem services for decision-making related to climate change and coastal zone management; and
- (d) To present practical tools and strategies for addressing climate change and coastal zone management

Dr. Ruckelshaus also thanked all the organizations that co-sponsored the workshop and all conference participants.



The keynote address was delivered by Dr. Leonard Nurse, Senior Lecturer at the University of the West Indies at Cave Hill, Barbados and Chairman of the Board of Directors of the Caribbean Community Climate Change Center. His talk focused on considerations for mainstreaming climate change adaptations in coastal planning in the Caribbean. He emphasized that climate change adaptation response is part of a broader suite of policy interventions and to this end countries need to incorporate climate change adaptation policy considerations within the framework of their national development policies.

A total of 50 participants attended the conference, which included experts from Barbados, Canada, Guatemala, Jamaica, Trinidad and Tobago, the United States of America and Belize. These participants represented several government ministries and departments, non-governmental organizations and educational institutions.

The conference was made possible with financial support from the World Wildlife Fund/Inter-American Development Bank, Caribbean Community Climate Change Center and The Nature Conservancy.

B. Organization of the Conference

The conference was conducted over three days, comprised of the following sessions:

(a) Two (2) days of policy discussions

The first two days of the conference consisted of a combination of country presentations and plenary discussions. Country presentations allowed representatives from Barbados, Belize, Jamaica and the United States of America to present their country's experiences, highlighting their successes and challenges, in the context of: (i) coastal zone management and planning, (ii) disaster risk management and climate change adaptation planning and (iii) climate change adaptation strategies. Plenary discussions were dedicated to linking climate change adaptation to coastal zone management and identifying feasible, efficacious climate change adaptation options for the Caribbean region and developing climate change scenario using knowledge about purported impacts on ecosystem services.

(b) One (1) day technical training seminar on ecosystem-service models

The third and final day of the conference was dedicated to training conference participants on the use of one available tool and associated data applicable for linking coastal zone management and climate change adaptation planning.

InVEST, a family of ecosystem service models for mapping and valuing the goods and services from nature which are essential for sustaining and fulfilling human life, was used to demonstrate how the of ecosystem services modeling framework could enhance



coastal zone management through the use of climate change adaptation scenario. InVEST, Integrated Valuation of Ecosystem Services and Tradeoffs, is developed by the Natural Capital Project.

II. Summary of Presentations

A total of fourteen (14) presentations were presented during the conference along the lines of the following topical areas:

A. Coastal Zone Management and Planning

Following the keynote address on mainstreaming climate adaption considerations in coastal planning for the Caribbean, representatives from Barbados, Belize, and Jamaica outlined their country's experiences with coastal zone management planning, highlighting their success, challenges, and recommendations for the way forward. Representatives from the Natural Capital Project also supplemented Belize's presentations by providing an overview of the Natural Capital Project's ecosystem-services modeling tool, InVEST, and its applicability for climate change adaptation and marine spatial planning.

Dr. Cassandra Rogers, Natural Disaster and Risk Management Lead Specialist of the Inter-American Development Bank (IADB), discussed the IADB's collaboration with the Government of Barbados and the country's successful 30-year experience in coastal zone management. She cited that this country's success was largely attributed to the fact that coastal zone management has always received the highest priority, despite political cycles and changes in the Barbados government. One challenge identified by Dr. Rogers was that strategic social partners have been absent from the coastal zone management dialogue.

Chantalle Clarke, Coastal Planner of the Belize Coastal Zone Management Authority and Institute, presented an overview of how ecosystem-based approaches to coastal and marine spatial planning has helped to inform Belize's Integrated Coastal Zone Management Plan. She cited the importance of the approach Belize has embraced for attaining sustainable development objectives through the reduction of conflicts among multiple sectoral users and the lessening of impacts at the ecosystem level. Ms. Clarke cited that one of the challenges in the planning process was to acquire spatial data on the range of human uses within the coastal zone. However, this was overcome by converting non-spatial information into spatial layers.

Samir Rosado, Coastal Science Research Officer at the Belize Coastal Zone Management Authority & Institute discussed the important role of stakeholder engagement for the development of Belize's marine spatial plan. He pointed out the successes and challenges of the stakeholder engagement process for policy development in the context of coastal and marine spatial planning. Immediately following Mr. Rosado's presentation was a featured



talk by one stakeholder that participated in CZMAI's planning process. Mario Chavarria, General Manager of the Toledo Development Corporation, provided the stakeholder perspective on the planning process.

Maritza Canto, GIS Analyst at the Belize Coastal Zone Management Authority and Institute, presented Belize's experiences with InVEST for its marine spatial planning process. Ms. Canto detailed both the favorable outcomes and challenges from the application of InVEST and offered recommendations for novice users of the tool based on the lessons learnt from the Belize experience.

Sean Green, Ecosystems Management Branch Coordinator of Jamaica's National Environment and Planning Agency delivered a presentation on the experiences of Jamaica with the implementation of its coastal zone management plan. Mr. Green expressed that Jamaica's current challenges for implementing its coastal zone management are financial and legislative in nature. However, with the existence of a recently completed national development plan, *Vision 2030*, it is hoped that the enabling legislation for coastal zone management will be streamlined under this planning framework.

Each presentation was followed by a question and answer session in which other participants shared their observations, recommendations and country experiences.

B. Disaster Risk Management and Climate Change Adaptation Planning

Representatives from Belize and Jamaica shared their country's assessment of human resources and productive sectors that are most vulnerable to the incidence of natural disasters. Both presenters identified the implications of climate change planning to disaster risk reduction and management. Guiding principles and current initiatives being utilized by Jamaica and Belize were also presented as a model for how countries with similar national circumstances could develop a comprehensive approach to climate-related risk management. One salient recommendation was the need to promote synergies between disaster risk management and climate change adaptation for the implementation of effective strategies for managing risks resulting from extreme climatic events.

Presenters included P. Noreen Fairweather, National Emergency Coordinator of Belize's National Emergency Management Organization and Ronald Jackson, Director General in the Jamaica Office of Disaster Preparedness and Emergency Management. Each presentation was followed by an interactive question and answer session.

C. Climate Change Adaptation Strategies

There were several presentations made on a range of possible climate change adaptation strategies and options for the Caribbean, which included utilizing ecosystem-based approaches and building climate change resiliency into protected area management.



Dr. Marianne Fish, Climate Adaptation Specialist for WWF’s Latin America and Caribbean Program, presented a wide range of climate change adaptation options relevant for the Caribbean region.

Lynelle Williams, Climate Change Technical Associate of The Nature Conservancy Belize Program, discussed the integration of climate change adaptation considerations into protected area management within the Gulf of Honduras.

Dr. Katie Arkema, Marine Ecologist at the Natural Capital Project at Stanford University, introduced the conference participants to the use of ecosystem services for informing climate change adaptation strategies.

Amy Rosenthal, Science-Policy Specialist of the Natural Capital Project/World Wildlife Fund, outlined the recommended key steps for the development of scenarios of future changes as an adaptation approach to climate change.

III. Climate Change Adaptation Recommendations

During the first two days of the conference, plenary discussions were held, the main objective of which was to engage conference participants in discussion on identifying climate change adaptation options for the Caribbean, through linking coastal zone management and adaptation to climate change, and using the context of ecosystem services. The outcomes of the sessions are summarized below:

Realistic Climate Change Adaption Options for the Caribbean and their Potential Benefits and Costs

The main climate change adaptations options identified for the Caribbean are below:

Climate Change Adaptation Options
1. Mangrove Re-plantation
2. Coastal Armoring/Hardening of Shorelines
3. Coastal Re-engineering
4. Minimum Elevation Levels
5. Coastal Setbacks
6. Replacement of low-cost infrastructure
7. Retreat, Relocation of Vulnerable Communities
8. Resiliency-building in MPA networks
9. Alternative Livelihoods for resource-dependent communities

At the beginning of these discussions, some participants pointed out that in addition to being realistic and economically-feasible, climate change adaptation options for the Caribbean must also be efficacious, whereby there is also cultural, social, economic and political acceptability.



In addition to this recommendation, other participants suggested that the options presented should not be considered in isolation of each other but rather as a suite of adaptation options that can co-occur.

In discussing the cost of the options, participants suggested that a “one-size-fits-all” approach cannot be applied as different states within the Caribbean region have unique circumstances. For instance, a realistic adaptation option for some countries might be continuously replace structures because this strategy is less costly than the costs associated with the relocation of structures and entire communities from within vulnerable areas. For other countries, it might be realistic to discourage further development of an inhabited vulnerable area but to protect existing assets and hold the number of people at risk constant. Thus, the climate change adaptation options must be assessed on a country-specific basis. Finally, participants recommended that in addition to examining the outcome of cost-benefit analyses for each adaptation option, consideration of incentives and disincentives should be incorporated.

Challenges and/or Synergies for Integrating Climate Change Adaptation into Coastal Zone Management

Participants identified the lack of visionary political leadership as one of the main challenges for integrating climate change adaptation into coastal zone management, highlighting the seeming inability of those in “power positions” to think in the long term. In addition to prioritizing the short term objectives over long term goals, there is also some level of political skepticism about climate change and the importance of ecosystem services. In order to improve synergies, participants recommended that regulatory agencies should fill the role of planners of sustainable futures rather than as enforcers of legislation.

To this end, participants also recommended the need for improved communication and integration of policies and regulations of agencies tasked with sustainable development planning.

Climate Change Impacts and Adaptation Options for Ecosystem Services

Discussions focused on the three ecosystem services that are being modeled using InVEST, and includes coastal protection, tourism & recreation and fisheries (lobster and conch).

Coastal Protection

In considering the impacts of climate change on coastal ecosystems to provide protection services, especially from storms, participants noted that sea level rise contributes to significant coastal erosion, mostly exacerbated by loss of shoreline vegetation. Increased temperatures could also create extraordinary increases in primary productivity of mangrove forests, resulting in low viability mangroves with reduced structural ability to provide protection.



Participants recommended that ecosystem restoration and habitat restoration are prioritized. The identification of vulnerable and resilient of habitats needs to occur. Where resilient habitats have been identified, participants in this discussion group asserted that the goal should be to protect them to every extent of the law. Participants also underscored the fact that in discussing adaptation options to the impacts of climate change on coastal protection services provided by the natural environment, the protection of life and property must also be considered. The application of proactive processes, rather than reactive actions, could help vulnerable communities to better adapt to any loss of coastal protection services. The development of disaster risk reduction and management programs and stringent building codes are two feasible adaptation options for the Caribbean.

Tourism & Recreation

Participants in this discussion group identified direct and indirect impacts on the tourism sector and related tourism products resulting from climate change. It was pointed out that increasing temperatures are affecting diving activities in the Caribbean, are causing coral bleaching and are contributing to the increased incidence of storms. Sea level rise is reducing the recovery and reproductive rates of corals. Indirect impacts from climate change on the tourism sector that participants discussed included infrastructural damage from storms, and a reduction in tourist visitation due to temperature changes and the increased occurrence of storms, especially during the high tourism season.

In order for the tourism sector to survive in spite of climate change, participants recommended the need for countries in the Caribbean region to diversify their tourism product beyond sun-sand-beach and scuba. Countries could consider having their tourism product receive some sort of green certification and market their unique products as such.

Fisheries (Lobster and Conch)

In terms of the lobster and conch fisheries, sea level rise and ocean acidification were cited among participants in this discussion group as the two climate change factors that threaten to have the most significant impacts. Sea level rise is purported to affect the in-sediment stage of the conch life cycle and could also affect certain habitats, like mangrove, that are important for the lobster at certain stages of its life cycle. Ocean acidification could possibly affect the important formation of exo-skeleton in conch, and to a lesser extent in lobster.

Participants recommended several adaptation strategies to help the lobster and conch fisheries in the Caribbean to cope in light of the threats of climate change. These recommendations included the introduction of new quotas/re-adjustment of existing; the implementation of minimum and maximum catch sizes; re-designing marine protected areas to highlight refugia areas, limiting the number of fishers that participate in the fisheries and instituting conditions for obtaining fisherfolk licenses.



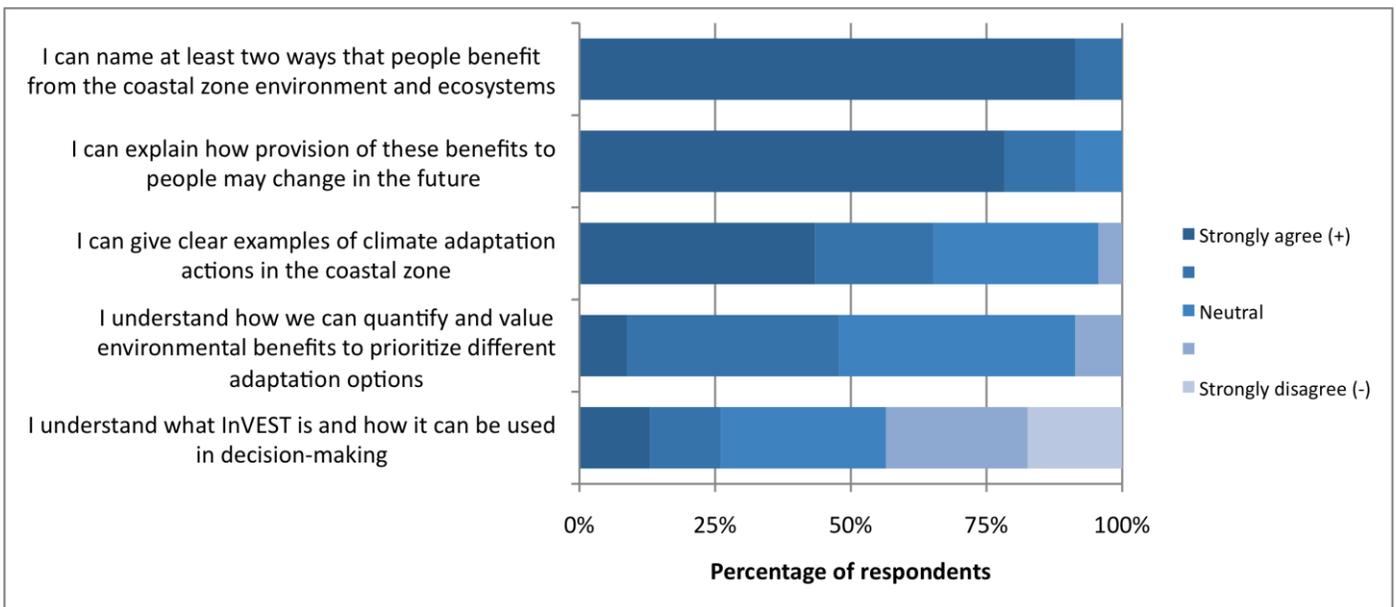
IV. Feedback and

Recommendations

Participants were provided with pre and post-conference surveys¹. The pre-conference survey was aimed at assessing participants’ expectations, general knowledge on the topics to be covered at the conference and how they intend to use the knowledge gained at the workshop in their respective fields. The post-conference survey was geared at assessing whether participants’ felt that the conference goals were met, whether activities enhanced their knowledge on the substantive topics covered and their overall satisfaction level of the conference.

Participants that responded to the pre-conference survey cited the main reason for attending the conference was to learn about approaches for integrated coastal zone management being undertaken by Belize and the experiences of other countries in the Caribbean, including the incorporation of climate change adaptation considerations. Other reasons included learning from and sharing experiences with each other on climate change impacts to specific ecosystem-services.

A summary of participants’ indicated knowledge level of the substantive topics to be covered prior to the conference is summarized below:

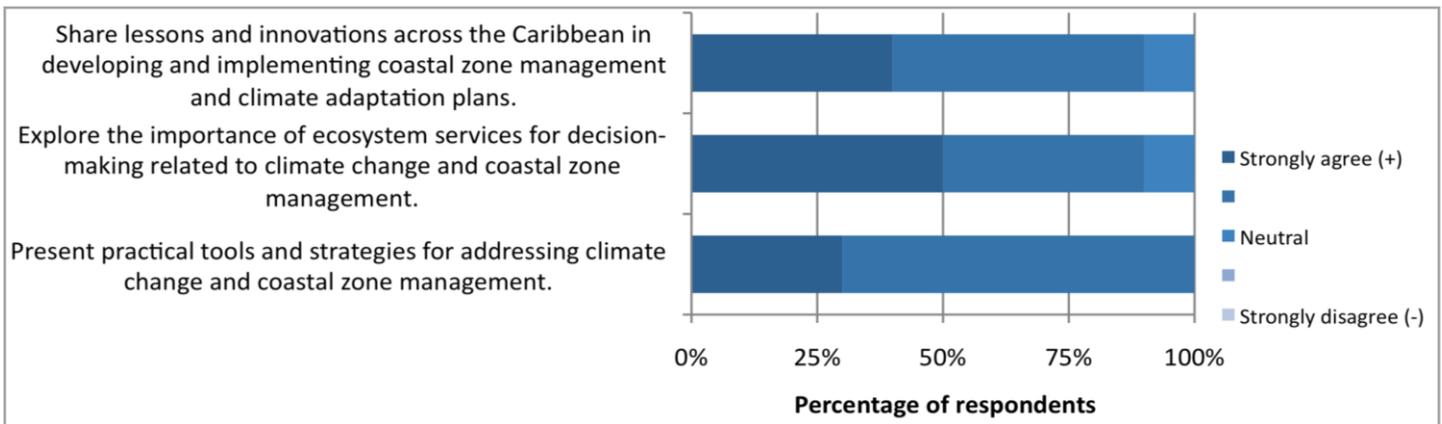


¹ The statistical power of these results is limited by the low response rate to the survey. 26 Participants took the pre-conference survey while 10 participants took the post-conference survey. Low response rates were attributed to a variety of reasons, including early departure by some participants.

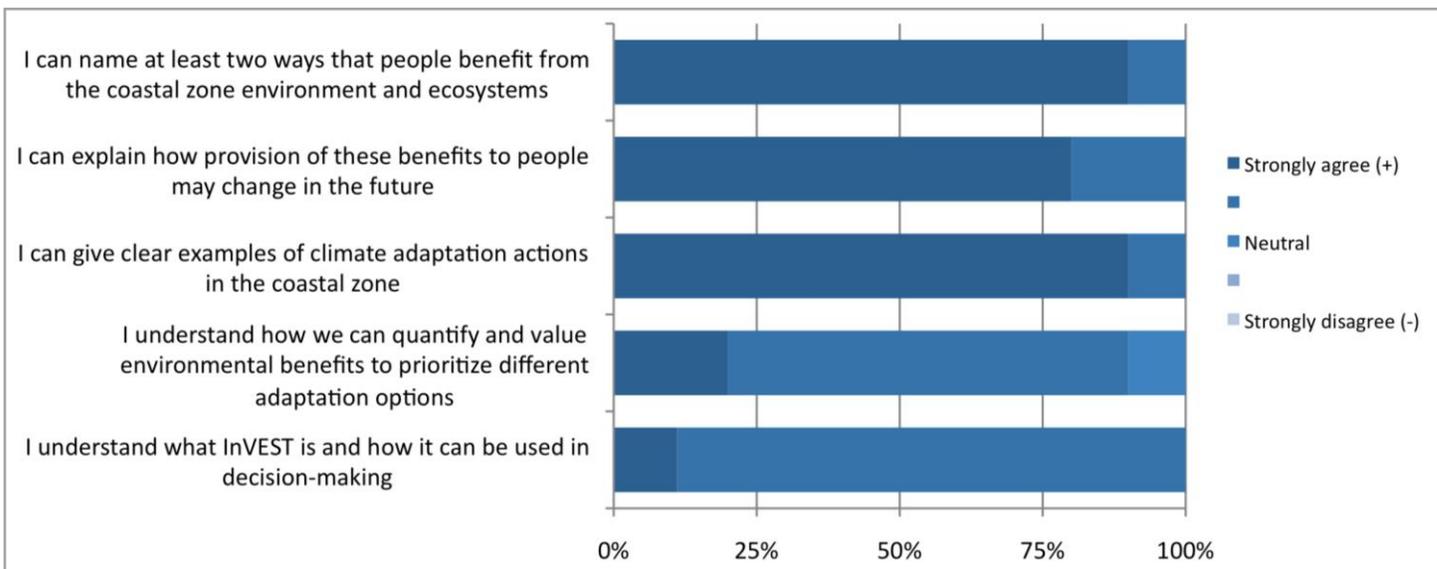


Participants’ responses to the question about their intended future use of the knowledge gained at the conference varied. The responses ranged from use of the conference information for research and educational purposes to enhancing technical capacity for strategic decision-making in their respective organizations or fields.

Overall, participants expressed that the conference was well-organized and met their expectations. They also reported that the goals set for the conference were achieved.



Participants also reported an increase in their knowledge level in the areas of climate change adaptation and ecosystem benefits to humans after participating in the conference activities.



Participants also highlighted the following as some of the most useful aspects of the conference:

- (a) The presentations were very informative. The country presentations that outlined current activities in respect of coastal zone management, disaster risk management and climate change adaptation, were especially helpful.



- (b) The interactive plenary discussions
- (c) Opportunities for networking and dialogue-exchange
- (d) The hands-on technical training using the InVEST tool and relevant data to examine the applicability of an ecosystem service approach for climate change adaptation.

The participants made the following recommendations for future conferences or workshop on integrating climate change adaptation and coastal zone management using ecosystem-services:

- (a) Make presentations available to participants prior to the conference as this would allow participants to better follow the information presented over the three days
- (b) Allot more time for the technical training in InVEST to allow participants to better understand how it works in a broader sense and also to feel comfortable with using the software and associated data, and interpreting outputs
- (c) Improve facilitation for group discussions as some of the facilitators did not clearly outline objectives at the very beginning of the discussions
- (d) Provide better time management for the conference activities, primarily the presentations and their question and answer segments
- (e) Share updates to InVEST model software and any other helpful resource documents



V. LIST OF PARTICIPANTS

Barbados

Dr. Leonard Nurse

Senior Lecturer
CERMES
University of the West Indies at Cave Hill St.
Michael, BB 11000
Barbados, W.I.
(246)-417-4344
leonard.nurse@cavehill.uwi.edu

Barbados

Dr. Cassandra Rodgers

Disaster Risk Management Lead Specialist
Inter-American Development Bank
Mervue House, Marine Gardens
Hastings, Christ Church, BB14047 Barbados,
W.I.
(246)-227-8533
cassandrar@iadb.org

Belize

Dr. Wendell Parham

Chief Executive Officer
Ministry of Forestry, Fisheries & Sustainable
Development
Ground Floor, Sir Edney Cain Building,
Belmopan, Belize
(501)-822-0810
ceo@ffsd.gov.bz

Belize

Nadia Bood

Reef Scientist & Climate Change Officer
World Wildlife Fund
Mesoamerican Reef Program
1154 Sunrise Ave, Unit 102
Belize City, Belize
(501)-223-7680
nbood@wwfca.org

Belize

Carren Williams

Principal Land Information Officer
Ministry of Natural Resources and Agriculture
Belmopan, Belize
(501)-802-2598 ext 118
plio@mnrei.gov.bz

Belize

Virginia Burns-Perez

Technical Coordinator
Wildlife Conservation Society
1755 Coney Drive
Belize City, Belize
(501)-223-3271
vburns@wcs.org

Belize

Lynelle Williams

Climate Change Technical Associate
The Nature Conservancy
14A Garden City Plaza,
Mountain View Boulevard
Belmopan, Belize
(501)-822-0274
lmartinez@tnc.org

Belize

Leandra Cho-Ricketts, PhD

Science Director (Marine)
Environmental Research Institute
University of Belize
Price Center Road,
Belmopan, Belize
(501)-822-2701
lricketts@ub.edu.bz



Belize

P. Noreen Fairweather

National Emergency Coordinator
National Emergency Management Organization
Belmopan, Belize
(501)-822-0995
nemocoordinator@nemo.org.bz

Belize

Amanda Acosta

Executive Director
Belize Audubon Society
12 Fort Street, P.O. Box 1001
Belize City, Belize
(501)-223-4987
executivedirector@belizeaudubon.org

Belize

Melanie McField, PhD

Director
Healthy Reefs Initiative
1755 Coney Drive,
Belize City, Belize
(501)-223-4898
mcfield@healthyreefs.org

Belize

Cecy Castillo

Lecturer (Natural Resources Management)
University of Belize
University Drive
Belmopan, Belize
(501)-822-1000 ext 449
cacastillo@ub.edu.bz

Belize

Safira Vasquez

Project Manager
National Climate Change Office
Ministry of Forestry, Fisheries & Sustainable
Development
Belmopan, Belize
(501)-822-0810
promg.cc@ffsd.gov.bz

Belize

Abil Castaneda

Senior Tourism Officer
Ministry of Tourism & Culture
106 South Street, P.O. Box 325
Belize City, Belize
(501)-227-2801
abil.castaneda@tourism.gov.bz

Belize

June Sanker

Tourism Officer
Ministry of Tourism & Culture
106 South Street, P.O. Box 325
Belize City, Belize
(501)-227-2801
june.sanker@tourism.gov.bz

Belize

Maria Guerra

Tourism Officer
Ministry of Tourism & Culture
106 South Street, P.O. Box 325
Belize City, Belize
(501)-227-2801
mar_ub@yahoo.com

Belize

Yusleidy Chan

Tourism Officer
Ministry of Tourism & Culture
106 South Street, P.O. Box 325,
Belize City, Belize
(501)-227-2801
yusleidyc04@hotmail.com

Belize

James Lord

Development Director
Toledo Institute for Development & Environment
One Mile San Antonio Road,
Punta Gorda Town, Belize
(501)-722-2274
jlord@tidebelize.org



Belize

Mario Chavarria

General Manager
Toledo Development Corporation
First Floor, Agriculture Department
Elridgeville, Toledo
Mailing Address:
P.O. Box 174
Punta Gorda Town, Toledo, Belize
(501)-702-2275
chavarria.mario155@gmail.com

Belize

Jair Valladarez

Lecturer (Natural Resources Management)
University of Belize
University Drive
Belmopan, Belize
(501)-822-1000 ext 449
jvalladarez@ub.edu.bz

Belize

Roberto Pott

Belize Coordinator/Social Scientist
Healthy Reefs Initiative
1755 Coney Drive
Belize City, Belize
(501)-223-4898
pott@healthyreefs.org

Belize

Arreini Palacio-Morgan

Advocacy Manager
Belize Audubon Society
12 Fort Street, P.O. Box 1001,
Belize City, Belize
(501)-223-4987
advocacy@belizeaudubon.org

Belize

Celso Cawich

Marine Biologist
Environmental Research Institute
University of Belize
Price Center Road,
Belmopan, Belize
(501)-822-27011
ccawich@ub.edu.bz

Belize

Elizabeth Ayala

Operation Analyst
Inter-American Development Bank
Marina Towers Building, 1st Floor
1024 Newtown Barracks
Belize City, Belize
(501)-221-5303
eliayala@iadb.org

Belize

Arlene Maheia-Young

Acting Program Director
National Protected Areas Secretariat
Ministry of Forestry, Fisheries & Sustainable
Development
Belmopan, Belize
(501)-822-0810
apd.npas@ffsd.gov.bz

Belize

Vivian Ramnarace

Fisheries Officer
Fisheries Department
Princess Margaret Drive
Belize City, Belize
(501)-224-4552
vivian@fisheries.gov.bz



Belize

James Azueta

Fisheries Officer
Fisheries Department
Princess Margaret Drive
Belize City, Belize
(501)-224-4552
jamesazueta@yaho.com

Belize

Arneid Thompson

Director of Quality Assurance
Belize Tourism Board
64 Regent Street
Belize City, Belize
(501)-227-2420
athompson@travelbelize.org

Belize

Perry Bodden

Quality Assurance Officer
Belize Tourism Board
64 Regent Street
Belize City, Belize
(501)-227-2420
pbodden@travelbelize.com

Belize

Martin Alegria

Chief Environmental Officer
Department of the Environment
Ministry of Forestry, Fisheries & Sustainable
Development
Belmopan, Belize
(501)-802-2816
doe.ceo@ffsd.gov.bz

Belize

Edgar Ek

Deputy Chief Environmental Officer
Department of the Environment
Ministry of Forestry, Fisheries & Sustainable
Development
Belmopan, Belize
(501)-802-2816
doe.dceo@ffsd.gov.bz

Belize

Christian Windsor

Environmental Officer
Department of the Environment
Ministry of Forestry, Fisheries & Sustainable
Development
Belmopan, Belize
(501)-802-2816
xwindsor@gmail.com

Belize

David Brown, PhD

Secretary General
Belize National Commission for UNESCO
Ministry of Education, Youth & Sports
Albert Street
Belize City, Belize
(501)-666-4078
dnabrowne1945@yahoo.com



Belize

Vincent Gillett

Chief Executive Officer
Coastal Zone Management Authority & Institute
Coastal Zone Multi-Complex Bldg, 3rd Floor
Princess Margaret Drive
Belize City, Belize
(501)-223-0719
ceoczmai@gmail.com

Belize

Colin Gillett

Director
Coastal Zone Management Authority & Institute
Coastal Zone Multi-Complex Bldg, 3rd Floor
Princess Margaret Drive
Belize City, Belize
(501)-223-0719
directorczmai@gmail.com

Belize

Chantalle Clarke

Coastal Planner
Coastal Zone Management Authority & Institute
Coastal Zone Multi-Complex Bldg, 3rd Floor
Princess Margaret Drive
Belize City, Belize
(501)-223-0719
coastalplanner.czmai@gmail.com

Belize

Samir Rosado

Coastal Science Research Officer
Coastal Zone Management Authority & Institute
Coastal Zone Multi-Complex Bldg, 3rd Floor
Princess Margaret Drive
Belize City, Belize
(501)-223-0719
coastalreseach.czmai@gmail.com

Belize

Maritza Canto

GIS Analyst
Coastal Zone Management Authority & Institute
Coastal Zone Multi-Complex Bldg, 3rd Floor
Princess Margaret Drive
Belize City, Belize
(501)-223-0719
mcanto.bz@hotmail.com

Belize

Nicole Auil-Gomez

National Consultant
Coastal Zone Management Authority & Institute
Coastal Zone Multi-Complex Bldg, 3rd Floor
Princess Margaret Drive
Belize City, Belize
(501)-223-0719
nauilgomez@gmail.com

Belize

Monique Goldson

Sport Fishing Coordinator
Coastal Zone Management Authority & Institute
Coastal Zone Multi-Complex Bldg, 3rd Floor
Princess Margaret Drive
Belize City, Belize
(501)-223-0719
sportfishing.czmai@gmail.com

Belize

Yamira Novelo

Intern
Coastal Zone Management Authority & Institute
Coastal Zone Multi-Complex Bldg, 3rd Floor
Princess Margaret Drive
Belize City, Belize
(501)-223-0719
yamiranovelo@gmail.com



Canada

Marianne Fish, PhD

Climate Adaptation Specialist
World Wildlife Fund
Latin America & Caribbean Program
245 Eglinton Ave. East Suite 410,
Toronto, Canada
(416)-489-8800
mfish@wwfcanada.org

Guatemala

Angelica Mojica

Marine Ecologist
MAR Leadership Program/University of
Valley
18 Avenida, 11-95 zona 15. Vista Hermosa III
Guatemala, Guatemala 01015
(502)-4891-8970
mojica.angelam@gmail.com

Jamaica

Sean Green

Coordinator
Ecosystems Management Branch
National Environment and Planning Agency
10 Caledonia Avenue
Kingston 5, Jamaica
(876)-754-7540
sgreen@nepa.gov.jm

Jamaica

Ronald Jackson

Director General
Office of Disaster Preparedness and
Emergency Management
2-4 Haining Road,
Kingston 5, Jamaica
(876) 906-9674
rjackson@odpem.org.jm

Trinidad & Tobago

Jahson Alemu

Ecosystem Services Researcher/Student
Institute of Marine Affairs
& University of the West Indies at St.
Augustine
Hilltop Lane, Chaguaramas
Trinidad and Tobago, W.I.
(868)-678-3718
jahsonb@gmail.com

United States of America

Mary Ruckelshaus, PhD

Managing Director
Natural Capital Project/Stanford University
2725 Montlake Blvd.
E. Seattle, WA 98112
Stanford, CA 94305-5020
(206)-271-6858
mary.ruckelshaus@stanford.edu

United States of America

Katie Arkema, PhD

Marine Ecologist
Natural Capital Project/Stanford University
2725 Montlake Blvd
E. Seattle, WA 98122
(206)-302-2434
karkema@stanford.edu

United States of America

Amy Rosenthal

Science-Policy Specialist
Natural Capital Project/World Wildlife Fund
1250 24th St. NW,
Washington, DC 20037
(202)-495-4650
amy.rosenthal@wwfus.org



The Nature Conservancy
Protecting nature. Preserving life.™

United States of America

Gregg Verutes

GIS Specialist

Natural Capital Project/World Wildlife Fund

1250 24th St. NW

Washington, DC 20037

(202)-495-4650

gregory.verutes@wwfus.org

United States of America

Joe Faires

Coastal Engineer/Research Assistant

Natural Capital Project/Stanford University

2725 Montlake Blvd

Seattle, WA 98122

(301)-785-5844

jfares@stanford.edu