

Project Brief

Deep Sea Wonders of the Caribbean –
An educational video series and book

Section I

1. Name of Lead Organisation

National Institute for Higher Education, Research, Science & Technology (NIHERST)

2. Organisation Profile

National Institute for Higher Education, Research, Science & Technology (NIHERST) - was established as a statutory body by Republic of Trinidad and Tobago in 1984, for the promotion of science, technology and higher education and enhancement of the innovative, creative and entrepreneurial capabilities of the general population. The fulfilment of this mandate has been guided both by changes in national development priorities and government's policy imperatives. NIHERST's work involves: research and intelligence gathering to shape science policy and guide the funding of research and development (R&D); promoting innovation and commercialisation of technology in priority areas; building collaborative global relationships; and fostering a culture of science, innovation and entrepreneurship. The organisation seeks to leverage its distinctive competencies to become a pivotal, internationally recognised agency that facilitates the utilisation of research, science and technology in the service of economic transformation driven by innovation and competitiveness.

NIHERST's International Projects Unit will undertake the project coordination of the video production and provide direction as required, based on and building on previously completed public education video documentary projects. This would include advice and input into project framework, funding/sponsorship opportunities, contracted video production services, script editing that appeals to the target audience, video editing, planning and execution of the media launch and effective distribution strategies.

3. Partner Organisations

The University of the West Indies (UWI) - is a regional university created in 1948 in Mona, Jamaica, as The University College of the West Indies. This was based on a recommendation by the Asquith Commission, which had been established five years prior to review the state of higher education in the then-British colonies. The Trinidad campus of the regional university, which began in 1960, was borne out of the Imperial College of Tropical Agriculture; Barbados' Cave Hill campus came on stream three years after. The University of the West Indies currently serves 17 English-speaking regional territories, offering undergraduate and postgraduate degrees in numerous fields of study: the arts, sciences, business, law and humanities. The mission of the UWI is to advance education and create knowledge through excellence in teaching, research, innovation, public service, intellectual leadership and outreach in order to support the inclusive (social, economic, political, cultural, environmental) development of the Caribbean region and beyond.

UWI will provide the technical direction on this initiatives, including content development of the scripts, provision and identification of appropriate footage and stills, identification of appropriate candidates for interviews and input into the video editing process, launch and distribution of the series to the target audience.

Caribbean Council for Science & Technology (CCST) - is an inter-governmental organisation that was created in 1981 with the support of UNESCO for the promotion of cooperation in science and technology, with the long-term goal of furthering the social and economic development of its member countries. CCST comprises 14 member countries from the Caribbean and its secretariat is based at NIHERST.

The CCST focal points within the region would spearhead regional networking and coordination that may be required during the undertaking of the production, including provision of contacts as required and the distribution of the videos to the appropriate target audience within each respective CCST member country.

4. Organisational Point of Contacts

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Section II

1. Title of Project

Deep Sea Wonders of the Caribbean – An educational video series and book

2. Project Type

Regional

3. Aim of Project

To foster a deeper understanding and appreciation of the deep sea environment in the region, through the introduction and distribution of an educational video series and captioned photo book detailing this previously unexplored natural feature.

4. Project Duration

12 months

5. Project Timeframe

January 2017 – December 2017

Section III

1. Project Description

In 2013 and 2014, Dr. Judith F. Gobin, Lecturer, Department of Life Sciences, UWI, St. Augustine, was invited as the lone UWI scientist on board the Exploration Vessel (EV) Nautilus. The EV Nautilus comprises the latest technological systems in helping to advance the frontiers of ocean exploration. The primary capabilities include science-class remotely operated vehicles (ROVs), high-resolution seafloor mapping and real-time satellite transmission of data¹.

Dr. Gobin was part of a team of international scientists that made the exciting discovery of four new deep-sea cold seeps approximately 130 kilometres off the east coast of Trinidad. Hundreds of thousands of eight-inch-long deep sea mussels, metre-long tubeworms, pink shrimp, snails and fish were found living around the seeps at a 1200 metre depth. This is the first time that local scientists have taken part in a deep-sea science mission in T&T and the first time an entire expedition was broadcast live on the internet. The expedition was led by the Ocean Exploration Trust (OET) - a non-profit, US-based pure ocean exploration organisation².

Inspired by the wealth of new information, research potential and a large quantity of never-before-seen footage and photos, Dr. Gobin decided to explore a collaborative public education opportunity with NIHERST and CCST on the development of a five (5)

¹ Further details available at: <http://www.nautiluslive.org/>

² Further details available at: <http://www.oceanexplorationtrust.org/#!aboutus/cfvg>

part video documentary series and a captioned photo book on the Deep Sea Wonders of the Caribbean.

The five (5) part video documentary series will be approximately eight (8) minutes each and comprise the following segments:

1) The EV Nautilus's expedition to Trinidad and Grenada:

An overview of the expedition, facilities of the ship, role of the crew members, types of research conducted, the value of the expedition and deep sea resources to persons within the region and mitigation/conservation measures for potential threats.

2) The Deep Sea Environment:

A detailed look into the scientific non-biotic and biotic components of the deep sea - the physical conditions including the substrates and geology and the biodiversity and its adaptation to the deep sea environment.

3) Trinidad's Deep Sea Communities:

A look into the unique non-biotic and biotic deep sea environment off the coast of Trinidad and Tobago - its natural features including its cold seeps and biodiversity; the value of these deep sea resources to the region and mitigation/conservation measures for potential threats specific to Trinidad's deep seas.

4) Grenada's Deep Sea Communities:

A look into the unique non-biotic and biotic deep sea environment off the coast of Grenada - its natural features including its biodiversity, with particular reference to the Kick 'em Jenny submarine volcano; the value of these deep sea resources to the region and mitigation/conservation measures for potential threats specific to Grenada.

5) Careers of a Deep Sea Expedition:

Profiling of the traditional as well as new and emerging career fields that are required to undertake a deep sea expedition, including present-day scientific research methodologies/technologies and other tasks involved in executing a successful expedition.

The captioned photo book, will bear the same title as the video documentary series and will contain captioned/annotated imagery of components within the deep sea environment. It will contain ten (10) double-sided pages excluding the cover. Both resources will be made available to the region's general public via various distribution formats.

2. Rationale

Little about the deep sea environment has been known until just over a century ago. Deep sea exploration first began by European scientists in the late 1800s and as time progressed, technologies evolved to allow a more thorough investigation of the deep

seas for scientific and commercial purposes. However, at present, a mere 5% of the ocean has been explored although the ocean takes up about 71% of Earth's total space.

Until recently, there has been limited knowledge on the deep sea environment of the Caribbean region. Then in 2013 and 2014, Dr. Robert Ballard, well-known discoverer of wrecks such as the RMS Titanic (1985) and battleship Bismarck (1989), led an expedition to the Caribbean on the EV Nautilus. This expedition led to the discovery of amazing resources within the Caribbean's deep sea, such as rich biodiversity, hydrothermal sulfide, manganese nodules and methane. The areas of focus were depths greater than 2,500ft, off the coasts of Trinidad and Tobago, and Grenada. To capture this novel information at depths where humans are unable to venture themselves, cameras attached to remotely operated vehicles were used. For Trinidad and Tobago, this was the first videography and photography of extensive areas at depths greater than 2500ft. Seen for the first time at these depths were rich biodiversity and methane hydrates, which are dense deposits of methane locked inside of ice crystals. The United States Geological Survey estimates that the total amount of carbon locked away inside of methane hydrates could be twice as much as the amount that exists in all the world's known fossil fuels. This places Trinidad and Tobago in a unique situation as further possibilities in energy production as explored. Grenada is also placed in a unique situation due to the influence of Kick em' Jenny – the Eastern Caribbean's only active submarine volcano.

In addition to continuing research in this area, it has been proposed that the footage and photos (which was provided to Dr. Gobin for educational purposes), be made available to promote public education and awareness on this emerging field of science for the region, through this collaborative effort among UWI, NIHERST and CCST.

NIHERST and CCST is experienced in the execution of successful public education and science popularisation projects and in 2005 and 2012 respectively, NIHERST with the support of CCST, released the Natural Wonders of the Caribbean video series (parts 1 and 2)³. The series has been promoting awareness of significant ecosystems and geological features that exist throughout the region and the critical importance of their conservation in maintaining their intrinsic value as well as in promoting the sustainability of socio-economic development. Part 1 of the video series, which was partially funded by UNESCO, dealt with coral reefs, tropical rainforests, mangrove swamps, karst landscapes and waterfalls and part 2 of the video series dealt with beaches, cloud forests, tropical savannas and seagrasses. The series was directed at the general public across the region and in this multimedia video format aimed at engaging the audience's visual and audio perceptiveness and allowing the information disseminated to be received in an enjoyable and impactful manner.

The video production was well received by the general public, students, teachers, parents and environmental organisations. The effort was even acknowledged by the

³ Video documentaries can be viewed at: <https://www.youtube.com/user/niherst/search?query=natural+wonders>

Environmental Management Authority of Trinidad and Tobago (EMA), when NIHERST received an award nomination for outstanding environmental education programme in 2007. There have also been numerous requests from school teachers for copies of the video to be used as a teaching tool in the classroom, after viewing the series on local television stations. Even at present day, the local television stations continue to air the series indicating its continued relevance and interest by the nation's audiences.

When Natural Wonders of the Caribbean was first conceptualised, it was felt that these unique features should have been highlighted in terms of their tremendous importance in everyday human lives as well as in the complex ways that they support an abundance of biodiversity. With their small land masses, the biodiversity of Caribbean countries are at risk of being lost as socio-economic development intensifies and resource sustainability is not sufficiently taken into account amidst socio-economic development. As development continues to exert great pressure on the region's biodiversity, the Caribbean has been identified as a biodiversity hotspot.

A biodiversity hotspot is a biogeographic region with a significant reservoir of biodiversity that is threatened with destruction. The Caribbean region falls under this category as it is home to 7,000 species of endemic plants and 779 species of endemic vertebrates, which is equivalent to 2.3% and 2.9% of global plants and vertebrate species, respectively. Additionally, the biodiversity that exists in the Caribbean is at great threat from anthropogenic activities and presently, the region ranks fifth as a global hotspot. The deep sea provides a habitat which allows a unique biodiversity to prosper and contribute to useful genetic resources and chemical compounds. In addition, the deep sea contributes to the grander value of chemosynthetic primary production, nutrient cycling carbon sequestration and storage for gas and climate regulation and the biological control of pests. But there are also significant threats to the value of our deep seas which include offshore oil and gas operators, deep sea mining, deep sea fishing, waste disposal and pollution.

Deep Sea Wonders of the Caribbean seek to continue the awareness of these vital natural features by highlighting a unique and previously uncharted wonder of the Caribbean, their value and strategies to promote their conservation.

3. Beneficiaries

The general public, including both youth and adults, of 14 (fourteen) countries within the Caribbean region, are expected to benefit from the distribution of the public education video and book resource. These include the CCST member countries - Antigua & Barbuda, the Bahamas, Barbados, Cuba, Dominica, Grenada, Guyana, Jamaica, St. Kitts & Nevis, St. Lucia, St. Vincent & the Grenadines, Suriname, Trinidad and Tobago, and U.S. Virgin Islands.

The particular niche of beneficiaries being targeted are secondary schools, visitors to governmental and non-governmental educational centres of environmentally affiliated organisations and the recipients of corporate social messages from the sponsors.

As the material will also be available online and promoted via NIHERST's social media pages and other related organisations, and the video are expected to be aired for an indefinite timeframe, on the local television stations (in-between programmes), the potential reach cannot be quantified.

4. Objectives

- To develop a five-part DVD sequel series and captioned photo book on the Deep Sea Wonders of the Caribbean, which is informative, easy to understand and has strong audio-visual appeal;
- To educate the general public on the Deep Sea Wonders of the Caribbean - the science, the value, the threats and strategies for sustainability, through the use of outstanding and never-before-seen footage, as well as advice from conservationists and environmental experts;
- To distribute the video series broadly across the region for use in schools, libraries and educational centres, and for airing on local broadcast stations and online streaming, in order to target a wide-cross section of people;
- To provide teachers with a supplementary multimedia teaching tool that aids in educating students on this novel topic, as it relates to the geography and environmental sciences curricula;
- To inculcate a culture of environmental conservation and sustainability within the Caribbean region;
- To encourage regional persons to become interested in careers within this novel field; and
- To promote environmental and socio-economic sustainability of the region.

5. Project Activities

Activity i: Research and Data Gathering

- a. Background research on each topic will be conducted by a team comprising staff of NIHERST's International Projects Unit and UWI. UWI has already undertaken a large portion of the research during the EV Nautilus expedition and the information gathering status is 70% complete.
- b. The CCST Secretariat will be responsible for liaising with relevant agencies, both locally and within CCST countries for any additional photos, footage and other material that may be required for this project.

Activity ii: Script Writing/ Editing

- a. Five 8-minute scripts will be prepared based on the data/information gathered by the research team. The content of the scripts will be prepared by UWI and edited/refined by the NIHERST team and a professional science communications writer.

- b. The team in point a. above will develop guiding questions for persons selected to be interviewed.
- c. Key photos acquired during the deep sea expedition will be selected and appropriately captioned for the booklet by the team in point a.
- d. The key scientists on-board the EV Nautilus will be allowed to review and suggest edits before finalisation of the script and booklet captions.

Activity iii: Filming

- a. 80% of the footage and photo still have been made available by personnel attached to the EV Nautilus. The remaining 20% of footage required, consists of interviews with relevant international, regional and local deep sea experts, as identified by UWI and fillers or additional specific shots that align to the final script, to be filmed by the contracted video production house.

Activity iv: Editing and Post Production

- a. The contracted video production house will also be responsible for video editing and post production, which includes the outsourcing of animators/graphic artists, narrators, inclusion of scored copyright-free music and project management of the process.
- b. The NIHERST and UWI project teams, will review the drafts of the video production.
- c. Six (6) master copies of the final production will be produced by the videographer when the team has signed off on the final drafts for each video feature. This will include five (5) master copies of each feature on high definition (HD) DVD and one (1) master copy of the entire video series on HD DVD.

Activity v: Promotion and Distribution

- a. The completed video series will also be uploaded to the NIHERST youtube channel for online streaming/ sharing and an electronic version of the book will be made available on the NIHERST website.
- b. An official media launch will be also held following the completion and output of the resources and 75 branded USB cards with the web link to the digital resources will be distributed at this launch.
- c. 575 hardcopies the captioned photo book and 75 hardcopies of the video series in HD DVD format will be replicated. These hardcopies will be distributed locally to key partners/players, schools, libraries, educational centres and television stations, as well as within the beneficiary countries regionally, via CCST's focal points.
- d. The web link to the online resources in point a. above will be included within the hardcopy book and video resources. A heavy emphasis would be placed on sharing and promotion of the digital resources - particularly the video resources, in keeping with societal trends.

6. Project Timeline

January 2017 – December 2017

#	Project Activities	01/17	02/17	03/17	04/17	05/17	06/17	07/17	08/17	09/17	10/17	11/17	12/17
i.	Research and Data Gathering												
ii.	Script Writing / Editing												
iii.	Filming												
iv.	Editing and Post Production												
v.	Promotion and Distribution												

7. Expected Outcomes

Apart from providing heightened knowledge and awareness in this novel field of science for the region, the resources are expected to encourage active conservation efforts, support the geography and environmental studies syllabi in secondary schools, and influence students in careers choices aligned to this emerging field, such as ROV operators/technologists and deep sea researchers.

In the long term, the beneficial impacts are expected to assist in promoting environmental and socio-economic sustainability as well as further advancements in deep sea research as it relates to conservation, as well as science, technology and innovation.

Output #1

Five (5) 8-minute video documentaries on:

- The EV Nautilus’s expedition to Trinidad and Grenada
- The Deep Sea Environment
- Trinidad’s Deep Sea Communities
- Grenada’s Deep Sea Communities
- Careers of a Deep Sea Expedition

Output #2

One (10 double-sided page) captioned photo book on the Deep Sea Wonders of the Caribbean.