



Technical and Financial Project Proposal Template¹

<p>Name of the Organization: Environment Unit, National Parks Authority</p>	<p>Type of Organization: Not for Profit, National Statutory Body</p>
<p>Brief Description of the Organization: The National Parks Authority (NPA) was established in 1984 when the first national park – Nelson’s Dockyard National Park - was created. Since then three other smaller national parks have been declared. The Environment Unit (EU) was established in 2011 to take responsibility for the management of the natural resources included in these parks, which comprise over 5,000 acres (2000 ha) of land and 2,500 acres (1000 ha) of marine area contiguous with the terrestrial areas. The NPA is governed by a Board of Directors who are appointed by the national government and the Board reports to the Minister responsible for Tourism. The day to day management of the NPA is headed by a Parks Commissioner. The NPA is a not for profit agency, financed primarily from revenues derived from fees charged to visitors, concessionaires and for yachting services, marina etc. The EU currently comprises a Coordinator with a PhD and many years experience in natural resources management, and an Environment Officer with a BSc in Environmental Biology, who specializes in marine biology. The work of the EU includes programmes in Environmental education, Environmental monitoring and conservation, Recycling, and development of new parks.</p>	
<p>Contact Person: Dr Brian Cooper</p>	<p>Address: Environment Unit, NPA, PO Box 1283 English Harbour Antigua, West Indies</p>
<p>Telephone: (268) 481-5034/5022</p>	<p>Email and Website: brian.cooper.ag@gmail.com www.nationalparksantigua.com</p>
<p>Project title: Monitoring reef health in Nelson’s Dockyard National Park, Antigua</p>	
<p>Project Objectives and Expected Outcomes:</p> <ol style="list-style-type: none"> 1. To create a video and image database of the shallow reefs in key areas of the NDNP marine area contiguous with natural bays or heavily used harbours. 2. To develop an analysis of per cent cover of coral and other cover types (e.g. dead coral, rubble and algae) selected to determine the health status of the reefs monitored 3. To obtain water quality data during the monitoring period in the areas being monitored. 4. To use the reef health status data and the water quality data at the monitoring sites in combination with additional data obtained from on-going water quality surveys inside each harbour to provide management guidelines for water quality management in the commercial areas. 5. The project will also result in the establishment of permanent monitoring sites for long term monitoring of reef health. 	

¹ The proposal can be written in English or Spanish



<p>Target Population: The project is primarily intended to provide an assessment of reef health and the likely factors responsible for any health problems observed. This should allow changes to management of water quality factors that would result in improved reef health. This will be of benefit to various stakeholders including locals and visitors involved in recreational activities around the reefs, the dive and tour operators, as well as fishermen. Healthy reefs will also help to protect the shore line thus mitigating effects of storms or sea level rise.</p>	
<p>Amount Requested in USD:</p>	<p>Co-financing:</p>
<p>Project Duration in Months: 6 months from distribution of funds</p>	<p>Country: Antigua and Barbuda, West Indies</p>

2. Project Summary:

This project will focus on monitoring of Coral Reefs, which are considered to be in decline in Antigua as they are throughout the worlds' oceans and therefore, research is needed to assess their current state and to support protection. This project intends, not only to collect and create a baseline of data about reefs in Antigua's Nelson's Dockyard National Park (NDNP), but also to do a comparison on the effect of corals adjacent to developed versus undeveloped harbours. The area of the study will be within the area of the NDNP, along the South Coast of the island of Antigua. The project will conduct monitoring via video transects on three reefs, two at the mouths of developed harbours (Falmouth and English Harbour) and one at the mouth of an undeveloped harbour (Indian Creek). With data from water quality analyses done around the monitoring sites as well as the information obtained from the Video Monitoring, we hope to provide a detailed assessment of not only the status of the reefs, but what is affecting them and what steps can be taken, if necessary, to improve their health. The project will provide training to NDNP staff in the latest reef monitoring techniques and also provide a set of permanent monitoring sites which can continue to be used for long term monitoring of reef health. The research data will also provide accurate and up-to-date scientific information which can be used to support future conservation activities on numerous migratory species within the National Park and around the island's entire coastline.

Resumen del Proyecto

El enfoque de este proyecto será el monitoreo de Arrecifes de Coral, los cuales son considererados en disminución en Antigua así como en el resto de los océanos del mundo. Por lo tanto, es necesario aplicar la investigación para evaluar su estado actual y para apoyar su protección. El propósito de este proyecto no sólo es recopilar y crear una línea de base de datos sobre los arrecifes encontrados en Nelson's Dockyard National Park (NDNP), Antigua, sino también para hacer una comparación del estado de arrecifes en puertos desarrollados y no desarrollados. El área de estudio será dentro de la zona del NDNP, a lo largo de la Costa del Sur de la isla de Antigua. El proyecto se llevará a cabo mediante el uso de video-transectos en tres arrecifes, dos encontrados en la entrada/boca de puertos desarrollados (English Harbour y Falmouth Harbour) y uno encontrado en la entrada/boca de un puerto no desarrollado (Indian Creek). Con datos recopiladas de un análisis de la calidad del agua, hecho alrededor de los sitios de monitoreo, así como información obtenida del video-monitoreo, esperamos proporcionar una evaluación detallada de no sólo el estado de los arrecifes de coral, sino también lo que los afecta y que se pueden adoptar, si es necesario, para mejorar su salud. Otros beneficios del proyecto serán proporcionar la capacitación al personal del NDNP en las técnicas más recientes de monitorear a los arrecifes y también proporcionar un conjunto de puntos permanentes de monitoreo que se pueden utilizar en el monitoreo a largo plazo de la salud de los arrecifes. Los datos de investigación también proporcionarán información científica precisa y actualizada que se pueden usar para apoyar actividades futuras de conservación en numerosas especies migratorias encontradas dentro del Parque Nacional y alrededor de la costa de toda la isla.



3. Organization's Experience (300 words or less)

The National Parks Authority has been in existence for the last 28 years and has been managing the Nelson's Dockyard National Park, which consists of over 5000 acres of land and approximately 2500 acres of coastal marine area. It receives several tens of thousands of visitors each year. The Environment Unit which would be responsible for this project, was created in August 2011. However, the Unit Coordinator who will provide project management services, has had more than 20 years of project management experience in a range of organisations – regional research institutes, government service and NGOs. The Environmental Officer has carried out marine monitoring activities both in Antigua and in Jamaica (while attending the University of the West Indies).

4. Project Narrative Description (Maximum 10 pages): This section should include the content below in which the following questions should be addressed: what is proposed and what is its relevance (objectives and relevance), how the work will be done (methodology), what will be achieved, what outputs will be delivered, how the project success will be measured (monitoring and evaluation methodology). This should be developed in the format below:

4.1. Rationale:

Reefs are home to the largest biodiversity within the world, rivalled only by that of rainforests. They are essential for life in clear tropical waters and form the base of the food web due to their ability to produce food, via photosynthesis, in the low-nutrient waters of the Caribbean.

Healthy reefs support biodiverse coastal regions, which in turn provide greater beach and wetland protection, supporting: 1) Replenishment of sand for vigorous sea grass beds, which serve as food for endangered and migratory Sea Turtles – particularly Greens; 2) Stable back-beach areas for nesting Hawksbill turtles); 3) Protected wetlands and mudflats for migratory birds, some of which are nesting migrants - e.g. Least Terns, Black necked Stilts and food for migratory species – e.g. Whimbrels, and many other shore birds and 4) Stable fish populations for ocean feeding birds such as Gulls, Tropic birds, Pelicans, and Frigate birds, some of which breed in Antigua and Barbuda

The monitoring is important since there have been no published studies of reef health since 1996 (Goreau and Goreau, 1996) and there has been a significant increase in yacht and other pleasure boat traffic in these waters since then. New marinas have been developed but facilities for liquid and solid waste disposal have lagged behind. This study will therefore contribute to filling an important gap in our knowledge of coral reef health in Antigua, and by extension in Barbuda

The Environment Unit of the NPA has recently started a programme of regular water quality monitoring in the shallow in-shore waters of the two main harbours used by yachts and commercial traffic. The proposed reef monitoring programme in more off-shore environments, will supplement the findings in the harbours and may facilitate understanding of any sources of poor water quality which may be found affecting the reefs. The two studies will therefore be complimentary. The Fisheries Division does collect some reef monitoring data, which is generally not available to the public. However, in the case of the proposed study within the NDNP, it may be possible to compare the data with other sites studied by Fisheries.

4.2 Baseline:

In a study conducted in August 1996, Maya Goreau and Thomas J. Goreau conducted an ecological assessment of the reefs of Antigua and Barbuda. Their research used rapid swimming observations to obtain an estimated percentage cover of the reef rather than using a transect method. This study was conducted soon after the passage of hurricanes Luis and Marilyn in 1995.

They found an overall percentage cover by live coral of 20%. This compares poorly with a healthy reef, which should have a coral cover of around 90%. The majority of the reefs studied in this survey were dominated by dead coral rubble and they classified these areas as coral communities with isolated coral colonies which aren't currently building up a wave resistant structure.



Water quality testing was done at several of the test sites where the reef checks were made. However, the results were deemed by the authors to have not been very reliable.

Most areas had a low-level of fleshy algae, with a marked dominance of sand producing calcareous algae. The deeper reefs were noted to have an absence of sand-producing calcareous algae although there was an abundance of encrusting calcareous red-algae.

In comparing the data to previous data taken by them from before Hurricane Hugo in 1989, it was found that the coral cover estimated at these two testing times were very similar. This would suggest that the degree of damage cause by the hurricanes themselves is minor, and would support reports from highly experienced long-term divers, which also indicated that reef decline preceded the hurricanes. The main cause of coral decline was attributed to coral diseases like white band, which has wiped out most of the Acropora corals in the Caribbean.

Given what has taken place in terms of hurricanes and human development since the Goreaus' study it is clear that a new monitoring programme is needed to provide a current and accurate set of baseline data on reef health.

The proposed study, covering a much smaller area than the Goreaus' study, will use permanent transects and regular monitoring to assess on-going and future changes in reef status. The concurrent programme of water quality monitoring, in both English and Falmouth Harbours, should provide the hard data to identify pollution sources in the in-shore, harbour areas.

4.3 Project Goals and Purpose:

The Goal of the project is to achieve a much better understanding of current reef health conditions within the NDNP boundary. This understanding can then inform decisions relating to management priorities.

The primary purpose of this project is to provide accurate, current data on the conditions of key reefs within the NDNP. The project will also establish permanent transect sites and use the most up-to-date procedures to assess reef health. In addition, the project will assess the surrounding water quality so as to gain biological, physical and chemical information on the present condition of the reefs. This information will then be used to inform park management decisions with respect to water quality issues.

It is hoped that this research can serve to create greater awareness of the issues facing the reef health within the Park and at a national level. The complementary project, addressing water quality in the in-shore areas of Falmouth and English Harbours should enable the detection of any major point sources of pollution affecting reef health.

This study should also allow Antigua and Barbuda to begin participating in the Reef Check monitoring programme, by setting up permanent transects and having annual monitoring to add to the database of the GCRMN (Global Coral Reef Monitoring Network).

4.4 Project Outputs and Indicators:

Project Outputs

1. Project Manager trained in latest techniques of reef monitoring following 3-day refresher course at University of the West Indies/ Jamaica Coral Reef Monitoring Network
2. Reef monitoring data from the 3 sites over a 6 month period assembled in a report detailing at least the following:
 - a. Coral species present and per cent occurrence.
 - b. Per cent of cover with dead coral and other sea bottom types
 - c. Abundance of algae, sea grass and reef material.
 - d. Sea urchin population levels
3. Water quality data for each site from at least bi-monthly samples throughout the monitoring programme. Data to include at least the following:
 - a. Temperature
 - b. pH
 - c. Enterococci bacterial counts
 - d. Dissolved oxygen



- e. Nitrates and Phosphates
- 4. Similar water quality data from three in-shore, harbour sites during the same period for comparison of chemical and biological composition of relevance to pollution monitoring.
- 5. Assessment of water quality threats to reef health and development of management programmes to mitigate these threats
- 6. Establishment of a permanent set of reef monitoring transects for long term monitoring of reef health in the NDNP

4.5 Project Activities and Methodology:

1. **Technical capacity building**
 - a. Attendance of project manager at 3-day refresher training in set up and management of reef monitoring sites
2. **Reef Monitoring**
 - a. Identify coral areas at each targeted test site using snorkelling surveys and GIS software for mapping.
 - b. Randomly select areas within the identified test sites to set up the video transect.
 - c. Set up transect areas in each of 3 monitoring areas: These will be 5 lines by 20 m long, separated by 5 m each to create a total square area of 400m².
 - d. Record along each transect line using the video-camera at an appropriate speed and depth for accurate recording. Use an underwater plaque to provide transect identification.
 - e. Set-up required software (Coral Point Count [CPC] and video analysis) onto computer.
 - f. Process video data using CPC software, separating into individual clips for analysis
 - g. Assign ten random points for each clip and identify what is beneath each point.
 - h. Analyse results using spread sheet produced by the CPC program.
 - i. Prepare reef health analysis report.
3. **Water quality sampling**
 - a. Collect samples of water in sample bottles and send for chemical analysis.
 - b. Use the YSI water sampling equipment to take readings of different parameters at the area.
 - c. Prepare water quality report
4. **Analyse reef and in-shore water quality data**
 - a. Obtain water quality data from harbour monitoring programme and use to enhance water quality data and assess possible influence of harbour pollution.
 - b. Set up database linking video footage and reef health analysis with water quality data
5. **Water quality management recommendations**
 - a. Based on assessment from Activity 3, review harbour water quality management practices and make recommendations for revision
 - b. Write Final Report



4.6 Logical Framework: Complete a Logical Framework for the project using the format below:

Narrative Summary	Performance Indicators	Means of Verification	Assumptions/Risks
<p>Goal To improve understanding of coral reef health in the NDNP to inform marine management policies</p>	Long term monitoring of reefs	Monitoring reports from permanent transects	Long term monitoring can be sustained Management changes can be implemented
<p>Purpose The primary purpose of this project is to provide accurate, current data on the conditions of key reefs within the NDNP</p>	Baseline monitoring of reefs completed and reef health assessed	Monitoring reports from current project	Outputs do not provide basis for rational management decisions
<p>Outputs 1 Current, accurate knowledge of reef health in NDNP</p> <p>2 Current, accurate knowledge of water quality in surrounding waters</p> <p>3 Current accurate knowledge of water quality in adjacent in-shore, harbour areas</p> <p>4 Increased understanding of impacts of water quality on reef health</p> <p>5 Recommendations for changes in water quality management</p>	<p>Reef monitoring data obtained from 3 sites over a 6 month period</p> <p>Water quality monitoring data obtained from the same sites</p> <p>Water quality monitoring data obtained from in-shore harbour areas</p> <p>Analysis of data obtained in 1-3 above and any indication of threats from in-shore waters</p> <p>Review and revisions to water quality management plans</p>	<p>Final report on reef health Photo database for transects</p> <p>Final report on analysis of water quality data</p> <p>Final report on analysis of water quality data</p> <p>Final report on assessment of water quality impacts on reef health</p> <p>Revised plans</p>	<p>Transect lines not interfered with</p> <p>Laboratory continues to perform analytical services.</p> <p>Harbour monitoring programme is successfully maintained</p> <p>Reef and water monitoring provides good basis on which to recommend management changes – if necessary</p>



Narrative Summary	Performance Indicators	Means of Verification	Assumptions/Risks
<i>Activities</i>	(US\$)		
1 Capacity Building	4,300	Project Financial Reports and Financial documents	Timely provision of funds
2 Reef Monitoring	5,710	(Bank Statements, receipts, invoices etc.)	Present staffing resources are maintained
3 Water Quality Monitoring	N/A	In-shore water monitoring programme data	
4 Analysis of reef and In-shore water quality data	680		
5 Reporting and Recommendations			
	Total(US\$) 16,629 (WHMSI) = 8,560		



4.8 Monitoring and Evaluation:

Project activities will be carried out principally by the Environment Officer who will be under the supervision of the Unit Coordinator, acting as project manager.

Transect layout, monitoring/videoing and data collection and processing will be the responsibility of the Environment Officer, while both staff members will be involved in data interpretation and developing recommendations. Report writing will be the primary responsibility of the project manager. All data collection will be made according to a predetermined schedule.

4.9 Team Composition and Task Assignment:

The project team will be comprised of two persons – the NPA Environment Unit Coordinator Dr Brian Cooper and the Environment Officer, Mr Ruleo Camacho, BSc. The water quality analyses will be conducted by Dr Linroy Christian, Head of the Fisheries Analytical Laboratory, operated by the Fisheries Division of the Ministry of Agriculture. Staff member responsibilities have been indicated in Section 4.4 above.

4.10 CVs of Proposed Staff:

Dr Cooper is an experienced agronomist with many years work in Natural Resources management. He has also had considerable experience in project development and management, including with the OAS (1997-2000). He was formerly head of the Project Planning and Management Unit of the Ministry of Agriculture of Antigua and Barbuda. He also has extensive experience in environmental projects carried out by the Environmental Awareness Group of Antigua and Barbuda – including the Off-shore Islands Conservation Project funded by the OAS in 2003 to 2006.

Mr Camacho has a degree in environmental management and is PADI certified. His chief interest is in marine biology and he has been instrumental in initiating the harbour water quality sampling programme being conducted by the Unit for the NPA. He has considerable knowledge of diving and small boat operation and is an experienced yachtsman.

- 5. Budget (2 pages):** A detailed budget should be submitted in US dollars showing how WHMSI financial resources will be used, and if applicable, how that support fits together with co-financing provided by your institution or partner institution(s). Clearly indicate budget items for which WHMSI funds would be used. Information on salaries may include staff name, position and rate. Travel should include number of flights, per-diem, local transportation, miscellaneous expenses, etc. Other expenses must provide description, quantity, unit price, and total.

The total budget for the project is set at US\$ 16,629 of which US\$ 8,560 (51.5%) is contributed by the WHMSI programme and the National Parks Authority co-funding amounts to US\$ 8069 (48.5%). The co-funding includes costs of the water sampling programme for the in-shore data which will be provided as part of the NPA inputs to the project, which will provide very useful complimentary data to improve the analysis of any poor quality water effect.. It also includes a proportion of staff costs for the Project Officer (Ruleo Camacho) and Project Manager (Brian Cooper). The Project Officer's input was assessed as 25 per cent of full time (FT) and the Project Manager's as 10% of FT. The money has been apportioned over the various activities for a 6 month period.

A significant cost (US\$ 3,600), which has been charged to the proposed project is the allocation of funds for the travel and accommodation costs of the project officer (Mr. Ruleo Camacho) to facilitate his attendance in Jamaica at a 3-day training course which would update and polish his skills in the use of underwater monitoring equipment to obtain accurate and repeatable reef health data.

A breakdown of the complete budget is provided in the spread sheet following.



Project Budget

Item	Number Time(#)	WHMSI Funds (\$US)		Co-Funding (NPA) (\$US)		WHMSI	NPA
Boat usage	10	Fuel	100	Hire	200	1000	2000
Travel (Air)	1	Airline Ticket	650			650	
	5	Accommodation	200			1000	
	5	Local travel costs	50			250	
	5	Meal allowance	100			500	
Course Fees (est.)			1200			1200	
Transect set up	3	Material	150			450	
Video Camera	1	Camera	500			500	
Computer usage	1	Storage	100			100	
Water quality (Reef)	6	Lab	50			300	
Water Quality (Harbour)				In-shore sampling	2889		2889
YSI	3	Rental	30			90	
Scuba Equipment	6	Rental	130			780	0
Additional Diver	6	Rental	130			780	0
	6	Stipend	60			360	
Travel (land) per month	6	Vehicle	100			600	
NDNP - EU Cost	6				100		600
Management Costs	6			R.Camacho @ 25%FT ⁽¹⁾	250		1500
	6			B.Cooper @ 10%FT ⁽¹⁾	180		1080
Total						8560	8069

Notes: (1) Staff costs for project officer (Ruleo Camacho) and Project Manager (Brian Cooper) calculated as % of monthly salary as specified



6. Annex 1: Document proving the legal existence of your Organization

The legal document establishing both the National Parks Authority and the Nelson's Dockyard National Park is an Act of the Antigua and Barbuda Parliament approved in 1984. An extract from the pdf version of this document is provided below and the complete document if required is attached in the pdf format.

The full text can also be accessed at <http://www.laws.gov.ag/acts/chapters/cap-290.pdf>

Extract from Title Page:

LAWS OF ANTIGUA AND BARBUDA

National Parks (CAP. 290)

3

NATIONAL PARKS

An Act to provide for the establishment of National Parks and a National Parks Authority; to make provision for the preservation, protection, management and development of the natural physical and ecological resources and the historical and cultural heritage of Antigua and Barbuda; and for matters connected with those purposes.

(13th December, 1984.)

Part I Preliminary

1. This Act may be cited as the National Parks Act.

Short title