



The Baths at Virgin Gorda



Stakeholder meetings with the Virgin Gorda Fishermen's Association

**Final Programmatic Report to the National Oceanic and Atmospheric
Administration - ICRC Grant**

**Strategic Designation of British Virgin Islands MPA Network: Agreement Number:
NA04NOS4630285**

Submitted by



SAVING THE LAST GREAT PLACES ON EARTH

The Nature Conservancy is committed, at a global scale, to the conservation of natural resources, both marine and terrestrial. To more fully realize these goals in the Eastern Caribbean, The Nature Conservancy (TNC), is working with local and regional partners to assist countries in fulfilling their commitments to the international agreements and ensure effectively managed conservation areas. In the British Virgin Islands, TNC has been working with the British Virgin Islands National Parks Trust (NPT) to support strategic designation and effective management of a network of marine protected areas in the BVI, with primary funding being provided by NOAA-ICRC. The NPT network of proposed MPAs will form part of “A Parks and Protected Areas System Plan for the British Virgin Islands” created to address the preservation of unique values and management needs of both terrestrial and marine habitats. The primary aim of the marine component of the System Plan (that which this grant refers to) is to create an MPA network that accurately reflects the marine and coastal habitats of the BVI through a strategic approach identifying final MPA boundaries that include full representation of coral reef types and associated marine communities based on their ecological value.

In 2004 Warwick University, the Department of Conservation and Fisheries, and the National Parks Trust, implemented a project (Overseas Territory Environmental Programme Project) centred on mapping both terrestrial and near shore marine habitats throughout the territory. Prior to the implementation of this project, the BVI had only one established marine protected area comprising of 325 hectares (Wreck of the Rhone). There were also some areas designated as Fisheries Protected Areas managed under the jurisdiction of the Conservation and Fisheries Department (CFD). However, when combined, these protected areas comprised of relatively little area within the BVI so efforts have centred on designing, from scratch, a representative network of marine protected areas. For the current Systems Plan, all marine areas being considered for protection are to be classified as National Park in the BVI which is equivalent to the IUCN Protected Areas classification III.

Throughout the development of the Systems Plan there have been numerous agencies, local partners, expert and stakeholders involved. Early mapping efforts were conducted primarily by the National Parks Trust (NPT) and CFD staff with additional support from Warwick University. Digitizing all habitat data was also conducted primarily by NPT and CFD with support from The Nature Conservancy.

The first system plan for parks and protected areas in the BVI was prepared in 1981. A second report was prepared in 1986 with subsequent work on the revision of the policy framework for protected areas management leading to the promulgation of the National Parks Act 2006. Underlying much of the work contributing to the development of the most recent Systems Plan is the commitment to several international agreements the UK and BVIs has made, including:

- Convention concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention);
- Convention on Biological Diversity (CBD);

- Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention); and
- Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Regions (Cartagena Convention), Protocol Concerning Specially Protected Areas of Wildlife (SPAW Protocol).

This report summarizes the results of project deliverables associated with *Strategic Designation of British Virgin Islands MPA Network: NA04NOS4630285* and outlines future plans in our continued efforts to support the implementation of this network

Project Results

Phase 1: MARXAN and the Gap Analysis

MARXAN training and Gap Analysis:

During Phase 1 of this project, TNC was responsible for conducting a marine Gap Analysis incorporating MARXAN modelling. A gap analysis is a process conducted by a planning team for the purpose of finding where species and ecosystems are left unprotected or under-protected. MARXAN is a software program that delivers decision support for marine reserve system design (Ball and Possingham 2000). MARXAN finds reasonably efficient solutions to the problem of selecting a network of spatially cohesive sites that meet a suite of biodiversity goals. It satisfies explicit quantitative goals in a clear repeatable manner.

The Gap Analysis was completed by examining existing areas and contrasting them with the area needed to put into strict conservation approximately 30% of the representative marine habitats within the BVI waters. Habitat data incorporated into the MARXAN analysis were obtained from two main sources; (1) ground-truthed coastal GIS layers that were developed just prior to the beginning of TNC's efforts by Warwick University, UK and NPT staff as part of a separate, but complimentary project and (2) The Conservation and Fisheries Division (CFD). Additional socio-economic data were collected enabling the incorporation of threats and their relevant "footprint" into the MARXAN analysis. Thus, the outputs were based on both biological as well as anthropogenic variables. Representatives from the National Parks Trust and The Conservation and Fisheries Division completed a MARXAN training to ensure a comprehensive understanding of the process in country.

During this same time period, identification of conservation targets and threats specific to the BVI were identified and the ranking in terms of intensity and distance of their effect specific to of the BVI were carried out. Threats were determined through a multi-phased process. Initially, this effort began by determining which spatial data were available through the Department of Planning Units, the agency within the BVI

Table 1. Conservation Threats to BVI nearshore areas

Conservation Threats	
Anchorage	Sedimentation
Moorings	Dumps
Land Fill Sites	Urban Areas
Marinas	Hotels
Hazardous Material Locations	

that manages and houses all GIS data for the territory. Once the full listing of available data was obtained, selection of “threats” thought to be most important from the list were selected and ranked (Table 1). The ranking exercise was conducted by NPT, CFD and The Nature Conservancy staff. The ranking process itself consisted of determining which threat relative to each other was considered a Small, Medium or Large. Each of the three categories was broken down and given a score of 1-3 for Small, 4-7 for Medium and 8-10 for Large. In addition to the ranking itself, participants also provided estimates for the spatial extent from point source each threat impacted. For example, marinas, considered as a threat assigned a medium score was further broken down by the number of moorings per marina and ranked accordingly. Each marina was then assigned an estimated area of impact. The result of the ranking exercise was then mapped enabling visual inspection of where the most significant threats were and for development of a cost-surface layer to be included in MARXAN runs (Figure 1.).

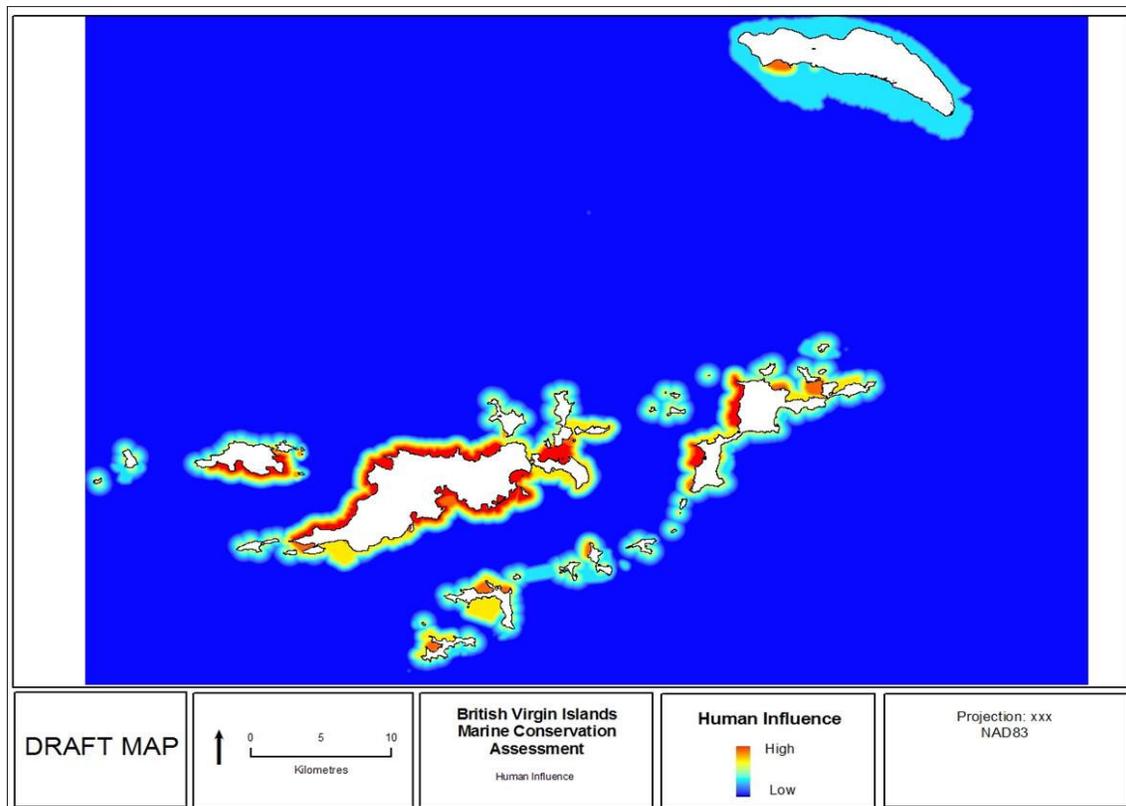


Figure 1. The Cost Surface included in the MARXAN analysis

Representatives from NPT and Conservation and Fisheries offices were involved in conducting the MARXAN analysis. Two key concepts considered when conducting this analysis related to “representation and resilience” and “clustering.”

- ✚ The concept of representation and resilience through stratification
 - In order to ensure representation in the event of a loss of biodiversity the BVI was divided into three strata for the analysis. In each stratum 30% of six major biological habitats were targeted for conservation through the analysis (Figure 2).

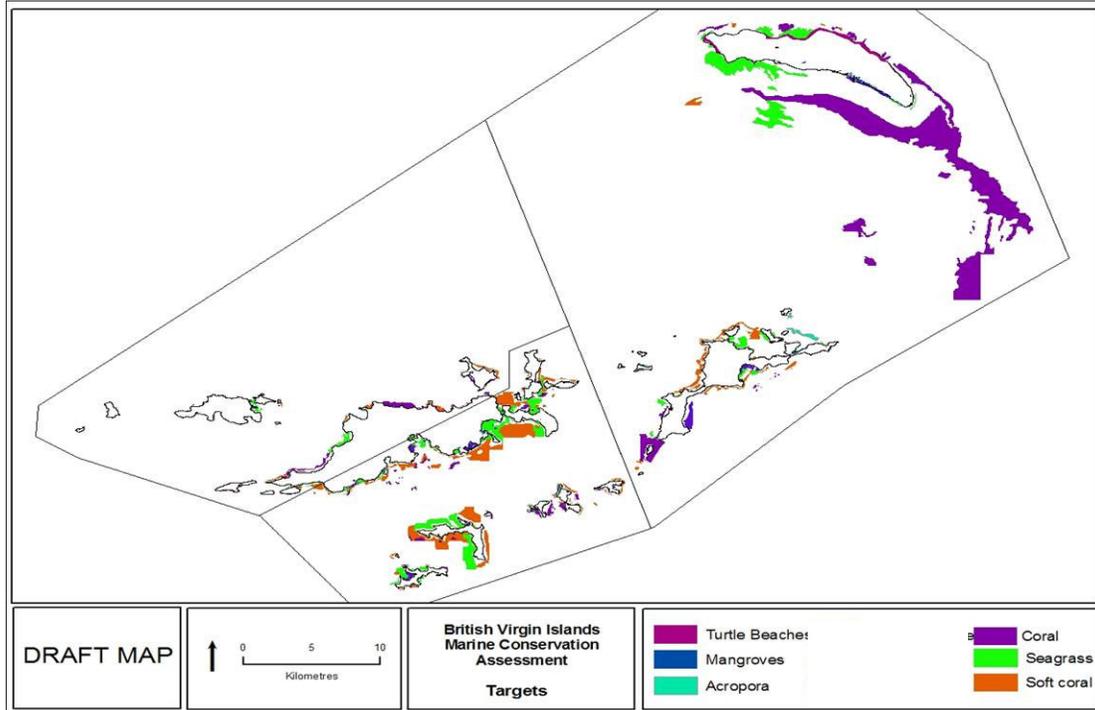


Figure 2. The Conservation targets as mapped within the BVI showing management based stratification lines to ensure biological representation

✚ Clustering and data layers

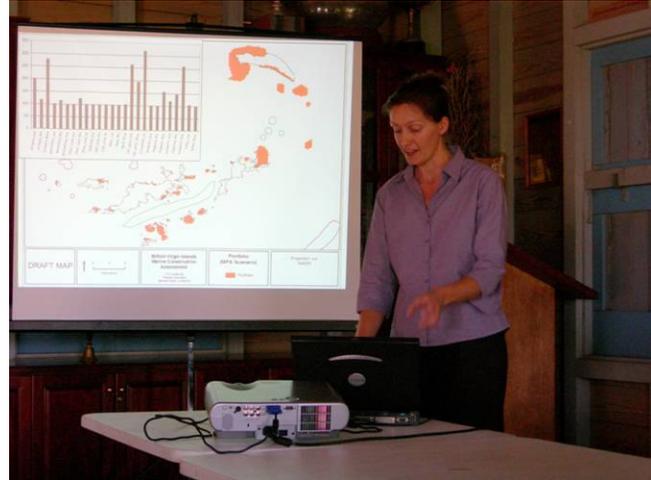
- Different levels of clustering were examined to determine the most manageable approach in terms of enforcement without reducing the target conservation effectiveness
- Habitat data layers and special interest areas layers from Conservation and Fisheries were incorporated into MARXAN iterations that combined habitat targets with existing fisheries protected areas.

In addition to the incorporation of repetition, resilience and clustering, the analysis also considered the affects of “locking in” areas deemed as being critical for conservation efforts. These areas included, but were not limited to, critical seagrass beds, fisheries, and unique coral reef sites. Fisheries priority areas, designated under law by CFD were locked out of the analysis in order to promote conflict reduction and public acceptance.

A series of proposed maps were created based on the outputs of the MARXAN exercises. Each of the maps created met the minimal goal of identifying 30% of each habitat per stratum, yet differing based on the relative size of determined area and whether or not certain areas were “locked in” or not. These maps provided the basis to begin formal engagement of particular stakeholder groups and to elicit their feedback on the various scenarios derived from the completed analysis.

Phase 2: Community Meetings and Workshops

Stakeholders and scientific experts were consulted to evaluate the proposed maps, determine particular uses, special values, and unique characteristics of potential sites and to identify any foreseeable conflict areas. Meetings held on the four main islands (Tortola, Virgin Gorda, Anegada, and Jost Van Dyke), and the main summary points from each of the respective meetings conducted are below.



Dr Annette Huggins explains a MARXAN generated portfolio option at a training session

➤ *Tortola*



Dive and Boat Charter companies

- Very supportive of the concept of a network of protected areas and objective of placing 30% in no-take areas
- Were interested in additional areas beyond the near-shore environments being protected
- Expressed concerns regarding the implementation and enforcement of Rules and Regulations governing the protected area



Fishermen

- Although well advertised with advanced notice local fishermen did not attend the meeting. Consultation with CFD assistant fisheries officer did take place



Expert Consultation

- Very supportive of the concept of a network of protected areas and objective of placing 30% in no-take areas
- Were interested in additional areas beyond the near-shore environments being protected including reef fish spawning grounds on the Banks north west of Virgin Gorda
- Expressed concerns regarding the implementation and enforcement of Rules and Regulations governing the protected areas



NPT staff work with Virgin Gorda Fishermen

- Expressed the need for the creation of a monitoring and evaluation plan
- *Virgin Gorda*
 - ✚ Dive and Boat Charter companies
 - Very supportive of the concept of a network of protected areas
 - Identified the need to protect 100% of mangroves throughout the BVI
 - Re-enforced the need for boat pump-out stations on charter boats
 - Identified the need for all the Dog Islands to be incorporated into one protected area
 - ✚ Fishermen and Virgin Gorda's fishermen's association
 - Very organized as a group within the fishermen's association and overall supportive of the concept
 - Aware of the finality of natural resources and cognizant of the need for protection of areas that are important in terms of spill over
 - Pointed out existing conflict around Taylor's Bay and South Sound where fisheries protected areas currently exist
 - Acknowledged North Sound as an important extensive seagrass area for conch. This area was identified by CFD as an area of special interest that should be protected
 - Identified an large are north of Virgin Gorda as important for trap fishing
- *Anegada*
 - ✚ Dive BVI – Anegada chapter
 - Helped to locate several key wreck dives with the HorseShoe reef
 - Pointed out that although a large part of HorseShoe reef is currently under protection by CFD little or no enforcement is actually in place and therefore fishing activities are continuing
 - Identified key mooring sites necessary for the reduction of anchoring at Anegada for both overnight and day situations
 - ✚ Fishermen and local stakeholders
 - Were initially hostile to communication with NPT and TNC staff



NPT and TNC staff work with Anegada stakeholders

- Some members had little faith in the participatory approach actually having direct impact of proposed areas for protection
- Many were sceptical of NTP's ability to enforce any network
- Did eventually provide areas that are key to local fishermen in order to assist in the planning process

➤ *Jost Van Dyke*

✚ Fishermen and the President of the BVI Fishermen's Association

- Very aware of reduction in available catch, especially with respect to lobsters
- Supportive of the concept but much more interested in steps being taken to deal with the sewage pump-out problems and sedimentation from erosion caused by large scale development
- Angry about CFD's decision to allow dredging of the seagrass area around Diamond Cay and the East End Harbour. This area was traditionally important as a conch nursery ground and so fishermen feel betrayed about the perceived need to "give up areas" while others are being destroyed
- Provided information regarding areas where traps are set and line fishing occurs

Phase 3: MPA Zoning Plan

Through the establishment of a legal framework for protected areas over time there are a variety of management areas that exist within the BVI. These areas were consolidated into nine definitions during the passing of recent legislation, The National Parks Act 2006, to ensure that the national system is not only logical, but is also understandable by internal and external institutions, as well as being consistent with internationally accepted approaches. This consistency with internationally recognised categories is important in meeting international convention commitments. The drafting and subsequent passage of the National Parks Act is a testament to the fore-thought of Agencies and Government departments working in the environmental sector in the BVI. This step in the PA system design process was critical to allowing the framework of area gazetting, implementation and zonation to continue. This process was conducted in-house by NPT and CFD with legal assistance seconded from Island Resources Foundation and was not a component of this grant.

However, the BVI National Parks Act 2006 does not extend NPT's authority to the other legislations that authorize the establishment of protected areas, but which are not managed by the BVI National Parks Trust (NPT). Therefore, work consolidating all nationally-designated protected areas into the IUCN system of management categories will be continuing.

Zonation can be a key management tool for multiple-use MPAs. It allows the designation of areas for particular activities such as protection of key habitats or nursery areas and

breeding sites, research, education, anchoring, fishing and tourism. Zonation has also been used to reduce or eliminate conflict between different users of the MPA, to improve the quality of activities such as tourism, and to facilitate compliance.

The feedback elicited from the stakeholder meetings on each of the major islands in the BVI was compiled into a single representation to allow potential conflicts to be clearly elucidated (see Figure 3).

Stakeholder Feedback on Proposed MPA Network March 2006

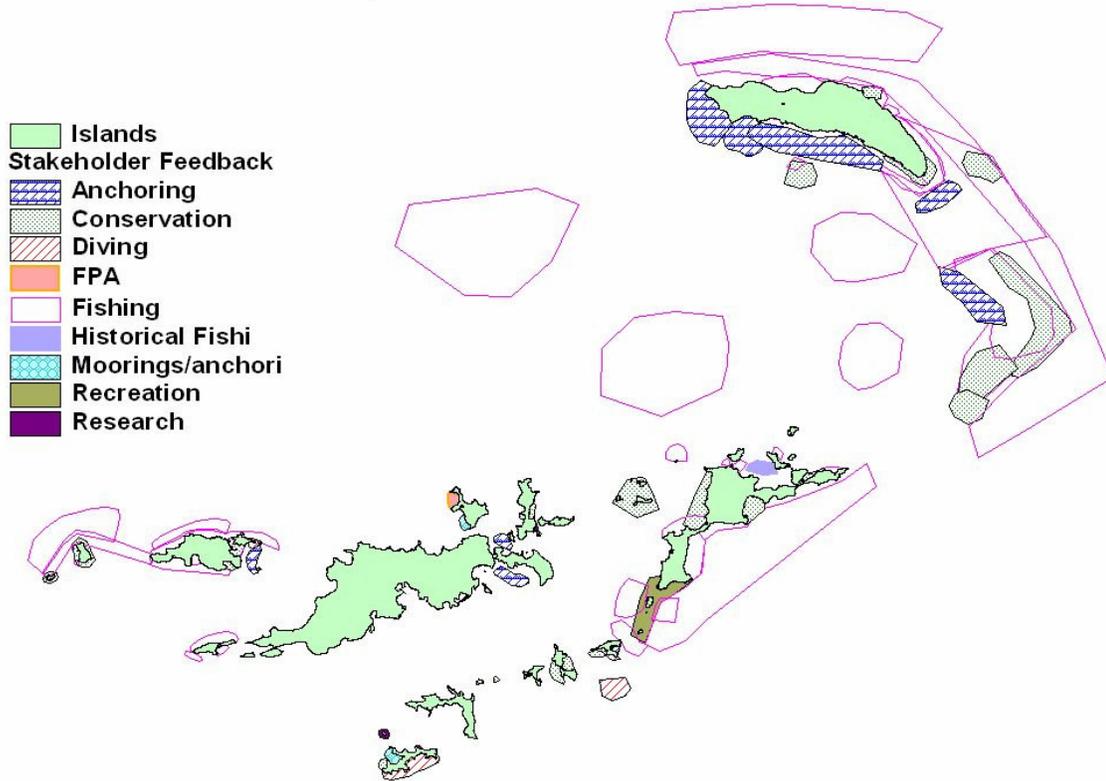


Figure 3. Stakeholder feedback from all 4 islands incorporated into one map

The unanimous decision was made amongst partners to be consistent with the original goal of the PA system and set aside at least 30% of six major habitats in strict no-take areas. Therefore the focus of the zoning plan was centered on minimizing conflicts by strategic placement of these no-take areas using both biological and social information to guide the final decision. The final draft of the proposed nearshore PA system for the BVI, based on biodiversity conservation and socio-economic drivers has been included as Figure 4 in this report. This map highlights existing and proposed areas that will make up the resilient and resistant PA system of the British Virgin Islands.

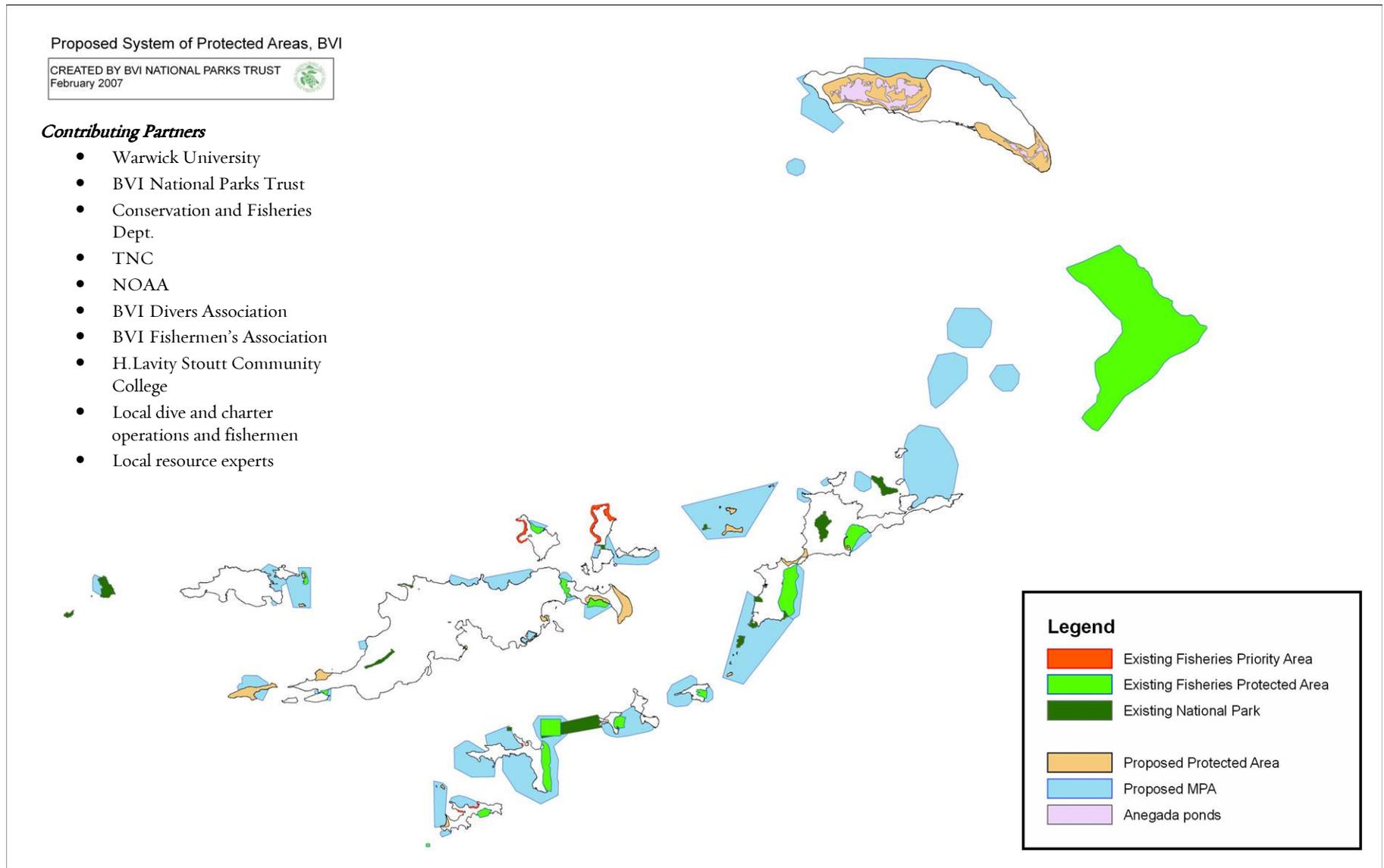


Figure 4. The Proposed Network of Protected Areas in the British Virgin Islands

Phase 4: Monitoring Indicators

A series of two workshops were held to develop management goals, objectives, and an evaluation framework for the British Virgin Islands National Park System (BVI NPS). These workshop were designed around the use of the “How is Your MPA Doing” guidebook (Pomeroy, Parks et al. 2004) allowing a combination of worksheets and activities in the book to be used in the development and prioritization of biophysical, social and governance indicators for management effectiveness. The workshops were lead jointly by the National Parks Trust and The Nature Conservancy, with support and facilitation by the NOAA Fisheries Division.

The associated objectives of the workshop were:

- To develop SMART goal and objective statements for the BVI NPS
- Identify a relevant set of biophysical, socioeconomic, and governance indicators with which to measure the effectiveness of the BVI NPS through time
- To engage stakeholder participation within the development of a BVI NPS management framework to encourage public consensus



Workshop participants from NPT, CFD, BVI Divers Association, BVI Fishermen’s Association, H. Lavity Stoutt Community College, dive and charter operations, fishermen, and resource experts, TNC, NOAA

A draft set of guiding principles, goals and objectives were determined throughout these workshops as listed below. Final revisions were done in-house at National Parks Trust and incorporated in to the final draft of the BVI PA Systems Plan 2007-2017. This systems plan, although it utilises work completed during this project was not a direct deliverable within this scope of work. It does, however, highlight the ambitious and dedicated nature of the staff at NPT and is a testament to the drive of all the partners involved in the process. It was this nature that was recognised by an award for Outstanding Management at the US Coral Reef Task Force Meeting held in St Thomas from the 22nd to the 28th of October 2006. The final draft of the BVI PA Systems Plan has been submitted along with this report.

Goals and Objectives for the System

The overarching vision for the BVI protected areas system for the period 2007-2017 is **“To manage important natural and historical resources in ways that will contribute to an improvement of the quality of life of BVI residents”**. A comprehensive vision statement is currently under review with NPT.

Socio-Economic

Goal One:

Maintain and enhance sustainable, economic marine activities within the BVI, while ensuring the health of communities that are reliant on marine and coastal resources

Objectives:

- 1a. To have a perceived increase in the catch of certain, regulated reef fish and invertebrate species at selected areas adjacent to specified marine protected areas zones over a five year period.
- 1b. Improve the quality and distribution of benefits derived from the marine protected areas system by those who utilize marine resources within five years after designation.

Goal Two:

Continue to seek and disseminate information about the island ecosystem that educates the present and future generations that reside in or visit the British Virgin Islands.

Objectives:

- 2a. To provide useful information prepared in a manner that is suited to guide policy, decision making, and public awareness strategies on an on-going basis.
- 2b. A diversity of educational materials and experiences are continuously guiding and positively influencing stakeholder behaviour and decision making.

Biophysical

Goal Three:

Conserve, restore and enhance a representative range of selected habitats within the BVI marine protected area system which will ensure viable and healthy marine and coastal resources.

Viability = integrity, geographic continuity/representation, reproductive health

Objectives:

- 3a. Maintain and seek to enhance the health of a representative range of coral reef, mangrove, algal, and sea grass communities relative to 2006 levels by 2012.
- 3b. Increase, by a statistically significant amount, biomass and species richness within selected marine protected areas for certain species by 2012.

Governance

Goal Four:

Ensure the sustainable use and effective management of natural and cultural resources in the BVI through stakeholder participation.

Objectives:

- 4a. To enact a marine protected area system, comprising of representative coastal and marine habitats throughout the BVI, including multiple use areas, marine parks and at least 30 percent no-take areas by 2008.
- 4b. Promote effective management by increasing compliance and enforcement for the marine protected area system within five years of its designation.
- 4c. To actively engage and collaborate with stakeholders in the planning for and implementation of the marine protected area system management plan.

Monitoring Indicators

Monitoring indicators are defined as units of information measured over time that allow the documentation of changes to specific attributes within an MPA system. The selection of monitoring indicators was achieved through an extensive participatory process involving 28 people representing several stakeholder groups, including the National Park Trust, Conservation Fisheries Division, fishermen, and the tourism sector. This was achieved through a two day workshop held in November 2006.

Following an introductory explanation of the purpose of indicators and management effectiveness, the participants formed small groups to select indicators relevant to their chosen goal. Prioritization of chosen indicators then occurred by reviewing the appropriate indicator summary and determining in country capacity to accomplish the monitoring of each indicator. Each small group was tasked with developing and assessing the



Stakeholders Selecting Monitoring Indicators

feasibility of indicators for the goal categories and each section was reviewed in plenary to ensure consent throughout the workshop participants.

The final worksheets for each set of indicators are attached in Appendix 1. These sheets reflect the initial wordings of the goals and objectives as proposed by a range of stakeholders and partners in the workshop setting. Slight changes in wording were made to these initial thoughts by NPT and CFD to accurately reflect the purpose and goals of the entire system but efforts were made to ensure the intention remained unchanged.

Lessons Learned and Long Term Outcomes

The British Virgin Islands have set an ambitious goal of protecting, under no take designation, at least 30% of nearshore habitats and have approached achieving this goal steadfastly. They have achieved a great deal in a relatively short period of time addressing not only the ecological aspects of developing such a plan, but also, and in concert, addressing the legislative aspect of establishing and implementing a system of protected areas throughout the territory. Among the variables believed to have been fundamental in reaching the current state of the protected areas are political will, the willingness to engage partners and recognizing how certain partners can contribute to the end goal, engaging the broader community in the development and selection of areas to be protected and a strong conservation ethic among the populace of the British Virgin Islands.

Another reason for the early success of this project might also be a function of the demographics of the BVI. It is a small territory comprising of a population of just over 23,000. The relatively small population and the fact that a small proportion of the population depends on the extraction of marine resources essentially minimizes the amount of potential conflict resulting from the establishment of protected areas. Indeed, much of the economy of the BVI is reliant upon tourism, particularly the boat-charter and dive industries.

Future Direction

It is The Nature Conservancy's long-term goal to contribute to the effective management of natural resources throughout the Caribbean basin. It with this in mind that TNC is conducting a series of Conservation Action Planning (CAP) for Protected Areas workshops focused directly on the development of site level management plans. This workshop series will be attended by nine Caribbean nations; Grenada, St. Vincent and the Grenadines, St. Lucia, St. Kitts and Nevis, Antigua and Barbuda, Dominica, Montserrat, Anguilla, and the British Virgin Islands. Project teams of 3 individuals have been determined by each country, and include Government representatives, NGOs and consultants. Each participating country team will be paired with a TNC coach to assist in:

- ✚ Developing an effective protected area management plan for one priority site which will meet in country requirements with a solid foundation focused on biodiversity conservation and threat abatement. .
- ✚ Building in-country capacity to implement the CAP process for all of the sites in their country's Protected Area system.

The TNC team that will be leading the CAP effort will consist of up to eight Coaches, from the U.S.A., Mexico and Jamaica, who will provide expert guidance to each country team throughout the planning process. There will be one Coach assigned to each country team that will work with the country team throughout the workshops and be available to provide guidance and assistance in between the workshops. The first workshop is scheduled for the last week of May 2007 in Dominica and the following workshops will

be scheduled for July and September. This effort will be funded through USAID and The Nature Conservancy.

The development of detailed site level plans is the next logical step for the British Virgin Islands PA system and TNC remains committed to ensuring in-country partners receive any necessary support to ensure the success of the newly formed nearshore protected areas system.

Acknowledgements

The Nature Conservancy would like to acknowledge the dedication of the hard working staff of The National Parks Trust and Conservation and Fisheries Department in the British Virgin Islands. We would also like to acknowledge the valuable input of John Parks and Jason Philibotte of NOAA as well as Annette Huggins and Mike Palmer for their contributions to the process. This work would have been impossible without the drive and determination of Mark Drew, an inspiration to us all.

References

Ball, I. and H. Possingham (2000). MARXAN: Marine Reserve Design using Spatially Explicit Annealing, A Manual Prepared for the Great Barrier Reef Marine Park Authority: 70.

Pomeroy, R. S., J. E. Parks, et al. (2004). How is Your MPA Doing? A Guidebook of Natural and Social Indicators for Evaluating Marine Protected Area Management Effectiveness, IUCN Gland, Switzerland and Cambridge, UK.

Appendix 1. Monitoring Indicators Chosen for the BVI PA system

BVI SOCIO-ECONOMIC GOALS, OBJECTIVES AND INDICATORS

GOALS RELATED TO YOUR NATIONAL SYSTEM	OVERLAPPING GOALS FROM SUMMARY TABLES (Figures 2, 3 and 4 in Section 2)	OBJECTIVES RELATED TO YOUR NATIONAL SYSTEM	OVERLAPPING OBJECTIVES FROM SUMMARY TABLES (Figures 2, 3 and 4 in Section 2)	RELEVANT INDICATORS FROM SUMMARY TABLES (Figures 2, 3 and 4 in Section 2)
<p>Maintain and enhance sustainable economic marine activities, within BVI, while ensuring the health of communities that are reliant on marine and coastal resources.</p>	S1	To have an increase (by X% or a statistically significant) in fish catch and size at selected areas adjacent to the MPA zone over a 5 year period.	1B	S4, S5
	S2			
	S4	Prevailing attitude and beliefs towards the MOA system taking into account issues of equitable distribution of desired benefits, improved over a five year period.	2A, 2D	S1, S7, S9 S11
	S6	Improved socio-economic benefits from MPA by stakeholders over a five year period.	4A, 6B	S4, S8, S11 S7, S10 S3, S4, S14

BVI BIOPHYSICAL GOALS, OBJECTIVES AND INDICATORS

GOALS RELATED TO YOUR NATIONAL SYSTEM	OVERLAPPING GOALS FROM SUMMARY TABLES (Figures 2, 3 and 4 in Section 2)	OBJECTIVES RELATED TO YOUR NATIONAL SYSTEM	OVERLAPPING OBJECTIVES FROM SUMMARY TABLES (Figures 2, 3 and 4 in Section 2)	RELEVANT INDICATORS FROM SUMMARY TABLES (Figures 2, 3 and 4 in Section 2)
Conserve, restore, and enhance a range of selected habitats which will ensure a viable and healthy marine ecosystem	B1	1) By 2010, maintain selected habitat health and species diversity relative to 2006 levels within BVI near-shore ecosystems.	1A 1B	B1, B2, B6, B7 B3, B4, B5, B8
		2) By 2012, increase biomass and species richness by a statistically significant amount within MPAs for selected species.	1A 1F	B1, B2, B6, B7 B1, B2, B7, B9
		Objective 1	4A	B3, B4, B8, B9
		Objective 2	4A	B3, B4, B8, B9
	B5	Objective 1	5A 5C	B1, B6, B7, B9 B2, B3, B4, B8, B9
		Objective 2	5A	B1, B6, B7, B9

BVI GOVERNANCE GOALS, OBJECTIVES AND INDICATORS

GOALS RELATED TO YOUR NATIONAL SYSTEM	OVERLAPPING GOALS FROM SUMMARY TABLES (Figures 2, 3 and 4 in Section 2)	OBJECTIVES RELATED TO YOUR NATIONAL SYSTEM	OVERLAPPING OBJECTIVES FROM SUMMARY TABLES (Figures 2, 3 and 4 in Section 2)	RELEVANT INDICATORS FROM SUMMARY TABLES (Figures 2, 3 and 4 in Section 2)
Ensure the understanding and sustainable use of marine natural and cultural resources within the framework of participatory management.	G1	1. To have an established and enacted MPA network comprising 30% of nearshore habitats throughout the BVIs by 2008.	1A – 1F	G3
	G2		2A - 2F	G4
	G3	2. To have an increased level of public awareness of threats to the marine environment by end of 2007.	3A – 3C	G6
	G4			G5
		3. To have an education plan developed by 2007.	4A – 4F	G8