Management Plan
for
Central Forest Reserve National Park
2007-2011

Federation of St. Kitts and Nevis

Prepared in consultation with
The Government of the Federation of St. Kitts and Nevis
And the People of St. Kitts and Nevis.

Prepared for

The Organization of Eastern Caribbean States (OECS)
Environment and Sustainable Development Unit

OECS Protected Areas and Associated Livelihoods Project

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ACRONYMS AND ABBREVIATIONS

CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CTF	Conservation Trust Fund
DPPE	Department of Physical Planning and the Environment
ESDU	Environnent and Sustainable Development Unit
FFEM	Fonds Français pour l'Environnement Mondial
Ft	Feet
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIS	Geographic Information System
GPS	Global Positioning System
GoSKN	Government of St. Kitts and Nevis
in	Inches
IRF	Island Resources Foundation
IUCN	International Union for Conservation of Nature
IWCAM	Integrated Watershed and Coastal Areas Management (Project)
km^2	Square kilometers
m	Meters
mm	Millimeters
mi^2	Square miles
MEA	Multilateral Environmental Agreement
MPA	Marine Protected Area
NCEPA	National Conservation and Environmental Protection Act
NEMS	National Environmental Management Strategy and Action Plan
NGO	Non-governmental Organisation
NICE	National Implementation Coordinating Entity
OAS	Organisation of American States
OECS	Organisation of Eastern Caribbean States
OPAAL	OECS Protected Areas and Associated Livelihoods (Project)
PA	Protected Area
PMS	Participating Member State
PSC	Project Steering Committee
SIDS	Small Island Developing States
SIE	Site Implementing Entity
UNEP	United Nation Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization

EXECUTIVE SUMMARY

The Central Forest Reserve National Park of St. Kitts and Nevis was gazetted on 29 March 2007. It is the first national park to be designated in the Federation of St. Kitts and Nevis for the purposes of biodiversity conservation and sustainable development. As a new national park, it is virtually a blank slate. It presently receives little use, but this is expected to change quickly, as tourism is the fastest growing sector of the economy. Information about the area is scarce and management programs are not yet in place. Under this confluence of circumstances, the defining features of the first years of the park will be the speed and extent of knowledge gained and the evolution of management.

This management plan for the Central Forest Reserve National Park was prepared under the direction of the government and people of St. Kitts and Nevis. It is contains a brief description of the resources of the park and the surrounding communities, past and present uses of the area, and current legal and management status. This is followed by information on the current management issues and action-oriented programs to address these issues. The final sections of the plan contain operating plans, a budget and a series of appendices which provide describe the planning process, additional information and some useful tools for management.

Goals of the Central Forest Reserve National Park

Shown in order of priority

The Central Forest Reserve National Park will conserve biodiversity, including ecosystem functions, and scenic resources, so that the park remains an intact resource for the sustainable use and enjoyment of future generations of the people of St. Kitts and Nevis.

The Central Forest Reserve National Park will support the sustainable development of St. Kitts and Nevis through the creation of economic opportunities that are compatible with conservation and managed to remain within sustainable levels.

Critical management issues identified for the CFRNP include:

PRIORITY	CRITICAL ISSUE
Highest	Establish excellent relationship between the DPPE and stakeholders
Highest	Upgrade management capacity
Highest	Develop protected area management policies, procedures and information
High	Modify existing visitor use to support the achievement of the CFRNP vision, goals and guidelines
High	Develop stable and sufficient funding
Medium	Develop a master infrastructure plan, update management plan, to support long-term CFRNP vision, goals and guidelines

The CFRNP has no serious resource management threats at this time, which is a promising start for a new National Park. However, there are significant issues to resolve in order to ensure that this situation continues. One of the most important will be establishing a cooperative management structure with local stakeholders, as there is little cooperative management experience to draw on. Other issues include increasing management capacity and establishing and funding effective

management that will ensure conservation of the natural heritage of St. Kitts and Nevis. For the CFRNP, addressing these issues should result in shifting the park closer to achieving its goals of conservation and sustainable development. For the stakeholders, this should result in increased economic opportunities and quality of life.

Six management programs were developed in response to the issues listed above and these were divided into Phase 1 and Phase 2. Phase 1 covers the first two plan years, includes the first five programs, and is focused on laying a solid cooperative management foundation to move into Phase 2.

Phase 1 Programs:
1. Teaming Up with the Community
2. Building Capacity
3. Building the Management Foundation
4. Improving Interim Visitor Use
5. Financing Sustainability

Phase 2 is focused on achieving the CFRNP's goals of conservation and sustainable development. The overarching vision to achieve these ambitious goals is a world-class network of trails draped across the landscape of the Central Forest Reserve and studded with site-based activities, picnic areas, panoramic views and small towns full of shops, museums, lodging, and more, all owned and operated by the people of St. Kitts and Nevis. Phase 2 has only one very program, but it is expected to consume all of plan year 3. This phase calls for developing a master infrastructure plan for the CFRNP and revising the management plan to work hand in hand with that master plan and with new park information gained during Phase 1. Phase 2 will incorporate significant community consultation to develop the new infrastructure and management plan.

Phase 2 Program:
6. Achieving Lasting Sustainable Use

This management plan represents a significant and essential step toward accomplishing the CFRNP's goals. The plan emphasizes the importance of integrating management around the goals of sustainable development within the limits of conservation, and incorporates the best practices in protected area management. It employs the ecosystem approach as defined by the IUCN in utilizing a people-centered and participatory approach, involving resource users in daily management. It also incorporates adaptive management throughout the management cycle through monitoring and learning, and improving the results over time.

CHAPTER ONE INTRODUCTION AND BACKGROUND

1.1 Origin of the Central Forest Reserve National Park

The Central Forest Reserve was designated a National Park by the Government of the Federation of Saint Christopher (St. Kitts) and Nevis on 23 October 2006, and officially gazetted on 29 March 2007. National Park status was declared under sections 3(1) and 3(4) (a)-(d) of the National Environmental Conservation and Protection Act (NCEPA) of 1987.

The Central Forest Reserve National Park (CFRNP) is the second National Park to be created in St. Kitts and Nevis, but the first to be designated for the purposes of biodiversity conservation and sustainable development. The Park contains the last remaining area of tropical forest on the island of St. Kitts, making its protection a significant step in regional conservation. The thickly vegetated area collects and stores rainfall for the national water supply and the protection of this healthy watershed will continue to be a priority. The trails are used by the majority of ecotourism ventures on the island, as well as local recreational and educational programmes, and are an important asset expected to play an expanding role in the island's economic future.

In addition to the desire of the Government of St. Kitts and Nevis to protect natural resources, part of the impetus to designate the Central Forest Reserve National Park came from a project undertaken by the Organization of Eastern Caribbean States (OECS), a regional institution promoting cooperation and sustainable development for its member states, including the Federation of St. Kitts and Nevis. This project is the OECS Protected Areas and Associated Livelihoods Project (OPAAL[1]).

The Central Forest Reserve National Park was selected as the OPAAL demonstration project for the Federation of Saint Kitts and Nevis. Although the OPAAL project is a limited term project, scheduled to end in 2010, its influence is expected to extend beyond this time period.

1.2 Vision for the Central Forest Reserve National Park

Within the Government of St. Kitts and Nevis, the Department of Physical Planning and Environment in the Ministry of Sustainable Development has management authority for the CFRNP. The DPPE has developed the following vision for the CFRNP shown in Figure 1 (following page).

1.3 Purpose and Scope of this Plan

A management plan might be described as a road map for a protected area. It describes where management wants to go (goals), what road blocks exist (critical issues) and the route to be taken (strategic programs and activities). This management plan is the first vital step toward the achievement of the goals identified for the Central Forest Reserve National Park. It will guide and assist the Department of Physical Planning and Environment, as management of the Central Forest Reserve, and the community, as partner in CFRNP management, to accomplish the goals they have identified in an effective and timely manner.

[1] The OECS Secretariat through its Environment and Sustainable Development Unit (ESDU), in partnership with the International Bank for Reconstruction and Development (the World Bank) acting as an Implementing Agency of the Global Environmental Facility (GEF); the Fonds Français pour l'Environnement Mondial (FFEM) of the Government of France; and the Organisation of American States (OAS), is implementing the OECS Protected Areas and Associated Sustainable Livelihoods (OPAAL) Project.

The National Physical Development Plan for St. Kitts and Nevis outlines as one of its visions that "areas of outstanding natural beauty, biological and geological significance and of historical and cultural importance will receive protected status that will ensure their continued use."

The management of the area should contribute to the realisation of this vision based on the following elements:

- The sustainable use of its natural and cultural resources in support of social and economic development.
- The equitable distribution of the benefits derived from this use.
- The conservation of the area's unique and valuable resources.
- The participation of all sectors and groups in the social and economic development processes, as well as in all management decisions.
- The enhancement of the tourism product of St. Kitts and Nevis through the establishment and maintenance of rainforest trails.

Figure 1. Vision

This management plan for the Central Forest Reserve National Park is the result of a collaborative effort between the Government of the Federation of St. Kitts and Nevis, the Organisation of Eastern Caribbean States, and interested persons and organizations in the community. The process of creating this management plan has provided the opportunity to organize existing information about the CFRNP, identify new information needs, discuss important issues with the local communities, prioritize the issues most in need of management attention, develop strategies to address these issues, and develop a financing plan to carry out these actions. This information is presented in the succeeding sections of this plan.

Financial support for this management plan was provided through the OPAAL project of the Organisation of Eastern Caribbean States.

This plan is deliberately concise and focused on information and strategies linked directly to management of the Central Forest Reserve. It makes no attempt to compile or review all available knowledge about the Central Forest Reserve, nor the ecological and socioeconomic systems of the Federation of St. Kitts and Nevis. Instead, the reader is referred to the background information sources as necessary.

There are three factors that provide the context for this management plan that are so significant that they must be mentioned here and repeated later in the document. First, the CFRNP is a new park with no management history, no established administrative systems, and very little infrastructure. There is no history of mistakes to overcome, but equally no experience that will guide decisions. It is reasonable to expect that the learning curve will be very steep in the first few years, for park management and for stakeholders, and that the situation and circumstances will evolve rapidly.

Second, presently no source of dedicated funding exists for park management, and although strategies to gain funding are proposed in this plan, the success of these cannot be predicted. Yet the process must begin somewhere and this plan will serve as a vehicle to solicit funding. Accordingly, this plan has attempted to strike a balance between what could be done with all necessary funding, and what might reasonably be accomplished with the expected limited funding.

Third, visitation to the CFRNP by tourists, principally cruise ship arrivals, is expected to rapidly increase due to the GoSKN policy of expanding this economic sector.

In combination, these factors strongly suggest that this management plan be formally updated, including a more extensive community input process, no later than two years from its initial adoption. This review has been formally incorporated into this present plan.

1.4 Overview of Planning Process

Threat-based planning was the conceptual approach used to develop the management plan. In this approach, the first step is to review the conservation goals that the protected area seeks to accomplish. Typically, these goals include conserving biodiversity in the form of habitats, species etc., and frequently also include sustainable development. Next, "issues" are identified. These include "threats" in the form of inappropriate types or inappropriate intensities of human use in the area, or introduced species, diseases, or a variety of other factors. Other types of issues include any circumstance that impedes the ability of management to achieve the desired goals. Typical among these are insufficient funds and staff. Reducing, removing or solving these issues should shift the conditions in the protected area closer to the management goals.

The next step is to establish quantitative and time-limited objectives to describe the progress that management hopes to make in addressing the identified issues. Finally, the programs are developed to accomplish these objectives. Each program consists of a series of activities, designed so that the completion of the activities will result in achievement of the management objective.

Moving from the conceptual approach to the procedural approach, development of this plan consisted of the following steps:

1. Information gathering was used to clarify goals, identify threats, develop objectives, and develop appropriate programs. The information gathering process included participation by the community which is described in Appendices A and C. Personal one-on-one interviews were conducted with twenty individuals, and a strategy brainstorming session was carried out with existing DPPE staff.

2. Issue analysis. This includes analysis and prioritization of the threats, and was supported by the information gathered in Step 1. This process is described in Appendix B

3. Development of management objectives, programs, activities and the administrative support, training, equipment and funding needed to make these programs operational and effective. Again, the information gathered in Step 1 was critical to developing feasible objectives and programs.

A detailed description of the planning process, including consultation with community members, threats analysis, and goals, guidelines and objectives analysis, can be found in the Appendices. This provides background for all the decisions reflected in the document.

1.5 Next Steps

No management plan, however well crafted, is an end in itself. Equally significant are the steps that follow completion of the planning process. In brief, these next steps include implementation, evaluation, adaptation and communication (Margoluis and Salafsky, 1998).

By adopting and implementing this plan, CFRNP management and the citizens of St. Kitts and Nevis will move beyond the discussion of the goals and into the challenging work of making a new reality. The activities must be implemented with attention to the guiding principles outlined in section 6.2 and with constant vigilance to learn and share in order to achieve the greatest success. Ultimately, the success of the plan will be measured in terms of improved conditions both in the resources and in the communities that depend on these resources.

A process for updating of the plan is included in section 6.5.8. Other revision processes may be substituted, as long as they include community participation in the evaluation process and a willingness to identify areas that can be improved.

In addition to evaluating the effectiveness of the strategies, the review process is the perfect step in which to identify changes in circumstances that render activities or strategies obsolete. It is common in protected area management to have new threats emerge, or new goals develop, which may outweigh earlier threats and goals. In this case, the plan should be adapted to respond to changes in the circumstances of the protected area or any strategies determined to be less effective than hoped for.

CHAPTER TWO SITE DESCRIPTION AND CONTEXT

The information presented in Chapter two is a brief summary of the resources directly relevant to management of the CFRNP. For additional details on resources, please see the *St. Christopher National Physical Development Plan* (GoSKN Ministry of Sustainable Development, 2006), *A Biodiversity Profile of St. Kitts and Nevis* (Horwith, 2000) and other references cited in the text.

In most of the topic areas below, the description is first of the characteristics found in the area of influence for the CFRNP (see section 2.1 for definition of the area of influence), then within the boundaries of the CFRNP.

Two characteristics mark the description found in the remainder of chapter two and are noted here to avoid repetition within each subsection. First, the boundary of the CFRNP, as determined by the 1000 foot contour level, has not yet been marked on the ground, so describing what is inside the CFRNP, is currently unclear unless one is equipped with an altimeter or GPS unit. Second, virtually all resource information for the CFRNP is quite limited. In part, this is due to the new status of the protected area; there was no need for baseline data previously. In addition, the very steep topography and dense vegetation have discouraged independent research and survey efforts by interested scientists, and even visitation by locals.

2.1 Location, Extent and Tenure

As the name suggests, the Federation of St. Kitts and Nevis is comprised of two islands, St. Kitts, and Nevis. It is located in the Lesser Antilles of the Eastern Caribbean, a long arc of islands which generally defines the boundary between the Caribbean Sea to the west and the Atlantic to the east (Figure 2). The islands of St. Kitts and Nevis, like most of the other Lesser Antilles, are summits of a submerged volcanic mountain range found at the eastern boundary of the Caribbean Tectonic Plate (GoSKN Ministry of Health and Environment, 2001). The total land area of the country is just 104 mi^2 (269 km^2). The island of St. Kitts, the larger of the two islands, is 65 mi^2 (176 km^2) in size.

Figure 2. Locator Map of St. Kitts and Nevis within the Caribbean.

The Central Forest Reserve National Park is designated as including all the land area on the island of St. Kitts from 1000-foot in elevation and above, a total of approximately 12,500 acres (Figure 3). This area is about 25% of the total land area of St. Kitts. Because the CFRNP is so large and centrally located relative to the small island of St. Kitts, its area of influence is effectively the entire island excluding the South East Peninsula. All lands within the CFRNP are Crown lands (Personal communication, Randolph Edmead, unreferenced).

2.2 Geography and Topography

Historians often say that geography is destiny. In regard to the destiny of ecosystems, that is certainly true for the island of St. Kitts. Geography determines climate, which in turn determines the pattern of vegetation and watersheds, which in turn determines the pattern of human use.

The shape of the island of St. Kitts has been compared to a chicken "drumstick." The extended portion of the drumstick is the South East Peninsula. This area is comprised of low hills, is very arid relative to the rest of the island, and contains several unique vegetation communities found nowhere else on St. Kitts. It has great conservation value and need but is entirely outside of the CFRNP and will not be dealt with further in this plan.

Figure 3. Central Forest Reserve National Park and Principal Trails

The meaty larger part is dominated by a chain of volcanoes; this area comprises the majority of the Central Forest Reserve National Park. The highest of the volcanoes is Mount Liamuiga, with its crater at 3,793 ft (1,156 m) (Lang and Carrol as cited in GoSKN Ministry of Sustainable Development, 2003). Mt Liamuiga has a breached crater, up to three quarters of a mile in diameter and up to 700 feet deep. The walls rise steeply from its floor, which holds a small lake, usually partly filled by landslide debris. This volcano is dormant but fumarole activity persists within the crater. Southeast of Mt. Liamuiga, the volcanic chain continues with the Middle range and the Southeast, or Olivees, range. The topography here is very irregular and rough. The summit of Verchild's Mountain is the highest point of the Middle range, at more than 3203 ft (976 m) above sea level. A broad gently sloping saddle of about 1500 ft (457 m) known as Phillips and Wingfield levels separate the Middle range from the Southeast range. No true craters remain, although there is a small pond, known variously as Dos D'anse, Dos D'ane, or Doan's Pond, set in a crater-like hollow on Verchild's Mountain. The Middle and Southeast ranges are considered "dead" volcanic centres, while Mt. Liamuiga is considered "live" although dormant. An eruption of Mt Liamuiga is possible, yet completely unpredictable.

The terrain slopes steeply down from the central peaks and is folded by a multitude of deeply incised ghauts with steep sides. These act as the primary channels for rainfall runoff and may attain depths of some hundreds of feet. Most of the ghauts are ephemeral, carrying water for short periods after rainfall and otherwise dry along all or most of their length. Only the relatively large Wingfield and Cayon rivers flow almost to the sea for much of the wet season (typically August through November). At lower elevations, ghauts become wider and contain varying amounts of coarse sandy deposit on which commonly grows a "food forest" of mangoes and breadfruit (Lang and Carrol as cited in GoSKN Ministry of Sustainable Development, 2003).

Moving below the perimeter of the CFRNP, the steep slopes eventually moderate to concentric rings of gentle slopes, then flatlands, and on to the sea. The majority of flat or moderately sloped land occurs near the coastal area, so most urban and agricultural development has occurred around the perimeter of the island.

2.3 Climate

Rainfall is the primary source of fresh water. The island of St. Kitts as a whole receives an average of about 64 inches (1625mm) of rainfall annually, while the higher elevations can receive up to 79 inches (2000 mm). As suggested by these numbers, rainfall is mainly orographic, increasing in both amount and frequency with altitude (GoSKN Ministry of Sustainable Development, 2006).

The climate of St Kitts and Nevis is classified as tropical marine. The islands enjoy warm even temperatures with a mean of approximately 27 degrees Celsius. Seasonal and diurnal variations in temperature are small. Generally, steady northeast trade winds and tropical oceanic cyclonic movements influence it.

The hurricane season extends from June to November, peaking in August (GoSKN Ministry of Sustainable Development, 2006). According to the Caribbean Hurricane Network (http://stormcarib.com) thirteen hurricanes have passed within sixty nautical miles (69 statute miles) since 1950. Of these, seven were category 1 storms, two were category 3, and four were category 4.

The effects of hurricanes and other violent tropical storms on natural resources is described in section 2.5.7; however, the effects of violent storms on humans and the built environment is quite different. The high winds and floods associated with these storms are traumatic events that can destroy infrastructure, endanger lives and derail or halt economic progress. The threat posed by hurricanes is very real to most Kittitians and Nevisians who have experienced several in recent decades.

2.4 Socioeconomics

2.4.1 Population and Communities

The population of the Federation of St. Kitts and Nevis in 2006 was 42,696, with 31,515 persons residing in St. Kitts and 11,181 in Nevis (U.S. Department of State, 2007). Basseterre, the capital city located on St. Kitts, has approximately 15,000 residents, including the outskirts. The remaining population of St. Kitts is scattered in smaller towns and villages around the coast, most of which are within a few miles from the park boundaries (Figure 5).

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There are no communities within the CFRNP, but there may be isolated dwellings. The area has not been surveyed for the presence of residents or residential buildings to determine the number of persons residing within the boundaries. During the stakeholder interviews, respondents were asked about the presence of persons currently residing in the CFR. The responses varied in part because the area is large and the respondents, if they visit the area at all, typically only visit the area closest to their residence. Some stakeholders stated that no one lives in the area, while others stated that a small number of persons reside there. However, since the lands within the CFRNP are Crown lands, any persons residing there lack formal tenure.

2.4.2 Economic Activities

St. Kitts and Nevis was the last sugar monoculture in the Eastern Caribbean until, after decades of losses in the state-run sugar company, the government decided to close the sugar industry in 2005. To compensate for the loss of the sugar industry, the Government of St. Kitts and Nevis embarked on a program to diversify the agricultural sector and stimulate the development of other sectors of the economy (U.S Department of State, 2007).

Tourism, which has been developing in St. Kitts and Nevis for two decades (GoSKN Ministry of Sustainable Development, 2006), has shown the greatest growth and is now a major foreign exchange earner for St. Kitts and Nevis, as evidenced by an 83% increase in foreign direct investment in a range of tourism-related projects. The manufacturing and financial services sectors have also grown.

The economy of St. Kitts and Nevis experienced strong growth for most of the 1990s, but hurricanes in 1998 and 1999 and the September 11, 2001 terrorist attacks in the United States hurt the tourism sector. Economic growth picked up again in 2004, with a real GDP growth rate of 6.4%, followed by 4.1% growth in 2005. In 2006, the economy of St. Kitts and Nevis posted growth of 4.6%, mostly as a result of diversification into tourism and construction related to the Cricket World Cup (U.S. Department of State, 2007).

2.4.2.1 Tourism

Tourism development on St. Kitts and Nevis was initially focused on sailing and small, high-end operations scattered around the island in the form of small hotels or former plantation houses converted to luxury accommodations. Recently it has shifted to a greater emphasis on cruise ship tourism and resort complexes situated on the South East peninsula.

Both independent travelers to St. Kitts and Nevis and disembarking cruise ship passengers may chose from a selection of tours and activities, including the Brimstone Hill Fortress National Park, shopping excursions, fishing, horseback riding, scuba diving or snorkeling, rainforest hikes, plantation tours, beach relaxation, etc. Some of these activities are offered by independent operators; others are offered through exclusive contracts with the cruise lines. Similarly, most resorts and hotels offer organized activities for their guests. Rental vehicles are available for visitors who opt to explore independently.

Tourism policy is to foster the continued growth of the industry in St. Kitts. The St. Christopher National Physical Development Plan (GoSKN Ministry of Sustainable Development, 2006) states: "The tourism industry has been the main driver of economic growth in St. Kitts for the last two decades…The underlying objective of the tourism strategy in St. Kitts is the achievement of sustained

growth in visitor arrivals to obtain optimal long-term benefits to the population, without adversely affecting the country's cultural heritage and natural resources… GoSKN sees its role as the provider of an appropriate environment – legislative, fiscal and planning, that would be conducive to the development of competitive tourism in St. Kitts." The St. Kitts Tourism Authority announced on 16 April 2007 that cruise ship arrivals will increase by over 70% in 2008, largely due to the addition of the Carnival Destiny to the island's cruise ship roster. This will be the first cruise ship to call there on a weekly year-round basis (Caribbean Tourism Organization, 2007).

Visitor numbers and other demographic information relevant specifically to the CFRNP are not known since there has been no program to collect this information in advance of the national park designation. It is unclear how many of the visitors that arrive at the park are independent travelers versus cruise ship day-trippers.

2.4.2.2 Other Economic Activities

Other economic activities in the small communities that surround the CFRNP include fishing, small retail operations, and small-scale vegetable, fruit and livestock production (GoSKN Ministry of Sustainable Development, 2006).

2.5 Description of the Existing Resources

2.5.1 Geology and Soils

The island of St. Kitts is composed principally of volcanic rocks of andesite or dacite mineralogy (GoSKN Ministry of Health and Environment, 2001; GoSKN Ministry of Sustainable Development, 2006). A comprehensive literature review of the geology of St Kitts and Nevis was compiled by Lang and Carroll (1964, as cited in GoSKN Ministry of Health and Environment, 2001).

In the lower elevations of the island, the soils are deep clays, silts and sandy soils, weathered from the parent volcanic material; but in the higher elevations of the CFR, the soils are more shallowly developed over the underlying volcanic materials (GoSKN Ministry of Sustainable Development, 2006).

2.5.2 Watersheds, Ghauts, and Springs

The ecosystem service provided by the CFRNP as a functioning watershed may be its most important role. Most of the nation's major watersheds are headquartered here, providing the greatest source of readily renewable water. The vegetation of the area is critical to intercept rainfall, slow its passage to the land surface below, store the rainfall and slowly release it. Deforestation of this area would result in rapid runoff, erosion, land slippage, and severe water quality impacts.

The CFRNP contains numerous ghauts (watercourses) which drain the water from the higher elevations following frequent rains. The Ministry of Health and Environment (2001) states "Although the NCEPA Act makes allowances for important watersheds to be legally protected areas no watershed in St Kitts and Nevis currently has such status. The 1956 Water Courses and Water Works Ordinance, however gives authority to the Water Department to protect certain fresh water supply sources or intake areas within watersheds. These water intake areas are declared out of bounds to the public by the water department."

The ghauts also form the primary linkage between the central mountainous area of the island, the lower elevation, and eventually the coastal waters. Sediment, pollutants, solid trash and anything else in the ghauts is transported downstream during high run off events.

The GIS Atlas of St. Kitts and Nevis (GoSKN Ministry of Sustainable Development, 2003) notes "There are a small number of springs appearing mainly between 1,000 and 2,000 ft. elevation in the ghauts on the Central and Southeast Ranges but not on Mt. Liamuiga. Within a short distance of appearing the spring water tends to infiltrate back into the gravel beds of the ghauts and rarely appears

in the lower reaches except during times of exceptionally heavy rainfall." Additional springs exist in the vicinity of the Wingfield, Lodge, Phillips, Cayon, Franklands, and Stonefort. These have been impounded into catchments (see also section 2.5.9).

2.5.3 Land Cover and Vegetation

Several vegetation classifications have been utilized in various studies of the flora of St. Kitts and Nevis[2]. Beard (1949) completed the first in 1945 utilizing five vegetation classes. In the late 1990's, The Nature Conservancy and Horwith and Lindsay (1999) each used updated and similar classification systems to describe 36 vegetation communities on the islands. Most recently, Helmer et al (in prep) utilized year 2000 satellite imagery to detail the land cover of St. Kitts and Nevis into 17 classifications.

Two interesting findings came from the work of Helmer et al. First, they explicitly examined the relatively intact vegetation on St. Kitts within the area defined by the 1000 foot contour line and above, which matches the designation of the CFRNP. Within this area, they found 75 ha of sugar cane, and 152 ha of pasture/grass, with the remaining area comprised of forest or other montane vegetation. This provides the most recent and accurate estimate of current vegetation within the CFRNP.

Second, and on an island-wide basis, they aggregated the appropriate land cover classifications from their classification system to match the five classes used by Beard (cultivated land, other uncultivated land, etc.) and compared the current extent of these classes with the original Beard findings from 1945. This comparison determined that cultivated land area in St. Kitts had declined by 59% from 1945 to 2000, while seasonal evergreen, evergreen and cloud forest cover types had increased a combined 26%. They also note that developed land has increased significantly over the same time period and that this trend is likely to continue.

2.5.4 Flora

Horwith and Lindsay (1999) describe 45 plant species that occur in St. Kitts and Nevis and are considered endemic to the Lesser Antilles or West Indies and which may deserve special conservation concern due to their restricted distribution. They also note that botanical information for the islands is limited and that additional species may yet be recorded. The current presence and distribution of these species in St. Kitts and Nevis is not known, but clearly some are associated with lower elevation habitats and will not be found in the CFRNP.

2.5.5 Wildlife

Most of the native wildlife of St. Kitts and Nevis has been lost. This loss is attributed to the combination of the small populations naturally found on small islands, and intense impacts from the arrival of humans, estimated to have occurred as early as 2000 BC (Keegan and Diamond, 1987 as cited in Steadman et al, 1997). With the arrival of humans came also hunting, development activities that converted large tracts of habitat to other uses, and the introduction of non-native species. Under the combined effects of these changes, small populations simply could not persist. Few historical records exist and so it is not possible to determine conclusively even the species that were present at the time of the arrival of Europeans in approximately 1623.

Species that are entirely restricted to lower elevation habitats are not discussed here. Little is known of the invertebrate species on the island (Horwith and Lindsay, 1999). Bass (2003) surveyed a number of streams in St. Kitts and Nevis and described freshwater macroinvertebrates, including the presence of numerous species not previously recorded; however a list of all species is not provided, nor information on distribution, abundance or habitat conditions. Horwith and Lindsay (1999) reported that St. Kitts originally hosted 9 species of fresh water fish, but the current status of any of these is

[2] In any defined area of land, the answer to the question "what vegetation communities exist here?" depends on the vegetation classification system employed as well as the species present.

unknown. During the 2000 stakeholder consultation process related to the Wingfield Watershed project, residents described catching "eels, small lobsters and fresh water mullet" in the lower stretches of the Wingfield River (Charles, 2000). Several interviews (Appendix A) reported harvesting "crayfish" from local rivers, and the introduction of several species to local rivers (Campbell Evelyn, personal communication, unreferenced). Many of the stakeholders interviewed noted that these species have disappeared, but one stakeholder, K. Orchard, provided photographic evidence that at least some species remain in the Wingfield and West Farm watersheds. The differing reports of presence and absence suggest that these species are slowly being extirpated from some riparian areas, although the cause is not known.

Figure 4. Unidentified Crayfish.
Photographed at West Farm, St. Kitts, 2002.
Photo courtesy of K. Orchard.

Horwith and Lindsay (1999) describe the reptiles of St. Kitts, noting that 10-11 species were originally recorded; two of these are now considered extinct. Of the remaining species, most are considered secure as they are common and occur in habitats that are not at risk. The exceptions, as of 1999, were the two species of snake that occur on St. Kitts, *Typhlops monastus* and *Alsophis rufiventris.*

T. monastrus (common name blind snake or worm snake) appears to be stable as of 2007. *A. rufiventris* (common name red-bellied racer) appears to have been extirpated from St. Kitts. At the time of the Horwith and Lindsay report in 1999, they noted that *A. rufiventris* had not been reported in several years and might have been extirpated by the mongoose. The species remains listed on the IUCN Red List of Threatened Species as vulnerable in 2007 (Day, 1996). Its distribution was previously limited to St. Kitts, Nevis, and the Netherlands Antilles.

The Global Amphibian Assessment (www.globalamphibians.org) lists two native species for St. Kitts: *Eleutherodactylus johnstonei* with the common name of Johnstone's Whistling Frog and *Leptodactylus fallax,* commonly known as the giant ditch frog or mountain chicken.

E. johnstonei is very common and expanding its range, due to its ability to and to outcompete other frogs and utilize a wide variety of habitats, including those disturbed by human activities. *L. fallax* is considered extinct on St. Kitts and Nevis (Global Amphibian Assessment, 2007). Previous efforts to reintroduce it have failed (Campbell Evelyn as cited in Horwith and Lindsay, 1999) but the reasons for this are not clear.

The cane toad (*Bufo marinus*) is also present on St. Kitts and considered highly invasive. In general it prefers disturbed and lower elevation sites than those found in the CFRNP, but it is occasionally found in the montane rainforests (Global Amphibian Assessment, 2007).

At this time, bats are the only native mammalian species on St. Kitts. Recent field surveys by Pedersen et al (2005) increased the total number of bat species[3] reported for St. Kitts to seven. Based

[3] *Noctilio leporinus, Artibeus jamaicensis, Molossus molossus, Tadarida brasiliensis, Monophyllus plethodon, Ardops nichollsi* and *Brachyphylla cavernarum.*

on the mapped sites of roosts in their work, the majority of roost sites important to these bats are located outside the CFR, although foraging is presumed to occur over large areas of the island, including parts of the CFRNP, depending on the species and season.

In 1997, Steadman et al conducted a comprehensive review of previous avifauna studies on St. Kitts and described the "certain, probable or former" occurrence of 116 species. Of these 3 were non-native, 41 are considered resident (currently or formerly breeding on the island), and 72 to be non-resident. Steadman et al commented: "Like other Lesser Antillean islands, St. Kitts supports fewer species of neotropical migrants during the winter than the larger islands of the Greater Antilles. The only such species that occur regularly and commonly on St. Kitts are Northern Parula, Black-and-White Warbler, American Redstart, and Northern Waterthrush[4]." They noted two species that occur in St. Kitts within the CFRNP, and may deserve conservation attention, although they do not specify the reasons. These are the Brown Trembler (*Cinclocerthia ruficauda)* and the Antillean Euphonia (*Euphonia musica*).

The presence and status of both of these species in St. Kitts are unclear at this time. The Brown Trembler is found in moist high elevation forests and occasionally in dry ghauts. Birdlife International (2007a) ranks the Brown Trembler as a species of least concern. The Brown Trembler has a fairly restricted distribution and has been impacted by habitat losses.

The Antillean Euphonia typically feeds on mistletoe found in the canopy of mature rainforest, and due to this preference for mature forest structure may be adversely impacted by hurricane disturbance or volcanic activity such as has recently occurred on Montserrat. Although its distribution includes Saba, St. Barts, Barbuda, Antigua and Montserrat in addition to St. Kitts, it is considered rare on most of these islands (Steadman et al, 1997).

2.5.6 Habitats and Natural Communities of Special Interest

Within the CFRNP, there are also several natural communities of restricted extent, special habitat value, and/or special sensitivity. At present, these are very poorly known, but based on the noted factors, are of special interest.

1. The area and vegetation surrounding and including Dos D'ane pond (personal observation; Horwith, 2000), and the area and vegetation surrounding the pond within the crater of Mr. Liamuiga. They may offer specialized or restricted habitat to species of invertebrates or other wildlife. With the combination of topography, vegetation and littoral influence, and restricted distribution these areas are likely sensitive.
2. Fumarole vegetation. This vegetation community is inherently interesting and sensitive because it exists as very small patches of extremely limited distribution, known only on Montserrat, Guadaloupe, Dominica, Martinique, St. Lucia, St. Kitts and St. Vincent. The community is restricted to areas around active vents in volcanic craters, where it is specialized to the soils, acidity and the gaseous conditions[5] (US Geological Survey, 2007). It is unclear how much of this community exists in the crater of Mt Liamuiga, or how sensitive it is to the types of disturbances posed by visitation. In his 1949 study of the vegetation of St. Kitts, Beard (1949) described this vegetation as a "pioneer community characteristic of volcanic ejecta."
3. In his 1949 study of the vegetation of St. Kitts, Beard stated "Only two relatively small areas of first-class undamaged rain forest were located in St. Kitts, the one lying in the head-waters of the Wingfield River and the other above Mansion Estate." It is unclear if these patches remain, and if so, their current condition, or whether they harbor unique species.
4. During interviews, various stakeholders mentioned natural springs that occur within the CFRNP. Some of these have been greatly modified as part of the water supply infrastructure described in section 2.6.9.4; others may exist in more pristine form in remote parts of the CFRNP.

[4] This list does not include the shorebirds that utilize the South East Peninsula.

[5] See also http://scitec.uwichill.edu.bb/bcs/courses/Ecology/ECOL2453/ecol2453_sc/Fumaroles.html

5. Riparian areas. No comprehensive information is available on the extent, vegetation, or condition of these areas (Bass, 2003; Stakeholder Interviews, Appendix A; GoSKN Ministry of Health and Environment, 2001).
6. Areas that may be key habitats for resident avifauna. Birdlife International initiated a process to identify Important Bird Areas[6] in the Caribbean in 2006. Environmental Protection in the Caribbean (EPIC) was contracted to identify these areas based on existing surveys and literature. This process identified the Central Forest Reserve as an important bird area, prior to its designation as a National Park, due to the habitat provided for regionally restricted species below:

   > "Restricted-range species found in the reserve include the Bridled Quail-dove *Geotrygon mustacea*, Lesser Antillean Flycatcher *Myiarchus oberi berlepshii*, Purple-throated Carib *Eulampis jugularis*, Green-throated Carib *Eulampis holosericeus*, Antillean Crested Hummingbird *Orthorhyncus cristatus*, Brown Trembler *Cinclocerthia ruficauda pavida*, Pearly-eyed Thrasher *Margarops fuscatus*, Scaly-breasted Thrasher *Margops fuscus*, Lesser Antillean Bullfinch *Loxigilla noctis*, and Antillean Euphonia *Euphonia musica*. Specific locations and population estimates were not found in the literature. Steadman et al. report that all except the Green-throated are common in undisturbed moist forests on St. Kitts. Six species of neotropical migrants have been reported from this habitat type on St. Kitts" (Birdlife International 2007c).

7. Areas that may be key habitats for the support of migratory birds. In addition to resident species, the CFRNP has value for migratory species, although the specifics remain unclear. The Lesser Antilles, including St. Kitts, is on a migratory route termed the Pelagic Route, or Atlantic Oceanic Route, about which little is known. The route is almost entirely oceanic, passing from Labrador and Nova Scotia in a direct line to the Lesser Antilles, then to the northeast coast of South America. Most of the species that utilize this route are thought to be shorebirds, but it is also utilized by some species of warblers. In general, the difficulty of following birds during migration greatly complicates identifying the details of routes and species (Horwith and Lindsay, 1999; US Geological Survey, 2007b).

2.5.7 Disturbance Regimes

Hurricanes and violent tropical storms are the dominant type of natural disturbance for the islands and have historically shaped landforms, influenced the distribution of vegetation and wildlife, and configured the structure of vegetation at a wide range of spatial scales (Boose et al, 1994). Multiple hurricanes and lesser tropical storms occur every year in the Caribbean. As noted in section 2.3, thirteen hurricanes have passed within sixty nautical miles (69 statute miles) of St. Kitts since 1950. Of these, seven were category 1 storms, two were category 3, and four were category 4.

Impacts from these storms derive from high winds, heavy rainfall, and the combined effects of wind and rain. Strong winds associated with hurricanes topple trees, especially in rain-sodden soils, open gaps in forest cover and distribute seeds, insects and birds over long distances. Winds also strip leaves, flowers or fruit from vegetation, leaving animals without habitat or food. Intense rains can contribute to landslides, and when collected into runoff can scour streambeds, rapidly erode and redistribute large amounts of soil, cause flooding of lower lying areas and carry sediment, contaminants, and large objects into rivers and coastal waters (Boose et al, 1994).

While these impacts are "natural," and important in maintaining the patchy distribution of vegetation and seral stages of habitats, they can nonetheless be locally devastating for small populations of aquatic and terrestrial wildlife (Raffeale, 1977), or when they interact synergistically with other disturbances. These disturbance regimes remain relatively intact in the Caribbean, although changes in storm frequency and intensity related to global climate change continue to be debated.

[6] See www.birdlife.org for criteria for designating Important Bird Areas.

Distinct from large storm events, the quantity of water and variable flow of water, ranging from sporadic desiccation to flooding, is an essential disturbance in riparian and spring ecosystems. These two factors determine and maintain over time a matrix of habitats and conditions that supports overall biodiversity. Both the quantity and flow regime have been modified in the springs that have been tapped for water supply purposes. Neither the extent of the change or the impacts to the riparian systems have been studied.

Fire, as a disturbance process, has historically been of relatively little concern in the moist forest types found in the CFRNP. This may change under the influence of introduced or cultivated vegetation, global climate change, or a combination of these factors.

2.5.8 Cultural and Scenic Resources

There are no known historic or archaeological sites within the CFRNP (GoSKN Ministry of Sustainable Development, 2006) although as with other resources, the area has not been surveyed. Few if any resources would be expected to be found due to the steep topography and dense vegetation, which virtually preclude habitation in the area. Numerous historic sites occur in the surrounding lowlands that are relatively close to the perimeter of the protected areas (GoSKN Ministry of Sustainable Development, 2006).

Many sites of the CFRNP that have gaps in the dense vegetation or cloud cover boast spectacular panoramic vistas. These are very attractive features for visitors to the area.

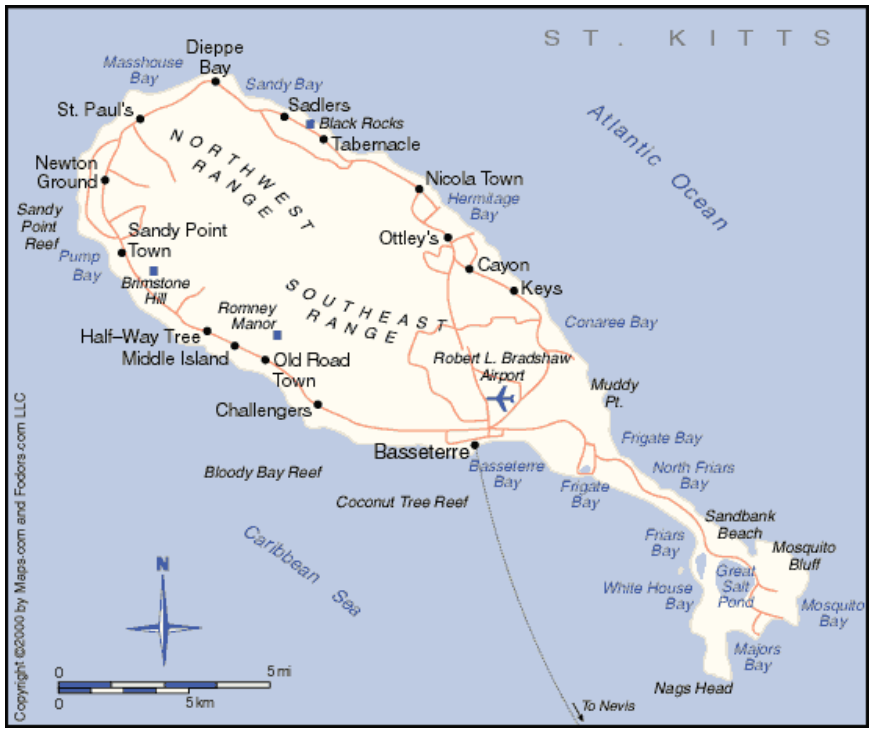


Figure 5. Principal Population Centers and Roads of St. Kitts.

2.5.9 Infrastructure

2.5.9.1 Roads and Public Transportation

The main body of the island is circumnavigated by a two-lane paved road in good condition. This road, along with various side roads, provides transportation between the large and small communities of St. Kitts. Public transportation exists throughout the island via taxis and buses, both of which are typically minivans. The public transport system on St. Kitts is considered excellent in that it is well-organized, regular, reasonably priced and serves the needs of the local population.

Side roads that access the CFR are few and either partially paved or unpaved (Figures 2, 5). These "feeder" roads were originally developed to enable the movement of people and food crops from provisioning grounds to markets (personal communication, Randolph Edmead, unreferenced). The feeder road in Old Road Town, also known as Wingfield Road, runs approximately 3 km inland, is partially paved, and in places very steep (personal observation). Many portions are narrow enough that two vehicles cannot pass without moving off the main track. This road receives a fair amount of traffic from visitors and tours to trails in the Wingfield Watershed area and other local businesses.

Condition of the feeder road in Phillips was not observed. A third feeder road leaves the vicinity of Saddler and is frequently used by tours to access trails to Mr. Liamuiga. A fourth feeder road also accesses the area below Mt. Liamuiga from the Kittitian Hill development, but this area is currently a confused tangle of dirt roads as construction of a large tourist and residential development is in progress (personal observation). The unpaved sections of roads can become extremely muddy and/or rutted during the rainy season, requiring 4-wheel drive, or in extreme cases becoming impassable even with 4-wheel drive (personal communication, Greg Pereira, unreferenced).

At this time there are no roads that cross through the CFRNP, although a road from Old Road Town to Molineux, which will bisect the CFRNP, is proposed in the National Physical Development Plan (GoSKN Ministry of Sustainable Development, 2006).

2.6.9.2 Trails

Several footpaths exist within the CFRNP, some of which have been present and used for generations. Others have been newly constructed, apparently without authorization (various stakeholder interviews, unreferenced), by tour operators and local residents. Those that receive significant tourist use are listed and described below[7].The Dos D'ane Pond trail, Crater trail and Military trail have been mapped and are shown in Figure 2.

1. The Crater trail traverses from the end points of the feeder roads at Saddlers and Kittitian Hill to the crater of Mt. Liamuiga. It is heavily used by tour operators, littered, and in places, eroded (Various stakeholders, unreferenced).
2. The Military trail (also called the Soldier's trail). This trail is accessed from near the terminus of the Wingfield feeder road and passes through Wingfield and Phillips levels to Phillips, or vice-versa. A strong hiker can traverse the route in approximately 1-1.5 hours, depending on the conditions at the time. Interviewed stakeholders reported sections of this trail are currently blocked by downed vegetation.
3. The Dos D'ane Pond trail. Also accessed from near the terminus of the Wingfield feeder road, it passes up a ghaut and along a ridge line to arrive at the summit of Verchild's mountain, where a depression holds a small lake. This trail is extremely steep in places, frequently muddy and slippery, and very narrow due to encroaching vegetation (personal observation).
4. Stakeholders interviewed report that a new road/trail outside of Phillips has been cleared by two local tour operators, which reportedly takes an alternate route to the Mt. Liamuiga crater.
5. Stakeholders interviewed also note that hikers have established trails in various parts of the CFR. This has not been verified and specific locations are not known.

2.6.9.3 Other Visitor Amenities and Infrastructure

Other than the roads and trails listed in the previous sections, and informal vista points, no visitor amenities are present within the CFRNP except one directional sign indicating the divergence of the Dos D'ane Pond trail from the Military trail.

No other building or structures are known to exist, except the water supply infrastructure described in the following section. Various stakeholders interviewed reported that some small shelters may exist in the area.

The only infrastructure outside the CFRNP that is directly relevant to CFRNP management is the office space presently occupied by the DPPE in Basseterre and office equipment and supplies housed there. This is located at the Bladen Commercial Development on Wellington Road.

[7] Additional trails and tracks exist at lower elevations and are either used primarily by local residents to access the forest, or are outside the CFRNP. Especially noteworthy among the latter category is the small system of trails accessed from the Wingfield feeder road on the outskirts of Old Road Town, called the Peter Manning Trail. This trail is heavily used by tourists and tour operators, in part because it is less steep, wider, and generally more appropriate for recreational use.

2.6.9.4 Water Supply Infrastructure

There are six freshwater springs tapped for the national water supply on the island of St. Kitts; four of these are located within the CFRNP (GoSKN Ministry of Sustainable Development, 2003; GoSKN Ministry of Health and Environment. 2001). Virtually all flow from these springs flow is diverted at the catchment and then diverted via pipes to the residential areas at lower elevations via gravity flow. Maintenance of this infrastructure is the responsibility of the Water Services Department.

CHAPTER THREE PAST AND PRESENT USES OF THE AREA

As is the case with the resource descriptions in chapter two, information about use within the CFRNP is very limited. Opinions from interviewed stakeholders varied so widely regarding what uses occurred, when, where, and with what intensity, that many directly contradicted each other and one of the few consensus points was that the use levels are not known.

Based on the interviews conducted and the results of the Espeut study (2006) there does not appear to be any hunting of animals for consumption, collection of animals for the pet trade, or lumber extraction occurring within the CFRNP. No future forestry, mining or other extractive industries are proposed for the CFRNP area in the National Physical Development Plan (GoSKN Ministry of Sustainable Development, 2006).

3.1 Agriculture

Historically, the agricultural land of St. Kitts was intensely devoted to sugar cane production. Most other agricultural production, including livestock for dairy and meat, as well as rice, fruits, vegetables, peanuts, was oriented to local consumption. Essentially all land suitable for large-scale cane production was stripped of native vegetation and placed under cultivation. Marginal lands determined to be unsuitable for cane production but still workable became "provision" grounds, used for producing food crops, or pastures (Stakeholder interviews; Government of St. Kitts and Nevis, Ministry of Sustainable Development, 2006). With the demise of the sugar industry, and the encouragement of the Government, some former cane fields are being converted to production of other types of crops or livestock.

Within the CFRNP, no large-scale agricultural production is occurring (stakeholder interviews). The amount of subsistence[8] agricultural activities of any type is not known and again, no surveys have been conducted. Some of the persons interviewed for this plan stated that the number of persons carrying out subsistence agriculture within the CFR was small. Others stated that it was locally extensive, as farmers preferred to use high elevation lands to decrease the likelihood of crop theft or of damage from monkeys. At least one small farm and some pasture exist within the area of the CFRNP at the terminus of the feeder road running upslope from Old Road Town[9].

Marijuana is known to be cultivated illicitly within the forested areas of the CFRNP, but again the extent of the cultivation is not known and opinions of the interviewed stakeholders on this extent vary significantly. Several stakeholders stated that the amount of cultivation was small while Horwith and Lindsay (1999) stated "Complicating matters [of biodiversity protection] is the widespread development of small-scale marijuana production that has led to some forest clearing." On occasion, plots of marijuana are discovered by the St. Kitts and Nevis Defense Forces (section 3.5) during exercises and destroyed (Lt. Kayode Sutton, personal communication, unreferenced)

3.2 Collection of Trees, Plants and Plant Parts

The higher elevation forest area of St. Kitts have traditionally been used for small-scale collection of trees, plants, and plant parts for a variety of purposes (stakeholder interviews). These include:

- Wood for carving toys, trinkets, craft materials and furniture
- Charcoal production
- Herbs and roots for flavoring of drinks and food products, or for home medicinal purposes.
- Sticks for traditional fish pot construction

[8] Subsistence agricultural activities, as defined here, include pasturing of animals, cultivation of fruits and vegetables or other crops for personal consumption or for sale in local markets.

[9] Determined by the consultant who was present in the area with a GPS that was equipped with a boundary layer of the CFRNP.

- Collection of plants to transplant to home gardens or to sell for use in home gardens.

Again, there is no objective or quantified information on the extent, intensity or location of these activities at this time.

3.3 Recreation and Tourism

At this time no program exists to collect visitor information to the CFRNP, nor is there historic information on visitation, nor the types of experiences or amenities desired by either local or foreign visitors in the CFRNP.

According to the stakeholder interviews, locals primarily use the area of the CFRNP for casual recreation, including walking with friends and family, or small group outings such as the local Hash House Harriers club. Local recreational use of the protected area does not appear to be significant, as many of the interview respondents were unfamiliar with the trails and access roads.

Stakeholders also reported that virtually all visitation to the CFRNP is in the company of a tour guide. The reason for such strong use of guides is not known. It may be a preference, or perhaps a reflection of the lack of maps, directional signs and transportation. Most visitors come from countries in which guides are rarely used for hiking trips, but maps, signs, and transportation are plentiful.

One respondent estimated 20 persons per day use the Crater trail during the winter high tourism season. Other persons estimated that up to 200 persons per afternoon use the Peter Manning Trail, near Old Road Town. This trail is outside the CFRNP; the use level is noted here to indicate the demand that exists during the winter high tourism season.

At this time, there does not appear be any use of bicycles or all-terrain vehicles in the area (personal observation). There is a parking structure on the Wingfield Road in Old Road Town (personal observation) that houses approximately a dozen all-terrain vehicles, but these are assumed to be used elsewhere, since the trails in the CFR area above this location are too narrow, overgrown and steep for ATVs. Interview respondents did not mention equestrian use in the area, although stables exist at lower elevations, and horses could negotiate some of the trails following relatively minor work.

3.4 Research and Education

There is no formal research program associated with the area of CFRNP at this time and relatively few ad hoc research projects have been conducted in past (Stakeholder interviews, Appendix A). The only current project that DPPE staff are aware of is one regarding relationships between *Heliconia* and hummingbirds. This is being carried out by a team from the Smithsonian Institute and George Washington University, both of the United States, and no further details could be obtained.

The schools of St. Kitts include environmental education within the curriculum. The specific topical content is not known. Field trips to the upper elevation areas do not seem to be a significant part of this, likely due to the difficulty of access, as many local residents reported in casual conversations with the consultant. However, at least two stakeholders noted that schools have conducted hikes or walks in the area that resulted in large amounts of litter.

3.5 Defense Forces of St. Kitts and Nevis

The Defense Forces of St. Kitts and Nevis have for years used the area now designated as the Central Forest Reserve to conduct various types of military training (personal communication, Lt. Kayode Sutton, unreferenced). These training exercises include initial boot camp training, combat drills, patrols, navigation, and survival. These are typically conducted on the existing trails, particularly the Military trail, or in existing open areas. No live ammunition is used during exercises in this area.

No quantified information is available on the impacts resulting from use by the Defense Forces, but no stakeholder mentioned these as problematic. The Defense Forces have policies in place to minimize clearing and cutting of vegetation as well as for cleaning up any wastes or materials left from exercises. Some trampling of vegetation occurs.

CHAPTER FOUR MANAGEMENT ISSUES

While goals for the CFRNP, or any protected area, will remain stable, critical issues will come and go over time, requiring that management continuously identify these, prioritize them and respond. The most critical issues presently facing the CFRNP were determined through information gathering, interviews with stakeholders in the communities, discussions with DPPE staff, personal observation by the consultant, analysis, and prioritization as described in Appendix B. Only the results of this process are presented in summary form below.

4.1 Overview of Critical Management Issues

Table 1 below are listed the most critical issues in order of priority, as determined by the issue assessment process described in Appendix B.

PRIORITY	CRITICAL ISSUE
Highest	Establish excellent relationship between the DPPE and stakeholders.
Highest	Upgrade management capacity
Highest	Develop protected area management policies, procedures and information
High	Modify existing visitor use to support the achievement of CFRNP vision, goals and guidelines
High	Develop stable and sufficient funding
Medium	Develop a master infrastructure plan, update management plan, to support long-term CFRNP vision, goals and guidelines.

Table 1. Summary of Prioritized Critical Issues

Issue 1. The need to establish an excellent relationship between the DPPE and stakeholders.
Stakeholder interviews revealed that most respondents (those who were not government employees) had one of two types of relationship with GoSKN in general and/or DPPE specifically: 1) a poor relationship; or 2) no relationship. Details of specific attitudes and behaviors relevant to St. Kitts and Nevis, and the CFRNP, are presented in Appendix B. Notable among these are:

1. Tour operators avoid reporting and paying fees (Stakeholder interviews, Appendix A), suggesting that collection of entrance fees would be likewise avoided.
2. An overall lack of citizen involvement, due to fear of reprisals, disinterest from government officials, etc., (despite governmental policies to the contrary).

Implications for management
As a general rule, poor stakeholder relationships result in lack of general public support for protected areas, lack of stewardship behaviors and /or an increase in destructive, negligent or illegal behaviors. In turn, these behaviors typically result in an increase in enforcement and resource restoration needs and costs, draining management resources away from other management activities. This appears to be the case presently with the stakeholders in St. Kitts, who stated that they would continue to use the area of the CFRNP as they chose, regardless of any controls that GoSKN might impose and evidenced little interest in participating in cooperative management (Stakeholder interviews, Appendix A). These attitudes will deprive the CFRNP and DPPE of highly needed volunteer labor and local cooperation, two sources of effort that would supplement the budget, which is presently very limited and expected to remain so. All funds spent on enforcement in the CFRNP are being diverted from other areas of need such as gathering baseline information and infrastucture improvements.

Issue 2. The need to upgrade protected area management capacity.
Four evaluation methods were utilized to assess protected area management capacity under the auspices of the OPAAL project: 1) a self-assessment completed by DPPE staff (Parsram, 2007; GEF, 2005); 2) a review of the policy, legal and institutional frameworks for protected areas management in St. Kitts and Nevis prior to beginning work on this management plan (Gardner, 2006); 3) A training needs assessment for St. Kitts and Nevis (Parsram, 2007); and 4) informal observation by the consultant. Appendix B contains a complete discussion of the findings. Each of these methods independently found that management capacity needs significant improvement. Since the CFRNP is the first national park designated in St. Kitts and Nevis for the purpose of biodiversity conservation, it is not surprising that management capacity is limited.

Implications for management
The lack of capacity and practical experience presently hinder the ability to make good decisions, successfully obtain funding, communicate and collaborate with stakeholders etc. This affects all areas of management and will continue to do so in the future if not improved. If management is seen by local residents as being ineffective, it will further undermine confidence in management efforts and exacerbate the situation described in Issue 1. Poor management decision made early, even with the best of intentions, will be difficult, costly, or impossible to reverse. Equally, the limited available budget increased the need for management to become highly effective, as rapidly as possible.

Issue 3. Develop protected area management policies, procedures and information
Issue 3.1 The CFRNP, as a new protected area, presently lacks an administrative foundation of policies and procedures.

Issue 3.2 As noted elsewhere in the document, almost all types of baseline information about the CFRNP are also severely limited at this time. Few surveys or studies have been completed, and most of those are of limited scope or out of date. The boundaries of the park have not been delineated on the ground yet.

Implications for management
The present lack of policies and procedures, if not corrected, will result in ad hoc decision making and confusion for staff and stakeholders. A set of clear, simple, and fair procedures and policies will need to be developed promptly. This will simplify management efforts and build stakeholder relationships.

The lack of knowledge of the area presents a challenge in assessing management priorities and developing appropriate management strategies. Baseline information on both resources and uses is required in order to compare before and after conditions of resources, uses, and the effectiveness of management (Secretariat of the Convention on Biological Diversity, 2004; Eagles et al, 2002; Margoluis and Salafsky, 1998). Specific surveys and studies that are needed are described in Appendix B and Program 3.1. Notable among these are surveys/mapping of various types of use in the area, the presence of invasive plant species, and sensitive habitats that require special protection.

The lack of boundary delineation makes it impossible for visitors, local residents or DPPE staff to know when they are within the park and when not. In addition, lack of boundaries makes it impossible for surveys or studies to accurately describe resources and uses in the CFRNP.

Issue 4. Modify existing visitor use to support achieving CFRNP vision, goals and guidelines
The only significant use of the CFRNP at this time is tourism, consisting almost exclusively of commercial tour operations. The *direct* impacts to biodiversity and ecosystem function derived from visitor tours in the CFRNP are poorly known at this time. Most interview respondents (including tour operators) described litter and erosion on the existing trails, particularly the Crater trail. There is no quantified information, but these impacts appear to be fairly limited in extent and intensity (personal observation of the Dos D'ane trail and a portion of the Military trail). More serious is the fact that at least one unauthorized, road/trail was installed for business use outside Phillips by a tour operator(s), as an alternate access route into the CFRNP (Stakeholder interviews; Appendix A). Other

unauthorized roads/trails may have been developed elsewhere in the park but not yet detected. It is not possible to fully evaluate any of these impacts without more complete information.

Figure 6. Trail to Dos D'ane Pond,
Extremely steep, slippery, muddy and incised.

In addition to direct impacts, there are some indirect consequences derived from the current use. Presently, the economic benefits of tours in the CFRNP are flowing to a limited number of relatively affluent individuals in the private sector. The benefits are not contributing to achievement of either of the goals of the CFRNP: biodiversity conservation, and creating alternative livelihoods for economically marginalized persons.

Although it does not appear that there are significant impacts to the natural resources of the CFRNP *at this level of visitation, visitation is not expected to remain at this level.* GoSKN is actively pursuing a policy to increase visitation to the St. Kitts and Nevis, as described in section 2.4.2.1 (GoSKN Ministry of Sustainable Development, 2006). Cruise ship arrivals to St. Kitts in 2008 are expected to increase 80% over the 2007 level (Onecaribbean.org, 2007).

Direct and indirect impacts from uses other than visitation, such as collection of plants and plant parts, appear to be patchy and relatively small in extent at this time (Stakeholder interviews, Appendix A).

Implications for management

The designation of the CFRNP brought with it a new set of goals for the area (section 6.1) which management will now be trying to achieve. These new goals, combined with the expected increase in visitation to the CFRNP, change the entire context of appropriate uses and use intensities for the area. Increased visitation has the potential to help, or hinder the achievement of these goals.

Visitor fees are one form of help and can be collected to support park management. But these fees will be dependent on offering quality visitor products and services, and will also be offset by increased costs of management of visitor impacts. Significant impacts are not occurring at the present level of visitation use; however they will occur at some increased level of visitation, or some combination of increased visitation and other uses (Secretariat of the Convention on Biological Diversity, 2004; Eagles et al, 2002, Margoluis and Salafsky, 1998).

Issue 5. Develop stable and sufficient funding

At present, there is no funding specifically allocated for CFRNP management from either GoSKN or international donors (personal communication, Randolph Edmead, unreferenced) and there is no mechanism or capacity in place to secure funds. The Government of St. Kitts and Nevis collects an island enhancement fee on tours and other activities, but this is directed to the Consolidated Fund (Stakeholder Interviews, Appendix A; Gardner, 2006). Some funds are available from OECS for

various projects related to management, such as staff training and public outreach. Staff time, by existing DPPE staff, and which will be redirected from other departmental activities, is the only other resource with a financial value. Funding of the activities of the DPPE is provided through the standard budgeting process of the Government of St. Kitts and Nevis.

Implications for management

The limited available funding for the CFRNP creates a situation is daunting but not impossible. Contrary to intuition, increased funding does not necessarily result in improved conservation (Wells et al, 2004), but it does simplify the effort. Therefore, this issue has been ranked at high priority but not highest. Presently, management does not have the capacity to seek funding at the necessary levels, so this presents yet another skill to be obtained. Fundraising for protected areas is competitive. Management will need to become expert is acquiring funds from multiple and diverse sources, practice fiscal restraint such that funding must necessarily always be directed to the highest management priorities. Equally management must seek to supplement funds with community volunteers, international researchers, concerned local businesses, and other ways to accomplish tasks with little or no funding (IUCN, 2006).

Issue 6 Develop infrastructure and use to support long-term CFRNP goals and guidelines.

Issue 6.1. The existing park infrastructure is not a good fit for ecotourism and needs to be replaced.

As described in section 3.3, there are four primary trails (one of which is unauthorized) and possibly a couple of additional minor trails in the CFRNP. These trails were not designed for ecotourism use at any level of visitation, but rather for the historic needs of local users – transporting farm produce to markets and crossing the island. Recreational use and ecotourism use of these trails developed later and spontaneously. The trail routes, pitch, treads etc., were not planned by a trail designer, or constructed by an experienced trail construction crew, and so did not consider such things as access roads and parking, routing travelers to desired locations, placement of sanitary facilities, interpretation, drainage or erosion controls, avoidance of sensitive habitats or water quality impacts, safety, or the physical ability of hikers. In short, they were not designed to meet the new vision, goals and guidelines of the CFRNP. The lack of design and amenities will become more problematic as visitation increases.

Issue 6.2. The focus on ecotourism overlooks other options needed for true sustainable development.

Income from tourism, notoriously a fickle industry, (IUCN, 2006; Wells et al, 2004; Norris and Curtis, 1999) must be diversified with other sources of income in order to provide a stable long-term source of protected area funding and for the sustainable development of the surrounding communities (Geoghagen, date unknown; IUCN 2006; Norris and Curtis, 1999).

Implications for management

It is possible to maintain or modify the trails, the access roads, and other infrastructure to better meet ecotourism needs, but the modifications needed would be very large and costly, and the maintenance would be continuous, extensive and costly over time.

In sum, the CFRNP is fortunate that compared to other protected areas it suffers from very few resource management problems and none of crisis proportions. This is a particularly happy state of affairs for a new protected area, which must simultaneously develop and apply management procedures. The principal problems that emerged from the issues analysis are related to management procedures for the area and sustainable development, not resource protection, and these are modest problems which can be solved relatively easily. Note that most of these critical issues are interwoven, each one complicating the others.

Appendix B contains a complete situational analysis that provides additional details on these management issues and describes the process and criteria used to prioritize them. The management programs described in Sections 5.4 and 5.5 are designed to eliminate or minimize the effects of these issues.

CHAPTER FIVE EXISTING MANAGEMENT

In 2006, the Organization of Eastern Caribbean States (OECS) contracted a analysis of the existing policy, legal and institutional context of protected area management in St. Kitts and Nevis (Gardner, 2006). Much of the material below is extracted from that report verbatim, but only the information and conclusions most relevant to this plan are included.

5.1 Institutional, Regulatory and Legal Context

5.1.1 International and Regional Conventions

Gardner (2006) developed an analysis of the current status of protected areas management for St. Kitts and Nevis. His study is the basis of the material presented in sections 4.1.1, 4.1.3 and 4.1.4.

St. Kitts and Nevis is Signatory to five, and Party to forty-one international environmental agreements (http://sedac.ciesin.columbia.edu/entri/CountryISO.jsp), of which eighteen are deemed to be the most important (Planning Unit, 2004).

The obligations of St. Kitts and Nevis under a number of these international agreements have been recognised in national law, with the amendment in 1996 to the National Conservation and Environmental Protection Act (1987). The amendment, by Act 12 of 1996, gives force of law to eight international environmental agreements.

The multilateral environmental agreements (MEAs) directly relevant to protected areas that have been signed by the Government of St. Kitts and Nevis are:

- Convention concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention) – Accepted July 10, 1986;
- Convention on Biological Diversity (CBD) – Signed June 6, 1992 and ratified January 7, 1993.

Other multilateral environmental agreements of relevance to specific operational aspects of protected area management (such as pollution control) include:

- Convention on International Trade in Endangered Species of Wild Fauna and Flora;
- Framework Convention on Climate Change;
- United Nations Convention to Combat Desertification;
- United Nations Convention on the Law of the Sea;
- International Convention on Civil Liability for Oil Pollution Damage;
- International Convention for the Prevention of Pollution from Ships (MARPOL73/78);
- The Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region (ratified June 15, 1999); and
- Protocol Concerning Cooperation in Combating Oil Spills in the Wider Caribbean Region.

St. Kitts and Nevis also participates in a number of regional and sub-regional environmental programmes, namely:

- Caribbean Environment Programme;
- Programme of Action for the Sustainable Development of Small Islands Developing
- States (Barbados Programme of Action);
- CARICOM Regional Fisheries Mechanism;
- Caribbean Regional Environmental Programme (CREP); and
- St. George's Declaration of Principles for Environmental Sustainability in the OECS (The St. Georges Declaration).

Figure 7. International and Regional Conventions

5.1.2 OPAAL Project

The OPAAL project is described here although it is not a permanent part of CFRNP management. It is shaping the initial management structure of the park and contributing financial support and will therefore impact future management, particularly due to its emphasis on community participation.

The OPAAL Project seeks to protect globally important biodiversity by improving the effective management of protected areas. This will be done via strengthening the national capacities in the Member States, and also by increasing the involvement of the private and civil society sectors in protected areas planning and management. An associated objective aimed at reducing unsustainable use of biodiversity, is to support sustainable livelihoods.

Four principal strategies comprise the on-the-ground implementation of the OPAAL project goal:

1. Strengthening national and regional capacities in the sound management of protected areas;
2. Establishing or strengthening a number of demonstration protected areas;
3. Providing economic sustainable opportunities for environmentally compatible livelihoods in buffer zones of project-supported protected areas; and
4. Involving communities, civil society and private sector in the participatory management of the protected areas.

The project is being carried out by the Environment and Sustainable Development Unit (ESDU) of the OECS, in partnership with those member states, including St. Kitts and Nevis, that opt to participate. This five-year project is financed by the International Bank for Reconstruction and Development (the World Bank) acting as an Implementing Agency of the Global Environment Facility (GEF); the Fonds Français pour l'Environnement Mondial (FFEM) of the Government of France; and the Organisation of American States (OAS).

A National Technical Advisory Committee (NTAC) is the primary mechanism to increase the coordination of various governmental agencies in OPAAL demonstration sites such as the CFRNP. OPAAL describes the NTAC responsibilities as: "an inter-sectoral, inter-agency body that will include representatives from relevant government agencies and public and private institutions, including NGOs, involved in environmental management in general and biodiversity management, in particular. The NTACs will: (i) provide broad technical and policy advice to the National Implementation Coordinating Entities or NICEs and (ii) review national strategies/workplans and associated livelihood subprojects."

The NICE for St. Kitts and Nevis is the Department of Physical Planning and Environment. Their responsibilities related to the OPAAL project include: 1) preparing annual work plans and budgets; (2) day-to-day implementation of project activities at the national level; 3) managing or supervising the local site activities in collaboration with the Site Implementing Entities (SIEs) and beneficiaries of livelihoods subprojects; and 4) liaising with the ESDU on project implementation.

A Site Implementing Entity (SIE) is the primary mechanism to foster collaborative community management of the CFRNP. OPAAL describes the role of the SIE as: "At the sites of project-supported PAs, Site Implementing Entities will be set up with a PA Manager assisted by relevant staff (including rangers and others) to undertake the day-to-day management of the PA and related site-specific project activities. Community groups living in and around the PAs, appropriate public and private agencies and relevant local stakeholders will also have representation in the SIE in an advisory capacity to assist the PA Manager. The SIE will participate actively in the implementation of component 2 and 3 of the project. SIEs will also participate in the National Technical Advisory Committees (NTACs) and will advise and/or collaborate closely with the NICEs on the implementation of site activities."

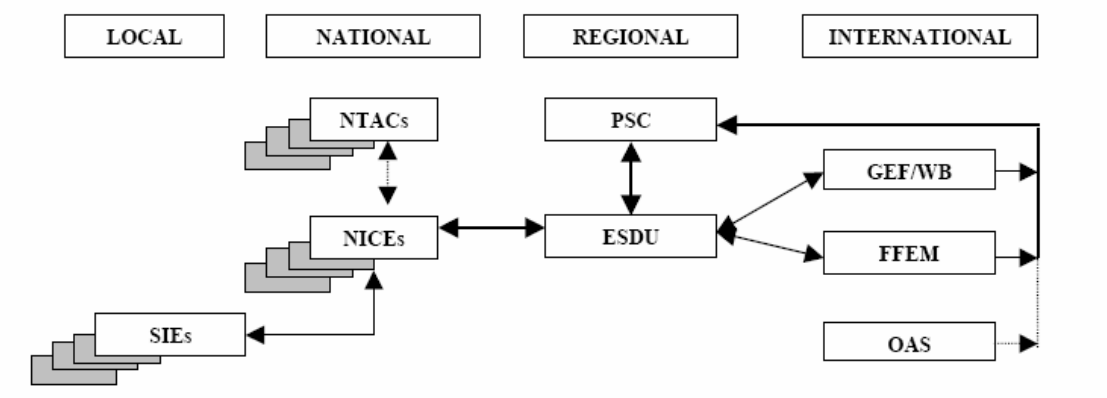


Figure 8. Schematic of OPAAL Project Organization.

5.1.3 National Laws and Policy Planning

Existing legislation in St. Kitts and Nevis provides for the establishment and management of protected areas and natural resources A number of laws affect different resource sectors and seek to achieve diverse outcomes. The most important[10] are summarized in Figure 9.

National Conservation and Environmental Protection Act, 1987

The Act provides for "…the better management and development of the natural and historic resources of Saint Christopher and Nevis for purposes of conservation; the establishment of national parks, historic and archeological sites and other protected areas of natural or cultural importance including the Brimstone Hill Fortress National Park…".

This Act contains provisions for:

- Designation of several categories of protected areas;
- Treatment of private lands as protected areas;
- Preparation of site management plans;
- Treatment of historical and archeological resources;
- Delegation of management authority to any institution as appropriate; and
- Recognition of the obligations under selected MEAs in national law.

Development Control and Planning Act, 2000

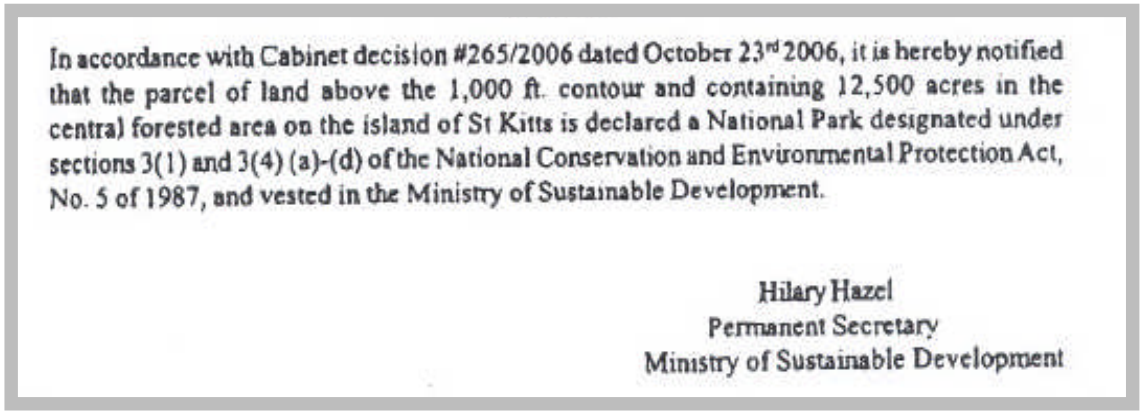
This Act provides for the orderly development of land through land use planning and development control purposes. As such, this Act focuses more on allocating land for conservation and protected areas. The Act supports the National Conservation and Environmental Protection Act (1987), in that it utilizes the mechanism of interim preservation orders to protect sites and immoveable assets and plant protection orders to protect a group of plants, sites, or landscapes.

Source: Gardner, 2006

Figure 9. National Laws Relevant to the Central Forest Reserve National Park.

5.1.4 Legal Basis for the Central Forest Reserve National Park

The Central Forest Reserve National Park was approved by decision #265 of the Cabinet of St. Kitts and Nevis on 23 October 2006 and gazetted 27 March 2007 (Figure 10).



In accordance with Cabinet decision #265/2006 dated October 23rd 2006, it is hereby notified that the parcel of land above the 1,000 ft. contour and containing 12,500 acres in the central forested area on the island of St Kitts is declared a National Park designated under sections 3(1) and 3(4) (a)-(d) of the National Conservation and Environmental Protection Act, No. 5 of 1987, and vested in the Ministry of Sustainable Development.

Hilary Hazel
Permanent Secretary
Ministry of Sustainable Development

Figure 10. Gazette Notice – Designation of Central Forest Reserve National Park

[10] Additional legislation exists, including the Fisheries Act of 1984, the Southeast Peninsula Land Development and Conservation Act of 1986. These are not directly relevant to the CFRNP, so are not discussed here.

The NCEPA sections referenced in the Gazette notice define a national park as follows:

> "an area consisting of a relatively large land or marine area or some combination of land and sea, containing natural and cultural features or scenery of national or international significance and managed in a manner to protect such resources and sustain scientific, recreational, and educational activities on a controlled basis."

Section 3(4) (a)-(d) of NCEPA states:

> "Any protected area designated under the Act shall have one or more of the following broad purposes and objectives:-
>
> (a) To preserve biological diversity of wild flora and fauna species that may be endemic, threatened, or of special concern and the land and marine habitats upon which the survival of these species depend;
>
> (b) To protect selected examples of representative or unique biological communities, both on land and in marine areas, and their physical environments;
>
> (c) To sustain natural areas important for protection and maintenance of life-support systems(air, water) an basic ecological processes including water recharge and soil regeneration;
>
> (d) To protect selected natural sites of scenic beauty or of special scientific, ecological historic or educational value, including sites that are already degraded and need protection for restoration or sites that may become degraded if not protected;"

In addition to be the law under which the CFRNP was designated, NCEPA is the principal law governing the environment in St. Kitts and Nevis. The major initiatives in national environmental reporting and policy planning include:

- Preparation of a national Environmental Profile in 1991 – A compilation of natural resources data, examination of the key environmental issues, and recommendations for policy directions.
- Preparation of a National Environmental Action Plan in 1994 – Identification of the major environmental problems of the country and recommendation of appropriate policies and actions to address these problems.
- Preparation of a National Biodiversity Strategy and Action Plan.
- Preparation of the National Environmental Management Strategy and Action Plan 2005-2009.

5.1.5 Institutional Context

There is no national policy or plan for protected areas development and management. The increased emphasis on protected areas development to meet national development priorities requires the supporting framework usually articulated within a national policy and plan for protected areas (Gardner, 2006).

Responsibility for the management of protected areas in St. Kitts and Nevis is shared among five institutions, two of which are non-governmental organizations focused on management of a specific site. There is currently no institutional coordinating mechanism for protected areas management. However, the existing initiatives dealing with establishment of protected areas are designed to facilitate increased collaboration among the relevant institutions, with the result that discussions have restarted concerning the establishment of a formal coordinating mechanism (Gardner, 2006).

5.2 Current Management

Per the Cabinet decision designating the CFRNP, management responsibility for the CFRNP is vested in the DPPE.

Gardner (2006) describes the DPPE as "both the lead agency for planning in St. Kitts and Nevis and the lead agency for environment and protected areas management in St. Kitts and Nevis. In the latter

capacity, and as the lead agency for watersheds management, the DPPE is responsible for the development of the Central Forest Reserve as the OPAAL Demonstration Site, and the Basseterre Valley water resources management area as a national park (Section 5.3) under the Integrated Watershed and Coastal Areas Management (IWCAM) Project coordinated by the Caribbean Environmental Health Institute. The Department does not currently use a standard protected areas planning format in the development of the projects, but it is intended that the two projects will be used to design such a process."

Although not a formal management program, the St. Kitts and Nevis Defense Forces have provided search and rescue services for lost and injured persons, whether local residents or foreign visitors, to the area of the Central Forest Reserve (Lt. Kayode Sutton, personal communication, unreferenced). The Defense Forces receive first aid training and have medics available as well when needed.

In addition, the Defense Forces and police departments have historically been utilized in control of illegal crops cultivated within the area that is now the CFRNP (Stakeholder interviews, Appendix A).

There are no park-specific policies, rules or regulations in place at this time, since the CFRNP is newly designated.

CHAPTER SIX THE PLAN FOR MANAGEMENT

6.1 Goals

Please see Appendix C for a discussion of the development of these goals.

Goals of the Central Forest Reserve National Park
Shown in order of priority

The Central Forest Reserve National Park will conserve biodiversity, including ecosystem functions, and scenic resources, so the park remains an intact resource for the use and enjoyment of future generations of the people of St. Kitts and Nevis.

The Central Forest Reserve National Park will support the sustainable development of St. Kitts and Nevis through the creation of economic opportunities that are compatible with conservation and managed to remain within sustainable levels.

Figure 11. Goals of the Central Forest Reserve National Park

6.2 Management Guidelines

The following Guiding Principles for Management[11] were developed by the DPPE:

1. Promote an integrated approach to management of areas within and outside the Central Forest Reserve Protected Area so as reduce negative impacts and achieve conservation objectives and goals.
2. Be adaptive and include mechanisms that allow for the evolution of management structures, measures and regulations in response to changing conditions.
3. Ensure that sound conservation principles and practices are incorporated into the infrastructural and economic development initiatives within or in the vicinity of the area.
4. Maintain the critical habitats and ecosystems for the survival of biological diversity and maintenance of ecological processes.
5. Protect all endemic, threatened, endangered and rare species as well as their habitats.
6. Lend support to regional and international conservation agreements to which St. Kitts and Nevis is party.
7. Optimize the current and potential uses of the natural and cultural assets of the area in ways that benefits the local resource users and the wider population.
8. Ensure that no one is denied access to the site as long as activities within the site are in compliance with the conservation of the natural resources of the area.
9. Develop a deeper understanding of and appreciation for the natural and cultural environment of the area and to enhance the ability of the area and to enhance the ability of the partners to manage the use of resources
10. Provide an aesthetically pleasing environment that contributes to the fulfillment of the recreational needs of locals and visitors.
11. Include the involvement and participation of beneficiaries and other stakeholders in all stages of the management process.
12. Provide appropriate mechanisms for the participation of resource users and local communities in the sustainable use, development and management of resources.
13. Establish a carrying capacity for activities within the site using the Limits of Acceptable Change method or similar method, and ensure that this principle of sustainability is adhered to.

[11] The principles for management of the Central Forest Reserve National Park are operational guidelines that describe how management will operate, not the specific goals that it intends to achieve (Appendix C).

6.3 Phase 1. Management Programs

The management programs are strategies to address the critical issues identified in section 4.1. The prioritization used for the critical issues remains intact and has been passed through to the programs. Each program consists of a set of measurable objective(s) and a series of activities to achieve the objective(s). See Appendix C for a description of how management objectives function within the planning process.

Collectively the first five programs comprise Phase 1 of this management plan. Phase 1 is scheduled for a two-year period, plan years 1 and 2. The overarching concept of Phase 1 is to build a solid foundation of management that will serve as both an accomplishment and a spring board to Phase 2 and beyond. Therefore, Phase 1 will seek to create an excellent working relationship with stakeholders, enhance the management capacity of both the CFRNP and the stakeholders that will cooperate with management, establish an effective, transparent and consistent set of administrative policies and procedures, and search for sorely-needed funds. During Phase 1, interim visitor use in the CFRNP will be stabilized, evaluated and see some minor improvements.

At the completion of Phase 1, the CFRNP and the stakeholders will be ready to move forward together into Phase 2. Phase 2 is focused on the long-term achievement of the CFRNP's goals of conservation and sustainable development. The overarching vision to achieve these ambitious goals is a world-class network of trails draped across the landscape of the Central Forest Reserve and connecting to site-specific opportunities to explore historic and natural sites, picnic areas, panoramic views and small towns full of shops, museums, lodging and more, all owned and operated by the people of St. Kitts and Nevis[12]. Phase 2 has only one very program, but it is expected to consume all of plan year 3. This phase calls for developing a master infrastructure plan for the CFRNP and revising the management plan to work hand in hand with that master plan. Phase 2 will incorporate significant community consultation to develop the new infrastructure and management plans.

All program activities in the sections following are to be carried out by DPPE, unless otherwise specified. Chapter 7 consists of Operating Plans that indicate the staff and/or community members responsible for carrying out specific activities and the timelines for initiating activities.

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[12] Please see Appendix B for a discussion of how this approach was developed.

6.3.1 Program 1. Teaming Up with the Community

Subprogram 1.1 Improving Community Communication

Objective 1. At the end of the first 6 months, survey of a sample of the local population indicates that at least 50% of Kittitians are aware of: 1) the existence of the CFRNP and management plan; 2) that DPPE is the management entity; 3) that an SIE will be involved in cooperative management; and 4) can correctly identify the location of the park when shown a map.

Objective 2. At the end of the first year, surveying indicates that at least 75% of Kittitians can correctly do the above, and 50% can correctly name the park manager, one member of the SIE, the name of the school-based program, and identify that it is sponsored by the CFRNP.

Objective 3. At the end of 18 months, surveying indicates that at least 75% of Kittitians can complete all of the knowledge requirements in the previous objectives.

Activities (for all of the above 3 objectives)

Activity 1-3.1 Within one month of adoption of the management plan, institute two simple, inexpensive and effective methods of ongoing and regular communication with the communities.

Activity 1-3.2 Within 4 months of adoption of the management plan, at least two community meetings will have been held in each of the following: vicinity of Old Road Town, Sandy Point, Dieppe Bay, and Cayon.

Activity 1-3.3 At the end of month 5 Staff will create and conduct simple verbal surveys to assess the level of awareness of the park, etc.

Activity 1-3.4 If the survey indicates that the goal has not been met, repeat the process.

Activity 1-3.5 Repeat the above steps and resurvey at month 11, and at month 17.

Subprogram 1.2 Improving Visitor Communication

Objective 4. At the end of the first 6 months, the tourism authority and 90% of hotels and guest houses in St. Kitts are distributing the visitor brochure (guidelines and a map that describes the shuttle service, and trails). (See Subprogram 4.3. This activity must be coordinated with permitting of the shuttle service, appropriate signs, etc.)

Activity 4.1 Edit the content of the model guidelines for visitors provided in the Appendix, cooperatively with the SIE (same as Activity 6.4) .

Activity 4.2. Design a simple, inexpensive one-sheet flyer style handout that contains the guidelines, and a simple map or directions to get to shuttle service in Old Road Town, and a simple map to access the trails.

Activity 4.3 Print or copy a trial set of flyers. Supply these to a sample set of hotel owners with a request to display them, and to obtain feedback on visitor use and response. Return to the hotels after 2 weeks. Obtain the feedback and modify the flyers based on this feedback.

Activity 4.4. Make a distribution list of all the lodging establishments on the island. Expand the program to all of the lodgings on the list.

Activity 4.5. Evaluate the success of this program. Are 90% of the lodging facilities selling the flyer? If not, determine why not and take corrective action.

Optional Activity 4.6. A website with information on the park would be an excellent addition to this communication program, but should not be substituted for the flyers

Objective 5. Establish an interpretation centre near Old Road Town

Activity 5.1 Procure the building near the Caribelle Batik Factory previously identified by DPPE as suitable for an interpretation centre.

Activity 5.2 Assess the needs for interpretation for visitors and local residents that will be served at this site.

Activity 5.3. Renovate the centre, based on the needs identified in Activity 2.

Activity 5.4. Equip the centre with interpretive materials. Design interpretive displays and materials, based on the needs identified in Activity 2. Procure other needed materials that are not to be designed in house.

Activity 5. 5 Hold a grand opening ceremony.

Subprogram 1.3 Building Cooperative Management

Objective 6. At the end of 1 year, at least 50% of the SIE[13] nongovernmental members report: 1) a positive working relationship with the DPPE staff; and 2) that their role in the SIE and contribution to the SIE activities includes legitimate responsibility and cooperation, when interviewed anonymously by an independent interviewer.

Objective 7. At the end of year 2, at least 80% of the SIE community members report a positive working relationship and legitimate responsibility and cooperation.

Objective 8. At the end of year 3, at least 80% of the SIE community members continue to report a positive working relationship and legitimate responsibility and cooperation.

Activities (for all objectives)

Activity 6-8.1 Announce the formation of the SIE and describe the roles and responsibilities of these persons, and the process for the community to select them, and how many total will be selected. Provide a reasonable deadline for the community to make its selection of representatives. This activity will comply with the policies for cooperative management in the Administration section.

Activity 6-8.2 Conduct the training with the selected SIE members (see Program 2). This activity must be completed prior to beginning cooperative management, and will establish the basics of roles, responsibilities, procedures for decision –making and other aspects of working together.

Activity 6-8.3 Working with the SIE, identify the projects that will be conducted collaboratively between now and the end of Phase 1 of the management plan. Develop a simple work plan and designate responsible persons to complete the actions in the plan.

[13] The term "SIE" as used here includes any succeeding cooperative management groups, following the completion of the OPAAL project.

Activity 6-8.4 As one of the initial actions of this group, review and edit the model visitor guidelines cooperatively (Same as Activity 4.1).

Activity 6-8.5 At the end of year 1, contract an objective and disinterested interviewer, (someone from outside the government and preferably from outside the immediate area - possibly a volunteer from Nevis Conservation and Historical Society) who will interview the community members.

Activity 6-8.6 All members of the SIE will review the findings of the interviews together, as a group. If the goal of 50% is not met, jointly determine what steps will be taken to improve the working relationship.

Activity 6-8.7 Repeat Activities 5 and 6 at the end of year 2 for the 80% level.

Subprogram 1.4 Educational Outreach

Objective 9. At the end of the first year, at least 10 schools in St. Kitts and Nevis will have participated in a new education program about the CFRNP.

Activity 9.1 Solicit a volunteer for at least a one-year term of service from Voluntary Service Overseas, Peace Corps, United Nations Volunteers, Volunteers for Peace or other volunteer international service organization.

Activity 9.2 The volunteer will initiate a program of outreach to local schools to assess their needs and collaboratively develop a curriculum to teach about the resources of the Central Forest Reserve National Park.

Activity 9.3 The volunteer and SIE will identify a local person to train to operate this program long-term. The volunteer and the trainee will develop the instructional curriculum jointly, and begin visiting the schools as "visiting teachers" to deliver the new curriculum. The program will include efforts at both the elementary and secondary levels.

Objective 10. At the end of the first year, 100% of teachers and at least 80% of students who have participated in this program can: 1) correctly name the DPPE/CFRNP as the sponsor the program; and 2) rate the program as at least "good."

Activity 10.1 Following the first year of effort, a random sample of the students and teachers will be surveyed and asked to rank the programs on a simple ranking scale of poor, acceptable, good, very good and excellent (or equivalent terms) as well as the name of the sponsoring institution.

Activity 10.2 Seek funding that will enable the trainee to continue this educational program permanently under a contract with DPPE.

6.3.2 Program 2. Building Capacity

Objective 11. At the end of year 2, all DPPE staff involved with management of the CFRNP will have gained at least intermediate level professional skills in the following topic areas: community collaboration, communications, general protected area management, and at least one other designated topic in their area of expertise, to include fundraising, Limits of Acceptable Change, GPS technology, and ecotourism management/recreation ecology, as measured by before and after self evaluation, and testing by trainers.

Activity 11.1 Each staff person will complete a before evaluation to rate their skills in communication, community collaboration and the selected area of expertise from the list of prioritized trainings

Activity 11.2 Self instruction in basic skills. During the first six months, each staff person will seek out some of the many excellent materials available free from the internet, complete a program of self-instruction in the basic skills of: 1) communication; 2) working with the community; 3) general protected area management and, 4) the selected skill area. The program of self-instruction will consist of: 1) reading at least three professional level documents in each of these 4 areas; and 2) preparing a summary of the most useful points from each document which will be discussed with other staff in Activity 3.

Activity 11.3 Sharing information with colleagues**.** On completion of the self instruction program for communication, staff will schedule a 2-hour meeting to share and discuss the various materials and lessons learned, using the summaries that they have prepared. Repeat this activity with the self-instruction program for community collaboration and for general protected area management. It does not need to be repeated with the special topic areas.

Activity 11.4 Formal training. During the first six months, staff will work with OECS or other partners to identify trainers and available training and appropriate formats for these (in-house training, attending classes, other). The collaborative training with the SIE is the first priority and will be completed no later than 3 months after selection of the SIE members. All training will be completed by the end of the second year. Each training must include testing by the trainer to determine that the participants have achieved an intermediate level of professional skill, in the trainer's judgment.

Activity 11.5 Designate a staff person to become proficient in each of the activities described in Program 3. The selected persons will complete any additional training needed to complete these tasks. The staff person designated for Limits of Acceptable Change training will coordinate this training with Subprogram 4.2 to include the Visitor Facilities committee members

Activity 11.6 "After" evaluation. Each staff person will repeat the self evaluation conducted in Activity 1.

Objective 12. Within 3 months of selection of the SIE community members, all members (community and government) of the SIE will have gained at least basic skills in collaboration in order to be able to work successfully with each other, as measured by before and after self-evaluation.

Activity 12.1 "Before" evaluation. Each SIE member will rate their skills in collaboration.

Activity 12.2 Members of the SIE, DPPE staff, and/or OECS personnel, will jointly identify a trainer in community collaboration and identify a source of funds to hire this person to conduct training at the earliest opportunity.

Activity 12.3 "After" evaluation. Each SIE member will repeat the self evaluation conducted in Activity 1.

Activity 12.4 Recruit an independent evaluator to assess results and present findings.

6.3.3 Program 3. Building a Management Foundation

Subprogram 3.1 Baseline Information

Objective 13. Within the first two years, obtain the information and create the data management system necessary to support excellent resource management and targeted planning, specifically, the Phase 2 activities, consisting of the following:

Activity 13.1 Establish a data management system that is organized and easy to use by all staff who will need to access it, and includes both hard copy and digital information. Document the procedures used to create the system and create a procedural manual for its use and maintenance. Conduct a short in-house workshop to share this system among staff.

Activity 13.2 Obtain the GPS (See equipment section) and complete related training. Mark the physical boundaries of the CFRNP wherever necessary and useful for access by local residents, tour operators or others, so that they know they are in a protected area[14] (See also section 6.5.1).

Activity 13.3 Complete mapping of existing trails and roads within the CFRNP as needed, including locations of signs, pit toilets, etc., via GPS.

Activity 13.4 Solicit the assistance of either qualified volunteer(s) from the Peace Corps, UN Volunteers, or other volunteer organization, or graduate student(s) that can perform the surveys/assessments of the CFRNP habitats in Activities 13.5 and 13.8.

Activity 13.5 Working with the volunteer(s) or graduate student(s), survey the area of the CFRNP for the habitats and species identified in section 2.5.6. As part of this activity, ensure that the volunteer(s) or graduate student(s) train the Natural Resource Specialist in the survey techniques.

Activity 13.6 Based on the results of Activity 13.4, if any of the surveyed habitats are located in areas threatened by tourism use at this time, interim re-routing of the trails or closure or other means of protection shall be identified and implemented until the master planning in Program 6 determines a long-term solution.

Activity 13.7 Map the extent of guinea grass within the park and external to it but near the park boundary. Update and analyze this mapping annually to determine whether guinea grass is spreading in extent in the CFRNP or externally, in such a fashion that presents a threat from fire or from replacement of native vegetation.

Activity 13.8 Working with the volunteer(s) or graduate student(s), assess the impacts of water extraction throughout the CFRNP and the need for or value of possible alternative extraction levels, timing, or areas, that would permit partial restoration, and maintenance of remaining biodiversity. As part of this activity, ensure that the volunteer(s) or graduate student(s) train the Natural Resource Specialist in the survey techniques.

Activity 13.9 Map the current extent of small farming operations within the CFRNP. See discussion of this under zoning policies.

[14] Marking may be completed inexpensively in remote areas with spray paint, or surveyor's tape on vegetation. Small wood signs are preferred on roads and trails accessed by the public.

Activity 13.10 Develop and carry out a series of visitor use surveys (encompassing both high season and low season, tours and independent visits) to determine how many persons are currently accessing the CFRNP, points of access, activities conducted, and other relevant information.

Activity 13.11 Develop and carry out a series of visitor preference surveys that will inform Phase 2 planning. The survey process should be professionally conducted, but at least one staff person should participate in this survey process.

Subprogram 3.2 Establishing Excellent Administration

Objective 14. Obtain the additional staff persons (described in section 6.5.1) that are needed to adequately manage the CFRNP within 6 months.

Activity 14.1 Seek funding to enable recruiting of additional staff. If financing is absolutely not available, seek additional volunteers or interns to complete this activity (see Subprogram 1.4).

Activity 14.2 Recruit the additional staff.

Activity 14.3 Immediately proceed with any necessary training of the new staff per Program 2.

Objective 15. No later than 2 years, all policies and procedures related to administration will be developed, and documented in written format where appropriate. All policies and procedures documents relevant to the public will be readily available to them.

Activity 15.1 Incorporate the documentation of policies and procedures into the data management system (Subprogram 3.1).

Activity 15.2 Establish a budgeting and funding system, and a corresponding work plan and schedule, that plans ahead for needed funding and begins the process of requesting it with sufficient time. Coordinate this activity with Program 5.

Activity 15.3 Develop emergency response plans, jointly with the Defense Forces and the local police forces as appropriate. Review the effectiveness of these and modify as needed[15].

Activity 15.4 Develop the decision-making guidelines and policies to support each of the areas described in the administration section, including permitting, enforcement, resource management etc. Format the combined products into a manual and make it readily available to the public. Conduct

Activity 15.5 Conduct an outreach workshop in Cayon, Dieppe Bay, Old Road Town and Sandy Point to increase awareness of the policies, visitor guidelines etc.

[15] Numerous background studies, maps, and emergency guidelines have been prepared for the Caribbean region which can inform these plans.

6.3.4 Program 4. Improving Interim[16] Visitor Use

Subprogram 4.1 Cooperating with the Tour Operators to better support biodiversity conservation

Objective 16. Within 3 months, no unauthorized roads or trails into the CFRNP will exist.

Objective 17. At the end of year 2, there will be no additional incidents of unauthorized road/trail building or clearing in the CFRNP.

Activities for both objectives.

Activity 16-17.1 Survey the roads leading into the CFRNP to locate the unauthorized road outside Phillips and to determine if any other unauthorized roads have been constructed.

Activity 16-17.2 Liaise with the tour operators and any other relevant stakeholders regarding the closure of the new Phillips access road into the CFRNP, and to inform them that roads and trails may not be constructed in the area of the CFRNP until the master infrastructure plan is completed.

Activity 16-17.3 Permanently close the Phillips road and any others identified. The tour operator(s) who developed this road will pay the costs associated with the closure and any actions needed to restore the vegetation or soil surface to its previous condition and ensure that erosion or infestation with weedy plants does not occur.

Activity 16-17.4 Repeat the survey of the park boundaries every other month. If any new roads are found, repeat the procedures above.

Objective 18. At the end of year 1, at least 75% of licensed tour operators will be participating in a cooperative management program as "Guardians of the Central Forest Reserve."

Activity 18.1 Establish contact with the tour operators as a group. Invite them to develop and participate in a cooperative management program and monthly meetings. Provide them with relevant information on the legal status of the CFRNP, information on the establishment of the SIE, etc. Provide each tour operator with a copy of the management plan so that they have complete knowledge of what will be happening and how it will affect their businesses. If the SIE membership does not include a tour operator, invite the tour operators to select a representative that will informally coordinate with the SIE.

Activity 18.2 Work with the tour operators to jointly identify projects or other ways that they can collaborate with the CFRNP management to achieve the voluntary objectives described in this subprogram, or other objectives that meet the mutual goals of CFRNP management and tour operations.

Activity 18.3 Work with the tour operators to establish a voluntary code of conduct for the tour operators, (similar to the visitor guidelines) that promotes stewardship of the trails and all other amenities associated with the CFRNP (see voluntary objectives below). Those tour operators that agree to abide by the code will receive an annual certificate from DPPE as a "Guardian of the Central Forest Reserve" which they can use in marketing their business as responsible tourism to potential clients. The agreement should be renewed annually as conditions in the CFRNP evolve.

Suggested Voluntary Objectives for the tour operators

[16] As used here, interim refers to the first three years of CFRNP operations, or until the completion of Program 6.

Voluntary Objective A. At the end of 6 months, the Crater trail, Dos D'ane trail and Military trail will meet the parameters of litter free as determined in Subprogram 4.2 (See also discussion in Appendix C).

Voluntary Objective B. The tour operators, as a group, will elect to tax themselves, visitors, or otherwise contribute to a fund (that they control) but which will be used for projects to improve conditions in the park, as long as the projects are compatible with the activities this management plan, and carried out collaboratively with the DPPE management staff.

Subprogram 4.2 Define Sustainable Use Levels through Limits of Acceptable Change

Objective 19. Visitor impacts on established trails and related visitor facilities in the CFRNP shall be reduced to a defined acceptable level, determined by a using the Limits of Acceptable Change (Stankey et al, 1985; Appendix G) methodology, by the end of year 1.

Activity 19.1 Establish a standing Visitor Facilities Committee that shall be composed of at least one SIE member, who is nongovernmental and not affiliated with tour operations in the CFRNP, at least one DPPE staff member, and at least one tour operator. If the tour operators elect to not participate, the remainder of this subprogram will be carried out by the DPPE staff and SIE member(s). This Committee will be responsible for oversight of the condition of the current trails and other visitor amenities, the monitoring program of these facilities, and provide information on these during the management plan review process and master infrastructure planning process in Program 6. Committee members must be willing serve for a minimum of 3 years and carry out the activities described below.

Activity 19.2 As part of the Building Capacity program, a training workshop in Limits of Acceptable Change methodology will be conducted for the Committee members.

Activity 19.3 Using the techniques learned in the workshop, identify the indicators that will be used to measure acceptable conditions for trails and other areas and a range of acceptable conditions for these indicators, identify tools and actions to use if conditions exceed the established permissible ranges. The Committee will jointly develop descriptions of opportunity classes, indicators, and standards (see Appendix F) and all other aspect of the limits of acceptable change methodology relevant to visitation.

Activity 19.4 Committee members will jointly **c**ollect baseline data on the current conditions in the CFRNP for these indicators.

Activity 19.5 Based on the results of Activity 19.4, management and tour operators will jointly identify the best tools to manage visitor impacts so that impacts remain within the previously identified acceptable ranges. Tools will be implemented on an experimental basis, and monitored for results every 6 months (Activity 19.6). Based on the results of the monitoring, each technique will be continued or discontinued, following the process in Limits of Acceptable Change. All visitor impacts will be within the identified acceptable levels at the end of year 2.

Activity 19.6. Monitoring of the indicators developed in Activity 19.5 will continue indefinitely, being carried out every 6 months, and performed jointly by the Committee members.

Objective 20. By the end of year 3, Committee members will expand the Limits of Acceptable Change application to all uses and infrastructure developed in the revised management plan and master infrastructure plan.

Activity 20.1 Committee members will provide a succinct report on the use of and results of Limits of Acceptable Change for Visitor Facilities to date in the CFRNP to inform the development of revised management plan and master infrastructure plan.

Activity 20.2 Committee members will participate in the revision of the management plan and the infrastructure plan to build in Limits of Acceptable Change for expanded uses, or new proposed uses in the CFRNP, such that baseline information, indicators and ranges of acceptability are established *in advance of* initiation of new uses or expansion of existing uses and all other aspects of the planning processes (see Section 6.6.9.1).

Subprogram 4.3 Expand Livelihood Opportunities by Improving Interim Visitor Use

Objective 21. Within 6 months, at least four local residents will have temporary or permanent work related to the CFRNP visitation (at least two permanent Visitor Service Rangers, one temporary person, one contracted local company). (Note: a fifth position is described in Subprogram 1.4.)

Activity 21.1 Two persons shall be hired as Visitor Service Rangers to conduct ongoing maintenance of the Visitor Center and bathrooms (Activity 21.3) and ongoing vegetation control and any other maintenance needed to keep the Crater trail, Old Military trail, and Dos D'ane Pond trail clearly visible and easy to hike. These are to be permanent positions.

Activity 21.2 One person shall be hired to assist in the demarcation of the CFRNP boundaries. This position is temporary.

Activity 21.3 A local business will be selected and contracted to construct two basic composting pit bathrooms at parking areas on the Wingfield feeder road access to the Military – Dos D'ane trails and at the terminus of the road to the Crater Trail and to make and install directional signs at trail junctions.

Objective 22. Within 1 year, organize and carry out two workshops for residents of Old Road Town on business skills that will support the success of new independent visitor-related business enterprises.

Activity 22.1 Meet with residents to communicate information regarding current and future visitation to the CFRNP (including the program in Objective 23) and identify 1) the particular businesses that interest the residents related to present and future tourism in the CFRNP, and 2) skills that are sufficiently generic to serve multiple types of businesses identified (e.g. bookkeeping, marketing).

Activity 22.2 Solicit funding from the OPAAL project for these workshops.

Activity 22.3 Identify the necessary trainers, contract the trainers, and carry out the workshops. As part of the workshops, trainers will provide participants with a survey or questionnaire to evaluate whether the workshop met their needs. The names and contact information of all participants will be recorded for follow up surveys (Activity 4).

Activity 22.4 Interview the workshop participants within 6 months to determine how many have initiated businesses.

Objective 23. Within 18 months, increase independent visitor traffic in the area of Old Road Town by an average of at least 24 persons per day during the principal visitor season, through the development of a private sector business opportunity for a shuttle service[17] from Old Road Town to the Old Military-Dos D'ane trail head area. (See Appendix C for a description of this service).

[17] A shuttle service is preferred over increasing the number of taxis or other vehicles accessing the roads of the CFRNP to avoid traffic impacts.

Activity 23.1 Complete minor improvements and prerequisites needed to support independent visitation to Old Road Town: development and distribution of visitor guidelines/map brochure (Subprogram 1.2); installation of directional signs on trails (Activity 21.3), etc.

Activity 23.2 Develop the process to select the shuttle service permit holder(s), limited to no more than 3 holders, and without charge, (see section 6.6.9.1 for permitting policies). The process shall be developed to ensure that the decision is made rapidly, transparently, and meets the goal of establishing new local independent businesses.

Activity 23.3 Notify the public via the SIE and the communications outlets (Activity 1-3.1) of this private sector opportunity.

Activity 23.4 Work with the selected shuttle driver(s) to record the number of passengers that they carry into the CFRNP to determine if the visitor traffic goal has been met.

Activity 23.5 Conduct additional outreach to ensure that the taxis, buses and rental car agencies are aware of the new service and the option for independent visits to the CFRNP.

Activity 23.6 Review this program at 3 months and 6 months from initiation, with the shuttle drivers, visitors who have used the service, and business owners in Old Road Town.

6.3.5 Program 5. Sustainable Financing

Objective 24. By the end of plan year 2, CFRNP will have established under the laws of St. Kitts and Nevis, an appropriate Conservation Trust Fund, with governing structure, and the supporting administrative and accounting procedures, that will permanently facilitate the collection and receipt of funds 1) directly and expressly for park management activities; and 2) from a diverse set of sources (donor organizations, businesses, government, private donations, fees, etc.) sufficient to meet operating costs.

Activity 24.1 Meet with the Brimstone Hill Fortress National Park Society to learn from their successful structure and operations model.

Activity 24.2 Review the model developed by the Brimstone Hill Fortress National Park Society trust mechanism thoroughly and adaptations that may be necessary for use in the CFRNP. Research alternative approaches to establishing various types of accounts that can independently accept funds and determine which of these approaches best serves the long-term needs of the CFRNP. Review the GEF guidelines on environmental trust funds and select the appropriate mechanism.

Activity 24.3 Initiate and complete the process required to set up the selected appropriate structure.

Objective 25. During plan years 2 and 3, the CFRNP will receive a total of at least US$250,000 in operating funds necessary to conduct the Phase 2 activities, in addition to basic operating costs.

Activity 25.1 Initiate the process with the appropriate entities to increase the island enhancement fee, such that the increase to be directed to the CFRNP Trust Fund for management salaries and activities.

Activity 25.2 Increase staff capacity to develop diverse and sufficient funding sources (same as Program 2 activities).

Activity 25.3 Identify and solicit funds from appropriate sources.

6.4 Phase 2. Management Programs

6.4.1 Program 6. Achieving Lasting Sustainability

Objective 26. No later than the end of year 3, DPPE and the SIE shall complete a comprehensive and integrated infrastructure master plan for the CFRNP that details all infrastructure design needed to meet the park's vision, goals and guidelines as described in Appendix B.

Activity 26.1 The SIE will develop and carry out a work plan for outreach and community input for this planning process and coordinate this with the update of the management plan under Objective 27.

Activity 26.2 DPPE shall select a staff person or contract for visitor use and preference surveys that will inform the master plan (same as Activities 13.10 and 13.11).

Activity 26.3 DPPE and the SIE will jointly select and contract a landscape architecture firm to complete the master infrastructure plan that will evaluate and plan for expanding ecotourism operations as well as for the diversified uses identified in Activity 3.

Activity 26.4. The SIE, DPPE, and Visitor Facility Committee shall conduct a special workshop(s) to identify options for diversifying sustainable uses in the CFRNP and provide the results of this to infrastructure planning contractor.

Activity 26.5 DPPE, SIE and Visitor Facility Committee will coordinate with the landscape architecture firm to develop the first draft of the infrastructure plan, utilizing all of the background information compiled to date through the community outreach process and the baseline information compiled in Subprogram 3.1: including the vision, goals and guidelines, the visitor preferences, and any other relevant information accumulated.

Activity 26.6 Review the draft of the infrastructure plan with the communities and determine if it has met the goals and guidelines for long-term sustainable development balanced with conservation.

Activity 26.7 Finalize the master infrastructure plan.

Objective 27. No later than the end of year 3, complete a revision of the management plan that indicates the way forward over the next five years and fully integrates with the master infrastructure plan.

Activity 27.1 SIE to develop and carry out a work plan for outreach and community input for this plan.

Activity 27.2 DPPE will select and contract for a management plan consultant who will ensure that the management plan is integrated with the master infrastructure plan and produce the final revised management plan.

Activity 27.3 Complete the process of review of the management plan, utilizing all of the background information compiled to date: the goals and guidelines, the updated information on resources gained in Program 3, the new master plan, the community input, the baseline information on resource location and condition, and any other relevant information. An overview of the review process is found in section 5.6.8.

Activity 27.4 Review the draft of the management plan with the SIE and the communities and determine if it has met the goals and guidelines for long-term sustainable development balanced with conservation.

Activity 27.5. Finalize the management plan.

6.5 Administration

6.5.1 Staffing

Minimum initial staffing for Phase 1 consists of the personnel indicated in Table 2. Since many staff will be juggling duties for the CFRNP and for other projects in the DPPE, all staff will continue to report directly to and be supervised by the Senior Environmental Officer, Randolph Edmead.

POSITION	STATUS	DPPE
Protected Area Manager	Permanent, Full-time	In Place
Community Coordinator/ Assistant Manager	Permanent, Full-time	Hire
Public Outreach Specialist	Permanent, Full-time	In Place
Natural Resources Specialist	Permanent, Full-time	Hire
GIS Specialist	Permanent, half time	In Place
GPS/Mapping Technician	Full time first during Program 3.1, adjusted later, per revised Management Plan/Infrastructure Plan	Hire new staff person or select and train from existing DPPE staff
Visitor Service Rangers	Two persons, permanent full time	Hire
Various Contractors: Educator Boundary Demarcation Assistant Sanitary Facility/Sign Contractor	 Permanent 6 months 6 months or per bid	Contracted
Various professional consultants	Per bids	Contracted

Table 2. Phase 1 Staffing

Prior to beginning Phase 2, an additional staff person with expertise in ecotourism infrastucture, visitor management, and recreation ecology will be either hired or trained. This is to be completed with sufficient lead time that this person can fully and effectively participate in the master infrastructure planning process.

Staffing needs will be re-evaluated as part of program 6, taking into consideration the new programs that are identified at that time.

6.5.2 Training

Program 2, Building Capacity, addresses the most critical training needs for Phase 1 in detail.

- Self-instruction
- Community collaboration/cooperative management
- Effective Communications
- General Protected Area Management tools and techniques, including fundraising.
- GPS
- Limits of Acceptable Change methodology
- Ecotourism/recreation ecology, if a staff person is trained, rather than hiring a new person.

In Phase 2, needs for additional training will be re-evaluated based on the new management issue priorities, programs and master planning process.

6.5.3 Infrastructure and Equipment

6.5.3.1 Infrastructure

Infrastructure presently within the CFRNP, and the DPPR office, is described in section 2.5.9.

Subprogram 4.3 describes the construction of signs, sanitary facilities, and the trail maintenance that will encourage responsible stewardship of the CFRNP by visitors, locals and tour operators, as well as create employment and provide a temporary improvement to trail conditions for visitors.

The master infrastructure planning process described in Program 6, which will provide a comprehensive and integrated approach to appropriate activities, visitor services and the infrastructure necessary to provide these, is the appropriate time to evaluate the need for office space, visitor centers, interpretive signage or displays and other possible infrastructure expansion.

6.5.3.2 Equipment

Existing equipment available for use by DPPE staff:

1. DPPE staff need the ability to communicate from the field to the DPPE office in Basseterre and/or the Visitor Interpretation Centre. Most of the staff are equipped with personal cell phones, and cell phone reception is available in most areas of the CFRNP and surrounding region, so additional equipment is not needed at this time.
2. Computers, software, and all other standard office equipment is presently available in the DPPE office.
3. A vehicle and video camera have recently been procured through OECS.

Needed equipment:

1. A professional quality submeter GPS, preferably a Trimble GeoXT, equipped with TerraSync Professional and Pathfinder Office software and a Trimble Hurricane Antenna. This will be used for determining and marking the boundaries of park on the ground, as well as mapping of resources, trails, etc.

6.5.4. Boundaries and Zoning

1. The boundaries of the CFRNP will be marked to be made visible to persons on the ground (Program 3).
2. Zoning of the CFRNP is not appropriate at this time, due to incomplete baseline information; there are no known conflicting uses, and no known habitats or other areas of special protection need.
3. On completion of the mapping of the small-scale agricultural operations presently within the CFRNP, the mapped area will be designated as the Small-scale agriculture zone. The baseline data collection process calls for identifying and mapping areas of existing small agricultural operations within the boundaries of the CFRNP. Once these are identified, they have in effect created a special use zone of small-scale agriculture. The zone will preserve this existing use at its current extent and level of enterprise, but it may not be expanded within the CFRNP (see also section 6.5.9). Special management policies for the zone are to be evaluated to consider such issues as use of pesticides, erosion control, and other issues that may adversely affect the biological resources. This zone and its policies will need to be evaluated over time, and in response to any management issues or conflicts that arise.
4. As areas of special habitats or natural communities are identified, (see section 2.5.6; Program 3.1) these areas will likely warrant greater protection from the impacts inherent in visitation. Each habitat or natural community will be evaluated on a case by case basis, according to its vulnerability to these impacts and designated as a special protection zone. Specific policies and visitor management tools (See Eagles et al, 2002) will be designed, also on a case by case basis, to minimize impacts and ensure sufficient protection.

6.5.5 Finance and Budgets

Phase 1. Activities to develop a Conservation Trust Fund and to seek an increase in the Island Enhancement Fee to support the financial needs of the CFRNP are detailed in Program 5. Budgets for years 1-3 are shown in Appendix E.

Phase 2. The use of an entrance fee and options to collect it, as well as other funding options such as fees for overnight camping, fees from tour operators, the creation of a "friends of the CFRNP" will be re-examined as part of developing the master infrastructure plan and revised management plan, when it may be more feasible to develop entrance controls and collection points, and the community has developed a more supportive attitude toward the CFRNP and management.

6.5.6 Disaster Management and Visitor Safety

1. Emergency response plan preparation is listed in Program 3.
2. Basic visitor safety precautions are provided in the model guidelines.
3. Search and rescue operations, when needed, have been effectively handled in the past through the Defense Forces. This arrangement is appropriate and will be continued.

6.5.7 Monitoring and Evaluation

Evaluation of the completion and success of the objectives for management are incorporated into the programs and summarized in Appendix F. Monitoring of visitor impacts will be developed collaboratively under Subprogram 4.2.

6.5.8 Management Plan Review Process

This management plan covers a three year period, estimated to begin 1 January 2008. The third year of the plan consists of a complete management plan review carried out in conjunction with the development of a master infrastructure plan for the CFRNP, as described in Program 6. The management plan review will include a complete process of stakeholder consultation.

A brief outline of the steps is below. All tasks should be carried out jointly by management and stakeholders.

1. Review the goals. Are they complete? Do they meet the descriptive criteria in Measures of Success (also in Appendix C)?
2. Review the management guidelines. Are they complete? Are they accurate?
3. Review all available information on conditions in the park and as appropriate, surrounding areas; identify the critical management issues; prioritize these.
4. Develop a set of management programs in response to the issues. Make sure that the objectives and activities fit the description provided of measurable, etc., provided in Measures of Success.
5. Update the administration aspects to enable completion of the management programs.
6. Update the monitoring and evaluation plan.
7. Review all steps again and ensure that they are integrated.

6.5.9 Policies and Regulations

6.5.9.1 Use Policies

1. No new agricultural operations may be initiated within the CFRNP. The existing small agricultural operations, (legal crops only) shall be permitted to continue operations in the CFR, under the following conditions:
    a. Guinea grass may not be planted or cultivated. Any other plants identified as potentially invasive may not be planted or cultivated.
    b. Livestock must be confined at all times within fences.
    c. Agricultural operations may not be expanded beyond their present extent of area, nor may they be converted to other uses, such as camping, hotels, construction of multiple dwellings etc.)

d. Fires shall not be used to eliminate agricultural waste, clear land or other purposes.

2. The use of motorcycles, or all-terrain vehicles (also known as "Quads) or any other motorized personal transportation is prohibited at all times and under all conditions within the CFRNP. These uses are not compatible with the vision, goals and guidelines (Secretariat of the Convention on Biological Diversity, 2004).
3. Bicycles and horses may be used in designated areas, following the completion of Program 6.
4. Camping and campfires are prohibited at this time. They shall be permitted when facilities are developed, under regulations to be developed during Program 6 that will address suitable locations, safety precautions, and conditions.
5. A permitting process shall be established for each of the various types of routine permits to be issued and the guidelines for obtaining these permits will be available in writing to any person who seeks to obtain a permit. If the number of permits to be awarded is limited, permits shall be awarded by lottery in a public setting so that participants are assured of fair awards.
6. All special events within the CFRNP require a permit. Fees for these permits will be established by the DPPE, but a minimum amount necessary to restore all resources to pre-event condition must be collected in advance of the event. Special events must be evaluated for compatibility with park goals and guidelines and include provisions for post event cleanup and site or vegetation, other infrastructure restoration as needed.
7. Motorized vehicles other than ATVs (autos, buses, trucks, vans) are prohibited on roads or trails within the CFRNP unless permitted, with the overall intent of limiting vehicle traffic within the CFRNP. Permits may be granted to farmers operating in the park for agricultural vehicles only (not tour vehicles or other non-agricultural use). Permits may be granted for vehicles necessary for special events and to shuttle drivers, tour operators or other uses that have been evaluated by DPPE staff for compatibility with park management goals and guidelines. There is no charge for vehicle permits.
8. Any new proposed use within the park must be evaluated for compatibility with the vision, goals, guidelines, and compatibility with the existing uses (Secretariat of the Convention on Biological Diversity, 2004). Before initiation of the use, limits of acceptable change will be determined and a complete program initiated to monitor the changes, and actions identified to modify use if the limits are exceeded. This shall include termination of the use if it does not remain within the established limits in any three consecutive monitoring periods. Any concessionaire or permitted user shall be granted a permit for use that includes the condition that the use will be terminated if the limits of acceptable change are violated.

6.5.9.3 Infrastructure Policies

1. The master infrastructure planning process and any future developments will generally seek to minimize infrastructure within the CFRNP, siting development outside the park boundaries wherever possible. When not possible, sites should be chosen to minimize fragmentation of habitats, disturbance of wildlife, disturbance of ecosystem function, and erosion, water contamination and all other impacts.

6.5.9.4 Visitor Management Policies

1. A set of visitor guidelines (established cooperatively with the SIE and Tour Operators Subprogram 1.3; Appendix D) will be distributed to all visitors.
2. Tour operators shall bear the responsibility and cost of distributing guidelines to clients.

6.5.9.5 Local Products and Services Policies

1. Local products and services shall be utilized to the greatest extent possible, provided that the services and products are available at similar costs and qualities to nonlocal products.
2. Local vendors, employees or concessionaires shall be trained and/or employed and/or contracted to the greatest extent possible, provided that the quality of the services or employment received is not compromised.

6.6.9.6 Resource Management Policies

1. No vegetation may be removed, harvested or modified except for:

   a. reasons of visitor and staff safety
   b. implementation of the master plan infrastructure.
   c. Traditional uses, (e.g. collection of fish pot materials) determined to be sustainable and monitored to ensure ongoing sustainability.
   d. Control of non-native vegetation.
2. No hunting or collecting of wildlife, including insects, fish, and other aquatic species is permitted except under the following conditions:
   a. Removal and/or control of current or future introduced species including pigs, cattle, mongoose, monkeys, etc.
   b. Traditional collection of fish or crayfish is prohibited until the population viability has been assessed. Collection of these may be resumed only after populations of these have been determined to be secure and a rate of sustainable harvest determined.

6.5.9.7 Enforcement Policies

1. Regulations, policies, permit conditions, etc., of the CFRNP will be enforced in order to conserve the ecosystems and resources of the area.
2. Whenever possible, outreach, education, and cooperative management will be the first techniques used to modify inappropriate or unsustainable visitor or resident behaviors, through building understanding and voluntary compliance[18].
3. When this is not possible, or is tried and found to be unsuccessful, other methods will be evaluated to determine the most strategic method for the circumstances (Eagles et al, 2002).
4. The Defense Forces and police departments shall continue in their historic roles in control of the cultivation of illegal crops within the CFRNP.
5. A manual of enforcement policies relevant to specific infractions shall be developed and made available to the public.

6.5.9.8 Cooperative Management Policies

1. All meetings of the SIE[19] will be open to the general public and advertised in advance through the communications outlets.
2. There shall be at least as many nongovernmental SIE members as governmental, and no fewer than four total SIE nongovernmental members.
3. SIE community members must be selected by the communities in the manner that they determine.
4. The SIE member selection process will be designed to ensure that all geographic areas of St. Kitts and Nevis are represented.
5. The initial term of office for nongovernmental members will be 2 years. Terms for future service, as well as procedures for receiving comments from the public and for working together (e.g. what constitutes a quorum? how are decisions made? Who chairs the meetings? How are changes in operating procedures to be made?) and other aspects of the functioning of this body will be determined by these members themselves and recorded in writing by a facilitator during the initial training sessions.
6. The SIE is an advisory board and does not have decision-making authority. However, the advice provided by community through the SIE on management of specific issues will be provided in the form of written, formal advice. If the DPPE does not opt to follow the advice of the SIE, reasons will be provided in writing to the SIE and these will be publicly available for review.
7. The SIE, or a replacement advisory board that similarly represents community input to CFRNP management, will remain in place after the termination of the OPAAL project.

[18] Generally, this approach is preferred over regulatory approaches as it is more effective at lower cost (Marion and Reid, 2007).

[19] 'Throughout the document, SIE is used to refer to the cooperative management body. It should be interpreted to include both the original SIE and a cooperative management body that continues in this role, following the completion of the OPAAL project, as called for in this policy section.

CHAPTER SEVEN OPERATING PLANS

Program 1 **Teaming Up with the Community**

Project Year	1				2				3			
Quarter	1	2	3	4	1	2	3	4	1	2	3	4

Management Tasks													*Responsible Person(s)** ****
Subprogram 1.1 Improving Community Communication													
Objectives 1, 2 and 3													
Activity 1-3.1	X	P	P	P	P	P	P	P	P	P	P	P	Public Outreach Specialist
Activity 1-3.2	X	X											Public Outreach Specialist, Community Coordinator
Activity 1-3.3		X											Public Outreach Specialist
Activity 1-3.4 (if needed)			X	X	X								Public Outreach Specialist
Activity 1-3.5				X		X							Public Outreach Specialist
Subprogram 1.2 Improving Visitor Communications													
Objective 4													
Activity 4.1		X											Community Coordinator
Activity 4.2		X											Public Outreach Specialist
Activity 4.3		X	P	P	P	P	P	P	P	P	P	P	Public Outreach Specialist
Activity 4.4		X	X										Public Outreach Specialist
Activity 4.5			X										Public Outreach Specialist
Activity 4.6 (optional)				X									Public Outreach Specialist
Objective 5													
Activity 5.1	X	X	X	X									Community Coordinator
Activity 5.2			X	X									Public Outreach Specialist
Activity 5.3					X	X	X						Community Coordinator, Public Outreach Specialist
Activity 5.4								X					Public Outreach Specialist
Activity 5.5									X				Public Outreach Specialist, Community Coordinator

* P indicates permanent ongoing activity. ** Titles are not intended to be exact, only similar. *** Indicates person(s) responsible for completing task, not necessarily all participants.

Program 1 Continued **Teaming Up with the Community**

Project Year	1				2				3			
Quarter	1	2	3	4	1	2	3	4	1	2	3	4

Management Tasks													*Responsible Person(s)*
Subprogram 1.3 Building Cooperative Management													
Objectives 6,7 and 8													
Activity 6-8.1	X	X											Community Coordinator
Activity 6-8.2			X										Community Coordinator, SIE, Contractor
Activity 6-8.3				X									Community Coordinator, SIE
Activity 6-8.4				X									Community Coordinator, SIE
Activity 6-8.5			X	X									Volunteer or Contractor
Activity 6-8.6					X								SIE, Community Coordinator
Activity 6-8.7					X	X	X	X					Community Coordinator, SIE, Volunteer/ Contractor
Subprogram 1.4 Educational Outreach													
Objective 9													
Activity 9.1	X	X											Community Coordinator
Activity 9.2			X	X									Volunteer
Activity 9.3			X	P	P	P	P	P	P	P	P	P	Volunteer and SIE, Local Trainee
Objective 10													
Activity 10.1					X								Volunteer, Local Trainee
Activity 10.2			X	X	X								Protected Area Manager

Program 2 **Building Management Capacity**

Project Year	1				2				3			
Quarter	1	2	3	4	1	2	3	4	1	2	3	4

Management Tasks													*Responsible Person(s)*
Objective 11													
Activity 11.1	X												All DPPE staff involved in CFRNP management
Activity 11.2		X	X	X									All DPPE staff involved in CFRNP management
Activity 11.3		X	X	X									All DPPE staff involved in CFRNP management
Activity 11.4		X											All DPPE staff involved in CFRNP management
Activity 11.5			X										All DPPE staff involved in CFRNP management
Activity 11.6				X									All DPPE staff involved in CFRNP management
Objective 12													
Activity 12.1	X												SIE
Activity 12.2	X	X											SIE, all DPPE staff
Activity 12.3	X	X											SIE
Activity 12.4			X										Contractor

Program 3 **Building a Management Foundation**

Project Year	1				2				3			
Quarter	1	2	3	4	1	2	3	4	1	2	3	4

Management Tasks													*Responsible Person(s)*
Subprogram 3.1 Baseline Information													
Objective 13													
Activity 13.1	X	X											GIS Specialist, Natural Resources Specialist
Activity 13.2	X	X											GIS Specialist
Activity 13.3			X	X									GIS Specialist, GPS Technician
Activity 13.4			X										Natural Resources Specialist
Activity 13.5					X	X	X						Natural Resources Specialist, Vol/Grad Student
Activity 13.6								X					Natural Resources Specialist
Activity 13.7					X	X	X		P			P	GIS Specialist, GPS Technician
Activity 13.8			X	X									Natural Resources Specialist, Vol/Grad Student
Activity 13.9					X	X	X						GIS Specialist, GPS Technician
Activity 13.10	X	X	X	X									Natural Resources Specialist or Contractor
Activity 13.11						X	X						Natural Resources Specialist or Contractor
Subprogram 3.2 Building Excellent Administration													
Objective 14													
Activity 14.1		X	X	X									Protected Area Manager
Activity 14.2		X	X	X									Protected Area Manager
Activity 14.3		X	X	X									Protected Area Manager
Objective 15													
Activity 15.1		X	X	X	X								Protected Area Manager
Activity 15.2			X	X	X	X							Protected Area Manager
Activity 15.3					X	X							Protected Area Manager
Activity 15.4						X	X	X					Protected Area Manager
Activity 15.5					X	X							Community Coordinator

Program 4 **Improving Interim Visitor Use**

Project Year	1				2				3			
Quarter	1	2	3	4	1	2	3	4	1	2	3	4

Management Tasks													*Responsible Person(s)*
Subprogram 4.1 Cooperating with the Tour Operators to Better Support Biodiversity Conservation													
Objectives 16, 17													
Activity 16-17.1			X										Natural Resources Specialist
Activity 16-17.2			X										Natural Resources Specialist
Activity 16-17.3				X									Natural Resources Specialist
Activity 16-17.4				X	P	P	P	P	P	P	P	P	Natural Resources Specialist
Objective 18													
Activity 18.1	X	X	X	X									Community Coordinator, Tour Operators
Activity 18.2	X	X	X	X									Community Coordinator, Tour Operators
Activity 18.3	X	X	X	X									Community Coordinator, Tour Operators
Voluntary Activity A	X	X											Community Coordinator, Tour Operators
Voluntary Activity B			P	P	P	P	P	P	P	P	P	P	Community Coordinator, Tour Operators
Subprogram 4.2 Defining Sustainable Use Levels through Limits of Acceptable Change													
Objective 19													
Activity 19.1			X	X									Natural Resources Specialist, Community Coordinator
Activity 19.2					X								Visitor Facilities Committee Members, N. R. Specialist
Activity 19.3						X	X						Visitor Facilities Committee Members, N. R. Specialist
Activity 19.4							X	X					Visitor Facilities Committee Members, N. R. Specialist
Activity 19.5									X				Visitor Facilities Committee Members, N. R. Specialist
Activity 19.6									P	P	P	P	Visitor Facilities Committee Members, N. R. Specialist
Objective 20													
Activity 20.1							X	X					Visitor Facilities Committee Members, N. R. Specialist
Activity 20.2									X	X	X	X	Visitor Facilities Committee Members, N. R. Specialist

Program 4 Continued **Improving Interim Visitor Use**

Project Year	1				2				3			
Quarter	1	2	3	4	1	2	3	4	1	2	3	4

Management Tasks													*Responsible Person(s)*
Subprogram 4.3 Expanding Livelihood Opportunities by Improving Interim Use													
Objective 21													
Activity 21.1	X	X	X	X									Protected Area Manager
Activity 21.2	X	X	X	X									Protected Area Manager
Activity 21.3	X	X	X	X									Protected Area Manager
Objective 22													
Activity 22.1			X	X									Community Coordinator
Activity 22.2			X	X									Protected Area Manager
Activity 22.3			X	X									Community Coordinator
Activity 22.4					X								Community Coordinator
Objective 23													
Activity 23.1			X	X	X								Public Outreach Specialist, Natural Resources Specialist
Activity 23.2			X	X	X								Community Coordinator
Activity 23.3					X								Public Outreach Specialist
Activity 23.4						X							Community Coordinator
Activity 23.5						X							Public Outreach Specialist
Activity 23.6						X	X	X					Community Coordinator

Program 5. Sustainable Financing

Project Year	1				2				3			
Quarter	1	2	3	4	1	2	3	4	1	2	3	4

Management Tasks													*Responsible Person(s)*
Objective 24													
Activity 24.1	X	X											Protected Area Manager
Activity 24.2		X	X										Protected Area Manager
Activity 24.3			X	X	X	X	X	X					Protected Area Manager
Objective 25													
Activity 25.1	X	X	X	X	X	X	X	X	X	X	X	X	Protected Area Manager
Activity 25.2	X	X	X	X	X	X	X	X	X	X	X	X	Protected Area Manager
Activity 25.3	P	P	P	P	P	P	P	P	P	P	P	P	Protected Area Manager

Program 6 **Achieving Lasting Sustainability**

Project Year	1				2				3			
Quarter	1	2	3	4	1	2	3	4	1	2	3	4

Management Tasks													*Responsible Person(s)*
Objective 26													
Activity 26.1								X					SIE
Activity 26.2								X					Protected Area Manager
Activity 26.3									X				SIE, Protected Area Manager
Activity 26.4								X					SIE, Protected Area Manager, Visitor Facility Committee
Activity 26.5									X	X	X	X	Contractor, SIE, Protected Area Manager, Visitor Facility Committee
Activity 26.6											X		Community Coordinator
Activity 26.7												X	SIE, Protected Area Manager
Objective 27													
Activity 27.1								X					SIE
Activity 27.2								X					Protected Area Manager
Activity 27.3									X	X	X	X	Contractor, SIE, Protected Area Manager, Visitor Facility Committee
Activity 27.4											X		Community Coordinator
Activity 27.5												X	SIE, Protected Area Manager

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APPENDICES

Appendix A. Participatory Planning Process

This appendix describes the process employed of working with stakeholders to obtain input regarding all aspects of the Central Forest Reserve management: the conservation targets, management issues and possible strategic responses. The results obtained in this first step feed directly into the analysis and planning stages presented in Appendices B and C, respectively.

The original terms of reference for developing this management plan called for "developing the plan in collaboration with the Site Implementation Entity…" The SIE was intended to be comprised of representatives from various government agencies and also of representatives from the communities who would be provide input to the day to day management of the CFR. Upon initiation of the planning process it was discovered that the only two members of the SIE selected were the protected area manager from DPPE and the member from the Parks and Beaches Unit of the Ministry of Health, and that there were no plans or process in place to select the remaining members in the immediate future. This meant that there was no representation of the wider community on the SIE. Since the planning had to be completed in a timely manner, and stakeholder consultation was deemed essential to eventual success, (Drumm, 2005; Renard, 2004; Thomas, 2003; Eagles et al, 2002; Margoluis and Salafsky, 1998) interviews with stakeholders from the local community were conducted in lieu of working with the SIE.

The participatory aspects of the planning process were informed by *Guidelines for Stakeholder Identification and Analysis: A manual for Caribbean Natural Resource Managers and Planners* (Renard, 2004).

Goals of the participatory process were to:
1. Identify stakeholders, both as individuals and as organizations/businesses, agencies etc., that represented the widest possible spectrum of concerns and points of view related to the planning and eventual management of the Park;
2. Interview or otherwise provide input opportunities to a sufficient number of the identified stakeholders to capture the ideas and input needed to make the management plan representative of and responsive to these diverse perspectives;
3. Through the stakeholder outreach and input process, contribute to awareness of and support for the CFRNP by building a solid working relationship between the stakeholders and the DPPE and ensuring that stakeholders feel that their input to CFRNP management is valued.

Stakeholder Identification

Work with stakeholders began with an effort to identify all stakeholders. Three methods were used:
1. Literature review - review of previous studies and reports completed in St. Kitts and Nevis to identify persons who had participated in these, and would be knowledgeable and likely to participate in this current effort.
2. Verbal networking with the individuals identified in step one, and with officials at DPPE, to further expand the network of stakeholders; and
3. Function-specific identification and outreach (Renard, 2004) to identify new or additional stakeholders. This step had the advantage of being disconnected from existing social or political networks and thereby accessing stakeholders who might typically be left out of the consultation process.

Stakeholder Interviews

The stakeholder process was iterative and flexible, with an emphasis on gaining the widest possible input, without regard to the methodology. Some stakeholders that were contacted were unavailable (e.g. off island on holiday, or described themselves as too busy to meet). Others were reluctant to be interviewed for a various reasons. The list shown in Table A-1 below indicates only those person actually interviewed, not all persons contacted.

NAME	AFFILIATION OR INTEREST
Anonymous/Anonymous	Two farmers, residing outside the village of Phillips
Anonymous	Female resident of Old Road Town
Jacqueline Armony	St. Christopher Heritage Society
Paul Benjamin	Department of Agriculture, NTAC member
Andy Blanchete	Department of Physical Planning and Environment
Brent Carty	Tour Operator, resident of Old Road Town
Randolph Edmead	Department of Physical Planning and Environment
Campbell Evelyn	Long-time island resident, naturalist
Bryan Farrell (Ras Benjie)	Project manager Wingfield Watershed project (a previous park effort).
Percival Hanley	Previous president St. Christopher Heritage Society.
Daniel Henry	Ministry of Health, Parks and Beaches Unit, NTAC member, SIE member
Marty Lowell	Business Owner, Ottley's Plantation Inn
Auston Macleod	Business Owner, ProDivers
Novelette Morton	St. Kitts Tourism Authority
Kate Orchard	Brimstone Hill Fortress National Park Society, Naturalist
Greg Pereira	Tour Operator, NTAC member
Joseph Simmonds	Fisherman's Cooperative, NTAC member
Lieutenant Kayode Sutton	St. Kitts and Nevis Defense Force
Patrick Williams	Department of Physical Planning and Environment

Table A-1. List of Interviewed Stakeholders

Interview Methodology

The first step in each stakeholder interview was a description of the designation of the CFRNP, including location and area, a description of the OPAAL project and the project goals in relation to the CFRNP, and a brief description of the management planning process. This was necessary because the existence, location, and purposes of the CFRNP had not yet been publicized and most persons were unaware of the new protected area or the implications of a protected area.

Initially, a set of stakeholder surveys were prepared for the interviews. This was done with the intention of asking some similar questions of all stakeholders, such as their assessment of current levels of use, threats, and most important conservation targets within the CRFNP. This would have facilitated drawing conclusions as to what percentage of respondents gave a particular response. The surveys also included questions specific to the individual's area of work or expertise, so that, for example, tour operators were queried on topics related to tourism, while farmers were asked questions related to farming.

However, the surveys proved to be of limited use, as most respondents made it clear that they preferred to speak in a spontaneous and unstructured manner, addressing first the topics that interested them, regardless of the specific question asked. In order to better accommodate the wishes and communication patterns of the participants, the consultant transitioned to using the survey simply as a checklist-style reminder of topics to cover and took notes on the freestyle comments of the respondents. Several open-ended questions (i.e. can you think of any uses of the CFRNP area that we have not yet discussed?" were asked of each respondent in order to uncover additional topics.

During the interviews, respondents were also asked for contact information, the names of other appropriate individuals to interview, and whether they would be willing to review the first draft of the management plan.

Strategy Brainstorming Session

A 2-hour meeting was held with the staff of the DPPE on 20 July 2007 to brainstorm possible strategies in response to the preliminary list of threats. Participants (shown in alphabetical order) in this session included: Mr. Andy Blanchete, Mr. Graeme Browne, Mr. Ronel Browne, Mr. Randolph Edmead, Ms. Teshelle Francis, and Mr. Patrick Williams.

Results

The initial interviews and strategy brainstorming session resulted in a list of conservation targets, a lengthy list of potential management issues, suggested strategies to mitigate the issues, and general concerns about the presence of and management of a new National Park. These lists are shown in Appendix B, along with a description of the additional analysis performed on them to move the planning process forward.

Stakeholder Review of First Draft of Management Plan

Following the developing of the first draft, the draft was sent via email, by either the consultant or DPPE, to the persons shown in Table A-2 below, with a request for review and comments within 30 days. Comments were received from the persons indicated in the last column and integrated into the final draft. This list differs from the previous due to the availability of reviewers and access to email.

NAME	AFFILIATION OR INTEREST	RESPONDED?
Randolph Edmead	Department of Physical Planning and Environment	X
Kate Orchard	Brimstone Hill Fortress National Park Society, Naturalist	X
Patrick Williams	Department of Physical Planning and Environment	X
Greg Pereira	Tour Operator, NTAC member	X
Joseph Simmonds	Fisherman's Cooperative, NTAC member	
Lt. Kayode Sutton	St. Kitts and Nevis Defense Force	
Grace Challenger	St. Christopher Heritage Society	
Marty Lowell	Business Owner, Ottley's Plantation Inn	
Auston Macleod	Business Owner, ProDivers	
Novelette Morton	St. Kitts Tourism Authority	
Graeme Browne	Department of Physical Planning and Environment	X
Andy Blanchete	Department of Physical Planning and Environment	
Brent Carty	Tour Operator, resident of Old Road Town	
Frank Ervin	Long-time resident	
Campbell Evelyn	Long-time resident, naturalist	
Bryan Farrell (Ras Benjie)	Project manager Wingfield Watershed project (a previous park effort).	
Percival Hanley	Previous president St. Christopher Heritage Society.	
Daniel Henry	Ministry of Health, Parks and Beaches Unit, NTAC member, SIE member	
Paul Benjamin	Department of Agriculture, NTAC member	
Phillip Walwyn	Long-time resident	

Table A-2. List of Stakeholders Contacted for First Draft Review

References

Renard, Y. 2004. Guidelines for Stakeholder Identification and Analysis: A manual for Caribbean Natural Resource Managers and Planners. Caribbean Natural Resources Institute. Laventille, Trinidad, West Indies. 36 pp.

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Appendix B. Analysis of Vision, Goals, Guidelines, Conservation Targets, and Objectives.

Vision

A guiding vision for the CFRNP was developed by the DPPE and is described in section 1.2.
An informal visioning exercise was conducted during the stakeholder interviews. Most stakeholders mentioned similar elements to those found in the DPPE vision. In particular, the concept of a network of hiking trails was repeatedly mentioned by stakeholders as a way to combine sustainable development and conservation of the CFRNP.

The trail network vision is:

- consistent with the vision goals and guidelines of the CFRNP
- consistent with the NPDP for low-impact tourism in this area.
- relatively low-cost to construct
- could be constructed and maintained by locally
- components could be constructed incrementally, as funds become available
- relatively resistant to hurricane damage, and relatively easy to repair if damaged
- attractive to many types of tourists; walking is always listed as a favorite activity, and who could structure itineraries to accommodate their specific interests (visit small farms or historic churches) and time schedules.
- flexible over time, to accommodate changes in the tourism market.
- flexible geographically, to add spurs or loops that access many communities, pass by new attractions such as museums, and permit ingress and egress from various points, accommodate special events, etc.
- trail use does not necessarily have to be limited to hiking and the network does not necessarily have to be limited to the CFRNP. Where appropriate, some trails could be for multiple users, or designated just for bicycling or horseback riding, or connections may be made to other trails outside of the CFRNP, which could potentially even include "water trails" for kayakers or other small craft users.

Goals

Clear goal statements are fundamental to effective management of any protected area. This is agreed upon by virtually every author writing on the topic of protected area management (Báez and Acuña, 1998; Borrie et al, 1998; Boo, 1993; Margoluis and Salafsky, 1998; Hockings, 2000; Thomas, 2003; Saterson et al, 2004) because goals address the most basic question: "what is the purpose of management?" A good set of goals provides the direction for all future management steps.

It is challenging to distill all of the desired outcomes associated with a protected area into specific goal statements. Writing clear goals is a process that is often difficult for management and stakeholders and often results in lofty statement of intent that provide little future management direction. In this case, the result is inertia or conflict and confusion over actions and priorities. Goal statements too are frequently confused with management guidelines, which describe ***how*** management will operate, rather than what it seeks to achieve, or with objectives for management interventions. And some confusion stems from the fact that the environmental field uses multiple terms including "objectives," "outcomes" and others.

In this plan, terms are defined as follows, based on Margoluis and Salafsky (1998).

- Goals – Broad statements that describe the fundamental purpose or purposes for which the protected area was established. Goals describe desired outcomes. Each goal statement will be clear, measurable and general enough to encompass all of the anticipated activities. A set of goal

statements should be as free of conflicts as possible, and where not possible, goals must be prioritized[20].

- Guidelines – describe how management will operate. Guidelines describe desired processes. These include such statements as "management will collaborate with stakeholders."
- Objectives – similar to goal statements in that they should be specific and measurable. But in contrast to goals they also typically include a time limit, are more action oriented, shorter-term, or location specific statements that describe specific desired outcomes, often related to reducing threats. Accomplishing a set of objectives will support the accomplishment of the overarching goal(s).

In the initial stages of drafting this management plan, it became clear that there were some issues related to the goal statements. The goals declared for the CFRNP by the Cabinet under NCEPA 1) do not meet the criteria above for clarity and measurability; 2) do not include mention of sustainable development, yet the CFRNP was designated in part in order to participate in the OPAAL project, which is very clearly oriented to sustainable development via the mechanism of alternative livelihoods. And the staff of DPPE and all stakeholders interviewed clearly consider sustainable development to be a goal of the CFRNP.

The goals of biodiversity conservation and sustainable development theoretically are compatible, but in practice they often conflict, with development needs compromising conservation (ecotourism development is a prime example of this phenomenon, with ecotourism providing needed livelihoods but also bringing impacts). Prioritization of these goals would help to avoid future conflicts between the two.

Clearly, it was not realistic to confer with the Cabinet to revise the goals for the CFRNP, which derived from the National Conservation and Environmental Protection Act (NCEPA) of 1987. And equally, it was not realistic to expect the Cabinet to be versed in best practices in writing integrated conservation and development goal statements.

Therefore, the goal statements from NCEPA were distilled and edited into two statements which conform to the criteria above. A third statement was added to capture the anticipated goal of sustainable development. And finally, the set of goals was prioritized and listed in the order of prioritization, such that uses of the CFRNP are sustainable and support the primary goal of conservation (Secretariat of the Convention on Biological Diversity, 2004).

As written, the goals are believed to have captured the intent of the park designation and also the wishes of the residents. However, they have not been subjected to a formal stakeholder review process.

Guidelines

The DPPE provided a set of management guidelines previously developed and these have been incorporated with only a few minor edits into the document. Again, review by stakeholders would have been preferable, but this could not be accomplished due to time and funding constraints, the lack of an SIE, and the lack of community awareness of the existence of the CFRNP.

[20] A concrete example of why prioritization of conflicting goals is important comes from the National Park Service in the United States. The Park Service is charged with conserving both biodiversity and cultural resources in parks and with providing recreational opportunities to visitors. By now, most conservation practitioners are familiar with the fact that recreational use can create impacts to biodiversity. The more unexpected management problem in numerous national parks has been rooted in the conservation of cultural resources. These resources often include introduced non-native species (such as agricultural plants, feral horses) that are becoming invasive and threatening conservation of native species. The Park Service is frequently forced to maintain the presence of these species despite the fact that they require constant, costly management, because their goals do not specify that management of one set of resources has precedence over the other. A solution to this dilemma can be found in prioritization and the use the Limits of Acceptable Change (Stankey et al, 1985) framework.

These current set of guidelines will serve as an initial set of guidelines but not should not become permanent, because there was no community involvement in formulating them. The guidelines should be revisited in collaboration with the SIE and the general community when the management plan is updated in year 3.

Conservation Targets

All interviewees valued the following conservation targets[21] toward which management effort should be directed. These targets are of course closely linked. Visual resources, biodiversity, and unique species and habitats are some of the assets of the CFRNP that support sustainable development.

- Watershed function. This was frequently cited for the following qualifying reasons: 1) quality and quantity of water supply; 2) the ability to moderate storm-related runoff events thus preventing erosion and sediment inputs to near shore coastal systems. No specific ghauts were identified as being particularly in need of attention.

- Biodiversity in general. Biodiversity protection was mentioned as an overarching concept. Specific mention was made of the need to protect native wildlife and to protect plants that might prove to be endemic to St. Kitts, or rare, although no specific species or natural communities were identified as especially vulnerable or in need of protection.

- Unique natural communities, habitats or species that potentially exist or potentially merit additional protection have been identified (section 2.5.4) but not evaluated. Determining whether these exist, where, and their condition will be necessary. In the interim, management will seek to protect these under general biodiversity.

- Visual resources. Many persons remarked upon the visual appeal of the area, including comments on the beauty of individual flowers, plants and vegetation to the inspirational value of open, panoramic vistas of the volcanoes, neighboring hills, coastal plains and ocean. No specific vista points were noted.

- The current and future resource assets of the CFRNP that enable it to serve as a pillar of sustainable development.

Objectives

Objectives for this plan were formulated after completing the critical issues analysis and in response to the results of that analysis.

The objectives describe precisely what park management hopes to accomplish within a specified period of time. If the critical issues are eliminated or reduced, the goals of the park should be achieved – this is the logic behind threat-based planning. This process makes very clear the actions that need to be undertaken in order to achieve the goals. If all of the activities are successfully completed, the objective should be achieved. If all the objectives are successfully completed, the CFRNP will be on track to achieve its goals.

Objectives in this program have been designed to be measurable so that the park staff or the community can track their success and describe their achievements to other community members, or to other funders when appropriate. Lacking measurable objectives, it is impossible to determine whether, or to what extent, a program is succeeding. Measurement may occur as either an unequivocal Yes/No manner (What the activity completed? Yes or No?) or as a measurable amount (Reduce the

[21] Conservation targets are defined as "Specific components of biodiversity ….used to identify, develop and prioritize conservation strategies. Conservation targets typically consist of ecosystems, natural communities and species." Source: The Nature Conservancy. nature.org/aboutus/howwework/cbd/science/art14307.html

extent of guinea grass within the CFRNP by 10%). Making objectives measurable is considered critical for management accountability (Margoluis and Salafsky, 1998).

In spite of the value of measurability, it is acknowledged in advance that some of the objectives may not be achieved. The objectives represent goals to strive for that are estimated to be achievable. However, some objectives require funding which may not be received, or working with other stakeholders who may not agree to collaborate. In these cases, the final results are not solely controlled by the park staff or the community. Failure to achieve these objectives, while disappointing, does not necessarily represent failure in general.

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Appendix C. Issue Analysis, Prioritization, and Situation Analysis

Critical Issue Assessment

The following list of critical issues[22] was assembled from three sources:

1. The stakeholder interviews;
2. A review of previously completed documents relevant to the CFRNP or general conditions in St. Kitts and Nevis[23]; and
3. The consultant's professional experience in protected area planning and personal observations while in St. Kitts.

Issues Identified by Stakeholders.

Stakeholder responses are listed below without order of importance and without editing. These responses reflect a wide range of viewpoints, concerns, and opinions. Some respondents completely disagreed with others regarding whether or where specific activities were occurring, and whether these activities at this particular level constituted a threat, or were occurring at a sustainable level. This reflects the fact that current knowledge is entirely anecdotal regarding what uses are occurring, where, when, and at what level of intensity.

- Erosion of trails such that trails are unsightly and/or difficult and dangerous to use.
- Overuse or crowded conditions on trails during high tourism season.
- Litter on trails.
- Dumping of large waste items into ghauts by local residents.
- Construction of new trails/roads into the area without authorization or adequate design.
- Over-extraction of water from ghauts/modification of water flow regimes that have led to loss of ghaut vegetation, loss of fish, crayfish, eels, erosion after periods of intense rainfall, sediment deposition into coastal waters.
- Lack of maintenance of water supply infrastructure.
- Tour operators are not certified.
- Tour operators do not pay the required island enhancement fees.
- Future road construction in the area.
- Unprotected and unknown endemic/rare species of plants.
- Species that may be commercially valuable are not known or protected.
- Guinea grass or other invasive species.
- Impacts to native species and/or inability to restore native species due to introduced mongoose.
- Monkeys are a pest species.
- Collection/over-collection of plants and plant parts, without adequate restoration, such that the collection level may be exceeding the ability of the affected plants to regenerate naturally (for fish pots, home medicinal use, foods and flavorings, bouquets for personal enjoyment, removing entire plants to be sold or for planting in home gardens, etc.).
- Global climate change.
- Hurricanes.
- Wood cutting for charcoal production.
- Governmental culture of not sharing information/guarding turf/information is power.
- Illegal cultivation of marijuana in forest interior.
- Expansion of agriculture into forests resulting in loss of native vegetation, impacts from erosion, increased impacts from or introductions of non-native species, impacts from agrochemicals, user conflicts, etc.

[22] Critical issues for management are defined as any circumstance or factor that may impede the achievement of the goals for the protected area. This definition includes "threats/stressors" (any human activity that impairs resources) as well as weaknesses or gaps in the protected area infrastructure, community relationships, legal status, management, etc., and underlying causes or drivers of threats.

[23] Including but not limited to the following documents: National Environmental Management Strategy and Action Plan for St. Kitts and Nevis, 2005 –2009; St. Christopher National Physical Develop Plan; Opportunities for Sustainable Livelihoods in One Protected Area in Each of the Six Independent OECS Territories; Review of the Policy, Legal and Institutional Frameworks for Protected Areas Management in St. Kitts and Nevis; Training Needs Assessment, Country Report St. Kitts and Nevis; National Report on Integrating the Management of Watersheds and Coastal Areas in St. Kitts and Nevis.

- Government personnel make decisions about permits, etc., based on friends, favors granted, political party affiliation, no reason at all, etc.
- Government has tried to create national parks before but nothing happened.
- Government personnel don't do anything but sit in offices.
- We don't want to work with the government.
- The community invested effort into selecting representatives for past park efforts, but the candidate selected was rejected by the government, so the entire process was stopped.
- Too difficult/too time-consuming and /or expensive to get permits and licenses for various activities.
- Cost of becoming a tour guide is too expensive due to vehicle, booth at cruise ship port, etc.

Additional Issues from Document Review (issues from interview list are not repeated)

- Lack of institutional capacity in environmental management in all areas.
- Lack of coordination between environmental departments.
- Various sources of pollution (agriculture, public) may be contaminating water supply (location specifics unclear).
- Lack of enforcement of existing regulations, policies and laws.
- Lack of adequate funds to support all activities, hire additional staff, etc.
- Overall lack of citizen involvement, due to fear of reprisals, disinterest from government officials, etc., (despite governmental policies to the contrary).

Additional Issues from the Consultant (issues from the above two lists are not repeated)

- Institutional policies and procedures for park not formulated, potentially leading to ad hoc, inconsistent policies, decision making and/or inertia.
- Existing use in the area of the CFRNP predates designation of the park, is not compatible with new goals; not optimizing either conservation or sustainable development.
- Existing infrastructure is the area now the CFRNP not designed for ecotourism, or sustainable use, poor design or missing elements prevents optimizing conservation and sustainable development.

Issue Prioritization

Funds, staff, and time are always limited. Given these limits, management cannot deal with every issue, but must make objective and rational choices about the most serious threats. It is sensible to work first on the highest priority issues, those with the greatest potential to harm the resources, or those with the most widespread impact, while cautiously postponing efforts directed toward less urgent issues.

The length of the above lists presents a challenge in prioritization. To identify which of the issues deserve priority attention, issues were first grouped into larger categories, then ranked by criteria, e.g. all of the trail use problems identified by stakeholders, plus some additional ones identified by the consultant but not listed here, were aggregated under the issue of "the existing use doesn't meet the new goals" This process was adapted from Measures of Success: Designing, Managing and Monitoring Conservation and Development Projects (Margoluis and Salafsky, 1998). The criteria used are described in the following section.

The categories were entered in Table A-3 below, and the criteria are listed across the top of the Table. All categories are ranked on a simple scale of 1-3. The rankings were then summed across the table and entered into the "Totals" column. The rankings are admittedly subjective, representing the professional opinion of the consultant.

Criteria Descriptions

Community Perceived Importance--Has the community expressed concern about this issue repeatedly? Have several different segments of the community named this issue as very important? If the answer to these questions is yes, the issue received a higher score.

Geographic Area--Does the issue affect the entire CFRNP, or only limited areas? If only limited areas, are these areas critical to ecological functioning or economic well-being? If the issue affects the entire CFRNP, or critical areas, it received a high score.

Intensity--Will the issue destroy CFRNP resources, or result in tolerable levels of impact? Are there interactions between this issue and others that may act synergistically to increase the impact? Most intense threats received the highest scores.

Urgency--Will the impact from this issue occur in the immediate future or not for many years? Are management interventions needed immediately to prevent serious impacts? Those issues causing immediate damage or requiring immediate action received higher scores.

Breadth--Will the threat affect multiple habitats, species, or processes, providing the potential for widespread damage? Will it prevent the achievement of multiple economic goals if not addressed? If the answer to either question is yes, it received a higher score.

Length--Will the impacts from this threat be persistent or potentially irreversible? Is so, the threat received a high score.

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Issue	Criteria							
	Community Perceived Importance	Geographic Area	Intensity	Urgency	Breadth	Length	Totals	Response
Need to establish excellent relationship between DPPR stakeholders	3	3	3	3	3	3	**18**	Program 1. Teaming up with the Community
Need to upgrade management capacity	3	3	3	3	3	3	**18**	Program 2. Building Capacity
Need to develop PA management policies, procedures, information.	2	3	3	3	3	3	**17**	Program 3. Building a Management Foundation
Need to assess, modify water flow regime, watershed, quality, etc.	3	2	3	3	3	3	**17**	Additional assessment recommended (under Program 3.)
Need to address impacts from natural disasters	2	3	3	1	3	3	**15**	Emergency response plans to be developed (under Program 3.)
Need to modify existing use of CFRNP to achieve new goals	2	3	2	2	3	3	**15**	Program 4. Improving Interim Visitor Use
Need to develop stable and sufficient funding for management	1	3	2	2	3	3	**14**	Program 5. Sustainable Financing
Need to develop infrastructure in CFRNP appropriate for long-term ecotourism use.	2	3	2	1	3	3	**14**	Program 6. Achieving Lasting Sustainability
Need to maintain collection/use of trees, plants, etc., at sustainable.	1	1	1	1	1	1	**6**	Not addressed at this time

Table A-3. Issue Prioritization

The prioritized issues were moved to the management plan nearly intact, but with two exceptions. The comments in the table explain the exceptions:

1. The watershed issue is potentially serious and deserves an integrated evaluation. However, it was clear from the stakeholder interviews that water supply is linked to development – possibly at an unsustainable level – and that there was little interest in restoring historic water flows to ghauts. Addressing this issue is deemed not feasible due to lack of political will at this time.
2. Natural disasters cannot be modified via management of the area; they can only be planned for in terms of safe evacuation and constructing relatively disaster proof infrastructure. This has been incorporated into the plan.

Situation Analysis- an expanded discussion of the management issues

Overall, resource threats in the CFRNP are not pressing. Compared with other protected areas around the world that are coping with civil wars, poaching of critically endangered wildlife, trafficking of narcotics, arms and humans through their borders, or desperate development pressures, the CFRNP has no critical threats. This is an excellent state of affairs for a newly designated park, because it provides a valuable window of time and opportunity to deal with the other issues that are described below.

Issue 1. Establish excellent relationship between DPPE and stakeholders

Stakeholders typically fall into several general groups, each of whom has different interests in the management of a protected area (Eagles et al, 2002). This is applicable in St. Kitts and Nevis, where the following groups of stakeholders exist: 1) the general St. Kitts and Nevis population who may use the area occasionally, or whose children learn about it in school, or have a peripheral economic association; 2) those individuals whose businesses are concerned with visitor services and products; 3) visitors to the CFRNP from other countries; 4) government agency officials; and 5) nongovernmental environmental organizations.

A positive relationship with stakeholders is not a luxury. It is a necessity, the extreme value of which becomes apparent when it is not present. Successful protected areas are correlated with strong public education, cooperative management, and the resulting support (Renard, 2001; Eagles et al, 2002; Secretariat of the Convention on Biological Diversity, 2004; World Wildlife Fund, 2004). A local population that does not support a protected area is capable of draining the resources of an area in myriad ways and utterly undermining management efforts. Surveillance and enforcement activities against these types of actions are not only expensive, they are often less effective than educational methods (Marion and Reid, 2007). Likewise, an excellent relationship with visitors leads to repeat visitation, excellent word-of-mouth advertising, and the resulting potential financial benefits.

Stakeholder interviews revealed that most respondents who were not affiliated with the government had one of two types of relationship with GoSKN in general and/or DPPE specifically: 1) a poor relationship; or 2) no relationship.

Most of the stakeholders interviewed had little interest in collaborating with government personnel. Since the CFRNP has just been designated, and there is no history of collaboration between the protected area and the communities as yet, this perception by stakeholders is rather premature. It is largely based on interactions with DPPE staff regarding other topics, or on interactions with staff of other governmental departments, or on disliked general governmental policies and personnel. None of these may be representative of future interactions with DPPE staff. Nevertheless, the staff will need to deal with the reality of these perceptions.

Specifics from the community that have contributed to a non-existent or poor working relationship[24]:

1. The perception that the government attempted to declare a National Park in the Wingfield Watershed previously, and that the effort did not result in an actual park, benefits to the community or other tangible results.
2. The perception that, after significant community effort to select a representative to work with the government on this project, the selected candidate was not rejected by the government. The Wingfield Watershed project was terminated for political reasons and the community's effort and trust was lost.
3. The perception that the government's true intent in designating the CFRNP is to increase its own income or control, rather than to contribute to biodiversity protection or sustainable development of the communities on the island.
4. The perception that government decisions in general, such as the allocation of land, approval of permits and licenses, etc., are riddled with favoritism based on political party affiliation, and other inappropriate considerations, and/or corruption, inconsistent rules or no rules.
5. The perception that the society and culture of St. Kitts is highly divided along two fronts: 1) urban dwellers vs. rural dwellers; and 2) political party affiliation.

Specifics from the DPPE that have contributed to non-existent or poor working relationships:

1. DPPE staff are aware that they have not yet prioritized establishing relationships with the community. This acknowledgement is a valuable first step. Specifically they stated that they have not sufficiently utilized their available resources to conduct outreach to the public. As an example, despite the fact that the CFRNP had been declared a National Park in March of 2007 and that the management planning process was identified some time in advance, there had been no public awareness campaign related to the designation of the CFR in advance of the kickoff of the management plan. Very few stakeholders were aware of the existence of the park. Even among government officials, awareness was spotty.
2. As might be expected, some DPPE staff have better skills than others at collaboration and communication than others. It will be critical to utilize the staff with best skills in rebuilding stakeholder relationships.

Specifics noted by the consultant that have contributed to non-existent or poor working relationships:

1. Despite the anticipated arrival of the consultant, initiation of the management planning process and the requirement in the contract terms of reference to utilize a community based body (the SIE described in Section 5.1.2) to achieve community input to the planning process, the only members of the SIE that had been selected were the DPPE staff member. Ostensibly, the representative of parks and beaches had been selected; he was unclear about the park, the SIE etc. No community members had been selected, nor was there a process established by which to select them. The consultant utilized other methods of obtaining public input, but additional public input would have helped create more awareness of and support for this plan.
2. Currently, staff spend the majority of their time in the office, which largely precludes the opportunity to interact with stakeholders and establish a better relationship. This may have been appropriate in the past, but will need to be modified in the future.
3. The tour operators are arguably the most important user group at this time, as indicated by the resource management issues derived from their use of the CFRNP. They will be augmented by other persons whose businesses depend on the CFRNP. Visitors will also be an important future group, whose needs and management issues will be different from those of the first two groups. At this time, there is virtually no interaction with any of these persons. This is not entirely surprising, given the new designation of the park, but it needs to be recognized that there are separate groups with specific needs.
4. Working with a community to manage a protected area requires a different set of skills and knowledges than those needed to manage biological resources. The OPAAL project calls for

[24] Note that these specifics are presented in unedited format and represent *perceptions* of events from community members and that these perceptions, whether accurate or inaccurate, will need to be addressed. No effort has been made to ascertain the factual accuracy of specific perceptions.

establishing an SIE to cooperate in management, but to ensure that this cooperation is successful excellent collaborative skills, on the part of both DPPE and SIE members will be needed (Secretariat of the Convention on Biological Diversity, 2004).

5. Some approaches in the DPPE office and other governmental offices are counterproductive to collaborating with the community (and with each other) and these need to be replaced with more productive approaches.
    a. There is a culture of non-sharing or limited sharing within the office and with outside entities (personal observation, stakeholder interviews, Gardner, 2006). Typically this lack of sharing is about information that may be useful to the other party.
    b. Fundamentally, the CFRNP designation is about helping the people of St. Kitts and Nevis, via conserving the country's biodiversity heritage. Conspicuous by its absence in interviews with some DPPE and other department officials was mention of conservation, helping people in the communities, or helping visitors to experience the park. In contrast, comments from these individuals were focused on imposing controls or creating new income from fees and development.

Issue 2. Upgrade management capacity

Several evaluations of management capacity were carried out in connection with the OPAAL project. First, the project completed a review of the policy, legal and institutional frameworks for protected areas management in St. Kitts and Nevis prior to beginning work on this management plan (Gardner, 2006). The review found that "Inadequate capacity for design and management of a system of protected areas is the single most critical problem for protected areas management in St. Kitts and Nevis. A capacity building programme will be required to address this limitation."

A training needs assessment for St. Kitts and Nevis was also completed under the auspices of the OPAAL project in advance of management planning (Parsram, 2007). The assessment identified the lengthy list of training needs indicated below for both national level agencies and site management. The list is not prioritized and the content of some categories overlaps with others.

- Organizational management and leadership
- Communications
- Project management
- Protected areas financing
- Fundraising and resource mobilization
- Partnerships and networking
- Project monitoring and evaluation
- Natural resources monitoring and assessments
- Co-management
- Ecosystems/conservation management
- Site operations and management
- Community outreach and management
- Protected area planning methods and management plan development
- Protected areas policy analysis, development and implementation
- Enforcement
- Tourism and sustainable livelihoods management
- Education awareness and outreach

A self-assessment was performed by DPPE staff , using the WWF-World Bank Alliance's Scorecard to Assess Progress in Achieving Management Effectiveness Goals (modified for use by the OECS) (Parsram, 2007; GEF, 2005), which agrees with the two assessments described previously.

During the interviews, strategy session, general conversations with staff and the community conducted in the course of management planning, the consultant also identified knowledge and skill shortfalls and agrees that remedying the lack of capacity is of the highest priority. Observations from the consultant, *which are in addition to, not instead of,* the findings of Gardner and Parsram:

1. Staff need to approach management issues more proactively.

2. Staff need assistance in analyzing and prioritizing issues. At this time, effort is being diverted into noncritical issues like cleaning up litter or certifying guides, or ideas are being proposed that are not consistent with the goals of the protected area.
3. Staff need assistance in selecting appropriate and effective communication methods and implementing these.
4. Staff need assistance in developing appropriate and efficient responses to management issues. Some responses proposed by staff during the management planning process were out of date, or too expensive or unwieldy for implementation. Other responses indicated a lack of understanding that stakeholders would react negatively, promoting noncompliance, which in turn necessitates extra time, and expense.
5. Staff need to recognize their current lack of management capacity and also to recognize that management errors can be extremely costly or even impossible to remedy. To avoid errors, staff must exercise extreme caution in making management decisions during Phase 1 and consult with regional experts, nongovernmental conservation organizations with recognized expertise.
6. Staff need to realize that increasing technical capacity is a life-long process which can be greatly facilitated by the abundance of free materials available for free via the internet.

The training needs assessment (Parsram, 2006) recommended a "training of trainers"-style program to address the multitude of capacity needs. This could be an efficient method of gaining and then distributing knowledge, but only after the information-sharing situation in the DPPE office is improved.

Issue 3. Develop protected area management policies, procedures and information

Issue 3.1. Protected area management policies and procedures.
This issue may initially appear obvious; the CFR is a new protected area and will naturally lack established policies and procedures for management as well as information about the current status of the area (See Sidebar 1).

It is beyond the scope of this management plan to detail an entire administrative program for the CFRNP. However, a set of initial policies, information needs, etc., are described in section 5.6.9.

Issue 3.2 Baseline Information
As noted throughout the document, most types of information about the CFRNP are quite limited at this time, making it difficult to assess management issues and needs accurately, as well as to develop management strategies. It is critical to collect baseline information on the status of resources and uses now, particularly tourism/visitor uses, in order to evaluate the impacts of possible new uses or increases in use (Secretariat of the Convention on Biological Diversity, 2004; Eagles et al, 2002; Margoluis and Salafsky, 1998).

Some specific details in addition to the needs described in section 2.5.6:

1. Assessment of springs and riparian habitats for habitat improvement and water quality. In addition to the lack of information on the status of the resources, the GoSKN Ministry of Health and Environment (2001) states "Proper mechanisms for guaranteeing absolute protection of these fresh water habitats are

Sidebar 1

The issue is detailed here in part because developing policies and procedures is often perceived as tedious or low priority. But clear, consistent and rational administration are needed to support excellent resource management decisions and good stakeholder relationships (Eagles et al, 2002; Secretariat of the Convention on Biological Diversity, 2004).

These fundamental administrative issues must be resolved before management can move forward with expanding visitation to generating livelihoods. If visitation or use increases without stabilizing management, the problems detailed in the other issues will increase in scope and difficulty, and the result will be poor experiences for visitors, discouraged staff, and most important, increasingly alienated communities.

not in place. Currently, members of the public, including tourists visit these areas regularly and in most cases without the knowledge of officials of the water department. The potential for severe pollution therefore exists."

2. Non-native Species. Habitat degradation through invasive species is one of the top driving forces in the loss of biodiversity worldwide (Nature Serve, 2007). Island ecosystems are particularly susceptible to invasive species degradation due to their small size and St. Kitts has already experienced the losses attributed to the present array of non-native species (mongoose, green vervet monkey, feral livestock etc.). It is tempting to believe that the impacts from these past introductions have stabilized and no further degradation will occur. This is not necessarily the case.

   As well, the rate of new introductions can reasonably be expected to increase with increased tourism. The introduction and spread of invasive species occurs via numerous pathways, the most relevant to St. Kitts and Nevis in general, and the CFRNP in particular, may be international trade and travel (NatureServe, 2007). The constant arrival of new persons, products, ships and airplanes has the potential to introduce to the island seeds, insects, and even entirely new plants and animals that have originated from anywhere else in the world. Increased visitation into the CFRNP will increase the likelihood of introduction of new non-native and potentially invasive species.

   A nonnative species that requires special attention is Guinea grass (*Urochloa maxima*, formerly *Paniculum maximum*). Native to Africa, Guinea grass has been introduced as a forage crop to many parts of the world, including St. Kitts and Nevis. Under certain circumstances, it is a valuable forage crop. Under different circumstances, it has emerged as an invasive species on the islands of Hawaii, Guam and Fiji, where it invades abandoned sugar cane fields and is considered a high-risk pest species and other islands of the Pacific, as well as the Galapagos and Central America. It grows up to 1200 m in elevation, including under canopy. It seeds profusely and spreads via numerous mechanisms: attached to vehicles, birds, or the fur of livestock, domestic pets, or native wildlife, and by wind or flowing water. It colonizes disturbed areas such as roadsides, ghauts, and abandoned farmlands. Once established, it continues to spread into areas too steep for livestock to access. It displaces native plants through strong allelopathic action.

   Guinea grass will modify the natural fire regime when present in sufficient extent. (Global Invasive Species Database, 2007; Pacific Islands Ecosystems at Risk, 2007) It builds up a dangerous mass of plant material so that when fires occur, the blaze is fiercer and native plants which have not built up fire-tolerance are wiped out. In contrast, the underground roots of the Guinea grass survive fire, rapidly resprout, to dominate the ground after a fire. As this cycle is repeated, Guinea grass continues to spread in extent. Although fire has not historically been a issue in the moist forest types of the CFRNP, when fires do occur in this vegetation, they are very destructive, since this forest type is not adapted to fire (Myers, 2004). Following a fire, recovery of the original vegetation will be slow, exposed soils will be vulnerable to erosion, and the area may be at increased risk for invasion by non-native plant species for a lengthy period. There are three factors that potentially increase the likelihood of fires within the CFRNP: 1) increasing presence of Guinea grass on the perimeter of the park boundary, which is highly flammable; 2) the practice of agricultural burning; and 3) climate change.

Issue 4. Modify existing use to support the achievement of the CFRNP vision, goals and guidelines.

Almost any allowed use of a protected area will result in impacts to biodiversity (Eagles et al, 2002; Stankey et al, 1995); the challenge of *sustainable* use lies in selecting relatively benign uses and managing the impacts from these, in the context of the goals and the specific natural resource circumstances of the individual protected area, so that the benefits received outweigh the impacts (Secretariat of the Convention on Biological Diversity, 2004; Wells et al, 2005).

Since the primary goal of the CFRNP is conservation, allowed uses must be compatible with this conservation goal. Types of use, or amounts of use must be carefully selected and monitored to ensure that the resources are not degraded beyond a level of change determined to be acceptable (Subprogram 4.2; Appendix G).

The only significant use of the CFRNP at this time is tourism, consisting almost exclusively of commercial tour operations.[25] The impacts to biodiversity and ecosystem function derived from visitor tours in the CFRNP are poorly known at this time. Most interview respondents (including tour operators) described litter and erosion on the existing trails, particularly the Crater trail (see Sidebar 2). There is no quantified information, but these impacts appear to be fairly limited in extent and intensity (Stakeholder interviews, Appendix A; personal observation of the Dos D'ane trail and a portion of the Military trail).

More serious is the fact that at least one unauthorized, road/trail was installed for business use outside Phillips by a tour operator(s), as an alternate access route into the CFRNP (Stakeholder interviews, Appendix A; personal observation). Other unauthorized roads/trails may have been developed elsewhere in the park but not yet detected. Roads and trails, especially poorly designed and located roads and trails, can contribute to runoff, erosion, introduction of invasive species, disturbance of vegetation and wildlife, etc.

Although it does not appear that there are significant impacts to the resources of the CFRNP *at this level of use*, without more complete information it is not possible to evaluate the situation, nor to prevent, mitigate or manage impacts to remain within levels that do not damage resources (Secretariat of the Convention on Biological Diversity, 2004; Eagles et al, 2002, Margoluis and Salafsky, 1998).

If the use continues in its current form and at this level of intensity, the CFRNP will continue to receive some relatively modest impacts, use is not expected to continue at this level.

The expected increase in cruise ship arrivals in 2008, as well as future tourism marketing efforts, will increase demand for access to the area and the trails. The designation as a national park will also increase the perception by visitors that this area is a unique and beautiful destination, and likely further increase demand.
Even if significant impacts are not occurring at this level of visitation use, they will occur at some increased level of visitation, or with the addition of other uses, or some combination of increased visitation and other uses.

Sidebar 2

A number of stakeholders suggested the construction of additional trails as a strategy to reduce foot traffic on trails, and therefore erosion.

Although this strategy intuitively appears sensible, in fact is contrary to best practices in visitor management. Most impacts from foot traffic, including vegetation trampling, vegetation loss, and subsequent soil erosion during rainfall, *occur with very little use*, so constructing additional trails results in spreading these impacts over additional areas, without the expected improvement in the original area (Borrie et al, 1998; Marion and Farrell, 1998).

Recommended practice is to instead concentrate visitor traffic and its associated impacts into specific areas and develop other methods, such as trail surface hardening, or regrading to divert water, to maintain impacts at acceptable levels.

Many stakeholders also suggested the installation of trash receptacles. Trash receptacles should NOT be installed in these areas at this time, as these will encourage the presence of rats, monkeys and other unwanted visitors, as well as require a service to empty at an ongoing cost.

Instead, DPPE and the tour operators will work together and with visitors and with locals to ensure that all waste is packed out of the area in Subprogram 4.1.

[25] Other non-commercial options for ecotourism include self-guided independent visits, and visits led by paid park staff or by volunteers.

There are also indirect problems with the current use regime: the benefits of this use are not contributing to the conservation and sustainable development goals of CFRNP.
In regard to conservation, administration of the CFRNP to support both biodiversity protection and sustainable use will necessarily require funds, labor, and/or other economic inputs. The current tour operations pay no fees directed to management, nor contribute labor or other inputs, so are contributing little or nothing to these needs, while benefiting from the use of (and possible overuse of) its resources.[26] Having said this, during the interviews, most of the tour operators expressed concern over impacts, awareness of the fact that uncontrolled use in the CFRNP will eventually negatively impact their livelihoods, and interest in working toward solutions. Some expressed willingness to pay additional fees, provided that they saw these funds being used effectively to improve management of or conditions in the CFRNP.

In general, the tour operators have the potential to become excellent partners with DPPE management (Secretariat of the Convention on Biological Diversity, 2004; Eagles et al, 2002). The issues created by their use of the CFRNP area (other than the unauthorized road) are relatively small and derived from standard businesses competition and practices, or from lack of awareness; not from any deliberate intent to harm people or resources. Building this partnership can provide benefits, but will not occur without obstacles. Experience with established commercial users in other protected areas also suggests that they will resist any management conditions that might decrease their profitability (Eagles et al, 2002), especially if they are not involved in designing and imposing those conditions on themselves.

A second indirect problem is that the current use regime is disconnected from the goal of supporting sustainable development. One of the CFRNP and OPAAL project objectives is to create alternative livelihoods[27] associated with protected areas. The economic benefits[28] of the current use regime are not directed to segment of the population in need of alternative livelihoods.

Management Guideline 7 directs management to "Optimize the current and potential uses of the natural and cultural assets of the area in ways that benefits the local resource users and the wider population." The opportunities to benefit economically from ecotourism potential of the CFR are not presently equitably distributed among the "wider" population. Instead, opportunities are limited to a very small number of persons, who, in order to enter the business of providing commercial tours, already had sufficient financial assets that they could obtain the necessary licenses, the 4-wheel drive vehicle needed to access the area, the access to the incoming cruise ship passengers, etc. Persons without these financial assets are effectively barred from entry into this endeavor (See Sidebar 3).

In addition, the tour operators, through use of vehicles, knowledge of the access routes to the CFRNP, and their attempts to provide their guests with a positive experience, effectively control the time and activities of the visitors throughout the tour. This prevents visitors from patronizing other businesses in small communities in and around the CFRNP, which might incidentally occur. This is not necessarily the intent of the tour operators, but it occurs nonetheless.

To expand sustainable economic opportunities for the local communities and distribute opportunities equitably (See management guidelines, section 6.2), decisions must be made that explicitly support this outcome (Secretariat of the Convention on Biological Diversity, 2004; Ashe, 2005). In advance of this developing this management plan, a study of current livelihoods and potential new livelihoods was conducted (Espeut, 2006). But additional alternative livelihood development beyond that

[26] The tour operators pay fees for licensing and are required to contribute to the island enhancement fund; however none of these fees are used for CFRNP management.
[27] As used here, the term livelihoods includes new jobs that may be created at the park itself, as well as expanded employment from businesses in nearby communities that grow as a result of the establishment of the park, and the creation of new businesses established by residents themselves, which may range from one person to many persons.
[28] As used here, the term benefits is broadly defined to include visitor fees or other financial support, increased knowledge of resources and ecosystems, donations of volunteer effort, increases in community support and awareness, etc.

recommended by Espeut is possible in the communities near to but outside the CFRNP. In many cases this would be the preferred location as development outside the protected area inherently limits impacts to resources. The mostly likely scenario is that many new jobs and small businesses will be created as support services for increased visitation to the area.

Expanding visitor numbers to businesses in the small communities is of very limited possibility at this time due to the lack of several support factors:

1. Flexible transportation is lacking. As noted above, visitors en route to the CFRNP currently are on a route and schedule determined by tour operators which does not permit them to pass through these communities without hurry, and with flexible transportation that facilitates stopping and visiting businesses along the way, then continuing to their final destination. Buses, taxis and rental cars can partially provide this flexible transportation.
2. Access is lacking and/or carries unacceptable impacts. Buses, taxis and rental cars can access the lower portion of the Wingfield feeder road, but not the upper portion that requires 4-wheel drive. In addition, The Wingfield feeder road is not constructed to support numerous vehicles transporting visitors, as it is steep and narrow. Turning numerous vehicles at the terminus of the road would destroy the vegetation and cause erosion. Improving this road to provide more transportation is possible, but not appropriate at this time for two reasons: 1) the master plan described in Program 6 has not been completed and its findings are not yet known; 2) increased vehicle traffic into the CFRNP would negatively impact the resources of the area and the visitor experience.
3. Information is lacking. Potential visitors currently receive little information about the attractions in these small communities. Prior to its designation as a national park, the area of the CFRNP has had very had very little promotion to attract visitors here, which would entail passing through villages, prompting them to explore these communities and possibly patronize businesses. This lack of promotion contrasts strongly with promotion of the beaches of St. Kitts, which are also public goods, but glowingly described in all of the tourism outreach materials. The lack of descriptive material and maps for the available at the Tourism Authority office in Basseterre makes it difficult for independent travelers or directional on the highway and feeder road makes it difficult to find the access roads. Access to the Military trail and Dos D'ane trail passes through two gates, which have no signs to indicate that the trail lies beyond or that entry is permitted.

Sidebar 3

A related observation from the stakeholder interviews is that many locals feel that all foreign visitors to the CFRNP should be required to be accompanied by a local tour guide. The rationale is that this will increase opportunities for locals to work as guides. For similar reasons, locals do not support maps or directional signage to the CFRNP that would facilitate independent visits via rental vehicle or taxis.

In fact, this perspective is misguided for two reasons. First, requiring that visitors hire a guide almost inevitably results in decreased quality of the guided experience, because there is little motivation to maintain quality (Drumm, personal observation).

Second, eliminating independent visits discourages these visitors from exploring outside the standard tourist areas of the South East Peninsula and Basseterre and into the small towns of the islands, where they would visit shops, restaurants, bakeries, museums, etc., supporting local businesses in these communities.

In sum, developing quality local guided tours is a valuable economic asset; requiring the use of them is not.

Issue 5. Develop stable and sufficient funding

Globally, funding levels for the management of protected areas are severely below the necessary budgets and that situation is not expected to change (IUCN, 2006; Wells et al, 2004; Norris and Curtis, 1999). Protected areas face numerous constraints to achieve financial stability. Contrary to frequent hopes, parks managed for conservation rarely generate sufficient funds to be entirely financially self-sufficient and this reality should be acknowledged early (IUCN, 2006; Wells et al,

2004; Eagles et al, 2002; Norris and Curtis, 1999). Tourism, notoriously a fickle industry, (IUCN, 2006; Wells et al, 2004; Norris and Curtis, 1999) needs to be diversified with other sources of income in order to provide a stable source of protected area funding over time (Geoghagen, date unknown; IUCN 2006; Norris and Curtis, 1999). And contrary to intuition, increased funding does not necessarily result in improved conservation (Wells et al, 2004).

The limited available funding for the CFRNP creates a situation is daunting but not impossible, (See Sidebar 4) therefore, this issue has been ranked at high priority but not highest. The term "sufficient" as used in this section therefore suggests that funding must necessarily always be directed to the highest management priorities, supplemented with community volunteers, international researchers, and concerned local businesses, and enhanced by management's continuous creativity in finding ways to accomplish tasks with little or no funding (IUCN, 2006). "…financial sustainability is not possible without strong and effective institutions for PA [protected area] management" (IUCN, 2006).

Sidebar 4

Collection of an entrance fee is not recommended in Phase 1. Under the best conditions, entrance fees rarely garner sufficient funds to achieve financial self sufficiency in protected areas (Eagles et al, 2002; IUCN, 2006; Norris and Curtis, 1999). This is true even in protected areas with high visitation rates; partly because increasing visitation also increases the needs for management interventions. Eagles et al (2002) note that visitor fees in the Galapagos comprise only about 25% of the needed operating budget. The CFRNP, at approximately 12,500 acres, is a very large area, with multiple entrance points scattered about the perimeter, both via feeder roads, and informal trails near populated areas. Controlling entrance into the park at all of these points, for the purpose of collecting user or entrance fees would require staff and security measures. In addition, the number of persons entering the area of the CFRNP, while not precisely known at this time, is estimated (Stakeholder interviews, Appendix A) to be fairly small and the present lack of visitor amenities does not support a large entrance fee. Thus, the costs of collecting entrance fees would likely be greater than the fees received at this time, and the designation of an entrance fee is postponed until Program 6, when it can be incorporated into an integrated master plan and the appropriate infrastructure and security measures can be initiated.

Beyond entrance fees, there are other methods of capturing income (Eagles et al, 2002; IUCN 2006; Geoghagen, date unknown; Norris and Curtis, 1999). To be successful, some of these require either more infrastructure, more time, or more business expertise than is currently available. Others could be contracted to established concessionaires, but this would conflict directly with the goal of creating livelihood opportunities for residents of nearby communities (Eagles et al, 2002; Norris and Curtis, 1999). The Phase 1 programs described in this plan have been selected as the most simple, rapid and low-cost to initiate while simultaneously laying the foundation of management capacity and institutional structure to move forward into Phase 2. In Phase 1, therefore, 1) an increase in the island enhancement fee will be sought, which will provide immediate funding; and 2) a conservation trust fund[1] (or similar funding mechanism, allowing for the laws of St. Kitts and Nevis, and variations in terminology) will be established, in preparation for Phase 2, where financing options will be re-evaluated and expanded.

The Brimstone Hill Fortress National Park Society provides an excellent and local model of the use of a conservation trust fund for sustainable financing (Stakeholder interviews, Appendix A; Geoghegan, date unknown; Gardner, 2006). Although the Society operates under very different circumstances, expertise can be obtained from this organization in the specific procedures needed in St. Kitts and Nevis to establish this funding and management mechanism.

I***ssue 6. Develop infrastructure and use to support long-term CFRNP vision, goals and guidelines.***

Most of the previous discussion has approached use and infrastructure from the perspective of trying to modify existing use and infrastructure to meet the new goals of the park. This perspective is "seeing the trees," in the sense of being relatively short-term and small-scale. It lacks a "seeing the forest" perspective that is long-term and larger in spatial scale (Sidebar 5).

Issue 6.1. The existing park infrastructure is not a good fit for ecotourism and retrofitting it would be prohibitively expensive.

As described in section 3.3, there are only four principal trails (one of which is unauthorized) in the CFRNP. These trails were not designed for ecotourism use, but rather for the historic needs of local users – transporting farm produce to markets and crossing the island. Recreational use and ecotourism use of these trails developed later and spontaneously. The trail routes, pitch, treads etc., were not planned by a trail designer, or constructed by an experienced trail construction crew, and so did not consider such things as access roads and parking, routing travelers to desired locations, placement of sanitary facilities, interpretation, drainage or erosion controls, avoidance of sensitive habitats or water quality impacts, safety, or the physical ability of hikers. And of course, the CFRNP did not exist at the time these trails were developed. In sum, the facilities were not designed to meet the current vision, goals and guidelines of the CFRNP.

It is possible to maintain or modify the trails, the access roads, and other infrastructure to better meet ecotourism needs, but the modifications needed would be very large and costly, and the maintenance would be continuous, extensive and costly over time (Sidebar 5).

Issue 6.2. The focus on ecotourism overlooks other options needed for true sustainable development.

The interviewees held a surprisingly narrow focus on ecotourism and even more, on commercial tours as the only means of use in and/or visitation to CFRNP. Other options for economic opportunity based both outside the park, (for example the independent visits described in the interim visitor use regime of Program 4),and inside the park, but marginally associated with tourism, such as education, research, and small-scale sustainable extraction or agriculture, were seldom mentioned. Although the CFRNP certainly lends itself to ecotourism use and this will undoubtedly remain a focus, such a limited focus on tourism is not maximizing sustainability especially given the fickle nature of international tourism (Secretariat of the Convention on Biological Diversity, 2004).

Sidebar 5

The vision of a trail network for this park (see sections 1.2 and earlier in Appendix B) is not new. It is recommended in the St. Christopher National Physical Development Plan, the NEMS, and the management guidelines. An effort to build a trail network was begun in the Wingfield watershed, but encountered obstacles. *Most importantly, most stakeholders spontaneously noted this as an idea that they support.*

At this point, it makes more sense to design and construct an integrated infrastructure that includes all the necessary amenities to both conserve biodiversity and attract visitors than modify the existing infrastructure. Starting this design process from the ground up will result in a world-class integrated network of ecotourism trails, which will be necessary if St. Kitts and Nevis is to be competitive in the ecotourism market (Eagles et al, 2002; GoSKN Ministry of Sustainable Development, 2006).

The master infrastructure planning process, coupled to a revision of the management plan, also provides an opportunity to identify additional appropriate uses within the CFRNP. An expansion of the international research and education center/program is strongly recommended, as this has few impacts, and the added benefits of bringing expertise and additional employment to the CFRNP. However, this decision is left until Program 6.

It is, however, imperative that the trail network be developed by professional landscape architects who will integrate all of the needed design factors and that the design process include a conservation biologist.

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Appendix D. Model Visitor Guidelines

Visitor guidelines are an extremely flexible tool. They can be used to modify the behavior of visitors in many ways e.g. "kindly leave the flowers for the enjoyment of other visitors." Because guidelines ask the visitor to assume responsibility for himself or herself in a positive and collaborative way, they typically inspire more cooperation than heavy-handed approaches such as regulations (Marion and Reid, 2007). This in turn reduces the need for enforcement and associated costs. In this sense, visitor guidelines are particularly appropriate for protected areas like the CFRNP where limited funds for enforcement of regulations are available (Rome, 1999; Blangy and Wood, 1993).

Visitor guidelines can also be used as a part of an environmental education program. When a protected area asks visitors to avoid stepping on the grass, it naturally makes sense to explain why. This is very simple education, but it is a first step for individuals who have never thought about the cumulative impact of many people picking flowers. Most of the damage caused by individuals in protected areas is due to a simple lack of understanding of their impacts (Blangy and Wood, 1993).

Tips for successful use of guidelines:

- The most effective guidelines are those that express concepts with positive language e.g. "please place trash in receptacles" not "throwing trash is prohibited" (Báez and Acuña, 1998; Marion and Farrell, 1998).
- Guidelines are part of service to the visitor, providing useful information, as well as codes of conduct
- Keep guidelines simple and easy to understand. Avoid technical jargon.
- Guidelines may be presented to visitors in a number of formats including paper handouts, posted signs or verbally by park staff or concessionaires.
- It is often useful to have several sets of guidelines, specific to various areas or uses. For example, one set may be posted in campgrounds, and provide information for visitors about water use, site clean-up, check-out times, and noise levels, while a second set is more general, can be given to all visitors, and provides information about safe ways to experience nature. If the original guideline content is maintained in digital format, guidelines may be easily updated or modified as conditions change, or new services are offered.

The guidelines below are presented as a model and not intended as a set of finalized guidelines. They may be edited, deleted, or supplemented to serve the CFRNP's unique needs.

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Welcome to the Central Forest Reserve National Park.

The Central Forest Reserve belongs to all the citizens of St. Kitts and Nevis. We share this special place proudly with our international visitors. We have set aside this National Park to preserve our natural heritage and to enjoy every day through appropriate recreation, education, research, and simple appreciation. The following guidelines are recommended for both local residents and visitors.

Trails

- Some trails can be muddy and very slippery during the rainy season. In muddy areas, stay in the middle of the trail. Please do not walk on vegetation along the sides of the trails to escape the mud, as this kills the vegetation.

Hiker Safety

- Take a map with you when hiking. Maps are available at the Tourism Authority office in the Pelican Mall of Basseterre, or many of the local shops for a small fee.
- Carry extra food and water and a flashlight, just in case. Nobody plans to get lost. There are no supplies available for purchase in the park.
- It can rain any day of the year. Carry protective clothing. During times of heavy rainfall, the ghauts (watercourses) are subject to flash flooding and very dangerous. Do not enter these if it is raining in your area, or at higher elevations.
- Cell phone reception is not available throughout the park. Do not rely on your cell phone for emergency help.

Camping and Campfires

- There are no facilities developed for camping in the Central Forest Reserve and at this time it is not permitted.
- Fires leave long-term scars and collecting wood for fires damages vegetation. Fires are currently not allowed in the Central Forest Reserve.

Respect the Natural Resources

All of the wildlife and vegetation in the Central Forest Reserve is protected. This is what makes it such special place.

- Please do not collect or pick plants, flowers, insects, or wildlife. Some species in the park are rare and collecting them could eliminate them from the park. Even picking a handful of common flowers along the trail diminishes the beauty of the trail for the next person.
- Please do not litter. Please take bottles, wrappers etc., with you, so that the next person can enjoy a pristine park. Wildlife can eat litter and become sick.

Water Quality

- Keep the water supply clean. If you must relieve yourself while hiking, do it at least 100 yards from any waterway (the dry ones too. They fill up when it rains). Carry out the toilet paper in a small plastic bag, or bury it 6 inches deep.

Appendix E. Budgets

Budget Year 1

Item	*% In-kind or Donation/Source*	*Additional Funds Needed*
Subprogram 1.1 Community Communication		
Flyers for community communication (paper , copying)	100%/DPPE	
Radio time	100%/radio stations public service	
Subprogram 1.2 Visitor Communication		
Initial design and copying of flyers	100%/DPPE	
Possible later upgrades to flyers	100% DPPE	
Program 2 Building Capacity	100% OPAAL project.	
Trail Maintenance/Infrastructure		
Small directional signs on gates and at trail intersections. 3 at $50 each (Subprogram 4.3)	---	$405 XCD /$150 USD
Pit Bathrooms (Subprogram 4.3)	---	$9720 XCD /$3600 USD
Staff /Personnel Salaries		
Protected Area Manager	100%/DPPE	
Assistant Manager/Community Coordinator	--	$60,000 XCD / $22,222 USD
Public Outreach Specialist	50%/DPPE	$30,000 XCD/ $11,000 USD
Natural Resources Specialist	--	$60,000 XCD / $22,222 USD
Education Outreach (External Volunteer)	0%	
GIS Specialist	50%/DPPE	$30,000 XCD/ $11,100 USD
Visitor Service Rangers (2) (Subprogram 4.3)	--	$30,000 XCD / $11,000 USD (both)
Boundary Demarcation Assistant (Subprogram 4.3)		$15,000 XCD / $5500 USD
Other Administrative		
Office equipment and supplies	100%/DPPE	
Office space	100%/DPPE	
Procure GPS, antenna and software		$26,875 XCD / $10,000 USD
Procure Visitor Center Building	100% OPAAL	
Program 4.3 Skills Workshops for Residents	100% OPAAL	
Total funding shortfall year 1		**$262,000 XCD / $104,213 USD**

Budget Year 2

Item	*% In-kind or Donation/Source*	*Additional Funds Needed*
Subprogram 1.1 Community Communication		
Flyers for community communication (paper , copying)	100%/DPPE	
Radio time	100%/radio stations public service	
Subprogram 1.2 Visitor Communication		
Initial Design and copying of flyers	100%/DPPE	
Possible later upgrades to flyers	100% DPPE	
Staff /Personnel Salaries		
Protected Area Manager	100%/DPPE	
Assistant Manager/Community Coordinator	--	$60,000 XCD / $22,222 USD
Education-Outreach (half-time)	50%/DPPE	
Natural Resources/Sustainability Specialist	--	$60,000 XCD / $22,222 USD
GIS/GPS specialist (half- time second year)	50%/DPPE	
Education Program Contractor		$40,000 XCD / $14,883 USD
Volunteers/Graduate Student Surveyors	100% Volunteers/Grad Students	
Visitor Service Rangers (2) (Subprogram 4.3)	--	$30,000 XCD / $11,000 USD (both)
Other Administrative		
Office equipment and supplies	100%/DPPE	
Office space	100%/DPPE	
Renovate Visitor Center (materials and labor)	--	$158,869 XCD / 58,840 USD
Total funding shortfall year 2		**$348,869 XCD / $129,375 USD**

Budget Year 3

Item	*% In-kind or Donation/Source*	*Additional Funds Needed*
Subprogram 1.1 Community Communication		
Flyers for community communication (paper , copying)	100%/DPPE	
Radio time	100%/radio stations public service	
Subprogram 1.2 Visitor Communication		
Copying of flyers	100%/DPPE	
Program 6 Achieving Lasting Sustainability		
Revision of management plan	---	$135,000 XCD / $50,000 USD
Develop master infrastructure plan	---	$540,000 XCD / $200,000 USD
Staff and Contractor Salaries		
Recreation Ecology/Ecotourism Specialist		$60,000 XCD / $22,000 USD
Protected Area Manager	100%/DPPE	
Assistant Manager/Community Coordinator	--	$60,000 XCD / $22,222 USD
Public Outreach Specialist	50%/DPPE	
Natural Resources Specialist	--	$60,000 XCD / $22,222 USD
GIS/GPS Specialist (half time third year)	50%/DPPE	
Education Program Contractor		$40,000 XCD / $14,884 USD
Visitor Service Rangers (2) (Subprogram 4.3)	--	$30,000 XCD / $11,000 USD (both)
Other Administrative		
Office equipment and supplies	100%/DPPE	
Office space	100%/DPPE	
Total funding shortfall year 3		**$954,999 XCD / $353,328 USD**

Appendix F. Monitoring and Evaluation Plan

Program Evaluation

Objective #	*Indicator*	*Frequency or timing*	*Results*
1	Survey at least 20 randomly selected persons. 50% have required awareness	1X. 5 months	% with required awareness. Goal achieved? Yes or no.
2	Survey at least 20 randomly selected persons. 75% have required awareness	1X. 11 months	% with required awareness. Goal achieved? Yes or no.
3	Survey at least 20 randomly selected persons. 75% have required awareness	1X. 17 months	% with required awareness. Goal achieved? Yes or no.
4	90 % of maintained list of lodging establishments feature brochure	1X. 6 months	% featuring brochure. Goal achieved? Yes or no.
5	Visitor Interpretation Center is procured, renovated, outfitted with appropriate materials	1X. 2 years	Yes or no.
6	Survey all SIE community members. 50% report as desired.	1X. End of year 1	% reporting positive. % reporting engagement. Goals achieved? Yes or no.
7	Survey all SIE community members. 80% report as desired.	1X. End of year 2	% reporting positive. % reporting engagement. Goals achieved? Yes or no.
8	Survey all SIE community members. 80% report as desired.	1X. End of year 3	% reporting positive. % reporting engagement. Goals achieved? Yes or no.
9	Number of schools participating in program = 10 or more.	1X. End of year 1.	Number of schools participation. Goal achieved? Yes or no.
10	Survey at least 10 teachers and 20 students. 100 % of teachers have required knowledge; ranking of program. 80% of students report as desired.	1X. End of year 1.	% with required knowledge and ranking. Goals achieved? Yes or no.
11	Self assessment (after) = intermediate level professional skills Trainers test for intermediate level professional skills.	1X. End of year 2.	Pass or fail.
12	Self assessment (after) = basic	1X. Approximately 6 months	Pass or fail.
13	Number of required activities completed.	1X. End of year 2.	Pass or fail. All required activities completed = pass
14	Number of required personnel recruited.	1X. End of 6 months.	Goal achieved? Yes or no.

Objective #	*Indicator*	*Frequency or timing*	*Results*
15	Number of required activities completed.	1X. End of year 2.	Pass or fail. All required activities completed = pass
16	Number of unauthorized roads/trails into park	1X. End of 3 months	Pass or fail. Pass = Number of roads = 0
17	Surveys of roads and trails into CFRNP. Incidents of unauthorized road/trail building discovered during surveys, accumulated over time.	12X, every other month during 2 year period.	Number = 0 = excellent Number = 1-2 = need more work Number = 3+ = reassess problem and initiate new strategies.
18	% tour operators participating in program	1X End of year 1.	% participating. Goal achieved? Yes or no.
18A Optional	None, or as selected by tour operators		
18B Optional	None, or as selected by tour operators		
19, 20	See separate Limits of Acceptable Change program below.	Every 6 months, indefinitely.	Meet established standards? If not, modify use. If failure to meet established standards 3 X in any time period, use shall be terminated.
21	Number of persons hired	1X. 6 months	Pass or fail. Pass = all persons hired as described.
22	Number of workshops carried out	1X. 1 year	Pass or fail. Pass = 2 workshops carried out as described.
23	Number of persons transported per day	Daily records	Less than 24 persons / day – evaluate what is lacking with the program implementation?
24	Conservation Trust Fund is established and operational	1X. End of year 2.	Pass or fail. Financial mechanism and all supporting procedures in place = pass.
25	$US received	1X. End of year 3.	Met funding goal of $250,000? Yes or no.
26	Completion of master plan	1X. End of year 3.	Goal met as described? Yes or no.
27	Completion of management plan review	1X. End of year 3.	Goal met as described? Yes or no.

Visitor Impact Monitoring

Under Program 4.2, the Visitor Facilities Committee will design a simple, adaptive and community-based monitoring program for impacts from visitation to the CFRNP, starting first with impacts to trails, and later, expanding this to other uses. Specific indicators for monitoring will be designed at that time.

Appendix G. Brief Overview of Limits of Acceptable Change Method

Planning based on the limits of acceptable change (LAC) (Stankey et al, 1985) approach has essentially replaced planning based on the concept of carrying capacity. LAC is more flexible and better captures the visitor behaviors that result in impacts (Eagles et al, 2002; Rome, 1999; Báez and Acuña, 1998; Borrie et al, 1998; Marion and Farrell, 1998; Wallace, 1993).

Step 1. The LAC methodology requires assessment of the protected areas concerns and issues. This was partially completed in the critical issues analysis. Additional information will likely be obtained during the collection of baseline information.

Step 2. Descriptions of opportunity classes are created and described for specific areas. These are qualitative descriptions such as “pristine” or “intensive use.” An opportunity class is a "qualitative description of the kinds of resource and social conditions acceptable for that class and the type of management activity considered appropriate" (Stankey et al, 1985).

Step 3. Indicators are selected to measure the relevant conditions for each of the opportunity classes described in Step 2. Indicators must be measurable. An example of an indicator might be: trail tread width of bare soil.”

Step 4. Inventory conditions to establish baseline and for use in establishing standards. Park staff and tour operators will collect data on baseline conditions for sites under both wet season and dry seasons conditions, using the indicators .

Step 5. Define standards for limits of acceptable change. Using the baseline data collected, park staff and tour operators will then define standards for the limits of acceptable change in step 5. This step is value judgment; there is no one “right answer” in defining the standards. Note that these standards are not *ideal* conditions, but *acceptable* conditions. When conditions degrade beyond the acceptable standards, management action to correct the problem will be required. Example: “Trail tread width as measured by bare soil does not exceed 2 feet over 90% of the trail length.” Typical approaches to establishing standards vary widely. It may be necessary to set the acceptable standard as better condition than currently exists, and immediately implement measures to achieve this. Or, it may be possible to set acceptable ranges as a percentage above and below the indicator being measured.

Step 6. Identify alternative allocations of area and approaches.

Step 7. Analyze costs and benefits of identified alternatives.

Step 8. Select preferred alternative.

Step 9. Implement collaborative monitoring and management feedback loop.

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