

## **IMPLEMENTATION COMPLETION MEMORANDUM (ICM)**

TF Name: GEF Grenada Dry Forest Project  
TF Number: TF050989  
Report Date: May 05, 2008  
Program: Grenada Dry Forest Project  
Net Grant Amount: US\$723,000  
Donor(s): Global Environment Facility  
Approval Date: August 8, 2001  
Closing Date: June 30, 2006

### **A. GRANT OBJECTIVES**

#### Original Statement of Grant Objectives

*Provide original statement of objectives from the approving grant or cleared IBTF.*

The overall goal of the project was to improve the management and conservation of Grenada's dry forest ecosystem and its component species of global significance through effective stakeholder participation in decision making and conservation activities, and through improved scientific understanding of the dry forest ecosystem. During the initial two years of implementation, the project was well on track to achieving its objectives. Progress was observed in improving the conservation of dry forest and its flagship species, the Grenada Dove and the Hook-billed Kite. But on September 7<sup>th</sup>, 2004, category four Hurricane Ivan directly struck Grenada, causing massive damage not only to homes and infrastructure, but also to the natural resources of the island. Consequentially, the project faced a number of critical setbacks midway through implementation. Since no revisions were made to project indicators in the period following the hurricanes, the project confronted a number of challenges in its final two years as it attempted to achieve its original targets.

The main objective of the project was to promote the adoption of effective long term strategies for conservation of the dry forest on public and private land by raising the awareness of key stakeholders on the importance of the dry forest habitat, providing key scientific information on this ecosystem, strengthening institutional capacity for forest habitat, and creating partnerships with the private sector to foster and support conservation activities. A second objective was to promote the acceptance of environmentally friendly land management practices to minimize dry forest loss and degradation on private land.

#### Changes to Grant Objectives

The original objective of the project remained the same throughout project implementation.

#### Achievement of Grant Objectives

**Context:** During the implementation of this project, Grenada suffered from two major hurricanes that had ramifications affecting the project's outcomes. On September 7<sup>th</sup>, 2004, Grenada was directly hit by a category four Hurricane Ivan that caused massive damage. Grenada's forests sustained severe damage by the 150 mph winds of Hurricane Ivan. No areas of forest on the mainland were left undamaged and large swathes of forest and countless trees, particularly in the south of the Island, were destroyed. In some areas, the forested hillsides have been practically swept clean of vegetation, leaving only a tangle of

climbers and vines that hamper regeneration.<sup>1</sup> Overall, Hurricane Ivan caused an estimated US\$900 million worth of damage--more than 200 percent of 2003 GDP.<sup>2</sup>

On July 13, 2005, Hurricane Emily struck the island of Grenada, further adding to the devastation sustained from Hurricane Ivan and causing significant damage to dams, forest roads, bridges and watercourses and severely impacting ongoing forestry conservation activities.

Progress observed in the early days of project implementation in improving the conservation of dry forest and its flagship species (the Grenada Dove and the Hook-billed Kite) were highly compromised by the effects of the hurricanes. The population of the Grenada Dove (a bird that is found only in Grenada and is a recognizable symbol as the national bird) was showing signs of recovery in the pre-Ivan period, increasing from 120 in 1998 (*B. Rusk*) to 192 in 2003/2004 (*Rusk & Couse*). Mainly due to the direct effects of the two hurricanes, coupled with the ensuing change in behavior and the limited natural resources available to satisfy the needs of the species that depend on the dry forest, the Grenada Dove's population size in post-Ivan period is estimated to have decreased to a range between 64 and 120. Estimates also reflect a change in calling behavior. Some professionals in the field estimate the population of this endangered species to have decreased to fewer than 100 following the aftermath of the two hurricanes. Today it is estimated that there are around 180-200 Grenada Doves.

The population of the Grenada Hook-billed Kite also appears to have declined. An assessment made following the two hurricanes reported that only one nesting attempt of the Hook-billed Kite was recorded – there were five kite nesting sites in the pre-Ivan period.

Following Hurricane Ivan, the Grant Agreement was amended to: “(a) extend the Closing Date; (b) ... allow for the rehabilitation of the Mount Hartman Visitor Center; (c) create a new expenditure category of works and reallocate funds among the various other expenditure categories; and (d) support additional biodiversity research and monitoring activities needed to facilitate the post-hurricane recovery of the Grenada Dove population and its dry forest habitat.”<sup>3</sup>

**Achievement of Project Objectives:** The first project objective had the twin goal of promoting conservation of dry forest and its globally significant species in public areas and private lands. The project was successful in promoting this objective in publicly owned dry forest lands. The project successfully supported the improvement in the management of the Mt. Hartman National Park. The Forestry and National Parks Department (FNPD) was able to enforce conservation of the dry forest by inhibiting the frequent intrusion into the dry forest for charcoal burning and clearing for purposes of other resource exploitation. These practices not only were degrading the dry forest, but also were threatening the very existence of Grenada Dove. The Government of Grenada (GOG) also showed its commitment by

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<sup>1</sup> Government of Grenada, Agency For Reconstruction and Development, *Forestry Sector Rehabilitation Project Proposal*. August 2005. (Memo).

<sup>2</sup> The World Bank. 2005. Country Assistance Strategy for the Organization of Eastern Caribbean States. September 6, 2005. (See Annex 1).

<sup>3</sup> See Amendment to the Grant Agreement dated March 31, 2005.

adding additional area to the Mount Hartman Park, including the trails under development and the site where the visitor and interpretation center has been built.

Effective conservation in the private lands was not as successful as in the public lands. Following Hurricane Ivan there was a wide recognition that this task could not be accomplished because of the lesser priority afforded to conservation due to pressing immediate reconstruction work (for instance, 90% of the country's housing stock was damaged to a varying degree). While the disaster affected both the public and private sector equally, the success in the public land shows the commitment of the government to the project objectives and the high value it attached to protecting and conserving the globally significant species.

The achievement of the second objective – *to promote the acceptance of environmentally friendly land management practices to minimize dry forest loss and degradation on private land* – is mixed. Although 90.7% of respondents to the Attitudinal Survey (see below) indicated a desire to leave dry forest around their property to protect Grenada Dove, the implementation of environmentally friendly land management practices did not take hold on private land and/or could not be verified. Thus, while there is a change in perception in favor of the need for conservation of the dry forest for protecting Grenada Dove, there is no evidence that the private landowners are willing to forego development on their lands in favor of dry forest.

Five indicators were used to measure the achievement of the DO. The first indicator was to measure the *increase [in] stakeholder knowledge and support for protection of dry forest habitat*. The project conducted two attitudinal surveys to measure the change achieved in awareness building through the support of the project. The first baseline study was conducted in 2003 and the second in June 2006. The 2006 survey found that the project was successful in enhancing awareness, relevance and understanding about dry forest and its associated species. The familiarity of the public with the term “dry forest” increased from 16.8% in 2003 to 76.5% (an increase of 355%) in 2006; almost two-third (63.5%) gave a dry forest definition which approximated the correct one compared to 12.6% in 2003 – an increase of more than 400%; and importantly the “Desire to Support a Dry Forest Conservation Index” increased from 69.35% to 81.54% and those who “strongly agree” with the statement “I would support a Dry Conservation effort” increased from 10.4% to 32.2% (a 226.7% increase from the baseline). It has to be noted that the baseline information was conducted in 2003, after two years of project implementation. It is logical to assume that the level of understanding at the start of this project in 2001 was lower. This would mean that the impact of the project in awareness building is much larger than is shown by the result of the Attitudinal Survey.

The designation of the Grenada Dove endemic species as the national bird dates back to 1990. Over the next fifteen years, with the support of RARE (a U.S.-based international conservation organization) and the more recent support of this project, a campaign for awareness building was undertaken. This project built on the earlier efforts and was able to enhance awareness on the identity of the Grenada Dove from the baseline value of 87.8% to 95.4% in 2006, an increase of 8.7% on the level that was already very high.

The second indicator relates to measuring efforts in “*dry forest biodiversity research and monitoring [and] provid[ing] adequate data to guide conservation efforts*”. A number of research activities were supported by this project: (i) research and data collection on the Grenada Dove, the Grenada Hook-billed Kite, Herptofaunal and reptilian species – in some cases through collaborative work with external institutions (such as Rare and the Louisville zoo); (ii) census methodology for the Grenada Dove was developed and is in place for ongoing population monitoring; (iii) baseline data collection on key dry forest insect species; (iv) classification of land use using IKONOS high resolution satellite images (2003 images) to provide baseline for future comparison of land cover (dry forest) changes; and (v) development of a map of key areas for dove and other important dry forests species. (See Annex 1 for details.)

The third indicator was planned to measure the “*additional area of dry forest beyond land currently secured (Mt. Hartman National Park and Perseverance Sanctuary) [brought] under improved protection and management*.” Due to Hurricane Ivan (2004), additional privately owned lands for improved management were not secured. The project initiated discussions with private landowners, but these were later curtailed after Hurricane Ivan.

The forth indicator planned to assess the “*increase [in] population size of key threatened species*.” Prior to Hurricane Ivan, the Grenada Dove population increased from an estimated 120 in 1998 to 192 in the 2003/2004 census. Dove population estimates conducted post-hurricane show a decrease to a range between 64 and 120. As for the Hook-billed Kite population, the 5 nesting sites existing in pre-Ivan decreased to one nesting attempt in post-hurricane Ivan, indicating a likely decrease in Hook-billed Kite population. Extreme damage to vegetation is believed to have been the main factor behind the observed decrease in the populations of both the Grenada Dove and Hook-billed Kite.

The final indicator relates to *measuring the implementation of application of environmentally friendly land-use practices, minimization of dry forest loss and degradation, both on public and private lands*. Previous land use practices within the protected areas to a large extent are no longer taking place. Pre-project land use practices, included farming, are now prohibited. Other resource degrading activities identified during project preparation, including charcoal burning and grazing, have been reduced to insignificant levels due to monitoring by FNPD and enforcement of the law. Clearly the protected area boundaries are to a large extent observed. The basis for ecotourism within the Dry forest area at Mt. Hartman is established. There is also evidence that indicates that private sector awareness has improved significantly, reducing the need for improved environmentally friendly land use practices.

After Hurricane Ivan, the project team was aware that the goals of conservation and improved protection and management of dry forest and its associated species on private lands could not be pursued. However, neither the objective nor the indicators were revised; therefore, this evaluation of the achievement of the DO assessed the project outcome from the perspective of the original objective. The Grant Amendment made subsequent to Hurricane Ivan mentioned the need to “restructure Project objectives.” However, due to insistence by the counterpart that notwithstanding the impact of Hurricane Ivan, the original objectives would be achieved, the objectives were not modified. Therefore, based on the original objectives, the project’s overall achievement of the DO is rated as *Moderately Satisfactory*.

## **B. OUTPUT**

### *Achievement of deliverables*

#### **Component 1-- Environmental Education/Public Outreach: *Satisfactory.***

This component sought to raise the general awareness on the uniqueness of the dry forest and its species, to involve Grenadians in dry forest-related environmental activities, and to disseminate information through a wide variety of media in a user-friendly manner. The achievements are evaluated using the indicators the project established during preparation. Overall, the component achieved the targets set during preparation.

*a. Establishment of environmental education program:* The project developed an educational program with the participation of stakeholders (media, government personnel, teachers, and NGOs, among others). The educational program included the development of a curriculum.

*b. Support attitudinal changes in support of project goal.* To measure a change in perception and attitudes towards the conservation of dry forest and associated globally significant species, an independent, statistically valid survey was conducted. As mentioned in Section A (Grant Objective) above, the project financed two surveys in 2003 and 2006, the former to establish a baseline and the second to measure the impact of the project. While the change in “knowledge” is given in Section A, changes in attitudes also were successfully achieved, as summarized in the table below that was extracted from the 2006 attitudinal survey. The final survey proved that the project not only led to an attitudinal change, but also improved the understanding and perception of Grenadians about dry forest and its associated species. As a result of the attitudinal changes, Grenadians now give a higher importance to the conservation of the dry forest and its biodiversity, especially the Grenada Dove.

**Table 1 – Main Findings of the Attitudinal Survey**

Indicator	2003 (%)	2006 (%)	Increase in % (2003 to 2006)
Proportion of respondents who indicated a desire to leave dry forest around their property to protect Grenada Dove	65.4	90.7	38.69
Perceived importance of Biodiversity Index – importance of conserving the species found in Grenada Dry Forest	73.28	82.36	12.39
Awareness of Grenada Dove	87.8	95.4	8.66
Awareness of the necessity of Dry forest environment for Grenada Dove survival	29.5	67.8	129.83

*c. Establishment of school educational programs.* Education materials on dry forest-related resource materials were developed for inclusion in the 2006 syllabus of primary and secondary schools, but were not formally implemented.

*d. Provide access to Grenadians and foreign tourists to visit the Mt. Hartman National Park Visitors’ Center.* The Visitor Center was re-opened in May 2006 after it suffered major structural damage and theft following Hurricane Ivan. In June 2006, the GOG deployed staff

for the Visitors' Center and planned to provide training to these staff in tourist-guide policies and procedures. Due to the delays in completing the rehabilitation of the Mt. Hartman center, the services intended to be provided through this center were also delayed. Since the Visitors' Center did not become operational by project closing, no data was available on the number of Grenadians that visited the site. However, the Attitudinal Survey measured visits to the dry forest and found that the ratio of respondents who reported to have visited the dry forest increased from 52.2% to 55.8%. This small increase could be attributed to the lack of a visitors' facility and associated lack of guides (i.e. educational orientation at the site) for those who were interested in learning more about the ecosystem.

*e. Enhancing stakeholders participation and provision of input to decision making.* Initially, the project sought and implemented wide stakeholders' participation, including the formation of a Steering Group. During the early days of project implementation, the Steering Group functioned as planned, providing a forum for the key stakeholders and general guidance in project implementation. However, the initial good practice was not maintained following the hurricane.

*f. Implementation of strategic communications.* The project successfully implemented a communication campaign using all available medium. These medium included frequent press releases, effective TV commercials (two times per day during prime time, every day for one year), radio announcements on events, provision of news briefs, interviews, competitive awards for conservation excellence within the private sector, and preparation of a documentary. In addition, these were supplemented through workshops, dissemination of information on dry forest using the media and preparation of educational materials for the Visitor Center.

The combined impact of the awareness building and communication activities was that the public's familiarity with the term "Dry Forest" increased from 16.8% in 2003 to 76.5% in 2006. In addition, more than twenty percent (20.7%) of respondents in 2006 (compared to 2003) indicated awareness about activities that are detrimental to the Dry Forest.

## **Component 2. Dry Forest Biodiversity Research and Monitoring: *Moderately Satisfactory.***

The main output expected from this component included the establishment of the dry forest biodiversity research and monitoring program, and the provision of required data to guide conservation efforts.

The project succeeded in establishing collaborations and partnerships with various scientific and educational institutions, including universities and zoos. Component indicators' status is summarized below (see Annex 2 for list of studies completed).

- (i) conducted several studies that created baseline data from which to assist with forest management and monitoring post-project completion;
- (ii) developed vegetation monitoring protocols, including establishment of a long-term monitoring plot on a hectare of land;
- (iii) deployed GIS database that includes all research results and land classification data;

- (iv) identified key areas of dry forest (i.e. mature stands) and important dry forest sites for the Grenada Dove and Hook-billed Kite,
- (v) identified critical areas for the Grenada Dove and presented to the Ministry of Agriculture for potential future land use planning;
- (vi) implemented portions of the Grenada Dove Recovery Plan, including the research program and the development of husbandry techniques (being carried out by Louisville Zoo) for a related *Leptotila* species.

This component could have been rated as Satisfactory except that the management plan, a key document for the future management of Mt. Hartman, was not completed as of the closing date of the project (June 30, 2006).

### **Component 3. Capacity Building: *Moderately Satisfactory***

The main output expected from this component was improving the capacity of FNPDP in: (i) conservation and wildlife management, (ii) preparation of policy and legislative initiatives that promote sound land use practices, and (iii) project implementation with effective coordination.

As part of the amendment to the Grant Agreement, the capacity building plan developed under the project was scaled-back to free up resources for the rehabilitation of the Mt Hartman Visitor's Centre and to launch a one-year environmental awareness campaign to complement efforts under the project. Further capacity building through hands-on training was also cut-back due to the non-replacement of FNPDP staff that left. This dwindling number of staff limited the number of professionals available to undertake additional responsibilities, though the Project Coordinator showed little interest in including the staff of FNPDP in project activities.

Initial accomplishments were progressing satisfactorily. The three major indicators and their corresponding status at project closing are summarized below.

- a. *Dry forest management and conservation activities are integrated into annual work plans of the FNPDP:* This task was fully accomplished and streamlined to the activities of FNPDP.
- b. *Number of qualified FNPDP personnel adequately trained, dedicated to ongoing dry forest conservation efforts and providing proficient conservation and wildlife management.* – This indicator was partially met since the training plan was shelved once the post-hurricane Grant Agreement was amended. Although the number of staff undertaking additional activities was limited due to lack of replacement of staff that left the institution, existing staff are providing conservation service and management support, especially in Dry Forest. Due to the destruction brought about by Hurricane Ivan, the staff is now facing a huge task of rehabilitation in addition to their regular work. Thus, while the number of staff has been reduced, the demand for their time has increased, which may negatively affect the quality of future work.
- c. *Grenada Forest Policy and/or legislation updated and expanded, as necessary, adopted to promote environmentally friendly land-use practices, minimizing dry forest loss and degradation on public and private lands.* The Forest Policy, which was updated in 2000 and

gave the FNPDP more responsibilities, predates the project. The Grenada Forest Policy, approved in 1999, mandates the conservation of representative samples of all forest ecosystems and the protection of important species because of their rarity and vulnerability, among other distinctions.

Thus on balance the achievement of this component is rated as Moderately Satisfactory.

**Component 4 -- Private Sector Partnership for Dry Forest Conservation:**  
***Unsatisfactory***

The main output expected from this component was to establish (“put in place”) effective partnerships with landowners and other stakeholder groups to protect and manage the identified network of key dry forest conservation sites.

This component was significantly scaled-back after Hurricane Ivan. Considering the level of destruction sustained following the two Hurricanes, it was determined that there was a lack of sufficient support for conservation activity on private lands. Therefore, the project opted to focus on continuing the awareness building activity to ensure enough support for dry forest and associated species conservation existed in the Island. In addition, formal community consultations to create a network of dry forest on private lands were unfeasible in the aftermath of Hurricane Ivan, given Islanders’ other priorities. However, one of the innovative aspects of the project was the partnership it formed with the private sector, which made possible the financing of 12 billboards that now prominently display the Grenada Dove across parish boundaries.

Again, the amendment to the Grant Agreement stated that sponsorship of the dry forest conservation agenda was an unlikely achievable goal following Ivan. Within the reduced scope, consultation was limited primarily to key Ministry personnel.

Under this component, the MSP brief established three indicators to measure the change brought about by the project. These indicators were:

- (a) *number and type of arrangements with landowners and other stakeholders to manage the network of dry forest;*
- (b) *further deforestation prevented in designated areas; and*
- (c) *establishment of an “Award for Conservation Excellence in the Private Sector” that will be seen as a prestigious prize.*

None of these indicators was met by the end of the project, and therefore the achievement of this component is rated as *Unsatisfactory*.

**3. Quality**

Overall, the quality of the work carried out met the standard targeted by the project. The studies completed were conducted by involved institutions experienced in conservation work and research (RARE and Louisville Zoo). The management arrangement of the dry forest reserve at Mt. Hartman was improved and enforcement was put in place. Although the number of staff trained is limited, the quality of improvement in capacity of the FNPDP will



be instrumental in the future management of dry forest and associated species. The products of the communications effort, from postage stamps (see below) to billboards, were of high quality.

On average, therefore, the outputs produced are rated as Satisfactory.



Grenada Dove postage stamp

### 5. Dissemination

The main dissemination activity conducted by this project relates to the awareness building activities under the communication program. The advertisement aired on TV for a year, and the dove stamps promoted through the Grenada postal service were only two of the shining examples of successful dissemination this project executed (See Component 1 outputs under section B above for other dissemination activities). The project also used brochures, fliers and other promotional and educative materials for widely disseminating the importance of dry forest and the need for protecting the Grenada Dove and other associated species. As the Attitudinal Survey result showed, this was successfully carried across the Island with substantial impact in changing the perception of all sectors of the society.

### 6. Overall Success

Overall the project was successful in producing quality products and reaching the whole segment of the population. The studies supported through this project were done mainly in partnership with learning institutions and a credible international NGO. Moreover, in some cases, the studies were peer reviewed by external consultants. The overall important output for future conservation effort by FNPd is the improved knowledge base created on the dry forest ecosystem and the management tools it deployed within the institution. Although the project deployed a GIS database, its use and manipulation to produce relevant information in a timely manner has yet to be improved – the main impending factor is the limited time the staff of FNPd has to fully make the system operational and updated. This additional task of maintaining the GIS database is an extra responsibility for a forestry officer who has several other tasks.

The project, with full support of the government, improved the management of dry forest in Grenada and the Mt. Hartman Sanctuary in particular. Results of this improvement were apparent early in project implementation, though were later compromised due to the two major hurricanes that hit the Island. By the closing of the project, given the improved management of the dry forest through full enforcement the law, the dry forests have shown quick recovery from the damage it sustained. Discussion with experts in Grenada on the conservation of the Grenada Dove during the final supervision revealed that the recovery of the dry forest is a good indication that the Grenada Dove and the Hook-billed Kite population may be on the track to recovery too.

Considering the progress made following the complete destruction and havoc brought by the two major hurricanes, the overall success of the project could have been rated as satisfactory. The dissemination work raised public awareness on the importance of dry forest and associated species in the aftermath of a disaster that cost 200 percent of the country's annual GDP. But because no modification was made to the expected outputs following the amendment to the Grant Agreement, the overall success of the project's outputs is rated Moderately Satisfactory.

## **C. OUTCOME**

### ***1. Achievement of developmental results***

The development result expected from Component 1 (Environmental Education/Public Outreach) was to increase public support for dry forest and biodiversity conservation through environmental education and public outreach program. To achieve this result, the project identified four major activities that are summarized below with their specific accomplishments.

- (i) two (out of three planned) surveys, to benchmark and to measure project impact in awareness among critical stakeholders was conducted;
- (ii) critical messages for target audience were identified and used in public awareness buildings. Thanks to the specific messages developed through the project, the message was tailored to improve the perception of Grenadians of the link between dry forest and the Dove, which contributed to the increase of this perception to 67.8% in 2006 from the 29.5% in 2003;
- (iii) conducted an integrated communication outreach effort to develop public appreciation of the dry forest ecosystem using the media, billboards, publications and implementation of a follow-up of RARE's education campaign on the Grenada Dove;
- (iv) developed resource pack for primary teachers and developed an educational syllabus that relates dry forest and adjacent ecosystem.

As the Attitudinal Survey revealed, this component was able to generate public support for dry forest and biodiversity conservation. Grenadians are now better informed about the dry forest and its associated species and show high preference to support government policies in protecting and preserving this important eco-system. Therefore, the development result of this component is rated as Satisfactory.

Component 2 (Dry Forest Biodiversity Research and Monitoring) aimed at establishing a dry forest research and monitoring program. Overall, this component result is rated as Moderately Satisfactory. Key results supported under this component include:

- (i) Grenada Dove recovery efforts was initiated under this project;
- (ii) Established the necessary protocol for monitoring the dry forest and the associated species that was supported by the formation of baseline database;
- (iii) Introduced scientific instruments to help the management of the dry forest parks;

While the component managed to deliver the above very important results, a significant product (management plan for the Mt. Hartman Sanctuary) was not completed. The completion of this plan was expected to be the main instrument for future management of the sanctuary.

Component 3 (Capacity Building) is rated as Moderately Satisfactory. The main development result achieved from this component was the improvement brought about in the capacity of FNPD in conducting conservation, monitoring, management, and promoting better land use practices (especially in dry forest ecosystem). However, the expected results also included an improved capacity to prepare policy and legislative initiatives and to implement this project with effective coordination. Due to continuous declines in the number of staff of the FNPD, the activities leading to these expected results were not pursued.

Towards achieving the development results under this component, the project supported:

- (i) short-term training for FNPD staff: one staff in GIS in the Netherlands and two staff in environmental education in Thailand and England; the latter in collaboration with RARE.
- (ii) Hands-on training to FNPD staff in dry forest ecological vegetation sampling, Grenada Dove census methodology, entomology research and herbarium/plant species collection;
- (iii) strengthened or established link with international organizations – Louisville zoo and RARE;
- (iv) established a project coordination unit that coordinated activities, monitored project implementation and prepared reports on project implementation;
- (v) improved the capacity of FNPD through the modernization of office equipment and financed the acquisition of vehicles and other supporting services. Activities financed under Component 2, such as the deployment of GIS, establishment of monitoring protocols, among others, have also contributed in improving the knowledge base of the institution thereby contributing to capacity improvement.

Component 4 (Private Sector Partnership for Dry Forest Conservation) is rated as Unsatisfactory. Before Hurricane Ivan, the activities leading to the expected development results were proceeding satisfactorily. However, following the two hurricanes, it was agreed that there was no support from the private sector to protect and manage networks of key dry forest conservation sites. The project, therefore, did not designate areas for prevention. It also failed to establish an award for conservation excellence in the private sector, and no arrangements were established to manage network of dry forests. Subsequent to the amendment to the Grant Agreement, all relevant indicators identified under this component should have been revised, which would have allowed to evaluate the result based on the revised indicators. Since the indicators remained the same throughout the project implementation and the project did not achieve the indicators established early in project preparation, this component achievement is rated as Unsatisfactory.

## 2. Relevance

The Government of Grenada is a signatory of "St. George's Declaration" (with other OECS countries) that placed increasing emphasis on strengthening environmental management. The tourism sector, which is critical in terms of its weight proportional to the national

economy, depends on sound natural resource management. Recognizing the dependency of healthy tourism sector on the environment, the Government joined the other OECS countries and also strove to improve its environmental management.

As the 2001 CAS alluded, environmental degradation resulting from unregulated tourism growth, poor agricultural practices and inadequate waste water management can endanger the viability of tourism. Thus, the CAS argued that the sustainable management of the environment was a key challenge facing the OECS countries (including Grenada) as an amenity-based economic asset that supports tourism. The 2001 CAS planned to support improvement in the management of natural resources.

The 2006 CAS for the OECS countries, on other hand, stated that much remains to be done in monitoring of critical ecosystems such as policy reforms, institutional strengthening, and public awareness. Thus, the CAS recommended that there is a need for the Bank to “remain engaged in the area of environmental management” in the OECS, given the importance to tourism to the national economies.<sup>4</sup>

The GOG’s Forest Policy, approved by the Cabinet in March 1999, included the mandates to: (i) maintaining representative samples of all forest ecosystems; (ii) protecting all species which are important because of their endemic nature, rarity or value; (iii) conducting research on population dynamics of important wildlife species.

Thus, the project activities reflected the development priorities of the government and were relevant to the environmental management of the country, as revealed in the Bank’s two CASes.

### 3. Efficacy

The project’s achievement of its grant objective is rated as moderately satisfactory. Overall the indicators identified during the project preparation were achieved with moderate shortcomings. Out of the five indicators identified to measure the DO, one was fully and three were partially achieved, while one was not realized. Hurricane Ivan had a significant impact on the achievement of project targets, most notably on the goal to increase the population size of key threatened species. The occurrence of the two natural disasters was beyond the control of the project but had a significant repercussion on the overall project outcome. Early trends in project implementation before the advent to the two hurricanes indicate that the project was well on track towards the achievement of its development objective.

### 4. Efficiency

The project was signed (became effective) on August 8, 2001 and the closing date was extended for an additional year – from June 30, 2005 to June 30, 2006. Thus, the project was under implementation for almost five years (4 years and 10 months). There were several delays in project implementation that cannot be attributed to the occurrence of natural disasters.

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<sup>4</sup> The World Bank. 2005. CAS for the Organization of Eastern Caribbean States. Report No. 33118-LAC.

No financial and economic returns were calculated for the project. However, since Grenada depends on its natural resources for the development of tourism industry, the leading contributor to the GDP, the improvement gained in the management of the PAs and the experience that will be replicated into other PAs of the country is believed to be significant. Therefore, in terms of economic benefit, the most important contribution of this project is its impact on the tourism sector of Grenada.

## **D. IMPACT**

### 1. Capacity Building Impact

The project clearly improved the capacity of the GOG in managing its dry forest by enhancing the knowledge base, providing monitoring tools and training to FNPDP staff. While the problem of non-replacement of staff persisted, the project managed to provide available staff with hands-on training in management of dry forest and its flagship species. Monitoring can now be handled by the FNPDP staff, and the project brought the institution to the modern era through the provision of satellite images to monitor land use patterns. Research results also contributed to the body of knowledge at the disposal of FNPDP on Grenada Dove and the management of dry forest. Although not completed and formally implemented into operation by project closing, the management plan developed for the Mount Hartman protected area will be instrumental and is the product of the improved capacity of FNPDP.

### 2. Sustainability

The sustainability of the project outcomes is rated *likely*. The activities of the management of the dry forest fall under the activities of FNPDP, a department under the Ministry of Agriculture that is supported through annual government budget. Contributing to the future sustainability of the project are the high level of awareness created, the government's commitment to enforce the forestry law, and the high value Grenadines have started to attach to the dry forest and associated species of global significance. The government should be congratulated for remaining committed to its forestry law and for maintaining Mt. Hartman as a protected area, the main sanctuary to the two flagship species of global significance – the Grenada Dove and the Hook-billed Kite.

In addition, the government is seeking co-financers for further improving the visitors' center at Mt. Hartman that is expected to attract tour operators and, through them, tourists to the site. This is expected to contribute to raising funds for future management of the dry forest area through entrance fees.

From a technical perspective, the monitoring protocol adopted at the FNPDP, the scientific research conducted, and modern land using monitoring software deployed will contribute to the future sustainable management of the dry forest and its associated habitats.

### 3. Follow-up Activities and/or Investment

As described under Section A, Achievement of Grant Objective, Grenada sustained extensive damage from Hurricanes Ivan and Emily in 2004 and 2005, respectively. These two

hurricanes caused massive damage to Grenada's forests; in some thick forest areas and hillsides the extent of the damage was so severe that no trees were left standing. To support the rehabilitation of the Island's biodiversity, the Prime Minister wrote two letters seeking GEF financing.

Check, if applicable:

Investment:

\_\_\_\_\_ Recipient/Other Investment;  X  Grant Project/Program; \_\_\_\_\_ Bank Project;  
\_\_\_\_\_ IFC Financial Project/Activity

Other Results:

X  Transferability of Know-How, Knowledge Base/Key Concepts;  X  Replicability, Modeling, Best Practices; \_\_\_\_\_ New Sectors or Products; \_\_\_\_\_ New Forms of Cooperation with Other Development Institutions/NGOs

## **E. PERFORMANCE**

### *1. Bank*

Overall the Bank fully carried out its fiduciary responsibility. Mid-course during project implementation, the Bank team discovered that the project suffered from lack of appropriate financial management and transaction handling. The team ensured that the Bank procedures were followed by establishing a system and contracting a book-keeper within the FNPd with responsibility for overall financial accounting, recording, maintaining and handling inventory of equipment purchased through the project. Later, the system that was set-up was reviewed by the Bank's financial management specialist for the project and was found acceptable and within the Bank guideline. The Bank team also ensured that annual audits and financial management reports were made available and, recently, the team worked closely with disbursement specialists in ensuring that unused balance of the Grant (\$ 5415.95) is returned to the Bank.

In addition, within the overall framework of the project, the Bank team worked closely with the GOG in amending the Grant Agreement to support urgent tasks following the devastation brought about by the two hurricanes. The strategic choice made by the team to continue with the awareness building after the hurricane, in hindsight, was a significant decision that ensured the project objective did not get lost as the country's priority shifted towards rehabilitation and reconstruction work. The continuation of this communication program ensured that the dry forest did not suffer from excessive intrusion by illegal squatters and cutting of the trees for reconstruction and rehabilitation purpose.

### *2. Recipient*

During project implementation, the GOG, through the Ministry of Agriculture, partnered with the Bank in resolving issues in project implementation, and facilitated the work of FNPd. The Government was able to provide the necessary counterpart contribution. Under the difficult condition following the two hurricanes, the government remained true to the objective of the project and partnered with the Bank team in realigning activities reflecting the changed priorities. Throughout project implementation, officials of the Ministry of

Agriculture were accessible to Bank missions and contributed in seeking solution to problems faced in project implementation. The Government, through the Ministry of Agriculture, also facilitated the partnership with the private sector (in financing billboards' creation) and external learning institutions and NGOs in support of the project.

Thus, the performance of the GOG both during preparation and implementation is rated as Satisfactory. The GOG performance could have been rated Highly Satisfactory had it effectively ensured the replacement of FNPDP staff, streamlined project activities into the task of FNPDP throughout project implementation and had it mastered a better coordination among stakeholders.

## **F. LESSONS LEARNED / RECOMMENDATIONS**

1. Following natural disasters and as “emergency works” take precedence, it is crucial to ensure the project objective is not lost. As mentioned in several section of this document, the level of devastation wrought by the two hurricanes during the implementation period of this MSP could have easily derailed the project from its stated objective. However, the government commitment and the Bank’s team’s strategic choice to focus on communication/awareness building ensured that the project objective was not lost following these two natural disasters.
2. Project coordination should be streamlined to fit with the activities of the existing institution. While from the start the project aimed to streamline the project activities into FNPDP tasks, this was lost for almost two years due to lack of coordination between the project coordinator and the staff of the FNPDP.
3. A project coordinator should be a consensus builder. There is a consensus among FNPDP staff for a project coordinator to work on seeking coordination and facilitating participation and not pushing his/her own decision. Had the project implementation been led by agreements reached via consultation with staff, the project would have been fully integrated into the activities of FNPDP early and division of labor could have allowed all tasks to be completed by the agreed on time.

### Recommendations for the Bank

- 1 *Early consultation is an important ingredient for awareness building activity.*  
The project conducted the Attitudinal Survey that showed an improvement in support of the conservation effort for dry forest in Grenada. During the project preparation, consultation of stakeholders revealed the level of awareness and the type of communication activity to conduct. This early consultation contributed to the wide awareness created under the project.
- 2 *Following a natural disaster, it is important to review not only where the project needs adjustment but also whether there is a need to revise indicators.*  
The Bank team should be highly commended for reviewing the project following the two hurricanes and for its successful decision to proceed with communication and awareness building measures. As resources are moved

from one component to the other, the associated indicators have to be revised as well.

#### Recommendations for the Recipient (Client)

- 1 *Throughout project implementation, it is recommended to ensure that the activities of a project are streamlined into activities of sectoral agencies.*
- 2 *At all time ensure that responsible institutions are fully staffed:* Changes in priorities that ensued following the two hurricanes gave the government the pretext of not replacing staff of FNPB that separated with the institutions due to different reasons (death, retirement, among others). It is important that the government review the staffing need occasionally from the perspective of the requirements to fulfill the mandate of the institution.

#### Recommendations for the Donor(s)

- 1 *Ensure that there is a high level of commitment.* The success of this project is due to the high level of commitment by the government of Grenada to preserve their national bird, the Grenada Dove.
- 2 *Support recovery and rehabilitation when the priorities change:* Natural disasters of the magnitude of Hurricane Ivan do not spare any section of development activities – all initiatives are affected. In such circumstances, it is important for the donors' community to act immediately and to identify areas of rehabilitation related to their specific involvement or line of work within the development activities and support a government in an emergency situation on transitional basis.

#### Recommendations for the Development Community

- 1 *Continue with awareness building following a natural hazard when priorities seem to shift:* One of the lessons learned from this project is the need for a functioning communication strategy, which can be readily replicated to other areas and projects. The need for continuous awareness building and creation of public support for conservation is an important ingredient in preserving the achievements made even in the face of major disaster when nothing seems to matter except reconstruction.
- 2 *Conservation requires a long-term commitment:* In conservation, the gains made through intervention could be reversed easily. During the implementation of the project, whatever gain made in rehabilitating dry forest and the observed increased in the population flagship species of this ecosystem was practically wiped out by Hurricane Ivan. Therefore, a long-term view that will smooth out this occasional reversal has to be pursued in lieu of quick-fix initiatives

## **G. PROCESSING**

Prepared by: Samuel Taffesse



Task Team Leader: Samuel Taffesse

Date Submitted: May 6, 2008.

Comment : The release of this ICM was delayed due to new hotel and villas development adjacent to Mount Herman National Park. This happened after the project closed. However, once it became apparent that there will be a new development in the Park area, the project team made the choice of delaying the ICM release until the Government of Grenada complied with the spirit of the Grant Agreement to this MSP. At present the Government has expressed its plan to comply with the Grant Agreement and have committed to keep the full area of the Mount Hartman National Park intact. After considering the Government renewed commitment, the ICM is now released.

The comments provided by the Sector Leader (below) were taken in to account before finalizing this ICM.

Manager : Mr. Lucio Monari

Date Approved: January 31, 2008.

Comment:

Sam,

It reads very well. I do not have the knowledge to fully comment on the ICM, but I am sure that Jo and others will be able to do so. In general, I would submit to you the following comments for consideration:

- No restructuring of project objectives after Hurricane Ivan. It is unclear why this was not done and the reasons behind it. Given the damage caused by the hurricane and the consequent complications in achieving one of the objectives of the project (i.e., private sector partnership), you need to explain the reasons for not restructuring the grant to justify the satisfactory performance given to the Bank supervision. There is also an unclear wording in the last paragraph of page 4: "Although the Grant Amendment made subsequent to Hurricane Ivan mentioned the need to restructure the project objectives, it did not **formally** alter the original objectives."
- There is a need to include reference to the subsequent dispute about Mt. Hartman's development and the Grenada dove. I would suggest that you mention it in the section of the project objectives, on the sustainability section and in the lessons learnt. Among the lessons learnt, I would certainly include the need for a more thorough review after the two hurricanes which, I understand, affected the habitat of the dove. Perhaps, in these cases, it would be advisable to do a new census or reconsider the borders of the protected area. Similarly, what safeguards in terms of legislative sustainability of the protected areas can be taken?

Best regards,

Lucio











## Annex 1 Project Indicators and Results

<b>Overall Project Goal:</b> Improved management and conservation of Grenada's dry forest ecosystem and its component species of global significance through effective stakeholder participation in decision making and conservation activities, and through improved scientific understanding of the dry forest ecosystem.		
Project Objectives	Indicators in project brief	Results
<p><b>Project Objectives:</b></p> <p>To promote the adoption of effective long term strategies for conservation of the dry forest on public and private land by raising the awareness of key stakeholders of the importance of the dry forest habitat, providing key scientific information on this ecosystem, strengthening institutional capacity for forest management, and promoting partnerships with the private sector to foster and support conservation activities. A second objective is to promote the acceptance of environmentally friendly land management practices to minimize dry forest loss and degradation on private land.</p>	<p>a. Increased stakeholder knowledge and support for protection of dry forest habitat (as measured through attitudinal survey and involvement in decision-making and conservation activities).</p> <p>b. Dry forest biodiversity research and monitoring provide adequate data to guide conservation efforts.</p> <p>c. Additional area of dry forest beyond land currently secured (Mt. Hartman National Park and Perseverance Sanctuary) is under improved protection and management.</p> <p>d. Increased population size of key threatened species.</p> <p>Environmentally friendly land-use practices, minimizing dry forest loss and degradation on public and private lands in use.</p>	<p>a. There was an overall increase in awareness of all dry forest issues from the baseline attitudinal survey conducted in 2003 to the final survey conducted in 2006. There was an increase in the awareness that the Dry Forest is critical to the survival of the Grenada Dove (29.5% in 2003, 67.8% in 2006), an increase in the "Desire to Support a Dry Forest Conservation Index", (69.35% in 2003 to 81.54% in 2006), and an increase (65.4 in 2003, 90.7% in 2006) of respondents who indicated a desire to leave Dry Forest around their house if they had it in order to protect the Grenada Dove. These results indicate that the Project had successful results in the desired awareness objectives of the Project. See II (1) (i) above for additional specifics and percentage increases.</p> <p>b. Research completed as per Research Program (with changes to Dove Biology Research post Ivan), and information gathered was able to guide conservation.</p> <ul style="list-style-type: none"> <li>▪ List of reports/data completed and provided to Ministry of Agriculture departments, other institutions (foreign and local) working with forest ecosystems/Grenada Doves/species found in dry forest, schools (as requested). Dry forest research data used in development of school materials, interpretation materials, radio and other communication activities including video documentary on the Grenada Dove. Data also disseminated internationally through news reports and manuscripts to be published in.</li> <li>▪ Grenada Hook-billed Kite data collected, through collaborative work with Peregrine Fund, has been used by Ministry of Agriculture in decision making on important kite locations to focus management and educational efforts. Kite research used in RARE kite campaign being developed and implemented by FNPD officer. Data has been disseminated through peer reviewed scientific journals.</li> <li>▪ Grenada Dove census methodology is developed and in place for ongoing population monitoring.</li> <li>▪ A dry forest vegetation long-term monitoring plot has been established based on the Smithsonian MAB monitoring program, and is part of a Smithsonian regional vegetation/ecosystem monitoring programme. Several permanent plots also established through dry forest areas under government protection.</li> <li>▪ Baseline on key dry forest insect species developed.</li> <li>▪ Herptofaunal and reptilian species data collected. Data available through a long-term study on the Grenada Bank endemic tree boa data, and ongoing monitoring to continue.</li> <li>▪ Land cover classification of IKONOS high resolution satellite images (2003 images) provides baseline for future comparison of land cover (dry forest) changes.</li> <li>▪ Data collected enabled identification of key dry forest areas for the Grenada Dove, Grenada Hook-billed Kite and other important dry forest stands (mature stands).</li> <li>▪ Map of key areas for dove and other important dry forests provided to Ministry for potential land use planning.</li> </ul> <p>c. Due to hurricane Ivan (2004) during project implementation, additional privately owned lands for improved management were not secured. However, Project initiated discussions with private landowners. In addition, the Mt. Hartman National Park is proposed to be expanded from 154 acres to 178, which includes the site where the visitor center is built and where trail and interpretation are under development.</p> <p>Pre-hurricane Ivan, the Grenada Dove population increased from an estimated 120 (1998) to 192 in (2003/2004 census). Kite nesting sites located were 5 pre-Ivan. Post hurricane Ivan, a likely decrease in population noted. Hook-billed Kite; only 1 nesting attempt recorded decreased post hurricane Ivan (2005)</p>

<p><b>Project Objectives:</b></p> <p>The main objective of the project is to promote the adoption of effective long term strategies for conservation of the dry forest on public and private land by raising the awareness of key stakeholders of the importance of the dry forest habitat, providing key scientific information on this ecosystem, strengthening institutional capacity for forest management, and by promoting partnerships with the private sector to foster and support conservation activities. A second objective is to promote the acceptance of environmentally friendly land management practices to minimize dry forest loss and degradation on private land.</p>	<p>e. Increased stakeholder knowledge and support for protection of dry forest habitat (as measured through attitudinal survey and involvement in decision-making and conservation activities).</p> <p>f. Dry forest biodiversity research and monitoring provide adequate data to guide conservation efforts.</p> <p>g. Additional area of dry forest beyond land currently secured (Mt. Hartman National Park and Perseverance Sanctuary) is under improved protection and management.</p> <p>h. Increased population size of key threatened species.</p> <p>i. Environmentally friendly land-use practices, minimizing dry forest loss and degradation on public and private lands in use.</p>	<p>d. There was an overall increase in awareness of all dry forest issues from the baseline attitudinal survey conducted in 2003 to the final survey conducted in 2006. There was an increase in the awareness that the Dry Forest is critical to the survival of the Grenada Dove (29.5% in 2003, 67.8% in 2006), an increase in the “Desire to Support a Dry Forest Conservation Index”, (69.35% in 2003 to 81.54% in 2006), and an increase (65.4 in 2003, 90.7% in 2006) of respondents who indicated a desire to leave Dry Forest around their house if the had to in order to protect the Grenada Dove. These results indicate that there Project had successful results in the desired awareness objectives of the Project. See II (1) (i) above for additional specifics and percentage increases.</p> <p>e. Research completed as per Research Program (with changes to Dove Biology Research post Ivan), and information gathered able to well guide conservation.</p> <ul style="list-style-type: none"> <li>▪ List of reports/data completed and provided to Ministry of Agriculture departments, other institutions (foreign and local) working with forest ecosystems/Grenada Doves/species found in dry forest, schools (as requested). Dry forest research data used in development of school materials, interpretation materials, radio and other communication activities including video documentary on the Grenada Dove. Data also disseminated internationally through news reports and manuscripts to be published in.</li> <li>▪ Grenada Hook-billed Kite data collected, through collaborative work with Peregrine Fund, has been used by Ministry of Agriculture in decision making on important kite locations to focus management and educational efforts. Kite research used in RARE kite campaign being developed and implemented by FNPD officer. Data has been disseminated through peer reviewed scientific journals.</li> <li>▪ Grenada Dove census methodology, is developed and in place for ongoing population monitoring.</li> <li>▪ A dry forest vegetation long-term monitoring plot has been established based on the Smithsonian MAB monitoring program, and is part of a Smithsonian regional vegetation/ecosystem monitoring programme. Several permanent plots also established through dry forest areas under government protection.</li> <li>▪ Baseline on key dry forest insect species developed.</li> <li>▪ Herptofaunal and reptilian species data collected. Data available through a long-term study on the Grenada Bank endemic tree boa data, and ongoing monitoring to continue.</li> <li>▪ Land cover classification of IKONOS high resolution satellite images (2003 images) provides baseline for future comparison of land cover (dry forest) changes.</li> <li>▪ Data collected enabled identification of key dry forest areas for the Grenada Dove, Grenada Hook-billed Kite and other important dry forest stands (mature stands).</li> <li>▪ Map of key areas for dove and other important dry forests provided to Ministry for potential land use planning.</li> </ul> <p>f. Due to hurricane Ivan (2004) during project implementation, additional privately owned lands for improved management were not secured. However, Project initiated discussions with private landowners. In addition, the Mt. Hartman National Park was expanded from 154 acres to the proposed 178, which includes the site where the visitor center is built and where trail and interpretation are under development.</p> <p>g. Pre-hurricane Ivan, the Grenada Dove population increased from an estimated 120 (1998) to 192 in (2003/2004 census). Kite nesting sites located were 5 pre-Ivan. Post hurricane Ivan, a likely decrease in population noted. Hook-billed Kite; only 1 nesting attempt recorded decreased post hurricane Ivan (2005) and Dove population decrease estimated to range between 64 and 120. Extreme damage to vegetation and resources were documented post Ivan, likely significantly effecting populations of Grenada Dove and Kite.</p> <p>Previous land uses practices within the protected areas no longer taking place, such as farming, charcoal burning, grazing reduced to occasional occurrences which are monitored, and protected area boundaries are accepted. Ecotourism is implemented within the Dry forest area at Mt. Hartman. There are some evidences that the private sector is implementing improved environmentally friendly land use practices.</p>
<i>Project Objectives</i>	<i>Indicators in project brief</i>	<i>Results</i>

<b>Project Outputs</b>		
<p><b>Component 1. Environmental education and public outreach</b></p> <p>Environmental education and public outreach program fully implemented, which increases public support for dry forest and biodiversity conservation</p>	<ul style="list-style-type: none"> <li>a. Established environmental education program.</li> <li>b. Statistically valid surveys demonstrate attitudinal changes in support of project goal.</li> <li>c. No. of in school educational programs established.</li> <li>d. No. of Grenadians and foreign tourist visitors to Mt. Hartman National Park Visitor's Center.</li> <li>e. Stakeholders actively participate in meetings and provide input to decision making.</li> <li>f. Strategic communications plan implemented.</li> </ul>	<ul style="list-style-type: none"> <li>a. Education program developed through a workshop by stakeholders (media, government personnel, teachers, other). Education programme part of Project communications programme, with an intentional focus on the CXC curriculum and schools. Program not implemented as a result of hurricane Ivan.</li> <li>b. A comparison of the attitudinal surveys conducted in 2003 and 2006 indicates support of the Project goal. There was an increase in familiarity with the term "Dry Forest", an increase in the awareness of the identity of the Grenada Dove (87.8% - 95.4%), an increase in the understanding of practices which either benefit or compromise the Dry Forest, and an increase percentage of those who "<i>strongly agree</i>" with the statement "I would support a Dry Forest Conservation effort". These results indicate that the environmental education programme and the activities carried out by the Dry Forest Biodiversity Conservation Project had successful results in the desired awareness objectives of the Project. See II (1) (i) above for additional specifics and percentage increases.</li> <li>c. In-school programmes in process of development. Discussions with Government curriculum development personnel in progress (2004) but dissemination to schools halted due to hurricane Ivan.</li> <li>d. Visitor Center opened in May and visitors planned for 2006 tourist season. Numbers of visitors since opening to be reported end of August 2006. Approximately 2500 visitors are estimated for year 1 of park operation, based on estimates collected from Levera National Park.</li> <li>e. Stakeholders – Steering committee members, Government officials, dry forest users and landowners represented main stakeholders. Stakeholders participated in workshops and development of programs.</li> <li>f. Communication plan developed and implemented through press releases, TV commercials, (2 times per day during prime time, every day for 1 year), radio announcements on upcoming events, competitions, news briefs, interviews, newspaper press releases, documentary. Public support promoted through workshops, media, dissemination of dry forest information and educational materials for Visitor Center</li> </ul>

<p><b>Component 2.</b> <b>Dry forest biodiversity research and monitoring</b></p> <p>Dry forest biodiversity research and monitoring program established and providing required data to guide conservation efforts.</p>	<p>a. Up-to-date database on dry forest ecosystem and biodiversity in place serving as the basis for sound habitat management and species conservation.</p> <p>b. Strategy in place to protect priority dry forest sites, based on data collected and stakeholder input.</p> <p>c. Grenada Dove research and species recovery efforts initiated.</p> <p>d. Ecological monitoring program in place.</p>	<p>a. GIS Database developed and includes all relevant data, including; land classification of forest cover of dry forest areas, dove territories (pre and post hurricane), kite nest locations (pre and post hurricane), dry forest ecology sampling plots, and others. Other baseline data now exists on insect species, a herbarium that includes dry forest species, and other.</p> <p>b. Management plan for future formulation of strategy developed. An estimated 400 ha of priority dry forest area for improved management identified based on data collected and stakeholder consultation. Research program developed and implemented to be used as a basis for future research. Ongoing Grenada Dove conservation efforts will continue to build on Grenada Dove Recovery Program and Grenada Dove research outlined in Project Research Program.</p> <p>c. Grenada Dove research conducted and efforts outlined in Recovery Plan. Grenada Dove research on breeding, feeding, predators, distribution and abundance, initiated. Habitat protection and management, stakeholder participation, education and awareness, all part of Recovery plan (developed pre-project implementation), were implemented. The development of husbandry techniques for a related <i>Leptotila</i> species is being carried out through Louisville Zoo.</p> <p>d. Dry forest ecology monitoring program established based on Smithsonian MAB program. 1 ha long-term monitoring plot in Mt. Hartman part of Smithsonian regional forest monitoring program. Ten permanent small plots also set in protected areas. Data collected includes species composition, relative abundance, diameter at breast height (dbh), canopy height, and other.</p>
<p><b>Component 3.</b> <b>Capacity Building and Project Coordination</b></p> <p>Capacity of Forests and Parks Department for conservation and wildlife management improved, policy and legislative initiatives that promote sound land use practices adopted, and project implementation effectively coordinated.</p>	<p>c. Dry forest management and conservation activities are integrated into annual work plans of the Forestry and Parks Department;</p> <p>d. Number of qualified Forestry and Parks Department personnel adequately trained, dedicated to ongoing dry forest conservation efforts and providing proficient conservation and wildlife management.</p> <p>e. Grenada Forest Policy and/or legislation updated and expanded, as necessary, adopted to promote environmentally friendly land-use practices, minimizing dry forest loss and degradation on public and private lands.</p> <p>f. Satisfactory project implementation rating from Bank Supervision Missions and from Supervisory Committee</p>	<p>a. Responsibilities for future management rest with the FNPd. Conservation Unit manages the forest lands at Mt. Hartman, including maintenance of overall supervision of the protected area. Recreation Unit is responsible for the management and administration of the Visitor Center, while the Education Unit manages the awareness and interpretation displays and materials. The Government of Grenada's budget now includes all recurrent and capital costs for Mt. Hartman National Park and Perseverance Protected Area.</p> <p>b. The Project financed the training for 1 staff member in GIS, 1 in environmental education in Thailand, and 1 (partially) in education and recreation through Smithsonian. Approximately 6 staff members received on the ground training, in dry forest ecological vegetation sampling, Grenada Dove census methodology, entomology research, herbarium/plant species collection. Improved understanding of dry forest biodiversity, management requirements, and species of special by FNPd staff. Established FNPd as central resource for dry forest ecological and biological information for Grenada.</p> <p>c. Project supported Forest Policy development during Project preparation phase (PDF-A). Project supported the revision of Grenada Forestry legislation, by providing information/data on dry forest ecosystem conservation and species of special significance, that since has been incorporated into the draft revised legislation.</p> <p>d. Satisfactory project implementation rating.</p>



<p><b>Component 4. Private Sector Partnerships for Dry Forest Conservation</b></p> <p>Effective partnerships in place with landowners, and other stakeholder groups to protect and manage the identified network of key dry forest conservation sites.</p>	<p>a. Number and type of arrangements with landowners and other stakeholders to manage the network of dry forest.</p> <p>b. Further deforestation prevented in designated areas.</p> <p>c. The “Award for Conservation Excellence in the Private Sector” is seen as a prestigious prize.</p>	<p>a. Network of dry forests for improved management identified and future land use planning. No specific arrangements with landowners to manage dry forests have been made, though there are some evidences that the private sector is implementing improved land management practices. Additional land has been added to the Mt. Hartman National park, upon which sits the Mt. Hartman Visitor Center, approximately 25 acres.</p> <p>b. No deforestation taking place in areas designated (Mt. Hartman &amp; Perseverance Protected Areas). Dry forest loss and degradation on public lands has been reduced within the protected areas, such as grazing and burning for charcoal.</p> <p>c. No award has been presented due to the changes in Project priorities post hurricane Ivan.</p>
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## **Annex 2**

### **Dry Forest Biodiversity Research and Monitoring Component**

#### **Research Reports funded by Dry Forest Project**

1. DIGITAL IMAGE INTERPRETATION – SATELLITE IMAGES  
Report on Classification of Grenada IKONOS Satellite Imagery  
David Plume, 2005
2. ECOLOGY  
Composition and Structure of Grenada Dove (*Leptotila wellsi*) Habitat  
Pedro Rivera Lugo, 2005
3. GRENADA DOVE  
Final Report – Grenada Dove Census 2003/2004  
Bonnie Rusk and Lawrence Clouse, 2004
4. GRENADA DOVE  
Post-hurricane Ivan Dove Evaluation  
Bonnie Rusk, 2005
5. GRENADA DOVE  
Grenada Dove Biology: Final Report  
W. Dan Twyman and Steve Hayslette, 2006
6. ENTOMOLOGY  
A survey of insect assemblages in fire dry forested areas in Grenada  
Elroy Charles, 2005
7. GIS DATABASE AND MAPS (no written report)  
Andrew T. Stephens, 2006

#### **Research/Studies collaborating with the Dry Forest Project**

8. REPTILES/AMPHIBIANS  
Herpetofaunal Communities in Grenada: A Comparison of Altered Sites, with an Annotated Checklist of Grenadian Amphibians and Reptiles.  
(Robert Henderson, Milwaukee Public Museum, Milwaukee, WI, USA)
9. GRENADA HOOK-BILLED KITE

Grenada Hook-billed Kite – year end status reports  
(Russel Thornstrom, Peregrine Fund, Idaho, USA)

Literature Cited:

- Rusk, B. L. and L. Clouse. 2004. Status of the endangered endemic Grenada Dove (*Leptotila wellsi*).  
Unpublished report. Grenada, W.I.
- Rusk, B. L. 2005. Draft Post Hurricane Ivan Grenada Dove Evaluation. Unpublished report.  
Grenada, W.I.
- Thornstrom, R., E. Massiah, and Christi Hall. 2001. *Caribbean Journal of Science*. 37(3-4):278-281.