Darwin Initiative for the Survival of Species

Final Report

June 2004

A National Strategy for Sustainable Wildlife Use

Commonwealth of Dominica

A National Strategy for Sustainable Wildlife Use, Commonwealth of Dominica
Project Ref. 162 / 10 / 010

CONTENTS

Contents

1. Darwin Project Information
2. Project Background/Rationale
3. Project Summary
4. Scientific, Training and Technical Assessment
5. Project Impacts
6. Project Outputs
7. Project Expenditure
8. Project Operation and Partnerships
9. Monitoring and Evaluation, Lesson Learning
10. Actions Taken in Response to Annual Report Reviews
11. Darwin Identity
12. Leverage
13. Sustainability and Legacy
14. Post-Project Follow up Activities
15. Value for Money
16. Appendix I: Project Contribution to Articles under the Convention on Biological Diversity
17. Appendix II: Outputs
18. Appendix III: Publications
19. Appendix IV: Darwin Contacts

References

Annexe A: Logframe from Project Schedule

1. DARWIN PROJECT INFORMATION

Project Reference No.	162 / 10 / 010
Project title	A National Strategy for Sustainable Wildlife Use, Commonwealth of Dominica
Country	Commonwealth of Dominica
UK Contractor	Fauna & Flora International (FFI)
Partner Organisation (s)	Forestry, Wildlife & National Parks Division (FWD) Ministry of Agriculture and the Environment
Darwin Grant Value	£99,754
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Project website	Publicised via www.fauna-flora.org
Author(s), date	Alex Page Project Leader (11/03 – 03/04) 1st June 2004

2. PROJECT BACKGROUND/RATIONALE

The Commonwealth of Dominica is a small volcanic island state with one of the lowest population densities and the most intact forest cover in the Caribbean. It is the most northerly Windward Island of the Lesser Antilles, with a land area of 751 square kilometres and a population of just over 70,000. With a series of complex mountain ranges, Dominica is characterized by very rugged and steep terrain. This mountainous topography has contributed greatly to the island's dramatic beauty and the conservation of its natural resources, leading to it being widely called the "Nature Isle of the Caribbean".

Around 65 percent of the land area is covered by natural vegetation, interspersed with rivers, waterfalls and lakes. Over 20 percent of land area is under protection, including Morne Trois Piton National Park, a UNESCO World Heritage Site. Among the 1226 species of vascular plants are several endemics, including 'Bwa Kwaib' (*Sabinea carinalis*), the National Flower. Dominica is host to the most diverse assemblage of wildlife species remaining in the Eastern Caribbean, with 175 species of birds, including the world's most threatened Amazon parrot, the single-island endemic 'Sisserou' (*Amazona imperialis*); four regionally endemic bats (*Monophylus plethodon, Ardops nicholsi, Myotis dominicensis* and *Bracyphylla cevernum*); two endemic lizards (*Ameiva fuscata* and *Anolis oculatus*); an endemic snake (*Typhlops dominicana*) and an endemic frog (*Eleutherodactylus amplinympha*).

Dominica's biodiversity is under threat from human activity, especially deforestation, and natural disasters. In recent years a slowdown of the economy is thought to have increased exploitation of wildlife through hunting and capture. The Forestry, Wildlife and Parks Division (FWD) of the Ministry of Agriculture and Environment are primarily responsible for biodiversity management and conservation issues in Dominica. In response to concern over the levels of exploitation of Dominica's wildlife FWD requested the assistance of FFI to address the direct threats of over-exploitation facing Dominica's wildlife.

The project was developed in consultation with FWD, who identified a lack of technical

expertise and financial resources to implement the required project components. This partnership was formalised through the signing a Memorandum of Understanding between FWD and FFI, specifying the outputs of the Darwin project and the responsibilities of the two agencies.

3. PROJECT SUMMARY

3.1 Purpose and Objectives

The Project Purpose was as follows:

To reduce direct threats of over-exploitation facing the wildlife of Dominica, through the participatory development of a National Strategy for Sustainable Wildlife Use, and building of the in-country capacity for its long-term implementation, in partnership with the Government and communities of the Commonwealth of Dominica. Collection of novel biological and social data will provide a sound basis to future decision-making, the work aims to draw on and develop models of best practice for the region.

The following section reports against the objectives/outputs and activities specified in the logframe (see Annexe A) of the Project Schedule, which has not been modified. Further details regarding research and training activities are provided in Section 4 and in the full reports in the Annexes.

Objective 1: To improve the baseline level of social information on key resource species use.

Analyse available data

Background research on key resource species was carried out through literature review and in-country discussion with FWD and other agencies to plan the social assessment component of the project.

Initial participatory assessments

This appears to be the first time a social assessment of wildlife views and hunting has be undertaken in Dominica. Through this component FWD Forest Officers and Dominican community members received professional training in social assessment techniques; designed and field-tested the survey methodology; and successfully planned and conducted the research over a three-month period.

This has, for the first time, enabled an assessment of the value of wildlife at the community level; perceived changes in abundance; hunting methods and the pattern of use of key resource species. The low response to the survey question concerning dietary use of wild meat suggests that this is a sensitive issue and data related to this question should be treated with caution.

FWD now has staff with training and experience in social assessment and an improved understanding of community perceptions and practices that have great influence on the success of FWD's efforts in wildlife management.

Objective 2: To improve understanding of the biology and status of key resource species.

2.1 Determine distribution and abundance of key species

FWD Forest Officers received professional training in biological survey techniques; established 35 permanent survey transects; planned and conducted an 18-month survey programme and gained experience in data input and analysis. This has been the first scientific assessment of the status of resource species in Dominica and has increased knowledge regarding their distribution and abundance, leading to management recommendations. The baseline data collected will enable FWD to monitor future changes in the status of these species, to determine the success of management activities.

Discussions between the Project Leader and senior FWD staff noted that there is also now an opportunity to review the way in which FWD carries out surveys, based on the experience gained during this project. This should include a detailed review of methodology and the competence of individual Forest Officers. This may lead to a select number of Forest Officers, with appropriate interest and ability, being given further training to enable them to fulfil future survey requirements.

2.2 Initiate further ecological studies

The wildlife surveys conducted by FWD identified greatly reduced distribution and abundance of one of the focal species, the mountain chicken frog (*Leptodactyllus fallax*). Also a fatal fungal skin disease was found to be affecting the frogs. This was of great concern due to the critically endangered status (pending IUCN confirmation) of the mountain chicken.

In response to these findings two further ecological studies were initiated. Firstly, a more detailed study of the status of the mountain chicken was commissioned, involving additional transects being established. Secondly, samples of frogs apparently killed by the fungal disease were sent back to the UK for analysis by the Zoolological Society of London, leading to the diagnosis of *Chytridiomycosis*. This is considered to pose a major threat not only to the mountain chicken, but to amphibian species throughout the Caribbean.

As described below, the project enabled further positive steps to be taken to address these urgent conservation issues. The identification and follow up of these issues affecting the mountain chicken have been a highly successful component of the project.

2.3 Review the historical and current sustainability of off-take

The data collected during the project does not enable a comprehensive analysis of the current sustainability of off take of key species and prior to the project only anecdotal information was available. However, the decline in area and abundance of the Mountain chicken identified by the project are an indication that off take of this species has been unsustainable. Further practical guidelines for the other focal species have also been produced.

Objective 3: To develop conservation strategies for selected key resource species.

3.1 Produce species-specific sustainable management guidelines

Practical guidelines for future action, based on the available data, have resulted from the project and are incorporated in the Wildlife Survey Report and Sustainable Wildlife Use Strategy. One of the key actions already adopted is a ban on hunting of mountain chicken which has been a direct result of the project, based on data collected during the biological surveys of key resource species.

3.2 Support the ongoing review of national wildlife legislation

The project enabled FFI conservation biologists to provide support to FWD staff in a critical review of the Forestry and Wildlife Act (1976), leading to the drafting of detailed revisions embodied in the Forestry and Wildlife (Amendment) Act 2003. Following a number of years of unsuccessfully attempting to pass earlier amendments, these approved revisions are now on the verge of gaining parliamentary approval partly due to the support provided by the project.

Objective 4: To build capacity within the Forestry, Wildlife and Parks Division and other key agencies.

4.1 Work with FWD counterparts in all phases

All project activities have been designed and implemented in collaboration with key FWD personnel, through initial planning meetings and subsequent progress meetings, e-mail correspondence and telephone calls. This has enabled FWD institutional learning to take place in relation to each component of the project. There has been a good level of communication and teamwork between FWD and FFI throughout the project.

4.2 Hold training courses for FWD personnel

A series of training courses were provided for FWD personnel during the project, as described in Section 4. These matched the outputs specified in the Project Schedule, except for the following:

- The training course on rural business development did not take place due to prioritising time on more central aspects of the project.
- Training in strategic planning for conservation was incorporated into the Sustainable Wildlife Use Strategy development process, rather than being a stand-alone course. It was felt that the principles of strategic planning were best learned through actual involvement in strategy development, rather than via hypothetical exercises.

This training has been very successful in improving FWD's capacity in a number of new areas and the high staff retention levels will make this an enduring legacy of the project. A particularly important achievement was for FWD to develop skills and demonstrate leadership in participatory planning for conservation through the strategy development workshop mentioned above.

4.3 Establish a stakeholder forum on sustainable use

This component was successfully achieved in two phases. Dominica's first Hunters Association was established to improve communications between FWD and this important group of stakeholders and enhance the implementation of legislation pertaining to sustainable use.

Secondly, wider stakeholder engagement in sustainable use issues was enabled through a series of three workshops during the final year of the project (see Section 4), which were well attended by representatives from a variety of agencies and led to the development of the Sustainable Wildlife Use Strategy (see 6.1).

Objective 5: To improve public awareness of the vulnerability of natural resources amongst stakeholder groups.

5.1 Plan public awareness campaign

This component was carried out effectively at an early stage in the project. A public awareness strategy was developed through a two-day participatory workshop, which also served as training in public awareness planning for FWD, leading to a collaboratively designed action plan for increasing public awareness of wildlife management issues. The strategy remains a document relevant to FWD's remit, which can be used to guide future public awareness activities.

5.2 Develop a suite of educational materials

The development of educational materials has been limited to a series of three road signs, which were painted by a local artist, each containing key messages regarding the vulnerability of Dominica's wildlife. These large, sturdy and colourful displays were erected at strategic locations on the roads leading out the capital of Roseau. This is a highly effective means of communication as the signs would be seen by anyone travelling to/from Roseau on the very limited road network of this small island. In addition, the signs are located on the many hairpin bends that are required by mountainous terrain, meaning that they are visible from either direction and vehicles are always travelling slow enough to read them.

5.3 Regularly publicise the project

Regular and effective exposure of the project has been possible due to good links between FWD and television, radio and newspaper agencies. Via these methods it has been possible to access the majority of the 70,000 population on this small island. By these means the public were made aware of each stage of the projects progress, including National TV coverage of the strategy development workshops through the Government Information Service (GIS).

5.4 Target wildlife collectors and women's groups for regular discussions

Regular meetings have been initiated between FWD and hunters through the development of a Hunters Association. This is proving an important forum for FWD to engage with the hunting community and improve the implementation of hunting legislation. Similar forums were not established with women's groups, but there was representation by the Women's Bureau in the strategy development workshops.

Objective 6: To develop a collaboratively designed strategy for sustainable use of wildlife in Dominica.

6.1 Develop a National Sustainable Wildlife Use Strategy

A draft strategy has been produced, which is currently going through a consultation process with a wide range of stakeholders. Therefore, within the life of the project this objective has only partially been achieved due to the logistics of implementing this component taking longer than expected. However, FFI and FWD remain committed to completing this objective following the consultation process, with future costs for this being met by FFI.

6.2 Work with FWD on relating protected area and buffer zone management on key species

Based on the survey results, advice at this level of detail has not been possible, but further assistance in this area is planned for follow up work through the development of a national biodiversity monitoring system, as described in Section 6.

3.2 Modifications to the project

The project review by the Edinburgh Centre for Tropical Forests following the Annual Report 2002 – 2003 highlighted a number of issues for consideration. On the basis of these comments, operational restructuring of the FFI Caribbean Programme and a pending change of Project Leader a response was sent on 22nd September 2003. This explained that due to various factors it was unlikely that the strategy would be completed within the lifetime of the project, although inputs to the project would be increased. Also that the scope of the strategy would expand beyond the sustainable use of key resource species to the wider issues affecting sustainability within Dominica. Further information regard modifications are referred to in Section 10.

3.3 Relevant CBD Articles

The following CBD articles best describe the project.

Article #	***Article Description***
6	General Measures for Conservation & Sustainable Use
7	Identification and Monitoring
8	In-situ Conservation
10	Sustainable Use of Components of Biological Diversity
12	Research and Training
13	Public Education and Awareness
17	Exchange of Information

The extent to which the project contributes to these measures for biodiversity conservation is shown in Appendix I.

3.4 Overall success of the project

The project has resulted in significant improvements in the capacity of FWD to fulfil its institutional remit with respect to wildlife management. The Forestry Officers have, for the first time, received professional training in biological and social research techniques relating to key resource species. This training has been consolidated through prolonged practical implementation of these techniques in collecting data in the field. Capacity has also been built in the fields of public awareness, proposal writing, wildlife farming and participatory action planning.

The status of FWD within government and the general public has been enhanced through their implementation of this project. In particular, FWD has been able to improve consultation with stakeholders and demonstrate leadership through the participatory strategy development process. This would seem to be the first instance of FWD leading this type of cross-sectoral process. The data arising from the project enabled FWD to push a hunting ban on mountain chicken through parliament, which in the past would in all likelihood have been blocked due to the absence of convincing supporting evidence. FWD is also now consulting with hunters on a regular basis through the Hunter's Association established through this project, which is helping to alleviate conflict and improve understanding.

The project has directly led to action being taken to safeguard the future of the Critically Endangered (subject to IUCN confirmation) mountain chicken Frog (*Leptodactylus fallax*). In addition, the project also confirmed the presence for the first time in the Caribbean of a fungal disease (*Chytriomycosis*) which is believed to be partly responsible for the worldwide population decline and extinction of many species of amphibian. This is considered to pose the greatest single threat to Caribbean amphibians since the introduction of alien species. The confirmation of its presence has enabled precautionary measures to be initiated through the initiation of the hunting ban and the development of a Darwin proposal (by the Zoological Society of London with FFI assistance), which is currently awaiting approval.

The survey data does not permit detailed analysis of the sustainability of off take of key resource species, but has resulted in increased knowledge and practical guidelines, which have been incorporated into the national strategy.

The broadening of project focus has enabled the participatory analysis of factors affecting sustainability by a wide range of stakeholders in the development of the Strategy. In addition to resulting in a framework for action in the Strategy this process has built the capacity of these agencies in action planning and participatory strategy development.

Finally, the project has directly resulted in the development of a series of detailed proposals, which will enable implementation of key aspects of the strategy. Further details about these initiatives and provided in Section 6.

4. SCIENTIFIC, TRAINING AND TECHNICAL ASSESSMENT

4.1 Research

This section provides a summary of the methodology and findings of research carried out during the project.

a) Social Assessment Survey on Hunting of Wildlife

Staff Sara Gillingham – Participatory Natural Resource Management Consultant.

Sara McIntyre – Consultant.

Five FWD Forest Officers.

Seven Research Assistants from various communities in Dominica.

Methodology

Between 15 March – 15 June 2002 a social assessment on hunting of wildlife in Dominica was carried out by trained FWD Forest Officers and community members. The aim of this research was to provide data regarding the socio-economic characteristics of hunting in Dominica, particularly of the focal resource species, as an input into the assessment of sustainability of wildlife use.

The surveys took place in selected known hunting areas and consisted of 107 targeted and 181 random interviews within 20 villages throughout Dominica. Targeted interviews were conducted with known hunters (Targeted) and random interviews were conducted with randomly selected households (Random), both within the same villages. One individual per household was interviewed and questions related to activities per household rather than per individual. The methodology was trialled in a successful pilot survey. The survey questionnaires elicited information regarding diet; perceived abundance of wildlife species; perceived hunting pressures; hunting activities and preferences; consumption and marketing of wild meat; estimated off take and perceptions about wildlife management, especially hunting laws.

Findings

- Income – Hunting was reported as a source of household income for 4.4% of Random and 11.2% of Targeted.
- Dietary preferences – 48% of Random and 76% of Targeted reported eating wild meat at least once a week. Domestic meat was preferred over wild meat for Random, but there was little difference in preferences overall in Targeted. The reported order of preference for focal species of wild meat is Agouti (R=24%, T=29.4%), black crab (R=6.6%, T=7%), mountain chicken/Crapaud (R=3.9%, T=7%) and Red-necked Pigeon/Ramier (R=0.6%, T=4.7%). The relatively low figures for mountain chicken are interesting as it is the National Dish of Dominica and populations appear to be under pressure from a fungal disease and over-hunting.

  A very high rate of non-response from Random regarding dietary use of wild meat (52%) indicates that it may have been a sensitive issue, possibly due to concern over breaking wildlife laws. Therefore the data for this section should be treated with caution.
- Sources of wild meat – The main reported sources of wild meat for both Random and Targeted were directly from hunting or from local hunters, with Random obtaining more from local hunters and Targeted directly from hunting.
- Perceived wildlife abundance – Most respondents believed that the focal species were abundant in their area of residence and had increased over the past five years. The accuracy of these responses may have been influenced by concern

amongst respondents that the information could be used to promote increased restrictions on hunting.

- Hunting – The perceived levels of hunting were slightly lower than actual levels. Household consumption was reported as the main reason for hunting, with very few hunting for sale. For Random the main reported hunting method is using dogs, while Targeted preferred to use guns. Two thirds of respondents hunt weekly, with Targeted spending more time hunting than Random. Targeted report a much larger catch than Random for every species, however the large standard errors for off take suggest that these figures are inaccurate. Hunting most commonly takes places in forested areas, followed by forest-farmland fringe.
- Wildlife management – Wildlife was considered important for Dominica by nearly all households, with 'health and nutrition' being given as the most common reason, followed by 'visitor use', 'economic', 'future use' and 'natural beauty'. There was a general lack of knowledge about wildlife management laws, although most responded that the ban on hunting certain species was a good thing to allow reproduction of wildlife. The most frequent suggestions for improving wildlife management included education, public awareness and restrictions on use of wildlife. 85% of Targeted respondents expressed an interest in joining a hunting association, although this figure was less than half for Random.

These findings have been subject to internal review only.

Full details are provided in McIntyre (2003).

b) Magin, C. (2004). Wildlife Survey Report.

Staff Evan Bowen-Jones

Dr. Jenny Daltry

Dr. Chris Magin

FWD Forest Officers

Methodology

Biological surveys were undertaken to assess the status of four key resource species from each major use group, to be used together with the social hunting assessment data in devising management guidelines. The following species were chosen for study in consultation with FWD, based on their importance as game species and concern over sustainability of off take. There was also heightened concern over the conservation status of the mountain chicken Frog, the National Dish of Dominica. This was only found on Dominica and Martinique and was believed to be critically endangered.

Group	Common Name	Local Name	Scientific Name
Mammal	Red-rumped Agouti	Gouti	*Dasyprocta leporina*
Amphibian	Mountain Chicken Frog	Crapaud	*Leptodactyllus fallax*
Crustacean	Black Crab	Kwab	*Gecarcinus ruricola*
Bird	Red-necked Pigeon	Ramier	*Columba squamosa*

Training was provided to FWD Forest Officers by FFI conservation biologists, Evan Bowen-Jones and Dr. Jenny Daltry through a series of workshops discussions and field training. A series of 35 fixed-length permanent transects were established throughout the four administrative Forest Ranges in areas believed to contain the focal species. Siting of transects was also heavily influenced by the extremely rugged and mountainous terrain of Dominica. These were distributed as follows:

SPECIES	FOREST RANGE				TOTAL
	Central	Eastern	Southern	Northern	
Agouti / Red-necked Pigeon	4	3	4	4	**15**
Mountain Chicken	0	3	3	3	**9**
Black Crab	0	3	4	4	**11**
Total no. of transects	**4**	**9**	**11**	**11**	**35**

Transects for Agouti and Red-necked Pigeon were combined, with mountain chicken and black crab being used solely for these species. The following monitoring protocols were used for each species, carried out by the trained FWD Forest Officers using standard data sheets. The monitoring period was from March 2002 to September 2003 for Agouti / Red-necked Pigeon transects and from August 2002 to March 2004 for mountain chicken transects. Physical descriptions, locations and habitat characteristics were recorded for each transect.

Agouti / Red-necked Pigeon

Fifteen transects 1km long and 20m wide, distributed through all four Forest Ranges, were walked by a minimum of two observers in the early morning on a monthly basis. All Agouti's seen and heard were recorded, with individuals being separated into three classes where possible – Adult, Pregnant Adult and Juvenile. The number of Red-necked Pigeon's seen and heard was also recorded.

Mountain Chicken

Nine transects, 250m long and 10m wide, were established in all Forest Ranges except Central, where mountain chickens are unlikely to be present due to altitude. The relative abundance at each transects was recorded on a monthly basis after dark, as mountain chickens are primarily nocturnal, by a minimum of two observers. Relevant environmental conditions were recorded before the start and end of each survey. Visual Encounter Surveys (VES) were conducted by observers on the outward journey along the transect, with details of all frogs seen being recorded. As mountain chickens tend to 'freeze' in torchlight, close inspection of individuals was possible. On the return journey along the transects Aural Encounter Surveys (AES) were conducted, with the numbers of frogs calling within an estimated 100m either side of the transect being recorded.

During the initial survey period frogs encountered on transects during the VES were caught, weighed, sexed and measured, but this was discontinued after the diagnosis of the fatal fungal disease affecting the frogs due to risk of spreading the infection. Further precautions were taken by the Forest Officers disinfecting their footwear and vehicle tyres before leaving transect areas.

A more detailed description of the transect monitoring techniques for mountain chicken is given in Daltry (2002).

Black Crab

Eleven transects, 200m long and 10m wide, were established throughout the forest ranges except Central. black crabs are believed to be largely absent from this area due to the need for close proximity to the coast for egg washing. Being a nocturnal species, surveys were conducted after dark, on a monthly basis.

Findings

Agouti

No significant differences between the density of agouti's in different forest ranges, although significant differences in averages were recorded between different transects, with the higher densities being found in the northern and eastern ranges. There does not appear to be a seasonal effect on population structure and density, although there are large variations in agouti numbers. The agouti appears to be highly adaptable, with habitat, altitude and levels of disturbance having no significant effect on population numbers. Other studies have shown agouti populations to be fairly tolerant of hunting, suggesting good prospects for sustainable use of this species.

A ban on commercial hunting of agouti is recommended, but local subsistence hunting should be allowed to continue. The main reasons for maintaining a viable population of the agouti is its cultural importance as a popular game species. Continuing to allow hunting will also enable farmers to take direct action against crop depredation. As a non-threatened, introduced species the agouti is of low conservation priority. Monitoring should continue on a six-monthly basis to enable population changes to be detected and adjust management regimes accordingly. Further studies should also be designed identify the reasons for the significant differences in numbers observed between transects, as this will have further implications for management.

Red-necked Pigeon

These studies showed no overall changes in the population of red-necked pigeon. However, as the transect widths could not be accurately estimated data could not be used to estimate habitat preferences or absolute densities. Other studies suggest the species has a high capacity for regeneration and therefore there should be good prospects for sustainable use, with proper controls. Monitoring should be continued on a six-monthly basis to enable long-term changes to be detected and adjust management regimes accordingly. Conservation of the red-necked pigeon should be based primarily on its importance as a popular games species in Dominica.

Mountain Chicken Frog

The mountain chicken population on Dominica seems to be falling, with numbers recorded on the transects halving over the study period and evidence of local extinctions. The surveys also identified the appearance of *Chytridiomycosis* in the mountain chicken – a fatal fungal disease which has been responsible for amphibian mortality and extinction around the world. This is the first time this has been observed in the Caribbean, and poses a great threat to amphibian species throughout the region. mountain chickens on Dominica appear to be significantly smaller than those observed during similar studies on Monserrat, which may be symptomatic of systematic long-term over-exploitation.

A complete ban on hunting of mountain chicken has been initiated and this should remain in force while the effects and implications of *Chytridiomycosis* are investigated and until population numbers have recovered. To kerb the spread of the disease, efforts should be made to prevent amphibians or potentially contaminated material being moved around Dominica or leaving the island.

Efforts should be made to confirm the global conservation status of the mountain chicken, which is likely to be Critically Endangered (Daltry, 2002). This should enable enhanced support for initiatives to conserve the mountain chicken and address the *Chytridiomycosis* threat, with wider benefits to other Caribbean amphibians.

If conditions are suitable to lift the hunting ban in the future, the hunting season should avoid periods when females are nourishing tadpoles. This is in October to December, which currently coincides with the general hunting season.

Monitoring should continue on a six-monthly basis by FWD Forest Officers to enable long-term changes to be detected. This should coincide with mountain chicken monitoring on Montserrat, which takes place during May and November,

Black Crab

Overall numbers of black crab were found to be high, but a decline in overall abundance was recorded during the study. The differences in numbers observed between transects was highly significant, with a hundred-fold variation between sites. There did not seem to be any strong regional trends, with abundance at specific sites more likely to be affected by local habitat, environmental conditions and infrastructure than location within administrative forest ranges. Coastal roads are responsible for high mortality of black crabs, especially during May when females migrate to the shore to wash their eggs. Also, concrete barriers protecting some roads from land slip debris form an impenetrable barrier to this migration.

Although there does not seem to be major cause for concern over black crab populations at present, other studies have linked population declines to over-harvesting. Monitoring should continue on a six-monthly basis to enable long-term changes to be detected and management regimes adjusted accordingly.

General

The trends identified during this study period should be treated with caution due to the presence of various forms of ‘noise’ in the system – climatic fluctuations, observer bias, and seasonal variations in behaviour. Therefore monitoring of each focal species should continue on a six-monthly basis to determine whether perceived changes in populations are genuine. Until these long-term trends are apparent a precautionary approach should be taken in the management (for cultural of conservation purposes) of these resource species.

These findings have been subject to internal review only.

Full details are provided in Magin (2003).

c) McIntyre, S. (2003). The Current Status of the Mountain Chicken *Leptodactyllus fallax* on Dominica, Eastern Caribbean: An Amphibian in Decline.

Staff Sara McIntyre

Dr. Jenny Daltry

FWD Forest Officers

Methodology

This additional study was initiated in response to concerns about a marked decline in the abundance of the mountain chicken on Dominica, identified during the biological surveys of key resource species by FWD Forest Officers. Anecdotal information was collated from Forest Officers and local communities on the distribution and abundance of the mountain chicken, verified through field visits where possible. This information was mapped using Arc View (a GIS programme) and overlaid with further layers of information, including soil type, vegetation and elevation to investigate environmental factors potentially affecting distribution.

A further seven transects were established, in addition to the nine previously established for the main biological survey programme. Two of these were in areas where there was suspected local extinction, three in areas of reported decline in abundance and two in areas where there was a reported good abundance of the mountain chicken. The following information was recorded for each transect – location, forest type, land use, slope angle, slope aspect and the proximity of the nearest water course. The methodology for carrying out mountain chicken surveys on these transects was identical to that for the main survey programme and is described in Section 4.2 (b) above.

The abundance figures from the Aural Encounter Surveys (AES) and Visual Encounter Surveys (AES) were not normally distributed due to the large number of zeros recorded during the surveys, therefore non-parametric statistics were used to analyse the data. The abundance of mountain chickens at each transect site was ranked according to mean numbers recorded during AES and VES and plotted using ArcView.

Findings

The research suggests that the mountain chicken population is distributed over an area of approximately 25km^2, mainly on the west coast at altitudes of 0 – 250m. This distribution could be due to the wetter and more saline conditions of the windward east coast, although soil characteristics also seem to be important. While spatial differences in abundance can be partly explained by habitat preferences, temporal differences are correlated with environmental conditions.

There is evidence that Dominica's mountain chicken population has declined in area and abundance. One year prior to this study a sudden die-off was first reported at La Haut Estate in the south west of Dominica, with a general island-wide decline being evident eight months later. These declines coincided with the appearance of a fatal fungal disease on Dominica, Chytridiomycosis, which has been closely linked to worldwide declines in amphibian populations over the past 20 years. The most recent population decline has included an apparent local extinction at 14 different locations and a dramatic reduction in the area of distribution at a further five sites.

The extirpation of the mountain chicken from five other islands in the Caribbean is believed to be due to human hunting, habitat loss and introduced predators. All these pressures exist within Dominica, with the additional impact of Chytridiomycosis. Together with results from the only other remaining population on the island of Montserrat, it is suggested that the conservation status of the mountain chicken should

be classified as Critically Endangered (IUCN Red List) and CITES listed.

These findings have been subject to internal review only.

Full details are provided in McIntyre (2003).

4.2 Training and Capacity Building Activities

This section describes training and capacity-building components of the project.

a. Social Assessment Techniques

The training in social assessment skills consisted of a three day workshop followed by a three day preliminary field exercise. Participants were five FWD Forest Officers covering all Dominica's forest ranges and seven Research Assistants. The Research Assistants were chosen from communities in all regions of Dominica, including the indigenous Carib Territory. The participants were chosen by the Director of FWD and FFI's Project Leader on the basis of their interest, inter-personal skills and overall suitability for participation in the social assessment component of the project.

The workshop provided technical training on the basic concepts of Participatory Rural Appraisal (PRA) and social survey research, the two methodologies to be used in the Social Assessment Survey on Hunting of Wildlife in Dominica. Through an interactive approach participants received training in social research methods (overview); questionnaire surveys and sampling; PRA methods; semi-structured interview methods and research planning. The adequacy of research methodology and researchers were verified during a pilot survey.

Full details of this training component are provided in Gillingham (2002).

b. Biological Survey Techniques

Training was provided to FWD Forest Officers in biological survey techniques to equip them with the skills necessary to carry out field surveys of key resource species. Forest Officers were selected for the biological survey component based on their overall suitability (according to the FFI Project Leader and Director of FWD) and motivation, while ensuring an adequate spread from different forest ranges.

The training course provided background on the project, requirements for surveys and basic concepts in wildlife biology and scientific survey methodology. A field component of the training established a series of permanent belt transects within different forest ranges and assessed the Forest Officers to ensure competency in the survey methodology. The survey methodology is described more fully in Section 4.2.

Further training in biological survey techniques was provided to FWD Forest Officers with respect to one of the focal resource species, the mountain chicken frog (*Leptodactyllus fallax*). This largely field-based component built on the general training outlined in the section above and also involved establishing the permanent transects that would be used for the mountain chicken survey programme. The competency of the Forest Officers was assessed by the trainer during the field component through practice surveys, with unsuitable staff being excluded from the survey programme. The survey mythology is described more fully in Section 4.1.

Full details about this training component are provided in Daltry (2001) and Bowen-Jones (2001).

c. Use of GPS and Mapping

This component provided training to FWD Forest Officers in the principles and use of maps, compasses and Geographical Positioning Systems (GPS). The training was attended by the same staff that were to carry out the biological survey programme, to provide them with the supplementary skills required for effective surveying. The course included practical exercises to enable the trainer to assess competency, leading to provision of additional training or exclusion of individuals from the survey programme.

Full details of this training component are provided in Bowen-Jones (2001).

d. Ranching Propagation

Two senior FWD Forest Officers (Chosen by the Director of FWD) participated in a wildlife study tour to Trinidad and Tobago, where they were hosted by the local Forestry and Wildlife Division. This visit enabled the FWD staff to investigate methods for wildlife farming and consider their applicability for introduction in Dominica. In addition to seeing wildlife farming in operation, technical knowledge on farming techniques was gained. The Forest Officers concluded that the Agouti (*Dasyprocta leporina*) would be a suitable species for farming in Dominica and that this could reduce overall hunting pressure for wild meat.

Full details of this training component are provided in Christian and Durand (2002).

e. Data Analysis

This workshop provided training to FWD Forest Officers involved in the biological survey programme in data analysis and interpretation. This enabled the Forest Officer's to fully appreciate how the data they were collecting would be used and why the specified standardised methodology for data collection was important. It also enabled the Project Leader to identify suitable FWD staff for input of data from the survey programme.

Full details of this training component are provided in Magin (2002).

f. Public Awareness

Training in public awareness planning took place during a two-day workshop, leading to the development of a Public Awareness Strategy for this project. This was attended by staff from FWD and the Government Information Service (GIS).

Full details are provided in Entwistle (2002a).

g. Developing Funding Proposals for International Donors

The workshop was attended by 11 participants from FWD, Environmental Coordinating Unit, Lands and Surveys Division, Fisheries Division and other government agencies.

Issues covered included project donors, project cycles and a detailed analysis of proposal preparation requirements. This provided participants with a practical guide to submitting funding proposals to donors, which proved very welcome in view of tight governmental budgetary constraints. No assessment was required for this component.

Full details of this component are provided in Magin (2003).

h. Strategic Planning for Conservation

The following stakeholder workshops were held to develop the Sustainable Wildlife Use Strategy. These involved FFI assisting FWD to present findings from the project; identify and engage key stakeholder groups; and develop the action plan for the strategy through consultation with stakeholder groups.

- 13th August 2003 – Workshop on Wildlife Management for Related Agencies. Full details are provided in Charles (2003).
- 30th January 2004 – Pre-Consultation Meeting: A National Strategy for Sustainable Wildlife Use. Full details are provided in Hypolite and Page (2004).
- 18-19th March 2004 – National Sustainable Wildlife Use Strategy: Strategy Development Workshop. Full details are provided in Page (2004).

5. PROJECT IMPACTS

The project has resulted in the participatory development of a National Strategy for Sustainable Wildlife Use that addresses the key issues relating to sustainable use of wildlife in its broadest sense. This provides a framework for FWD and other agencies to drive implementation of aspects of the national BSAP relating to sustainable use. This has been based on collection of novel social and biological data and building of capacity within FWD for its implementation. On this basis the project purpose has been accomplished. The national strategy is still in draft format and undergoing consultation, as described in Section 6. FFI is committed to completing this process and covering the additional costs that will be incurred.

The project has also directly supported the development of three detailed project proposals to implement components of the strategy, working in partnership with FWD, the Environmental Coordinating Unit and the Dominica Marine Reserves Service. One of these proposals has already been successful, with funding approved for implementation to begin in 2004.

The biological survey component directly led to the identification of a reduction in population size and area for one of the key resource species, the mountain chicken (*Leptodactylus fallax*). Also to the identification of the fatal fungal disease *Chytridiomycosis* for the first time in the Caribbean, which has been responsible for a worldwide decline in amphibian populations and is affecting the mountain chicken on Dominica. Based on these findings our project partners at FWD implemented a ban on hunting mountain chicken, which is still in effect, to allow time for further research into the causes of these declines. In this way the direct threats posed to a highly endangered species (expected to be classified as Critically Endangered) have been reduced as a direct result of this project. The project has contributed to the development of a further detailed project proposal in collaboration with the Zoological Society of London and the Vetinerary Services Division to specifically address *Chytridiomycosis* in Dominica and kerb its spread through the Caribbean. Data collection on other key resource

species has also proved useful in making recommendation for their future management.

In-country capacity for conservation been enhanced in the following areas:

- **Participatory planning techniques** – Increased capacity of FWD to carry out participatory planning, based on training and experience gained through strategy development.

- **Public awareness** – Increased capacity of workshop participants to develop and implement public awareness campaigns, in addition to increased general public awareness of wildlife issues in Dominica. The latter means a more favourable public environment for effective wildlife management.

- **Biological survey and data analysis techniques** – Professional training for FWD Forest Officers in biological survey techniques and data analysis and put these into practice over an 18-month survey period.

- **Social survey techniques** – Professional training for FWD Forest Officers in social survey techniques and experience of implementing PRA and questionnaire-based social research. This work has also deepened FWD's understanding of social issues related to hunting of wildlife in Dominica, which will enhance its ability to implement wildlife management laws.

- **Physical institutional capacity** – Purchase of survey equipment, computer facilities and a 4-wheel drive vehicle for FWD that has enhanced their capacity to carry out future survey activities. Prior to the project only one vehicle was available for fieldwork and therefore this purchase has doubled FWD's logistical capacity to conduct fieldwork.

As FFI maintains its involvement with Dominica past the life of this project we will be taking steps to build on this capacity through initiation of new projects in collaboration with FWD and other government agencies, underpinned by the national strategy framework. There tends to be a good level of continuity of staff within FWD and therefore the training provided to Forest Officers is likely to be retained.

FWD has not previously worked in close partnership with an international NGO and following this successful collaboration is open to the possibility of future collaboration, with FFI or other agencies. In a letter to FFI dated 19th March 2004, the Director of FWD (Eric Hypolite) made the following comments:

With the conclusion of the programme, 'sustainable use of wildlife' and the development of the strategy and action plan to fulfil such, clearly identified that there is no doubt that both institutions benefited tremendously. This programme has brought Dominica over the last three (3) years, closer to meeting some of its obligations under the CBD in numerous ways. Capacity is a case in point. Both parties have agreed to remain in contact to develop well needed conservation plans for the island biodiversity.

The project has improved the standing of FWD within the government and public domain through demonstration of competence in biological and social survey techniques and leadership in the development of wildlife management strategies. Being a small and closely knit country it has been relatively easy to widely disseminate the project activities and make clear the leading role played by FWD in bring this project to fruition. This will enhance FWD's ability to lobby within parliament for improvements in wildlife

management legislation and implement laws within the country. The balanced messages delivered through the media have improved the local communities understanding of wildlife management issues and FWD's role in bringing about positive change for the country.

There is also evidence of improved collaboration with civil society groups. For example, the project has directly led to the establishment of a Hunter's Association to represent this important stakeholder group within Dominican society. A number of meetings have already been held and the group is working closely with FWD on issues related to the sustainable management of resource species that the association, FWD and Dominica has an interest in managing wisely.

The ban on hunting mountain chicken and publicity regarding the disease may have had some socio-economic impact, through reduced hunting and sale of this species. Inevitably the ban will be ignored by a proportion of hunters, as previously occurred during the annual closed season for hunting. Efforts will be made through the national strategy to have the mountain chicken listed as Critically Endangered and put onto CITES Appendix I, based on evidence collected during this project.

6. PROJECT OUTPUTS

All project outputs are quantified in the table in Appendix II using the coding and format of the Darwin Initiative Standard Output Measures.

Information relating to project outputs has been disseminated widely within Dominica, as described in Section 11 below. A wide range of stakeholders participated in the Strategy development process. Consultation of the draft strategy will continue after the project and its finalisation will be at FFI's expense, as will the implementation of projects designed to implement aspects of the strategy. This consultation process involves participants in the strategy development process (and other relevant individuals and agencies) being invited to comment on the draft strategy, leading to revision to produce the final strategy. Efforts will then be made to have this adopted into Dominican law through direct discussions with decision-makers.

The main additional outputs were the purchase of a 4-wheel drive vehicle for FWD; the identification of *Chytridiomycosis* (see Sections 3, 4 and 5) and development of project proposals to implement aspects of the national strategy. The vehicle purchase was enabled through an approved budget line reallocation (see Sections 5 and 7).

The following proposals to address specific issues outlined in the strategy were also produced directly as a result of this project. A brief summary of the project, its partners and funding agencies is provided.

- Proposal – Development of a National Biodiversity Monitoring System, Commonwealth of Dominica

This proposal was prepared by FFI for the Environmental Coordinating Unit (ECU) of Dominica to enable them to seek donor funding for this vital initiative. The proposed project will enable provide further training and resources for more extensive assessment and monitoring of Dominica's biodiversity, providing continual feedback to improve management of biodiversity. ECU is now securing funding through UNDP to implement this project.

- Proposal – Conserving the National Flower of Dominica

This project will identify a suitable area of Dry Scrub Forest as a protected area, using the National Flower (Bwa Kwaib – *Sabinea carinalis*) as a flagship species to conserve the important habitat in which it is found and associated threatened species. The

proposal has been submitted by FFI to the UK Department of Environment, Food and Rural Affairs (DEFRA) Flagship Species Fund and has already received preliminary approval.

- Proposal – Strengthening Marine Protected Area Management, Commonwealth of Dominica

This project will strengthen the capacity of the Dominica Marine Reserves Service (DMRS) to develop and manage Marine Protected Areas and will include management plan review and training for key personnel in tropical marine ecology. The proposal has been submitted by FFI to a US-based donor.

- Proposal – Addressing a Threat to Caribbean Amphibians: Capacity Building in Dominica

This proposal was submitted by the Zoological Society of London to the Darwin Initiative and is currently under consideration. The need for this work arose directly from the identification of *Chytridiomycosis* in mountain chicken frogs during FWD biological surveys funded by the current Darwin project. It proposes measures to tackle a disease that is considered to be the greatest single threat to Caribbean amphibians.

7. PROJECT EXPENDITURE

8. PROJECT OPERATION AND PARTNERSHIPS

8.1 Project Partners

The project was planned and managed by FFI in full consultation with the Forestry, Wildlife and National Parks Division (FWD) of the Ministry of Agriculture and Environment, as originally planned. FWD's Mission Statement is:

To develop and formulate forest policies and programmes which enhance employment and stabilize rural economies and to actively collaborate in implementing these programmes cost effectively, while administering forestry, wildlife and national park regulatory measures in a sustainable manner.

In practice FWD are responsible for implementation of all activities relating to conservation and management of biodiversity.

The only modifications to plans in response to local consultation were in broadening the scope of the national strategy, as described in Section 3.

8.2 Collaboration

There were no similar projects in operation during the life of this project. The Environmental Coordinating Unit (ECU) is a largely administrative coordinating body who were responsible for the production of Dominica's Biodiversity Strategy and Action Plan (BSAP) in 2002. The project maintained close links with ECU and a joint ECU/FFI proposal has been developed to establish a National Biodiversity Monitoring System in Dominica, for which funding is currently being sought.

8.3 International Links

The project was also instrumental to the development of a proposal through Dr Andrew Cunningham at the Zoological Society of London to address the Chytridiomycosis threat to Caribbean amphibians, for which funding is currently being sought through the Darwin Initiative.

8.4 Local Partnerships

Stakeholder involvement in sustainable use has been increased through participation in Strategy development and the Hunter Association established is still active. There is considerable scope for increased private sector involvement, especially of the tourism industry, whose business depends on the conservation and sustainable use of Dominica's natural resources.

FWD maintains a close working relationship with ECU as the lead agency in implementing activities relating to BSAP implementation. FFI remains in contact with both agencies and there is a commitment by all sides to collaborate on future follow up activities to this Darwin Initiative project.

9. MONITORING AND EVALUATION, LESSON LEARNING

Project progress was monitored through discussions with the Director and Forest Officers of FWD during visits by the Project Leader and consultants. In the intervening time communications were maintained by telephone and e-mail with the Director of FWD. M&E within FFI led to improved management of the project due to being moved from our Global Programme to our Americas Programme and under the responsibility of a new Project Leader. Baseline biological and social information was collected, but caution was required in drawing conclusions from apparent changes during a relatively short monitoring period.

A number of problems were encountered. The highly restricted FWD budget, which was cut further during the project, has resulted in an overstretched department with limited capacity. The Director of FWD changed twice during the project, as did the FFI Project Leader. These factors inhibited continuity and the amount of time FWD could commit to the project. However, the main training and research components were completed effectively. Also the increased contact between the most recent FWD Director and FFI Project Leader has enabled a draft strategy to be produced within the life of the project, which is currently undergoing consultation within Dominica. The follow up for finalising the Strategy will be undertaken at FFI's expense.

FFI is currently undertaking an institutional review of its M&E procedures.

10. ACTIONS TAKEN IN RESPONSE TO ANNUAL REPORT REVIEWS

The review of the 2002/2003 Annual Report raised a number of issues which were responded to in the following correspondence.

- Letter of 22nd September 2003 – General response from Evan Bowen-Jones (Regional Director, FFI Americas Programme) to Mrs Sylvia Smith (DEFRA).

- Letter of 25th September 2003 – technical response from Dr. Chris Magin (FFI Senior Protected Area Specialist and previous Project Leader) to Mrs Sylvia Smith.

The main recommendation was for the Project Leader to increase the amount of time spent in-country for the remainder of the project to improve the progress on various aspects of the project. At this time a changeover of Project Leaders was taking place due to the previous Project Leader leaving FFI at the end of 2003. In response to the recommendation four further visits to Dominica were undertaken. One by the outgoing and three by the incoming Project Leader.

11. DARWIN IDENTITY

The project was promoted and recognized as a distinct project with a clear identity through the FFI website and in country. Dominica has a small, closely-knit community that has been easily accessible through FWD's close links with the media. The project and the Darwin Initiative have been extensively promoted through national newspapers, radio stations and television by means of press releases and interviews. The strategy development workshops were covered by the Government Information Service and broadcast on national television.

The 4-wheel drive vehicle purchased through the project also bore a large Darwin Initiative logo, together with logos for FWD and FFI. This vehicle made numerous trips around the island during the project and the distinctive logos will have caught the eye of a large proportion of the population. Together with the media exposure, it is likely that all sectors of the population will have heard of the project and link it to Darwin, FWD and FFI.

An interview with Adolphus Christian (FWD) and the Project Leader on the mountain chicken situation was also conducted with Martinique TV and later broadcast.

12. LEVERAGE

FFI has provided funds to cover a minor overspend on the project, as described in Section 7. The project was also directly responsible for the development of four proposals for future implementation work, as described in Section 6. One has already been approved and it is likely that the others will receive funding in the near future.

A proposal writing workshop was also delivered to representatives from several government agencies, as described in Section 3 to strengthen capacity to secure further funds for similar work.

13. SUSTAINABILITY AND LEGACY

The increased capacity and status of FWD and the framework for action embodied in the national strategy are significant enduring features of this project. Project staff were drawn from existing FWD staff, who are likely to remain within FWD, as are project resources (vehicle, lap-top, survey equipment, etc). There is a commitment by FWD and FFI to collaborate on future projects to implement the strategy and steps have already been made to secure funding for these initiatives, as described in Section 6.

FWD remain an under-resourced government department, which has suffered from ongoing budget cuts and frequent changeover of Directors. There is an urgent need to provide ongoing institutional support to continue development of staff and structure and to provide assistance with the implementation of the national strategy following the consultation period. The project has improved FWD's capacity with respect to the purpose and objectives of this project, but wider institutional development has not been possible.

14. POST-PROJECT FOLLOW UP ACTIVITIES

FFI is requesting follow-up Darwin funding to assist FWD with the implementation of the national strategy through consultation and development of further proposals to implement specific projects.

15. VALUE FOR MONEY

The project has identified a major threat to Caribbean amphibians; safeguarded the immediate future of a critically endangered species; increased the capacity of the key agency responsible for wildlife management; developed a strategy for future conservation action and initiated a series of follow on projects to implement the strategy. On this basis the project constitutes good value for money.

Appendix I: Project Contribution to Articles under the Convention on Biological Diversity (CBD)

The extent of project contribution to the different measures for biodiversity conservation defined in the CBD Articles are outlined in the table below.

Project Contribution to Articles under the Convention on Biological Diversity		
Article No./Title	**Project %**	**Article Description**
6. General Measures for Conservation & Sustainable Use	20	Develop national strategies that integrate conservation and sustainable use.
7. Identification and Monitoring	10	Identify and monitor components of biological diversity, particularly those requiring urgent conservation; identify processes and activities that have adverse effects; maintain and organise relevant data.
8. In-situ Conservation	10	Establish systems of protected areas with guidelines for selection and management; regulate biological resources, promote protection of habitats; manage areas adjacent to protected areas; restore degraded ecosystems and recovery of threatened species; control risks associated with organisms modified by biotechnology; control spread of alien species; ensure compatibility between sustainable use of resources and their conservation; protect traditional lifestyles and knowledge on biological resources.
9. Ex-situ Conservation	0	Adopt ex-situ measures to conserve and research components of biological diversity, preferably in country of origin; facilitate recovery of threatened species; regulate and manage collection of biological resources.
10. Sustainable Use of Components of Biological Diversity	20	Integrate conservation and sustainable use in national decisions; protect sustainable customary uses; support local populations to implement remedial actions; encourage co-operation between governments and the private sector.
11. Incentive Measures	0	Establish economically and socially sound incentives to conserve and promote sustainable use of biological diversity.
12. Research and Training	20	Establish programmes for scientific and technical education in identification, conservation and sustainable use of biodiversity components; promote research contributing to the conservation and sustainable use of biological diversity, particularly in developing countries (in accordance with SBSTTA recommendations).

13. Public Education and Awareness	15	Promote understanding of the importance of measures to conserve biological diversity and propagate these measures through the media; cooperate with other states and organisations in developing awareness programmes.
14. Impact Assessment and Minimizing Adverse Impacts	0	Introduce EIAs of appropriate projects and allow public participation; take into account environmental consequences of policies; exchange information on impacts beyond State boundaries and work to reduce hazards; promote emergency responses to hazards; examine mechanisms for re-dress of international damage.
15. Access to Genetic Resources	0	Whilst governments control access to their genetic resources they should also facilitate access of environmentally sound uses on mutually agreed terms; scientific research based on a country's genetic resources should ensure sharing in a fair and equitable way of results and benefits.
16. Access to and Transfer of Technology	0	Countries shall ensure access to technologies relevant to conservation and sustainable use of biodiversity under fair and most favourable terms to the source countries (subject to patents and intellectual property rights) and ensure the private sector facilitates such assess and joint development of technologies.
17. Exchange of Information	5	Countries shall facilitate information exchange and repatriation including technical scientific and socio-economic research, information on training and surveying programmes and local knowledge
19. Bio-safety Protocol	0	Countries shall take legislative, administrative or policy measures to provide for the effective participation in biotechnological research activities and to ensure all practicable measures to promote and advance priority access on a fair and equitable basis, especially where they provide the genetic resources for such research.
Total %	**100%**	**Check % = total 100**

16. Appendix II Outputs

Please quantify and briefly describe all project outputs using the coding and format of the Darwin Initiative Standard Output Measures.

Code	Total to date (reduce box)	Detail (←expand box)
Training Outputs		
1a	Number of people to submit PhD thesis	0
1b	Number of PhD qualifications obtained	0
2	Number of Masters qualifications obtained	0
3	Number of other qualifications obtained	0
4a	Number of undergraduate students receiving training	0
4b	Number of training weeks provided to undergraduate students	0
4c	Number of postgraduate students receiving training (not 1-3 above)	0
4d	Number of training weeks for postgraduate students	0
5	Number of people receiving other forms of **long-term** (>1yr) training not leading to formal qualification(i.e not categories 1-4 above)	0
6a	Number of people receiving other forms of **short-term** education/training (i.e. not categories 1-5 above)	50
6b	Number of training weeks not leading to formal qualification	6
7	Number of types of training materials produced for use by host country(s)	7
Research Outputs		
8	Number of weeks spent by UK project staff on project work in host country(s)	24
9	Number of species/habitat management plans (or action plans) produced for Governments, public authorities or other implementing agencies in the host country (s)	1
10	Number of formal documents produced to assist work related to species identification, classification and recording.	1
11a	Number of papers published or accepted for publication in peer reviewed journals	0
11b	Number of papers published or accepted for publication elsewhere	2
12a	Number of computer-based databases established (containing species/generic information) and handed over to host country	4
12b	Number of computer-based databases enhanced (containing species/genetic information) and handed over to host country	0
13a	Number of species reference collections established and handed over to host country(s)	0
13b	Number of species reference collections enhanced and handed over to host country(s)	0

Dissemination Outputs		
14a	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin project work	5
14b	Number of conferences/seminars/ workshops **attended** at which findings from Darwin project work will be presented/ disseminated.	0
15a	Number of national press releases or publicity articles in host country(s)	9
15b	Number of local press releases or publicity articles in host country(s)	0
15c	Number of national press releases or publicity articles in UK	3
15d	Number of local press releases or publicity articles in UK	0
16a	Number of issues of newsletters produced in the host country(s)	0
16b	Estimated circulation of each newsletter in the host country(s)	0
16c	Estimated circulation of each newsletter in the UK	0
17a	Number of dissemination networks established	0
17b	Number of dissemination networks enhanced or extended	0
18a	Number of national TV programmes/features in host country(s)	6
18b	Number of national TV programme/features in the UK	0
18c	Number of local TV programme/features in host country	0
18d	Number of local TV programme features in the UK	0
19a	Number of national radio interviews/features in host country(s)	6
19b	Number of national radio interviews/features in the UK	0
19c	Number of local radio interviews/features in host country (s)	0
19d	Number of local radio interviews/features in the UK	0
Physical Outputs		
20	Estimated value (£s) of physical assets handed over to host country(s)	£16,000
21	Number of permanent educational/training/research facilities or organisation established	0
22	Number of permanent field plots established	35
23	Value of additional resources raised for project	£500,000 (pending)

17. Appendix III: Publications

Type *	Detail	Publishers	Available from (e.g. contact address, website)	Cost £
PDF Document	**National Strategy for Sustainable Wildlife Use, Commonwealth of Dominica, Fauna & Flora International (2004)**	**FFI, Cambridge, UK**	www.fauna-flora.org	**Free**

18. Appendix IV: Darwin Contacts

To assist us with future evaluation work and feedback on your report, please provide contact details below.

Project Title	
Ref. No.	
UK Leader Details	
Name	Alex Page
Role within Darwin Project	Project Leader for final stages of project from 11/03 – 03/04
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Other UK Contact (if relevant)	
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Partner 1	
Name	Eric Hypolite, Director
Organisation	Forestry, Wildlife and National Parks Division Ministry of Agriculture and the Environment
Role within Darwin Project	Director of main project partner agency
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Fax	
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Partner 2 (if relevant)	
Name	
Organisation	
Role within Darwin Project	
Address	
Fax	
Email	

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ANNEXE A: LOGFRAME FROM PROJECT SCHEDULE

Project summary	Measurable indicators	Means of verification	Important assumptions
Goal To assist countries rich in biodiversity but poor in resources with the conservation of biological diversity and implementation of the biodiversity convention.	Project assistance provided by Darwin Initiative funding.	Publications acknowledging the impact of the Darwin Initiative project. Time spent in-country by the Darwin funded project.	
Purpose To reduce direct threats of over-exploitation facing the wildlife of Dominica, through the participatory development of a National Strategy for Sustainable Wildlife Use, and building of the in-country capacity for its long-term implementation.	Production of a National Strategy for Dominica. Training of other staff by Darwin trainees from workshops. Long-term sustainability of off-take of key species.	Published National Strategy Evaluation from workshops, and reports from implementation of strategy. Reports from long-term monitoring of resource species.	Political stability and will maintained. Socioeconomic conditions for sustainability continuing to be met.
Outputs 1.Improved baseline information on resource species use. 2. Improved understanding of the biology and status of key species 3. Conservation strategies developed for key species 4. Capacity built within FWD and other agencies 5. Improved public awareness 6. National strategy for sustainable wildlife use developed.	1.Gap analysis on current baseline data completed. 2. Initial studies of key species completed. 3.Four species conservation strategies completed. 4. FWD & other agencies able to implement and sustain project objectives. 5. Increased awareness of need for sustainability. 6. Publication of national strategy for sustainable wildlife use.	1. Project reporting & project research plan. 2. Project publications. 3. Project publications. 4.Evaluation forms from workshops & departmental progress reports. 5. Consumer questionnaires. 6. National strategy for sustainable wildlife use for Dominica produced & adopted.	1. Effective reporting regime. 2. Ethos of generating wider awareness of the project. 3. Ethos of generating wider awareness of the project. 4. Access to departmental records. 5.Honest responses to questionnaires. 6. Political will.

Activities:			
1.1 Analyse available data	1.1 8 days FFI; £800	1.1Review document & bibliography	1.1 Access to relevant publications
1.2 Initial participatory assessments	1.2 10 days FFI; 30 days FWD; travel; £6,305	1.2 Social report	1.2 Truthful participation from those questioned
2.1 Determine distribution and abundance of key species	2.1 42 days FFI; 125 staff days FWD; travel; equipment; £26,056	2.1 Survey report and published article.	2.1 Accuracy and standardisation of data collection
2.2 Initiate further ecological studies	2.2 50 days FFI; 75 days FWD; travel; £17,495	2.2 Research & monitoring strategy produced	2.2 Willingness and training of FWD personnel
2.3 Review the historical & current sustainability of off-take	2.3 5 days FFI; 5 days FWD; £1,415	2.3 Paper on off-take data	2.3 Accuracy of past and present data collection
3.1 Produce species specific sust. management guidelines.	3.1 20 days FFI; 10 days FWD: £4,640	3.1 Published guidelines	3.1 Adequate planning data available to project
3.2 Support the ongoing review of national wildlife legislation.	3.2 5 days FFI; 5 days FWD; £1,440	3.2Management guidelines incorporated into new legislation	3.2 Willingness and time
4.1 Work with FWD counterparts in all phases.	4.1 200 days FFI; 608 FWD staff days; costs equal to total budget	4.1 Collaborative project reporting	4.1 Good motivation
4.2 Hold training courses for FWD personnel	4.2 30 days FFI; 362 FWD staff days; travel; workshop costs; £15,090	4.2 Workbooks and evaluation forms from courses	4.2 Willingness and time
4.3 Establish a Stakeholder Forum on Sustainable Use.	4.3 10 days FWD;£850	4.3 Minutes of Stakeholder forum meetings.	4.3 Public interest
5.1 Plan public awareness campaign	5.1 10 FFI days; 10 days FWD: £2,880	5.1 Public awareness plan completed.	5.1 Willingness to attend meetings
5.2 Develop a suite of educational materials.	5.2 14 FFI days; 42 FWD days; travel; printing; £10,791	5.2 Educational materials	
5.3 Regularly publicise the project.	5.3 5 FFI days; 21 FWD days; £2,615	5.3 Media articles	5.3 Public interest and marketability
5.4 Target wildlife collectors and women's groups for regular discussions	5.4 20 days FWD; travel; £1700	5.4 Information from discussions fed into strategy	5.4 Appropriate social mechanisms for inclusion
6.1 Develop a National Sustainable Use Strategy.	6.1 20 days FFI; 30 days FWD; printing costs; travel and workshop costs; £8,745	6.1 National Sustainable Use Strategy published	6.1 Political will
6.2 Work with FWD on relating protected area & buffer zone management of key species.	6.2 5 days FFI; 15 days FWD; workshop costs; £2,315	6.2 Revised PA management plans	6.2 Commitment and willingness for change
	Project co-ordination, communication and reporting costs: £12,747 Management and office costs: £9,750		