Costing Biodiversity Priorities in the UK Overseas Territories

RSPB

Final report

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1 INTRODUCTION

The UK Overseas Territories (UKOTs) have long been acknowledged as being rich in biodiversity. With the exception of the British Antarctic Territory and Gibraltar, they are all islands, small in size and isolated to varying degrees. As a result, they collectively support large numbers of endemic plants and animals. The territories are often host to significant populations of breeding birds or marine turtles, and have rich terrestrial and marine ecosystems[1] (see Annex 1).

For example, the UKOTs hold 34 bird species which are globally threatened with extinction and a further 13 species which are Near-Threatened, which is more than the entire Europe mainland. Of these, 22 are entirely confined to the UKOTs and a further 15 have vital breeding grounds in them.

The economies of the territories depend very heavily on their biodiversity. Tourism and fisheries are their main source of external income, while mangroves and coral reefs provide protection from severe weather events.

Many of these important ecosystems, habitats and species are threatened. Habitat destruction is increasing the vulnerability of many territories to the impacts of climate change, particularly sea level rise and the escalating frequency of hurricanes. Invasive alien plants and animals are having a devastating impact on native wildlife in the Territories. Seven albatross and five petrel species with important nesting populations in the Territories are affected by the impacts of longline and other forms of fishing in the Southern Ocean, particularly in the south Atlantic.

Although the Territories are locally governed, the UK Government has signed up to international conventions including the Convention on Biological Diversity on behalf of the Territories, and is therefore committed to halting the loss of biodiversity on the Territories by 2010. Urgent action is required if this commitment is to be met.

The RSPB believes that there is an immediate need to address these conservation concerns by enhancing efforts to conserve biodiversity in the UKOTs. However, a shortage of resources remains a major constraint to meeting biodiversity priorities. Many of the UKOTs have underdeveloped economies and therefore limited resources to devote to conservation priorities. On some territories the sheer scale of biodiversity far outweighs their population size. For example Pitcairn has more endemic species than people and Tristan has 1 globally threatened bird species for every 30 residents. Despite being rich in biodiversity and poor in resources the UKOTs are not eligible for international sources of funding such as the Global Environment Facility because they are considered the responsibility of the UK Government. The UK Government therefore has a key role to play in supporting biodiversity conservation efforts in the OTs.

Although JNCC provides some advisory assistance and a small amount of funding is made available through the Darwin Initiative, the Overseas Territories Environment

[1] JNCC (1999) Biodiversity: The UK Overseas Territories. http://www.jncc.gov.uk/pdf/OT_All.pdf

Programme (OTEP) is the main mechanism by which the UK Government supports biodiversity conservation in the OTs. OTEP is a joint programme of the Foreign and Commonwealth Office and the Department for International Development to support the implementation of the Environment Charters and environmental management more generally in the UK Overseas Territories. OTEP has an annual budget of £1 million per year, with around 75% of this being devoted to biodiversity conservation projects[2]. It is for one off projects rather than ongoing conservation work which makes it difficult to sustain conservation gains. In contrast, it is estimated that more than £450 million is spent each year on biodiversity conservation in England, Northern Ireland, Scotland and Wales, where there are far fewer globally threatened species[3], even though this is considered to be insufficient to secure full implementation of the UK Biodiversity Action Plan. Most of this money is spent by central government.

The RSPB is concerned that current biodiversity spending in the UKOTs is inadequate to meet biodiversity priorities. The Society therefore commissioned GHK to undertake this short review of the costs of meeting current biodiversity priorities in the UKOTs.

The overall objective of the assignment was to provide an outline estimate of the cost of meeting biodiversity priorities in the UK overseas territories, in order to facilitate a comparison of current expenditures with identified needs, and to inform the RSPB's submission to the current Comprehensive Spending Review. Given the limited timescale and budget involved, the estimates are intended to be indicative only, with a view to encouraging more detailed costings work.

The assignment focuses on the following OTs: Anguilla, Ascension, Bermuda, British Indian Ocean Territory, British Virgin Islands, Cayman Islands, the Falkland Islands, Montserrat, Pitcairn Islands, St Helena, South Georgia and the South Sandwich Islands, Tristan da Cunha, and the Turks and Caicos Islands. Three OTs – British Antarctic Territory, Sovereign Bases on Cyprus and Gibraltar – are excluded from the analysis because they have rather different needs and characteristics. Ascension and Tristan are dependencies of St Helena but are given separate attention because of their distinct biodiversity priorities.

Section 2 of this report outlines the methods used to produce the cost estimates, and the key issues encountered. Summary estimates of the costs of meeting biodiversity priorities in each of the OTs are given in Section 3. An overall summary of the cost estimates produced is presented in Section 4, together with overall conclusions and recommendations regarding the costing of biodiversity priorities in the UKOTs. The

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[2] DFID (2006) A Review of the Overseas Territories Environment Programme (OTEP). http://www.ukotcf.org/OTEP/docs/Review2005.pdf

[3] Recent estimates by GHK Consulting (2006) Estimating Current BAP Expenditures in the UK. http://www.ukbap.org.uk/library/BRIG/TargetsReview06/EstimatingCurrentExpenditure.pdf are currently being updated.

Annexes present more detailed estimates of the costings for each OT, a summary of the global biodiversity assets of the UK OTs and a short international review of biodiversity cost estimates.

2 METHODOLOGY

2.1 Method of Approach

The cost estimates in this report are based on a short desk review, working with the RSPB and in consultation with contacts in the individual OTs[4]. The work involved the following tasks:

1. For each OT, key biodiversity priorities, actions and targets were identified. This information was compiled by the RSPB, based on information provided by contacts in each Territory, and drawing as far as possible on agreed strategic documents such as Biodiversity Action Plans, National Environmental Management Strategies and Environment Charter Plans.

2. Working with contacts in the OTs and drawing on published plans, these actions and targets were specified in terms of units for which resource requirements could be assessed, e.g. hectares of habitat to be restored; number of site management plans to be developed; number of conservation officers employed; number and size of islands for predator eradication programmes; number of person-days of monitoring/research work etc.

3. As much information as possible was collected from contacts in the OTs about the costs of implementing the actions identified. Some OTs have costed Biodiversity or Environmental Action Plans, while in others contacts were able to indicate the costs of implementing the actions required, based on their own records and experience.

4. Information collected from the OTs was supplemented by an international review of biodiversity cost data, which sought to identify standard unit costs that could be applied where local data were not available. This was particularly helpful for types of activity dependent on imported expertise (e.g. invasive alien predator control). The data collected is presented in Annex 2.

5. Based on the above tasks, the costs of action required to meet biodiversity priorities in each OT were estimated. These costs were expressed in £ sterling and as an annual average cost over the 5 year period between the financial years 2007/08 and 2011/12.

2.2 Key Methodological Issues

The costs presented in this report are:

- Indicative, providing outline estimates of the scale of resources required, with a view to encouraging debate about funding issues and further more detailed costings work.

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[4] We are grateful for the many helpful inputs and comments received from contacts in the OTs, obtained and compiled by Sarah Sanders of RSPB. Also the global biodiversity value information provided by Dr Geoff Hilton of RSPB. Contributors in the OTs are listed in the next section and annexes.

- Additional to current funding commitments in the OTs. No attempt has been made to estimate core annual expenditures on biodiversity conservation in the OTs (such as the costs of employing core conservation staff and operating core programmes). Instead, the costings aim to estimate the costs of extra actions required to meet currently unfulfilled biodiversity priorities.
- Financial costs only. Any uncompensated opportunity costs of biodiversity actions (e.g. effects on fishing revenues as a result of marine protection measures) are excluded. Opportunity costs are only included where they are reflected in direct expenditures (e.g. land purchase).
- Inclusive of both capital and revenue costs. These are presented as an average annual figure over the 2007/08 to 2011/12 period, to overcome uncertainty about the timing and phasing of costs.
- Expressed in £ sterling, using 2007 prices and exchange rates.
- Based on a combination of officially documented targets and actions (e.g. as identified in BAPs or environmental action plans) and less formal priorities (as identified by contacts in the OTs).
- Incomplete, since it has not been possible to identify all of the costs involved, due to shortages of information about some of the actions required.

2.3 Factors Affecting the Costings

The cost estimates vary widely between the OTs. These variations can be explained by a number of factors, including differences in:

- Geographic scale. The OTs covered by this report vary widely in size, ranging from less than 55km^2 (Bermuda) to 12,173 km^2 (Falkland Islands), affecting the areas of habitat that require surveying, monitoring, protection and management, and the logistics of covering each territory.
- Biodiversity importance. We would expect the costs of biodiversity action to vary with the significance and priority attached to the biodiversity resource.
- Level of pressure on biodiversity. The pressures on biodiversity, and hence the degree of effort and expense required to conserve it, vary according to a wide range of factors such as population, economic activity and presence of introduced species. The population of the OTs covered in this report varies from no permanent population (South Georgia and South Sandwich Islands) to 65,000 (Bermuda).
- Identified priorities. The costings rely on the judgement of contacts within the OTs and are inevitably affected by differences in identified priorities and expectations.
- Economic conditions. The OTs covered by this report have widely varying economic conditions, with estimated GDP per head ranging from $2,300 in St Helena to $55,000 in Bermuda. These differences in prosperity affect the costs of employing local labour, as well as the ability to pay for biodiversity actions.
- Accessibility. Some OTs are particularly remote, and therefore difficult and expensive to access (e.g. Pitcairn, BIOT), increasing the costs of biodiversity action.

- Local capacity. Where local capacity to deal with biodiversity issues is limited, there is an increased dependence on imported expertise, raising the cost of biodiversity action. This is particularly true of OTs with a small population (e.g. Pitcairn and Tristan). Local capacity to meet biodiversity priorities varies by type of action. Particular activities (e.g. predator eradication projects) are often undertaken by international teams, at relatively high cost.
- Current activity. Where current activity is most developed, the need for additional biodiversity expenditure is reduced. Some OTs such as Bermuda have already well developed biodiversity programmes, limiting the need for additional activity.
- Available data. The cost estimates vary according to the information available. There are particularly large gaps for some OTs such as St Helena and the Turks and Caicos Islands, for which the costings are significant underestimates.

2.4 Categories of Costs

The costings are presented under seven main headings:

- **Habitat and Site Management**: This includes the costs of clearing invasive plant species, restoration of native vegetation and the provision of visitor facilities.
- **Control of Introduced Mammals**: In many of the OTs, a priority is to remove introduced predators such as rats and cats (which can harm native birds and animals) and to control rabbits and loose livestock which cause damage to ecosystems.
- **Site and Species Protection**: This typically involves employment of wardening staff and implementation of measures designed to protect sensitive sites and species.
- **Policy and Advisory Work**: This includes a variety of activities, including the development of biodiversity and environmental action plans, the development and enforcement of regulatory measures such as environmental impact assessment legislation, the control of fisheries and marine activities, the designation of protected areas, and the development and enforcement of biosecurity measures.
- **Education and Communications**: Raising public awareness of biodiversity issues is a key priority in the OTs. Costs result from the employment of environmental education staff, production of publications, and organisation of meetings and workshops.
- **Survey, Research and Monitoring**: The status, condition and needs of many habitats and species in the OTs are not fully understood, and also require ongoing monitoring. A major segment of the costs relates to the need for survey, research and monitoring work.
- **Training**: Training plays a key role in developing the capacity of local communities to address biodiversity conservation priorities.

3 COUNTRY PROFILES

3.1 Introduction

This section presents one page profiles of UK Overseas Territories. Each profile provides a brief introduction to the Territory, and a short summary of key biodiversity conservation priorities. It then provides a summary of the estimated costs of meeting these priorities, as an annual average over the 5 year period to 2010/11.

More detailed profiles of the territories are given in the Annexes to this report, which include more details of the actions which have been costed and the assumptions and workings used to produce the cost estimates.

3.2 Key Contributors

We are most grateful to the following contacts who provided details of biodiversity priorities and costs in individual OTs, and gave helpful comments on drafts:

- Anguilla: Karim Hodge, Director Department of Environment, Damien Hughes, Director of the Anguilla National Trust and Rhon Connor, Sustainable Development Officer
- Ascension: Tara Pelembe, ex Conservation Officer, Susanna Musick, Conservation Officer, Stedson Stroud, assistant Conservation Officer and Charles Williams, Head of Environmental Health
- Bermuda: Samia Sarkia, Species Action Plans Bermuda Government, Jennifer Gray, Dept of Conservation Services, Dr Anne Glasspool, Bermuda Zoological Society, Andrew Dobson, Bermuda Audubon Society
- BIOT: Dr Charles Sheppard, University of Warwick, carries out environmental inspections and Dr Geoff Hilton, senior research biologist RSPB
- British Virgin Islands: Esther Georges and Nancy Woodfield-Pascoe from the BVI National Parks Trust
- Cayman Islands: Dr Matt Cottam, Department of Environment, Gina Ebanks-Petrie, Director of Environment
- Falkland Islands: Helen Otley, Falkland Islands Government Environmental Officer and Grant Munroe, Director Falklands Conservation
- Montserrat: Stephen Mendes, Project Manager of the Darwin Centre Hills Project and Gerard Gray, Director of Environment
- Pitcairn: Dr Mike Brooke, Cambridge University, Noeleen Smyth, author of the Pitcairn Environment Management Plan and Dr Geoff Hilton, senior research biologist RSPB
- St Helena: Isabel Peter, Environment Coordinator, Cathy Hopkins, Director of St Helena National Trust, Emma Bennett, Marine Research Officer, Rebecca Cairns-Wicks, Environment Consultant and Andrew Darlow, St Helena Invasive Species Officer
- South Georgia: Gordon Liddle, ex South Georgia Government, Sally Poncet, South Georgia Surveys

- Tristan da Cunha: James Glass, Head of the Tristan Natural Resources Department and the Tristan Biodiversity Advisory Group
- Turks and Caicos: Ethlyn Gibbs-Williams, Director of the TCI National Trust and Naqqi Manco also of the TCI National Trust.

3.3 Sources of Data on Biodiversity Priorities

The main sources of information for the identified biodiversity priorities for each OT were as follows:

- Anguilla: Anguilla National Trust 2005 – 2008 Strategic Development Plan, Anguilla National Environment Management Strategy and Important Bird Areas in the UK Overseas Territories Directory
- Ascension: Green Mountain National Park 5 year Action Plan, Proposal – Ascension Island National Protected Areas, A Management Plan for the Marine Turtles of Ascension Island, Important Bird Areas in the UK Overseas Territories Directory
- Bermuda: Bermuda Biodiversity Action Plan, Important Bird Areas in the UK Overseas Territories Directory
- BIOT: BIOT environmental management plan and Important Bird Areas in the UK Overseas Territories Directory
- British Virgin Islands: BVI Protected Areas System Plan, Important Bird Areas in the UK Overseas Territories Directory
- Cayman Islands: National Biodiversity Action Plan - currently under preparation
- Falkland Islands: Draft National Biodiversity Strategy for the Falkland Islands
- Montserrat: Montserrat National Environment Management Strategy, Montserrat Oriole Species Action Plan, Montserrat National Tourism Strategy (2003) and Important Bird Areas in the UK Overseas Territories Directory
- St Helena: St Helena Environment Charter Strategy and Diana's Peak Management Plan
- Pitcairn: Pitcairn Environment Management Plan, Henderson Island Management Plan, Important Bird Areas in the UK Overseas Territories Directory
- South Georgia: South Georgia Environment Management Plan
- Tristan da Cunha: Tristan Biodiversity Action Plan, Nightingale Island Management Plan and the Important Bird Areas in the UK Overseas Territories Directory
- Turks and Caicos: Turks & Caicos Environment Charter Strategy, Plan for Biodiversity Management and Sustainable Development around the Turks and Caicos Ramsar Site (2002) and Important Bird Areas in the UK Overseas Territories Directory.

3.4 Anguilla

3.4.1 Introduction

An archipelago of 22 low lying limestone islands, supporting habitats ranging from coral reefs to coastal cliffs, degraded evergreen woodland, mangroves, and brackish and freshwater ponds. Anguilla has:

- Caribbean Island Global Biodiversity Hotspot, Lesser Antilles Endemic Bird Area
- 4 Important Bird Areas, covering 594 hectares or 5.8% of the total land area
- 5 proposed Ramsar sites
- Regionally important populations of seabirds
- 2 bird, 3 plant, 3 reptile, 3 turtle and 1 bat species of global conservation concern
- 1 endemic plant, 40 endemic invertebrate (on Sombrero island alone), 2 endemic reptile species
- Significant coral reefs

3.4.2 Biodiversity Priorities

Key priorities are to:

- Clear invasive plants and restore native vegetation
- Eradicate alien animals, including rats (from 3 islands), goats and African snails
- Improve visitor facilities
- Appoint wardens to protect and manage key sites, islands and marine areas
- Advance key policy developments, including Biodiversity Action Plan, Site Management Plans and Marine Protected Areas
- Strengthen biosecurity and quarantine arrangements
- Undertake education and awareness raising activities
- Undertake survey, research and monitoring work

3.4.3 Cost Estimates

The total cost of delivering the package of extra actions identified is estimated at £335,000 per year between 2007/08 and 2011/12. Largest costs relate to employment of wardens and policy staff.

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	35
Control of Introduced Mammals	30
Site Protection	105
Policy and Advisory Work	101
Education and Communications	25
Survey, Research and Monitoring	36
Training	3
Total	**335**

3.5 Ascension Island

3.5.1 Introduction

Ascension is an isolated, 97 km² island of volcanic origin, with rugged terrain, the highest point being Green Mountain at 859m. It has:

- 2 Important Bird Areas and 1 proposed Ramsar site, both covering 100 % of the land area
- 1 Protected Area and 11 proposed Protected Areas
- Regionally important populations of seabirds
- 1 bird, 2 plant, 2 turtle species (one of the most important breeding green turtle populations in the world) of global conservation concern
- 1 endemic bird, 10 endemic plant, 14 endemic crustacean, 9 endemic fish, 26 endemic invertebrate species

3.5.2 Biodiversity Priorities

Key priorities are:

- Clearance of invasive plants and restoration of native vegetation on Green Mountain
- Provision of visitor amenities
- Eradication of rabbits from the Island
- Site protection/wardening at Green Mountain and turtle beaches
- Strengthening quarantine and border controls
- Establishment of marine protected areas
- Development of site management plans
- Education and communications work
- Seabird, turtle and marine surveys

3.5.3 Cost Estimates

The total annual cost of meeting biodiversity priorities on Ascension Island is estimated at £680,000 per year between 2007/08 and 2011/12, in addition to current core expenditures on the island. The largest costs relate to eradication of rabbits.

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	67
Control of Introduced Mammals	393
Site Protection	21
Policy and Advisory Work	74
Education and Communications	39
Survey, Research and Monitoring	86
Training	-
Total	**680**

3.6 Bermuda

3.6.1 Introduction

Bermuda is an archipelago of approximately 150 islands, all volcanic in origin. Most of the Bermuda bank remains shallowly submerged with areas of active coral reef surrounded by large areas of sand. The total land area is about 55 km². Wetlands are important. Bermuda has:

- Caribbean Global Biodiversity Hotspot
- 1 Important Bird Area, covering 43 hectares or 1% of the total land area
- 7 Ramsar sites of which 6 are proposed
- 500 hectares of parks and nature reserves (9% of land area)
- 4 plant, 1 reptile and 1 bird species of global conservation concern
- 15 endemic plant, 1 endemic bird and 1 endemic reptile species
- Significant coral reefs

3.6.2 Biodiversity Priorities

Key priorities are set out in the Biodiversity Action Plan, published in 2003, which sets out an overall framework for the conservation of biodiversity in Bermuda. The Plan sets out 12 objectives, each with a number of actions and sub-actions. Costs and funding requirements are identified. The Plan suggests that the cost of many of the actions can be met through existing budgets, while identifying a number of major items of additional expenditure which have ongoing cost implications after 2007.

One Species Action Plan has been published to date, for the Bermuda Skink, and this identifies ongoing costs relating to habitat management, predator control, and research. SAPs for a further 68 protected species are under preparation and will be costed, but their costs cannot be estimated at this stage.

3.6.3 Cost Estimates

The additional ongoing costs of implementing the Bermuda BAP and Bermuda Skink SAP are estimated as follows:

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	5
Control of Predators	2
Site Protection	0
Policy and Advisory Work	118
Education and Communications	59
Survey, Research and Monitoring	33
Training	11
Total	**228**

The largest costs relate to policy advisory work, including actions relating to co-ordination of biodiversity policy, management planning and securing sponsorship for protected species. The costs of implementing further SAPs cannot yet be estimated.

3.7 British Indian Overseas Territory

3.7.1 Introduction

BIOT is a tropical archipelago of 55 low-lying islands, and surrounding seas. All islands are uninhabited except for the largest, Diego Garcia, which supports a military base. Contains five atolls, including the Great Chagos Bank, the largest atoll in the world. Total area of 54,400 km^2, mostly ocean, with a land area of 60 km^2. BIOT has:

- Maldives, Chagos, Lakshadweep Atolls Global Ecoregion
- 10 Important Bird Areas, covering approximately 20% of the total land area
- 1 Ramsar Site (Eastern Diego Garcia) and 1 proposed
- Regionally important populations of seabirds
- 1 plant and 2 turtle (significant nesting and foraging populations) species
- Significant populations of at least five globally threatened fish species
- Arguably the most important reef and island system in the Indian Ocean, with an enormous area of coral reef, which is the least degraded in the Indian Ocean
- At least three endemic fish, one endemic coral and one endemic moth species

3.7.2 Biodiversity Priorities

Key priorities include:

- Invasive plant clearance (especially coconut plantations) from most islands, with native plant restoration
- Eradication of rats from ca.35 islands, to permit restoration of seabird colonies
- Protection of sensitive marine habitats, including through better management of fisheries
- Development of biodiversity action plans and protected areas
- Survey, research and monitoring work covering marine habitats, seabirds, turtles, native vegetation and invasive species

3.7.3 Cost Estimates

The cost of meeting biodiversity priorities is provisionally estimated at £613,000 per year. There are significant gaps and uncertainties in these costings. They relate to additional needs and exclude the cost of operating the existing patrol vessel, which plays a crucial part in meeting a variety of biodiversity priorities.

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	100
Control of Introduced Mammals	108
Site Protection	-
Policy and Advisory Work	120
Education and Communications	10
Survey, Research and Monitoring	275
Training	-
Total	**613**

3.8 British Virgin Islands

3.8.1 Introduction

An archipelago of more than 60 islands, cays and rocks with a total land area of 154km². Except for limestone island Anegada, all are volcanic in origin. They have:

- Caribbean Islands Global Biodiversity Hotspot, Puerto Rico and the Virgin Islands Endemic Bird Area
- 3 Important Bird Areas, covering 10% of the total land area
- 1 Ramsar site (+ 1 proposed), 20 National Parks and Protected Areas, and 20 designated bird sanctuaries
- Regionally important populations of seabirds
- 10 plant, 4 reptile and 2 bird species of global conservation concern
- 4 endemic plant and 4 endemic reptile species
- Significant coral reefs

3.8.2 Biodiversity Priorities

Key priorities include:

- Provision and enhancement of visitor facilities at National Park sites
- Removal of rats, cats and goats from various islands
- Hiring new wardens to strengthen protection and management of National Parks
- Development of a national Biodiversity Action Plan, consolidating existing plans
- Promoting sustainable development across government
- Strengthening biosecurity arrangements
- Raising awareness and building public support
- Regular surveys/monitoring of ponds, seabirds and coral reefs

3.8.3 Cost Estimates

The costs of meeting biodiversity conservation priorities in the BVI are estimated at £527k per year, with the largest costs for provision of visitor facilities and survey, research and monitoring work:

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	237
Control of Introduced Mammals	39
Site and Species Protection	58
Policy and Advisory Work	51
Education and Communications	39
Survey, Research and Monitoring	103
Training	*Included in the above figures*
Total	**527**

3.9 Cayman Islands

3.9.1 Introduction

The Cayman Islands are three low-lying limestone islands. Coastal habitats include fringing reefs, shoreline, littoral woodland and cliffs. The interior is dominated by dry evergreen forest and shrubland. The islands have:

- Caribbean Islands Global Biodiversity Hotspot, Cayman Islands Endemic Bird Area, Greater Antillean Marine Global Ecoregion
- 10 Important Bird Areas
- 1 Ramsar site and 4 proposed
- Regionally important populations of seabirds
- 3 plant, 2 reptile, 3 bat, 5 bird species of global conservation concern
- 21 endemic plant, 7 endemic reptile and 30 endemic non-marine mollusc species
- Significant coral reefs

3.9.2 Biodiversity Priorities

The Cayman Islands have an established system of environmental governance and the Department of the Environment and National Trust already spend significant sums on environmental policy, survey, research and monitoring work, and management of protected areas. However, significant additional funding is required to implement biodiversity priorities over the next five years. Key priorities include:

- Implementing the Blue Iguana Species Action Plan, requiring spending on land purchase, predator fencing, breeding programmes, habitat and visitor management, research, publicity, project management and wardening staff.
- Developing the National Biodiversity Action Plan, including development of a further 43 species and 48 habitat action plans
- Acquisition and establishment of a new National Park

3.9.3 Cost Estimates

It is estimated that additional annual funding of £3.2 million over the next five years is required to meet these biodiversity priorities. Most of the costs relate to site and species protection, and include the costs of land acquisition for the national park and to protect Blue Iguanas, as well as the costs of predator fencing for the latter.

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	-
Control of Introduced Mammals	-
Site and Species Protection	2,991
Policy and Advisory Work	91
Education and Communications	72
Survey, Research and Monitoring	2
Training	-
Total	**3,156**

3.10 Falkland Islands

3.10.1 Introduction

The Falklands are an archipelago of 750+ islands covering an area of approximately 12,000 km². The landscape is rugged and hilly. They have:

- Southern Patagonia Endemic Bird Area
- 22 Important Bird Areas, covering 5.9 % of the total land area
- 2 Ramsar sites, with a further 18 proposed
- 27 islands/coastal regions designated as National Nature Reserves
- Internationally important populations of seabirds
- 6 plant and 10 bird species of global conservation concern
- 14 endemic plant and 2 endemic bird species

3.10.2 Biodiversity Priorities

Key priorities are:

- Clearance of invasive plants and restoration of native vegetation
- Provision of visitor amenities
- Implementation of 17 species and habitat action plans
- Eradication of rats and other alien predators from offshore islands
- Site wardening and implementation of site management plans
- Development, implementation, review of biodiversity and site management plans
- Strengthening quarantine and border controls
- Development and implementation of marine policies and protection measures
- Raising awareness and building public support in Falklands and internationally
- A variety of survey, research and monitoring studies

3.10.3 Cost Estimates

Meeting biodiversity priorities in the Falkland Islands is estimated to require additional expenditure of £716,000 per year, with the largest costs for survey, research and monitoring work, particularly in the implementing species action plans:

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	97
Control of Introduced Mammals	38
Site and Species Protection	41
Policy and Advisory Work	95
Education and Communications	96
Survey, Research and Monitoring	348
Training	-
Total	**716**

3.11 Montserrat

3.11.1 Introduction

Montserrat is a volcanic island with mountainous terrain. It continues to be affected by eruptions from the Soufriere Hills volcano, which has resulted in two thirds of the island being evacuated. Montserrat has:

- Caribbean Islands Global Biodiversity Hotspot, Lesser Antilles Endemic Bird Area
- 3 Important Bird Areas and 2 proposed Ramsar sites
- 4 plant, 1 reptile, 1 amphibian, 4 bat, 4 turtle and 2 bird species of global conservation concern
- 3 endemic plant, 3 endemic reptile & amphibian and 1 endemic bird species

3.11.2 Biodiversity Priorities

Key priorities are:

- Provision and improvement of visitor amenities
- Implementation of the Species Action Plan for Montserrat Oriole
- The development of SAPs for Mountain Chicken, Montserrat Galliwasp and endemic plant species
- Rat control from key areas of the Centre Hills
- Feral pig eradication, management and control of loose livestock
- Employment of wardening staff at key sites
- Developing site management plans
- Improving biosecurity arrangements
- Promoting sustainable development across government
- Environmental education and awareness raising
- Research, survey and monitoring work

3.11.3 Cost Estimates

The average annual cost of meeting biodiversity priorities in Montserrat is estimated at £399,000, with largest costs for site management (especially provision of visitor facilities), control of loose livestock and site wardening.

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	97
Control of Introduced Mammals	84
Site and Species Protection	73
Policy and Advisory Work	51
Education and Communications	42
Survey, Research and Monitoring	44
Training	9
Total	**399**

3.12 Pitcairn Islands

3.12.1 Introduction

The Pitcairns are 4 islands: Pitcairn, Oeno, Ducie and Henderson, with a total land area of 43.25km^2. Pitcairn is a rugged island of volcanic origin, the others are low-lying atolls Henderson Island is one of the most pristine raised coral islands on earth, while much of the endemic flora and fauna of Pitcairn Island is threatened due to the loss of native habitats and the spread of invasive alien species. They have:

- Micronesia-Polynesia Global Biodiversity Hotspot, Henderson Island Endemic Bird Area, Pitcairn Endemic Bird Area
- 4 Important Bird Areas (100% of the total land area) and 5 proposed Ramsar Sites
- 7 plant, 1 turtle and 8 bird species of global conservation concern
- 20+ endemic plant and 6 endemic bird species
- Many endemic land snails and other invertebrates
- Significant coral reefs

3.12.2 Biodiversity Priorities

Key priorities are:

- Eradication of Rose Apple from Pitcairn and restoration of native plants
- Eradication of rats, feral cats and goats
- Regular visits, especially to Henderson, Oeno and Ducie, for monitoring, survey and research work and site protection and management measures
- Management of GIS and research databases
- Development of species action plans
- Completing and implementing the environmental management plan
- Strengthening quarantine/biosecurity control arrangements
- Training of local people as wildlife/nature reserve guides

3.12.3 Cost Estimates

The average annual cost of meeting biodiversity priorities in the Pitcairn Islands is estimated at £371,000 over the five year period to 2011/12, with the largest costs for predator control (particularly eradication of rats from Henderson Island).

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	80
Control of Introduced Mammals	163
Site and Species Protection	*Included under survey/research*
Policy and Advisory Work	52
Education and Communications	10
Survey, Research and Monitoring	61
Training	5
Total	**371**

3.13 St Helena

3.13.1 Introduction

St Helena is an isolated mountainous island of volcanic origin, with a land area of 121 km². It has:

- 2 Important Bird Areas (76% of the total land area)
- 3 proposed Ramsar Sites
- Regionally important populations of seabirds
- 21 plant and 1 bird species (there used to be 6 endemic land birds, the remainder being extinct) of global conservation concern
- 49 endemic plant, 1 endemic bird, 10 endemic fish and 400 + endemic invertebrates species

3.13.2 Biodiversity Priorities

Key priorities are:

- Invasive plant clearance and restoration of native vegetation
- Development and implementation of species action plans
- Control of invasive animals including rats, feral cats, rabbits and mynah birds
- A variety of policy and advisory activities designed to protect and enhance marine and terrestrial habitats
- Additional survey and research work, including for marine plants, invertebrates and fish
- Training for local teachers and conservation staff.
- Capacity building among all environment/ conservation stakeholders.
- Increased public awareness on environmental and conservation issues

3.13.3 Cost Estimates

Meeting the above priorities is estimated to require additional expenditure of at least £298,000 per year.

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	69
Control of Introduced Mammals/Birds	23
Site and Species Protection	4
Policy and Advisory Work	112
Education and Communications	25
Survey, Research and Monitoring	47
Training	18
Total	**298**

3.14 South Georgia and the South Sandwich Islands

3.14.1 Introduction

These are two geologically distinct groups of uninhabited islands. South Georgia is a rugged, mountainous island with a land area of 3755 km^2 and 20+ peaks over 2,000m. More than half of the island is covered in permanent snow and ice. The South Sandwich Islands are a 240 km chain of 11 islands, volcanic in origin, some of which are still active, with 85% permanently covered in snow and ice. Together they have:

- South Georgia Endemic Bird Area
- 2 Important Bird Areas and proposed Ramsar sites (South Georgia and the South Sandwich Islands)
- Internationally important populations of seabirds
- 10 bird species of global conservation concern (1 endemic), 25 native vascular plant species, 125 mosses, 80 liverworts and 150 lichens

3.14.2 Biodiversity Priorities

Key priorities are:

- Removal of installations from the whaling era, which contain dangerous substances such as oil and asbestos
- Eradication of rats and reindeer from South Georgia
- Building of boardwalks to prevent disturbance to wildlife, protect fragile vegetation and control visitor access
- Review and prepare management plans for Protected Areas
- Develop species action plans for 10 species
- Improve fisheries management
- Declare a Marine Protected Area
- Strengthen quarantine and biosecurity arrangements
- Maintain/develop research, survey and monitoring of albatrosses and petrels

3.14.3 Cost Estimates

The costs of meeting biodiversity priorities on South Georgia are estimated at £7.1 million per year between 2007/08 and 2011/12. The largest costs relate to the removal of former whaling installations and eradication of rats and reindeer from South Georgia.

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	4600
Control of Introduced Mammals	2000
Site and Species Protection	50
Policy and Advisory Work	122
Education and Communications	10
Survey, Research and Monitoring	348
Training	-
Total	**7130**

3.15 Tristan da Cunha

3.15.1 Introduction

The Tristan Group includes Tristan, Inaccessible, Nightingale, Middle, Stoltenhoff and Gough islands. All are of volcanic origin. The total land area is 179km^2. They have:

- Tristan da Cunha Endemic Bird Area, Gough Island Endemic Bird Area
- 4 Important Bird Areas (100% of the total land area) and 4 proposed Ramsar Sites
- Internationally important populations of seabirds
- 7 plant and 15 bird species of global conservation concern
- 46 endemic plant and 9 endemic bird species
- A globally important marine environment with many endemic species

3.15.2 Biodiversity Priorities

Key priorities are:

- Eradication of a variety of alien plant species
- Eradication of rats from Tristan and mice from Gough
- Implementation of management plans for Nightingale and Gough and developing plans for Tristan
- Strengthening biosecurity arrangements
- Improving fisheries enforcement
- Monitoring and research work covering seabirds, fisheries, crayfish, the marine environment and other habitats
- Training conservation and biosecurity officers

3.15.3 Cost Estimates

The total costs of meeting the biodiversity priorities identified above are estimated at £1.45 million per year over the next five years, as follows. The largest costs relate to the eradication of mice from Gough Island and rats from Tristan.

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	95
Control of Introduced Mammals/Birds	1,040
Site and Species Protection	26
Policy and Advisory Work	78
Education and Communications	36
Survey, Research and Monitoring	168
Training	12
Total	**1,455**

3.16 Turks and Caicos Islands

3.16.1 Introduction

The Turks and Caicos are a group of 8 main islands and numerous smaller cays on two shallow banks, with deep ocean between them. The maximum height is 50m. They have:

- Caribbean Islands Global Biodiversity Hotspot, Bahamas Endemic Bird Area, Greater Antillean Marine Ecoregion
- 9 Important Bird Areas (84,850 ha) and one Ramsar site (with 7 more proposed)
- Regionally important populations of seabirds
- 3 plant, 1 reptile, 2 bat, 3 turtle, 1 bird species of global conservation concern
- 8 endemic plant and 4 endemic reptile species
- Significant coral reefs

3.16.2 Biodiversity Priorities

Key priorities are set out in the Environment Charter and Ramsar site management plan and include:

- Protect, manage and restore Salinas
- Identify and restore degraded forests and terrestrial habitats
- Provide visitor facilities
- Develop a native plant nursery
- Protect, manage, improve and extend the Protected Areas system
- Develop and implement a variety of policies (e.g. protection of marine and coastal areas, fisheries, wildlife protection, biodiversity action plans)
- Promote awareness of the value of the environment
- Undertake survey, research and monitoring of seabirds, terrestrial and marine habitats and turtle beaches
- Develop information and recording systems

3.16.3 Cost Estimates

The annual cost of meeting the above priorities is provisionally estimated at £287,000. There are significant gaps relating to predator control and survey/research/monitoring.

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	66
Control of Introduced Mammals	?
Site and Species Protection	50
Policy and Advisory Work	75
Education and Communications	50
Survey, Research and Monitoring	40
Training	6
Total	**287**

4 SUMMARY AND CONCLUSIONS

4.1 Summary of Costs

Table 4.1 summarises the costs of meeting biodiversity priorities in each of the OTs examined in this report.

Together, these costs amount to £16.1 million per year between 2007 and 2011. These estimated costs are in addition to existing local expenditure for biodiversity conservation in the OTs.

The highest costs relate to South Georgia, followed by the Cayman Islands and Tristan da Cunha. On South Georgia substantial investments are needed to removal former whaling stations that threaten to pollute sensitive habitats, and to remove rats and reindeer from large areas of the island. On the Cayman Islands major investments are needed to establish a National Park and to implement the Blue Iguana Species Action Plan (including major investments in land purchase). On Tristan da Cunha the largest costs relate to the eradication of rats from Tristan and mice from Gough, which would be a one off rather than a recurrent expenditure

Across the OTs, the largest costs are for habitat and site management (£5.4 million), control of introduced mammals (£3.9 million) and site and species protection (£3.4 million). These are all affected by major investments required in individual OTs, such as those mentioned in the last paragraph. For many of the actions identified, particularly the control or eradication of invasive alien species, the longer they are left the more expensive it will become to deal with them. Survey, research and monitoring work, policy and advisory work, and education and communications also require substantial levels of expenditure but have a much more even distribution across the OTs, largely comprising revenue rather than capital costs.

4.2 Availability of Resources

The ability of individual OTs to find the resources to meet these biodiversity priorities is likely to vary widely, reflecting very different economic conditions in individual OTs. More prosperous OTs such as Bermuda, the Falkland Islands and the Cayman Islands tend to have well developed environmental governance systems and greater domestic funding for biodiversity action, while low income OTs such as St Helena, Montserrat and Pitcairn have a shortage of resources and are much more dependent on UK Government funding, especially through OTEP.

The figures suggest that funding for OTEP, at £1million per year, is insufficient to meet biodiversity conservation priorities. Given the biodiversity significance of the OTs, the significant pressures facing biodiversity within them, and the UK Government's commitment to halting biodiversity declines by 2010, there is a need to review levels of funding for biodiversity conservation in the OTs.

4.3 Further Research Needs

This short study has permitted only an initial assessment of biodiversity funding needs in the OTs, and there are many gaps and uncertainties in the cost estimates made. There would therefore be benefit from further work to refine these cost estimates.

Table 4.1: Summary of Costs (£k per year)

	Habitat and site management	Control of introduced mammals	Site/Species Protection	Policy & Advisory	Education & Communications	Survey, Research & Monitoring	Training	**Total**
Anguilla	35	30	105	101	25	36	3	**335**
Ascension	67	393	21	74	39	86	0	**680**
Bermuda	5	2	0	118	59	33	11	**228**
BIOT	100	108	0	120	10	275	0	**613**
BVI	237	39	58	51	39	103	0	**527**
Cayman	0	0	2,991	91	72	2	0	**3,156**
Falklands	97	38	41	95	96	348	0	**716**
Montserrat	97	84	73	51	42	44	9	**399**
Pitcairns	80	163	0	52	10	61	5	**371**
St Helena	69	23	4	112	25	47	18	**298**
South Georgia	4,500	2,000	50	122	10	348	0	**7,030**
Tristan	95	1,040	26	78	36	168	12	**1,455**
Turks&Caicos	66	0	50	75	50	40	6	**287**
Total	**5,448**	**3,920**	**3,418**	**1,140**	**513**	**1,591**	**64**	**16,095**

ANNEXES

Annex 1: UK Overseas Territories Global Biodiversity Values

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Annex 5: Bermuda

Annex 6: BIOT

Annex 7: British Virgin Islands

Annex 8: Cayman Islands

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Annex 10: Montserrat

Annex 11: Pitcairn Islands

Annex 12: St Helena

Annex 13: South Georgia

Annex 14: Tristan da Cunha

Annex 15: Turks and Caicos Islands

Annex 1: Global Biodiversity Conservation Values

1.1 Inclusion in priority regions for global conservation

A group of schemes exists for identifying the global areas of highest priority for biodiversity conservation, using quantitative and objective criteria, based around species richness, levels of endemicity, unique habitat types, and levels of threat.

- **Global Biodiversity Hotspots** (Conservation International) are a set of 34 terrestrial regions, covering 2.3% of the earth's land surface, which have high levels of species richness and endemicity, and high levels of natural habitat destruction.
- **Endemic Bird Areas** (BirdLife International) are terrestrial centres of avian endemicity, where clusters of 'restricted-range' bird species co-occur. There are 218 EBAs, covering 5% of the earth's land surface. '**Secondary Areas**' are areas where less concentrated aggregations of restricted-range species occur.
- **Global Ecoregions** (sometimes known as the Global200) (WWF – the global conservation organisation) are a set of 238 of the most outstanding terrestrial, freshwater and marine habitats, selected from the WWF division of the world into 825 terrestrial eco-regions, 450 freshwater ecoregions, and 229 marine coastal ecoregions (see below for the ecoregions into which the UKOTs fall).

Global designations of high biodiversity & endemicity in the UKOT's.

	Global Biodiversity Hotspot	Endemic Bird Area[1]	Global Ecoregion
Pitcairn	Micronesia-Polynesia	Henderson Island; Pitcairn Island	
Anguilla	Caribbean Islands	Lesser Antilles	
British Virgin Islands	Caribbean Islands	Puerto Rico & the Virgin Islands	
Cayman Islands	Caribbean Islands	Cayman Islands	Greater Antillean marine
Montserrat	Caribbean Islands	Lesser Antilles	
Turks & Caicos Islands	Caribbean Islands	Bahamas	Greater Antillean marine
Bermuda	Caribbean Islands		
BIOT			Maldives, Chagos, Lakshadweep Atolls
SGSSI		South Georgia	
Falkland Islands		Southern Patagonia	
Tristan da Cunha		Tristan da Cunha; Gough Island	

Ascension	
St Helena	St Helena
United Kingdom	

1: Areas in italics are secondary areas, containing a single restricted-range species.

1.2 Occurrence of high priority sites for biodiversity conservation

As with the landscape-scale designations above, several schemes exist for identifying, using consistent, globally applied criteria, the world's top priority sites for conservation of biodiversity. In addition, some MEA's involve development of a list of special sites for conservation.

- **Important Bird Areas** (IBAs) (BirdLife International) are a global network of critical sites for bird conservation (currently 7,500 sites are listed), based on presence of globally threatened species, assemblages of restricted-range species, and large congregations of birds (e.g. seabird colonies).
- **Alliance for Zero Extinction Sites** (AZE Sites) (Alliance for Zero Extinction, www.zeroextinction.org) comprise 595 discrete, generally small sites that are known to support effectively the entire world population of an Endangered or Critically Endangered species, and which are therefore considered to be the frontline against extinction.
- **Ramsar sites** (Ramsar Convention on Wetlands) are 1,650 sites designated as wetlands of international importance for conservation and sustainability, covering 150 million hectares in 154 countries. Recently, a review of sites qualifying as Ramsar sites in the UKOTs was commissioned by Defra, and we report here both the number of currently designated sites and the number of candidate sites identified by the review.
- **World Heritage Sites** (UNESCO World Heritage Convention) include 162 natural and 24 mixed (cultural and natural) sites around the world whose natural heritage is considered as having outstanding universal value.

Designation as Important Bird Areas and Alliance for Zero Extinction Sites does not imply any protection or conservation management; it simply reflects the presence of high biodiversity value. Conversely, Ramsar and World Heritage designation implies the active will to conserve those values, and imposes obligations on the management authorities.

Key site designations and coverage in the UK OT's.

	Number of IBA's	% land area in IBA's	Proportion of IBA's protected[1]	Number Ramsar sites (proposed)	% candidate Ramsar sites designated	World Heritage Sites	AZE Sites
Pitcairn	4	100%	25%	0 (5)	0%	Henderson	Henderson Island
Anguilla	4	5.8%	0%	0 (5)	0%		None
British Virgin Islands	3	10%	67%	1 (2)	33%		Anegada Island
Cayman Islands	10	29%	50%	1 (4)	20%		none
Montserrat	3	18%	33%	0 (2)	0%		Centre Hills
Turks & Caicos Islands	9	>100%[2]	56%	1 (7)	13%		None
Bermuda	1	1%	100%	7 (6)	54%		Paget Marsh; Offshore Islets
BIOT	10	20%	10%	1 (1)	50%	BIOT*	None
SGSSI	2	100%	50%	0 (2)	0%		None
Falkland Islands	22	5.9%	68%	2 (18)	10%		none
Tristan da Cunha	4	100%	50%	0 (4)	0%	Gough & Inaccessible Is	Gough Is; Inaccessible Is
Ascension	2	100%	50%	0 (1)	0%		
St Helena	2	76%	100%	0 (3)	0%		
TOTAL FOR UKOTs	76	27%	49%	13 (60)	18%	3	7
United Kingdom	295	13%	260 (88%)	144		St Kilda	

1: Proportion of IBA's with at least part of the site managed for biodiversity conservation. Some protected sites are not managed for biodiversity over the whole area. Sites with international designation (Ramsar, World Heritage) but lacking domestic protected status are classed as protected. Sites in BIOT have restricted access, but are not managed specifically for biodiversity conservation.

2: IBAs in Turks & Caicos include several extensive shallow marine areas.

1.3 Main ecological communities

The most widely used classification of biomes and habitat types for biodiversity conservation purposes is that developed by WWF for the ecoregion concept. Recent global atlases allow the total area of two key tropical coastal habitats – coral reefs and mangroves - to be estimated.

Main terrestrial biomes and ecoregions in the UKOT's.

	Terrestrial biomes	Terrestrial ecoregions
Pitcairn	Tropical & Subtropical Moist Broadleaf Forests	Tuamotu tropical moist forests
Anguilla	Tropical & Subtropical Dry Broadleaf Forests; Deserts & Xeric Shrublands;	Lesser Antillean dry forests; Caribbean shrublands;
British Virgin Islands	Tropical & Subtropical Moist Broadleaf Forests; Deserts & Xeric Shrublands;	Leeward Islands moist forests; Caribbean shrublands;
Cayman Islands	Tropical & Subtropical Dry Broadleaf Forests; Mangroves	Cuban Dry Forests; Bahamian –Antillean Mangroves
Montserrat	Tropical & Subtropical Moist Broadleaf Forests; Tropical & Subtropical Dry Broadleaf Forests; Deserts & Xeric Shrublands;	Leeward Islands moist forests; Lesser Antillean dry forests; Caribbean shrublands;
Turks & Caicos Islands	Tropical & Subtropical Coniferous Forests; Mangroves	Bahamian pine mosaic; Bahamian –Antillean Mangroves
Bermuda	Tropical & Subtropical Coniferous Forests;	Bermuda Subtropical Conifer Forests
BIOT	Tropical & Subtropical Moist Broadleaf Forests	Maldives-Lakshadweep-Chagos Archipelago tropical moist forests
SGSSI	Tundra	Scotia Sea Islands tundra
Falkland Islands	Temperate grasslands, savannas & shrublands	Patagonian steppe
Tristan da Cunha	Temperate Grasslands, Savannas & Shrublands	Tristan da Cunha-Gough Islands shrub and grasslands
Ascension	Tropical & Subtropical Grasslands, Savannas, & Shrublands	Ascension scrub and grasslands
St Helena	Tropical & Subtropical Grasslands, Savannas, & Shrublands	St. Helena scrub and woodlands
United Kingdom	Temperate broadleaf and mixed forests Temperate coniferous forests	Celtic broadleaf forests; North Atlantic moist mixed forests Caledon conifer forests

Marine realms and ecoregions in the UKOT's.

	Marine realm	Marine ecoregions	Coral reef area (km²)[1]	Mangrove area (km²)[2]
Pitcairn	Central Pacific	Rapa-Pitcairn	100	0
Anguilla	Tropical Northwestern Atlantic	Eastern Caribbean	50	5.17
British Virgin Islands	Tropical Northwestern Atlantic	Eastern Caribbean	330	4.3
Cayman Islands	Tropical Northwestern Atlantic	Greater Antilles	230	71
Montserrat	Tropical Northwestern Atlantic	Eastern Caribbean		
Turks & Caicos Islands	Tropical Northwestern Atlantic	Bahamian	730	111
Bermuda	Tropical Northwestern Atlantic	Bermuda	370	0.1
BIOT	Central Indian Ocean Islands	Chagos	3,770	*ca*.0.1
SGSSI	Scotia Sea	South Georgia; South Sandwich Islands		
Falkland Islands	Magellanic	Malvinas/Falklands		
Tristan da Cunha	Tristan-Gough	Tristan-Gough		
Ascension	St Helena & Ascension Islands	St Helena & Ascension Islands		
St Helena	St Helena & Ascension Islands	St Helena & Ascension Islands		
United Kingdom	Northern European Seas	Celtic Seas North Sea		

1: Spalding, MD, Ravilious, C and Green EP (2001). *World Atlas of Coral Reefs.* University of California Press, Berkeley. 424pp.
2: Spalding MD, Blasco F and Field CD (eds.). (1997). *World Mangrove Atlas*. International Society for Mangrove Ecosystems, Okinawa, Japan. 178pp.

1.4 Globally threatened & endemic species

Here we report IUCN Red Listed taxa in four relatively well-known taxon groups, as a measure of the degree of threat faced by species in the UKOTs.

Red List assessments are genuinely complete for birds only. Assessments for bats, herptiles (reptiles and amphibians) and higher plants are well-advanced but remain patchy for some regions. For example, none of the three endemic plant species on Montserrat are currently Red Listed, even though all of them would certainly qualify were they to be assessed. Thus, these lists tend to be biased, such that poorly-studied countries appear to have a lower number of threatened species than is genuinely the case.

Counts of endemic species in the same relatively well-known groups are also presented, based on information from a variety of sources. These give a good indication of the degree of uniqueness and irreplaceability of UKOT's biodiversity.

Clearly, there are many more endemic taxa among fish, invertebrates and lower plants as well, but information about these is so patchy that comparisons between Territories are more revealing about state of knowledge than about genuine patterns of endemicity.

Endemic species and species of global concern among selected taxa in the UKOT's.

	Higher plants		Reptiles & amphibians		Bats		Birds	
	Global concern	Endemic[2,3]	Global concern	Endemic	Global concern	Endemic	Global concern	Endemic[4]
Pitcairn	7	20?	0	0	0	0	8	6
Anguilla	3	1	2	2	1	0	2	0
British Virgin Islands	10	4	4	4	0		2	0
Cayman Islands	3	21	2	7	3	0	5	0
Montserrat	4	3	2	3	4	0	2	1
Turks & Caicos Islands	3	8	1	4	2	0	3	0
Bermuda	4	15	1	1	0	0	1	1
BIOT	1	0	0	0	0	0	0	0
SGSSI	0	0	0	0	0	0	10	1
Falkland Islands	6	14	0	0	0	0	9	2
Tristan da Cunha	7	46	0	0	0	0	15	9
Ascension	2	10	0	0	0	0	1	1
St Helena	21	49	0	0	0	0	1	1
UKOT total	71	188	12	21	10	0	59	22[5]
United Kingdom	11	9	0	0	5	0	5	1 probable

1: tracheophyta only (gymnosperms and angiosperms). 2: gymnosperms, angisperms and ferns. 3: includes recently extinct plants on Bermuda, Ascension and St Helena. 4: does not include >20 species extinct since ca.1500. 5: one further bird species, Great Shearwater Puffinus gravis, occurs at Tristan da Cunha and Falkland Islands, but nowhere else on earth, and is consequently endemic to the UKOTs, but not endemic to any single Territory.

Global concern includes taxa in the categories Extinct in the Wild, Critically endangered, Endangered, Vulnerable, Data Deficient, Near-threatened. It does not exclude recently extinct species.

Totals for species of global concern does not take into account that some species occur at more than one Territory, and therefore is correctly interpreted as 'number of discrete populations of species of global concern'.

Data for birds are from the World Bird Database (BirdLife International). Data on species of global concern in other taxa are from IUCN 2006. 2006 IUCN Red List of Threatened Species. www.iucnredlist.org. Downloaded on 21st March 2007. Data for endemic species from a variety of sources.

Marine turtles are a key indicator group of globally threatened species in warm seas. They are highly vulnerable to pollution, fishing activities, unsympathetic coastal development and marine habitat degradation, but respond well to sound conservation management.

The UKOTs hold nesting populations of four species: Leatherback Turtle *Dermochelys coriacea* (globally Critically endangered), Green Turtle *Chelonia mydas* (Endangered), Hawksbill Turtle *Eretmochelys imbricata* (Critically endangered) and Loggerhead Turtle *Caretta caretta* (Endangered).

In addition, the inshore waters of the UKOTs support large foraging populations of some species; these are not reported here.

Indicative size of nesting marine turtle populations in the UKOTs.

	Leatherback Turtle	**Green Turtle**	**Hawksbill Turtle**	**Loggerhead Turtle**
Pitcairn	absent	Small	absent	absent
Anguilla	small	very small	moderate	absent
British Virgin Islands	small	Small	small	possibly occasional
Cayman Islands	occasional	Small	very small or extirpated	small
Montserrat	occasional	Small	small	small
Turks & Caicos Islands	absent	very small	moderate	possibly, small
Bermuda	absent	extirpated	absent	absent
BIOT	absent	moderate	large	absent
Ascension	absent	very large	probable small	absent

n.b. many Territories also support foraging populations of other species.

Data are taken from the Marine Turtle Research Group Turtles in the UK Overseas Territories project http://www.seaturtle.org/mtrg/projects/tukot/outputs.shtml.

ANNEX 2: INTERNATIONAL BIODIVERSITY COST DATA

Costs of Eradication and Control of Non-Native Species

From Martins et al (2006) Costing eradications of alien mammals from islands

http://www.uec.ac.uk/biology/research/downloads/thais-martins/martinsislandcost.pdf

Island	Country	Animal	Year	Area (Km2)	Ha	Cost ($US)	$/ha	£/ha
Ascension	Ascension	Cat	2003	88	8800	815661	93	49
Bird	Seychelles	Rodent	1996	1.01	101	5169	51	27
Bottom	Falklands	Rodent	2001	0.08	8	3201	400	211
Breaksea	NZ	Rodent	1990	1.7	170	48796	287	151
Campbell	NZ	Rodent	2003	113	11300	1249726	111	58
Chetwode	NZ	Rodent, weka	1996	2.78	278	43778	157	83
Curieuse	Seychelles	Rodent	2000	3	300	67290	224	118
Cuvier	NZ	Rodent	1993	1.7	170	16968	100	53
Denis	Seychelles	Rodent	2000	1.4	140	56994	407	214
Double	Falklands	Rodent	2001	0.09	9	370	41	22
Double (Large)	NZ	Rodent	1989	0.19	19	3271	172	91
Double (Small)	NZ	Rodent	1989	0.08	8	1919	240	126
Ducie	Pitcairn	Rodent	1998	0.6	60	32191	537	282
Enderby	NZ	Cattle	1993	7.1	710	10698	15	8
Flat	Mauritius	Rodent	1998	2	200	64381	322	169
Fregate	Seychelles	Rodent	2000	2.2	220	61916	281	148
Great Barrier	NZ	Goat	1987	32.3	3230	32975	10	5
Green	Antigua	Rodent	2001	0.43	43	16115	375	197
Hawea	NZ	Rodent	1986	0.09	9	36101	4011	2111
Kapiti	NZ	Possum	1986	19.7	1970	149498	76	40
Korapuki	NZ	Rodent	1987	0.18	18	3858	214	113
Lord Howe	Australia	Goat	2001	14.6	1460	48125	33	17
Macquarie	Australia	Cat	2000	122.5	12250	2356350	192	101
Mokohinau	NZ	Rodent	1991	1	100	21621	216	114
Mou Waho	NZ	Rodent	1996	1.4	140	8243	59	31
Oeno	Pitcairn	Rodent	1998	0.6	60	32191	537	282
Otata	NZ	Rodent	1991	0.22	22	8208	373	196
Outer	Falklands	Rodent	2001	0.2	20	895	45	24
Palmyra	USA	Rodent	2001	2.29	229	111007	485	255
Pitcairn	Pitcairn	Rodent, Cat	1998	5	500	225334	451	237
Ramsey	UK	Rodent	2000	2.53	253	28972	115	60
Raoul	NZ	Goat	1986	29.38	2938	551470	188	99
Red Mercury	NZ	Rodent	1992	2.25	225	24126	107	56
Round	Mauritius	Rabbit	1986	1.5	150	48286	322	169
Rurima	NZ	Rodent	1984	0.08	8	7366	921	485

Sandy Lacepede	Australia	Rodent	1986	4.49	449	51653	115	61
Sangalaki	Indonesia	Rodent	2003	0.14	14	2800	200	105
Stanley	NZ	Rodent, rabbit	1992	1	100	17064	171	90
Tawhitinui	NZ	Rodent	1983	0.23	23	4225	184	97
Top	Falklands	Rodent	2001	0.12	12	2974	248	130
Tuhua	NZ	Rodent, cat	2000	12.8	1280	67543	53	28

The above suggests the following average costs per hectare (based on mean of means):

Animal	**£/ha**
Rodent	194
Rabbit	170
Cat	75
Goat	41

Other estimates:

Rabbits

The Tasmanian Government, with funding assistance from the Australian Government, has developed an eradication plan for the removal of rabbits and rodents from Macquarie Island. This will cost about $15 million. 100,000 rabbits. 12785 ha total area of island at a cost per hectare of AUS$1200 = £480 per hectare. Say 50% of cost is rabbits, i.e. £240 per hectare

Goats

Lord Howe Island, NZ. Cost of eradicating goats from 1455ha island = NZ107,000 or NZ$ 74/ha, or £26/ha, using both aerial shooting and control by dogs.

http://issg.appfa.auckland.ac.nz/database/species/reference_files/TURTID/Parkes.pdf

Rats and Mice

Eradication of rats from 170 ha Breaksea Island, 1986, cost NZ$483 per hectare (Innes 2001) = £160/ha

Mouse eradication Gough Island, 6500 ha, £5 million (Albatrosses and petrels workshop) or £2.6 million (Tristan profile). Cost per hectare - £400 to £770 per hectare.

Rat eradication from Tristan. £2.6m to £5m. 9800 hectares, at a cost of £265 to £510 per hectare.

Stoats

Costs of stoat control NZ$10-100/ha (DOC 2001).

Snails

Eradication of African Giant Snail from Florida cost $1million and took 10 years

Suggested standard costs:

Animal	£/ha
Rodent	200
Rabbit	200
Cat	50
Goat	40

Plants

- Rhododendron control – UK - £526 per ha in 2001 (Dehnen Smutz et al, 2003) http://www.public.asu.edu/~cperring/Dehnen-Schmutz,%20Perrings%20and%20Williamson%20,%20JEM%20(2003).pdf
- Invasive species control all Wales agri-environment scheme £750 per hectare
- Skunk vine control (US) $645/ha chemical control to $1622 per hectare for manual control, £340-£850 per hectare (2003) http://www.encyclopedia.com/doc/1G1-109272204.html
- Removal of invasive plants and restoration of gopher tortoise habitat - $124-495 per ha (£65 to £260 per hectare) (Groutt, 2005) http://www.encyclopedia.com/doc/1G1-136075366.html
- Mauritius control of invasive plant species US$3000 per hectare (£1600/ha) followed by $140/ha/yr (£75/ha/yr)
- Higher Level Stewardship, England:
    - Scrub management: £228/ha (<25% cover) to £583/ha (>75% cover)
    - Bracken control: £48-112/ha
- Removal of non native species from South African fynbos, US140-US$830 per hectare (£75 to £440/ha) http://www.answers.com/topic/conservation-biology
- California. Effort of eradicating pest plant species in California put at between 6 hours/ha and 800 hours/ha at cost of $96 US per hour, i.e $600 to $75,000 per hectare (£315 to £40,000/ha), most expensive over small areas with high concentrations Rejmanek and Pitcairn, Auckland University.

The above indicates that costs per hectare are highly variable and it is difficult to generalise. However, an average cost of £400 per hectare could be used for developed countries.

Cost of Establishing Native Vegetation

South Australia, former mineral workings – capital cost of establishing native vegetation ranges from AUS$500-3500 per ha (£200 to £1400), typical cost of AUS$800/ha (£320/ha) suggested. http://www.pir.sa.gov.au/byteserve/minerals/references/publications/native_veg_policy.pdf

Re-establishing native woodland in West Gippsland, Australia, AUS$1,000 to $3,000 per ha (£400 to £1200 per hectare)

http://www.environment.gov.au/land/publications/nvm-vic/pubs/vic-west-gippsland.pdf

Capital costs from UK Biodiversity Costings:

- Expansion of Native Woodlands -£1500/ha
- Restoration of native woodlands by conversion of plantations on ancient woodland sites - £3,000/ha
- Restoration/expansion of lowland heathland - £350/ha
- Restoration of upland heathland - £150 per hectare
- Restoration of blanket bog - £500/ha
- Restoration/expansion of native grasslands - £500 to £2000 per hectare

Costs of Habitat Restoration in St Helena

Costs from the St Helena case study are as follows:

- Use of contractors to clear invasive non-native vegetation and restore native woodlands: Contract pricing is unpredictable and varies hugely between contractors and jobs. Costs of clearance of invasive vegetation are high and regular and costly maintenance is needed. Costs of initial removal have ranged from £1111 to £1729 per hectare and typically require 3 follow up visits per year to remove regrowth at an average cost of £1115 to £1482 per hectare per year.
- Restoration of pasture habitat for wirebirds, including removal of scrub and invasive weeds, pasture improvement, fencing and introduction of grazing: £33,000 for 80 acres, £1030 per hectare.
- Forest expansion over 17.3 acres (7ha) – £15,225 or £2200 per hectare.

Protected Areas

Natura 2000 network: European Commission Working Group estimated the costs of managing the Natura 2000 network (453,000 km^2 in EU15) at 5.0 billion euro, an average of 110 euro per hectare per year (£75/ha/yr). This includes marine areas.

http://ec.europa.eu/environment/nature/nature_conservation/natura_2000_network/financing_natura_2000/pdf/n2k_annex_en.pdf

Balmford et al – costs of MPAs estimated at $2700 per km2 (median) (£14/ha) with wide variations http://www.pnas.org/cgi/content/full/101/26/9694

Montserrat National Tourism Strategy and Plan (2003) puts cost of establishing a pilot Marine Protected Area at EC$125,000 (£23,600)

Comparison of Costs between OTs

Ideally cost assessments will be made for each OT, using local costs of wages, equipment and materials. However, where local costs are not available, it is often necessary to use international cost estimates, applying appropriate scaling factors.

One of the main variables affecting costs is local labour costs, particularly for those items where salaries are a high proportion of overall costs (e.g. costs of manual habitat management work). For these costs it is possible to apply scaling factors based on differences in income per head in OTs. For example, we might expect certain jobs to cost only 20% as much in Montserrat as in the UK, in line with differences in average incomes.

Data for GDP per head are not available for all of the OTs, some of which have very small economies.

Table: GDP per Head, OTs, UK and US

	Year	US$	UK=100
Anguilla	2003	7,736*	21*
Bermuda	2005	55,000	146
British Virgin Islands	2003	38,643	103
Cayman Islands	?	39,801	106
Falkland Islands	2001	47,118	125
Montserrat	2004	7,493	20
St Helena	2000/01	2,291	6
Turks and Caicos	2003	13,506	36
UK	2005	37,600	100
US	2005	43,740	116

The table indicates very wide variations in average incomes, with certain OTs such as Bermuda and the Falklands having significantly higher average incomes than the UK, and others such as St Helena, Montserrat, Anguilla and the Turks and Caicos Islands having much lower GDP per head.

From the above it is possible to cluster OTs as follows:

- "High income": Bermuda, BVI, Cayman Islands, Falkland Islands, South Georgia.
- "Low income": Anguilla*, Ascension, Montserrat, St Helena, Tristan, Turks and Caicos.

BIOT and Pitcairn have small populations and are highly reliant on importing staff at high cost from overseas.

* Anguilla's GDP per head has increased substantially in the last four years.

Labour costs can be assumed to be at a similar level to the UK in the “high income” OTs but much lower (20-30% of UK levels) in the “low income” OTs.

However, it is important to note that actions based on imported materials, labour and expertise will cost at least as much in the low income OTs as in the high income OTs (and may be higher due to high transport costs). For example, eradication of non native predators is often undertaken by international contractors and is likely to incur similar costs across the OTs.

ANNEX 3: ANGUILLA

1.1 Contributors

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1.2 Background

Archipelago of 22 limestone islands, all of which are low-lying with a maximum elevation of 65 m. Habitats range from coral reefs to coastal cliffs, degraded evergreen woodland, to small areas of mangrove, and brackish and freshwater ponds.

1.3 Biodiversity Importance

- Caribbean Island Global Biodiversity Hotspot, Lesser Antilles Endemic Bird Area
- 4 Important Bird Areas, covering 594 hectares or 5.8% of the total land area
- 5 proposed Ramsar sites
- Regionally important populations of seabirds
- 2 bird, 3 plant, 3 reptile, 3 turtle and 1 bat species of global conservation concern
- 1 endemic plant, 40 endemic invertebrates (on Sombrero island alone), 2 endemic reptiles
- Significant coral reefs

1.4 References

Important Bird Areas in the UK Overseas Territories

Anguilla National Trust 2005 – 2008 Strategic Development Plan

Anguilla National Environment Management Strategy

1.5 Biodiversity Conservation Priorities and Costs

1.5.1 Habitat management and restoration work

- Invasive plant clearance from islands/mainland sites. The cost per hectare is uncertain but an annual budget of £10,000 would enable clearance of 20ha per year at £500 per hectare
- Eradicating African snails from Anguilla mainland. No cost data or indication of the scale or type of work required are available. The initial requirement is for a feasibility study, cost £10,000
- Provision of visitor amenities including interpretation centres, display cases and toilet facilities at East Pond Conservation Area and Big Spring. The Anguilla National Trust campaign has identified a need for US$15,000 for nature trail

development, US$35k interpretation centre, US$3k signage. Total cost US$53k (£28k), average £6k per year for 5 years

- East End Pond Restoration. ANT campaign identifies restoration cost of US$20,000 (£11,000 or £2,000 per year averaged over 5 years).
- Native vegetation restoration at island/mainland sites. The cost per hectare is uncertain but an annual budget of £15,000 would enable restoration of 10ha per year at £1500 per hectare.
- Total cost: £35,000 per year over 5 years

1.5.2 Mammal control

Priorities are:

- Removal of goats from Dog Island. Over an area of 207 ha and at a cost of £40 per hectare, this suggests a total cost of £8,280, an average of £1656 per year over 5 years.
- Rat eradication from 3 islands (Dog 207ha, Scrub 343ha and Prickly Pear 63ha)
    - Feasibility study = £15,000/island
    - Clearance of rats = £200/hectare over 613ha = £123,000
    - Total cost £138,000 or £28,000 per year over 5 years

1.5.3 Site Protection

There is a need to appoint wardening staff as follows:

- East End Pond and other ponds. 1 warden.
- Big Spring. 1 warden.
- Marine Park wardens covering marine areas and Dog, Scrub, Sombrero, Prickly Pear and other islands. Visits to these islands would be made by Marine Park wardens on a daily basis as part of their patrols and monitoring. In addition, a specific trip to conduct an assessment would be done twice per month. The salary of each warden would be £8,000 and there is a need for 3-4 Marine Park Wardens.

Data provided by ANT suggests annual salary costs of £8,000 per warden. At present the Anguilla National Trust only has administrative control for East End Pond.

6 wardens required at an annual salary of £8,000 each, or £16,000 each to include support costs and expenses. Total cost £96,000 per year.

A boat is required to enable marine patrols at a cost of XCD$245,000 (£46,000, or an average of £9,200 per year over 5 years).

1.5.4 Policy and advisory work

Key priorities are:

- Development of a Biodiversity Action Plan
- Development of site management plans (East End Pond, Big Spring, Sombrero and others)

- Advising/integrating sustainable development into other government departments (particularly tourism)
- Establishing legislation for Environment Impact Assessment and Protected Areas The legal time required to facilitate the legislative changes to ensure the inclusion of mandatory EIAs would be about 3-4 months and would cost about XCD $25,000 (£5,000) for that time, an average of £1,000 per year over the 5 year costing period.
- Strengthening quarantine/border controls (legislation & implementation). This requires recruitment of a biosecurity officer.
- Establishing 5 Marine Protected Areas – Dog Island, Prickly Pear Cays, Little Bay, Shoal Bay/Island Harbor, Sandy Island
- Reporting to the UK Government
- ANT data suggests an annual cost in the region of £10,000 per year for policy/advisory staff. Requirement is for 5 policy officers to work on the above biodiversity and sustainable development policy issues, at annual combined salary cost of £50,000, total cost of £100,000 including expenses and support costs.

1.5.5 Education and communications

Requirements are as follows:

- 1 education officer = XCD$52k/year (£10k per year or £20k including support costs and expenses).
- Publications = XCD$13k (£2k) for brochures, guides and books
- Workshops/Seminars/Meetings = XCD$10k (£2k) per year
- ANT campaign - US$2k radio spots + $US5k membership attraction/retention
- Total annual budget: £25,000

1.5.6 Survey, research and monitoring costs

The following work is required:

- Seabird surveys at Prickly Pear, Sombrero, Dog, Scrub and also on mainland Anguilla. Monthly trips to each island would require boat hire at XCD $1100.00 per trip, a total of XCD$52,800 (£10,000) per year for 48 days hire. Employing two staff for this purpose would cost XCD $96,000 (£18,000).
- Mainland pond surveys (monthly). Monthly wetland bird counts cover some 19-20 ponds including one artificial pond. To do this properly requires three teams of two working for one day a month. This involves personnel costs of XCD $10,800 per year and the transportation costs would be XCD $4,000 for the year, a total cost of XCD$14,800 (£3,000) per year.
- Turtle (beach) surveys. Effort unknown, assume similar as for pond surveys = £3,000 per year
- Invertebrate baseline survey. Effort and cost unknown.
- Management of GIS. Assume £2,000 per year as for Ascension.

- Complete cataloguing of Anguilla's herbarium specimens and mount displays. Cost unknown.
- Total annual cost: £36,000

1.5.7 Training

To offer one scholarship in Environmental Studies each year through university partners. Value of scholarships varies widely, but may amount to £3,000 per annum.

1.6 Summary of Costs

The total cost of delivering the package of actions set out above is estimated at £335,000 per year between 2007/08 and 2011/12.

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	35
Control of Introduced Mammals	30
Site Protection	105
Policy and Advisory Work	101
Education and Communications	25
Survey, Research and Monitoring	36
Training	3
Total	**335**

ANNEX 4: ASCENSION ISLAND

1.1 Contributors

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1.2 Background

A 97 km² isolated and relatively young island. It is entirely of volcanic origin (44 distinct dormant craters). It has a rugged terrain, the highest point being Green Mountain at 859m.

1.3 Biodiversity Importance

- 2 Important Bird Areas – 9,705 hectares or 100 % of the total land area (Ascension mainland & Boatswain Bird Island)
- 1 proposed Ramsar site (Ascension Island & BBI – 9,705 hectares or 100% of total land area)
- 1 Protected Area (Green Mountain) + 11 proposed Protected Areas (2 sanctuaries, 6 Nature Reserves, 4 National Parks)
- Important regional populations of seabirds (11 species)
- 1 bird, 2 plant, 2 turtle species (one of the most important breeding green turtle populations in the world) of global conservation concern
- 1 endemic bird, 10 endemic plants, 14 endemic crustacean, 9 endemic fish, 26 endemic invertebrate species

1.4 References

www.ascensionconservation.org.ac

Green Mountain National Park 5 year Action Plan

Proposal – Ascension Island National Protected Areas

A Management Plan for the Marine Turtles of Ascension Island

Important Bird Areas in the UK Overseas Territories

Current annual budget for the Conservation Department is £70,000/year excluding projects

1.5 Biodiversity Conservation Priorities and Costs

1.5.1 Habitat management and restoration work

Priorities are:

- Invasive plant clearance from Green Mountain. Assume a cost per of £500/hectare (based on international review) and an area to be cleared of 100 hectares. Suggests a cost of £50,000 over 5 years or £10,000 per year.

- Provision of visitor amenities. This includes the capital costs of restoration of the Red Lion visitor centre which are put at £250,000. This suggests an annual cost of £50,000 over 5 years.
- Native vegetation restoration on Green Mountain. The estimated annual cost of running a native plant nursery is put at £6,000.
- Control of Mexican thorn. Ascension received UK Govt funding of £12,750 in 1996/97 for a project to control the spread of the Mexican thorn tree on Ascension Island. Further work is needed to prevent the tree re-spreading. The Turtle Management Plan estimates that this requires 1-2 days work every 6-8 weeks, i.e. approx 11 days per year. This suggests a total annual cost in the order of £1,000, including transport and equipment.

1.5.2 Mammal control

Control/eradication of rabbits from the island is an important priority for achieving habitat restoration. Applying an average cost of £200/hectare (based on international review, Annex 1) gives an estimated eradication cost of £1.94 million. This implies a total cost of £388,000 per year for 5 years.

Black rats are currently controlled by a team of three, covering 90% of the island. The costs of controlling rats yearly on Ascension Island are:

Item	**£ p.a.**
Rat Poison	3,768
Bait boxes	5,270
Staffing	40,116
Other employment costs	7,817
Total	**56,971**

As the costs of rat control are covered by existing expenditures they are not included in the totals below.

There is also a need to control donkeys to reduce their impacts on sensitive habitats. These costs include the cost of erecting and maintaining a donkey pen, and the daily cost of feeding and caring for the donkeys. These costs are estimated to total £5,000 per year.

1.5.3 Site Protection

Site protection work is required as follows:

- Green Mountain. There is a need for two wardening staff, with equipment needed for site management and maintenance of paths and habitats. The annual cost is estimated at £14,000 (two staff at £6500 each plus £1,000 per year for equipment).

- Turtle beaches. The Management Plan for marine turtles sets out a series of actions that need to be undertaken to protect turtle beaches and feeding areas from disturbance and damaging activities. These actions could be implemented by extending the existing work of turtle wardens. At the existing hourly rate of £5 per hour, an extra 100 days site protection work each year would cost £3500 in wages, or £7,000 including support costs and expenses.

1.5.4 Policy and advisory work

A variety of priorities for policy and advisory work have been identified. These include:

- Development of site management plans (for Long Beach and all proposed sites)
- Establishing legislation for Environment Impact Assessment and biosecurity controls.
- Strengthening quarantine/border controls (legislation & implementation)
    - 1 biosecurity officer = £12,000/year plus support costs
    - construction of quarantine area (£20k capital cost)
- Establishing Marine Protected Areas
- Reporting to the UK Government

The above suggests the following staff requirements:

- 2 Policy/advisory officers – to advise on policy development, prepare site management plans and work on establishment of protected areas
- Biosecurity officer

At least 3 staff are required at an annual salary of £12,000 each. Including support costs and expenses doubles this to £24,000 per post, or £96,000 in total.

1.5.5 Education and Communications

There is a need for:

- 1 education officer at a cost of £12,000 per year, or £24,000 including support costs and expenses.
- Publications = cost of producing Ascension Conservation Quarterly, leaflets etc. An annual budget of £10,000 is needed.
- Workshops/Seminars/Meetings = £5,000/year

1.5.6 Survey, research and monitoring costs

A variety of survey, research and monitoring needs have been identified. The annual cost of these is estimated as follows:

- Seabird surveys. The main colonies need to be surveyed monthly, in addition to a more detailed five yearly census. This involves two staff with salaries of £7,000 each, plus an equivalent amount for support costs and expenses, at a total cost of £28,000 An annual budget of £10,000 is required for boat hire, with each stack trip costing £50 and each BBI trip £400.

- Turtle (beach) surveys. Survey work currently takes place at the three main breeding beaches and involves 10 hours of work at each per week over the season at a cost of £5 per hour, a total cost of approximately £5850 per year. However, a further 29 beaches are not monitored. Doubling survey work to 60 hours per week over the nine month season at a total cost of £11,700 would enable a larger proportion of beaches to be surveyed. The additional cost involved is £5850 per year.
- Management of GIS. There would be benefits in increasing the management of the GIS system from the current two hours per week to 10 hours per week, at a total cost of £2,000 per year.
- Ascension Spurge study
- Land crab research. This is done by volunteers and external students at minimal cost.
- Marine surveys. Marine survey work is currently undertaken by volunteers but would benefit from a full time team of two at an annual cost of £28,000 including expenses and support costs. Boat hire costs will amount to £1000 per month (allowing two round the island trips per month) at a cost of £12,000 per year.
- Total additional cost: £86,000

1.6 Summary of Costs

The total annual cost of meeting biodiversity priorities on Ascension Island is estimated at £680,000 per year between 2007/08 and 2011/12. This is additional to current core expenditures on the island, and excludes some costs (such as rat control) which are met through existing budgets.

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	67
Control of Introduced Mammals	393
Site Protection	21
Policy and Advisory Work	74
Education and Communications	39
Survey, Research and Monitoring	86
Training	-
Total	**680**

ANNEX 5: BERMUDA

1.1 Contributors

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1.2 Background

Archipelago of approximately 150 islands, all of which are volcanic in origin. Most of the Bermuda bank remains shallowly submerged with areas of active coral reef surrounded by large areas of sand. The total land area is about 55 km². Wetlands are important.

1.3 Biodiversity Importance

- Caribbean Global Biodiversity Hotspot
- 1 Important Bird Area, covering 43 hectares or 1% of the total land area
- 7 Ramsar sites of which 6 are proposed
- 500 hectares of parks and nature reserves (9% of land area)
- 4 plant, 1 reptile and 1 bird of global conservation concern
- 15 endemic plant, 1 endemic bird and 1 endemic reptile species
- Significant coral reefs

1.4 References

Bermuda Biodiversity Action Plan, www.biodiversityactionplan.bm

Important Bird Areas in the UK Overseas Territories

1.5 Biodiversity Conservation Priorities and Costs

1.5.1 Bermuda Biodiversity Action Plan

The Bermuda Biodiversity Action Plan, published in 2003, sets out an overall framework for the conservation of biodiversity in Bermuda. The Plan sets out 12 objectives, which relate to:

A. Coordination, collaboration and communication

B. Integration of biodiversity conservation into Government policies, programmes and plans

C. Environmental education and training

D. Public awareness

E. Community participation

F. Economic and other incentives

G. Environmental legislation

H. Enforcement of legislation

I. Protected Areas

J. Management plans for key species and habitats

K. Research and monitoring

L. Fundraising.

Each objective has a number of actions and sub-actions. Costs and funding requirements are identified.

The Plan suggests that the cost of many of the actions can be met through existing budgets. However, the following major items of additional expenditure are identified which have ongoing cost implications after 2007.

Action	**Annual Cost (US$000)**
A1.1 Establish and maintain BAP co-ordinating unit	60
A1.5 Quarterly stakeholder meetings	2
A2.4 Lectures and workshops	5
B1.2 Surveys of Government	5
B1.5 Training for Government Officials	10
B3.1 Government workshops	5
B4.8 Workshops	1
C2.1 Environmental Education Co-ordinator	60
C2.4 Annual Teachers' Workshop	1
C2.3 Youth club leaders' workshop	1
C3.3 Educators' workshops	2
C3.8 Annual biodiversity essay contest	1
C5.1 Horticultural and landscaping programmes	1
C7.4 GIS workshops	1
E1.1 Habitat Restoration Seminars	1

E1.4 Community support for invasive plant control	2
E1.5 Environmental clean-up programmes	2
E1.6 Annual community day events	2
E4.5 Annual review of NGO membership	5
E5.6 Home gardening seminars	1
E7.3 Celebrating youth involvement	1
E8.1 Identify and advertise dates for environmental action	1
E10.1 Architects/developers seminars	1
F3.3 Secure sponsorship for native species	100
F6.1 Annual competitions	25
F6.5 Promotional initiatives for business	1
H3.2 Training programmes for environmental enforcement officers	10
I1.7 Aerial photo surveys	10
I5.4 Co-ordinate implementation of management/rehabilitation plans	60
K1.7 Forum for researchers/conservationists	1
K (various) Additional research projects ($350k assume spread over 10 year period)	35
L4.5 Conservation training workshops	1
Total	**414**

This suggests that implementing the plan will require additional ongoing funds of US$414,000 (£220,000) per year compared to the funding available at the time the plan was prepared in 2003. It is not clear what proportion of those funds have been provided since that date.

In addition, action J1.3 requires the development and implementation of a series of action plans for individual habitats and species, making new funds available as required.

One such plan is the Bermuda Skink SAP.

1.5.2 Bermuda Skink SAP

Habitat management and restoration work

Cost of $100,000 for habitat management work between 2004 and 2030 – i.e. $4,000 (£2,000) per annum

Predator control

Control of Bermuda Skink Predators. SAP suggests a cost of US$50,000 between 2004 and 2030. There are likely to be benefits in concentrating activity in the early part of this period. If half of this activity is concentrated between 2004 and 2010 this suggests an annual cost of US$4,000 (£2,000) over this period.

Survey, research and monitoring costs

Bermuda Skink Research: SAP identifies research to the value of $86,000 to be completed between 2003 and 2010 – suggests an annual cost of £6,000 per year.

1.5.3 Other SAPs

The Bermuda Government is currently drafting recovery plans for all protected species subject to protection under the Protected Species Act 2003. The list covers 68 species including 6 ferns, 11 flowering plants, a moss, a terrestrial snail, two freshwater molluscs, 5 reptiles, 3 marine molluscs, 10 finfish, 2 whales, 3 birds, a marine plant and 23 species of cave organisms. Some of these are covered by group plans, such as ferns and seahorses. Plans are expected to be complete by end of April 2007, and costing is the last item to be done. There are no habitat protection plans at this time, although for most of the plant species, habitat protection is included within the plans. The Government is currently working on designating approximately 16 areas as critical habitats, where complete protection is ensured. Some of these are privately owned, and lengthy negotiations are underway.

1.6 Summary of Costs

The additional ongoing costs of implementing the Bermuda BAP and Bermuda Skink SAP are estimated as follows:

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	5
Control of Predators	2
Site Protection	0
Policy and Advisory Work	118
Education and Communications	59
Survey, Research and Monitoring	33
Training	11
Total	**228**

The costs of implementing further SAPs cannot yet be estimated.

ANNEX 6: BRITISH INDIAN OCEAN TERRITORY (BIOT)

1.1 Contributors

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Chagos Conservation Trust

1.2 Background

Tropical archipelago of 55 low-lying islands, and surrounding seas. All islands are uninhabited except for the largest, Diego Garcia, which supports a military base. Contains five atolls, including the Great Chagos Bank, the largest atoll in the world. Total area of 54,400 km^2, mostly ocean, with a land area of 60 km^2 (6,000ha) of which Diego Garcia accounts for 44km^2.

1.3 Biodiversity Importance

- 10 Important Bird Areas – 924 hectares or approximately 20% of the total land area
- 1 Ramsar Site (Eastern Diego Garcia)
- The archipelago forms part of the 'Maldives-Lakshadweep-Chagos Archipelago tropical moist forests' ecoregion (IM0125), which is critically endangered, and very limited in area.
- Regionally important populations of seabirds.
- Significant nesting and foraging populations of two globally threatened turtle species, including the Critically Endangered Hawksbill Turtle *Eretmochelys imbricata*.
- Significant populations of at least five globally threatened fish species, including two shark species, and Bigeye Tuna *Thunnus obesus*.
- Arguably the most important reef and island system in the Indian Ocean, with an enormous area of coral reef, which is the least degraded in the Indian Ocean.
- At least three endemic fish species, one endemic coral species, and one endemic moth species.

1.4 References

BIOT environmental management plan

1.5 Biodiversity Conservation Priorities

1.5.1 Terrestrial habitat management and restoration work

The following priorities have been identified:

- Invasive plant clearance (especially coconut plantations) from most islands, with native plant restoration. Most islands are dominated by coconut plantations,

and converting these back to native woodlands is a priority. The removal of coconut needs to be combined with restoration of native woodland in a single operation. Substantial work is needed to prepare the sites and to staff the follow-up, to avoid the arrival of potentially invasive alien plant species. Costs of conversion of coconut plantations to native forest are uncertain but will be high. A substantial annual budget is required to fund restoration work. An annual budget of £100,000 would fund the restoration of 33 hectares per year at an average rate of £3,000 per hectare (equivalent to UK cost of restoration of native woodlands on plantation sites), though area of habitat restored would be expected to vary depending on actual cost per hectare.

- Removal of rats from ca.35 islands = ca.4,000 ha. Two estimates of the cost have been made as follows:
    - Based on published equations, the cost of rat eradication would be in the region US$450,000-600,000 (£240,000 to £320,000).
    - However, the cost of clearing Eagle Island, the only island where work has so far taken place, amounted to £150,000 and suggests that the overall cost will be higher than published equations suggest, with logistical difficulties adding to costs. The Eagle Island costs suggest a total cost for the islands as a whole of £800,000.
    - The true cost is likely to fall between these two estimates. Taking a midpoint would suggest a figure of £540,000. This would imply an average cost of £108,000 per year over the five year costings period.

1.5.2 Site Protection

The following needs have been identified but not costed:

- Installation of moorings for yachts, to prevent anchor damage.
- Artificial reef restoration work on the western reef of Diego Garcia, following military digging operations which have caused major damage and subsequent shoreline erosion.
- Restoration of shoreline stabilising plant communities (mainly Scaevola)
- Implementing the plan to conduct annual or near-annual monitoring of natural resources and reef condition.
- Control of alien plants, especially Hawaian Dodder, a parasitic creeper which is killing much Scaevola

1.5.3 Policy and advisory work

Fisheries and Marine Policy

There is a need for continuing measures to protect and enhance the marine environment, including:

- Improved policing of fisheries through the BIOT Patrol Vessel and observer programme.
- Implementation and management of a licensing system for commercial and recreational fishing

- Participation in regional fisheries management organisations, in particular Indian Ocean Tuna Commission.
- Enforcement of an NPOA for sharks, probably to include a total ban on shark fishing and use of steel traces in long lining.
- Scientific assessment of catches and setting of quotas (currently executed by MRAG under license from BIOT).
- Enforcement of regulations for marine ballast.
- Enforcement of regulations for visiting yachts.
- Improved management of the marine environment would benefit from the appointment of a Marine and Fisheries Policy Officer. Estimated cost £60,000 per year including salary, support costs and expenses.

Biodiversity and Protected Areas

Policy and advisory needs include:

- Developing biodiversity action plans.
- Designation of 30% of all marine and terrestrial habitats as strictly protected areas
- Designation of new Ramsar sites and reporting to Ramsar.
- Raising public awareness of biodiversity issues.
- Reporting to UK Government.

Requires a Biodiversity Policy Officer – cost of £60,000 per year including salary, support costs and expenses.

Publications, events and communications

£10,000 per annum budget for publications, events and communications.

1.5.4 Survey, research and monitoring costs

At present, there is an annual visit by an Environmental Inspector, of about 1 month (perhaps a bit less). Occasionally this is expanded to cover a larger number of experts (e.g. teams of 4 to 17) visiting annually to survey mainly marine habitats, but also seabirds, turtles and native vegetation and monitor invasive species. The timing of these visits depends on the best times for monitoring seabirds and turtles. The environmental adviser receives a fee from BIOT, but all others receive salaries from their home institutions only. There is a need to expand this work.

Costs are likely to include:

- Staff time – 5 researchers for 50 days each (25 days on islands plus 25 days for office based research, analysis and write-up) @ £200 per day = £50,000
- Travel and subsistence - £5,000 per researcher = £25,000
- Ship costs – 1 month per year for marine surveys = £100,000

- Research Co-ordinator – to design, manage and co-ordinate research expeditions, maintain records, maintain GIS system. Likely to require payment at international rates – £60,000 per year including office costs, expenses.
- Establishment of a formal scientific advisory group, co-ordinated by the Research Coordinator. Annual budget of £40,000 to cover time inputs and expenses, cost of organising meetings.

Total: £275,000 per annum.

1.6 Summary of Costs

There are significant gaps and uncertainties in the above costings, and a number of required actions cannot be costed at this stage. However, the estimated indicative costs of meeting biodiversity commitments are summarised as follows:

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	100
Control of Introduced Mammals	108
Site Protection	
Policy and Advisory Work	120
Education and Communications	10
Survey, Research and Monitoring	275
Training	
Total	**613**

These costs relate to additional needs and exclude the cost of operating the existing patrol vessel, which plays a crucial part in meeting a variety of biodiversity priorities (e.g. policing policies for fisheries and yachts etc).

ANNEX 7: BRITISH VIRGIN ISLANDS

1.1 Contributors

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1.2 Background

Archipelago of more than 60 islands, cays and rocks with a total land area of 154km². With the exception of the limestone island Anegada, all are volcanic in origin.

1.3 Biodiversity Importance

- Caribbean Islands Global Biodiversity Hotspot, Puerto Rico and the Virgin Islands Endemic Bird Area
- 3 Important Bird Areas, covering 10% of the total land area
- 1 Ramsar site (+ 1 proposed), 20 National Parks and Protected Areas, and 20 designated bird sanctuaries
- Regionally important populations of seabirds
- 10 plant, 4 reptile and 2 bird species of global conservation concern
- 4 endemic plant and 4 endemic reptile species
- Significant coral reefs

1.4 References

Important Bird Areas in the UK Overseas Territories

Gardner, Lloyd. 2007. British Virgin Islands Protected Areas System Plan 2007-2017. BVI National Parks Trust. Tortola. January 4, 2007.

Biodiversity Conservation Priorities

1.4.1 Habitat management and restoration work

Key priorities are:

- Invasive plant clearance from islands/mainland sites. Three species pose potential threats to biodiversity - Casuarina equisetifolia (Australian whistling pine); *Scaevola sericea* (a beach shrub originally form the Indo-Pacific and introduced as a landscaping plant) and *Cryptostegia madagascariensis* (rubber vine, originally from Madagascar and introduced as an ornamental, a threat to the biodiversity on Anegada. The cost of clearing these plants is estimated at £250 to £500 per day based on the terrain which is generally hilly, plus additional costs of transportation of equipment of £150 to £300 per day. This

does not include the cost of replanting native species and restoring the habitat. However, there are no immediate plans to clear these plants.

- Provision of visitor amenities:
    - Tortola National Parks
        - Botanic Gardens in Road Town: Upgrading existing facilities at cost of £225,000 Inclusive of signage, park benches, botanical collections, interpretive panels, infrastructure.
        - Mt. Healthy: Interpretative signs and park benches - £5,000
        - Shark Bay: Trail maintenance, park benches and interpretative signs. £5,000
        - Sage Mountain: Construction of restrooms and visitor facilities, park benches, look out shelters, interpretative signage - £95,000
        - QEII Park in Road Town: – this is an urban park which requires all the amenities including exercise trails, rest rooms, parking area, gazebos, pavilion, children's play areas, park benches, garbage disposal and signage. The budget for these amenities was estimated at £150,000. Development has begun on phase 1 of this redevelopment project.
    - Virgin Gorda National Parks
        - The Baths, Devils Bay and Spring Bay: These parks all require upgrades to the infrastructure. Bathrooms, shade umbrellas, benches, life guard stations. Estimated cost at £200,000
        - Gorda Peak: trail maintenance and upgrade to the look out platform at an estimated cost of £5,000
        - Copper Mine: Restoration work, improved pathways, security railings, erosion prevention work, an interpretation centre and an observation deck for persons who are unable to trek through the ruins and restrooms. Estimated cost £500,000
    - Total cost: £1,185,000, or an average of £237,000 per year over 5 years.

1.4.2 Control of introduced mammals

Priorities are:

- Removal of goats from Great Tobago (86 hectares). The eradication of feral animals such as goats, donkeys and cattle will allow the natural restoration of many of the native plants which exist on Anegada and Great Tobago. An actual example of this was seen on Great Tobago when over 90% of the feral goats were removed, the natural grasses and shrubs regenerated within six months of the eradication. This project is still to be completed as not all of the goats were removed. Work so far has been undertaken by the Royal Virgin Islands Police Force, with support from the National Parks Trust. It is estimated that a further 7 days work is needed at £700 per day (4 people plus transportation costs). Total cost - £4,900 (an average of £950 per year if averaged over the five year costing period).

- Rat eradication from Anegada, Great Tobago and Fallen Jerusalem islands/cays. This requires:
    - Feasibility study - £15,000 per island for Great Tobago and Fallen Jerusalem.
    - Anegada – long term project with continued surveillance - at least £50,000 for the first phase.
    - Fallen Jerusalem: estimated £16,000 with annual surveys of £1,500
    - Great Tobago: estimated at £25,000 first phase and £5,000 annual follow up. Dependent on removal of remaining goats.
    - Total cost: £140,000 over the 5 year costings period, an estimated average annual cost of £28,000.
- Cat eradication from Anegada. Based on a visit by Island Conservation this will cost £50,000 first phase.
- Total annual cost - £39,000 per year for 5 years.

1.4.3 Site and Species Protection

Costs include:

- National Parks. Total salary costs for the management of National Parks are £226,500, which include average salaries of £10,100 for wardens and £17,000 for senior wardens. In addition, site maintenance costs are £50,000 per annum. There are 20 National Parks and Protected areas, and a team of 20 wardens is required to protect and manage these. There is a need to expand the current team from 13 terrestrial wardens and 3 senior wardens to 15 wardens and 5 senior wardens. This requires an additional annual budget of £54,000
- Species Action Plans (Anegada rock Iguana, Anolis roosevelti, Epicrates monensis, Acacia anegadensis, Metastelma anegadense). The only active species action plan is the Rehabilitation of the Anegada Rock Iguana. Currently 101 animals have been returned to the wild. The cost of managing the project is approximately £40,000 annually by the Trust and another £25,000 for visiting scientists.
- Species reintroduction (West Indian Whistling Duck). The initial requirement is a feasibility study at an estimated cost of £20,000.
- Total additional cost: £58,000 per year over 5 years, in addition to current commitments.

1.4.4 Policy and advisory work

Priorities include:

- Development of a national Biodiversity Action Plan. Several Action Plans already exist in the Territory (National Environmental Action Plan NEAP); Darwin- Anegada Biodiversity Action Plan 2004/2005, and several other plans developed by the Trust with the assistance of external consultants. The cost of amalgamating these is estimated at £20,000
- Development of site management plans. The Trust is mandated by the National Parks Act 2006 (NPA 206) to produce a plan for each park or groups of parks. The estimated cost (including in house costs) over 2.5 years is £85,000.

- Advising/integrating sustainable development into other government departments, by appointing a Sustainable Development Officer. Annual cost of £18,000 per annum.
- Strengthening quarantine/border controls (legislation & implementation), through appointment of a biosecurity officer. This should come under Environmental Health Dept and Agriculture Department Plant Quarantine. These departments & positions already exist in the Territory. Additional costs for training staff and upgrading facilities to meet biodiversity priorities is estimated at £30,000.
- Reporting to the UK Government. This requires 20 days work per year at £320 per day = £6400 per annum.
- Total additional costs: £51,000 average per year over 5 years.

1.4.5 Education and Communications

Needs include:

- Raising awareness and building public support, through an education officer with a publications budget and events/workshops/meetings budget. This position already exists in the Trust and CFD. Training and additional staff costs are estimated at £75,000 over two years.
- Cost of trips to outer islands – 36 trips per year @ £400/trip = £14,400
- Publications, events and communications budget - £10,000 per year
- Total - £39,000 per year over 5 years

1.4.6 Survey, research and monitoring costs

Priorities are:

- Seabird surveys. 4 per year completed through consultant trips at £7,750 per trip = £31,000 per year.
- Mainland pond surveys: If ponds on the mainland (Tortola and Beef) were to be monitored, there are about 10 ponds that usually hold water. If these ponds were monitored four times per year, it would cost about $500 per pond per year in labour (or $5000 total for the year), $600 total for transportation (for the year), and about $700 for the necessary equipment (not including microscopes or computers), which would have to be replaced every five or ten years. Total cost of $5700 per year (£3,000 per year). There are many ponds worth monitoring on the outer islands as well (e.g. Anegada). Doubling the effort to include other islands would incur an additional cost of £3,000 plus additional transport costs of £6,400 (based on 4 islands visited four times per year @ £400 per trip). Total cost = £12,400 per year.
- Marine/coral reef surveys and monitoring. This requires funds to hire a marine biologist and trainee, at an annual salary cost of £30,000, plus an annual budget of £30,000 for equipment and training for marine monitoring.
- Management of GIS. This is already done within the NPT by the Planning & Devt Coordinator. There is also a national GIS Coordinator in the Town Planning Dept.
- Total cost - £103,000 per year.

1.5 Summary of Cost Estimates

The costs of meeting biodiversity conservation priorities in the BVI are estimated at £527 million per year between 2007/08 and 2011/12:

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	237
Control of Introduced Mammals	39
Site and Species Protection	58
Policy and Advisory Work	51
Education and Communications	39
Survey, Research and Monitoring	103
Training	*Included in the above figures*
Total	**527**

The largest costs relate to provision of visitor facilities and survey, research and monitoring work.

ANNEX 8: CAYMAN ISLANDS

1.1 Contributors

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Gina Ebanks-Petrie, Director of Environment, Gina.Ebanks-Petrie@gov.ky

1.2 Background

Three low-lying limestone islands. Coastal habitats include fringing reefs, shoreline, littoral woodland and cliffs. The interior is dominated by dry evergreen forest and shrubland.

1.3 Biodiversity Importance

- Caribbean Islands Global Biodiversity Hotspot, Cayman Islands Endemic Bird Area, Greater Antillean Marine Global Ecoregion
- 10 Important Bird Areas
- 1 Ramsar site and 4 proposed
- Regionally important populations of seabirds
- 3 plant, 2 reptile, 3 bat, 5 bird species of global conservation concern
- 21 endemic plant, 7 endemic reptile and 30 endemic non-marine mollusc species
- Significant coral reefs

1.4 References

Important Bird Areas in the UK Overseas Territories

Darwin project to develop biodiversity action plans (e.g. blue iguana)

1.5 Biodiversity Conservation Priorities

1.5.1 National Biodiversity Action Plan (NBAP)

The Department of Environment is currently heading a Darwin Initiative for the establishment of a NBAP for Cayman. To date:

- 32 species of plants (20 in the first tranche, 12 in the second tranche) and ca. 12 species of animals have been identified as requiring Species Action Plans (SAPs) so far.
- 33 categories of habitats have been identified as requiring mapping and Habitat Action Plans (HAPs), and 15 categories of marine habitats.

An approximate costing of implementation of a local SAP is only available for the Blue Iguana (based on the Blue Iguana Species Recovery Plan). This should perhaps be regarded as a rather conservative estimate of the costs incurred or predicted by the programme. The primary objective of the programme is the establishment of a shrubland reserve in the East End of the island sufficient to support a self-sustaining

population of ca. 1000 free-roaming iguanas. A suitable sized habitat parcel of land in this area is currently for sale for CI$35m (£22m). While this kind of money is not realistic for the programme, there are only 2-3 other suitable areas of similar size on island with potential support such a population on island, and it is likely that whatever purchase / management agreement is implemented, the final cost of this will run to several million dollars.

The recurrent costs of the Blue Iguana SAP are estimated at CI$193,455 (£122,000) per year. This includes the cost of employing four staff: a Director, Programme Manager and two wardens. It also includes the cost of annual iguana release and follow up work, and annual maintenance and depreciation costs. While some grant funding has been found for this work, most of the costs have not been met or have secured only temporary funding.

Capital works to the value of CI$63,000 (£40,000) were completed in 2006. Further capital work is programmed, to the value of CI$1,647,666 (£1,036,000) in 2007, CI$1,506,666 (£948,000) in 2008 and CI$400,000 (£251,000) in 2009. The largest expenditures are for land purchase (CI$2.5m in 2007/08), with other costs for predator fences, breeding programmes, tourist access, habitat management, scientific studies and communications/publicity work. The plan therefore envisages additional capital works of at least £2,235,000 over the 2007/08 to 2011/12 period.

This suggests that the SAP will incur total capital and revenue costs of £2.845 million over the five years between 2007/08 and 2011/12, an annual average of £565,000.

The costs of implementing the Blue Iguana SAP cannot be extrapolated to estimate the costs of implementing any of the other SAPs or HAPs, which will all require rather different actions and resources.

SAPs only deal with the tip of the iceberg. The recently published Red List for Cayman lists 46% of native flora species as being under threat of extinction. The majority of these would be addressed through appropriate HAPs, rather than specific SAPs.

The combined cost of implementing SAPs/HAPs towards fulfilling the local objectives of the CBD will be considerable.

Significant additional resources will be required to develop and cost these HAPs and SAPs, even before they can be implemented. If each plan costs an average of £5,000 to develop, the cost of developing a further 43 SAPs and 48 HAPs would amount to £455,000, or an average of £91,000 per year over a five year period.

1.5.2 Site Protection

Cayman supports an established system of marine parks / protected areas:

- The total area of the marine protected areas is about 22,000 acres (8,800 hectares).
- The annual cost of maintenance of the park facilities / operations (e.g. moorings), which includes ca. 7 staff is currently CI$310,288 (£195,000).
- The annual cost of conservation enforcement (including enforcement of the marine parks, (currently ca. 8 officers active) combines to CI$1,071,280 (£674,000)

Cayman has no formal system of terrestrial protected areas at the moment, though this is under review in legislation currently pending.

The majority of terrestrial protected areas in the Cayman Islands are owned and managed by the National Trust for the Cayman Islands – extending to a total of some 2,350 acres. Their most recent purchase was a 32.22ha strip of land, consolidating the Brac Parrot Reserve on Cayman Brac. The land purchase funds were acquired from a combination of USFWS NMBCA funds and CI Government matched funds totaling CI$600,000 (£377,000).

An area on the northwest tip of Grand Cayman has been dedicated as Cayman's first National Park. The proposed Barkers National Park would extend to a total terrestrial area of ca. 112 acres (45 hectares). The only way to protect the land in the park is through outright purchase – the total cost of this purchase is likely to be of the order of CI$15-25m (£9.4m-£15.7m). This would amount to an annual average of £1.9m to £3.1m over a 5 year period (midpoint £2.5m p.a.)

1.5.3 Policy and advisory work

The CI Government currently funds the DoE to produce two outputs related to policy and advisory work. These are:

ENV1 - Reports and Advice on Environmental Issues - $252,244 (£159,000). This involves providing Environmental Assessment Reports and advice to Government Ministries, Departments, Developers and other stakeholders on issues likely to impact the natural environment, including: Review of Coastal Works applications; Review of Planning applications; Provision of guidelines, Terms of Reference and review of results for external Environmental Impact Assessments (EIA); Provision of environmental advice and recommendations on Best Management Practices to reduce potential environmental impacts associated with developments.

ENV 3 – Environmental Policy advice - $280, 642 (£177,000). This involves providing scientific reviews, management recommendations and policy advice for Government Ministries and other relevant agencies on a variety of environmental subjects including but not limited to the following: Establishment of a comprehensive sustainable development framework; the Cayman Islands Marine Parks, Animal Sanctuaries, other protected areas and the implementation of Multilateral Environmental Agreements (MEA), including review and updating of local environmental legislation.

The costs listed include all staff time and all overheads.

1.5.4 Survey, research and monitoring costs

The Government funds the DoE to carry out Research and Monitoring under ENV 7, to the value of CI$1,012,612 (£636,000) per year. This amount includes all staff time and all operating overheads including the operation and maintenance of vessels and equipment and travel to and from the Sister Islands.

The budget covers the provision of scientific research, monitoring and assessment services of the natural resources of the Cayman Islands. Services include:

- Annual monitoring and assessment of culturally important fisheries stocks, coral reef, sea grass, mangrove and other marine habitats

- Monitoring and assessment of ecologically important terrestrial communities and species
- Assistance with studies commissioned by Government or DOE and conducted by external consultants
- Co-ordination of Visiting Scientist Programme
- Provision of environmental advice and short-term rapid assessment for incidents, events and activities impacting the environmental resources
- Provision of routine marine water quality monitoring services.

1.6 Summary of Costs

The Cayman Islands benefit from an established system of environmental governance and the Department of the Environment and National Trust already spend significant sums on the implementation of environmental policy, on environmental survey, research and monitoring work, and on the management of protected areas. Some of these costs are detailed above.

However, significant additional funding is required to implement biodiversity priorities over the next five years. Key priorities include:

- Implementing the Blue Iguana Species Action Plan
- Developing the National Biodiversity Action Plan, including development of a further 43 species and 48 habitat action plans
- Acquisition and establishment of a new National Park.

The annual costs of these actions are estimated as follows:

Item	**£k per year (2007/8 to 2011/12)**
Implement Blue Iguana SAP	565
Develop further SAPs and HAPs	91
Establish National Park	2,500
Total	**3,156**

It is estimated that additional annual funding of £3.16 million over the next five years is required to meet these biodiversity priorities.

A breakdown by category of costs is as follows:

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	-
Control of Introduced Mammals	-
Site and Species Protection	2991
Policy and Advisory Work	91
Education and Communications	72
Survey, Research and Monitoring	2
Training	-
Total	**3,156**

Most of the costs relate to site and species protection, and include the costs of land acquisition for the national park and to protect Blue Iguanas, as well as the costs of predator fencing for the latter.

ANNEX 9: FALKLAND ISLANDS

1.1 Background

Archipelago of 750+ islands covering an area of approximately 12,000 km². Composed of sedimentary rock, the landscape is rugged and hilly with the highest point being 705m on East Falkland.

1.2 Biodiversity Importance

- Southern Patagonia Endemic Bird Area
- 22 Important Bird Areas, covering 5.9 % of the total land area
- 2 Ramsar sites, with a further 18 proposed
- 27 islands/coastal regions designated as National Nature Reserves
- Internationally important populations of seabirds
- 6 plant and 10 bird species of global conservation concern
- 14 endemic plant and 2 endemic bird species
- 1 native mammal (hunted to extinction)
- 350 + invertebrates recorded

1.3 Biodiversity Management

Biodiversity Management in the Falkland Islands is co-ordinated by the Environmental Committee, which is comprised of Falkland Islands Government (FIG) officers, Falkland Islands Development Corporation, Falkland Islands Tourist Board, Falklands Conservation, New Island Conservation Trust, Rural Business Organisation and local naturalists. The Environmental Committee guides the development of national biodiversity strategies, research licence applications and allocation of the FIG environmental funds.

FIG employs an Environmental Planning Officer (tasked 50% to environmental issues) and an Environmental Officer and provides a budget of £60k for "environmental studies" (research, invasives species action, management of national nature reserves etc). Conservation groups, research institutes and landowners bid for the funding.

FIG gives an annual grant of £90k to Falklands Conservation to part-fund administrative and scientific staff and organisational costs. New Island Conservation Trust conducts seabird research and manages the island, which a National Nature Reserve. They receive some funds through the FIG Environmental Studies budget.

FIG also spends a significant amount on infrastructural improvements to protect the environment (discussed below).

1.4 Guide to costings

Most of the costs of salary identified below are for FIG and Falklands Conservation Officers, and in many cases, salary costs reflect the time required by 1-5 different post-holders working together to achieve the outcome. Salaries for scientists and senior

managers in the Falkland Islands are in the region of £20–30,000/year and costs for purchasing and shipping for office equipment, and power and heating, are much higher than within the UK. The information below was supplied by Grant Munro, Director Falklands Conservation (Grant.Munro@conservation.org.fk) and Helen Otley, FIG Environmental Officer (hotley.planning@taxation.gov.fk) on Feb 7th 2007.

1.5 Biodiversity Conservation Priorities

1.5.1 Habitat management and restoration work

1. Invasive plant clearance/control

Stanley (300 ha), MPA/Mare Harbour (500 ha), Port Sussex (700 ha) and other actions identified in Invasives Strategy (developed as part of the EC funded project)

The cost of this work depends on the type of vegetation to be cleared, as well as other factors such as access and terrain. At a cost of £400/ha (based on UK costs) clearance of vegetation over half of the identified land area (750 hectares) would cost £300,000, or £60,000 per year over a five year period.

2. Provision of visitor amenities

FIG owned Gypsy Cove £10k/year maintenance & £15k one off costs (e.g. signage and platforms). So average costs £13k per year over 5 year period.

Infrastructure and other costs at approx. 20 privately owned sites with visitors – costs unknown.

3. Native vegetation restoration

At more than 10 sites/islands through tussac re-planting & fencing £10k/year for labour and materials.

4. Development of "Key Biodiversity Areas"

Combining Important Bird, Plant, Insect and Geo-diversity areas. Desk top study (data analysis & GIS) and Development (community consultation, legislation, area plans) £20k or average £4k per year over 5 years.

1.5.2 Species and Habitat Action Plan implementation

17 draft plans are being processed and costs predicted for next 3 years are tentative:

A. Mainland tussac habitat - £10k (management of livestock at key sites, replanting at various sites)

B. Whitegrass-fachine acid grassland habitat - £10k (management of livestock at key sites)

C. Boxwood scrub habitat – £10k (management of livestock at key sites)

D. Californian Club-rush stands - £2k (ad hoc surveys)

E. Threatened and critically endangered plants - £10k (dedicated surveys, site protection)

F. Endemic plants (13 species) - £2k (ad hoc surveys)

G. Endemic ducks and grebes - £3k (ad hoc surveys)

H. Penguin species (4 species) - £150k (long term annual and 5-year monitoring of colonies, breeding & foraging range study for rockhopper penguins)

I. Cobb's wren - £50k (£10k for rat eradications per year, biology studies)

J. Black-browed albatross, Giant petrels and White-chinned petrels £200k (long term annual and 5-year monitoring of colonies, foraging range studies, land management (farming and visitors) at breeding sites, fisheries interactions)

K. Ruddy-headed goose - £3k (ad hoc surveys)

L. Zebra trout - £15k (5-year surveys, protection at key sites)

M. Striated caracara - £80k (5-year surveys, study of interaction with livestock)

N. Falkland Fritillary - £2k (ad hoc surveys)

O. Pelagic cetaceans - £2k (ad hoc surveys)

P. Coastal cetaceans - £80k (ad hoc surveys, genetic studies, interactions with marine debris)

Q. Seals and sea lions - £80k (10 year monitoring, foraging ranges of elephant seals, fisheries interactions)

Total: £709k over 3 years, average £236k per year. This annual rate of expenditure is assumed to continue over the five year period, as actions are either ongoing or will require follow up. Most of these costs (approx £223k per year) relate to survey, research and monitoring efforts.

1.5.3 Predator control

1. Rat eradication

Pre-surveys, eradication activities, post-surveys/management at 20 priority islands groups (islands 5 – 300 ha, total 12, 000 ha), £40/ha for salaries, poisons, travel.

Doing 2-3 islands (300 ha) per year is £12 – 15k/year.

2. Predator interaction studies

At ecosystem level e.g. on New Island and Bense Island - £10k/year

3. Cat eradication from a number of sites/islands

To be determined by Invasives Strategy (developed as part of the EC funded project)

4. Fox eradication from five islands

Feasibility study on one island £50k. Average £10k per year if averaged over the five year costings period.

1.5.4 Site Protection

1. Site wardens

There is a requirement for a warden for Sea Lion Island for 5 months at £15k/year, warden for Gypsy Cove at £6k/year and additional unknown commercial costs to private landowners at 20 sites where visitors go.

2. Implementation of site management plans

The following sites have draft or adopted plans. Implementation costs predicted for the next 3 years are:

- Gypsy Cove - £10k for monitoring, trail construction, signage
- Cape Pembroke - £5-10k for monitoring, fencing
- Murrell River - £1k for monitoring, signage
- Kidney Island - £5k for monitoring, boat hire, shanty repairs
- Sea Lion Island - £10k for monitoring, fencing, tussac replanting, weed eradication, track works, viewing platforms
- Bertha's Beach - £6k for monitoring, fencing, signage
- New Island - £20k for monitoring, fence removal, invasive species management, field station infrastructure
- A further 20 privately owned sites with visitors/important wildlife do site protection and have unofficial management plans, but costs unknown.

Total cost £57k to £62k over 3 year period, average £20k per year for 3 years. This level of annual expenditure is assumed to continue annually to 2011/12.

1.5.5 Policy and advisory work

1. National Strategies

The following strategy work is required:

- Finalisation of Biodiversity Strategy, 17 Species and Habitat Action plans and 3-5 'cross-cutting thematic' plans (e.g. wildlife tourism, agriculture, aquaculture), FIG staff time of £50k over next 3 years
- Development of site management plans (6 sites have draft plans, 13 other national nature reserves need management plans, approx. 20 other important wildlife areas need management plans), FIG, NGO and landholder time of £20k over next 3 years
- Development of geo-diversity and geo-conservation strategy and action plan = £5k

- 5-year review of environmental data for a “State of Environment” type report, salary £10k
- 5-year review of Biodiversity Strategy and Action Plans, Salary £10k
- Total = £95k or £19k per year over 5 years

2. Advising/integrating sustainable development into other government departments

These are costed somewhat in the ‘National Strategies’ section.

FIG annually allocates funds for sustainable development and infrastructure improvements to reduce ‘environmental damage’. Over the next three years some development works include pumping sewage to a site away from Stanley Harbour £1.3 million, wind farm £2,300k (will displace 800 KL (20%) of fuel at Stanley Power Station), heat recovery programme at power station £414k (will displace 300 KL of fuel at Power Station), trial of composters and glass imploders £5k, house insulation grants £5k annually). These investments are not included in the overall totals as they meet wider environmental objectives as well as benefiting biodiversity.

3. Establishing an effective regional fisheries management organisation

For Falklands waters, protection costs (patrol vessel, patrol plane, Fisheries Officers) are £3.1 million/year and scientific management costs (scientists, equipment) are £1 million/year.

Regional Fisheries Management Organisation for South Atlantic – being progressed by high level Government representatives, costs unknown.

These costs are covered by existing budgets and meet wider objectives in terms of sustainable fisheries, as well as benefiting biodiversity, so are not included in the summary totals.

4. Strengthening quarantine/border controls (legislation & implementation)

Requirements are:

- 1 FIG biosecurity officer = £18k/year
- Other costs to be determined by Invasives Strategy (developed as part of the EC funded project). One suggested action is buffer zone protection at transit zones e.g. main ports, costs would be annual staff costs (£20k/year) and one off infrastructure costs (£50k)

Total costs - £48k per year over 5 year period.

5. Inshore marine policies and protection

Needs include:

- Desktop study - costs of £15k and time of FIG’s Environmental Planning Department and Attorney Generals Office of £5k to input into desktop study

- Development of strategy and implementation costs are difficult to predict but are likely to be a minimum £20k for FIG Officers salaries over next 3 years
- Total cost - £40k or £8k per year over 5 year period.

6. Obligatory Reporting to the UK Government

Obligatory reporting to international agreements such as ACAP, CBD, Ramsar, CITES and Kyoto. £15k/year for salary time and travel costs to MoPs etc.

7.Unofficial reporting to Governments and NGOs (e.g. UK Government, Birdlife, RSPB, EC)

Response by all environmental officials to general environmental requests, feeding information into UK, EC and international strategic document preparations etc. Total time of 1-3 Officers £5k/year

1.5.6 Communications and Publicity

1. Raising awareness and building public support

- Falklands-focus:
    - 1 education officer, £35k/year
    - Publications, Pamphlets, Leaflets, Signage, Websites. £10k/year for writing, design, production
    - Workshops, Seminars, Meetings = £1k/year
- Regional/International-focus (e.g. fishing fleets, BirdLife partners, Overseas Territories)
    - Total time of 1-3 Officers = £30k/year
    - Publications, Pamphlets, Leaflets, Websites. £5k/year for writing, design, production
    - Workshops/Seminars/Meetings = £ 10k (travel costs of 1-3 Officers)
- Total costs: £91k per year

2. Media

Responding to media requests, which can be demanding in Falklands at certain times (e.g. Falklands Conflict celebrations), Total time of 1-3 Officers £5k/year

1.5.7 Survey, research and monitoring costs

Requirements include:

1. Annual Biodiversity monitoring programme. For selected sites for penguins, albatrosses, waterbirds, landbirds, plants, insects, etc. Salaries, travel and equipment £35k/year

2. 5-year Biodiversity censuses. For all penguin species, albatrosses, giant petrels, white-chinned petrels, insects, zebra trout, selected plant species, habitats and sites. Salaries, travel and equipment £70k, average £14k per year.

3. 10-year Biodiversity censuses. For sea lions fur seals & elephant seals and striated caracaras. Salaries, travel and equipment £40 K. Average £4k per year.

4. Near-shore marine surveys. Salaries, boat, fuel, equipment, travel, expert identification £50k for next 3 years or £17k per year. This work is assumed to continue in subsequent years.

5. Penguin research. Salaries, fieldwork, equipment costs £150 K for next 3 years for research on breeding biology, demographics and foraging range. Average £30k per year over 5 year period.

6. Albatross biology research. Salaries, fieldwork, equipment costs £25k/year for next 10 years for research on breeding biology, demographics and foraging range

7. Seabird-fisheries interaction research. Salaries, mitigation equipment costs £30k/year

8. Raptor bird research. Salaries, equipment costs £100k for next 3 years for surveys and research into interactions with livestock. Average £20k per year over 5 year period.

9. Management of GIS/databases/National Herbarium/Insectarium. Salaries, computers, storage equipment costs £20k/year

10. Research Administration. FIG salary costs of £20k/year to administer research, shooting and egging licences, to allocate FIG and other environmental funds, to run the Environmental Committee, to co-ordinate a database of research programmes and publications etc

Total costs: £215k per year. There is some duplication between these costs and those identified in the implementation of Species and Habitat Action Plans (section 1.5.2 above). The additional costs are estimated at £112k per year.

1.6 Summary of Costs

Meeting biodiversity priorities in the Falkland Islands is estimated to require additional expenditure of £716,000 per year between 2007/08 and 2011/12:

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	97
Control of Introduced Mammals	38
Site and Species Protection	41
Policy and Advisory Work	95
Education and Communications	96
Survey, Research and Monitoring	348
Training	-
Total	**716**

The largest costs relate to survey, research and monitoring work, particularly in the implementation of species action plans.

ANNEX 10: MONTSERRAT

1.1 Contributors

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1.2 Background

The island is volcanic in origin and has a mountainous terrain. It continues to be affected by eruptions from the Soufriere Hills volcano, which has resulted in two thirds of the island being evacuated.

1.3 Biodiversity Importance

- Caribbean Islands Global Biodiversity Hotspot, Lesser Antilles Endemic Bird Area
- 3 Important Bird Areas and 2 proposed Ramsar sites
- 4 plant, 1 reptile, 1 amphibian, 4 bat, 4 turtle and 2 bird species of global conservation concern
- 3 endemic plant, 3 endemic reptile & amphibian and 1 endemic bird species

Montserrat supports a number of rare species including the Montserrat Oriole, one of the rarest birds in the world.

1.4 References

Important Bird Areas in the UK Overseas Territories

Montserrat National Environment Management Strategy

Montserrat Oriole Species Action Plan

Montserrat recognises the need to integrate biodiversity conservation with the development of sustainable tourism. Protecting, enhancing and interpreting the biodiversity resource is seen as key to tourism development, which in turn is recognised as important in promoting awareness of biodiversity and the need to protect it. Biodiversity conservation priorities are set out in the National Tourism Strategy and Action Plan (2003).

1.5 Biodiversity Conservation Priorities

1.5.1 Habitat management and restoration work

Key priorities are:

- The provision of visitor amenities, including refurbishment of Cudjoehead Station, improving the MNT and Jack Boy Car Parks and rest rooms at trail

heads (tourist trails). Total cost is estimated at US$400,000 (£210,000, or average of £42,000 per year over 5 years.)

- Regular maintenance of trails. This requires employment of 2 salaried persons on a part-time basis, at a cost of approximately EC$75K (£15K) per year, including materials.
- Management of botanic garden. This requires 2 staff @ 1,000 US$/month and 1 staff @ 1,250 US $/month. Total annual cost of £21,000.

1.5.2 Species Action Plans

Priorities are the implementation of the Species Action Plan for Montserrat Oriole, and the development of SAPs for Mountain Chicken, Galliwasp, Orchid:

- Cost of MO SAP implementation. The key resources required are:
    - Plan co-ordinator
    - Workshops and training courses for key personnel
    - Maintaining data on GIS
    - Research and monitoring
    - Forest restoration
    - Captive breeding programme
    - Communication and publicity work
    - Promotion of wildlife tourism

  The costings for the SAP suggest that funding of US$700,000 will be required over the 5 year period 2007 to 2011 (this requires some extrapolation since the plan itself extends as far as 2009). This excludes some costs estimated elsewhere in this Annex (e.g. eradication of feral pigs). The annual cost is US$140,000 (£73,000).
- Preparation of SAPS for Mountain Chicken, Galliwasp and Orchid = US$100,000 (£53,000, averaging £11,000 per year over 5 year period).

1.5.3 Control of introduced mammals

Priorities are:

- Rat eradication and control from key areas in Centre Hills, at an estimated cost of US$40,000 (£21,000), or an average of £4,000 per year over the five year period. Eradication of pigs from Centre Hills. Involves 100 days work over 5 sq miles. Cost estimated at US $160,157 (£84,000, average £19,000 per year over 5 year period).
- Management and control of loose livestock including a pilot intensive 'pen' farming system. At a cost of £40/ha a cull of loose and feral livestock across the entire island would cost in the region of £400,000, or £80,000 per year over 5 years. This would be inclusive of the costs of pig eradication from Centre Hills.

1.5.4 Site Protection

A priority is the conservation of key sites: Silver Hills, Centre Hills, Ghauts. There is a requirement for 6 wardening staff @ US $1,000 / month and 2 vehicles @ US$ 24,000. Average annual cost of £40,000.

1.5.5 Policy and advisory work

Key priorities are:

- Development of site management plans (Silver Hills, Ghauts). The development of plans will involve consultations, meetings, media, staff and stakeholder time, probably some printing/reporting, and potentially research into site resources. Excluding any research into site resources, this is likely to involve:
    - Staff time - 3 staff x £5000 (4 months of time) = £15,000
    - Printing and materials = £2,000
    - Consultations, meetings, workshops = £2,000
    - Total = £19,000 per site plan, a total of £38,000 or an average of £7,600 per year over 5 years.
- Advising/integrating sustainable development into other government departments. 1 SD officer = 25,000 US $/year (£13,000/yr)
- Establishing legislation for Environment Impact Assessment and Protected Areas. 1 year of work at US$50,000 (£26,000, or average of £5,000 per year over 5 years).
- Strengthening quarantine/border controls (legislation & implementation). 1 biosecurity officer at US$18,000/year (£9,000 per year).
- Reporting to the UK Government. 4 times per year @US $ 2,500 = US$10,000 per year (£5,000 per year)
- Total - £40,000 per year.

1.5.6 Communications and Publicity

Raising awareness and building public support:

- 1 education officer = 21,000 US$/year (£11,000 per year)
- Publications = 20,000 US $/year (£11,000 per year)
- Workshops/Seminars/Meetings = 10,000 US $/year (£5,000 per year)
- Development of environmental education centre. This could be housed in an existing building such as the MNT and require development of displays as well as purchase of materials. Estimated cost of £50K, or an average of £10,000 per year over the 5 year costings period.
- Total: £37,000 per year

1.5.7 Survey, research and monitoring costs

Key priorities are:

- Bird monitoring. Requires 60 days work per year involving 2 staff @ 50US$/day each, total US$6,000 per year (£3,000 per year)

- Marine/coral reef surveys. 80 days per year with transport costs of 130US$/day and 2 staff @ 50 US $/day. Total $18,400 per year (£10,000 per year).
- Management of GIS/data bases. 1 staff @ 1,100 US $/month, $13,200 (£7,000) per year
- Establishment of laboratory. Estimated cost of £50,000 or an annual average of £10,000 over 5 years.
- Average total annual cost: £30,000

1.5.8 Training costs

BSc Environmental Management. 2 scholarships at £3,000/year = £6,000 per year.

1.6 Summary of Costs

The average annual cost of meeting biodiversity priorities in Montserrat is estimated at £399,000 per year between 2007 and 2011. The largest costs relate to site management (especially provision of visitor facilities), control of loose livestock and site wardening. A breakdown of costs is given as follows. Montserrat oriole SAP costs are allocated to individual cost categories.

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	97
Control of Introduced Mammals	84
Site and Species Protection	73
Policy and Advisory Work	51
Education and Communications	42
Survey, Research and Monitoring	44
Training	9
Total	**399**

ANNEX 11: PITCAIRN ISLANDS

1.1 Contributors

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1.2 Background

4 islands: Pitcairn (4.6km^2), Oeno (0.65km^2), Ducie (0.7km^2)and Henderson (37.3km^2, World Heritage Site). Total area of 43.25km^2.

Pitcairn is a rugged island of volcanic origin, the others are low-lying atolls.

1.3 Biodiversity Importance

- Micronesia-Polynesia Global Biodiversity Hotspot, Henderson Island Endemic Bird Area, Pitcairn Endemic Bird Area
- 4 Important Bird Areas (100% of the total land area) and 5 proposed Ramsar Sites
- 7 plant, 1turtle and 8 bird species of global conservation concern
- 20+ endemic plant and 6 endemic bird species
- Many endemic land snails and other invertebrates
- Significant coral reefs
- Pitcairn – 8 endemic land snail species
- Much of the endemic flora and fauna of Pitcairn is threatened due to the loss of native habitats and the spread of invasive alien species.
- Henderson – of ca.180 known species of insect, ca.20% are endemic to the island. 26 species of spider, 9 species of isopod (3 endemic)
- A small population of green turtles nests at Henderson Island.

Henderson is one of the most pristine raised coral islands on earth, with undisturbed limestone forest communities, a remarkably intact ecology and numerous endemic species, including one of the few surviving species of flightless rail (there are now five such species, several hundred are now extinct).

Oeno supports some endemic marine invertebrates, including one gastropod genus known only from this atoll.

1.4 References

Important Bird Areas in the UK Overseas Territories

Pitcairn Environment Management Plan

1.5 Biodiversity Conservation Priorities

1.5.1 Habitat management and restoration work

The main priorities are:

- Eradication of Rose Apple from Pitcairn
- Native plant restoration on Pitcairn.

This requires continuation and expansion of a current programme of trials funded by OTEP, at a cost of £40,000 in 2006/07 and £26,000 in 2007/08. Implementation of a larger scale habitat restoration would require a larger budget of perhaps £80,000 per year.

1.5.2 Mammal control

Priorities are:

- Eradication of rats from Henderson. Assume cost of £200 per hectare over 3,730 hectares = £746,000. This work would be completed in a few months.
- Eradication of feral cats from Pitcairn. Estimated cost of £75 per hectare over 460ha = £34,500.
- Control of goats on Pitcairn. Estimated cost of £40 per hectare over 460ha = £18,400. The intention would be to reduce goat numbers but not eradicate the animals from the island.
- Rat eradication on Pitcairn. This is a lower priority than on Henderson, but it would be necessary for genuine ecological recovery, as well as providing economic benefits by restoring seabird colonies and encouraging ecotourism. However, rat eradication has failed in the past and its feasibility would require further investigation. A feasibility study could be undertaken in conjunction with the other work, at a cost of £15,000.
- Total cost = £814,000 or an average of £163,000 per year over the five year costing period.

1.5.3 Site Protection and Survey, Research and Monitoring Costs

The key priority is to organise regular visits, especially to Henderson, Oeno and Ducie. These visits would serve a multiple purpose, enabling the gathering of information on the conservation status of the islands, survey and research work into key species groups as specified in the Environmental Management Plan (land snails, seabirds, turtles, cetaceans, marine survey), and implementation of site protection and management measures.

This requires hiring a yacht from Tahiti at a cost of £750 to £1000 per day, a total cost of around £30,000 for an annual, month long visit. It will involve a team of at least four research and conservation staff at a cost of £100 per day each, plus travel expenses averaging £1,500 each to reach Mangareva where they will board the yacht. The total cost of the annual visit is therefore estimated at £48,000.

Additional monitoring of cetaceans could be conducted by local people who could be encouraged to record sightings in return for a small fee. Total cost would be approximately £3,000 per year.

Additional needs include:

- Management of GIS/databases 50 days per year @ £100/day = £5,000
- Planning and co-ordination of expeditions and reporting of results. 1 person for 50 days per year @ £100/day = £5,000

Total = £61,000 per year.

1.5.4 Policy and Advisory Work

Key priorities are:

- Completing and implementing the environmental management plan. This requires a plan co-ordinator who will complete the plan and oversee its implementation. A large part of this role will involve communicating the aims and objectives of the plan and raising awareness of biodiversity issues. Estimated cost is £20,000 per year including support costs and expenses.
- The Environmental Management Plan notes a requirement for additional species action plans (SAPs). Development of 2 SAPs per year at a cost of £5,000 each would require costs of £10,000 per year. Implementation costs would depend on the actions within the SAPs.
- Strengthening quarantine/biosecurity control arrangements. Employing a biosecurity officer is estimated to cost £20,000 per year including support costs and expenses.
- Preventing the removal of biological, geological and Polynesian archaeological material.
- Reporting to the UK Government. Quarterly, 20 days per year at £100 per day = £2,000 per year.
- Total = £52,000 per year.

1.5.5 Education and Communications

Needs include:

- Publications = £5,000 per year.
- Workshops/Seminars/Meetings = £5,000 per year.

1.5.6 Training

There is a need for training of local people as wildlife/nature reserve guides at a cost of £5,000 per year.

1.6 Summary of Costs

The average annual cost of meeting biodiversity priorities in the Pitcairn Islands is estimated at £371,000 over the five year period to 2011/12, with the largest element relating to costs of predator control (and particularly eradication of rats from Henderson Island). The latter is a one-off capital cost which will provide substantial long term

benefits, while the costs of survey/research visits and policy/advisory/communications work are recurrent.

Table: Summary of Costs

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	80
Control of Introduced Mammals	163
Site and Species Protection	*Included under survey/research*
Policy and Advisory Work	52
Education and Communications	10
Survey, Research and Monitoring	61
Training	5
Total	**371**

ANNEX 12: ST HELENA

1.1 Contributors

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Isabel Peters, Environmental Co-ordinator, isabel@sainthelena.gov.sh

1.2 Background

An isolated mountainous island (121 km²) of volcanic origin.

1.3 Biodiversity Importance

- 2 Important Bird Areas (76% of the total land area)
- 3 proposed Ramsar Sites
- Regionally important populations of seabirds
- 21 plant and 1 bird species (there used to be 6 endemic land birds, the remainder being extinct) of global conservation concern
- 49 endemic plant, 1 endemic bird, 10 endemic fish and 400 + endemic invertebrates species. 8 endemic lichen species and +/- 24 endemic bryophytes.

1.4 Key References

St Helena Environment Charter Strategy

Diana's Peak Management Plan

1.5 Biodiversity Conservation Priorities

1.5.1 Habitat and site management and restoration

Key priorities include:

- Invasive plant clearance and restoration of native vegetation at Diana's Peak. Park area is 81ha. Alien plant control, replanting with native species and maintenance of 6.4 ha per year at a cost of £13,000.
- Contract pricing is unpredictable and varies hugely between contractors and jobs. Costs of clearance of invasive vegetation are high and regular and costly maintenance is needed. Costs of initial removal have ranged from £1111 to £1729 per hectare and typically require 3 follow up visits per year to remove regrowth at an average cost of £1115 to £1482 per hectare per year.
- Restoration and maintenance of Millennium Forest, including:
    - Educational / recreation / tourist / visitor programmes. Funding of £63,000 has been secured from OTEP for two year project in 2007

and 2008. Post project management costs are estimated at £10,000 per year.

- Protecting and consolidating existing plantings. Additional costs of £2,000 per year for 2 years.
- Establishing a medium to long-term development plan and securing funding to resource planting and ancillary facilities over the next 15 years. Nominal cost.
- Expanding the forest by at least 4,000 gumwoods and 1,000 scrubwoods which requires 15 acres for gumwoods & 2.3 acres for scrubwoods. £3050 per year for 5 years.
- Securing waste water to meet needs of forest. Estimated £5,000 cost in 2008.
- Total cost estimated at £107,000 between 2007 and 2011, an average of £21,000 per year.

- Restoration of key Wirebird sites (Deadwood Plain, Broad Bottom and others). An area at Bottom Woods has been identified as an area where restoration of pasture habitat could provide potential for wirebird numbers to return to near former levels (1988/9) . Work was carried out in 2005 to clear about an acre of this site of invasive species, such as the prickly pear and wild coffee as wirebirds thrive in pastureland, it is hoped that livestock management can be reinvigorated at this site in order to keep this area sustainably maintained. A £1000 donation has enabled the clearing of 8 acres of this site, but further funding needs to be sought to maintain this area and remove weeds and maintain the whole area and for it to be fenced off from off-road vehicles and provide security to keep livestock in. It is estimated that habitat restoration would cost approximately £33,000 for 80 acres of Bottom Woods, equivalent to £1022 per hectare. This would involve annual expenditure of £6,600 for 5 years.
- An annual budget of £2,000 to be used as an incentive grant to livestock owners to maintain pastures to promote wirebird habitat would be a significant boost to maintaining wirebird habitat across the island.
- Peak Dale. The Environment Charter Strategy sets a target for clearance of 1.5 ha of clearance of invasive plant species per year and replanting of gum forest. Included in costs for Millennium Forest above.
- Development of vegetation management strategies. The Environment Charter Strategy contains actions to:
  - Implement plans to reduce introduced vegetation in the hills in a way that enables the spread of endemic and other native species, valuable for conservation, tourist interest and water management
  - Investigate ways to address particular problems in some areas – specifically flax and whiteweed on sheer cliffs which are difficult to access
  - In addition to whiteweed, devise ways of addressing the problems presented by wild mango, gorse, flax and creeper which are getting out of hand

- Investigate whether profitable uses can be found as ways to assist getting rid of some invasive plants
- This suggests the need for a programme of technical investigations and trials, to inform the development of a vegetation management strategy. An annual budget of £20,000 would fund this work in the short term and could then be used to fund ongoing management activities.

- Restoring some beaches for turtle nesting (e.g. Sandy Bay beach). Action 2c.8 of the Environment Charter Strategy involves re-shaping of beaches to encourage turtle nesting. Activities include identifying potential beaches, defining work required, undertaking physical works and monitoring effects. This is a medium term rather than short term priority. First stage would require a feasibility study. Cost estimated at £20,000.
- Consider and, if practicable, implement re-establishment of nesting seabirds on certain headlands (e.g. Gill Point) by fencing and control of introduced mammals. This would need to be linked to control of feral cats. First stage requires a feasibility study (cost of c. £10,000).

The total annual cost of these measures would be £69,000 over the five year period 2007 to 2011.

1.5.2 Species Action Plans

There is a need to:

- Develop species action plans (endemic plants, turtles, invertebrates). According to the Environment Strategy, Species Recovery Plans have been written and updated for the endangered / critically endangered endemics of St Helena, namely the She Cabbage, Large Bellflower, False Gumwood and the Redwood. Recovery Plans for the Dwarf Jellico, Small Bellflower, Toothed Tongue Fern, Veined Tongue Fern, Lesser Kidney Fern and Bastard Gumwoods will also be written. The cost of developing 10 SAPs would be approximately £50,000, or an average of £10,000 per year over a 5 year period.
- Implement Species Action Plans (e.g. Wirebird). These costs are included elsewhere under other headings in this annex.

1.5.3 Predator control

The EU Invasive Species Project will determine key invasive species to target. However, priorities are likely to be:

- Rat control. Rats are a significant threat to the Red Listed endemic Black Cabbage *Melanodendrom interifolium*, and possibly to other endemic species. An unsuccessful bid was made to OTEP for funding of £75,000 towards a £95,000 project to eradicate rats from St Helena. Control of rats needs to be linked to a feasibility study for the control of feral cats to investigate possible knock on effects for seabirds and wirebirds.
- Feral cat control. The first stage requires a feasibility study at a cost of c.£10,000.
- Mynah Bird control. Environment Charter Strategy Action 2c.7 involves investigation of feasibility of mynah bird control, including international fact-finding. Funding to be identified. First stage – feasibility study - £10,000.

1.5.4 Site Protection

Priorities include:

- Implement Diana's Peak management plan.
- Prevention of oil pollution from war time wreck (Environment Charter Strategy, 3a21). The Darkdale (1941 ship-wreck) is known to be leaking oil and an assessment is required of the damage and potential damage this is causing. Requires a study and risk assessment. This is a medium term rather than short term priority and the initial requirement is for a feasibility study. Cost - £20,000.

1.5.5 Policy and advisory work

A variety of policy and advisory related actions are required:

- Review, amend, draft and pass regulations needed under National Parks Ordinance to implement Protected Areas
- Extend the marine protected area to include all the coastline and inshore waters, with zoning of different levels of protection, using the existing categories of protected area, under the legislation or some other means
- Review and, if necessary, update oil pollution Ordinance and Whale Ordinance and protection measures for turtles and seabirds
- Review and update spear-fishing regulations, to add limits on numbers and any other necessary measures
- Review whether all relevant measures under the Endangered Species Protection Ordinance 2003 are implemented to give effect to CITES, including the operation of Management and Scientific Authorities, licensing, inspection, penalising unlawful possession of listed species and other enforcement measures
- Include invasive weeds in the noxious weed legislation, to help eradication or control the spread. Consider policy on costs of dealing with these, especially if neighbouring areas are source of reinfection
- Put in place fishery protection measures (including vessels) to address illegal, unregulated and unmonitored fishing by unlicensed fishing vessels
- Develop appropriate legislation to aid enforcement, for example by making the presence of a fishing vessel without an operating automatic transmitting positioning system an offence, rather than having to prove fishing
- Management plans (for all protected areas listed in the Land Development Control Plan) to be developed for South West Protected Area, Millennium Forest, North-Easterly Protected Area, Heart Shape Waterfall, High Hill and Ebony Plain, Prosperous Bay Plain, Deadwood Plain, South East Protected Area, Gill Point, George Island and Shore Island, Egg, Peaked and Thompson's Valley Islands, Deep Valley, Cason's including George Benjamin Arboretum and Nature Trail, Plantation Forest, Marine Biological Reserve – Long Ledge to Dry Gut Bay. In addition all coastline and inshore waters, Fisher's valley and extensions to the Peaks area
- Studies required on potential carrying capacity of different areas used for tourism and recreation to maintain natural value

- Explore potential for some form of visitor charge that can be earmarked for environment and conservation work.
- Advising/integrating sustainable development into all government departmental work
- Establishing and implementing legislation for Environment Impact and Strategic Environment Assessment (Commitment 4 in Environment Strategy)
- Strengthening quarantine/border controls (legislation & implementation), including:
- Ensure that safeguards are adequate to prevent both intentional and unintentional importation of e.g. seeds in animal feed; insects or eggs in furniture or packing
- Review whether biosecurity legislation, enforcement and penalties are adequate
- Undertake risk assessments of species potentially invading and posing threats
- Develop a list of species which are not allowed into St Helena
- Above actions require appointment of Biosecurity Officer.
- Construction of quarantine area. Cost approximately £10,000
- Assess current and proposed taxation and incentives for unintended environmental disbenefits
- Outreach to farmers (e.g. maintenance of pastures by cattle grazing for Wirebird)
- Implement conservation measures within the Forestry Strategy
- Implement international commitments relevant to Biodiversity (CITES, Ramsar, Bonn, Biodiversity, World Heritage Conventions; fisheries agreements)
- Reporting to the UK Government.

Implementing these actions has significant resource implications and requires appointment of additional staff. These are likely to include at least:

- Sustainable Development officer
- Protected Areas Officer
- Biodiversity Officer
- Biosecurity Officer
- Annual total cost – approximately £100,000 per annum including salary, support costs and expenses.

1.5.6 Communications and Publicity

Key priorities are:

- Raising awareness and building public support (invasives, environmental heritage). Education officer = £15,000 per year including salary, support costs and expenses.
- Measures to promote environmental training and awareness of teachers under Commitment 9 of Environment Charter Strategy (see Training below)

- Publications and publicity (Commitment 10 of Environment Charter Strategy). Budget of £5,000/year
- Workshops/Seminars/Meetings = £5,000/year
- Total cost - £25,000 per year

1.5.7 Survey, research and monitoring costs

Key priorities are:

- Seabird surveys. The main colonies are monitored monthly (2 sites counted from land and 5 from sea) and there is a six monthly count of all seabirds around the island. This is covered by a local, recurrent budget.
- Turtle Monitoring – takes place in conjunction with seabird monitoring. This is covered by a local, recurrent budget.
- Wirebird monitoring. Currently takes place once per year, Dec-Mar
- Develop quota system for Grouper based on scientific analysis rather than just catch data. Cost - £10,000.
- Monitor crayfish. Cost - £2,000 per year.
- Develop the computerised GIS facilities existing in one government department (PWSD) into an important tool for all users, governmental and civil society, for land survey, registration, planning, environmental and other aspects. Develop and agree plan for data-entry and validation to be the responsibility of appropriate departments (or NGOs) and for management of system to be a clear, separate responsibility. This is currently being addressed by an OTEP funded project but will require ongoing funding. Cost – GIS officer at £10,000 per year including support costs.

Key additional requirements set out in Environment Charter Strategy under Commitment 7:

- Consider development of project proposal, with UK partner organisation, to Darwin Initiative or elsewhere, to study marine invertebrates (previous studies date from 1800s). Requires work by visiting scientists, to provide baseline data, report and ID guide. 2 visiting researchers conducting 20 days fieldwork at £400 per day plus £100 per day boat costs, plus 20 days each desk/lab work plus £10,000 expenses = £44,000
- Consider needs for studies on marine plant species. (1983 study – 63 species of seaweeds; previous work in 1800.) Similar requirements to marine invertebrates study. Estimated cost = £44,000.
- Review the impacts (on fish stocks and physiology, invertebrates etc) of use of antifouling paint on boats. Estimated cost = £10,000
- Study and review the impacts of sand-dredging on invertebrates, fish, turtle-nesting potential etc. Estimated cost = £10,000. Further to this a need has been identified for a full survey of the inshore seabed to assess what areas would be feasible and sustainable for sand pumping operations. This is a key priority as the island needs sand for construction and has no baseline to assess new sites being identified for sand pumping operations – two new sites have been identified by the private sector for this year.

- Develop bio-survey on terrestrial areas, and consider what species to cover (to include invertebrates and plants). To include one biannual survey of plants (June/July) linked to wirebird surveys. 100 days extra survey work per year at £20 per day plus £5,000 one-off training cost, average £3,000 per year over 5 year period.
- Monitor terrestrial plant species to examine environmental change e.g. in 'crown wastes', where changes are known to be happening but are not backed by data. Study cost - £20,000.
- Examine the potential of GIS and aerial/satellite imagery (with appropriate ground-truthing) for terrestrial vegetation surveys and monitoring (including retrospective where images available). Feasibility study - £10,000.
- Examine potential of satellite imagery also for monitoring the marine environment and pollution. Feasibility study - £10,000.

Total estimated cost over 5 years = £233,000 or £47,000 per year, in addition to existing seabird, turtle and wirebird monitoring.

1.5.8 Training costs

Training needs include:

- One MSc scholarship at £3,000 per year.
- Measures to promote environmental training and awareness of teachers under Commitment 9 of Environment Charter Strategy. Cost - £5,000 per year.
- Short training courses in key areas to be delivered via distance learning, overseas attachments or on the job training. Possible cost - £10,000 per year.

1.6 Summary of Costs

Meeting the above priorities is estimated to require additional expenditure of at least £298,000 per year.

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	69
Control of Introduced Mammals/Birds	23
Site and Species Protection	4
Policy and Advisory Work	112
Education and Communications	25
Survey, Research and Monitoring	47
Training	18
Total	**298**

ANNEX 13: SOUTH GEORGIA AND THE SOUTH SANDWICH ISLANDS

1.1 Contributors

Gordon Liddle, ex South Georgia Government, gordon.liddle@gmail.com

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1.2 Background

Two geologically distinct groups of uninhabited islands.

South Georgia: 160 km long with a maximum width of 32 km and land area of 3755 km^2. Rugged, mountainous with 20+ peaks over 2,000m. More than half of the island is covered in permanent snow and ice.

South Sandwich Islands: 240 km chain of 11 islands volcanic in origin, some of which are still active. 85% is permanently covered in snow and ice.

1.3 Biodiversity Importance

- South Georgia Endemic Bird Area
- 2 Important Bird Areas – South Georgia and the South Sandwich Islands - 100% of the total land area
- 2 proposed Ramsar Sites (South Georgia and the South Sandwich Islands)
- Specially Protected Areas include Prince Olav Harbour Whaling Station, Leith Whaling Station, Stromness Whaling Station, Husvik Whaling Station, Cape Paryadin Peninsula, and all rat-free areas including Albatross Island, Prion Island, Willis Islands, Bird Island, Cape Rosa, Fanning Ridge Coast, Nunez Peninsula, Cooper Island, Larsen Harbour, Annenkov Island.
- Important international populations of seabirds
- 10 bird species of global conservation concern - 1 endemic
- 25 native vascular plant species
- 125 mosses
- 80 liverworts
- 150 lichens

1.4 References

South Georgia Environment Management Plan and five year update entitled “Plan for Progress”

1.5 Biodiversity Conservation Priorities

1.5.1 Habitat and site management and restoration work

Priorities are:

- Control/eradication of invasive plants. There are currently efforts to remove bittercress from King Edward Point. Approx 50 sq metres but seedlings have been seen scattered at other localities on the point. www.sgisland.org for more info. The small area involved suggests a low cost.
- Removal of installations from the whaling era, which contain dangerous substances such as oil and asbestos. Disposal of the Grytviken Whaling station cost about £7.5M. Four other stations exist of varying sizes. The best estimate is somewhere between £20M and £25M to make the remaining stations clean and safe, an average of £4.5 million per year over a five year period.

1.5.2 Control of non-native species

Priorities are:

- Eradication of rats from South Georgia.
- Eradication of reindeer.

Costs are high because of the large area of the island (3528 km^2). ACAP workshop put costs at £10-£15 million for eradication of rats and reindeer. This suggests costs of at least £2million per year if averaged over the 5 year costings period.

1.5.3 Site Protection

Priorities are:

- Tourism management. Policies are set out in the Environmental Management Plan – Visitors.
- Building of boardwalks in certain areas to prevent disturbance to wildlife, protect fragile vegetation and control visitor access. Estimated cost - £200,000 for one boardwalk on Prion island, an average of £40,000 per year over the five year costing period.
- Protected Areas. ACAP workshop proceedings contain action to review existing Protected Area (Managed Area) system, re-evaluate existing Protected Areas (and prepare management plans for each), reassess and revise the present Environmentally Sensitive Area (ESA) system with stakeholder consultation. This is a high priority action requiring 1+ person-year of work. Cost is likely to be approximately £50,000 including staff costs, support costs and expenses – an average £10,000 per year over 5 year period.

1.5.4 Policy and advisory work

Key priorities include:

- Species Action Planning. Action plans for specially protected species (Black-browed albatross, Macaroni Penguin, Wandering albatross, Grey-headed albatross, Southern Giant-petrel, White-chinned petrel, Gentoo Penguin, Light-mantled Sooty Albatross, Northern giant petrel, South Georgia pipit) will be prepared and the status of each species kept under review. Estimated cost: £5,000 per SAP = £50,000 or £10,000 per year over 5 year period.
- Fisheries management. The aim is to manage sustainable fisheries in the South Georgia Maritime Zone using an ecosystem approach and to conserve the marine environment. Policies are set out in the South Georgia Environmental Management Plan for Fisheries. The ACAP Workshop proposed an action to

develop, assess and disseminate FAO IPOA-S assessments for krill, icefish and toothfish fisheries. High priority, cost of £10,000.

- Declaration of the area within 12 nautical miles of the coastline of South Georgia a Marine Protected area. Could be achieved by employing a MPA Officer to develop and implement policy and manage consultation with key stakeholders. Estimated cost £50,000 per year including support costs and expenses.
- Strengthening quarantine/biosecurity control arrangements. ACAP workshop proceedings suggest action to maintain and strengthen the current policy of preventing the introduction of pests and diseases, especially in respect of rodents and avian diseases, and inter-island traffic of commercial and private vessels. In particular, develop a document for implementation of quarantine procedures. Also to assess the biosecurity risk of imported materials. Employment of a biosecurity officer would require an annual budget in the region of £50,000 to include salary, support costs and expenses.
- Designation of sites as World Heritage Sites. 1 consultant 30 days at £500/day, £15,000 to prepare application.
- Development of tourism management plan. 1 consultant, 30 days at £500/day = £15,000.
- Reporting to the UK Government. 20 days per year at £200 per day, £4,000 per year.
- Total cost – average of £122,000 per year over 5 year period.

1.5.5 Education and Communications

There is a need for:

- Publications budget - £5,000 per year.
- Workshops/Seminars/Meetings = £5,000 per year

1.5.6 Survey, research and monitoring costs

Albatrosses and petrels. The ACAP workshop recommended the following survey and monitoring actions:

1. Maintain BAS annual monitoring schemes and decadal all-island counts of selected ACAP species at Bird Island. HIGH priority, £200,000 per annum
2. Maintain (and extend to further species) annual monitoring of breeding numbers and success of wandering albatross, light-mantled sooty albatross, northern giant petrel, southern giant petrel and white-chinned petrels at Albatross and Prion Islands. HIGH priority, £100,000 per annum
3. Count breeding numbers of wandering albatrosses at Annenkov Island every 5 years. MEDIUM priority, £20,000 on assumption of above.
4. Photo-survey black-browed and grey-headed albatrosses every 5 years at sites other than Bird Island to confirm population trend. MEDIUM priority, £100,000
5. Census southern giant petrels at the South Sandwich Islands LOW priority; medium cost (c.£100,000).
6. As an adjunct to Albatross and Prion Island monitoring programme, determine population trends and breeding success of white-chinned petrels in areas with

and without introduced mammals (rats and reindeer), (e.g. fieldwork at Maiviken and Husvik) every five years. HIGH priority, £15-20,000

7. Take advice on demographic monitoring by French, South African and Australian researchers and consider a full demographic monitoring programme for white-chinned petrels. HIGH priority, low cost (first step only)
8. Total costs: £348,000 average per year over 5 year period.

1.6 Summary of Costs

The costs of meeting biodiversity priorities on South Georgia are estimated at £7.1 million per year between 2007/08 and 2011/12. The largest costs relate to the removal of former whaling installations and the eradication of rats and reindeer from South Georgia.

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	4600
Control of Introduced Mammals	2000
Site and Species Protection	50
Policy and Advisory Work	122
Education and Communications	10
Survey, Research and Monitoring	348
Training	-
Total	**7130**

ANNEX 14: TRISTAN DA CUNHA (INCLUDING GOUGH ISLAND)

1.1 Contributors

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Tristan Biodiversity Advisory Group (John Cooper, Peter Ryan, Ross Wanless, Niek Gremmen, Christine Haenel, Michael Swales, Martin Holdgate, Sarah Sanders, Clare Miller, Andrea Angel, Richard Cuthbert, Geoff Hilton, Simon Glass)

1.2 Background

The Tristan Group includes Tristan (96km^2), Inaccessible (14km^2), Nightingale (4km^2), Middle (0.5km^2), Stoltenhoff (0.2km^2) and Gough (65km^2) islands. All are of volcanic origin. The total land area is 179km^2.

1.3 Biodiversity Importance

- Tristan da Cunha Endemic Bird Area, Gough Island Endemic Bird Area
- 4 Important Bird Areas (100% of the total land area) and 4 proposed Ramsar Sites
- Internationally important populations of seabirds
- 7 plant and 15 bird species of global conservation concern
- 46 endemic plant and 9 endemic bird species

1 native mammal (sub-Antarctic Fur Seal)

The marine environment is extremely important globally with many endemic species. Of the 120 species of seaweeds, probably around 40% are endemic.

1.4 References

Important Bird Areas in the UK Overseas Territories

Tristan Biodiversity Action Plan

Nightingale Management Plan

1.5 Biodiversity Conservation Priorities

1.5.1 Habitat management and restoration work

Eradication of alien plants

1. Sagina from Gough

The integrity of the ecosystem is threatened by the invasion of an alien groundcover, procumbent pearlwort *Sagina procumbens*. This very quickly forms dense mats on disturbed ground such as birds' burrows, peat slips and around the settlement and

competes strongly with existing vegetation. The only realistic option is total eradication. A realistic budget will be in the order of £150,000 to £250,000. Prior to the work commencing there is a need for a feasibility study to identify and trial methods of eradication, in consultation with international experts (estimated cost - £20,000).

2. Flax from Inaccessible. Estimated cost is £12,000 + staff costs (4 people, 20 days on island @ £32 per day = £2,560) estimated 2,000 – 3,000 plants removed)

3. Loganberry from Sandy Point (OTEP proposal = £49,350 – does not include follow up).

4. Eradication of other invasive alien plant threats

Several introduced shrubs / trees appear to be spreading over considerably areas outside the settlement on Tristan. Other optential ecological pest species have been found on other islands. We need to find out in a quantitative manner how serious the threat is, and how feasible eradication, and what methods have to be used (OTEP application for the outlying islands presently in the running for funding). Some species have wind-dispersed seeds, and will be able to spread around the island and probably in the long run also between islands. This could be a serious threat to the native Phylica bush. Eradication programs for Tristan may be necessary, but there is not enough information for even a rough cost estimate. This program can be done by local personnel, and needs only outside expertise to get started, develop the necessary expertise in the local community, and for some help with setting up a proper monitoring program. Part at least of the necessary expertise is planned for the OTEP outlying islands alien plant project, and extra funding is dependent on the success of this funding application. A rough estimate for the actual eradication and the monitoring would be in the order of £50 – 100,000, though insufficient data is available for a good estimate.

5. Monitoring of new introductions (vascular plants):

Yearly visits to areas most likely to acquire new introductions (e.g. landing sites, camping sites, etc. on the islands) and 3 yearly monitoring of the whole of the islands. Again this can be done by local personnel, with the proper training. The design of a good monitoring protocol needs some outside expertise. Setting up the program will cost in the region of £30,000, monitoring (and when necessary eradication of new introductions) is estimated at £50,000 every 3 years.

Total cost: ca £473,000 over a 5 year period or £95,000 per year.

1.5.2 Predator control

Priorities are:

- Eradication of rats from Tristan = £2.6 million
- Eradication of mice from Gough = probably similar to eradication of rats from Tristan.
- Research, field testing and trials to inform the above eradications. This is likely to involve research with 1-2 field seasons of 4-5 months each, at a total cost of £20-30,000.

- Total cost estimated at £5.2 million or £1.04 million per year over a 5 year period.

1.5.3 Site Protection

Key requirements are:

- Implementation of Nightingale management plan. Requires 4 visits a year of two weeks duration (8 weeks total). 10 persons@£37/day. Boat hire = £100/trip + 6 crew@£32/crew. Total cost = (8 x 7 x £370) + 8(£100 + £192) = £23,056
- Implementation of Gough management plan. Environment Inspection (September takeover). 1 person for 1 month = £3,000

1.5.4 Policy and advisory work

Key priorities are:

- Preparation of management plan for Tristan peaks and Volcano site. 2 years @ £5,985 per year = £12,000 or £2,400 per year averaged over 5 years.
- Strengthening quarantine/biosecurity control arrangements. Prevention of new introductions is a very high priority. This requires appointment of a biosecurity officer with a substantial budget for training, education and raising awareness on Tristan, setting up legislation and regulations, getting buy-in from Cape Town-based service providers /visitors (e.g. DEA&T) and appropriate monitoring and reporting systems in Cape Town, Tristan and Gough. Biosecurity Officer based in Cape Town at £20,000/year plus an equivalent amount for expenses and support costs, and a £10,000 per year budget for training, education, awareness raising and communications. Total cost = £50,000 per year.
- Developing environmental impact and strategic environment assessment legislation
- Ensuring all long-liners carry a Natural Resources Department fishery observer. 1 person @ £115 /day for 208 days/year = £23,920
- Reporting to the UK Government. 60 days @ £32/day = £1,920
- Total cost: £78,000 per year average over 5 year period.

1.5.5 Communications and Publicity Costs

Needs include:

- Communications: 2 staff @ £50 /month = £1200 per year
- Meetings and events. Cost of £3,000 per visit to/from Tristan. Organising visits/trips for 10 people per year = £30,000.
- Publications. Annual budget of £5,000.
- Total annual cost = £36,000

1.5.6 Survey, research and monitoring costs

Key priorities are:

- Seabird surveys. Each trip costs £947 (Boat Hire @ £100; 6 crew @ £32 per day; 500 l fuel @ 51p/l; 8 staff @ £50/day). Cost of 12 trips per year covering

Tristan, Inaccessible and Nightingale = £11,364. The cost of an expedition to Gough is estimated at £30,000 every five years, an annual average of £6,000.

- Habitat monitoring (Tristan – every 5 years). Two persons for 50 days of fieldwork@£50 per day including expenses = £5,000, or £1,000 per year average.
- Fisheries surveys. Every 3 years. £5,000/day (for vessel hire) x 14 days = £70,000 plus equipment costs = £3,000 plus 5 staff @ £32/day = £2240 gives total cost of £75,000, or average £25,000 per year.
- Fisheries patrol. Cost of patrol boat. Boat Hire = £100 + 6 crew @ £32 per day. Fuel = 500 l @ 51p/l. Total £547 per day. For 50 days per year the total cost is £27,350.
- Management of GIS/databases. 1 staff @ £32/day for 100 days per year = £5,000 per year including support costs. This will collect all results from anyone doing any research on the islands in a central depository, both all publications and unpublished reports, and make them available as pdf's or otherwise in digital form to all people interested, as well as all data in the form of databases, with the necessary information to understand the data in the database. For practical reasons this depository can not be on the islands (although a library containing all publications could be, as can be a copy of all digital information).
- Co-ordination of design and results of expeditions. 1 staff @ £50/day for 100 days per year = £5,000 per year.
- Crayfish research (14 days to do transects, 12 days to do tagging, 60 days to analyse data. Total cost – 86 days @ £50 per day plus training and expenses = £8,000
- Marine environment. In many places, especially for islands other than Tristan, there is no knowledge of what is underwater or its importance. Marine survey work is expensive, but can often be tied in with other fieldwork/fisheries work using boats, and every opportunity to visit the outer islands should be fully utilised by all groups needing research opportunities. £100k/year for the next 3 years might just about get very basic survey work done at all the islands. This will barely get marine information up to even the most basic of land survey equivalent. Proper work-up of survey results, production of guides etc. may be another £50k/year. This suggests an average annual cost of £80k for 5 years. Monitoring for aliens in the wake of the rig will also be needed; if any attempted eradication programmes are deemed necessary from this the costs may be considerable. Monitoring will be ongoing and require considerable islander input.
- Total cost: £168,000 per year.

1.5.7 Training costs

Priorities are training in environmental management, monitoring, and report writing, and training for the Conservation and Biosecurity Officers. An annual budget of £10,000 is required.

For vascular plants a training program is planned as part of the OTEP outlying islands alien plant project for which funding is being sought. Knowledge of all vascular species is essential to recognise new introductions. It is quite feasible to develop the necessary

expertise on the island, at a total cost of around £10,000 (an average of £2,000 per year over the five year period).

For the marine environment, basic survey work needs to be done before identification manuals can be produced for training. More dive training is needed for islanders. Preliminary training is required in the identification of marine species, and dive training for 2 islanders was included in the Darwin bid.

1.6 Summary of Costs

The total costs of meeting the biodiversity priorities identified above are estimated at £1.45 million per year over the next five years, as follows. The largest costs relate to the eradication of mice from Gough Island and rats from Tristan.

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	95
Control of Introduced Mammals/Birds	1,040
Site and Species Protection	26
Policy and Advisory Work	78
Education and Communications	36
Survey, Research and Monitoring	168
Training	12
Total	**1,455**

ANNEX 15: TURKS&CAICOS ISLANDS

1.1 Contributors

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1.2 Background

A group of 8 islands and numerous cays on two shallow banks, with deep ocean between them. The maximum height is 50m.

1.3 Biodiversity Importance

- Caribbean Islands Global Biodiversity Hotspot, Bahamas Endemic Bird Area, Greater Antillean Marine Ecoregion
- 9 Important Bird Areas (84,850 hectares) and one Ramsar site (with a further 7 proposed)
- Regionally important populations of seabirds
- 3 plant, 1 reptile, 2 bat, 3 turtle and 1 bird species of global conservation concern
- 8 endemic plant and 4 endemic reptile species
- Significant coral reefs
- Endemic invertebrates – limited knowledge but include at least 3 butterflies and a spider.

1.4 References

Important Bird Areas in the UK Overseas Territories

Turks & Caicos Environment Charter Strategy

Plan for Biodiversity Management and Sustainable Development around the Turks and Caicos Ramsar Site (2002)

1.5 Biodiversity Conservation Priorities

1.5.1 Habitat and site management and restoration work

The Environment Charter Strategy contains the following actions:

2.c.8 Protect, manage and restore Salinas in all three of the Salt Islands. As an initial step a study of the resource and its management and restoration requirements is needed. Estimated cost - £20,000.

2.c.9 Identify degraded areas in all islands which will benefit from reforestation or other restoration, determine the optimal restoration approach for each, ensuring that only native plants are used, and carry out restoration works. This is likely to require studies to identify priority sites and proposed restoration methods, trials of restoration

techniques, and then carrying out full scale restoration works. An annual budget of £20,000 over 5 years would fund the development and initial implementation of a restoration programme.

The Ramsar site management plan contains the following actions:

- Development of visitor centres, trails, viewing platforms and supporting information. This includes production of six small hides – US$15,000 (£7,700), plus additional resources including: staff time to administer establishment of trails; staff time to develop interpretive resources; materials for trails, including signs and pegs; labour to establish trails; labour and materials to develop/renovate/refit information centres; ongoing costs of staffing information centres. This is likely to incur one-off capital costs in the region of £100,000 and annual running costs of ca. £20,000, an average total cost of £40,000 per year over the five year period.
- Acquisition by National Trust of high natural value areas including woodland, wetland, fishponds and other ponds. Cost unknown.
- Establishing native plant nursery – US$20,000 (£10,300)

1.5.2 Predator control

Possible work could include:

- Rat eradication from islands/sites
- Cat eradication from islands/sites
- Insect control (Middle Caicos)
- No further details are available.

1.5.3 Site Protection

The Environment Charter Strategy Commitment 2 I is to Protect, manage, improve and extend the Protected Areas System created under the National Parks Ordinance. It contains the following actions:

- 2.b.1 Lodge the boundaries of existing Protected Areas in the Governmental GIS system, Planning and Land Registry.
- 2.b.2 To ensure that there is no further erosion of the PAS through inappropriate development, use the National Trust Ordinance to put the Protected Areas System into inalienable conservation ownership, in trust for the future of the country.
- 2.b.3 Complete development of a Protected Areas Policy with agreement at highest level.
- 2.b.4 Continue revitalising the National Parks system and extend management throughout all Protected Areas. Set aside additional areas for the creation of more Protected Areas. Review the needs for amendments to the boundaries and/or the categorisation of existing Protected Areas, and the need for additional Protected Areas
- 2.c.1-3 Management plans: Develop and implement a five-year rolling strategic plan for the management of the Protected Areas System, including the setting of priorities for parts of PAS most urgently in need of management plans. Develop

management plans for every site in the PAS in priority order and finalise, adopt and periodically update existing management plans

- 2.a.4. Review and amend National Parks Ordinance to bring it up to date in light of experience and new information.
- 2.c.11 Ensure proper management of the Conservation Fund, including ensuring that the management authority for the Fund is representative of both governmental and non-governmental stakeholders and has transparent procedures.
- 2.c.7 Protect vital wetlands: Make wetlands a specific focus of protected areas protection, including zoning for sustainable wise use, proper management and wardening.

Implementation of these actions could be furthered by appointing a dedicated Protected Areas Officer. Estimated cost: £20,000 per annum including salary, support costs and expenses.

The Ramsar Management Plan identifies the need for two wardens, one on each of main islands (North and Middle Caicos). Total estimated cost - £30,000 per annum including salary, support costs, equipment and expenses.

1.5.4 Policy and advisory work

The Environment Charter Strategy contains the following actions:

- 2.c.6 Ensure the proper protection of coastal resources. Develop and implement Coastal Zone Management Policy to deal with coastal works, flooding and disaster management and wise allocation of the valuable and very limited supply of coastal land.
- 2.c.4 and 2.a.6/7 Develop fisheries policy to develop the fisheries sector of the economy while ensuring protection of the target and non-target species on which both the fishing and tourism industries are based. Review and amend Fisheries Protection Ordinance to update protection of sea turtles and other key species.
- 2.a.8 Develop and adopt a new Wildlife Protection Ordinance to protect important fauna such as iguanas, other endemic reptiles, rare butterflies etc.
- 2.c.14 Implement the TCI Rock Iguana Conservation and Management Plan. Ensure that ongoing species-specific conservation programmes are carried out and that logical successor projects follow on for turtles, whales, whistling ducks and other priority species.
- 2.a.9 Amend the Plant Protection Ordinance to protect important native plant species such as the Turks Head cactus, and deal with invasive species.
- 2.d.1 To control invasive species and for other environmental health reasons, carry out a major project to implement port environmental security.
- 2.c.16 Ensure the proper control of mosquitoes and other disease-carrying insects and animals using programmes which avoid adverse impacts on other species.
- 3.a.10. Undertake a biodiversity country study, building on the Habitat Mapping project (7.1), the Biodiversity Management Project for Middle and North Caicos,

DECR marine studies, UK Conservation Forum Important Bird Areas analysis, and using the proposed Biological Records System (7.2).

Implementing these actions would be facilitated by appointment of the following staff:

- Biodiversity Officer
- Biosecurity Officer
- Sustainable Development Officer

Estimated annual cost for 3 staff: £75,000 per year to include salary, support costs and expenses.

1.5.5 Communications and Publicity

Environment Charter Commitment 9 is to encourage teaching within schools to promote the value of our local environment (natural and built) and to explain its role within the regional and global environment. Action 9.1 is to ensure that the publicly funded school system is adequately resourced and sufficiently encouraged to continue developing and expanding the environmental and scientific curriculum, develop ongoing, regular teacher training in environmental issues and draw on the resources of NGOs to achieve these.

Environment Charter Commitment 10 is to promote publications that spread awareness of the special features of the environment in the Turks and Caicos Islands; promote within the Turks and Caicos Islands the guiding principles set out above. It contains the following actions:

- 10.a.1 Fund one of the NGOs to carry out a large-scale, multi-year, nation-wide awareness programme centred on the adult population.
- 10.a.4 Facilitate the securing of funding by NGOs for the development of ecotourism facilities. Use these as one means to integrate local culture into the tourist product.
- 10.b.1 Encourage and support the further development of high-quality publications which spread awareness of the TCI's special environmental features.
- 10.c.1 Carry out high-profile launch to raise awareness of the Charter.

The following package of resources would help to deliver the above actions:

- Teacher training in environmental issues - £10,000 per year
- Environmental awareness campaign - £25,000 per year including salary of campaign officer, support costs and expenses
- Publications - £10,000 per year
- Events, workshops and meetings - £5,000 per year.
- Total - £50,000 per year.

1.5.6 Survey, research and monitoring costs

Environment Charter Commitment 7 is to review the range, quality and availability of baseline data for natural resources and biodiversity. It includes the following actions:

- 7 I Develop systems to use more effectively the information we have and means to acquire the information we need for good environmental management practice.
- 7.1 Bring all the information we have on our terrestrial, wetland and marine systems into the GIS system so that land managers, planners and decision makers have ready access.
- 7.2 Establish a biological records system to make effective use of observations from various sources.
- Annual cost - £10,000 for establishment of systems and staff time.

There is also a need for survey work in the following areas:

- Seabird surveys
- Mainland surveys
- Coral reef/marine surveys
- Turtle (beach) surveys.
- No details available, but a budget of at least £30,000 per year will be required.

1.5.7 Training costs

BSc Environmental Management. 2 scholarships at £3,000 per year = £6,000

1.6 Summary of Costs

The cost of meeting the above priorities is provisionally estimated at £287,000 per year.

Category	**£k per year (2007/8 to 2011/12)**
Habitat and Site Management	66
Control of Introduced Mammals	?
Site and Species Protection	50
Policy and Advisory Work	75
Education and Communications	50
Survey, Research and Monitoring	40
Training	6
Total	**287**

The figures contain significant gaps relating to predator control and survey, research and monitoring work.