

Darwin Initiative for the Survival of Species

Development of a Biodiversity Strategy and Action Plan for Bermuda

Final Report

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1. Darwin Project Information

Project title	Development of a biodiversity strategy and action plan for Bermuda
Country	Bermuda
Contractor	Bermuda Zoological Society
Project reference No.	09-009
Grant Value	98,000
Start/Finishing dates	April 2000 – March 2003
Reporting period	April 2000- March 2001

2. Project Background/Rationale

Most of world's biodiversity losses have occurred on small islands, largely as a result of direct human interference such as harvesting, hunting and fishing, indirect interference such as intentional and accidental introduction of alien species (domestic, pets, pests, parasites & diseases), habitat loss, and pollution.

The isolated island chain of Bermuda, located in the Western North Atlantic, 965km S.E. of Cape Hatteras, is no exception. The island is situated on the southern rim of the largest of three steep-sided mounts. Originating through volcanic activity 110 million years ago, these mounts rise from depths of about 4,000 m to form a total platform area of approximately 1,000 km². Of great biological interest is the northerly extension of subtropical systems to this latitude, a direct result of the transport of the warm waters of the Gulf Stream. Boasting the northern-most coral reef system in the world Bermuda is biotically linked with the islands of the Caribbean and the S.E. United States. Bermuda's attractiveness as a natural laboratory explains the wealth of scientific research conducted on the island, particularly over the last century. Over 8,000 different species, a surprisingly high number for such a small chains of island have been recorded in Bermuda.

Since its discovery in 1503, humans have viewed Bermuda, the oldest of the UK's Overseas Territories, from a series of divergent perspectives. At first, it was viewed simply as a treacherous island to be avoided. However, with the accidental arrival of the first settlers in 1609, Bermuda soon became a strategic outpost, and the natural resources became the subject of intense exploitation. The uncontrolled harvesting of the endemic petrel (cahow) and of local sea turtle populations led to rapid declines in these resources. This is evidenced by the enactment of the first written conservation legislation of the new world protecting young turtles in 1620. Concurrently, man's colonisation led to the introduction of an host of highly competitive foreign species. Hogs, rats and cats, were among the first introductions, but perhaps the most significant was the accidental release of a scale insect in the 1940's which reshaped Bermuda's landscape by virtually exterminating the dominant tree species, the endemic Bermuda Cedar.

The early 20th Century saw Bermuda becoming one of the world's first big tourist destinations, as visitors were drawn to the natural beauty of the Island, however this not only

expounded the problems of foreign species introductions, but led to the need for a more sophisticated infrastructure – roads, railway and hotels were developed, in the process eating up valuable parcels of open space. This development trend has continued, even as international business replaced tourism as the cornerstone of the local economy,

Despite these changes, and like many island communities, Bermuda's economy, be it through tourism, recreational activities or international business is still intrinsically dependent on the health of its natural habitats. Moreover, as many of the more than 8,000 species recorded from the archipelago are at the extreme limits of their distribution, the status of the Island's biodiversity is not only critical to the well-being of Bermuda and its people, but also serves as an important barometer of climate-driven global trends. However, with a resident population of 60,000 inhabiting a total land mass of 50km², and entertaining 500,000 visitors a year, Bermuda is the most densely populated island in the world, and, fuelled by strong economic growth, the pressure for further development poses an escalating threat to the fragile ecology of the island. In the last few decades, approximately 5% of Bermuda's recorded endemic species have become extinct, and development and invasive species threaten many more. 14% of the land is covered in concrete and the Island has been grouped with Hong Kong, Singapore and Macaw as being a totally urban jurisdiction

It is this rapid pace of development, and the inevitable conflict, which arises between community needs and the natural environment, which dictated the need for a well-defined framework for conservation action, with prioritised goals for addressing the most pressing issues. There is no doubt that in many areas Bermuda could boast an impressive conservation record, with many organisations (both governmental and non-governmental) and individuals working hard towards protecting the Island's biodiversity. However, in many instances two different groups were working separately to tackle exactly the same issues. More significantly, in the absence of a common vision for conservation, efforts were often diluted by conflicting, albeit well-intentioned, activities, resulting in a very fragmented approach and inefficient allocation of resources. Given limited human and financial resources, it was recognised that a more logical approach would be one in which the community worked together to develop a common vision for conservation and then identified and addressed the problems and solutions, through the development of a coordinated series of actions.

It was recognised that the most logical approach for undertaking this initiative to develop a BSAP for Bermuda, was through the Bermuda Biodiversity Project (BBP). The BBP was launched in February 1997 as a joint initiative of the Bermuda Zoological Society (BZS) (a locally registered charity) and the Government run Bermuda Aquarium, Museum and Zoo (BAMZ), with the aim of developing a comprehensive information management system for Bermuda's natural resources. With a library of over 3,500 documents describing the island's natural history, over 5,000 museum specimens, an ongoing terrestrial and habitat mapping initiative, and an active programme to encourage scientific study of threatened or poorly understood native and endemic species, the BBP already had much of the scientific documentation in hand as the basis for this planning process. Perhaps most importantly, the BBP, had already established outreach programmes to promote community awareness and involvement in investigating critical issues of relevance to the conservation of Bermuda's unique biodiversity. Coupled with the outreach programmes of the BZS, which has a membership comprising over 15% of the population, this was seen as pivotal to the task of engaging wide community collaboration on this project. Moreover, the long-standing, well-respected partnership between the BZS and BAMZ had the support of the local NGO community as well as the ear of Government – a factor that was felt would contribute enormously to the overall buy-in to the project.

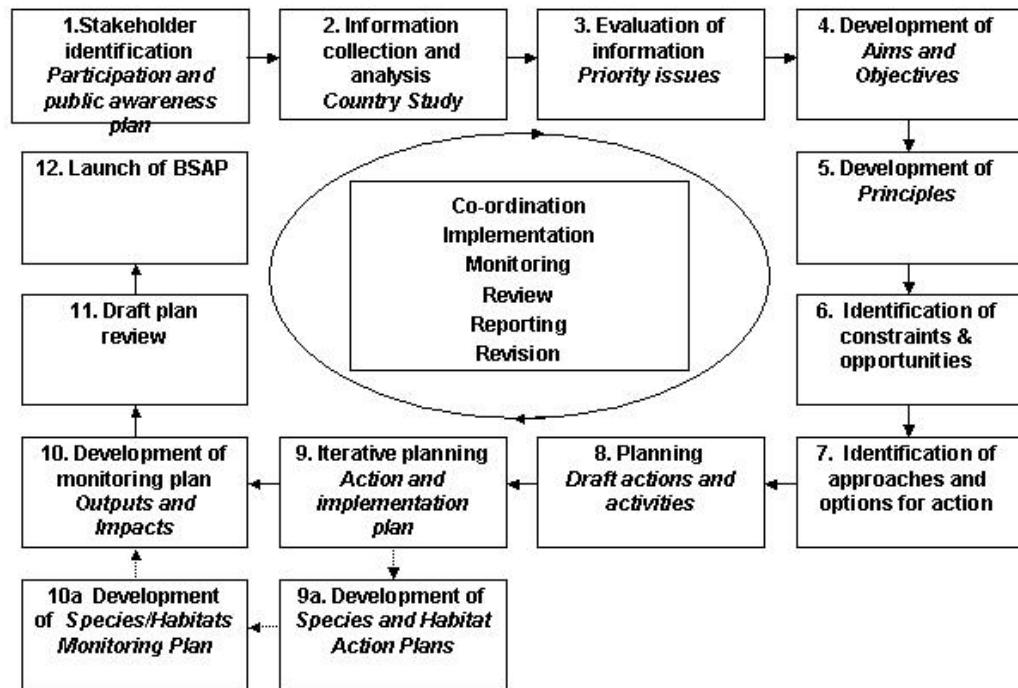
3. Project Summary

The overall objective of the project was to promote the conservation and sustainable use of Bermuda's biological diversity and to contribute to the conservation of global biodiversity. The production and subsequent implementation of a BSAP for Bermuda was seen as a vehicle for accomplishing this. This also most clearly satisfied Article 6 of the Convention on Biological Diversity which calls for parties to: develop national strategies, plans or programmes, or adapt existing plans for the conservation and sustainable use of biological diversity, and to integrate biodiversity work into sectoral and cross-sectoral plans, programmes and policies. The specific objectives of the project as defined in the original proposal were:

- To synthesise the existing biodiversity information and develop a series of prioritised species/habitat profiles clarifying their current status;
- To establish measurable targets for conservation of prioritised species/habitats through stakeholder consensus;
- To develop a series of prioritised practical options for achieving these targets, identify appropriate delivery mechanisms and produce and distribute the BSAP to the community;
- To build the capacity for implementation of the BSAP by forging partnerships utilising existing community resources;
- To raise awareness throughout the community on the issues threatening local and global biodiversity;
- To provide British expertise to Bermuda in; 1) developing skills in the process of consensus building and biodiversity strategy action planning; and in 2) promoting the effective management of threatening invasive species.

The project to develop a BSAP for Bermuda was considered instrumental in establishing the conservation priorities for Bermuda, as well as defining a strategy for implementation to meet these objectives. At the outset it was felt that if the BSAP was to be adopted and 'owned' by the whole community, then a participatory approach would be necessary. In a sophisticated society like Bermuda's there are many conflicting needs. Only by reaching out and inviting broad community participation, could we ensure that the Plan was relevant and achievable; that it was based on an understanding of how environmental, social and economic factors related to one another; and that, at the end of the day, it was adopted and put into action by a community of partners.

To this end, the development of the BSAP involved several stages. A 7-member management team was set up with staff from the BZS and BAMZ. A steering committee, comprising 12 members of the community representing Government, the NGO's and the private sector was also established to provide guidance and ensure objectivity. Finally, the biodiversity planning expertise of Drs. Abigail Entwistle and Nigel Coulson from Fauna and Flora International (FFI) was secured to help develop the strategy and participation plan, and facilitate the planning workshops. They presented the following framework for the BSAP process (see below) to the local project team at an initial planning meeting.



The first key objective was to synthesise existing biodiversity information through an audit in order to be able to develop prioritised species and habitat profiles. This was accomplished through several approaches. The need for a baseline framework onto which biodiversity data could be incorporated was met by the development of terrestrial habitat maps integrated with the Bermuda Government GIS. Using data collected by the BBP team in combination with a geographically accurate digitised aerial photomosaic of Bermuda, the Island's open spaces were delineated into 12 habitat types. The resulting habitat map not only served as an important baseline, but also allowed species-specific data to be superimposed onto it. In conjunction with the Department of Planning's digitised conservation zonings, it also provided a valuable management tool for determining which habitats were currently afforded protection, and highlighting critical habitats in need of protection. A similar approach was adopted for the habitat mapping of the Bermuda's 1000 km² shallow-water marine platform, however priority was given to the terrestrial environment where threats to biodiversity were recognised to be much more immediate.

In addition to the habitat mapping, information on Bermuda's endemic and threatened native species, as well as critical invasive species was collated. The extensive Bermuda Natural History database developed as part of the ongoing activities of the BBP proved to be an invaluable resource for securing information about Bermuda's flora and fauna. A concerted effort was also made to focus the summer intern research projects in each year of the project towards gathering

more field data on these species, and on integration of species-distribution data into the GIS. The BBP FileMaker Pro database now supports entries on 5,666 species found locally.

In an effort to assess what different sectors of the community were doing to support biodiversity conservation, a questionnaire was mailed to 230 organisations. This included local NGO's, churches, clubs and societies, schools, and businesses. 63 responses were received, detailing projects, initiatives and activities being supported or undertaken by the organisations. With this combined input the BBP team produced the Bermuda Biodiversity Country Study. This was a colourful 103-page document which provided an overview of the status of Bermuda's biota, identified the most critical issues facing the conservation of the Island's biodiversity and attempted to place these in the context of the social and economic needs of the community. Over 70 people contributed to the material in the study, which was reviewed as a draft by over 100 people. This document, which proved an unexpected success in terms of the extent to which people requested copies and quoted from the information, was used as the basis of the first planning workshop to establish priority issues, attended by over 60 stakeholders from all sectors of the community. An environmental awareness survey was also conducted to assess the value of Bermuda's biodiversity at the community level, revealing a very poor understanding of the issues, and guiding local partners in the development of activities to raise awareness.

The next key objective was to establish measurable conservation targets and action for prioritised species/habitats through stakeholder consensus. This was accomplished through another stakeholder planning workshop, using information gathered through the biodiversity audit focusing local expertise to identify specific details and facilitated by the UK partners.

Prioritised, practical options for achieving these targets were also developed through the workshop forum, but then 12 specialized working groups were established focusing local expertise on identifying the specific details necessary to ensure delivery of these targets. The results of this activity were compiled into a draft BSAP, which was reviewed in a final workshop with all key stakeholders present. This final document is currently being converted into pdf format so that it can be made available through the BSAP website www.biodiversityactionplan.bm, which is under construction. 10,000 copies of a 30 page "Summary of the Bermuda Biodiversity Action Plan" were produced and are being made available throughout the community through Government offices, local businesses and all the Island's post offices. The structure of the BSAP will allow for effective monitoring of the actual BSAP implementation over the five-year duration of the Plan. There is also intent for the Bermuda team to produce an evaluation report of the effectiveness of the consensus-building process, but this was not completed before the end of the Darwin project time-frame.

28 species, groups of species or habitats were identified through another workshop, as needing specific attention. Draft action plans have been produced for some of these but were not finalised before the projects completion date; they are currently in the process of undergoing a final review process. A training workshop specifically addressing invasive species, and facilitated by Dr. Colin Clubbe (Kew) and Karen Varnham was held with keen attendance from across the community. The outputs of this workshop are being incorporated into a specific action plan to address invasive species.

Whilst the primary intent of the BSAP planning process was to stimulate a more focused, and coordinated approach to biodiversity conservation, one of the obvious benefits of the process was that it created an avenue for strengthening existing partnerships and projects, as well as for establishing new ones. Through the planning process, it became apparent that different groups and

individuals were committed to different aspects of the final Plan. In the final planning workshop to review the Action Plan, these groups/individuals were encouraged by the facilitators to formalise that commitment by adopting a leadership role for relevant activities within the Plan. The BSAP management team is currently in the process of confirming this commitment through follow-up meetings with these lead agencies/individuals.

A key element of the whole project was to raise community awareness of the issues threatening biodiversity on both a local and global basis. Working with Dr. Abigail Entwistle, the BSAP management team conducted an initial stakeholder analysis from which they developed a public involvement and awareness plan. The production and distribution of the Biodiversity Country Study was an important vehicle for disseminating information throughout the community. Copies were distributed to all local schools, science teachers and to the public libraries. Copies were also available for sale in the BAMZ giftshop. Numerous articles were written for popular local magazines and newsletters, through local print media, through a T.V., radio and print publicity campaign and through local educational classes run through the BZS and BAMZ. Locally, there were 5 reports produced, 20 press releases, 10 articles written for circulated newsletters or magazines, 4 cabinet memoranda, 3 televised ministerial press statements, 6 radio interviews, and two conference presentations; in the USA through the American Zoo and Aquarium Association there was 1 conference presentation and one article; and in the UK and its Overseas Territories there were 2 articles and 2 conference presentations. Additionally, there were over 30 oral presentations to local groups such as the Rotary and Lions clubs, various schools, the Bermuda Natural History Course, and various NGO AGM's. Biodiversity action planning was also the focus of the biennial Environmental Youth Conference in 2002, as well as the annual Agricultural Exhibition where schools were invited to submit their projects for a biodiversity competition. Finally, the Minister of the Environment declared 2001 the "Year of Biodiversity Awareness" and 2002, the "Year of Biodiversity Action".

British expertise in developing skills in consensus-building and strategic action planning, and in promoting the effective management of threatening invasive species, was delivered by the planning specialists from FFI, and invasive species experts from the Royal Botanic Gardens, Kew, as well as an independent consultant. During an initial planning visit, Dr. Abigail Entwistle helped establish the core BSAP management team comprising staff at the BZS and BAMZ. Through a series of meetings she also ensured that local counterparts were thoroughly grounded in the BSAP process. These meetings extended to key staff at the Ministry of the Environment as well as staff at the former Department of Agriculture and Fisheries, and members of the BZS Executive, in recognition of the need for wide community buy-in to ensure the success of the initiative. In two of three subsequent visits to Bermuda to facilitate planning workshops, Dr. Entwistle was assisted by Dr. Nigel Coulson. Additionally, Dr. Colin Clubbe from Kew and Karen Varnham provided facilitation for an invasive species workshop. In each case, the role of the UK consultants in providing technical assistance and facilitation was clearly explained and welcomed by all stakeholders. Their ongoing support has continued beyond completion of the project through e-mail correspondence.

4. Scientific, Training, and Technical Assessment

The research component of this initiative was limited, and centred mainly on the compilation of scientific literature for the production of the Bermuda Biodiversity Country Study. The three BBP staff, as well as various interns employed during the course of the three-year initiative, undertook this task. This provided an opportunity for these individuals to increase their understanding and familiarity of Bermuda's natural history, and to make significant contributions

not only to the information available in the local biodiversity database, but also to modifying these databases as new variables emerged. Instrumental in supervising these activities, was the Curator of the Natural History Museum at BAMZ, Dr. Wolfgang Sterrer, who has been studying Bermuda's biota for over 30 years. Local Government GIS experts also offered their assistance in helping project staff to develop their GIS skills in order to produce accurate geographical habitat maps for the island. Two Bermudians received on-the-job training in GIS mapping skills. The results of this work, which were summarised in the Country Study, were subject to review by local experts through the BSAP process.

There was limited scope for active field research in this initiative; BBP staff did guide undergraduate and graduate interns in undertaking specific small-scale field research activities to address some gaps in the information. Most of these centred on species-specific distribution surveys of threatened species and involved 14 Bermudian and 10 non-Bermudian graduates and undergraduates.

The biodiversity planning and invasive species specialists from the UK provided the principle training component of this initiative, with regards to the strategic biodiversity planning process and workshop facilitation, neither of these being activities that local specialists had prior experience of. The combined experience of Drs. Entwistle and Coulson as biodiversity planning specialists was demonstrated in the first planning workshop held with key stakeholders. Their outstanding role as facilitators ensured objectivity in the process and inspired a high level of confidence amongst all the participants. Working closely with the BSAP management team before and after the workshop, the FFI staff shared ideas as to how best to involve the wider community in the process whilst at the same time ensuring continued forward momentum for the project and this provided an important guideline. With their coaching, the local BSAP management team moved in subsequent workshops from a largely participatory approach, during which they were able to gain insight and confidence in the skills required to develop consensus, to a more active role in facilitation.

5. Project Impacts

The principal purpose of this project was to develop and implement a Biodiversity Action Plan for Bermuda. This Plan was successfully developed, adopted by the Government and launched; however, as a five year Plan, full implementation cannot be realised immediately. It was evident though, that implementation of many of the Plan's activities commenced even prior to its final review, such was the momentum generated through the planning process. Local conservation resources have been mobilised into action based on a structured framework, with widely accepted priorities and built-in accountability.

Bermuda is a party to the Convention on Biological Diversity (CBD) under the UK's signature, but has been working with the Environmental Policy Department of the UK Foreign and Commonwealth Office to ensure that the Island has in-place the necessary framework to give local force to the provisions of the CBD by April 2004. This Darwin project was therefore pivotal to this, as Article 6 of the CBD calls for participating parties to: develop national strategies, plans or programmes, or adapt existing plans for the conservation and sustainable use of biological diversity, and to integrate biodiversity work into sectoral and cross-sectoral plans, programmes and policies'. Within the BSAP, the following CBD Articles are satisfied through the 12 objectives:

Article 7: Identification and Monitoring –

Objective K: To increase management-oriented biodiversity research and monitoring by 25% by 2007 as demonstrated by outputs

Article 12: Research and Monitoring –

Objective K: As above

Article 8: In-situ Conservation –

Objective I: To strengthen the level of protection, where appropriate, through the re-designation of existing protected areas, and to increase the area of fully protected nature reserves and marine protected areas through land acquisition or re-designation by 25% and 10% respectively; and to ensure the effective management of the protected areas network by 2007.

Objective J: To develop new, and revise existing management plans for all key species and habitats and to ensure their implementation by 2007.

Article 9: Ex-situ Conservation –

Objective J: as above

Article 10: Sustainable Use of Components of Biological Diversity -

Objective B: To ensure that biodiversity conservation is integrated into all Government programmes, policies and plans by 2007

Objective A: To ensure effective coordination, improved collaboration and ongoing communication in support of efficient biodiversity conservation such that key stakeholders are engaged throughout the implementation of this Plan.

Article 13: Public Education and Awareness –

Objective C: To improve and strengthen biodiversity education and training programmes for every age group by 35% over the next 5 years.

Objective D: To increase public awareness of biodiversity, its inherent values and conservation activities throughout the community by 100% over the next 5 years.

Objective E: To increase the active participation of the community and the private sector in ecologically responsible behaviours by 25% by 2007.

Article 17: Exchange of Information –

Objective A: As above

Article 11: Incentive Measures –

Objective F: To provide appropriate economic and other incentives to effectively encourage people to protect and enhance biodiversity.

Article 15: Access to Genetic Resources -

Objective G: To revise and develop laws that address all key identified gaps in existing environmental legislation for implementation by 2005.

Article 16: Access to and Transfer of Technology -

Objective G: As above

Article 19: Bio-safety Protocol -

Objective G: As above

Significant progress has already been made with regard to the legislative amendments necessary to conform to the CBD. A Protected Species Act has been drafted (see Appendix VII) and policies concerning feral and invasive species, and access to genetic resources are being developed. The Bermuda Parks Act is also under review. Public awareness, and education activities are also being addressed, and novel approaches to fund-raising are being explored, including the establishment of sliding scale loans, an environmental grants scheme, the establishment of a competition within the private sector to generate funds through participation fees, and a conservation and research endowment fund which has been established by the BZS.

One of the most significant impacts of this project was the partnership established between the local BSAP project staff, and the UK partners (principally FFI and Kew). Bermuda has largely approached local conservation in a fairly insular fashion, typically relying on local expertise. (Scientific research in contrast has relied heavily on overseas expertise). Whilst the Island is fortunate to have so many qualified conservationists, often establishing models subsequently adopted in other jurisdictions, this project demonstrated the benefits of collaborating with UK partners who brought to the table a wealth of experience gathered in other jurisdictions. They provided a tremendous sense of reassurance to the local project leaders, who had little experience in strategic planning and additionally demonstrated the benefit of having neutral facilitators when discussions focused on sensitive issues. The strength of this partnership should inspire further collaborative initiatives between Bermuda and these two UK partner organisations, and initial discussions have already commenced.

Without doubt, the tremendous collaborative spirit that was generated amongst local stakeholders through the BSAP process has also been significant. For an island of 55 km² with 60,000 residents, Bermuda is extremely well-served by a number of local environmental NGO's as well as the Ministry of the Environment. Whilst many members of these organisations wear several hats, each organisation has a slightly different approach to conservation. The BSAP planning process represented the first time these key stakeholders had united to discuss the main concerns, assess the opportunities and constraints within which each work, and develop a coordinated, multi-faceted approach to biodiversity conservation. The planning workshops were so successful in this regard, that continued forums of this nature were planned and written into the BSAP itself so that stakeholders could report and celebrate progress. A particularly encouraging move, during the duration of the project, was the restructuring of the Ministry of the Environment to create two new departments; the Department of Environmental Protection, and the Department of Conservation Services (DCS). One of the directives of the DCS is to foster better collaboration between the Ministry and the various environmental NGO's on the Island. This will be accomplished in large measure through the hiring of a BSAP Coordinator and will directly support the first objective of the BSAP.

The collaborative nature of this project extended beyond the Government and environmental NGOs' and included local community and religious leaders as well as the private sector. Again the Action Plan itself incorporates activities to ensure ongoing collaboration with these sectors and it is evident already that such collaboration, which has historically been strong anyway in Bermuda, is flourishing.

6. Project Outputs

Appendix II and III outline all the project outputs using the Standard Output Measures and the publications and material that can be publicly accessed.

Almost all of the proposed outputs were achieved during the three-year duration of this project. In some cases, there were additional outputs. Most significantly, the BSAP was produced and adopted by the Government and disseminated. Action Plans for some key species and habitats were also drafted, although these were not finalised before the project completion date. This work was accomplished through four planning workshops as scheduled. A fifth workshop was held to address the issue of invasive species. UK partners spent a total of 8 weeks in Bermuda facilitating these workshops and training local project leaders in the strategic planning process; this was 2 weeks less than had been proposed. In retrospect it is apparent to local project leaders just how much having the UK partners in Bermuda helped them focus on the specific task of taking the BSAP forward at each step; the development of the species/habitat-specific action plans may well have benefited from the presence of the UK partners for these additional two weeks. The Bermuda team also failed to produce the proposed evaluation report on the consensus building process and project implementation. The team recognise the value of such a report, particularly to other jurisdictions wishing to develop a BSAP, and therefore commit to ensuring that this report is completed.

The project outputs, and information relating to them have been disseminated in several ways. A summary of the information collated on Bermuda's biodiversity is presented in the Bermuda Biodiversity Country Study, of which 500 copies were printed and distributed throughout the Island's schools and public libraries. This document is also to be converted to a pdf to be made available on the BSAP web site. The Bermuda Natural History database, which sources all the scientific documents describing Bermuda's biodiversity, and was a primary source of information for the Country Study, is available as a searchable database on the BAMZ web site. Hard copies of most of these documents are housed in the library at the BAMZ, which is open to the public by appointment. The Bermuda species database is to be made available to the public through the newly renovated Natural History Museum exhibit area at BAMZ which is due to open in September 2003. Failure to construct a project website before the project completion date was significant in delaying the availability of project outputs and updates to both key stakeholders and the wider community. This is currently being addressed and a site is under construction.

The working copy of the Bermuda BSAP has been distributed to all key stakeholders involved in the planning process. This is also to be converted to a pdf format to be hosted on the BSAP web page. 10,000 copies of the Summary of the BSAP are being distributed through Government offices including all the Island's post offices. This document will also be available on the web site. The report from the invasive species workshop was distributed to all participants and again this will be available on the web site. Information from this, and from the Country Study, is also being included in the Ministry of the Environment's State of the Environment Report currently being produced. Once the species/habitat-specific action plans have been reviewed and finalised, these will also be widely publicised.

A significant component of the BSAP focuses on public awareness and education, and includes various delivery mechanisms for achieving this in the future. The local news media clearly demonstrated their willingness to cover news relating to the project, and again, the news media have been included in the BSAP as a vehicle for information dissemination. During the project, there were 20 releases through the national print media, (6 had been proposed), 6 national radio interviews (3 proposed) and 3 nationally televised stories on the project (3 were proposed). 10 of 11 proposed publicity articles were written.

Finally, in terms of training outputs, more Bermudians and overseas students received training through the project than originally proposed, although only one received long-term training.

7. Project Expenditure

Item	Budget	Expenditure
Total	273,528	312,283.68

The actual expenses are 14% higher than budgeted. This can largely be attributed to several major items. Firstly, printing costs for the Bermuda Biodiversity County Study were significantly higher than budgeted. It was decided that although more expensive to produce, a colourful and reader-friendly report was necessary to encourage readership. From feedback this decision appears to have been justified as the report has been read by people in all sectors of the society, and is occasionally quoted by politicians as a source of information. Indeed, the Cabinet even wished to table it for debate.

The implementation of a public awareness survey was a cost that was entirely unplanned. This was initiated on the advice of the BSAP steering committee and will undoubtedly serve as an important baseline against which to measure changes in the public’s understanding of environmental issues. With this template, future surveys could probably be undertaken through a coordinated effort of staff and volunteers at the BZS at a significantly reduced cost. The third major cost, resulting from the awareness survey, was a T.V., radio and print public awareness campaign that aimed to raise awareness about some of the threats to our biodiversity, rather than about the development of the BSAP itself. This was a huge expense, and was not considered in retrospect to be particularly successful.

Additional discrepancies in the budgeted-versus-actual costs revolved around allocation of staff time to the project. None of these significant discrepancies impacted Darwin support for the initiative. It should also be noted that the unfavourable exchange rate for most of the duration of the project, resulted in the project absorbing slightly higher costs than originally proposed. The additional costs were supported by funds raised from private funding agencies, including the Ernest E. Stempel Foundation, the Bay Foundation, the Kenridge Fund and the Bermuda Zoological Society membership as well as the Ministry of the Environment.

8. Project Operation and Partnerships:

The project originated through the BZS's BBP team, who served as local coordinators, in liaison with FFI who provided the biodiversity planning expertise. The BBP was initiated in 1997 with the goal of collating and disseminating information on Bermuda's rich biodiversity, and actively addressing gaps in the data with ongoing research. With a focus on directing research into locally threatened species and habitats, the development of the BSAP was a logical next step forward for the BBP team. A 7-member management team was set up to support the three member team, with two additional staff from the BZS and two civil servants from BAMZ.

With its mission statement: "to inspire appreciation and care in island environments", the BZS was founded in 1978 to support the BAMZ and to develop community participation in, and support for programmes in education, conservation and research through membership and donation. In addition to supporting exhibit development, the BZS is responsible for all programmes run at BAMZ. The BZS Education team, which works closely with the Ministry of Education, assisting them with curriculum development, as well as with the private schools, delivers classes to just over 9,000 local students per year. They also develop teachers' resource boxes, interpretive guides, nature guides and run training workshops, natural history courses, nature encounters, summer camps and the Junior Volunteer programme at BAMZ. Being able to drive the project through these two organisations was essential to the success of the BSAP development. Their combined leadership in the field of conservation is widely recognized in Bermuda. With 4,000 members, the BZS also has the interest of about 15% of the local population, facilitating outreach and wider community buy-in significantly.

During the course of the BSAP development, the Ministry of the Environment underwent a re-structuring, that saw the establishment of two new departments, Conservation Services and Environmental Protection. The Department of Conservation Services comprises BAMZ, a small conservation unit and a botanical and horticultural services unit, with a focus on environmental education and outreach and active field conservation. The newly appointed director Jack Ward was one of the key members of the BSAP management team, and has subsequently adopted the BSAP as the mandate of the new department. He was also principally responsible for ensuring the buy-in of Cabinet to the process. This should ensure continuity of the project and implementation of the Plan.

A steering committee, comprising 12 members of the community representing Government, the NGO's and the private sector was also established to provide guidance and ensure objectivity. Finally, the biodiversity planning expertise of Drs. Abigail Entwistle and Nigel Coulson from Fauna and Flora International was secured to help develop the strategy and participation plan, and facilitate the planning workshops. The support of Dr. Colin Clubbe from the Royal Botanic Gardens, Kew, and Karen Varnham, an independent invasive species specialist, was also secured through Kerstin Swahn at FFI to help facilitate the invasive species workshop.

The engagement of senior civil servants within the Ministry of the Environment, and through them, the Cabinet, was a significant factor in securing the overall backing of the Bermuda Government for this project. With this support, and the recognition that there was to be a significant commitment to this initiative, engaging local stakeholders became much easier. Clearly, the whole BSAP planning process was structured around community-wide input, and over 100 individuals representing over 50 local organizations, businesses and government departments participated in the process.

Implementation of the Plan by local partners, the community and private sector, and ongoing monitoring and stakeholder input is the key to sustaining the legacy of this initiative. The Director of the DCS is currently in the process of creating a position for a local BSAP coordinator who will take over this role from the current project leader, Dr. Anne Glasspool, who although resident in Bermuda, is not Bermudian. The two will work together to ensure a smooth transition, and the Coordinator will be tasked with coordinating implementation, actively monitoring the BSAP activities and reporting to all stakeholders on progress. Meanwhile, the management team is continuing to meet with lead agencies to ensure their commitment to the activities outlined in the Plan. Many activities have already been accomplished, particularly those relating to education; additionally an Government Environmental grant scheme has been established, a Protected Species Act has been drafted, amendments are being made to address the issue of certain feral species, policy concerning access to genetic resources is being considered, and Bermuda is to seek extension of the Convention of Biological Diversity in its own right in April 2004. It is already evident that the BSAP has mobilised local conservation bodies and focused resources on those issues deemed highest priority.

Other international partners in this initiative were significant in their financial support. Three private foundations in the US (The Ernest E. Stempel Foundation, the Kenridge Fund and the Bay Foundation), provided grants to the project, in addition to the Darwin monies received.

9. Monitoring and Evaluation, Lesson learning:

Aside from the logical framework established at the outset of the project, the strategic planning process adopted in Bermuda, which was developed by FFI and was based on models tried and tested in other jurisdictions, was in itself structured so as to allow progress to be monitored. Each step, with expected outputs was clearly defined, and subsequent steps were dependent on successful completion of earlier steps.

The establishment of a Steering Committee to oversee the project activities was the primary step taken to ensure that the project team remained objective in their approach and focussed on engaging the wider community. Whilst the public awareness survey that was commissioned will serve as an important baseline indicator with which the success of this initiative in engaging the wider community can be fully assessed.

Bermuda's small size, and the level to which all key stakeholders are widely known, greatly facilitated ensuring that this strategic planning process was inclusive. Attendance at workshops and feedback from the distribution of questionnaires enabled project staff to evaluate the workshop format and make changes to subsequent workshops where necessary. Each workshop was designed with clearly identified objectives, which served as a measure of success.

The production of the Bermuda Biodiversity Country Study served as the primary means for evaluating the extent to which existing biodiversity information was synthesised. With a long list of contributors and its widespread circulation for review prior to final publication, confidence that the material was comprehensive and accurate was high. The degree to which this document was subsequently used for prioritising objectives and activities with the final BSAP, as well as for general knowledge throughout the community, was the strongest indication of the value of this report. The enhancement of the Bermuda Government GIS database through the inclusion of

habitat mapping information produced in compiling the Country Study, as well as the species inventory (5,666 species records) and natural history bibliography (3,899 records) which are both components of the BBP biodiversity database, has also served as a positive measure of performance. Meanwhile, the BSAP is itself designed to track project implementation with measurable outputs, target dates and budgets. And whilst there was no formal internal or external evaluation of the development of the plan, inherent in securing community buy-in is an ongoing evaluation of the relevance and practicality of the BSAP activities.

There were several lessons learned during the course of the project. Most significant, was the value of having the collaborative support of the UK partners. The strategic planning experience that Drs. Abigail Entwistle and Nigel Coulson brought to the table, with models tested elsewhere, greatly facilitated the whole process and ensured that time was not wasted in developing the process. Similarly, Dr. Colin Clubbe (Kew) and Karen Varnham, with logistical support from Kerstin Schwan at FFI, were instrumental in facilitating the invasive species workshop. They all brought impartiality to a process which often raised sensitive issues with divergent perspectives. Local, impartial facilitation would have been extremely difficult. Moreover, the collaboration of these UK partners enabled local leaders to become participants in the planning process and actually have their own input, rather than trying to remain neutral facilitators. The local project leader recognises that she failed to liaise as closely with the UK partners once they had returned to the UK despite their offers of support. Editing of the BSAP and Summary of the Biodiversity Strategy and Action Plan would certainly have benefited from their feedback. This failure was largely the result of the local project leader trying to meet a tight deadline for the launch of the Plan.

The value of all the workshops in simply bringing people together to open dialogue, share ideas, and provide inspiration was tremendous, and all stakeholders expressed a desire for future opportunities to interact in this way. However, it also materialized that in such a small, and very active community, limiting stakeholder participation in workshops to “workable numbers” (ie. up to 50), meant that some stakeholders were inevitably excluded. This has created a need for additional, and often difficult follow-up sessions to eliminate feelings of exclusion. This is an ongoing activity.

Another immediate outcome of the workshops was that participants were inspired to initiate conservation activities immediately, ahead of completion of the BSAP. Whilst this was considered a very positive outcome, local project leaders were also called upon to implement many of these activities, which diluted focus in finalising the Plan. This in turn, led to some frustration over the time lapse in finally launching the Plan. It is probably also true that the process led to greater optimism than logistical resources could meet, so the Plan is ambitious, and it is likely that target dates may not be met for some activities. However, the prioritised structure of the BSAP is now established and is already proving a successful focus for all biodiversity conservation activities.

Local leaders were pleasantly surprised by the receptiveness of local politicians to the whole process. Engaging them at the earliest stage was acknowledged as critical to their receptiveness, but this did demonstrate the value of providing a project in which there was no negative fallout for the politicians, and by supporting it, they were effectively associated with a very positive project with significant community outreach. Their early “adoption” of the BSAP project as a Government initiative reflected this.

The BSAP steering committee was perhaps not as proactive as had been hoped, although all were fully supportive of the BSAP. Only one member undertook to take a lead, assisting with a marketing campaign and attempting to initiate a project to raise funds for community biodiversity projects. Particularly challenging to local leaders was the traditional marketing budget that many of the committee members were accustomed to and which could not be supported by the budget. With regards to marketing, the public awareness campaign (T.V., radio and print) that was launched was not viewed as a success particularly given the expense of the production costs. Feedback did suggest that the radio announcements made the most significant impact, and this might be the best vehicle for wide public engagement in the future.

Finally, the local project leader did feel a certain level of isolation from UK-based Darwin activities, as travel back to the UK to attend the annual Darwin lectures and orientation for project leaders was not budgeted. In retrospect, this was a mistake, and would have been beneficial in establishing an even stronger sense of identity with the whole Darwin initiative.

10: Darwin Identity:

The development of the Bermuda BSAP formed a distinct local programme. Although run through the Bermuda Biodiversity Project, the BSAP management team worked to ensure that the initiative was truly perceived as being community-driven rather than under the ownership of any one particular local organisation, although in this regard, the BZS has a very good relationship with the other NGO's and their leadership in this initiative was readily accepted.

Wherever possible, through press releases, conference and workshop presentations and publications, the support provided by Darwin for the project was acknowledged (see attached press releases, cabinet memoranda and publications). In some instances, inevitably, the press omitted to include some of the information given, but for the most part, the Darwin identity was promoted with the project. The launch of the BSAP, which was timed to coincide with the UKOT Conservation Conference: A Sense of Direction, held in Bermuda in March 2003, also helped to profile the project and publicise Darwin's support of the BSAP.

It is important to note that Bermuda, although an Overseas Territory, has been internally self-governed since the 1600's. There is a lot of local pride, and a strong sense of ownership of everything Bermudian. There are definitely times, when overseas influence is resented. With this understanding, the BSAP project management team recognised that for the project to succeed, it needed to be accepted as a Bermudian initiative. Indeed, the fact that at a very early stage, the Bermuda Government claimed the BSAP as one of the Ministry of the Environment's initiatives was a cornerstone of the widespread Government buy-in to the Plan. This was encouraged.

11. Leverage:

Procurement of the Darwin grant and with it the production of the Bermuda Biodiversity Country Study during the first year of the project, undoubtedly served as a means for leveraging support for the BSAP initiative from the Bermuda Government. The Country Study was extremely well received throughout the Government and in 2001 a 5-year commitment of \$150,000 annually was made towards the BBP, which was focused primarily on the development of the BSAP (see attached cabinet memoranda). An additional grant was also received from the Government to

cover part of the costs of the community awareness survey, which had not originally been budgeted for.

Private funding sources were also solicited for support through the Friends of the Bermuda Aquarium, and grants were received from; the Bay Foundation in the USA for work on the Bermuda Biodiversity Country Study; the Ernest E. Stempel Foundation, which has provided funding to employ undergraduate and graduate interns to the Bermuda Biodiversity Project over the last few years; and the Kenridge Fund in the USA.

Aside from direct funds, once the project was up and running, and the community recognised the significance of the initiative, buy-in and in-kind support became a key component in the success of this initiative as has been highlighted throughout this report. It is also important to emphasise that the BSAP itself establishes the framework for ongoing leverage both from the Government, the community and private partners. In accepting a lead role, each lead agency in the Plan is committing to working to secure the support necessary to meet its assigned outputs.

12. Sustainability and Legacy:

It is inherent in the very nature of the development of the Bermuda BSAP that its legacy will endure. The Plan has been developed as a ‘living’ document with the intention that as progress is made, activities are undertaken and goals are met, it be reviewed and updated accordingly. Whilst written as a five-year plan initially, the framework that has been established through the action planning process should form the basis of conservation action planning well into the future.

The output of this project, the development of the Bermuda BSAP, has been widely adopted and the Plan itself, disseminated. In addition to the buy-in from all the key stakeholders involved in the actual planning process itself (over 100 people), 10,000 copies of the summary document of the Plan have been produced and are being circulated in public offices. With the establishment of the new Department of Conservation Services within the Ministry of the Environment, the legacy of this project has been further assured, as the BSAP has become the mandate of the department, with the full blessing of the Ministry. In restructuring the Ministry and establishing the new Department of Conservation Services, the Bermuda Government was responding to several concerns, including the need for more public education and outreach, the adoption of appropriate conservation strategies, and the establishment of stronger partnerships with the local NGO’s all of which are adopting an increasingly active role in conservation. The development of the BSAP addresses all of these issues, and the department has agreed to be a lead agency in most of the specific activities addressing these matters. The Director of the new department was a key player in the BSAP planning process, serving on the management team, and is committed to ensuring it is fully supported by the Ministry.

Moreover, the Bermuda Government’s commitment to this process was further realised with the signing of the UKOT Environment Charter in 2001. Under the first commitment, the Government agreed to; “bring together government departments, representatives of local industry and commerce, environmental champions and other community representatives in a forum to formulate a detailed strategy for action”. In addition, collaborative efforts with the UK Foreign and Commonwealth Office to ensure that the Convention on Biological Diversity is extended to Bermuda in its own right are further evidence of the local commitment to ensure that the legacy already established through the current project, is long-lasting (see Appendix VI and VII for Cabinet papers/memoranda and press releases of the Throne Speech).

With the strength of this local commitment, as long as the future management of the project is sound, the project should endure, and it is hard to see at this point how this legacy could have been significantly improved. Logistical issues dictated the number of local stakeholders that could be directly involved in the planning workshops, and inevitably, some individuals felt excluded. However, again, the framework of the BSAP should provide for the pursuit of other avenues of engagement as this plan is taken forward.

In terms of the fate of project staff and resources, the local project leader will be fully employed under the BBP, fulfilling the commitment of this project to the BSAP objectives. A BSAP Coordinator is to be hired through the BBP until the next financial year, at which point the Ministry is working to ensure that this role becomes an established position under the Department of Conservation Services. The current project leader will be on site to assist with the transfer of responsibilities, although fully employed under the Bermuda Biodiversity Project, fulfilling the commitment of this project to the BSAP objectives. All other local project staff who assisted with the development of the BSAP are, with one exception, government employees; the exception is an employee of the BBP and will revert to her responsibilities under that project. The team spirit and respect that was fostered amongst the Bermudian students engaged at various stages of the project should also bode well for its future, as these young people become tomorrow's decision makers.

The UK experts who partnered on this project created such a positive impression locally, that every effort will be made to ensure that future collaborative ventures are promoted. It is likely that both Dr. Abigail Entwistle from FFI and Dr. Colin Clubbe from Kew, will be invited back to Bermuda to assist in implementation of the BSAP.

Other than staff, resources committed to this project were mainly to support overheads, to host planning workshops or to facilitate travel. The only other major expenses were the community awareness survey, the publication of the Summary of the Bermuda Biodiversity Strategy and Action Plan and the Bermuda Biodiversity Country Study. It is worth noting that although the latter serves largely as a record of the status of our biodiversity at just one point in time, it too will serve as an important baseline against which to measure future progress. This also applies to the community awareness survey, which is a benchmark of current public awareness of biodiversity issues, and may be repeated in the future to determine trends.

Full implementation of the BSAP will require additional funds, and recognition of this was addressed in the Plan itself, with one objective focussed specifically on "securing from both public and private sources, the financial commitment and other investment necessary for full implementation of the BSAP." The Ministry of the Environment has already made a commitment to address the financing of a BSAP coordinator. Additionally, they recently announced an annual grant to support community-driven environmental projects, with two cycles of grants being awarded each year. 5 projects received support from the first application round. One member of the BSAP steering committee has also been trying to encourage support from the private sector, through the establishment of an annual "survival" competition, whilst one of the major local banks has approached the local project leader wishing to discuss ways in which the bank can support sliding-scale loans for "biodiversity-friendly" projects. They have also pledged their support in trying to establish a biodiversity endowment fund. Notably, the BZS has already made a commitment to establish its own conservation endowment fund to support ongoing research and conservation initiatives. Whilst the overall BSAP is ambitious both in terms of time-frame and cost, the BSAP has generated an unprecedented spirit of cooperation amongst key stakeholders and the capacity of local partners to generate funds is well established. It should be noted that their

success is largely based on the state of the markets and the general appetite of the giving community. That said, Bermuda's private sector is heavily conditioned to investing in the community, so raising the funds necessary for full implementation, is considered an achievable goal.

13. Value for Money

Without doubt, this project has, overall demonstrated tremendous value for money. The three-year investment has not only established the framework, and more detailed specifics necessary to guide biodiversity conservation in Bermuda into the foreseeable future, but most significantly it has secured the buy-in of the Bermuda Government and both focused, and magnified the resources committed to conservation locally. Inherent in the development of the Plan itself, is the desire to ensure that future conservation efforts are coordinated in such a fashion as to avoid duplication of efforts and wasted resources, so the long-term costs benefits also bear mention. Specific areas in which the project proved cost effective are highlighted below.

During the course of the project, many benefits were realised through "in kind" support, including office space, electricity and telephone bills, stationery supplies, access to computers and the internet, availability of meeting rooms and an auditorium. With many institutions nowadays assigning up to 50% of grant money for overheads, this represented a significant saving.

Coupled with this 'in kind' support for overheads, was the amount of voluntary time donated by the members of the steering committee, working groups, and management team. This represented hundreds of hours of donated time, but also ensured that by having such broad input, wide community 'buy-in' for the project was secured, with a well-rounded, objective approach to biodiversity conservation, with objectives and activities being developed that were relevant, practical and ultimately achievable.

The ability to engage young local and overseas graduates and undergraduates in various aspects of the project through the BBP intern programme, was another area in which costs were kept down, whilst at the same time providing training opportunities, for what we hope will be Bermuda's future conservationists. This had, at the same time the added bonus of securing their buy-in to the Plan, thereby further strengthening the legacy of the initiative. Their input was particularly valuable in gathering baseline data in preparation for the production of the Bermuda Biodiversity Country Study, but they also assisted in the preparation and follow-up of the various planning workshops.

As already stated, one of the key strengths of this project, were the mechanisms that already existed for community outreach and publicity. The fact that the BZS has a membership comprising over 15% of the population, coupled with the membership outreach mechanisms of all the other local NGO's, including well-established newsletter circulations, ensured that the project could be widely promoted with little additional cost. The willingness of the local print, radio and T.V. media, to provide regular updates of the project for wider public circulation, also ensured that from a promotional viewpoint, this project was extremely cost-effective. This applied also, to the various professional associations of BAMZ/BZS/FOBA, which enabled the publication of promotional articles in both the UK and UKOT's (through the UKOT Conservation Forum) and the US, through the American Zoo and Aquarium Association.

There were various reports produced specifically for this project, which were more costly than originally budgeted. Most notable amongst these was the publication of the Bermuda Biodiversity Country Study. The decision to produce a high quality, full-colour glossy report at much greater expense, was fortunately rewarded with the very positive reception with which it was received. The resulting document was, and still is widely sought after, particularly amongst the local schools, but also by senior Government officials, and the Premier of Bermuda and her Cabinet, serving as a widely quoted reference document. The Summary of the Bermuda Biodiversity Action Plan, whilst also designed to be colourful and reader-friendly, was in contrast produced at a fraction of the cost. Having project staff undertake the design and layout 'in house' reduced costs. These documents are currently being converted to pdf format so that they can be made available on the BSAP website. As most people in Bermuda have access to the internet, this will prove a much more cost-effective means of making this material widely available.

Perhaps the only significant component of the project, which failed to deliver value for money, was the development of a formal publicity campaign. At the outset, the steering committee had recognised the need for ensuring wide community buy-in, and it was agreed that a formal survey be conducted to assess the current level of awareness amongst the community, on which a subsequent campaign could be built. Whilst the survey undoubtedly proved valuable, particularly in highlighting the media vehicles most widely accepted by the public, the cost of the survey was high and could probably have been undertaken through BAMZ/BZS/FOBA utilizing volunteer surveyors. Even more expensive, was the print, radio and T.V. campaign that was developed as a result of the survey. It was generally felt, that although this reached a wide audience, its impact did not merit the expense.

Finally, one of the pivotal factors contributing to the success of this initiative was the input from the various UK experts, most notably from FFI and the Royal Botanic Gardens, Kew. Whilst travel to, and accommodation in Bermuda was expensive, the experience and tried and tested planning models brought to the process by these personnel, ensured that valuable time, and money was not wasted on developing the planning process. In turn, the experience garnered in Bermuda by these UK-based partners has already been applied to subsequent strategic planning activities in other jurisdictions. Additionally, all the UK experts left such a lasting impression with local stakeholders that it is certain that they will be asked to assist in future initiatives, promoting an ongoing spirit of collaboration between the UK and Bermuda.

Author/Date: Anne F. Glasspool /3rd July 2003

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

Please complete the table below to show the extent of project contribution to the different measures for biodiversity conservation defined in the CBD Articles. This will enable us to tie Darwin projects more directly into CBD areas and to see if the underlying objective of the Darwin Initiative has been met. We have focused on CBD Articles that are most relevant to biodiversity conservation initiatives by small projects in developing countries. However, certain Articles have been omitted where they apply across the board. Where there is overlap between measures described by two different Articles, allocate the % to the most appropriate one.

Project Contribution to Articles under the Convention on Biological Diversity		
Article No./Title	Project	Article Description
6. General Measures for Conservation & Sustainable Use	100%	Develop national strategies which integrate conservation and sustainable use.
7. Identification and Monitoring	addressed in the BSAP	Identify and monitor components of biological diversity particularly those requiring urgent conservation; identify processes and activities which have adverse effects; maintain and organise relevant data.
8. In-situ Conservation	addressed in the BSAP	Establish systems of protected areas with guidelines for selection and management; regulate biological resources, promote protection of habitats; manage areas adjacent to protected areas; restore degraded ecosystems and recovery of threatened species; control risks associated with organisms modified by biotechnology; control spread of alien species; ensure compatibility between sustainable use of resources and their conservation; protect traditional lifestyles and knowledge on biological resources.
9. Ex-situ Conservation	addressed in the BSAP	Adopt ex-situ measures to conserve and research components of biological diversity, preferably in country of origin; facilitate recovery of threatened species; regulate and manage collection of biological resources.
10. Sustainable Use of Components of Biological Diversity	addressed in the BSAP	Integrate conservation and sustainable use in national decisions; protect sustainable customary uses; support local populations to implement remedial action encourage co-operation between governments and the private sector.
11. Incentive Measures	addressed in the BSAP	Establish economically and socially sound incentives to conserve and promote sustainable use of biological diversity.

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

15. Appendix II Outputs

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

code	Total to date reduce box	Detail (expand box)
Training Outputs		
1a	Number of people to submit PhD thesis	
1b	Number of PhD qualifications obtained	
2	Number of Masters qualifications obtained	
3	Number of other qualifications obtained	
4a	Number of undergraduate students receiving training	2 overseas undergraduates undertook field projects under the local project leaders supervision as part of their degree requirements.
4b	Number of training weeks provided to undergraduate students	12
4c	Number of postgraduate students receiving training (not 1-3 above)	1 Ph.D. candidate was recruited to assist the local leaders in the species and habitat action planning to tie in with her thesis work.
4d	Number of training weeks for postgraduate students	4 weeks
5	Number of people receiving other forms of long-term (>1yr) training not leading to formal qualification(i.e. not categories 1-4 above)	1 Bermudian received on the job GIS training.
6a	Number of people receiving other forms of short-term education/training (i.e. not categories 1-5 above)	25 in total as follows: 15 Bermudian and 9 overseas undergraduates or graduates were employed through the BBP internship programme to assist with data collection, GIS mapping, and workshop facilitation and reporting
6b	Number of training weeks not leading to formal qualification	207 weeks
7	Number of types of training materials produced for use by host country(s)	Biodiversity Strategic Planning workshop materials produced
Research Outputs		
8	Number of weeks spent by UK project staff on project work in host country(s)	8 weeks in total as follows: Dr. Abigail Entwistle (FFI): 1 week in 2000, for an initial planning visit; Dr. Abigail Entwistle and Nigel Coulson (FFI): 1 week each in March 2002 and June 2002 facilitating workshops; Dr. Abigail Entwistle (FFI): 1 week in May 2002 conducting review workshop; Dr. Colin Clubbe (Kew) and Karen Varnham: one week each facilitating invasive species workshop, March 2003.
9	Number of species/habitat management plans (or action plans) produced for Governments, public authorities or other implementing agencies in the host country (s)	1 BSAP; 14 Species/habitat plans drafted (NB. These are not full management plans)

10	Number of formal documents produced to assist work related to species identification, classification and recording.	
11a	Number of papers published or accepted for publication in peer reviewed journals	
11b	Number of papers published or accepted for publication elsewhere	3 papers presented at conferences and published in proceedings as follows: 1) "Linking the Fragments of Paradise", UKOT Conference, Gibraltar, 2000. 2) Zoos Committing to Conservation, Melbourne, Florida, 2001. 3) " A Sense of Direction", UKOT Conservation conference, Bermuda, 2003. Bermuda Biodiversity Country Study published 2001.
12a	Number of computer-based databases established (containing species/generic information) and handed over to host country	
12b	Number of computer-based databases enhanced (containing species/genetic information) and handed over to host country	3 databases enhanced as follows: 1) the Bermuda Species database; 2) the Bermuda Natural History Bibliography; 3) the Bermuda Terrestrial Habitat mapping database.
13a	Number of species reference collections established and handed over to host country(s)	
13b	Number of species reference collections enhanced and handed over to host country(s)	1; Specimens collected during field visits by students were accessioned into the Natural History Museum collection.
Dissemination Outputs		
14a	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin project work	5 workshops organised; 1) Strategic planning workshop to establish priority issues and develop aim, guiding principles and objectives 2) Action Planning workshop 3) Workshop to review draft BSAP 4) Species and habitat action planning workshop 5) Invasive species workshops 1 religious sermon delivered in Anglican Cathedral on biodiversity conservation and BSAP
14b	Number of conferences/seminars/ workshops attended at which findings from Darwin project work will be presented/ disseminated.	5 conferences/seminars as follows: 1) "Linking the Fragments of Paradise", UKOT Conference, Gibraltar, 2000. 2) "What price Bermuda?" Environment Conference, Bermuda 2001 3) Zoos Committing to Conservation, Melbourne, Florida, 2001. 4) Environment Conference, Bermuda, 2002. 5) " A Sense of Direction", UKOT

		Conservation conference, Bermuda, 2003 Over 30 oral presentations were made to local community groups, Rotary and Lion clubs schools etc. on the findings of the Country Study and BSAP framework.
15a	Number of national press releases or publicity articles host country(s)	20 press releases in the 3 national newspapers
15b	Number of local press releases or publicity articles in host country(s)	10 articles written for locally circulated magazines and newsletters; 1 article written for newsletter circulated in USA.
Dissemination Outputs		
15c	Number of national press releases or publicity articles in UK	
15d	Number of local press releases or publicity articles in UK	2 articles written for UK newsletters – Conservation Forum and FFI.
16a	Number of issues of newsletters produced in the host country(s)	
16b	Estimated circulation of each newsletter in the host country(s)	
16c	Estimated circulation of each newsletter in the UK	
17a	Number of dissemination networks established	1 web page currently being constructed www.biodiversityactionplan.bm with list server for key stakeholders/BSAP lead agencies
17b	Number of dissemination networks enhanced or extended	
18a	Number of national TV programmes/features in host country(s)	3 televised ministerial press statements for release of Biodiversity Country Study, and launch of BSAP.
18b	Number of national TV programme/features in the UK	
18c	Number of local TV programme/features in host country	
18d	Number of local TV programme features in the UK	
19a	Number of national radio interviews/features in host country(s)	6 radio interviews as follows; 1) 2) 2, half hour interviews on biodiversity 3) News interview with Nigel Coulson re. Action Planning Workshop 4) Release of Country Study 5) Launch of BSAP 6) Invasive species workshop
19b	Number of national radio interviews/features in the UK	
19c	Number of local radio interviews/features in host country (5)	
19d	Number of local radio interviews/features in the UK	
Physical Outputs		
20	Estimated value (es) of physical assets handed over to host country(s)	
21	Number of permanent educational/training/research facilities or organisation established	
22	Number of permanent field plots established	
23	Value of additional resources raised for project	

16. Appendix III: Publications

Type	Detail	Publishers	Available from	Cost
Report	Anderson, A., H. De Silva, J. Furbert, A. Glasspool, L. Rodrigues, W. Sterrer, and J. Ward. 2001. Bermuda Biodiversity Country Study. 103 pp.	Bermuda Zoological Society	Bermuda Zoological Society, P.O. Box FL 145, Flatts, FL BX Bermuda or www.biodiversityactionplan.bm	£15 limited supply
Report	Glasspool, A. 2003. A Summary of the Bermuda Biodiversity Strategy and Action Plan. 28 pp.	Bermuda Biodiversity Project	Bermuda Biodiversity Project, P.O. Box FL 145, Flatts, FL BX Bermuda or www.biodiversityactionplan.bm	None
Report	The Bermuda Biodiversity Strategy and Action Plan Working Document. 2002	Bermuda Biodiversity Project	Bermuda Biodiversity Project, P.O. Box FL 145, Flatts, FL BX Bermuda or www.biodiversityactionplan.bm	None
Report	Research Innovations Limited. 2001. Community Awareness and Knowledge Levels of Environmental/Biodiversity Issues: A Sample Survey. 66 pp.	Research Innovations Limited	Bermuda Biodiversity Project, P.O. Box FL 145, Flatts, FL BX Bermuda or www.biodiversityactionplan.bm	None
Report	Summary of the Invasive Species Workshop. Bermuda 2003.	Bermuda Biodiversity Project	Bermuda Biodiversity Project, P.O. Box FL 145, Flatts, FL BX Bermuda or www.biodiversityactionplan.bm	None
Conference Paper	Glasspool, A.F., W. Sterrer, J. Ward, H. De Silva and J. Furbert. 2000. Biodiversity Recording and Planning <i>Linking the Fragments of Paradise, UKOT Conservation Conference, Gibraltar 2000.</i>	Conservation Forum	www.ukotcf.org	None
Conference Paper	Glasspool, A.F., J. Ward, W. Sterrer, H. De Silva and J. Furbert. 2001. Conservation in Bermuda – Motivating a Community. Zoos and Aquariums Committing to Conservation, Florida.	Brevard Zoo	Brevard Zoo, 8225 N. Wickham Rd. Melbourne, FL 32940-7924, U.S.A.	None
Conference Paper	De Silva, H., J. Furbert, A. Glasspool, L. Rodrigues, W. Sterrer and J. Ward 2001. Strategies for Protecting Bermuda's Biodiversity Into the Future. <i>Environment Conference: What Price Paradise?</i> Bermuda, 2001	Bermuda Biodiversity Project	Bermuda Biodiversity Project, P.O. Box FL 145, Flatts, FL BX Bermuda	None
Conference Paper	Glasspool, A.F., J.A. Ward, H. De Silva, W. Sterrer, J. Furbert. 2003. Bermuda Biodiversity Strategy and Action Plan – a Recipe for Success. <i>A Sense of Direction, UKOT Conservation Conference, Bermuda 2003.</i>	Conservation Forum	www.ukotcf.org	None

Article	Glasspool, A. 2000. Biodiversity Strategy and Action Plan (BSAP): An Agenda for Conservation Action in Bermuda. <i>Critter Talk</i> . 23 , (3), 7	Bermuda Zoological Society	Bermuda Zoological Society, P.O. Box FL 145, Flatts, FL BX Bermuda	None
Article	Glasspool, A. 2001. a Biodiversity Strategy and Action Plan for Bermuda.....getting the ball rolling	Department of Agriculture and Fisheries	Ministry of the Environment, P.O. Box HM 834, HM CX, Bermuda	None
Article	Glasspool, A. 2001. Biodiversity Strategy and Action Plan (BSAP): Update. <i>Critter Talk</i> . 24 , (2), 15	Bermuda Zoological Society	Bermuda Zoological Society, P.O. Box FL 145, Flatts, FL BX Bermuda	None
Article	Glasspool, A. 2001. Biodiversity Strategy and Action Plan – A Community Approach to Conservation Planning. <i>Bermuda Audubon Society Newsletter</i> . 12 , (3),	Bermuda Audubon Society	Bermuda Audubon Society, P.O. Box HM 1328, Hamilton HM FX, Bermuda	None
Article	Glasspool, A. 2001. Biodiversity Conservation. <i>Newsletter</i> . 2001.	Keep Bermuda Beautiful	www.kbb.bm	None
Article	Glasspool, A.F. 2002. Partnerships and Information Management: Keys To Biodiversity Conservation. <i>Communique</i> January 2002, 33-34	American Zoological and Aquarium Association	8403 Colesville Road, Suite 710, Silver Spring, MD 20910, U.S.A.	None
Article	Glasspool, A. 2002. A Biodiversity Strategy and Action Plan for Bermuda....from classrooms to pulpits. <i>Forum News</i> 21 , 8.	UK Overseas Territories Conservation Forum	15 Insall Road, Chipping Norton, OX7 5LF UK	None
Article	De Silva, H. 2002. Lenten Thoughts: The connection between Christianity and the Environment. <i>Bermuda Diocesan News</i> . February 2002. 19-20	The Anglican Church of Bermuda	W.S.Zuill, (Editor). P.O. Box FL 255, Smith's, FL BX, Bermuda	None
Article	Glasspool, A.F. 2002. What the 'BSAP' Means for Bermuda. <i>Conservation It Takes an Island</i> . Annual Report BAMZ/BZS/FOBA. 36.	Bermuda Zoological Society	Bermuda Zoological Society, P.O. Box FL 145, Flatts, FL BX Bermuda	None
Sermon	De Silva, H. 2001. Talk for Conservation Sunday. Anglican Cathedral.	Bermuda Biodiversity Project	Bermuda Biodiversity Project, P.O. Box FL 145, Flatts, FL BX Bermuda or www.biodiversityactionplan.bm	None

17. Appendix IV: Darwin Contacts

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

Project Title	Development of a Biodiversity Strategy and Action Plan for Bermuda
Ref. No.	
Leader Details	
Name	Anne Glasspool Ph.D.
Role within Darwin Project	Project Leader
Address	Bermuda Zoological Society, P.O. Box FL 145, Flatts FL BX Bermuda
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UK Partner 1	
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UK Partner 2	
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Bermuda Partner I	
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18. Appendix V: Logical Framework

<i>Objective/Activity</i>	<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>	<i>Outputs</i>	<i>Quantity</i>
1. Synthesise existing information relating to biodiversity and contextual factors; develop a series of prioritised species/habitat profiles clarifying their current status					
a). Recruit local specialists and brief them on the process	X			8	1
b) Information gathering including collation of biodiversity data, contextual and institutional reviews literature and Museum collections and analysis of habitat mapping data to extract biodiversity information	X	X		4A 4D	8 Bermudian 16
c) Assess the real, and perceived value of Bermuda's biodiversity at the community level through information gathering process	X			17B	4
d) Organise strategic planning workshop with stakeholders to review information and establish priority issues	X			8	1
e) Input data into Biodiversity database and map species distributions on Government GIS	X			12B	2
f) Produce "Biodiversity Country Study" (incorporated as a chapter in planned State of the Environment report) and disseminate	X	X		10	500
2. Establish measurable conservation targets and actions for prioritised species/habitats through stakeholder consensus					
a) Organise planning workshop with key stakeholders to establish consensus on prioritised conservation targets		X		14A 6A 8	1 100 1
b) Establish working groups to identify specific details		X			
c) Conduct training workshops provide specific implementation skills (e.g. habitat restoration, invasive species)		X		6A 6B 8	15 1 1
3. Develop series of prioritised practical options for achieving these targets, identify appropriate delivery mechanisms, and produce and distribute the BSAP to the community					
a) Organise action planning workshop with key stakeholder to review options for actions		X		14A 6A 8	1 100 1
b) Establish working groups to identify specific details		X			
c) Produce draft strategy action plan, followed by final review workshop			X	14A	1
d) Edit, produce and distribute hard copies of BSAP and release electronic copy			X	9	500
e) Bermuda team to produce evaluation report of effectiveness of the consensus building process and develop plan to monitor effectiveness of the BSAP implementation			X X	9 11	100 2
4. Build the capacity for implementation of the plan by forging partnerships utilising existing community resources					
a) Establish a working group to assess areas of interest and levels of commitment within stakeholder groups and forge partnerships		X			
b) Report to the steering committee so that resources can be effectively allocated in the practical options being identified		X			
5. Raise community awareness on the issues threatening local and global biodiversity					
a) Hold series of workshops with stakeholders	X	X		6A 14A	100 3
b) Publicise the project through local print media	X	X	X	15A 15C	9 3
c) Conduct radio and T.V. interviews and make presentations on local shows	X	X	X	19A 18A	3 6
d) Produce regular updates in local newsletters (BZS, Audubon, National Trust, Agriculture and Fisheries, Bermuda Electric Light Company) and in the U.K. (FFI)	X	X	X	16A 16B 16C	6 >40,000 +web 5,000
e) Establish classes at BAMZ for primary and secondary		X	X	7	3

schools to consider the options facing Bermuda; develop interpretative material for exhibit; and produce information leaflet				10	2
6. Provide British expertise to Bermuda to develop skills in the process of consensus building and biodiversity strategy action planning, and in promoting the effective management of threatening invasive species					
a) Ensure maximal sharing of skills in biodiversity planning by close co-operation at all stages between Bermudian staff and UK collaborators, both through workshop facilitation and side-by-side working within a team environment.	X	X	X	8 6A 6B	4 15 4