



## ***Darwin Initiative for the Survival of Species***

### ***Annual Report***

***Marine biodiversity assessment and development in Perlas Archipelago, Panama***

***162/12/021***

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### **1. Darwin Project Information**

Project Ref. Number	162/12/021
Project Title	<i>Marine biodiversity assessment and development in Perlas Archipelago, Panama</i>
Country(ies)	<i>Panama</i>
UK Contractor	<i>Heriot-Watt University (HWU), Edinburgh</i>
Partner Organisation(s)	<i>Smithsonian Tropical Research Institute (STRI), Panama</i>
Darwin Grant Value	<i>£168,116</i>
Start/End dates	<i>April 2003 – March 2006</i>
Reporting period	<i>1 April 2003 to 31 March 2004 - Annual Report Number 1</i>
Project website	<i>Due to be developed in Year 2 of the project</i>
Author(s), date	<i>James Mair (HWU); Hector Guzman (STRI)</i>

### **2. Project Background**

- Several years ago discussions took place between Dr James Mair (HWU) and Dr Hector Guzman (STRI, Panama) following the establishment of collaborative supervision of a HWU MSc student. Dr Guzman has much experience both in marine biodiversity research and development work in national parks in Panama. He also works closely with personnel in the Panamanian government's Environmental Authority (ANAM – Autoridad Nacional del Ambiente) and was able to identify the need for work in Las Perlas Archipelago. In 1972, a study carried out by the United Nations' FAO concluded that Las Perlas should be included in the protected area system of Panama because of its importance in the production of food. Later on, the National Plan for Protected Areas and Biological Corridors proposed the protection of Las Perlas through a legal basis, under the designation "Las Perlas National Park". However, due to the paucity of studies in the archipelago some basic information is lacking and the park still has not yet been designated. The regulation of the economic activities combined with the protection of the natural resources of the Archipelago is today seen as a priority for the Republic of Panama. The Darwin project (162/12/021) aims to provide good background studies to address this problem of inadequate data and, through its work, enable the establishment of a marine National Park in the Las Perlas area.

### **3. Project Purpose and Outputs**

A copy of the project's original/current Logical Framework is included in the Annex to this report. The main purpose of this project is to build up research and habitat information about the marine and coastal environment of Las Perlas Archipelago, located in the Gulf of Panama, to properly enable it (or an appropriate area of it) to be designated by Panamanian authorities as a National Park. This is to be achieved by:

1. Establishing a research group dedicated to the survey and assessment of the area's littoral and sub-littoral habitats and identifying the potential threats from land and marine based activities.
2. Providing advanced training for three Panamanian Darwin Fellows so that each can specialise in different aspects of the study. These three will form the core of this research group,

during the Darwin Initiative project lifetime and afterwards, and they would subsequently be able to contribute to monitoring and advice on park management.

3. Increasing awareness (through, a. - school and community educational information material, and b. - scientific publications and conferences) to promote the designation of the Park so that the Archipelago's important marine natural and commercial resources can be protected and sustainably managed.

4. Establishing an active Darwin project network for the exchange of information and experiences relevant to the project.

Progress and planned activities in Year 1 have all been achieved and are well on schedule according to the original Project Implementation Timetable.

The main outputs and proposed operational plan have not needed to be modified over the last year.

#### **4. Progress**

Memorandum of Understanding agreed and signed by Smithsonian Tropical Research Institute, Panama and Heriot-Watt University, Edinburgh. Darwin Fellow No. 1 (Ms Beatriz Medina) selected and appointed (although she only started in August 2003 because of slight delays in getting all project contract work signed and approved and setting up system for transfer of money from UK to Panama). Two UK personnel, UK project Leader (James Mair) and Sarah Benfield (PhD student), travelled to Panama and took part in 10-day research cruise on STRI vessel as planned in August 2003. Samples and information collected have started to be worked up and processed. Background information on Las Perlas Archipelago continuing to be being entered onto GIS. Contact with potential network partners established with a view to formalising network. Initial satellite imagery has been bought and is being processed both in Edinburgh and Panama. Darwin Fellow 1 travelled to Edinburgh in late September 2003 to register and start on MSc course. She has successfully completed the taught component of the course and returns to Panama on 30 April 2004 to work on the Darwin project and to submit her MSc dissertation report (due in September 2004).

Progress has been all on schedule. There have been no major differences or slippages compared to the original plan. Minor slippage occurred at the beginning of the project due to delays in project approval and contract signing and therefore the setting up of the Memorandum of Understanding between the partners (HWU/STRI) and in the appointment of the first Darwin Fellow. Savings made in the non-payment, for 4 months, of the Darwin Fellow 1 stipend (she, Beatriz Medina, started officially on the project in August 2003 – not April 2003) were transferred to enable the proposed Year 2 Darwin Fellow (Mr Jose Miguel Guevarra) appointment to be made early – i.e. 4-months employment prior to the originally planned official start on 01 April 2004.

Major initial project survey work was successfully carried out in the planned August 2003 research cruise to Las Perlas involving UK and Panamanian personnel. Subsequently, Dr Guzman was able to make another 7 day research field trip in November/December 2003 to complete coverage of the survey area. Remote grab sampling of the sedimentary and deeper areas around Las Perlas was carried out at over 120 stations in a grid covering the Archipelago. It had initially been assumed that this would need to be done over two years but progress was very quick in the August survey and the remaining sampling was completed during the November survey. There is now a comprehensive baseline of benthic samples from one season that will, once fully worked-up, give a good description of the benthic biodiversity of the various marine communities around the islands. Dr Guzman's rapid assessment of the shallower-water, coastal habitats was also completed to provide comprehensive broadscale mapping of the area and to enable appropriate "hot-spot" areas to be identified for future detailed survey. Training of the Darwin Fellows has progressed well with Darwin Fellow 1 having successfully completed the taught component part (UK) of the MSc course. Darwin Fellow 2 was able to be integrated early into the project and has been offered a place on the 2004/2005 MSc course. Darwin Fellow 3 (originally planned to be appointed for Year 3 of the project – April 2005 onwards) has already been identified and is involved voluntarily on aspects of the project and has also applied for EU Alban funding to enable her to take the MSc course a

year early. Planning for the project is developing well and is constantly being discussed between the project collaborators (see Section 12).

No significant difficulties have been encountered.

The design of the project has not been actively enhanced during Year 1 but positive developments (see Section 12) that are evolving will enable the design of the project to be adjusted accordingly to take full advantage of all opportunities.

April 2004 - Darwin Fellow 1, after completing taught component of MSc course and additional training, returns to Panama to work on Darwin project results and towards completing the MSc dissertation. May 2004 – Project PhD student (Sarah Benfield) and two other MSc students go on field survey trip to Las Perlas (additional to original plan). August 2004 - Two UK staff and PhD student travel to Panama to provide training courses to Darwin Fellows and other personnel on applications of remote sensing, GIS, taxonomy and curatorial techniques and to participate in 9-day survey of study area with STRI personnel and Darwin Fellows. September 2004 - Darwin Fellow 2 travels to Edinburgh to start MSc course in October. Design of educational leaflets starts. Work-up, analysis and reporting of survey findings continues. Further small scale field surveys take place. Darwin Fellow 1 graduates with MSc degree (November 2004 ceremony).

## **5. Actions taken in response to previous reviews (if applicable)**

- First year of this project – so not applicable.

## **6. Partnerships**

- Collaboration has been excellent and a very good working relationship has developed enabling further ideas to be developed (e.g. additional Darwin project-related work to be carried out by visiting HWU MSc students as part of their research dissertations).
- Collaboration with similar projects is one of the planned outputs (“Information and Experience Exchange” network of Darwin workers to be established). For further details on this, please see Section 12.

## **7. Impact and Sustainability**

- Dr Guzman is ensuring that the profile of the Darwin project is kept high both within STRI itself and with relevant groups and agencies within Panama. He and Dr Mair have also produced progress updates for the British Embassy in Panama for them to use accordingly. To promote the aims of the project, and to indicate that work had started, an article (see first attached .pdf file) was published in August 2003 in the STRI Newsletter. This newsletter has a wide distribution/readership amongst the scientific and conservation community. Mainly through the efforts of Dr Guzman, the work of the project is being promoted through the local fishing communities, the agencies and other private bodies involved in environmental legislation, and the new Sustainable Tourism Plan for Las Perlas (see the second attached .pdf file). This activity is essential in order to achieve the desired and planned exit strategy for the Darwin project in Year 3.

## **8. Post-Project Follow up Activities**

- First year of this project – so not applicable.

## **9. Outputs, Outcomes and Dissemination**

- All outputs for Year 1 were fully achieved (see Table 1 below).

- Dissemination activities in Year 1 of the project have been described in Section 7. Relevant dissemination activities will continue throughout, and after, the Darwin project since STRI is the local institution that will maintain these activities as part of its remit in Panama.

**Table 1. Project Outputs (According to Standard Output Measures)**

Code No.	Quantity	Description
2	1	Darwin Fellow No. 1 is now successfully 50% through the MSc course
8	2 x 3-weeks	UK project leader and Ms Sarah Benfield spent 3 weeks each in Panama in August 2003 as planned
17	1	Initial networking has begun (see Section 12)
23	1	Extra funding in the form of "in-kind" contributions have been achieved by Dr Guzman for extra resources from within STRI for additional Las Perlas field-work and he is currently in discussions with a company of environmental lawyers for "in-kind" contributions towards assistance in drafting plans for Park designation
15/16	1	Text provided to British Embassy, Panama for press release and newsletter article in STRI August 2003 Newsletter

- At this early stage of the project, no publicly accessible publications are yet available but work is beginning on the drafting of some initial scientific manuscripts for publication. One MSc dissertation (of work carried out between May and September 2003) on some initial studies of the Las Perlas marine environment has been produced and is available through Heriot-Watt University library (this is the only publication listed so far in Table 2 below).

**Table 2: Publications**

Type * (e.g. journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (e.g. contact address, website)	Cost £
MSc Dissertation	An assessment of the Pearl Islands Archipelago, Pacific Panama, G. McNiven, 2003	Heriot-Watt University, Edinburgh	Heriot-Watt University Library www.hw.ac.uk	Through Inter-Library Loans process



He is now based in Edinburgh for 11 months and, as part of his scholarship work, is helping on the GIS and remote sensing aspects of the Darwin Panama project. Near the end of his Scholarship he is due to spend some weeks in Panama at STRI on experience and information exchange. Since his home Institution (Coralina, San Andres archipelago, Colombia) is the main agency dealing with conservation and sustainable development in the islands, he has much valuable experience that can be shared with the Darwin project working on the process towards designation of a Marine Park in Las Perlas. San Andres Islands were recently (2000) designated a Biosphere Reserve. A former Darwin Fellow (Ms Maria Fernanda Arroyo) on another project (162/06/029) in Ecuador has agreed to visit Panama regularly and will be able to impart her marine invertebrate identification expertise to the work of the Las Perlas project. Provisional links with CDRS and PNG in the Galapagos archipelago had been established with a view to integration into this Darwin Network. A former Ecuadorian biologist from CDRS (Ms Monica Calvopina) completed the Heriot-Watt University MSc course in 2003 and now has a position with WWF based in Galapagos. This will greatly assist the co-ordination and furthering of a successful Network build-up to include these organisations in Ecuador.

Dr Hector Guzman, the STRI host co-ordinator of the Las Perlas project has made full use of his local contacts and has been successful in starting discussions with local stakeholders in Las Perlas – the primary and secondary education sector, local fisheries associations, tourism agencies and local landowners as well as obtaining support from environmental lawyers in drafting plans to help establish the legal framework for the setting up of a marine National Park in Las Perlas. This activity, of full integration of the local stakeholders into the process, is vital for the successful outcome of the project plan.

Annex 1 Report of progress and achievements against Logical Framework for Financial Year: 2003/2004

Project summary	Measurable Indicators	Progress and Achievements April 2003-Mar 2004	Actions required/planned for next period
<p><b>Goal:</b> To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but poor in resources to achieve</p> <ul style="list-style-type: none"> <li>• The conservation of biological diversity,</li> <li>• The sustainable use of its components, and</li> <li>• The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources</li> </ul>			
<p><b>Purpose:</b> <i>To build up research expertise in a team dedicated to obtaining habitat information and to producing management plans for the marine and coastal environment of Las Perlas in the Gulf of Panama in order to enable the designation of a Marine National Park within the Archipelago's boundaries</i></p>	<p><i>Information obtained during surveying and research from project used in formulation of action plans for protected area management during discussions with ANAM (Panamanian National Environmental Authority)</i></p>	<p><i>Year 1 – too early at this stage of the project to report major impacts</i></p>	<p><i>Project outline continues as originally envisaged but planning to build on success and opportunities as they arise</i></p>
<p><b>Outputs:</b></p>			
<p><i>3 Panamanian Darwin Fellows with MSc level degrees and experience in applied field research</i></p>	<p><i>Continuous assessment and marks obtained during taught modules and research dissertation)</i></p>	<p><i>First Darwin Fellow has successfully completed taught component (in UK) of MSc course</i></p>	<p><i>Additional funding sources may be available for additional training (e.g. British Council, EU Alban program – <a href="http://www.programalban.org">www.programalban.org</a>)</i></p>
<p><i>Field plots and action plans produced</i></p>	<p><i>Plot sites geographically defined and Action Plan draft report presented</i></p>	<p><i>Initial broadscale mapping of habitats surveyed in Year 1 and specific plots being identified for future study</i></p>	<p><i>There is now a much better appreciation of the geography of the marine habitats – and this feeds back into directing future planning</i></p>
<p><i>Results disseminated through conference, scientific papers and other means</i></p>	<p><i>Papers being peer-reviewed, Conference arrangements and attendance confirmed</i></p>	<p><i>Too early in project for major impacts but manuscripts are in preparation</i></p>	<p><i>Further specific studies and papers being planned, Conference still planned for Year 3</i></p>
<p><i>Information and experience exchange network of Darwin workers established</i></p>	<p><i>Numbers of groups participating and numbers of communications</i></p>	<p><i>Institutions have been contacted - network beginning to be built up</i></p>	<p><i>Year 2 is when major move in activation of exchange network takes place</i></p>

## LOGICAL FRAMEWORK (162/12/02)

Project summary	Measurable indicators	Means of verification	Important assumptions
<p><i>Goal:</i></p> <p>To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but poor in resources to achieve</p> <ul style="list-style-type: none"> <li>• the conservation of biological diversity,</li> <li>• the sustainable use of its components, and</li> <li>• the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources</li> </ul>			
<p><b>Purpose</b></p> <p>To build up research expertise in a team dedicated to obtaining habitat information and to producing management plans for the marine and coastal environment of Las Perlas in the Gulf of Panama in order to enable the designation of a Marine National Park within the Archipelago's boundaries</p>	<p>Information obtained during surveying and research from project used in formulation of action plans for protected area management during discussions with ANAM (Panamanian National Environmental Authority)</p>	<p>ANAM endorsement of final reports produced by Darwin project team</p>	<p>Panamanian authorities accept the information obtained and advice/recommendations made during the project and pass appropriate legislation, policy and funding schemes to set up and manage the Park</p>
<p><b>Outputs</b></p> <p>3 Panamanian Darwin Fellows with MSc level degrees and experience in applied field research</p> <p>Field plots and action plans produced</p> <p>Results disseminated through conference, scientific papers and other means</p> <p>Information and experience exchange network of Darwin workers established</p>	<p>Continuous assessment and marks obtained during taught modules and research dissertation</p> <p>Plot sites geographically defined and Action Plan draft report presented</p> <p>Papers being peer-reviewed, Conference arrangements and attendance confirmed</p> <p>Numbers of groups participating and numbers of communications</p>	<p>Degree certificates awarded by Heriot-Watt University</p> <p>Feedback and final Action Plan report endorsed</p> <p>Scientific papers appearing in journals</p> <p>Network aims and details of active partners appear on websites</p>	<p>Darwin Fellows pass all academic requirements of HWU's MSc Course</p> <p>ANAM agrees on proposed Action Plan</p> <p>Manuscripts submitted to peer-reviewed journals are accepted</p> <p>Other partners maintain commitment to Network</p>
<p><b>Activities</b></p> <p>Provision of training</p> <p>Survey and habitat mapping</p> <p>Results dissemination and consultations</p> <p>Production of educational material</p> <p>Networking</p>	<p><b>Activity Milestones (Summary of Project Implementation Timetable)</b></p> <p>In each of the 3 Years, one Darwin Fellow selected in April, starts MSc taught course training in UK in October and completes degree with dissertation in Panama by following September. Main UK staff-run training courses held in Panama in July/August 2004.</p> <p>Survey programme planning finalised by June 2003. Main field survey work carried out in July/August of each year jointly by UK and Panamanian team with additional small-boat/shore survey work carried out locally throughout study period. Field plots, databases and reference collections consolidated by August 2005.</p> <p>Peer-reviewed scientific journal papers starting to be prepared after collation of initial survey results and being produced regularly in Years 2, 3 and afterwards. Project Conference held August 2005. Continuous discussions/liaison with ANAM personnel.</p> <p>Design of school and community education leaflets started September 2004 and printed ready for distribution in August 2005.</p> <p>Immediate "information and experience exchange" network initiated (May 2003) with core of other Darwin project personnel. Expanded throughout project.</p>		