

# Darwin Initiative – Final Report

(To be completed with reference to the Reporting Guidance Notes for Project Leaders  
(<http://darwin.defra.gov.uk/resources/reporting/>) -

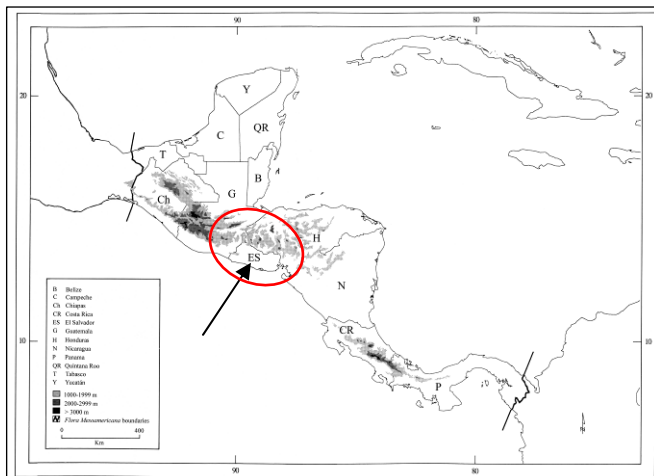
it is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)

## Darwin project information

Project Reference	640/15/015
Project Title	Tools and training for fern conservation and monitoring, El Salvador
Host country(ies)	El Salvador
UK Contract Holder Institution	The Natural History Museum
UK Partner Institution(s)	none
Host Country Partner Institution(s)	Jardin Botánico La Laguna, Ministerio del Medio Ambiente y Recursos Naturales (MARN), [SalvaNatura – see below]
Darwin Grant Value	£108,940
Start/End dates of Project	1 July 2006-31 June 2009 (extended to 31 August 2009)
Project Leader Name	Sandra Knapp
Project Website	<a href="http://www.jardinbotanico.org.sv/proyectohelechos.htm">http://www.jardinbotanico.org.sv/proyectohelechos.htm</a>
Report Author(s) and date	Sandra Knapp, Jorge Monterrosa, Roberto Escobar – October 2009

## 1 Project Background

This project builds upon two earlier successful Darwin Initiative projects undertaken with the Natural History Museum (NHM) and the Jardín Botánico La Laguna (LAGU) in El Salvador (162/8/150 and a Darwin Scholarship to J. Monterrosa). The project aimed to use ferns as a key non-vertebrate group for national biodiversity monitoring. In order to implement such a monitoring scheme, a field guide to the ferns of El Salvador was published, two training courses for non-specialists were held and a framework for monitoring given to the relevant environmental authorities. Indicator species were established for all forest types and preliminary conservation assessments at the national level made for all 397 species. A small grants programme funded by sales of the field guide was established and the first two grants given to young botanists.



**Figure 1.**  
Map of Mesoamerica showing the size and position of El Salvador (arrow) in the region. The country is about the size of Wales and has only recently emerged from decades of civil war.

## 2 Project support to the Convention on Biological Diversity (CBD)

This project has contributed directly to the first two targets of the Global Strategy for Plant Conservation (GSPC):

- **Target 1:** A widely accessible working list of known plant species, as a step towards a complete world flora.
- **Target 2:** A preliminary assessment of the conservation status of all known plant species, at national, regional and international levels.

Our distribution records for ferns and fern allies in El Salvador have been contributed to the Missouri Botanical Garden's TROPICOS database, from where they are directly accessible to the group assembling data for Target 1. The preliminary conservation assessments are the first national assessments done for an entire clade of plants at the national level.

Dr. Jorge Quezada Diaz, one of the key project partners, was the CBD focal point for El Salvador during the first stages of the project, so the project remained in contact with the CBD focal point. He was promoted to be head of natural resources, making his participation key to implementing the project as part of the national plans, but later in the project left the country to pursue doctoral studies. Other MARN personnel who participated in the first network meeting continued to work actively with LAGU personnel, so the in-country participant links strengthened as the project continued; this was also due to the successful functioning of the conservation network. During the second training course a MARN staff member was assigned to the project as a special responsibility, this will in future contribute to long-term stability and cooperation between in-country institutions.

## 3 Project Partnerships

The project arose through discussions held with personnel of LAGU and the Ministerio del Medio Ambiente y Recursos Naturales (MARN) as to the suitability of ferns as a key non-vertebrate group to use in a nationwide monitoring scheme. In order to implement a monitoring scheme, a field guide to the ferns of El Salvador on a national level (rather than just those found in coffee farms) was deemed necessary. Ferns are already in the frame for conservation action, all tree ferns are controlled for export by MARN, and other taxa are known to be of conservation interest and are thought to be good habitat indicators.

This entire project was developed in partnership by the participating institutions, particularly NHM, LAGU and MARN. SalvaNatura was invited to participate in the project, especially in the training courses and network activities, but was not involved in the overall project design: they later declined to participate in most project activities. An MOU was signed between the NHM, LAGU and MARN early on in the project. The partnership of the three core institutions has strengthened over the course of the project, particularly due to the conservation network meetings and to the training courses. Weekly phone conversations between NHM and LAGU personnel reinforced and strengthened the sense of working as a team towards common goals.

Institutional strengthening at LAGU has largely been achieved through the experience staff (particularly Monterrosa) have gained in project management and organisation; the project has contributed to the web site of the institution as well. Staff at LAGU have considerable experience in project management, but the links between MARN and the botanic garden developed during this project have significantly upped capacity for ministerial involvement.

At the NHM aspects of effective team work across the institution have been a learning experience. Because some staff members involved in the project were not able to participate in training courses due to illness/maternity leave, we were able to bring new staff from NHM into the project, thus increasing their capacity for training and people development. The need for

people to step into the breach was a real impetus for new staff development at the NHM as well as at LAGU.

All partners involved in the project have benefited from the interactions over the course of the project, with the somewhat changing circumstances of project implementation in both the UK and El Salvador, team members have developed new and useful skills in adaptability.

## **4 Project Achievements**

### **4.1 Impact: achievement of positive impact on biodiversity, sustainable use or equitable sharing of biodiversity benefits**

The purposes of this project were geared towards the increase of awareness and the provision of tools for use in measuring progress against 2010 targets. To this extent, the project was successful, firstly in providing high quality tools for use in biodiversity monitoring, and secondly in raising the capacity and awareness of plants as important indicators of ecosystem health. Institutional capacity at the host institution was enhanced, through development of project management skills and leadership skills in organising and managing the conservation network (see Section 4.6).

### **4.2 Outcomes: achievement of the project purpose and outcomes**

Overall the project was successful in achieving its purpose and outcomes – knowledge about the fern diversity of El Salvador was increased and made available to a wide variety of user communities, non-specialists were trained in fern identification, all fern species in the country have been given a national level preliminary conservation assessment (implementation of Target 2 of the GSPC), and a framework for fern monitoring is being incorporated into the national monitoring strategy.

### **4.3 Outputs (and activities)**

The project in general achieved its planned outputs as laid out in the logical framework at project inception. Fewer people were trained than planned; the rationale for this is detailed in Section 4.6. We encountered some problems in amassing the materials for the field guide in time for publication, but with a minor delay in the publication date we published what is reckoned to be a beautiful book that will be very useful both in El Salvador and further afield in Central America generally. Due to the ill health and then maternity leave of a key project participant at NHM, less time than originally planned was spent by UK staff in El Salvador. During the training courses other members of NHM staff came to El Salvador, but this is one of the outputs we failed to meet fully. We mitigated this by establishing a weekly phone chat with even more frequent e-mail contact in order to keep the project on track.

### **4.4 Project standard measures and publications**

See Annex 4 for project standard measures and Annex 5 for publications.

## 4.5 Technical and Scientific achievements and co-operation

Collections made (650 collections of ferns and fern allies, at least two duplicates each by Jorge Monterrosa, Maria Peña-Chocarro and Sandra Knapp) – although the Standard Outputs indicate number of collections handed over it is important to record the actual number of collections made – a collection as defined in the Standard Outputs could be one object or many, implying very different amounts of work and differing utilities to end-users!

During the course of the work undertaken here, 29 new records of ferns were discovered for El Salvador (including two genera new to the country, marked in bold face type in table below), bring the total number of fern taxa in the country to 397 (please refer to *Guía de Identificación de Helechos de El Salvador* for complete country species list, pp. 31-38).

<b>New fern records for El Salvador (inclusive of those found during previous DI work, all reported in Monterrosa &amp; Monro, 2008)</b>	
Asplenium cirrhatum	Pityrogramma ochracea
Asplenium cristatum	Polypodium diplotrichum
Asplenium monodon	Polypodium thyssanolepi
Asplenium theciferum	Polystichum muenchii
Bolbitis bernoullii	Psilotum nudum
Ctenitis equestris var. erosa	Pteris erosa
Dennstaedtia globulifera	Terpischore delicatula
Dennstaedtia spinosa	Thelypteris angustifolia
Diplazium drepanolobium	Thelypteris linkiana
Elaphoglossum lonchophyllum	Thelypteris obliterate
Elaphoglossum minutum	Thelypteris serrata
Hymenophyllum crispum	Thelypteris standleyi
<b>Lastreopsis effusa subsp. divergens</b>	Trichomanes hymenophylloides
Megalstrum pulverulentum	Vittaria bradeorum
<b>Olfersia cervina</b>	

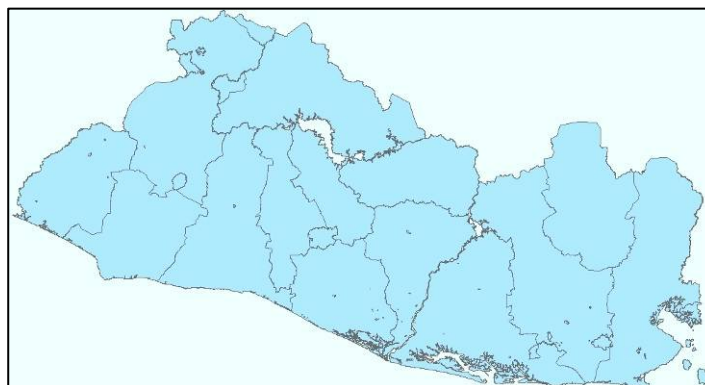
Publication of a user-friendly field guide for identification of the ferns of the country was the primary output planned for this project. Our initial estimate for the number of taxa to be included was conservative, and as the project went on it became clear that the inclusion of as many species as possible was essential for the ultimate usefulness of the guide in the monitoring effort. All genera were included, along with a key, but for those genera where species level identification requires microscopy or where species are taxonomically problematic, we included only easily identified and/or common taxa – but did include a species list for these groups (*Selaginella*, *Thelypteris* and *Elaphoglossum*). Photographs of habit and morphological details of all taxa are included, and a map of distribution at the departmental level (see Figure 2). The field guide took longer to assemble and prepare than we had expected, in part due to staff issues at the NHM (see Section 4.3). All species treatments were peer-reviewed. As a published book the guide runs to 558 pages and will be sold at the Jardín Botánico La Laguna for the cost of printing (\$30, £20, plus postage and packing). All proceeds from the sale of the book will be invested in the small grants programme, rather than a percentage as outlined in the proposal. Due to the large number of species and the amount of colour included in the guide, the available funds covered the publication of 1000 rather than 2000 copies. Given the size and price of the book this is probably a more realistic number to sell in the region. All decisions about the content, publication and dissemination of the guide were taken collectively.

The inventory of fern diversity in El Salvador was planned as an output of this project, and was combined with the manuscript partially prepared by Monterrosa during his Darwin Scholarship.

The inventory (checklist) was published in *Fern Gazette*, a peer-reviewed journal (see Annex 5 for complete citation).

Conservation assessments and habitat indicators have been published on the project website, which during intermediate stages of the project was to have been hosted at MARN; subsequent discussions and developments, however, changed and the website for the project will now be hosted at the Jardín Botánico La Laguna, facilitating updating and data addition. Links will be put in place to and from MARN in order to maintain the relationship begun during this project.

**Figure 2.**  
Map of El Salvador showing departmental outlines used in the guide and in calculating preliminary conservation assessments



The monitoring framework (see attached document) was delivered to MARN and is beginning to be used in key protected areas. Instructions for use were discussed at the final project workshop and MARN staff decided that area-specific guidelines would be written by them for subsequent use.

## 4.6 Capacity building

During the course of the project, Jorge Monterrosa developed his skills in both botany and in project management, as evidenced by the smooth running of the project throughout the period and the ultimate efficient publication of what was a much more complex book than originally considered.

### *Training courses*

In the initial proposal we had proposed training between 24 to 40 people in fern identification in order to leave a substantial body of people able to undertake monitoring after the project ends. However, in designing the training courses for maximum impact we collectively took the decision to train fewer people in more depth in order that they not only would be able to use the new knowledge, but be empowered to train others using the tools produced for the courses. This has allowed us to do substantial one-to-one training during the training courses with extremely good effect. Trainees from both courses are continuing to interact with Jorge Monterrosa and sharing with him their new discoveries for their protected areas – this has been possible because the training was in depth and extremely personal.

<b>Trainee name</b>	<b>Institution/Protected Area</b>
Dagoberto Rodríguez Delcid	técnico herbario LAGU
Mateo Andrés Hernández	guardarecursos del P. N. Los Volcanes
Eliberto Sandoval Martínez	guardarecursos del P. N. El Imposible
Ever Antonio Torres	guardarecursos del A. N. P. Normandía
Gloria Nohemy López	biólogo del P. N. Montecristo (came on both courses)
Jacinto Martínez	guardarecursos del P. N. Los Volcanes
Jennifer Cambara Zuniga	estudiante de biología UES Fac. Multidisciplinaria

	Occidente
Jorge Ramos Barahona	estudiante de biología UES Fac. Multidisciplinaria Occidente
José Tobías Guevara	jefe del A. N. P. Río Sapo
Juan Montes Manzanares	guardarecursos del A. N. P. Santa Rita
Salvador Misael Carrillo	guardarecursos del A. N. P. Montaña de Cinquera
Jenny Menjivar Cruz	técnico Museo de Historia Natural de El Salvador
Carlos Mauricio Linares	profesor, UES Fac. Multidisciplinaria Occidente
Ricardo Enrique Morales	profesor, UES Fac. Multidisciplinaria Occidente
Walter Chacón García	técnico CATIE El Salvador
José Gabriel Cerén	Museo de Historia Natural de El Salvador
Victor Manuel Martínez	guardarecursos del P. N. Montecristo
Raúl Villacorta	consultor botánico
Carlos Alberto Elías	profesor Universidad de El Salvador
José Yader Sageth Ruiz	estudiante de biología Universidad de El Salvador
Oscar Enrique Díaz	profesor, UES Fac. Multidisciplinaria Oriente
María Eugenia Aguilar	técnico MARN

#### 4.7 Sustainability and Legacy

The most enduring outcome of this project is the fern field guide which is already in use by MARN in protected areas on the ground. The availability of a high quality identification tool, coupled with ideas for how to use this in monitoring changes in biodiversity over time has meant a step change in MARN's ability to monitor more than just vertebrates.

With respect to staff and resources, several encouraging signs of a legacy from the project have emerged – 1) LAGU committed to plant diversity; 2) university student trainees have better chances of jobs in NGO sector (one has already been accepted on an OTS course); 3) park guards in permanent employment, with new more intellectually demanding work in monitoring giving new opportunities for personal development.

An integral part of the project planning was to use the funds (if any) generated from the sales of the fern field guide to support biodiversity related research by university students and other young people in El Salvador. These small grants have been called “Becas Darwin” (Darwin Grants), and the first two were awarded at the final project workshop (see Section 5.1 below). The supposition that the guide will sell well was behind this objective – this is based on the popularity of previous field guides published in El Salvador from the coffee farm project, and the anticipated need for the guide on a regional basis. LAGU (a not-for-profit organisation) will manage this part of the project into the future, and it will provide a lasting legacy. Selection of projects was undertaken by a small committee of staff from LAGU and NHM; in the next round we are considering the addition of an outside member, probably from MARN.

The recipients of the first Darwin Awards were José Yader Ruiz (Composición y Distribución de Plantas Vasculares Epífitas en la Cuenca de La Laguna de Caldera) and Pablo Olmedo Galán (Arboles de la Cuenca de la Laguna de Caldera). Both these projects will be carried out in an area currently being considered for legal protection, and for which little botanical information exists, thus they are of great interest to MARN as the in-country statutory authority for protected areas. Final reports for these small grants will be placed on the project website and branded with the DI logo. The next grant solicitation will be open until January 2010, with results announced in April.

## **5 Lessons learned, dissemination and communication**

Key lessons learned during the project were principally an underestimation of size of task (see Section 4.5) and an overestimation of the degree of media interest in the project in El Salvador.

Dissemination of project results to the target audience (those involved in conservation in El Salvador) was good, but we did not do so well at disseminating the results of the work to the “public”. This latter will certainly increase as the field guide becomes available through the LAGU distribution network and as the “Becas Darwin” continue; we just over estimated the interest that would be generated in a public concerned with the credit crunch and elections. We did achieve presentation of results at several international meetings.

Continuation of dissemination of results post-project through LAGU website will be closely monitored and the small grants programme will aid in widening the effects of the project work.

### **5.1 Darwin identity**

This has been a good stand-alone project with good Darwin identity; it has built upon the legacy of previous Darwin work in El Salvador, and in the academic and governmental sectors the Initiative has a positive image. All products, publications, workshops and events displayed the Darwin logo. The “Becas Darwin” programme established with the profits from selling the field guide will keep the Darwin identity current and associated with good science and effective conservation.

A good understanding in-country of funding through the Darwin Initiative has been helped by re-iteration of DI aims at every workshop or training course; this has been well-received by attendees.

## **6 Monitoring and evaluation**

Changes in training course numbers are detailed in Section 4.6; we also agreed with the DI Secretariat to run the project to end of August 2009 in order to print the book and to make up for staff losses during the project itself – this incurred no additional funding.

We decided collectively to change from using the very complex MARN vegetation categories (under revision by MARN themselves) of habitat types to broadly defined categories into which the MARN classification can fit and that will be easy to use by park guards and others doing monitoring on the ground. See Section 4.5 above.

The logframe system used here was useful for establishing the baseline of outcomes desired, but the M&E system integrated into the logframe was not particularly useful in keeping the project on track for a series of clear outputs. In general a monitoring system of milestones and deliverables was more appropriate for a tightly integrated project like this one, where publication dates must be met and courses run. In addition, the close integration of the project with MARN needs and the underestimation of the diversity of ferns in the country meant that we spent more time trying to adjust the logframe that would have been better used actually doing the work.

### **6.1 Actions taken in response to annual report reviews**

All reviews were discussed by the project team, first by e-mail, and then in person during the in-country activities. Annual report review suggestions were followed up, and they were helpful to

the completion of the project. In general, they were minor, and did not change the overall trajectory or outcomes of the project as a whole.

## 7 Finance and administration

### 7.1 Project expenditure

We underspent the total grant allocated by slightly under 1%; this was largely due to instability in the exchange rate between the UK pound sterling and the US dollar (the currency used in El Salvador). This time period has been particularly difficult for keeping track of expenditure whilst changing currencies – it is amazing we got this close!

Category	Allocation	Total	Difference
Overheads			
Office			
Travel			
Printing			
Conferences			
Capital			
Other Costs			
Salaries			
<b>Total</b>			

#### Cost Breakdowns

##### Salary

J Monterrosa

Web Designer

##### Capital

Herbarium

Supplies

(Ventilator)

Computer

Cabinets

Laptop

Projector

*Total*

##### Other (an allowable category at time of application)

Camera

Accessories

Artwork

Audit

External Disk Drive

*Total*



We transferred money between categories with DI Secretariat permission during the course of the grant – from travel to capital in year 2). Categories where expenditure differed from that budgeted by >10% are highlighted in bold in the summary table above. An underspend (£471.22) in “Office Costs” is partly accounted for by vagaries of exchange rate, but also by the use of free Skype and Yahoo chat services for regular project communications rather than telephone over the course of the grant period. The underspend (£790.71) in the “Other Costs” category is due to audit costs be less than anticipated over the grant period, something that could not be predicted.

## **7.2 Additional funds or in-kind contributions secured**

We did not achieve a great deal of in-kind contribution aside from lodging and transport from protected areas; this totalled ca. £2000 over the project lifetime.

## **7.3 Value of DI funding**

Darwin Initiative funding has enabled the publication of a high-quality colour illustrated field guide to the ferns and fern allies of the country that will be useful far beyond El Salvador. This will raise the status of the Salvadorean partner institutions in the biodiversity and conservation circles in Mesoamerica, in general the country is considered not on the first level by many others in the region. The ability of LAGU to participate (and really lead) this project has shown they are capable of operating on a high level regionally. The project has also provided a semi-formal way in which the various universities and NGOs (and governmental departments) can interact and work together into the future.

## Annex 1 Report of progress and achievements against final project logframe for the life of the project

Project summary	Measurable Indicators	Progress and Achievements	Actions required/planned for next period
<p><b>Goal:</b> <i>To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but constrained in resources to achieve</i></p> <p><i>The conservation of biological diversity,</i></p> <p><i>The sustainable use of its components, and</i></p> <p><i>The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources</i></p>			<p><i>(do not fill not applicable)</i></p>
<p><b>Purpose:</b></p> <p>Provide the training, tools and baseline data necessary for the establishment of a biodiversity monitoring programme for ferns in El Salvador.</p>	<ol style="list-style-type: none"> <li>1. Framework for the monitoring of fern diversity in place by project end.</li> <li>2. Capacity for monitoring of fern diversity in place by project end</li> <li>3. Capacity for non-specialists to identify fern species in place.</li> <li>4. Ferns species to serve as indicators of lifezone and habitat change selected and incorporated into monitoring framework.</li> <li>5. Up-to-date baseline fern inventory data available to the National Biodiversity Inventory and National Report.</li> </ol>	<p>Conservation network meetings have been well-attended and will meet regularly in future, MARN personnel will take the lead for this part of project, ensuring integration into national biodiversity strategy goals; manual for training courses completed; first training course held; field guide contents nearly completed; inventory accepted for publication in a peer-reviewed journal.</p>	
<p><b>Outputs and Activities</b></p>			

<b>Output 1.</b> Monitoring manual and framework developed for other taxa	Manual and framework delivered to MARN; included in National Inventory Strategy	MARN already has a manual for the monitoring of vertebrate taxa (birds and mammals), so the utility of having another different manual for plants was discussed and plans made to integrate the two formats; inclusion in the National Inventory strategy will depend upon its revision by MARN.
Activity 1.1 Conservation network meeting held at LAGU to discuss integration of fern monitoring		Monitoring framework design and delivery delayed to project end in order to better integrate with MARN
Activity 1.2 Draft monitoring manual and framework delivered to MARN		The draft framework was prepared and presented to MARN officials, after discussions at final workshop and lesson learnt taken into account. The framework will be further developed by personnel at each protected area in collaboration with personnel at LAGU.
<b>Output 2.</b> Training courses for non-specialists in fern monitoring and identification	24-40 non-specialists trained	We initially proposed training between 24 to 40 people in fern identification in order to leave a substantial body of people able to undertake monitoring after the project ends. However, in designing the training courses for maximum impact we collectively took the decision to train fewer people (going for the lower end of the numbers scale) in more depth in order that they not only would be able to use the new knowledge, but be empowered to train others using the tools produced for the courses. This has allowed us to do substantial one-to-one training during the first training course with extremely good effect. Trainees both courses are continuing to interact with Jorge Monterrosa and sharing with him their new discoveries for their study areas – this has been possible because the training was in-depth and extremely personal. For names and positions of trainees see Section 4.6.
Activity 2.1 First training course in fern identification and collection held at LAGU and in PN EI Imposible		12 trainees for one week; trainees were mostly park guards and natural resource managers from protected areas.
Activity 2.2 Second training course in fern identification and collection held at LAGU and in PN Montecristo		10 trainees for one week; trainees were mostly university professors and students (12 trainees were scheduled, two dropped out at the last minute).
<b>Output 3.</b> Biological collections made and used to strengthen national taxonomic capacity	Duplicate sets collections deposited nationally and internationally	Although collecting was not the main focus of the project, the work done resulted in many new records for the country and in a considerable strengthening of the LAGU capacity in fern identification.
Activity 3.1 Collecting undertaken throughout the projected period (14 trips to various parts of the country)		Collecting entailed trips to places not previously visited and regions where species are known to occur; much of the collecting was focused around obtaining images for the field guide

Activity 3.2 Distribution of duplicate specimens collected during the project to international herbaria		Specimens all prepared for distribution to international herbaria, being sent out with other exchange material
<b>Output 4.</b> Database of ferns of El Salvador	Database handed over to MARN at project end.	Good progress made against this output indicator; database will be hosted on-line by LAGU at project end, with open access to all. Originally we had thought that MARN would be a good repository for the data, but in the end it became clear that although there was considerable interest, the time and energy to keep the data current resided at LAGU. Links from/to the Ministry website will be made.
Activity 4.1 Assessment of BM fern collections; databasing begun		408 BM collections of ferns for El Salvador databased; integrated with other datasets.
Activity 4.2 Database of fern species constructed		Database constructed and populated with data from field guide and collections made in the field; made available over LAGU website <a href="http://www.jardinbotanico.org.sv/proyectohelechos.htm">http://www.jardinbotanico.org.sv/proyectohelechos.htm</a>
Activity 4.3 Database of fern collections constructed, linked to species database		Database constructed and populated with data from collections made in the field and collections from other herbaria; made available over LAGU website <a href="http://www.jardinbotanico.org.sv/proyectohelechos.htm">http://www.jardinbotanico.org.sv/proyectohelechos.htm</a>
<b>Output 5.</b> Updated inventory with indicator species and preliminary conservation assessments	Inventory published in hard copy and online.	
Activity 5.1 Inventory accepted for publication (follow-on from Darwin Scholarship project)		Inventory published in peer-reviewed journal (see Annex 5)
Activity 5.2 Indicator species identified for broad scale habitats in El Salvador		Indicator species identified for broadly defined habitats; use of those as defined by MARN national vegetation classification was deemed too complicated and specific and unlikely to be easy to implement in a monitoring programme on the ground. Discussions with MARN officials confirmed this, work post-project will be undertaken to bring the two “habitat” classifications together.
Activity 5.3 Final inventory of ferns of El Salvador made available to MARN and on website		

Activity 5.4 Preliminary conservation assessments at a national level made for all species of ferns and fern allies in El Salvador.		
<b>Output 6.</b> Field guide to the ferns of El Salvador	2000 copies of the field guide printed.	
Activity 6.1 Descriptions written for all fern species from El Salvador		Descriptions of 252 species completed; all were peer-reviewed before publication.
Activity 6.2 Produce photographs, line drawings and other illustrative material for the guide		Photographs taken for 252 species (of 393) for the guide; some of this difference in numbers is due to our decision to lump extremely difficult species into single exemplar categories. Other photographs taken of species not included in the guide are presented on the website through the database.
Activity 6.3 Publish field guide to ferns and fern allies of El Salvador.		Field guide published in July 2009; 1000 copies printed; marketed at cost (\$30/copy) and all proceeds going to Becas Darwin.
<b>Output 7.</b> Conservation work supported by sales of field guide	University student projects to be partially supported by sales.	
Activity 7.1 Competition held for “Becas Darwin” – end June 2009		Two small grants awarded at final workshop to university students (see Section 4.7 for names and project titles); awardees will prepare final reports for their projects and these will be made available (branded as “Becas Darwin”) over the project website and through MARN
<b>Output 8.</b> Network of national specialists, relevant NGOs and GOs	Network will have met at least 3 times; partners confirm intention to continue.	Network received enthusiastically, will reinforce MARN’s plans; network meetings held in LAGU on two levels.
Activity 8.1 Conservation network meetings held in LAGU		8 meetings of conservation network held at LAGU.
Activity 8.2 Core network group dedicated to plant conservation established		Seven of the 20+ participants decided to meet on a more regular basis to discuss broader biodiversity issues at regional and national levels; have begun to establish a more formal association (Asociación de Botánicos de El Salvador) to further plant conservation in-country.
<b>Output 9.</b> Public awareness of plant (fern) diversity in El Salvador raised	Articles in the press, radio interviews, public lectures	This is a long term output – and one that has not been particularly successful over the course of the project.
Activity 9.1 Press release about project while NHM staff in El Salvador		Project summary sent to national newspapers, little response despite repeated contacts (possibilities for this include upcoming and concurrent elections and general economic instability); plans laid for new strategy for dissemination post-

	project.
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## Annex 2 Project's final logframe, including criteria and indicators

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Goal:</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> <p>the conservation of biological diversity,</p> <p>the sustainable use of its components, and</p> <p>the fair and equitable sharing of benefits arising out of the utilisation of genetic resources</p>			
<p><b>Purpose</b></p> <p>Provide the training, tools and baseline data necessary for the establishment of a biodiversity monitoring programme for ferns in El Salvador.</p>	<ol style="list-style-type: none"> <li>1. Framework for the monitoring of fern diversity in place by project end.</li> <li>2. Capacity for monitoring of fern diversity in place by project end</li> <li>3. Capacity for non-specialists to identify fern species in place.</li> <li>4. Fern species to serve as indicators of lifezone and habitat change selected and incorporated into monitoring framework.</li> <li>5. Up-to-date baseline fern inventory data</li> </ol>	<ol style="list-style-type: none"> <li>1. Monitoring assessment forms and database available through MARN.</li> <li>2. A user-friendly field guide to the ferns of El Salvador published.</li> <li>3. List of trained non-specialist provided in project reports.</li> <li>4. Indicators of disturbance and key life zones identified in field guide, national report and project reports.</li> <li>5. Monitoring ferns identified as key activity in National Inventory Strategy; fern data and</li> </ol>	<p>Ferns represent a pragmatic choice of indicator organism in Central America.</p> <p>El Salvador retains taxonomic capacity for ferns resulting from previous Darwin awards.</p> <p>Developing a monitoring framework and capacity for ferns will act as a catalyst to the inventory of other groups.</p> <p>Capacity and tools for non-specialists generated in El Salvador will be important at regional level.</p> <p>MARN will undertake to develop a monitoring programme as stated in the National Biodiversity and National Inventory and Monitoring Strategies.</p>

	available to the National Biodiversity Inventory and National Report.	monitoring referenced in El Salvador's National Report to the CBD.	
<b>Outputs</b>			
Monitoring manual and framework; framework developed for other taxa.	Manual and framework delivered to MARN; included in National Inventory Strategy	Copy of manual and framework included in project final report.	MARN supports inventory as part of strategic activities; will use monitoring framework for other groups of plants and animals.
2 x training courses for 12-20 non-specialists in fern monitoring and identification.	24-40 non-specialists trained.	Individuals trained and their job titles to Darwin.	Training seen as essential to national strategy implementation; staff released; training using ferns is transferable.
Biological collections made and used to strengthen taxonomic capacity.	Duplicate sets collections deposited nationally and internationally.	Specimens collected cited in taxonomic works; duplicates distributed.	Current collecting regulations remain in place; collecting remains safe.
Database of ferns of El Salvador.	Database handed over to MARN at project end.	Copy of database sent to Darwin.	National Inventory and Monitoring Strategy requirements remain lifezone and species oriented.
Updated inventory with indicator species & preliminary conservation assessments.	Inventory published in hard copy and online.	Inventory included in field guide and published in peer-reviewed journal.	Indicator species identifiable from data collected; existing lifezone classification recognised.
Field guide to the ferns of El Salvador.	2000 copies of the field guide printed.	Copies supplied to DI and British Library.	Agreement reached; partners able to design guide.
Conservation work supported by sales of field guide.	University student projects to be partially supported by sales.	Darwin recognised in theses; candidates detailed to Darwin.	Sales of the field guides will be strong; students interested in participating.
Network of national	Network will have met	Participants and minutes	GOs & NGOs continue to work together to support national



specialist, relevant NGOs and GOs.	at least 3 times; partners confirm intention to continue.	of meetings sent to Darwin; joint expression of intent signed.	biodiversity inventory.
Public awareness of plant (fern) diversity of El Salvador raised.	Articles in the press, radio interviews, public lectures.	Copies to be included in project reports, web site interest monitored.	Salvadoran media will express strong interest.
<b>Activities</b>	<b>Activity Milestones</b>		<b>Assumptions</b>
Annotated database of ES ferns.	<b>Yr 1.</b> Inventory of fern collections nationally and internationally (Honduras); database; DI Fellow to visit Chicago (10/2006); <b>Yrs 2-4.</b> Updating of database.		Herbaria selected hold key collections.
Targeted plant collecting programme in-country.	<b>Yrs 1-4.</b> Collecting programme throughout El Salvador, targeting protected areas and fragments of natural vegetation (7/2008); all fern collections made as part of project labelled and distributed (9/2008).		All species found; permits remain in force; logistical support provided by MARN.
Lifeline indicators; preliminary conservation assessments.	<b>Yr 1.</b> Lifeline indicators selected using ecological data from database (11/2006). <b>Yr 3.</b> Preliminary conservation assessment for all Salvadoran ferns (12/2008).		Existing lifeline classification remains valid; indicator species identifiable; assessment possible.
Network establishment and strengthening..	<b>Yr 1.</b> Establishment of a group with government, NGO and academic representatives. (12/2006). <b>Yrs 2-4.</b> Group meets on a regular basis and with NHM staff when they are in-country.		Groups will agree; work together to implement BAP; commit to a future arrangement.
Monitoring format sheets for BAP.	<b>Yr 1.</b> Monitoring format for non-specialist use produced and agreed with MARN (12/2006)..		MARN support for monitoring continues.
Training in identification and monitoring	<b>Yr 2.</b> First training course for non-specialists in monitoring (6/2007). <b>Yr 3.</b> Second training course in identification and monitoring using draft guide (4/2008).		MARN sees training as essential to BAP implementation; staff released; training using ferns is relevant for other plant groups

Production of fern identification guide.	<b>Yr 1.</b> Workshop to agree design and layout; consultation with user groups (1/2007). <b>Yr 1-2.</b> Produce line drawings, amass images, prepare identification keys and descriptions (10/2008). <b>Yr 3.</b> Print 2000 copies of the guide (12/2008).	Agreement reached; participants enthusiastic; illustrators and printers still available; work proceeds on time.
Competition for student project on conservation.	<b>Yr 4.</b> Select first student project. (4/2009).	Students willing to participate; theses part of degree course.
Promote awareness of ES plant diversity.	<b>Yrs 1-4.</b> Press releases, public and university lectures. <b>Yr 4.</b> Public invited to final project workshop at La Laguna (5/2009).	Media coverage broad and noted by public.

## Annex 3 Project contribution to Articles under the CBD

### Project Contribution to Articles under the Convention on Biological Diversity

Article No./Title	Project %	Article Description
6. General Measures for Conservation & Sustainable Use		Develop national strategies that integrate conservation and sustainable use.
7. Identification and Monitoring	70	Identify and monitor components of biological diversity, particularly those requiring urgent conservation; identify processes and activities that have adverse effects; maintain and organise relevant data.
8. In-situ Conservation		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		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		Integrate conservation and sustainable use in national decisions; protect sustainable customary uses; support local populations to implement remedial actions; encourage co-operation between governments and the private sector.
11. Incentive Measures		Establish economically and socially sound incentives to conserve and promote sustainable use of biological diversity.
12. Research and Training	20	Establish programmes for scientific and technical education in identification, conservation and sustainable use of biodiversity components; promote research contributing to the conservation and sustainable use of biological diversity, particularly in developing countries (in accordance with SBSTTA recommendations).
13. Public Education and Awareness		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		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

Article No./Title	Project %	Article Description
		and equitable way of results and benefits.
16. Access to and Transfer of Technology		Countries shall ensure access to technologies relevant to conservation and sustainable use of biodiversity under fair and most favourable terms to the source countries (subject to patents and intellectual property rights) and ensure the private sector facilitates such assess and joint development of technologies.
17. Exchange of Information	10	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		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.
Other Contribution		Smaller contributions (eg of 5%) or less should be summed and included here.
Total %	100%	Check % = total 100

## Annex 4 Standard Measures

Code	Description	Totals (plus additional detail as required)
<b>Training Measures</b>		
1a	Number of people to submit PhD thesis	0
1b	Number of PhD qualifications obtained	0
2	Number of Masters qualifications obtained	0
3	Number of other qualifications obtained	0
4a	Number of undergraduate students receiving training	0 (although the second training course had 8 undergraduate students on it, the training was not specifically aimed at that level)
4b	Number of training weeks provided to undergraduate students	0
4c	Number of postgraduate students receiving training (not 1-3 above)	0
4d	Number of training weeks for postgraduate students	0
5	Number of people receiving other forms of long-term (>1yr) training not leading to formal qualification( ie not categories 1-4 above)	1 (Monterrosa)
6a	Number of people receiving other forms of short-term education/training (ie not categories 1-5 above)	22 (participants in training courses)
6b	Number of training weeks not leading to formal qualification	156 (Monterrosa); 50 (training courses)
7	Number of types of training materials produced for use by host country(s)	1 identification and collection manual
<b>Research Measures</b>		
8	Number of weeks spent by UK project staff on project work in host country(s)	14 person weeks; fewer than planned due to personnel changes at NHM (see text)
9	Number of species/habitat management plans (or action plans) produced for Governments, public authorities or other implementing agencies in the host country (s)	0
10	Number of formal documents produced to assist work related to species identification, classification and recording.	2
11a	Number of papers published or accepted for publication in peer reviewed journals	1
11b	Number of papers published or accepted for publication elsewhere	0
12a	Number of computer-based databases established (containing species/generic	2 (one database with species attributes, another with collections

<b>Code</b>	<b>Description</b>	<b>Totals (plus additional detail as required)</b>
	information) and handed over to host country	data – now are linked via the species name)
12b	Number of computer-based databases enhanced (containing species/genetic information) and handed over to host country	1 (408 BM fern collections from El Salvador databased and the data handed over to LAGU)
13a	Number of species reference collections established and handed over to host country(s)	1 (new collections incorporated into LAGU)
13b	Number of species reference collections enhanced and handed over to host country(s)	1 (all fern specimens held in LAGU re-identified)
<b>Dissemination Measures</b>		
14a	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin project work	2 (book launch and final wokshop)
14b	Number of conferences/seminars/ workshops attended at which findings from Darwin project work will be presented/ disseminated.	2 (Congreso Latinoamericano de Botánica in Dominican Republic; reunion de Red de Herbarios Mesoamericanos y Caribes in Cuba – posters presented at both meetings)
15a	Number of national press releases or publicity articles in host country(s)	3
15b	Number of local press releases or publicity articles in host country(s)	0
15c	Number of national press releases or publicity articles in UK	0
15d	Number of local press releases or publicity articles in UK	0
16a	Number of issues of newsletters produced in the host country(s)	0
16b	Estimated circulation of each newsletter in the host country(s)	0
16c	Estimated circulation of each newsletter in the UK	0
17a	Number of dissemination networks established	1 (conservation network)
17b	Number of dissemination networks enhanced or extended	0
18a	Number of national TV programmes/features in host country(s)	0
18b	Number of national TV programme/features in the UK	0
18c	Number of local TV programme/features in host country	0
18d	Number of local TV programme features in the UK	0

<b>Code</b>	<b>Description</b>	<b>Totals (plus additional detail as required)</b>
19a	Number of national radio interviews/features in host country(s)	0
19b	Number of national radio interviews/features in the UK	0
19c	Number of local radio interviews/features in host country (s)	0
19d	Number of local radio interviews/features in the UK	0
<b>Physical Measures</b>		
20	Estimated value (£s) of physical assets handed over to host country(s)	£xxxx (computer hardware, software, herbarium cabinets and supplies). If the profits from book sales are to be included here the amount rises to ca. £xxxx (£XX x 1000 books – but proportion of profits to be invested in small grants programme)
21	Number of permanent educational/training/research facilities or organisation established	0
22	Number of permanent field plots established	0
23	Value of additional resources raised for project	ca. £XXXX
<b>Other Measures used by the project and not currently including in DI standard measures</b>		
	Number of conservation network meetings held	8
	Number of websites established and populated with project data	2 <a href="http://www.jardinotanico.org.sv/becasdawin">http://www.jardinotanico.org.sv/becasdawin</a> ; <a href="http://www.jardinbotanico.org.sv/proyectohelechos.htm">http://www.jardinbotanico.org.sv/proyectohelechos.htm</a> )

## Annex 5 Publications

Type *	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £
*Training manual	Monterrosa, J. & M. Peña-Chocarro (2007) <i>Manual de técnicas de colecta e identificación de helechos</i>	Not formally published, but available from authors		Not for sale
Book	Monterrosa, J., M. Peña-Chocarro, S. Knapp & R. Escobar (2009) <i>Guía de identificación de helechos de El Salvador</i>	Jardín Botánico La Laguna/Natural History Museum [printed in San Salvador, El Salvador]	Jardin Botánico La Laguna ( <a href="http://www.jardinbotanico.sv">http://www.jardinbotanico.sv</a> )	\$30 (= £20)
Peer-reviewed article	Monterrosa, J. & A.K. Monro (2008) An annotated checklist of the Monilophytes (ferns) and Lycophytes of El Salvador. <i>Fern Gazette</i> 18: 120-215.	Fern Gazette, published by the British Pteridological Society ( <a href="http://www.nhm.ac.uk/hosted_sites/bps/gazette.htm">http://www.nhm.ac.uk/hosted_sites/bps/gazette.htm</a> )	British Pteridological Society ( <a href="http://www.nhm.ac.uk/hosted_sites/bps/gazette.htm">http://www.nhm.ac.uk/hosted_sites/bps/gazette.htm</a> )	Subscription to journal; purchase on-line
Peer-reviewed article	Knapp, S. & J. Monterrosa (submitted) A simple method for assessing preliminary conservation status of plants at a national level: a case study using the ferns of El Salvador. <i>Oryx</i> , submitted.	<i>Oryx</i> , published by Fauna and Flora International, Cambridge UK	<i>Oryx</i> ( <a href="http://www.oryxthejournal.org/">http://www.oryxthejournal.org/</a> )	Subscription to journal; purchase on-line



## Annex 6 Darwin Contacts

Ref No	640/15/015
Project Title	Tools and training for fern conservation and monitoring, El Salvador
<b>UK Leader Details</b>	
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Role within Darwin Project	Project leader
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Fax	
Email	
<b>Other UK Contact (if relevant)</b>	
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Phone	
Fax	
Email	
<b>Partner 1</b>	
Name	Jorge Monterrosa
Organisation	Jardín Botánico La Laguna
Role within Darwin Project	Project manager in-country
Address	Jardín Botánico La Laguna, Urb. Industrial los Planes de La Laguna, AP-1197CG, Antiguo Cuscutlán, La Libertad, El Salvador
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Email	
<b>Partner 2 (if relevant)</b>	
Name	Dr. Jorge Quezada
Organisation	MARN
Role within Darwin Project	CBD focal point and liaison within MARN
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Fax	
Email	

## Annex 7 Documents enclosed

1. Monterrosa and Monro 2008 (15\_015\_Monterrosa&Monro\_2008.pdf); sent as hard copy and as attachment
2. Final monitoring format for use in protected and other areas by MARN (15\_015\_monitoring\_format\_final.doc); sent as hard copy and as attachment
3. Monterrosa et al. 2009. *Guía de Identificación de Helechos de El Salvador*; sent as hard copy only.