



DARWIN INITIATIVE

APPLICATION FOR DARWIN SCHOLARSHIP PROGRAMME 2005

Please read the Guidance Notes before completing this form. Give a full answer to each section; applications will be considered on the basis of information submitted on this form. Please note the additional information requirements (CVs and letters of support as detailed in the Guidance for Applicants). Whilst this form is to be submitted by the host institution the proposed Scholar should be fully involved in development of the proposal.

Submit by 18 March 2005

1. Contact Details

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| <i>Ref. (Defra/ECTF only):</i> |
| <p>Name and address of UK applicant organisation The Natural History Museum Cromwell Road London SW7 5BD</p> |

2. Darwin Scholar. A one page CV must be enclosed.

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| <p>Name and official address of proposed Darwin Scholar Jorge Alberto Monterrosa Salomón Herbario Sección Técnica-Científica Asociación Jardín Botánico La Laguna Plan de La Laguna Antiguo Cuscatlan Apartado Postal 1197 CG La Libertad El Salvador</p> |
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3. Project summary (no more than 100 words)

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| <p>This scholarship will develop the taxonomic capacity of a Salvadoran botanist from Jardín Botánico La Laguna in identification of ferns by drawing on expertise and the collections at the NHM. Training will include identification of all unidentified fern collections from El Salvador in collaboration with specialists and using the unparalleled library resources at the NHM. Products will include an updated checklist and database of Salvadoran ferns, published both in print and on-line. The up-to-date inventory of the ferns of El Salvador will contribute directly to El Salvador's National Biodiversity Strategy, GTI work programme and to Target 1 of the GSPC.</p> |
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4. Principals in Project. Please give the details of the individuals from the UK host organisations (and other institutions if relevant) who would be directly involved in supervising/working with the Darwin Scholar. A 1 page CV on each must be enclosed.

| Details | Main UK principal | Main UK expert | Other UK expert |
|-------------------------------------|--|--------------------------|--|
| Surname | Monro | Paul | Knapp |
| Forename(s) | Alex | Alison | Sandra |
| Post held | Researcher, Central American Plants | Curator of Pteridophytes | Researcher, Central American Plants |
| Institution (if different to above) | | | |
| Department | Botany | Botany | Botany |
| Telephone | | | |
| Fax | | | |
| Email | | | |

5. Describe briefly the aims, activities and achievements of the UK applicant organisation. (Large institutions please note that this should describe your unit or department)

The Department of Botany at The Natural History Museum in London houses a major international collection of over six million preserved specimens of algae, diatoms, lichens, mosses, ferns, conifers and flowering plants. The herbarium dates back to the sixteenth century and is of great historical importance, with many major collections represented within it. Geographic coverage is world-wide, with particular foci in the Neotropics, S.E. Asia, the Himalayas, Africa, Macaronesia, Europe and the UK. The Botany Department's 70 scientists are involved in many different areas of taxonomic research, based largely on the collections. Research interests include biodiversity, classification, evolution, biogeography, molecular systematics, conservation and ethnobotany. As with the collections, these interests extend world-wide. Examples of current major projects include DNA bar-coding of the British Flora; identifying glacial refugia in Europe; Macaronesian/Mediterranean biogeography; a Planetary Biodiversity Inventory of *Solanum*; and diatoms of ancient lakes. The Department is also taking a lead role in several major floristic projects, in Macaronesia, in the Himalaya, and in Latin America. In the latter region, Flora Mesoamericana is a long-term collaboration with Missouri Botanical Garden and the Instituto de Biología of the Universidad Nacional Autónoma de México and will provide the baseline floristic inventory for the region.

6. Describe briefly the aims, activities and achievements of the proposed Darwin Scholar's organisation. (Large institutions please note that this should describe your unit or department)

Jardín Botánico La Laguna is the only active botanic garden in El Salvador. It is a privately funded organisation with charitable status whose objectives are to promote an interest in the botanical world with a particular emphasis on the conservation and sustainable use of Salvadoran plants, public engagement with biodiversity science and the promotion of horticulture. La Laguna is situated in the crater of an extinct volcano and includes an ornamental garden and arboretum, natural vegetation, an educational centre and El Salvador's largest and most active herbarium with over 24,000 specimens. In 1998, Jardín Botánico La Laguna was awarded El Salvador's Premio del Medio Ambiente (Environment Prize for contributions to the Environment) by the Minister for the Environment.

The herbarium of Jardín Botánico La Laguna has three principal objectives: 1) the support of the conservation of biological diversity through the provision of data and information on the plants and vegetation of El Salvador; 2) the provision of plant identifications; the exchange of botanical collections and regular contact with international herbaria and institutions, and 3) the support of the teaching of botany in El Salvador. The dissemination of information on botany and its key role in society through scientific and popular publications, courses, talks and the supervision of university projects is also integral to the mission of the herbarium, and to the mission of the Jardín Botánico as a whole.

7. Describe briefly the proposed Darwin Scholar's current role within their organisation.

Jorge Monterrosa is one of two curators at the herbarium of Jardín Botánico La Laguna (La Laguna Botanic Garden). He has been in post since 1999 and his principal responsibilities include:

- making botanical collections in the field
- undertaking inventory and vegetation description/ classification throughout El Salvador
- preparing and identifying herbarium specimens
- managing the institutional collections database
- ensuring the conservation of the botanical collections (general herbarium curation)

8. Provide a concept note on the Darwin Scholarship. This should include:

- a clear outline of the aim and objectives of the Scholarship
- the, including key milestones through the duration of the Scholarship and their timing
- the role of the UK applicant organisation, and others where relevant (including contacts)
- where appropriate, how the Scholarships will contribute towards sustainable development or sustainable livelihoods

Background

Conservation initiatives and national inventories often focus on flowering plants, overlooking non-flowering plants such as mosses, ferns and fern allies. This results in much reduced taxonomic support and capacity for these plants as compared to other plant groups, making them relatively understudied despite their diversity and usefulness in habitat monitoring, especially in areas of high biodiversity. El Salvador has ca. 500 fern species, over a third of the diversity of Central America. Despite the small size of the country and its inclusion in larger regional projects such as *Flora Mesoamericana*, El Salvador remained relatively poorly understood botanically until a renewed collecting programme associated with El Salvador's National Biodiversity Strategy (2000) and the Darwin Initiative project 'Empowering local people to manage the biodiversity of El Salvador' (1999-2002) began to stimulate country-wide inventory. El Salvador's report on its implementation of its GTI work programme cites limited taxonomic capacity and the need for increased capacity to implement the national inventory. El Salvador is committed to the production of a national biodiversity inventory and the development of taxonomic capacity; the production of an up to date, collections-based checklist of ferns and fern allies undertaken during this scholarship will contribute directly to these national efforts and will engage the Salvadoran botanical community in Target 1 of the Global Strategy for Plant Conservation (GSPC). The proposed Darwin Scholar Jorge Monterrosa was the lead Salvadoran botanist on the field guide to the ferns of shade coffee farms produced during the DI project 'Empowering local people to manage the biodiversity of El Salvador'.

Aim and objectives of the Scholarship

This scholarship will develop the taxonomic capacity of a Salvadoran botanist from Jardín Botánico La Laguna in identification of ferns by drawing on UK expertise and collections, and will produce an updated checklist and database of Salvadoran ferns in order to contribute directly to El Salvador's National Biodiversity Strategy, GTI work programme and to Target 1 of the GSPC. In doing so we will:

- Identify the currently unidentified fern collections from the herbaria of Jardín Botánico La Laguna and the El Salvador Natural History Museum (MNHES) in collaboration with fern specialists and using the collections at the NHM.
- Produce a comprehensive, updated synonymic checklist and database of Salvadoran fern scientific names using NHM library and herbarium resources; database checklist will include digital images of critical specimens such as types.
- Revise and update the identification of previously determined fern collections at La Laguna, MNHES and University of El Salvador herbaria (post-NHM training)
- Publish an updated checklist of the ferns of El Salvador online through MARN and in a peer-reviewed journal, the results will be incorporated into El Salvador's national inventory of biodiversity
- Contribute to Target 1 and 2 of the GSPC with the checklist and preliminary conservation status assessments of ferns of El Salvador; identify species of current and potential horticultural value (as ornamentals and cut leaves) and those under threat from horticultural activities.

This scholarship will be of importance at a regional as well as national level as there are no full-time, and only two part-time fern specialists in Central America. This does not reflect the relatively high diversity of ferns and fern allies in the region nor conservation concern for these plants, as indicated by their presence on IUCN and CITES lists of threatened

taxa.

Programme of work

- June 2005:** All unidentified fern collections at La Laguna and MNHES separated and shipped to NHM (collections with identifications left for in-country use and subsequent re-identification at later stage of scholarship); Missouri Botanical Gardens send a database of Salvadoran fern collections extracted from W3FM
- July-Oct 2005:** DI Scholar arrives at NHM; identification of previously shipped unidentified material from La Laguna in collaboration with NHM curator of ferns
Digital imaging of critical specimens at NHM
Initial preparation of database and checklist of ferns and fern allies
- Oct 2005:** DI Scholar returns to El Salvador; fern collections from La Laguna and Museum shipped back to El Salvador
- Oct–Nov 2005:** DI Scholar revises identification of all previously identified fern collections at La Laguna Botanic Gardens, the El Salvador Natural History Museum and University of El Salvador herbaria in the light of knowledge and skills gained in UK.
- Dec–Feb 2005:** DI Scholar and UK taxonomists produce manuscript version of the checklist of the ferns of El Salvador
- Feb–April 2006:** Manuscript sent out to family specialists in Argentina, Mexico and USA for comments and review
- May 2006:** Manuscript submitted for publication; electronic version placed on-line on El Salvador's Ministry of the Environment's server, thus ensuring updates are incorporated into El Salvador's National Biodiversity Inventory.

Role of the UK applicant organisation

- Provide training in fern identification by fern specialists at the NHM.
- Provide access to one of the World's largest and historically most important fern collections.
- Provide contact with visiting fern specialists and through the NHM's fern specialists, the global fern community.
- Provide access to one of the World's largest and historically most important natural history libraries.
- Provide experience of and training in the high collections storage and pest management standards at the NHM and how they are maintained.

How the Scholarships will contribute towards sustainable development

This scholarship will contribute directly to the assessment and monitoring needs of sustainable development, with relation to ferns and fern allies. A number of Salvadoran ferns are used commercially, as cut foliage for bouquets and as pot plants. The ability to identify these plants in their natural habitat and in the commercial sector will be necessary to underpin their sustainable exploitation. Ferns have also been suggested as possible indicator species for ecosystem monitoring as they are sensitive to changes in microclimate associated with vegetation change. Due to lack of taxonomic capacity, a monitoring programme for these environmentally sensitive plants has not yet been developed in El Salvador. The taxonomic capacity gained during the course of this scholarship would enable these activities to be undertaken in-country in El Salvador.

9. Legacy. Provide information on how the Darwin Scholar will utilise, promote and disseminate the benefits of the Scholarship on return to his/her home country. Will a strategy be developed during the Scholarship to ensure this is achieved?

Darwin scholar will use knowledge and skills gained through visit at NHM to undertake a revision of fern identifications at the two main collections of ferns in El Salvador: La Laguna and the Natural History Museum of El Salvador. This combined with the identifications undertaken at NHM will enable the Scholar and UK collaborators to produce an up to date checklist for the ferns of El Salvador. This checklist will form the reference work for El Salvador's National Biodiversity Inventory as set out in the BAP, and will be a component in El Salvador's effort to help implement Target 1 of the Global Strategy for Plant Conservation.

Jorge Monterrosa as fern taxonomist working at La Laguna Botanic Gardens will provide the taxonomic support for all future fern and fern ally identification in El Salvador and will be able to do so with the support of contacts developed at the NHM and other herbaria. The capacity gained during this scholarship will also enable Monterrosa to play a key regional role in developing Mesoamerican efforts to document and monitor biodiversity in the Mesoamerican corridor; ferns and

fern allies are a group that will in future be used in monitoring efforts regionally, as many species cross national borders. Contacts with key Mesoamerican partners will be developed during the scholarship period, through *Flora Mesoamericana* and other more development related projects.

The revised, identified fern collections at LAGU and MHNES will form the comparative reference material that will underpin future fern identification and monitoring for several decades to come.

10. How will the Scholarship assist the Scholar's organisation and/or local communities and/or home country in working towards the objectives (or implementation) of the Convention on Biological Diversity? References to the Convention should be specific, for example, by referring to articles, cross-cutting or thematic issues¹.

The Scholarship will assist El Salvador with the implementation of the following articles, cross-cutting and thematic issues:

- Article 7 - Identification and Monitoring: 'Identify components of biological diversity, monitor, through sampling and other techniques, the components of biological diversity'
- Article 12 - Research and Training: 'Establish and maintain programmes for scientific and technical education and training in measures for the identification, conservation and sustainable use of biological diversity'
- Article 15 – Access to Genetic Resources: 'endeavour to develop and carry out scientific research based on genetic resources provided by other Contracting Parties with the full participation of, and where possible in, such Contracting Parties.'
- Article 17 - Exchange of information: 'The Contracting Parties shall facilitate the exchange of information, from all publicly available sources, relevant to the conservation and sustainable use of biological diversity, taking into account the special needs of developing countries'
- Article 18 – Technical and Scientific Cooperation: 'promote international technical and scientific cooperation in the field of conservation and sustainable use of biological diversity'
- Global Taxonomy Initiative: 'to remove or reduce taxonomic impediment - in other words, the knowledge gaps in our taxonomic system (including those associated with genetic systems), the shortage of trained taxonomists and curators'
- Forest Biodiversity Thematic Programme: 'the third element covers assessment and monitoring'. Most ferns are associated with forests and have been shown to be sensitive to environmental change and thus good monitors of forest health.
- Dry and Sub-humid Lands Thematic Programme: the south of El Salvador consists of sub-humid lands dominated by savannah type vegetation, this habitat is habitat to a number of 'rare' ferns in El Salvador.
- Agricultural Biodiversity: plant genetic resources for food and agriculture, including: pasture and rangeland species and forest genetic resources of trees that are an integral part of farming systems. Coffee farms are repositories of biodiversity in El Salvador, ferns persist in these systems.
- Global Strategy for Plant Conservation: this project will support Target a- 'Understanding and documenting plant diversity by 2010 and Target b- ' at least 30% of of production lands are managed consistently with the conservation of plant diversity' and '60% of threatened plant species *conserved in situ*, as well as target e- 'Building capacity for the conservation of plant diversity'.

11. What collaboration has there been with the Darwin Scholar to date in developing the proposal, and what collaboration is planned for the duration of the Scholarship? Where relevant, describe any consultation or collaboration by the proposed Scholar within his/her own country.

¹ Refer to the Guidance Notes for Applicants for further information

What collaboration has there been with the Darwin Scholar to date in developing the proposal

There has been full collaboration with the Darwin Scholar and El Salvador's CBD Focal Point and GTI Focal Point during the development of this proposal. The Darwin Scholar has devised the schedule and key elements of the project such as the shipping of unidentified material from El Salvador to the NHM for identification. The CBD Focal Point suggested the inclusion of MHNES in this component.

What collaboration is planned for the duration of the Scholarship?

There will be daily contact and collaboration with fern specialist Alison Paul and Alex Monro.

Where relevant, describe any consultation or collaboration by the proposed Scholar within his/her own country

Jorge Monterrosa will collaborate with the curators of MNHES, staff at MARN and NHM throughout the post-UK phase of this collaboration.

12. Provide details of the Darwin Initiative project that the proposed Scholar was involved in, including his/her role in that project and any ongoing involvement.

'Empowering local people to manage the biodiversity of El Salvador' (DEFRA ref. 162/8/150) sought to empower local people to monitor and inventory biological diversity through the development of taxonomic capacity and the production of appropriate identification tools for shade coffee farms in El Salvador. Jorge Monterrosa was one of two botanists involved in the production of the identification guide to the ferns of shade coffee farms in El Salvador. In this capacity he was trained in the basics of fern taxonomy and identification. During the course of this component of the project and subsequent to the project's end he became a keen pteridologist in El Salvador and has collected hundreds of new collections as part of the general inventory work undertaken all over El Salvador by the Jardín Botánico La Laguna and he has maintained regular contact with the NHM.

13. Duration of the Scholarship: what is the intended start and finish date.

Start Date: June 2005

Finish Date: May 2006

14. Where will the Darwin Scholar be based? Please be specific with organisational details and dates (where more than one location).

June 2005: Jardín Botánico La Laguna, El Salvador

July-Oct. 2005: Cryptogamic Herbarium, Department of Botany, The Natural History Museum, London

Oct. 2005- May 2006: Jardín Botánico La Laguna, El Salvador

15. Financial Aspects.

| Scholar payment | | | |
|---|------------------|--------|--------|
| London: £1400/month | Number of months | 2005/6 | 2006/7 |
| | | £ | £ |
| UK (outside London): £1000/month | Number of months | £ | £ |
| Overseas location £ /month* | Number of months | £ | £ |
| Host Organisations' costs | | | |
| UK: £200/month | Number of months | 2005/6 | 2006/7 |
| | | £ | £ |
| Overseas location: £ /month* | Number of months | | £ |
| A. Total Scholar & Host Organisation Costs | | £4000 | £ |

* Figures available from Darwin@defra.gsi.gov.uk

| Actual travel costs | | |
|--|-------------|-------------|
| Return airfare. <i>Details</i> | 2005/6 £ | 2006/7 £ |
| Travel to/from airports. <i>Details</i> | £ | £ |
| Visas etc. <i>Details</i> | £ | £ |
| B. Total Scholarship Travel Costs (Actual costs up to £2000 will be paid) | £ | £ |

| | | |
|--|---|---|
| TOTAL SCHOLARSHIP COSTS (A + B) | £ | £ |
|--|---|---|

16. Other sources of funding: provide details and amounts

NHM will be contributing, through staff costs and bench fees, £XXX and the La Laguna Botanic Garden in staff costs £XXX.

FCO NOTIFICATION

Please check the box if you think that there are sensitivities that the Foreign and Commonwealth Office will need to be aware of should they want to publicise details of the Darwin Scholarship and the resultant work in the UK or the Darwin Scholar's home country

CERTIFICATION

I certify that, to the best of our knowledge and belief, the statements made by us in this application are true and the information provided is correct. I am aware that this application form will form the basis of the project schedule should this application be successful.

I enclose a copy of the organisation's most recent audited accounts and annual report, CVs for project principals and letters of support.

| | |
|------------------------------|---------------------|
| Name (block capitals) | DR RICHARD LANE |
| Position in the organisation | DIRECTOR OF SCIENCE |

Signed



Date:

March 8, 2005

Please return completed form to The Edinburgh Centre for Tropical Forests (ECTF) by 18 March 2005 by email to darwin-applications@ectf-ed.org.uk. Where it is not possible to send the full application in electronic form (for example if signed references are not available electronically), a hard copy of the full application should also be sent to ECTF, Darwin Applications Unit, Pentlands Science Park, Bush Loan, Penicuik, Edinburgh EH26 OPH.