



EIDPS035

Submit by Monday 14 January 2013



APPLICATION FOR DARWIN FELLOWSHIP PROGRAMME ROUND 19

Please read the Guidance Notes before completing this form. Where no word limits are given, the size of the box is a guide to the amount of information required. Information to be extracted to the database is highlighted blue.

1. Name and address of UK Host organisation (NB: Notification of results will be by email and addressed to the main UK Expert listed in Section 5)

Name: Dr Mark Watson	Address: Royal Botanic Garden Edinburgh, 20a Inverleith Row, Edinburgh, EH3 5LR www.rbge.org.uk
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2. Name and official address of proposed Darwin Fellow (include email and telephone details where available)

Sangeeta Rajbhandary Central Department of Botany, Tribhuvan University, Kirtipur, Kathmandu, Nepal Email: Phone:
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3. Project dates, duration and total Darwin Initiative Grant requested

Proposed start date: 1/9/2013		Duration of project: One year		End date: 31/8/2014	
Darwin funding requested	2013/13 £10,850	2014/15 £7,650	Total £18,500		

4. Summary of proposed Fellowship ie Purpose and expected outputs and outcome

Ferns are a major component of biodiversity and indicators of healthy ecosystems in Nepal. Despite their prominence, knowledge of Nepalese ferns is very poor - there is no comprehensive documentation of the 534 known species, and few people can identify them. Consequently only three tree ferns have legal protection and ferns rarely feature in conservation initiatives. Dr Rajbhandary will complete the fern inventory for Central Nepal, provide conservation assessments and develop a photographic field guide to aid identification. This will raise awareness and build in-country capacity for fern research and conservation, and enable environmentalists to include ferns in their studies.
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5. Principals in the 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 Fellow. Please provide a one page CV for each of these named individuals. You may copy and paste this table if you need to provide details of more than one overseas project partner.

Details	Main UK expert	Other expert
Surname	Watson	Colin
Forename(s)	Mark	Pendry
Post held	Flora of Nepal, Editor in Chief	Flora of Nepal, Editorial Manager
Department	Science	Science
Telephone/ Skype		
Email		

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

RBGE's mission statement is 'to explore and explain the world of plants'. It has an international reputation as a centre for excellence in plant taxonomy, molecular systematics and biodiversity science based on its rich herbarium, living collections, library and archives. RBGE has wide-ranging education activities which include PhD, MSc, BSc, HND courses as well as diverse public education programmes.

RBGE contributes to many Flora projects worldwide, and coordinated the recently completed European Garden Flora (2000), Flora of Bhutan (2002) and Ethnoflora of the Socotra Archipelago (2004). The Floras Group manages the Flora of Nepal in collaboration with the University of Tokyo and the Nepal Academy of Science and Technology, Tribhuvan University and the Department of Plant Resources in Kathmandu. The Group is developing innovative biodiversity informatics tools to aid compilation of Floras and has an active fieldwork schedule. In addition to the Nepal project RBGE has successfully undertaken Darwin projects in Bhutan, Vietnam, Turkey, Laos, Peru, Chile, etc.

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

(max 150 words)

Tribhuvan University, the largest university in Nepal, has campuses located across the country. The Central Department of Botany (CDB) is responsible for all academic programs in botany throughout the university, and itself specialises in M.Sc. and Ph.D. level education. Postgraduate courses include plant taxonomy, ecology, biotechnology, and other related fields in botany. CDB is the only place in Nepal where students can study for an MSc in plant taxonomy, and CDB has an excellent track record in producing high quality graduates who find work in the biodiversity sector or go on to further research. As one of the three collaborating institutes in Nepal on the international Flora of Nepal programme, staff and students are involved in contributing information, undertaking expeditions and writing accounts. CDB staff are co-authors of Flora of Nepal accounts for their specialist groups, and are involved in the mentoring of other c-authors.

8. Describe briefly the proposed Fellow's current role within their organisation and their link to a Darwin project (If applicable), including the project reference number, his/her role in that project and any ongoing involvement.

(Max 200 words)

Dr Sangeeta Rajbhandary's primary role in Central Department of Botany, Tribhuvan University, is postgraduate teaching and M.Sc project supervision - she has been actively teaching postgraduate-level botany (especially plant systematics) for the last 20 years. Sangeeta has also been deeply involved in several research projects, notably the "Botanical Exploration of South-Western Terai of Nepal focusing on Pteridophytes (ferns)", funded by National Geographic Society, Washington D.C., U.S.A. (2000-2002). Currently she is the leading researcher on a project entitled "Inventory of Pteridophytes of Daman VDC, Makwanpur District, Central Nepal with Application of GIS", funded by Tribhuvan University Grants Commission (2012- 2013). For part of her PhD research on "A revision and phylogenetic study of Himalayan Begonia" Sangeeta studied at Royal Botanic Garden Edinburgh, funded by M.L. MacIntyre Begonia Trusts, Glasgow, UK (2008-2009).

Dr. Rajbhandary's interest in ferns dates back to her participation in the Darwin project *Plant Information and Technology Transfer for Nepal Project* at Natural History Museum, London (1998-1999; 162/06/052). Sangeeta was also one of the top Darwin Scholars involved in the Darwin project *Building Capacity for Plant Biodiversity, Inventory and Conservation in Nepal* (2003-2006; 162/12/030). Her ongoing work on the Flora of Nepal follows directly from these projects.

9. Provide a concept note on the Darwin Fellowship. This should include:

9a A clear outline of the aim and objectives of the Fellowship

(Max 300 words)

This Fellowship will produce a field guide and web resource for the ferns of Nepal. Ferns are a significant component of Nepalese biodiversity, with 534 species from an estimated total of 7000 species of vascular plants. However, they are understudied relative to other plant groups, primarily because there are no publications which allow non-experts to identify ferns. The reference collections at the National Herbarium, Kathmandu (KATH), are often badly named, poorly curated, and are consequently difficult to use for identification.

It is impractical to produce a comprehensive field guide to the ferns of the whole of Nepal within one year, so this Fellowship concentrates on the ferns of Central Nepal. However, the key to genera will include all genera known from Nepal, and so it will be useful throughout the country. Additional funding will be sought to produce a second edition covering all species throughout the whole of Nepal. The field guide will be published in Nepal, where high quality colour publications can now be printed at very reasonable costs. The web resource will be hosted at RBGE and based on data held in RBGE's Flora of Nepal Padme database. This database has been purpose designed at RBGE and manages all data for the publication of the Flora of Nepal. District-level distribution maps will be generated by databasing representative specimens at RBGE, the Natural History Museum, London and RBG Kew.

For several years Dr Rajbhandary has been collecting data and images suitable for a field guide of Nepalese ferns and is currently working on fern projects at two locations in Central Nepal, Daman in the Mid Hills and Manaslu in the High Himalaya. Some 200 species have already been photographed, and many other species have also been photographed by RBGE collectors on other collecting expeditions.

9b The role of the UK Host organisation, and others where relevant (including contacts)

(Max 300 words)

Dr Rajbhandary will be based at RBGE which is the centre of excellence for botanical research on the Himalayan Region. RBGE runs the international Flora of Nepal project with Dr Mark Watson as Editor-in-Chief and Dr Colin Pendry as Taxonomic Researcher and Editorial Manager for the Flora. Between them they have over 25 years experience of fieldwork and working on Himalayan plants. Also on the Flora of Nepal team is Nepalese botanist Dr Bhaskar Adhikari. Dr Rajbhandary will join the Flora of Nepal team and be supervised by Drs Watson and Pendry. She will learn modern floristic techniques in data gathering, interpretation and management. She will be taught how to use RBGE's Flora of Nepal Padme database, with specialist advice from Padme's developer, Dr Martin Pullan. Dr Adhikari has experience in developing photographic field guide templates for Nepal and will train Sangeeta in these skills. Dr Rajbhandari will have free access to RBGE's world class herbarium collection of Himalayan plant specimens, including the extensive Nepalese fern herbarium of C.Fraser-Jenkins - recently donated to RBGE. Dr Rajbhandary will also have free access to the RBGE library, which is rich in floristic publications from China and the Himalaya.

Sangeeta will be able to collaborate with fern expert Dr Stuart Lindsay at RBGE who has developed (with Dr Martin Pullan) a comprehensive online identification website for the ferns of Thailand, many of which are also found in Nepal

< <http://rbg-web2.rbge.org.uk/thaiferns/Pages/ferns-of-thailand.htm>>.

Sangeeta will also work with Prof. Mary Gibby, Hon. Research Associate at RBGE, and expert on fern taxonomy worldwide. Whilst visiting London, Sangeeta will be able to discuss issues with fern specialists at the Natural History Museum (especially Dr Harald Schneider and Alison Paul), and consult the historic Himalayan fern collections there and at RBG Kew, which are not available in Nepal.

9c where appropriate, how the Fellowship will contribute towards sustainable development or sustainable livelihoods ie what the expected outcome of the Fellowship will be, with regard to the higher goals of the Darwin Initiative

(Max 300 words)

Nepal is a biodiversity-rich country (an important component of the Indo-Burmese Biodiversity Hotspot), where high humidity, rainfall and warm temperatures promote pteridophyte species diversity. Nepal holds about 5.15% of world's pteridophyte species - in a country that is just 0.1% of the world land area. Pteridophytes form an important component of ecosystems of Nepal, including tree ferns, epiphytes, club mosses, lithophytes, terrestrial and aquatic ferns. Many Nepalese species have been reported to have medical or food uses, and so they are of economic value where the majority of rural people rely on the plants around them for their livelihoods. Ferns also contribute to maintaining healthy forest ecosystems, which is needed for the sustainable harvesting of Non-Timber Forest Products – an important income stream for rural poor.

Though pteridophytes are easily recognised for their horticultural value, their role in the natural environment is less obvious and poorly understood. Ferns are a significant part of the country's biodiversity heritage, and in most parts of Nepal they make up the bulk of the ground cover in little-disturbed forests. Thus ferns are significant to forest biomass, contributing significantly to the nutrient and water cycles of the upper layers of the soil. Nepal faces enormous challenges with regard to biodiversity conservation, and there are a many conservation issues that require urgent attention. As there is very little information on pteridophyte biodiversity, this group is greatly underappreciated and so badly in need of research to inform conservation action.

This fellowship will provide base-line data and identification tools, desperately needed by conservation bodies in Nepal to engage in effective conservation action and instigate sustainable use programmes for pteridophytes. The information will also be useful to increase awareness of the value of ferns and, in cooperation with local stakeholders, develop effective measures for conservation and habitat protection.

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

(max 200 words)

The legacy will be a combination of written outputs, electronic mobilisation of geo-referenced specimen-level data on the ferns of Nepal, and enhanced capacity for project supervision, mentoring and capacity building in Nepal for fern research. Written outputs will be distributed electronically (as described above), printed publications and papers in scientific journals. This legacy will also contribute to furthering research on Nepalese ferns by highlighting areas in need of field study and groups with problems in species delimitation. Knowledge gained during project will help further work on ferns exploration, documentation and conservation within Nepal.

After completing the Fellowship Dr Rajbhandary will return to Nepal and resume her position at Tribhuvan University. She will be more able to deliver authoritative lectures and supervise postgraduate students in fern research. The project will greatly enhance Sangeeta's network of scientific contacts and will help her to develop collaboration with national and international pteridophyte experts and encourage young botanists to work in the field of fern biology and conservation. Further research projects are planned to enhance capacity building in the field of pteridophyte research and to involve colleagues and students in the wider exploration, documentation and conservation of the ferns of Nepal.

11. How will the Fellowship assist the Fellow's organisation and/or local communities and/or home country in working towards the objectives (or implementation) of the CBD/CITES/CMS? Please refer to specific Articles or cross cutting themes as appropriate.

Only 3 Nepalese ferns (tree ferns *Cyathea chinensis*, *C. gigantea* and *C. spinulosa*) are currently protected under CITES Appendix II, and no ferns are protected by national legislation. However, many fern species are thought to be under threat from trade, unsustainable harvesting and habitat destruction. The problems faced when addressing this situation are both lack of data and lack of in-country expertise in identifying which species need protection and providing the documentation to back this up. The improved skills and enhanced knowledge gained through this fellowship will result in Nepal developing its own expertise and making the necessary data available. The preliminary conservation status of fern species of Central Nepal will be assessed for the first time, using red-listing guidelines, and so this will directly contribute to international conservation initiatives (CBD, GSPC, etc.). Information on identification and rarity will enable more effective controls in this area and benefit horticultural cultivation to alleviate pressures on wild populations. The results of this fellowship will help the Government of Nepal, and Nepal's scientific community, strengthen national biodiversity conservation by highlighting the enormous challenges that fern species face, and use them as a vehicle to promote forest protection and sustainable management.

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

Dr Rajbhandary has collaborated extensively with RBGE staff for more than 10 years, and has been closely involved with the development of this proposal. The original ideas were Sangeeta's, and over the last few months Drs Watson and Pendry have developed the proposal iteratively with Sangeeta using email, Skype and telephone conversations. Drs Watson and Pendry will supervise Sangeeta and so continue the collaboration during the Fellowship. RBGE has a long term commitment to working with Nepalese botanists to build capacity for biodiversity research and complete the Flora of Nepal. We will continue working with and supporting Dr Rajbhandary on her return to Nepal, and seek to involve those whom she passes on the skills that she has learnt.

Sangeeta has consulted with other botanists in Nepal in developing all her fern research projects, and she is recognised by them as the most knowledgeable Nepalese botanist for ferns. This project follows on from fern inventory projects based at her University department, for which she has the full backing of the Head of Department (Prof. P.K. Jha) and fellow staff.

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

Dr Sangeeta Rajbhandary will be based at Royal Botanic Garden Edinburgh for most of her fellowship in the UK, as this is the centre of excellence in the UK for Flora of Nepal and Himalayan studies. However, she will need to visit the herbaria and libraries at the Natural History Museum and Royal Botanic Gardens, Kew, to consult historic Nepalese herbarium specimens and literature that are not available in Edinburgh. She will image these new fern materials to complete the photographic record for Central Nepal ferns, and use these images in her photographic identification tools. During her time in these institutes Sangeeta will be able to work with fern experts (staff and visitors), learn from them and discuss any taxonomic problems that she has with fern identification. Sangeeta will work in following institutions:

1. Royal Botanic Garden Edinburgh, Inverleith Row, Edinburgh, Scotland, UK, ten months (Sept. 2013-Feb. 2014, May 2014-Aug. 2014)
2. The Natural History Museum, Cromwell Road, London, one month (Mar. 2014)
3. Royal Botanic Gardens, Kew, Richmond, Surrey, London, one month (Apr. 2014)

14. Provide a programme of work, including key milestones, through the duration of the Fellowship

Activity	Duration	2013/14									2014/2015					
		J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
Arrival at RBGE				√												
Consultation, planning of work					√											
Library work					√	√	√	√								
Examination of herbarium specimens at RBGE					√	√	√	√	√							
Visit and work at Natural History Museum (BM)										√						
Visit and work at Royal Botanic Garden, Kew (K)											√					
Further work at RBGE and writing manuscript												√	√	√	√	
Submission of report to Darwin Initiative															√	
Return to Nepal															√	

15. Costs. Using UK Government Financial Years ie April 2013 – March 2014 etc), please set out your budget for the Fellowship

	Unit cost	No of months		Total	
		2013/14	2014/15	2013/14	2014/15
Fellow's Subsistence contribution					
Arrival allowance	£300	NA	NA	300	
London based	£1,200 pcm	1	1	1200	1200
UK (outside London)	£1,000 pcm	6	4	6000	4000
Overseas	£tbc*	0	0	0	0
Host organisation's costs					
UK	£300 pcm	7	5	2100	1500
Overseas	£tbc*	0	0	0	0
Total Fellow and Host costs				9600	6700
Travel costs to Fellowship location (up to £2,000)					
Return airfare	Details: Kathmandu to Edinburgh			600	600
Travel to/from airports	Details: to/from KTM & EDI			60	60
Visas, insurance, medical cover etc	Details: Academic visa, travel insurance and medical insurance			300	000
Additional travel costs (up to £500 local travel OR £1,500 for international travel)					
Purpose of additional travel	Details: 2-month research in London				
Airfares/train fares	Details: train and oyster card (tube/bus)			250	250
Travel to/from airports/stations	Details: taxi to/from stations			40	40
Subsistence costs (inc number of days and rates)*	Details: N/a			0	0
Visas etc	Details: N/a			0	0
Total travel costs				1250	950
Fees and training costs					
Academic fees	Details: N/a			0	0
English language training costs**	Details: N/a			0	0
Total fees				0	0
TOTAL REQUEST FROM DARWIN				£ 10,850	7,650

*for advice on rates please call the Darwin Application Unit 0131 440 5181

**these costs are ringfenced and should be surrendered if not used.

16. Other sources of funding: provide details and amounts

Although not part of the Fellowship, follow-on funding will be sought (e.g. Nepal Academy of Science and Technology) to print the field guide in Nepal. We will also look to gain funding (e.g. RBGE's Sibbald Trust, University of Edinburgh's Davis Expedition Fund, etc.) to continue this work on to cover all fern species in Nepal to the same standard.

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 Fellowship and the resultant work in the UK or the Darwin Fellow'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 CVs for project principals and letters of support as requested in the Guidance Notes. Our most recent audited accounts and annual report are also enclosed/can be found at (*delete as appropriate*):

Name (block capitals)	DR MARK F WATSON
Position in the organisation	Head of Major Floras, Science Division

Signed



Date:

14 January 2013

Fellowship Application - Checklist for submission

	Check
Have you provided actual start and end dates for the Fellowship?	Yes
Have you provided your budget based on UK government financial years ie April – 31 March? 1	Yes
Have you checked that your budget is complete, correctly adds up and that you have included the correct final total on the top page of the application?	Yes
Is the concept note within 1,000 words?	Yes
Has your application been signed by a suitably authorised individual? (clear electronic or scanned signatures are acceptable)	Yes
Have you included a 1 page CV for the proposed Fellow and the UK experts listed in Section 5?	Yes
Have you provided the relevant letters of support?	Yes
Have you included a copy of your most recent annual report and accounts? An electronic link to a website is acceptable.	Yes
	www.rbge.org.uk
Have you read the Guidance Notes?	Yes
Have you checked the Darwin website immediately prior to submission to ensure there are no late updates?	Yes

Once you have answered Yes to the questions above, please submit the application, not later than 2359h GMT on **Monday 14 January 2014** to Darwin-Applications@Itsi.co.uk using the name of the proposed Fellow as the subject of your email. If you are e-mailing supporting documentation separately please include in the subject line an indication of the number of e-mails you are sending (eg whether the e-mail is 1 of 2, 2 of 3 etc).

DATA PROTECTION ACT 1998: Applicants for grant funding must agree to any disclosure or exchange of information supplied on the application form (including the content of a declaration or undertaking) which the Department considers necessary for the administration, evaluation, monitoring and publicising of the Darwin Initiative. Application form data will also be held by contractors dealing with Darwin Initiative monitoring and evaluation. It is the responsibility of applicants to ensure that personal data can be supplied to the Department for the uses described in this paragraph. A completed application form will be taken as an agreement by the applicant and the grant/award recipient also to the following:- putting certain details (ie name, contact details and location of project work) on the Darwin Initiative and Defra websites(details relating to financial awards will not be put on the websites if requested in writing by the grant/award recipient); using personal data for the Darwin Initiative postal circulation list; and sending data to Foreign and Commonwealth Office posts outside the United Kingdom, including posts outside the European Economic Area. Confidential information relating to the project or its results and any personal data may be released on request, including under the Environmental Information Regulations, the code of Practice on Access to Government Information and the Freedom of Information Act 2000.