



Submit by Friday 20 February 2009

APPLICATION FOR DARWIN FELLOWSHIP PROGRAMME ROUND 16

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 post and addressed to the main UK Expert listed in Section 5)

Name: Royal Botanic Gardens, Kew	Address: Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AB
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2. Name and official address of proposed Darwin Fellow (including contact details where available)

Hibert Huaylla
Herbario Nacional de Bolivia, Casilla 10077, Calle 27, Cota Cota, La Paz, Bolivia.

3. Project dates, duration and total Darwin Initiative Grant requested

Proposed start date: 01/09/2009		Duration of project: 4 months		End date: 31/12/2009	
Darwin funding requested	2009/10	2010/11	Total		
	£7100	£	£7100		

4. Summary of proposed Fellowship (no more than 100 words)

<p>Hibert Huaylla will study the systematics, distribution and conservation status of <i>Cardenanthus</i> and related genera of the <i>Iridaceae</i> (tribe <i>Tigrideae</i>) in Bolivia. It will involve training in and use of both molecular and traditional methods. <i>Cardenanthus</i> is near-endemic to Bolivia. Most species are known from single localities and their systematic relationships and taxonomic status are poorly understood. Thus conservation priorities are not clear. This research should make possible a reappraisal of species numbers, their relationships and conservation status for at least the Bolivian species in this genus following Huaylla's earlier studies in the related genus <i>Mastigostyla</i>.</p>

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 UK expert	Other UK expert	Other UK expert
Surname	Wilkin	Forest	Wood	
Forename(s)	Paul	Felix	John Richard Ironside	
Post held	Head of Lilioid & Alismatid team, Herbarium	Head of Molecular Systematics	Research worker. Also field coordinator of Darwin Projects 161/11/010 and 16/004	
Institution (if different to UK Host)			Oxford University	
Department	Herbarium	Jodrell Laboratory	Plant Sciences	
Telephone				
Email				

6. Describe briefly the aims, activities and achievements of the UK Host organisation. (Large institutions please note that this should describe your unit or department) (150 words)

Kew achieves its impact by:

- constantly generating and publishing new information and understanding on plants and fungi through relevant high quality research.
- ensuring that Kew's unparalleled resources are applied to the delivery of lasting impacts in the conservation of biodiversity and the international drive to reduce and adapt to climate change.
- working in strong partnerships with many organisations – governments, companies, and other science and conservation bodies.
- building capacity and wide understanding at all levels through an extensive learning agenda.
- engaging the public and opinion formers through our gardens, media and web presence.

In 2006-7 Kew achieved (for example) 465 publications, of which 78 were high impact, 3848 conservation and sustainability assessments and 12 major habitat conservation surveys. Forecast training days in 2007-8 numbered ca 24000, and actual or virtual visits to the collections ca 200000.

7. Describe briefly the aims, activities and achievements of the proposed Darwin Fellow's employing organisation. (Large institutions please note that this should describe your unit or department) (150 words)

The Herbario Nacional de Bolivia (LPB) is Bolivia's leading herbarium and centre for training and research in plant ecology, taxonomy and biodiversity. Linked to the University in La Paz it aims to produce high quality graduates in botanical science and undertake research to provide information to underpin programmes for plant conservation. It has developed strong links with the Bolivian government through the Director General of Biodiversity and is often used as a consultant on conservation matters. It is proud of its links with similar institutions within and outside Bolivia including Kew and Oxford University. Since its foundation its staff have produced a range of publications including vegetation maps, ecological and taxonomic papers, a monograph of the palms of Bolivia and the *Guia de Arboles de Bolivia*. It is currently working on a checklist of the whole Bolivian flora and, in collaboration with IUCN, red data accounts of threatened plant species.

8. Describe briefly the proposed Fellow's current role within their organisation and their link to a Darwin project, including the project reference number, his/her role in that project and any ongoing involvement. (200 words)

Hibert Huaylla is a research associate of the Bolivian National Herbarium in La Paz with specialist research interests in Ferns, Iridaceae and Amaryllidaceae. He was previously a research associate and part-time university lecturer in Sucre and was employed from 2003 to 2006 to work with the Darwin project 161/11/010 to identify hotspots of plant diversity in The Inter-Andean valleys. He participated in all aspects of the project including field work, photography and contributing to the field guide produced by the project. He also worked on Iridaceae producing a paper on the genus *Mastigostyla* due to be published in 2009. Since the end of the Darwin project he worked with the project follow-up financed by Rio Tinto and independently co-authored an illustrated guide to the Plants of The Torotoro National Park which was published in December 2008 with support from the Fundación Puma and The Bolivian National Parks Authority. This received enthusiastic support from the local community in Torotoro and, to date, is the only field guide to the plants of any Bolivian national park. He has also been employed as a consultant on ferns for the Darwin Cerrado Project (16-004).

9. Provide a concept note on the Darwin Fellowship (maximum 1,000 words). This should include:

- a clear outline of the aim and objectives of the Fellowship
- the role of the UK Host organisation, and others where relevant (including contacts)
- where appropriate, how the Fellowship will contribute towards sustainable development or sustainable livelihoods

Cardenanthus belongs to the tribe Tigridieae of the Iris family (Iridaceae), a group of ill-defined genera in urgent need of further study to establish their status and relationships. It is a small genus with about ten species occurring at high altitude in the Andes. Most are restricted to a single area and about six are apparently endemic to Bolivia. Patterns of variation and distribution within and between species are poorly understood. Although horticulturally attractive and photogenic, Iridaceae as a whole are neglected in South America because most species have a short flowering season (so are rarely collected), make poor herbarium specimens (so cannot easily be studied) and can only be distinguished by characters that are often lost in the preservation process. There is no modern study of the Andean Tigridieae, but the great majority of species occurring in Bolivia are believed to be narrowly endemic.

Huaylla will complete and publish a species-level taxonomic study of *Cardenanthus* using specimens collected in the field as well as material stored at or borrowed by Kew. This will involve examination of herbarium material, the use of bibliographic resources and the development of links with other research workers in the group in the United States, Colombia and elsewhere. An important new element to be brought to this study is the use of photographs collected by Darwin Project 161/11/010 because detailed study of herbarium specimens is difficult due to the delicate and complex nature of Iris flowers. A second important part of the fellowship is to learn laboratory techniques to help reconstruct the phylogeny of *Cardenanthus* and related genera of the Tigridieae. It is hoped that one or more further scientific papers will result, including a reassessment of the genera and species of *Cardenanthus*, *Mastigostyla* and Bolivian species previously placed in *Sphenostigma*. Huaylla will, therefore receive training in molecular systematic techniques alongside the reinforcement of those traditional skills which he has acquired earlier. On his return he will be able to foster an interest in plant molecular systematics in Bolivia and transfer the necessary skills.

An important aspect of the fellowship is the conservation assessment of each species. The assessments will be derived from the taxonomic baseline described above and a database of distribution data which Huaylla will compile. This is an innovation as far as Bolivian scientists are concerned and is an important step to link taxonomic research with conservation priorities. The La Paz herbarium, where Huaylla is based, is the focal point for the preparation of IUCN red data lists and publications and it is hoped that Huaylla's fellowship will feed into this.

The UK host institution is a leading international institution for plant diversity and conservation research. Its collections of herbarium and living plants as well as its library resources are pre-eminent. The Jodrell Laboratory, where Huaylla will learn and use molecular techniques, is at the forefront of molecular systematics research. Huaylla has already spent some time in 2005 at Kew (Darwin Project 161/11/010) with Paul Wilkin, who will be his principal supervisor and will coordinate the academic side of his fellowship. Huaylla will also enjoy links with the Department of Plant Sciences at Oxford University, which has led the Darwin projects he has been involved in. These will be mostly through John Wood (also an Honorary Research Associate of Kew), who will assist with any pre- and post-fellowship activities in Bolivia as well as helping with practical matters during Huaylla's time at Kew. It is important to emphasise that this fellowship builds on work done by Huaylla in a previous Darwin project and during the interval between that project and this application.

The paucity of competent national taxonomists is a major limitation on biodiversity assessment and conservation in Bolivia, which remains heavily dependent on foreign expertise. Additional training of this type, including molecular systematic skills, will help fill this gap and is an important step towards the development of Bolivian taxonomic capacity. It is also worth emphasising that Huaylla's long-term and partially self-financed interest in this area shows that this fellowship is a good investment as he is very keen to pursue a career in plant systematics and conservation research.

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? (200 words)

Discussions will continue before and during the fellowship concerning promotion and dissemination of benefits. At present it is planned that Huaylla will utilise and disseminate the results of his fellowship:

1. By publishing two, possibly three, scientific papers:

(a) A taxonomic revision of *Cardenanthus* in Bolivia based on morphology

(b) A re-evaluation of the status of *Cardenanthus* and related Andean genera in Tigridaeae based on DNA sequence data

(c) The generic status of two Bolivian endemic species currently placed in *Sphenostigma*.

2. Incorporating conservation status assessments and descriptions in the above papers and IUCN red data publications.

3. Producing an illustrated paper for distribution to government organisations (e.g. SERNAP), Conservation Organisations working in Bolivia (Conservation International, Fundación Puma, Nature Serve etc) to promote conservation of Tigridaeae.

4. Using the photogenic qualities of Tigridaeae to seek publication and raise awareness in Bolivian newspaper magazines and similar publications.

5. Present an illustrated talk in his home institution.

6. Helping, advising and mentoring young Bolivian botanists.

The letter of support given by his institute indicates that the skills and experience that Huaylla will acquire during his fellowship will be very valuable to them and put to good use upon his return to Bolivia.

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. (200 words)

The fellowship will assist the National Herbarium and Bolivia in general to work towards the objectives of the CBD and in particular to fulfil its obligations under the articles through international cooperation, particularly between the Bolivian National Herbarium and Kew with the participation of Oxford University (Articles 5, 18). It is specifically focussed on a group of species, almost all which are endemic to the Bolivian Andes, helping the inventory and monitoring of rare and potentially threatened species (Article 7). The fellowship involves training in the use of biotechnology (Article 19) together with research and training in general (Article 12). It is planned that the awareness of both scientists and the general public will be raised using scientific and popular publications (Article 13).

The fellowship relates to several crosscutting themes of the CBD including access to scientific collections and new technologies so Bolivia can benefit from these. It ties in with the global taxonomy initiative providing skills urgently needed and in short supply in Bolivia. The subject of study relates to mountain biodiversity and several of the species are located in protected areas. It is hoped to contribute to public education and awareness by focussing on these rare, attractive plants.

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. (200 words)

The possibility of this fellowship was first raised by Hibert Huaylla after his visit to the U.K. as part of the Darwin Project 161/11/010 in 2005, when he worked with Paul Wilkin on *Mastigostyla*. It was recommended that he should build up a collection of photographs, specimens and field knowledge before applying for the fellowship. This was done during the final stages of the Darwin project, during the project follow-up financed by Rio Tinto and, recently, by independent field work with some support from John Wood. During his 2005 studies, Huaylla became aware of the importance of molecular systematics in Tigridae and was anxious to develop these skills. Since learning of the possibility to apply for a Darwin fellowship this financial year, Huaylla has been in constant touch with Wood to discuss the scope of the fellowship. Discussions with Dr Stephan Beck, director the National Herbarium in Bolivia, have also taken place and a supporting letter is provided with this application. Felix Forest, Head of the Molecular Systematics Section at Kew and currently working on Iridaceae systematics, was contacted and agreed to supervise the molecular aspects of the proposed project.

13. Where will the Darwin Fellow be based? Please be specific with organisational details and dates (where more than one location). (200 words)

Huaylla will be based at the Royal Botanic Kew, partly in the Jodrell Laboratory where the molecular systematic research will be based, and partly in the Herbarium under Dr Wilkin's supervision. Visits to Kew will be made as required by Wood; Huaylla will not normally be expected to work at Oxford. A very small budget for travel to the Natural History Museum and Oxford is included for access to herbarium collections and discussion.

It is expected that the molecular work will take place over a three month period. It will be particularly intensive during the training received in the first weeks. The herbarium-based work will take place simultaneously with the sequencing thereafter, with a final month for write-up, production of conservation assessments and distribution maps, and the preparation of manuscripts for publication.

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

Activity	Duration	2009/2010									2010/2011					
		J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
Morphological study of herbarium specimens					X	X										
Specimen database construction					X	X										
Molecular systematics training/research				X	X	X										
Conservation status assessments							X									
MS production							X									
Talk(s) in Bolivia and production of Iridaceae conservation leaflet								X	X	X						

15. Financial Aspects. Please use UK Government Financial Years ie April 2009 – March 2010 etc)

Fellow payment			
	09/10	10/11	
London: £1200/month	Number of months 4		2009/10 £
UK (outside London): £1000/month	Number of months		2010/11 £
Overseas location £ /month*	Number of months		£
Host Organisations' costs			
	09/10	10/11	
UK: £300/month	Number of months 4		2009/10 £1200
Overseas location: £ /month*	Number of months		2010/11 £
A. Total Fellow & Host Organisation Costs			£
Actual travel costs (Return journey to Fellowship location)			
Return airfare. <i>Details</i> Bolivia-London			2010/11 £
Travel to/from airports. <i>Details</i>			£
Visas etc. <i>Details</i>			£
B. Total Fellowship Travel Costs (Actual costs up to £2000 will be paid)			£

Actual travel costs 'Additional Travel'		
Specify purpose. Maximum £500 within country of Fellowship location, £1500 for international travel.		
Airfares <i>Details</i> Misc Train/bus/tube fares to Oxford and Natural History Museum		2010/11 £
Subsistence <i>Details (including number of days)</i> <i>Contact the Darwin Applications Unit for rates</i>		£
Travel to/from airports. <i>Details</i>		£
Visas etc. <i>Details</i>		£
C. Total (Other travel) costs		£
D. ACADEMIC FEES <i>Details</i>	2009/10 £	2010/11 £

* Figures available from the Darwin Applications Unit Tel: 0131 440 5180

TOTAL FELLOWSHIP COSTS (A + B + C + D)		£
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16. Other sources of funding: provide details and amounts

Huaylla's costs within Bolivia, both before and after the fellowship, will be funded separately, partly through private means (mostly his own funds) and partly through the Bolivian Nacional Herbarium which allows free use of its facilities, bench space etc, the value of which may amount to some £500 for work related to this fellowship.

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.

Name (block capitals)	PAUL WILKIN	RUTH BARTHOLOMEW
Position in the organisation	Head of Lilioid & Alismatid Monocots, Herbarium	Senior Project Accountant

Signed



Date:

17/02/2009

Fellowship Application - Checklist for submission

	Check
Have you provided actual start and end dates for the Fellowship?	✓
Have you provided your budget based on UK government financial years ie 1 April – 31 March?	✓
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?	✓
Is the concept note within 1,000 words?	✓
Has your application been signed by a suitably authorised individual? (clear electronic or scanned signatures are acceptable)	✓
Have you included a 1 page CV for the proposed Fellow and the UK experts listed in Section 5?	✓
Have you provided the relevant letters of support?	✓
Have you included a copy of your most recent annual report and accounts? An electronic link to a website is acceptable.	✓
Have you read the Guidance Notes?	✓

Once you have answered Yes to the questions above, please submit the application, not later than 2359h GMT on **Friday 20 February 2009** to Darwin-Applications@ltsi.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). In addition, a hard copy of the application and any supporting documents not available electronically should be submitted to the Darwin Applications Management Unit, c/o ECTF, Pentlands Science Park, Bush Loan, Penicuik EH26 0PL postmarked not later than **Monday 23 February 2009**.

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.