

Darwin Scholarship - Final Report

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| Darwin Project Ref No. | |
| Darwin Project Title | The impact of alien plants on the pollinator's of rare plants: a network approach |
| Name of Darwin Scholar | Ruth Boada |
| UK Organisation | University of Bristol |
| Your Organisation | Charles Darwin Foundation |
| Your role in your Organisation | Scientist |
| Start/end date of Scholarship | April 2005 – September 2005 inclusive |
| Location | Bristol, UK |
| Darwin Scholarship funding (£) | £8492 |
| Type of work (e.g. research, training, other, please specify) | Research training |
| Main contact in UK Organisation | Dr Jane Memmott |
| Author(s), date | Ruth Boada/Jane Memmott, 8th July 2005 |

Briefly describe your involvement in the Darwin project before the start of your scholarship.

Before starting the scholarship I was working at the Charles Darwin Foundation in Galapagos Islands, studying the interactions between insects and endangered species of plants, this study was supported by the Darwin Initiative. I was interested in learning the techniques to qualify and quantify those interactions, and show them in a way that were objective, illustrative and that let me to obtain clear conclusions of the results of the study I was doing and intend to continue doing it. I had heard about Dr. Jane Memmott and her research and I wanted to learn the methodology I needed to study plant-pollinator interactions in Galapagos Islands.

Describe aim and objectives of the Scholarship, and programme of Work

The aims of the Scholarship were to provide practical training in the use and application of pollination ecology techniques, and to learn how to use food web techniques to understand how plant-pollinator communities function.

Objectives: (1) To construct visitation webs quantifying which insect species visit the flowers of endangered British plants and to put this data into community context. (2) To transfer this training and work experience to study pollination ecology in selected endangered plants in Galapagos.

Briefly describe the roles of the UK and Scholar's institutions Achievements

The work was carried out based at the University of Bristol, with the involvement of Dr Jane Memmott. Dr. Memmott had the contacts to obtain the permits to undertake the field research in the Avon Gorge, and also to involve the taxonomists of the National Museum and Galleries of Wales, needed for insect identification.

Summarise the work undertaken during your scholarship. What were the main activities undertaken. Highlight any work undertaken but not originally planned and explain why this happened. Highlight any problems encountered and how they were overcome.

During six months, I was studying the impact of the alien insects and plants in the pollination system of the native and rare species of plants in the Avon Gorge National Nature Reserve in Bristol. During the first month I did a literature review and from the second month I started working in the field sampling for flower-pollinator interactions along transect lines every 10 days. Floral units were quantified after insect sampling. The insects were mounted, labelled and identified. The data was entered in a database and then used to construct quantitative visitation webs. It was considered that six months could have been enough to finish with the planned work but it took longer due to factors such as weather conditions to work in the field and time used for specimen identification. I had to return to my country before getting the last of the insect identifications. However, I learned to construct webs using the available data (c. 90% of the field season) and another laboratory member finished entering in the database the final insect identifications needed to construct the complete food web.

What have been the main achievements of your scholarship? Key documents should be annexed to this report.

Outcomes, lessons and Impact

I think that my main achievements are: 1) meeting a team of young researchers to talk to about similar studies and learning ways to address the topics I was interested in; 2) the construction and interpretation of visitation webs, 3) and the opportunity for my research in Galapagos Islands to become a potential PhD project supervised by Dr. Jane Memmott, a noted specialist in this area from the University of Bristol.

Do you feel that the work undertaken during your scholarship has improved skills that are relevant and important for your work in your organisation? How are you planning to apply those skills in future work?

Definitively to learn techniques to study pollination and to construct food webs to address questions such as: 1) What pollinating species are visiting the rare plant's flowers? 2) What other flower species do these pollinators visit; 3) Are flowers of native and alien plants visited by equal numbers of insect species, and is the number of visitors to an alien influenced by the taxonomic affinity of that plant to the native flora? 4) Are the visitors to flowers of native and alien plant species equally likely to have generalized floral diets? 5) Does the connectance of the flower visitation web differ for native and alien plant communities? Comparing plant-pollinator webs from restored and pristine plots will allow the efficacy of the restoration programme to be assessed. The restoration programmes in the Avon Gorge have identical objectives to those running in the Galapagos - the removal of alien plant species. Thus the training will be of direct relevance to the conservation of the Galapagos Islands and it is completely

related with the study in which I have been working during the last five years and with which I will continue working for the foreseeable future.

Has the scholarship helped to improve your capacity to solve practical problems related to the sustainable use and/or conservation of biodiversity in your country?

Yes, this project contribute to my research capability to improve methodologies to understand the insect-host plant interactions and their mutual dependences this will provide information on the interactions of those insects that are endemic, native or introduced. With this knowledge we can made decisions to preserve or control the species evolved. The study of pollinating agents of native, endemic and also alien plants is of considerable importance in the conservation of both plants and their pollinators. It is a priority research area in Galapagos, and one that provides a link between plant and invertebrate scientists.

Have you had the opportunity to make contacts with other UK biodiversity institutions, intergovernmental organisations, NGOs or the private sector during your scholarship? Will these contacts be useful for your future work, and how are you planning to maintain them?

The work undertaken in Bristol was made in collaboration with the Avon Gorge Botanist (Libby Houston), the Bristol Downes Biodiversity office (Mandy Leivers), the Avon Wildlife Trust (Helen Hall) and the National Trust (Bill Morris) all of whom work on the rare plants in the Avon Gorge. I made contact with them and if funded for a Galapagos-based PhD, I will be interested in their feedback on my planned project.

Any other issue emerging from your experience as Darwin Scholar that you would like to raise, or suggestions for improvements to the Darwin Initiative Scholarship scheme.

I feel fortunate to have had the opportunity to be part of a research team and to share experiences and knowledge with other people. I do not have any suggestion for improvements to the Darwin Scholarship scheme.