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NEWS

Special Issue – "The Darwin Legacy"

Welcome to the second special edition of Darwin News. In this issue, we present articles from completed Darwin projects. These provide a valuable insight into the continuing legacy generated by successful Darwin Projects.

You can find out more about any of these projects from the Darwin Initiative website, in the *Projects* section.

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Seahorses, from community support to global policy change [3-197]

Author: Dr. Amanda C.J. Vincent **Lead organisation:** McGill University

My Darwin Initiative grant, for Conservation biology of seahorses and pipefishes (1994-1996), has made a global conservation impact. Darwin funding allowed me to launch conservation field-work with colleagues in Vietnam and the Philippines. In collaboration with communities, we looked at the biology of seahorses and pipefishes, the ecological and socioeconomic importance of their exploitation, and our management and conservation options. We also developed the guiding vision for the Project Seahorse team that emerged from this Darwin project: a world in which marine ecosystems are healthy and well-managed.



Marine Protected Area (MPA) in Bohol, Philippines

Project Seahorse is an interdisciplinary and international organisation committed to conservation and sustainable use of the world's coastal marine ecosystems. We number about 35 professionals working around the world, and linking research and management at scales ranging from community initiatives to international accords. Collaborating with stakeholders and partners, we use seahorses to focus our efforts in finding marine conservation solutions.



Collaborating with the local fishing community in the Philippines

Our work in the Philippines has grown from the initial Darwin project into a regional force for marine conservation. We have catalysed and supported the establishment of 23 no-take marine reserves (for all marine life), all locally managed and enforced. Building from village level initiatives, we fostered creation of a regional alliance of small-scale fishers, now numbering more than 900 families across a 145 km double barrier reef. With our help, this group helps with community development, insists on law enforcement, implements marine reserves, and attracts media support. Among other ventures, our marine apprenticeship programme has funded 32 children from fishing families to attend and complete high school. All our programmes in the Philippines are now executed with the Project Seahorse Foundation for Marine Conservation, a registered non-governmental organisation.



Hippocampus comes

At the other end of the political scale, we used our biological and trade expertise to persuade governments into the first global trade regulations for marine fishes of commercial value. The signatories to Convention on the International Trade in Endangered Species (CITES) had repeatedly defeated moves to constrain marine fish exports to sustainable levels. With seahorses, we took our time, consulting widely, analysing trades repeatedly, mapping taxonomy and life histories, developing management options, and involving stakeholders. As a result, 169 countries must now ensure that seahorse exports do not threaten wild populations, a landmark action that facilitated similar controls on sharks and humphead wrasses.

We do what it takes to effect measurable advances in marine conservation. We have developed voluntary codes of conduct with traditional Chinese medicine traders in Hong Kong, generated joint conservation messages with public aquariums around the world to reach more than 10 million visitors each year, and published scores of biological and management articles and papers. New work explores the cultural basis of marine protected areas in the Philippines, the impacts of Mexican shrimp trawlers on small fish species, and marine planning by indigenous people in Canada. And it all began with a Darwin grant.

A living legacy for CEE peatlands [7-038]

Author: Dr. Olivia Bragg

Lead organisation: Peatlands Biodiversity Consortium

The Darwin Initiative Peatland Biodiversity Programme (PBP) focused on central and eastern Europe (CEE) through a critical time of political transition, when new mechanisms were needed to safeguard the future of the region's globally precious resource of mires and other peatlands. It worked as a capacity-building information cascade between Scotland and 13 CEE countries with significant resources of peatland biodiversity.

Between 1998 and 2001, nearly 700 CEE experts and practitioners participated in the 27 carefully tailored PBP courses and workshops that took place in Scotland and throughout the target region. By the end of the project, a wide range of planned and unplanned outcomes were reported, such as new approaches to promoting peatland conservation and new patterns of collaboration, in addition to various publications. The most significant legacy, however, is the escalating peatland conservation activity that is now happening in many of the target countries, and the central role that is being played in this by the 58 'core' Darwin Initiative PBP delegates who received training in Scotland.



Map of Europe showing Scotland and the area covered by the PBP target countries Belarus, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Slovakia, Slovenia and Ukraine

For example, the extent of peatlands in Slovakia was unknown five years ago; there is now a national peatland inventory, peatland education in schools and a developing peatland management programme backed by ecohydrological research, achieved through a series of three internationally funded projects instigated and led by PBP trainees.

In target countries anticipating 2004 accession to the European Union, PBP trainees were also ready to grasp opportunities presented by the EU-LIFE funding programme, for example to restore the Häädemeeste wetland complex in Estonia (2001) and to implement the mire habitat management plan for Latvia (2004). Indeed, the wheel has now turned almost full-circle. This summer, three PBP alumni will bring 25 personnel engaged on a EU project aiming to conserve Baltic raised bogs in Poland to see the latest results of similar work in Scotland. This time, they will pay the bills!



Repairing drainage in a Russian peatland during a PBP follow-up project. Photograph: Alexander Mischenko.

The Darwin Initiative Peatland Biodiversity Programme was co-ordinated by the University of Dundee Geography Department on behalf of the Peatland Biodiversity Consortium, which comprised six academic, government and non-government organisations with key roles in Scottish peatland conservation. The consortium organisations were Scottish Natural Heritage, the Scottish Wildlife Trust, the universities of Aberdeen, Dundee and Stirling and the Macaulay Land Use Research Institute.



A full account of the Peatland Biodiversity Programme can be found in the book *Sharing Expertise for the Conservation of Peatlands in Central and Eastern Europe*, available at http://www.imcg.net/ (Publications).

MAB biosphere success for San Andres archipelago [7-147]

Author: Dr. James Mair

Lead organisation: Heriot-Watt University

THE Darwin project, entitled 'Marine habitat mapping development in San Andres Archipelago, Colombia' ran from 1998-2001. The Colombian host organisation, CORALINA (Corporation for the Sustainable Development of the San Andres Archipelago – http://www.coralina.gov.co) at that time had been working for several years towards gaining United Nations Man and the Biosphere (MAB) Biosphere Reserve designation for the Archipelago. Using information obtained from the Darwin project (especially the marine habitat mapping part of the project), CORALINA successfully obtained MAB status for the "Seaflower Biosphere Reserve" in 2000 and, subsequently, national declaration of the "Seaflower Marine Protected Area" in 2005. Visit the UNESCO directory here:

http://www2.unesco.org/mab/br/brdir/directory/biores.asp?mode=a ll&code=COL+05



Stakeholders (artisanal fishermen) making decision on marine zoning in Seaflower Biosphere Reserve

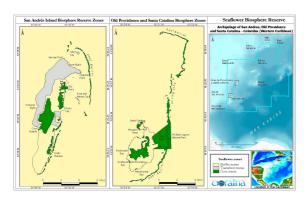
CORALINA's Darwin Fellows (Mr Anthony Mitchell and Ms Martha Ines Garcia) have trained and supervised continued research of numerous local inhabitants and Colombian students and this has assisted greatly in the early development and management of the Seaflower reserve. Since the end of the Darwin project in March 2001, staff at Heriot-Watt University and CORALINA have maintained particularly close and mutually beneficial collaboration:

- i) Anthony Mitchell obtained a first round Darwin Scholarship to work at Heriot-Watt University during 2004 and he continues links with the developing Darwin Network, including collaboration with current project 12/021 (see article in Darwin Newsletter Issue 3)
- ii) CORALINA has hosted 15 Heriot-Watt University MSc students since 2001 to carry out relevant marine research dissertation work in San Andres.



Two students receiving training in GIS from CORALINA staff

More recently, and resulting from the small network of Darwin marine-related projects developing in Central and South America, both Mr Mitchell and Ms Garcia plus Ms Delis Hernandez (Chief of CORALINA's Environmental Management Section) attended the Darwin project Conference held in Panama in March 2006 (http://www.darwin.gov.uk/news/projects/las perlas conference.ht ml). They presented work resulting from the Darwin project in San Andres and experiences in developing the Seaflower Biosphere Reserve and Marine Protected Area (MPA). They also participated in Workshop sessions where experiences on similar Darwin marine protected area studies were shared (amongst others, Darwin Projects from Ecuador mainland - 06/029, Galapagos -14/048, San Andres, Colombia - 07/147 and Las Perlas, Panama -12/021). It is expected that this network of Darwin workers from these neighbouring countries and others, plus the UK personnel involved, will continue to grow since all workers and organisations involved have much to gain from sharing such experiences and knowledge in assisting the host countries in successfully managing marine biodiversity.



Zoning of the Seaflower Biosphere Reserve, San Andres Archipelago, Colombia

Bananaquits, Butterflies, Big-eared Bats & Belongers: Biodiversity in the Turks & Caicos Islands [8-164]

Authors: Dr. Oliver D. Cheesman & Mike W. Pienkowski Lead organisation: UK Overseas Territories Conservation Forum (UKOTCF)

THE Turks & Caicos Islands (TCI), one of the UK's Overseas Territories, lie at the southern extreme of the Bahamas archipelago. Within the TCI group are islands relatively unspoilt by intensive development, including those (North, Middle, and East Caicos) at the heart of a substantial wetland of international importance. This is one of the largest and most natural sites listed under the Ramsar Convention by the UK Government, and probably the best example of its type in the Caribbean. The area supports fascinating but poorly documented biodiversity, and local people ('Belongers' in TCI vernacular) expressed a wish to preserve this important natural heritage, whilst investigating opportunities for sustainable, low-impact ecotourism.



The Bananaquit *Coereba flaveola*, one of around 200 birds recorded from TCI (Photograph: Mike Pienkowski)

Between 1999 and 2002, a Darwin Initiative grant supported the UK Overseas Territories Conservation Forum (UKOTCF), CABI Bioscience, and the Turks & Caicos National Trust (TCNT) in developing a management plan for the area. Baseline biodiversity surveys were undertaken, for plants, birds, herpetiles, bats, and some insect groups, particularly butterflies. A habitat map, and the first accurate map of the Ramsar site itself, was produced. Surveys showed that, in addition to the recognised value of the wetlands, the associated dry scrublands and woodlands are of great importance for wildlife. They support a number of local endemics, provide overwintering habitats for rare North American birds, and local cave systems contain significant bat roosts. Throughout the surveys, local people provided valuable insights, and were involved in training sessions (including very popular visits by biodiversity specialists to local schools). Whilst this work would not have been possible without the support of the Darwin Initiative, it also relied on unpaid work by the specialists, and on substantial in-kind contributions from UKOTCF and TCNT.



Visiting specialist Tony Hutson shows Middle Caicos school children a bat from the local caves, which support a number of species including the Big-eared Bat *Macrotus waterhousii* (Photograph: Oliver Cheesman)

The management plan arising from the Darwin project (see under Publications on the Forum website: http://www.ukotcf.org) provides recommendations for the management of key sites and areas. These include the development of a network of trails (based on traditional 'field-roads') for use by ecotourists and local people. The real value of such a plan, of course, is in its implementation, so UKOTCF and TCNT have worked tirelessly to ensure that this ultimate legacy of the Darwin project comes to fruition. Follow-up funding has come from various sources, locally and in the UK, including the Overseas Territories Environment Programme (OTEP), a joint Foreign & Commonwealth Office / Department for International Development scheme. Together, these extra funds have supported additional survey work (again by unpaid volunteers), the production of a series of illustrated field-road guides and other interpretation materials, the installation of viewing platforms, training of local guides, and small business workshops. A former school building on Middle Caicos, donated by the TCI Government, is being developed into a visitors and education centre. In 2004, the first field-road trails were officially opened by the Hon. Jeffrey Hall (local Legislative Assembly Member, and Minister of the TCI Government), who said: "As we celebrate today, I wish to remind you to enjoy the plants and animals that are indigenous to Middle Caicos. We want to share these with many more generations of people - islanders and visitors alike....and we pledge not to destroy or compromise your efforts." Long may those words ring true.



Drury's Hairstreak Strymon acis leucosticha, a subspecies endemic to TCI (Photograph: Oliver Cheesman)

Conservation of the Bornean orang-utan in Sabah [9-016]

Authors: Prof. M.W. Bruford and Dr. B. Goossens **Lead organisation:** Cardiff University

CARDIFF University and its local partners (Sabah Wildlife Department, Kinabatangan Orangutan Conservation Project and University Malaysia Sabah) saw the need for the provision of critical genetic information on a Bornean orang-utan population located in the Lower Kinabatangan Wildlife Sanctuary in Sabah, Malaysia. The area contains one of the main populations of orangutan, which is a flagship species for wildlife conservation in Malaysia.

Due to their unique diversity and abundance of wildlife, the remaining forested areas in this region were recently gazetted with a view to creating a corridor for wildlife along the floodplain of the Kinabatangan River. However, these forests are seriously fragmented and it was not known whether this habitat fragmentation and its resultant isolation of orang-utan sub-populations would impact the long-term survival of the orang-utan in this area. The results of the genetic study were astonishing: for the first time a recent and alarming decline of a great ape population – brought about by man – was demonstrated, dated and quantified using genetic information. The results were immediately made available to decision makers in position to make management changes that will improve the viability of the remaining orang-utan populations in the project area and in Sabah.



The Kinabatangan river and its riparian and degraded forests, home of one of the largest orang-utan populations of Sabah, about 1,100 individuals. The study carried out during the project took place in the Lower Kinabatangan floodplain, recently gazetted as a Wildlife Sanctuary in August 2005. (Photo credit: Benoît Goossens)



Maria, a female orang-utan living in the highly fragmented forest of the Lower Kinabatangan Wildlife Sanctuary in eastern Sabah. Her future is in the hands of humankind, who clearly pushed the species to the brink of extinction during the last century, according to the study carried out during the project. (Photo credit: Jamil Sinyor)

Scientists involved in the second survey recommended at an international orang-utan conference held at Shangri La's Tanjung Aru Resort here in August 2003 that YS keep these commercial lowland forests under natural forest management and do oil palm planting outside the biodiversity-rich lowland forests. Then Chief Minister Kah Kiat, who closed the conference, promised the report would be submitted to the Cabinet for a decision once the department had finalised the report. Wednesday 15 March, 2006 was that day of decision and would change the future of the orangutan in Sabah.

The Cardiff team is currently working with its partners in Sabah to set up effective conservation measures that will help protecting the orang-utans. Moreover, a number of host-country nationals have benefited from training and capacity building. One Malaysian student, who was a trainee during the project, is currently finishing his PhD at Cardiff University. A functional laboratory on non-invasive genetics has also been installed at the Institute for Tropical Biology and Conservation, University Malaysia Sabah, and is now used for other research projects.



A young Bornean elephant male in the forest of the Lower Kinabatangan Wildlife Sanctuary. The new DI project (14-014) currently carried out by Cardiff University and its partners in Sabah will help setting up conservation measures for the Bornean elephant populations in Sabah. (Photo credit: Benoît Goossens)

The groundbreaking findings of our research were published in top ranking international biology journals such as PLoS Biology (2 papers), Molecular Ecology (2 papers) and Animal Conservation (1 paper) and have attracted widespread media coverage including local press in Sabah (Daily Express, New Sabah Times, etc) and Malaysia (New Straits Times, The Star, etc), British press (The Times, The Guardian, BBC, etc), world press (Washington Post, National Geographic, The Hindu, Le Monde, Libération, etc) and the internet (more than 60 web pages). Finally, the project led to another initiative (DI 14-014) currently focusing on the conservation of the Bornean elephant in Sabah.

New partnerships for plant conservation in the Seychelles [10-006]

Author: Dr. Anthony Kendle **Lead organisation:** Eden Project

FROM 2001 to 2004 the Eden Project worked with staff from the Ministry of the Environment of the Seychelles to increase knowledge of propagation of endemic plants to support restoration and re-introduction programmes.

During that time, we developed a real partnership and the project team continues to collaborate on a range of projects. From the Seychelles, Frauke Fleischer-Dogley is researching the conservation management of the Coco de Mer palm, *Lodoicea maldivica*. Denis Matatiken has been promoted to Director of the Botanical Gardens in Victoria, Mahé. He is currently in the UK studying an MSc in Plant Conservation at the University of Plymouth, and is working with the Eden Project on a research project on propagation of the *Impatiens gordonii*.



Impatiens gordonii in the wild

The work on the island is gaining strength. During our Darwin project work, we saw the development of a new nursery dedicated to the propagation and growth of endemic plants at Barbarons on Mahé, and we organised training programmes for the nursery team. The number of species that are being grown has steadily increased and successful restoration projects are also underway.

Without question, the most exciting development has been the establishment of a new NGO in 2004, the Plant Conservation Action group (PCA). In a short period of time, the PCA has started a dynamic programme of activity including adopting new reserves and conservation efforts on the ground and a wide range of educational initiatives. Newsletters with contact details are available for download from

http://www.geobot.ethz.ch/publications/books/kapisen



Ray of Hope sold at Eden to raise money for plant conservation

The PCA has also been active at a policy level and lead an initiative that produced the National Plant Conservation Strategy for the Seychelles, which was a first for a small island nation. The production of the strategy was financially supported by the Eden Project, and it was launched in March this year.

In the UK millions of visitors to Eden Project have been introduced to the need and challenges of protecting endangered island plants, and in particular the flagship species of the Darwin project. Alistair Griffiths of the Eden scientific team has produced a new hybrid Impatiens that has the rare *I. gordonii* as one of its parents. This has been sold through the Eden shop under the name

'Ray of Hope' with profits going to support continued plant conservation on the islands.

As part of the learning and research for the project work, we identified several gaps in the published generic guidance for developing propagation strategies for plants that are close to extinction, We therefore worked with the Alliance for Sustainable Horticulture to produce Guidelines for Horticulture for Critically Endangered Plants. This will be the first of a series of related publications, and is available for download from http://www.sustainablehorticulture.org/

Developing a parataxonomist team for biodiversity surveys in Papua New Guinea [10-030]

Author: Dr Alan J.A. Stewart **Lead organisation:** University of Sussex

PAPUA New Guinea (PNG) contains 5-8% of the world's biodiversity, including at least 20,000 species of plants (70% of them endemic) and a large, but unknown number of insect species. It has been designated as one of the world's three major tropical wilderness areas, but it is extremely inaccessible and enormous tracts of forest remain virtually unexplored by biologists. Although 70% of the original forests of PNG are still intact, they are coming under increasing pressure due to population increase, the increasing aspirations of the people towards material development, and increasing demand for timber as exploitable forests in neighbouring Malaysia and Indonesia diminish. Identifying which parts of the existing forests in PNG are most valuable is currently the top conservation priority, at a time when the government is considering granting major logging concessions. However, in 1993 the PNG Conservation Needs Assessment report identified poor knowledge of the country's biota as a major obstacle to designing conservation strategies



'Bush laboratory' in Ohu village, constructed as a base for biodiversity surveys in pristine rainforest

In the PNG social and legal system, the predominately rural population retains traditional land tenure rights over 97% of the territory. A significant proportion of the people live in villages scattered in the forests. Their land is a major source of income because it is used for subsistence food gardens as well as for small-scale cash crop farming. As village landowners weigh their options for future development of their forests, they need access to information on the value of their resources and alternatives to granting concessions to logging companies, which would bring income but would also destroy the traditional subsistence way of life in the village.

Working with the New Guinea Binatang Research Center in Madang ('Binatang' means 'insect' in the local Tok Pisin language), this project has been equipping and training a team of twelve 'parataxonomists' to carry out plant and insect surveys in remote parts of the country. Parataxonomists are trained to do everything from collecting field data and specimens following strict protocols, to preliminary identification and preparation of specimens for verification by museum taxonomists, macrophotography and databasing of specimens, initial analyses and presentation of results through webpages, posters and conference presentations. The team is now recognised as one of the top parataxonomist teams world-wide. We hope that our approach to gathering biodiversity data, based on collaboration between indigenous people, parataxonomists and researchers, will become common practice for surveying hyper-diverse biological communities throughout the tropics.



Parataxonomists talking to local school children about rainforest insects and environmental issues

The team also pursues an active environmental education programme for school children and grassroots villagers. Parataxonomists have proved to be particularly effective communicators in this respect, making complex environmental information readily accessible for village landowners. The team is also getting increasingly involved in working alongside and helping to train PNG postgraduate students as the next generation of conservation biologists.

The most important legacy of the Darwin project will be the knowledge, skills and experience obtained by the parataxonomist team (14 individuals to date). The team has proved its ability to obtain contracts for biodiversity surveys from both the research and commercial sphere, including WWF South Pacific, Misima Mines Ltd., various overseas universities, as well as the Smithsonian Institution and the National Geographic Society in the USA. By focusing the post-project work on training in fundraising and financial management, and broadening the scope of biological training to include marine biodiversity and increasing its sophistication, particularly in data analysis, it is helping to ensure the team's long-term sustainability well beyond the life of the original Darwin project.



Parataxonomist Micah Damag sorting hundreds of moth species from a Darwin biodiversity survey

Darwin legacy for bat conservation in Madagascar [10-024]

Author: Dr. Richard Jenkins **Lead organisation:** University of Aberdeen

Successive Darwin Initiative projects from the University of Aberdeen aimed to rectify the chronic neglect of the island's endemic bat fauna through a programme of conservation research and capacity building. Madagascar needs a group of well-trained and enthusiastic Malagasy scientists to promote bat conservation and to maintain its presence on the conservation agenda. In collaboration with three host country university departments, 13 Darwin Trainees have graduated from Diplôme d'Etude Approfondie (masters) programmes as specialists in either fruit bats or insectivorous bats and a further eight more are currently

under supervised study and are expected to complete their training in 2007/08



Bat detector training for Malagasy students

The initial Darwin Initiative projects were therefore successful in their first objective of capacity building and assisting Madagascar to incorporate bats into its biodiversity agenda and its short-term legacy was a cadre of trained bat biologists.

The lack of opportunities for these newly qualified, dynamic biologists to secure the type of employment that would enable them to further promote bat conservation is symptomatic of the neglect of bats by international and national conservation bodies in Madagascar. For the Darwin Initiative projects to have a long-term legacy, the bat trainees needed to operate in an environment where they can continue to champion bat conservation and use the skills and knowledge acquired during the Darwin sponsored training.

Until recently, all of Madagascar's bat biologists have come through the University of Aberdeen's Darwin Initiative projects and there are no other people able or willing to engage themselves full-time in bat conservation. The Darwin Initiative legacy will therefore last longer than the life of the grant if some of these people are active as full-time bat conservationists. In close cooperation with our host country partners we therefore identified a second objective, which was to establish a new Malagasy conservation organisation.



Field classes in bat identification

In May 2005, with support from the Darwin Initiative Post Project funding scheme, a new Malagasy conservation organisation was formed called Madagasikara Voakajy (MV). It was founded by team members from Darwin bat projects and representatives of our host country partners constitute its board. MV now employs Darwin trainees from three previous Darwin projects and provides an operational base from where these Malagasy biologists can launch their careers in conservation and engage with other organizations.

MV's remit includes the conservation of all endemic Malagasy vertebrates and we have already employed a former Darwin Trainee from a University of Kent chameleon project as its herpetologist. With the essential assistance of the Darwin Post-project grant we therefore succeeded in meeting our second objective which was the creation of a Malagasy conservation body.

This team uses the identity, profile and resources of MV and is active in the conservation scene in Antananarivo (e.g. various

workshops on planning, creating protected areas) as well as organizing a wide range of field activities. It is the only bat specialist team in Madagascar and its projects include conservation education, training protected area guides and ecological research.



Pteropus rufus

Our aim now is to consolidate the new organization to cement the Darwin legacy and to meet the aspirations of Madagascar's leading young biologists; this constitutes our biggest challenge to date. MV relies 100% on project income and has no core funding. Fund raising is therefore key to the organization's success and takes up an increasing amount of time. In this respect, the close support of a Darwin funded English-speaking scientific advisor with strong connections to international bodies (since most funders are based in the UK or USA) is a huge advantage.

Without the creation of MV, the Darwin legacy would be left entirely to the vagaries of the recruitment policies of international NGOs in Madagascar; a community that has traditionally neglected bats. With the creation of MV, the Darwin legacy and the ca. £500,000 invested by DEFRA, has a strong foundation and Darwin staff are engaged in high profile, innovative and relevant activities. MV is a potential host-country partner in future collaborations with British institutions on Darwin Initiative projects - and there is no better indicator of the legacy of the earlier Darwin projects than the long-term survival of this new conservation organization.