

Darwin Initiative – Final Report

(To be completed with reference to the Reporting Guidance Notes for Project Leaders
(<http://darwin.defra.gov.uk/resources/reporting/>) -

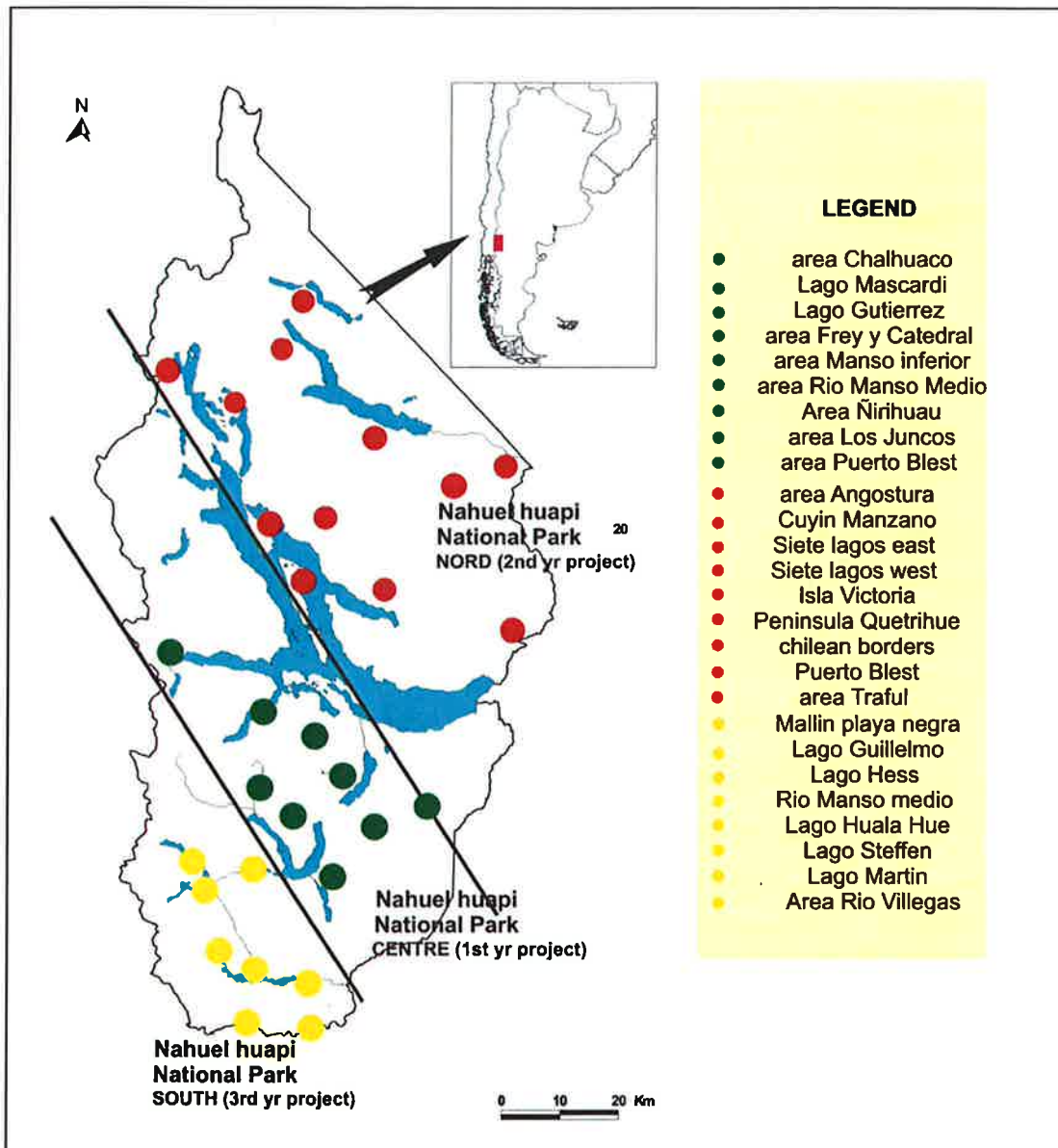
it is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)

Darwin project information

Project Reference	15/025
Project Title	Capacity building for biodiversity studies of freshwater insects, Argentina
Host country(ies)	Argentina
UK Contract Holder Institution	Natural History Museum, London
UK Partner Institution(s)	None
Host Country Partner Institution(s)	Museo de Ciencias Naturales de La Plata (UNLP) Instituto de Biodiversidad y Medioambiente (INIBIOMA, CONICET) Administracion Parques Nacionales (APN) Universidad de la Patagonia, Esquel, Chubut (UNP) Instituto Limnologia de La Plata (ILPLA)
Darwin Grant Value	£178,880
Start/End dates of Project	1 September 2006 – 31 August 2009
Project Leader Name	Stephen Brooks
Project Website	
Report Author(s) and date	S. Brooks, G. Spinelli, J. Massafferro April 2009

1 Project Background

Nahuel Huapi National Park (NHNP) is a biodiversity hotspot in northern Patagonia, Argentina, and is rich in a wide variety of wetlands. However, little was known about the diversity of freshwater insects in the park, there was poor appreciation of the value of wetlands amongst local people and park visitors, and the national park authorities (APN) had no conservation strategy for its wetlands. Our project sought to address this problem by equipping a field station, developing interpretive material, establishing a GIS database and reference collection of freshwater insects, running courses, and building collaborative networks between stakeholders.



Nahuel Huapi National Park showing the areas sampled during the three years of the project.

Abbreviations

APN Administracion Parques Nacionales

CENAC Centro De Estudios Aplicados a la Conservacion de la Biodiversidad

CONICET Consejo Nacional de Investigaciones Cientificas y Tecnicas (Research Council)

EBPB Puerto Blest Biological Station

GIS Global Information Systems

ILPLA Instituto de Limnologia, La Plata

NHM Natural History Museum, London

NHNP Nahuel Huapi National Park

CRUB Centro Regional Universitario Bariloche

UNC Universidad del Comahue

UNLP Museo de Ciencias Naturales de La Plata

UNP Universidad de la Patagonia, Esquel, Chubut

2 Project support to the Convention on Biological Diversity (CBD)

The project has supported the host country to meet four of the five 2010 Biodiversity Targets i.e. 1. sustainable use of biodiversity, 3. bio-regional planning and use of land, 4. protected areas and education, 5. communication and capacity-building. Details of how our project has achieved this are provided under section 4.1 below.

The project has provided considerable support to APN in NHNP to build its capacity to meet CBD commitments through identification and monitoring (art. 7), research and training (art. 12) and public education and awareness (art. 13). We have also contributed towards exchange of information (art. 17). We can confidently expect that the work we have started will continue and is likely to expand, the evidence being the establishment of CENAC and the MoU between APN, CONICET and UNC (in Spanish, available on request).

The project has had contact with the CBD focal point in Argentina, Victoria Lichtschein (National Conservation Agency). Project partners will continue to develop their relationship with the CBD focal point and have organised a meeting in early November to discuss how the project partners can expand and develop their work to assist with meeting CBD commitments beyond the end of our project.

3 Project Partnerships

Host country partners, teamed with the Natural History Museum, London, comprised freshwater insect specialists from several Argentinean Universities and national museums and the local national parks administration of Nahuel Huapi National Park (NHNP). The focus of the science partners was to investigate the biodiversity and distribution of the freshwater insects in NHNP, to develop, publish and disseminate specialist and non-specialist identification guides and interpretative material, to establish an accessible reference collection and distributional database of freshwater insects and their habitats, and to use this material to train undergraduate and post-graduate students. The role of APN was to provide logistic support during fieldwork, advice on their wetland conservation strategies and to manage the field station and biodiversity laboratory that were established during the project. Over the course of the project the team developed a close working relationship, which has resulted in a new collaborative atmosphere between biologists and APN where previously there had been little contact. This has resulted in real on-going benefits for informed and targeted conservation planning in APN.

All partners were involved in project planning from initial concept through to final delivery and the project received enthusiastic support from senior figures in national agencies who confirmed a national need for the objectives and deliverables which go towards fulfilling Argentina's CBD obligations.

The project has recently established a Memorandum of Understanding with the Nahuel Huapi National Park's Administration to run a new Biodiversity Conservation Centre (CENAC). This centre will be run in addition to the Puerto Blest field station and the Biodiversity Laboratory in Bariloche, which have already been set up during the course of our project. This demonstrates real commitment between APN and the Project Partners to maintain and continue developing the initiatives already begun during our project and is a clear indication of the lasting legacy of the project which will continue to deliver biodiversity conservation of wetlands in NHNP. This is the first such centre anywhere in Argentina and promises to be a model that will be followed elsewhere. The CENAC consortium will provide conservation advice throughout the country.

A significant achievement of the project was the excellent working partnership and cohesion that developed during the course of the project which resulted in an excellent *esprit de corps*. This was particularly the case concerning the involvement of APN which resulted in a far greater input, especially in terms of logistic support and provision of accommodation (i.e. for the Biodiversity Laboratory and CENAC) than had originally been anticipated in the project proposal. The excellent working relationships between all project partners has contributed significantly to the project legacy (described below) and also in spin-off projects that have developed. No difficult negative challenges emerged between the project partners. We enjoyed a remarkably trouble-free partnership. This is in no small part due to Dr Julieta Massaferro, who was employed in Argentina on the project as coordinator, and who carefully advised on the composition of the project team.

4 Project Achievements

4.1 Impact: achievement of positive impact on biodiversity, sustainable use or equitable sharing of biodiversity benefits

The main foci of our project, as agreed in the initial project design, were towards improving institutional capacity in support of biodiversity conservation of freshwater insects in NHNP and improving awareness of the importance of wetlands as ecosystem serviced providers. Through our outreach to local communities we have seen a positive change towards understanding the importance of this resource and its sustainable use.

The project goals and outcomes should be viewed within the context of the 2010 Biodiversity Target in Argentina. The main priorities of this protocol are 1) sustainable use of biodiversity, 2) restoration of degraded lands, 3) bio-regional planning and use of land, 4) protected areas and education, 5) communication and capacity-building. Our project met four of these priorities.

1. Sustainable use of biodiversity. A contribution to this has been the training courses we have run on using freshwater invertebrates as indicators of water quality. Training APN Rangers in biomonitoring techniques has been especially effective and they are now running biomonitoring programmes on three different local river catchments. Two rivers are affected by erosion caused by ski tourism, organic pollution from a local town and farm run-off, the third by impacts of natural volcanism. During our project we have also interacted with the Mapuches indigenous community. For example, the Mapuches from the community of Lof Wiritray were concerned about foamy scum along the northern shores of the local lake. We showed them how to sample freshwater insects, how to identify the key insect groups, and explained how the presence or absence of particular elements of the insect fauna can reveal the water quality of the lake. We also held several well-attended workshops for local people and tourists on wetland biodiversity conservation and also took the opportunity to discuss our project with people we met during fieldwork or who visited the laboratory and field station, or who volunteered to work with us. Team members also identified insects that people brought to APN, and explained to them their biology and ecology.

3. Bio-regional planning and use of land. The new cooperation and synergy that has developed between the scientific partners and APN during the project has provided an opportunity to work on pressing environmental issues in the park. One of the most important problems we are currently tackling is the pollution of water bodies due to the increase in tourist pressure. APN identified this problem and asked us to work together to investigate this issue. A PhD student, supervised by project partner at UNLP, is currently using bioindices to investigate which areas of NHNP are impacted. She receives logistical assistance from a team of park rangers. The final report will be used by APN to plan remedial action where necessary and will be fed into technical reports and documents for governmental institutions, as well as scientific publications.

4. Protected areas and education. Limited progress has been made in this activity in Argentina at present. Legislative and institutional gaps have not yet been identified and there is a need for a more thorough assessment, although a partial national plan for financing protected areas is supported by the Ministry of Environment and Sustainable Development and international donors (see CBD website on 2010 national biodiversity strategy). Our project has been cited by the Ministry of Science, Dr Baranao and CBD as a good example of progress to achieving this goal.

One of the most important achievements in terms of education were the courses that we have run and are still running beyond the end of the project. We have developed a 2-3 day workshop programme, which includes classroom and fieldwork activities for primary schools that is taught by our field assistants and personnel from APN. The workshops include presentations on wetland biodiversity, environmental impacts and why freshwater insects are important, practical work in the class room, including insect identification using microscopes, and field work, during which the children can try insect sampling.

We have also targeted courses for anglers and others with an interest in wetlands, providing training in sampling, biomonitoring, laboratory methods and identification of aquatic insects, and highlighting the importance of biodiversity conservation.

We have produced a wide variety of leaflets and posters on wetland biodiversity aimed at non-specialists. We are also in the final stages of completing a field guide to freshwater insects (in Spanish, available on request), the first of its kind in Argentina, which will be commercially published and widely available in bookshops and sports shops. The book is aimed at people with an interest in the natural world and we expect it will promote a wider awareness of wetlands conservation and will provide a means for people to take a deeper interest in the subject. Books like this are commonplace in Britain and have resulted in a large, broad-based and knowledgeable amateur naturalist community who are responsible for much of the conservation work in the UK. We can hope that our publication, backed by the enthusiasm of CENAC, may start a similar movement in Argentina.

5. *Communication and capacity-building.* An early achievement of the project was the equipping and furnishing the Puerto Blest Biological Station (EBPB). This building, established and maintained by UNC and APN, had been an empty shell for several years before the start of the project. Now it is a fully functional biological field station and has been regularly and frequently used by national and international scientists for biodiversity field studies, conservation and also as a venue for international workshops. Use of EBPB in this way has generated income for APN. We have also equipped and furnished the Biodiversity Laboratory in Bariloche, under APN management, which we have used for sorting, identifying and data-basing the specimens we have collected, and it will continue to be used in this way by APN and UNC. Most recently, we have also established the Centre for Biodiversity Studies (CENAC). This new initiative, which will be housed in a dedicated building provided by APN, will bring together scientists, students, technicians, APN managers and rangers with a focus on environmental, biodiversity and conservation studies. The project will be supported and funded by APN, CONICET and funds from research grants and consultancy.

4.2 Outcomes: achievement of the project purpose and outcomes

Project purpose: To develop capacity in northern Patagonia for the identification, surveying, monitoring and mapping of freshwater insects.

This was to be achieved by:

1. Using our expertise in the collection, identification, monitoring, storage and curation of freshwater insects to build infrastructure and capacity at the Puerto Blest Biological Field Station, Nahuel Huapi National Park, Argentina, as a centre for the study of wetlands, and to develop local expertise in this field that can be transferred as a model of Best Practice to the rest of Argentina and southern South America.
2. Compiling an inventory of freshwater insects and a GIS-based vegetation map in NHNP and providing information on the biodiversity and biogeography of pristine freshwater ecosystems in the region as a baseline against which damaged systems can be measured and the success of remediation assessed.
3. Providing specialist and non-specialist identification guides to freshwater insects.
4. Developing a multi-tiered education programme at the Puerto Blest field station which provides interpretative material, workshops and courses on freshwater ecosystems for the local community, university and school students, eco-tourists, national park rangers, sport fishermen.

The project has succeeded in its original purpose and achieved or exceeded all of the four outcomes listed above.

Using Darwin Initiative funds we have fully equipped and furnished the Puerto Blest Biological Field Station (EBPB). EBPB is managed by Laboratorio Ecotono, UNC, and is open, accessible and available for bookings. The field station is used frequently by visiting scientists and for national and international workshops and courses. We have increased infrastructure over and above our initial expectations by also using Darwin Initiative funds to furnish and equip the Biodiversity Laboratory in Bariloche. The building was made available for our use during the second year of our project as a result of successful negotiations between our partnership and APN and following the visible success of EBPB in promoting wetlands conservation studies in NHNP. In the latter months of the project we have made further progress in infrastructure and capacity building by the establishment of the Biodiversity Conservation Centre, CENAC. The close working relationship we have established between conservation scientists and APN is a first in Argentina and promises huge rewards in terms of

informing targeted conservation strategy. This collaboration has drawn a lot of interest from conservationists and biologists throughout Argentina who have contacted the project partners for advice on developing similar initiatives elsewhere in Argentina, as a result we have achieved our goal of providing a model of Best Practice. Further capacity building, to enhance academic taxonomic research and student training, has been achieved at UNLP with the provision of cabinets to house the collection of insects from NHNP, and at ILPLA with the installation of digital imaging equipment.

We have developed a database of freshwater insects collected from 337 sampling sites from throughout NHNP. This database includes the names of the taxa collected from each site together with physical and chemical data from each sampling site, mapped onto terrestrial vegetation types using GIS, based on satellite images and ground-truthing. This database is available for use by conservation biologists and APN to identify biodiversity hotspots within NHNP, the location of rare species and habitats, and the location of degraded habitats in order to develop a targeted conservation strategy for wetlands in NHNP. The insect collection is stored at UNLP in ethanol in air-tight jars and cabinets purchased by the project. The collection is sorted systematically and is fully curated and accessible to visiting researchers. A duplicate collection is stored at the NHM. There is also a supplementary collection stored in 100% ethanol for the purpose of DNA analysis.

We have designed, developed and published a series of specialist and non-specialist identification guides and taxonomic papers on the freshwater insects of NHNP (Annex 5). These publications are the first of their kind in Argentina and will encourage and facilitate the study and understanding of freshwater insects throughout Argentina and beyond.

We have provided a series of multi-tiered courses on conservation, biodiversity and sustainable use of wetlands for visitors to NHNP, students, school children, anglers, park rangers, and local community groups at EBPB, APN offices at Bariloche and at local schools. These courses have all been well-received, generated further interest in the project and the project goals, and also stimulated interest from people who have subsequently volunteered to assist in the project or asked us to investigate possible pollution incidents.

4.3 Outputs (and activities)

All outputs of the project set out in the original proposal have been achieved.

We have compiled a database of the distribution of almost 300 species of freshwater insects across a representative sample of wetlands in NHNP and characterised their physical, chemical and biological properties. Population of the database is on-going as the specialist taxonomists work through the material we have collected, which amounts to thousands of specimens.

All the Darwin-funded staff completed their training and, as a result, are fully competent in sampling methods, specimen identification, specimen preservation and curation, databasing, basic GIS methods, development of interpretative material and providing training courses to non-specialist audiences.

Publications based on material collected during the project included 38 scientific papers in peer-reviewed journals, one book, and three non-specialist identification guides. Project partners gave 17 oral presentations based on the project at scientific conferences and 3 lecture series (see Annex 5). The project partners have co-authored a field guide to the freshwater insect families of NHNP which is due to be commercially published (in Spanish, available on request). Each family account is written by the appropriate specialist, drawn from the project partners, and illustrated from material collected during the project fieldwork, using the imaging equipment purchased by the project.

EBPB is in extensive use by scientific visitors carrying out research in NHNP, and for national and international workshops.

Project partners have organised courses, workshops, lectures and talks on biomonitoring, wetland conservation, freshwater insect taxonomy and ecology for a range of specialist and non-specialist audiences, involving adults and children. The project has generated considerable

national and local media interest and featured in newspaper and magazine articles, radio and television interviews (see Annex 4).

A fully curated, systematically arranged, data-based and accessible collection of the insect material collected during the project is stored at UNLP in dedicated cabinets purchased by the project. A supplementary collection of duplicate material will be deposited in the NHM. The collection will be a valuable resource for professional and amateur taxonomists, PhD students and as a teaching aid for undergraduate students. The collection already includes several type specimens of new species described during the course of the project.

NHNP rangers have been trained in biomonitoring techniques and are running biomonitoring programmes as part of their duties in NHNP. Local community groups will be trained and recruited to undertake biomonitoring programmes on their local rivers through the CENAC initiative.

The project did not encounter any serious problems until towards the end of the project when the currency exchange rate began to deteriorate. At the beginning of the project the exchange rate was favourable and this allowed the funds to go further than originally anticipated. However, in the last 9 months of the project this became problematic necessitating some money to be vired between budget lines to make up shortfalls. However, this did not prevent us fulfilling any of our aims.

4.4 Project standard measures and publications

Standard measures are listed in Annex 4 and publications are listed in Annex 5.

4.5 Technical and Scientific achievements and co-operation

All members of the project team, including the staff recruited, have worked closely together throughout the project and all have made a significant input into the project planning and direction in which the project has developed. As a result several new collaborations have developed that would not have arisen had we not been working together on the Darwin Initiative project. Examples include a) grant proposal submitted by UK and Argentinean project members to National Geographic Society, USA, to work on freshwater insects in the Falklands Islands; b) supervision of the BSc project of Fernandez Montes de Oca (staff member) by Argentinean and UK project members (passed with distinction); c) Montes de Oca has now submitted a proposal for a PhD thesis following up the work she has done on the project under supervision of project members; d) grant award from CONICET to Donato to fund his visit to NHM during 2009; e) visit of Hernandez to University of Guelph, Canada, in 2009 to work on DNA bar-coding of material collected during project and subsequent invitation from Professor Paul Herbert to all project members for a collaborative project and contribution to the International Barcode of Life project. These are some examples of the way that the project has fostered new scientific collaborations between the project members.

The project has already generated a wealth of information about the freshwater insects of NHNP and this will continue to be updated because much of the material collected in the final year of the project has still to be worked on by the specialists. Annex 5 lists the peer-reviewed publications based on material collected during the project that have already appeared including checklists and descriptions of new species. We are compiling a database of freshwater insect distribution, associated with physical, chemical and vegetation data, which will reveal important new ecological information about the northern Patagonian freshwater insect fauna.

Staff. Below is a list of the personnel who have been directly involved in the project and listing the specialist contribution to the project. All personnel have been involved in developing all aspects of the project including project design, developing and presenting training courses, presentations and lectures, fieldwork, public outreach.

UK personnel

S. Brooks (NHM) project leader, Chironomidae, Ephemeroptera, Plecoptera, Odonata research

L. Hernandez (NHM) Simuliidae research

M. Penn (NHM) Vegetation classification, GIS research

Argentinean personnel

G. Spinelli (UNLP) national project leader, Ceratopogonidae research
M. Donato (UNLP) Chironomidae research
J. Muzon (ILPLA) Trichoptera, Odonata, Hemiptera research
M. Archangelsky (UNP) Coleoptera research
P. Passacq (UNP) Ephemeroptera, Plecoptera research
S. Seijas (ANP) logistic support

Staff employed on grant

J. Massafarro Local coordinator
F. Montes de Oca Field assistant
A. Garre Field assistant

Methods. One of the principal scientific goals was to collect freshwater insects from a representative sample of freshwater habitats in NHNP. Freshwater habitats were identified from maps, ground reconnaissance and advice from APN and covered a range of water-bodies of different sizes, flow rates, altitude, climate regimes and vegetation types. Insects were sampled using a range of techniques to capture all life stages including flight interception traps, hand-netting, kick sampling and light traps, and throughout the warm season from October to March. Water chemistry was sampled at each site using meters, physical conditions and vegetation-types were noted. A full list of variables measured is provided in Annex 7 of our 2008 annual report. NHNP was sampled in three stages: the central area in year 1, the north in year 2 and the south in year 3. To date most of the laboratory effort has focussed on identification of the insects collected and publication of taxonomic papers and identification guides. However, when the bulk of the samples have been identified, probably within the coming year, we will use multivariate analyses to explore the role of the environmental variables in driving the distribution of insects in NHNP. When our species distribution data are coupled with GIS data, we will develop models to be used to predict what species and species assemblages may be expected to be present in a given habitat type. We will further explore those that have richer or more impoverished faunas than expected to determine the underlying causes. This has potential as an important conservation management tool.

Results. A total of 337 sites was sampled during the course of the project resulting in the collection of thousands of insects. To date 291 different species have been identified from the samples including several new to science. These are the first data available on freshwater insects for NHNP. Most of the material collected during the final year of the project has yet to be identified but work on this is currently on-going and forms a major part of the future research commitments of the project partners. Mapping these data onto the GIS vegetation classification is at an early stage and cannot be completed until a more comprehensive picture of insect distribution in NHNP is available following completion of work on the bulk of the final year samples. The data and collections we have gathered have been made available to and are being used by MSc and PhD students at UNLP, UNC and ILPLA and some results have already appeared in the theses of 10 students or are part of on-going dissertations.

4.6 Capacity building

Equipping and furnishing the EBPB, the Biodiversity Laboratory and most recently CENAC, will build capacity for biodiversity studies in NHNP by providing a base for visiting researchers and students, where they can sleep and prepare food, while they explore and sample the NHNP, and study, process and store the material they have collected. These establishments will also provide a focus for meetings and workshops where scientists and conservation managers will come together to discuss conservation strategies and management plans for NHNP and in the wider APN framework. They will also act as interpretive centres where visitors to NHNP will be able to learn more about the biodiversity by examining interpretive material, hearing talks and meeting scientists and park managers. By training APN park rangers in biomonitoring techniques and identification of the major insect groups we have increased their effectiveness by improving the capacity of APN to monitor the quality of the wetland habitats in NHNP. In the coming year water quality monitoring teams, lead by park rangers and including undergraduate students, will be established in NHNP to take regular water and insect samples throughout the

park. Through our outreach to indigenous communities we have improved their capacity in the sustainable use of wetlands in their neighbourhoods. Through our educational programme in primary schools we have instilled knowledge of wetland biodiversity and the significance of wetlands as ecosystem service providers to the young generation, which will help to build capacity for future conservation efforts. The reference collections of insects, identified to species level, which we have developed and publications we have produced, will all help to build capacity by increasing knowledge of freshwater insects, encouraging and enabling more people to study them.

4.7 Sustainability and Legacy

An important achievement of the project has been to bring together university researchers, having specialisms in freshwater ecology, taxonomy and conservation, and APN staff charged with the conservation and sustainable use of biodiversity resources in NHNP. This is unusual in Argentina but is of obvious benefits for informed targeting of conservation resources by the national park authorities. Due to the success of our project, which has received wide publicity and interest from relevant stakeholders who have all commented on the above aspect of our project, we expect our model to be emulated in wider conservation circles in Argentina. We have received the enthusiastic support of the CBD office in Argentina who will promote this kind of collaboration elsewhere. This we see as one of the most important long-term legacies of the project because it has created a new mindset in the country. A tangible example of this is the creation of CENAC, an initiative bringing together conservation biologists, CONICET (Argentinean Scientific Research Council) and APN which promises, as detailed in the multilateral MoU, to provide a long-term forum and research base for conservation biology and sustainability studies in NHNP supported by national Argentinean agencies.

Another legacy, which we confidently expect to endure, is the continued use and maintenance of the EBPB and the Biodiversity Laboratory. These facilities continue to be in frequent and increasing use as a base for biodiversity research and education in NHNP. We have established a management committee comprised of the principal local stakeholders, which should ensure the long-term support of these establishments.

The taxonomic collections of insects, established in dedicated storage cabinets at UNLP, linked to the database of collection localities and the physical and chemical attributes of these water-bodies, will be an important research and teaching tool for decades to come. The collection and database represent the single most important collection of freshwater insects and their associated habitat characteristics yet made in Argentina. The supplementary collection housed in the NHM will also be an important research tool for a wider, international, community of research biologists and we can expect these collections to stimulate further research on freshwater habitats in Patagonia. As examples of this, Professor Peter Cranston (University of California, Davis) has been in contact to suggest new collaborative projects on the taxonomy and ecology of southern hemisphere chironomids to build on the work we have started, and we are also in discussion with Prof. Paul Herbert (University of Guelph, Canada) on DNA bar-coding initiatives both of which promise to further enhance understanding of biodiversity in northern Patagonia.

New and strong collaborative links have also been forged between the scientists directly engaged in our project. We have already submitted grant proposals for future work elsewhere in Argentina and in the Falkland Islands. In addition, the graduate and undergraduate student community at the various universities with which we are associated have benefited from the opportunity to work on the material we have collected. Therefore another legacy of the project is to build a strong Argentinean research base in freshwater insect taxonomy and ecology and a cadre of new students equipped to pursue this line of research.

The staff employed on the project have benefited through their experience by developing their careers further. Fernanda de Oca Montes will begin a PhD project on Chironomidae under the supervision of project members at UNLP and UNC as a result of the expertise she has developed while working and being trained on the project. Analia Garre will complete her PhD studies on Odonata based largely on data she has collected while working on the project. Dr Julieta Massaferrero is moving on to new research projects at UNC and will stay closely involved with steering the development of CENAC.

All project resources, in terms of buildings, furnishings and capital equipment, obtained during the course of our project will continue to be maintained and be available for use for the foreseeable future under the management of APN and UNC.

The scientific partners are already in active collaboration on new projects and project proposals (e.g. grant applications to National Geographic Society and CONICET) and have every intention of continuing to work together on Patagonian freshwater insect faunas, especially in the development of DNA taxonomy and population genetic diversity. In addition, new projects are being developed between the scientific partners and our partners at APN in NHNP through the CENAC initiative which will further conservation in NHNP. A priority for the consortium working through CENAC will be to draw up habitat management plans for NHNP using the data we have gathered during the project and the biomonitoring results.

5 Lessons learned, dissemination and communication

The most crucial aspect for the success of the project is the importance of having a reliable and trusted contact to work with in the host country. Dr Julieta Massaferro, who was employed on the project as co-ordinator, had worked successfully with Steve Brooks (NHM project leader) on various projects for seven years prior to the start of the project. Dr Massaferro also had close contacts with many Argentinean freshwater insect specialists holding key positions in various organisations in Argentina who had good track records and so could be relied upon to deliver project outcomes on time and to budget. Dr Massaferro had previously worked at UNC in Bariloche and so also had good links with APN management in NHNP. As stakeholders, all the project partners were highly motivated to achieve the project aims. There was a real need identified in Argentina to learn more about wetland insect biodiversity and conservation in view of CBD commitments. In addition, APN knew little about the biodiversity of wetlands in NHNP but wanted to be in a position to prioritise and target their conservation activities based on robust principles and data.

APN were vital in the success of the project for their ability to provide logistic support for fieldwork and also were landlords of EBPB and the Biodiversity Laboratory. However, after the first year of field work, when APN started to receive real benefits from the project, such as the GIS database, which would help them in conservation planning, and the training their rangers received in biomonitoring and biodiversity assessment, APN started to pour additional resources into the project, including provision of vehicles and rangers to assist with field work. This developing relationship culminated in the establishment of CENAC.

Therefore the main lesson learnt was the importance of choosing the right team from the beginning and then encouraging the continued commitment, enthusiasm and cohesion of the project team through frequent meetings, involvement of all partners in project development and providing feedback on how the project was developing and achieving its milestones.

Dissemination of the project's achievements has been through popular articles and interviews in local and national press, magazines and APN publications available to visitors to NHNP, television and radio, which have targeted non-specialist audiences but especially those with an interest in conservation and natural history. We have also designed posters, calendars, leaflets, a simple identification guide to freshwater insects all highlighting wetland biodiversity and our work in NHNP. These are available from APN interpretive centres in NHNP aimed at visitors to NHNP and will be reprinted by APN when required. The field guide to families of freshwater insects, which is aimed at amateur naturalists, will be available for purchase from shops throughout Argentina, especially those specialising in sport fishing and natural history. Scientific audiences have been made aware of our project through the publication of numerous scientific papers but especially in the special volume (68) of *Revista Sociedad Entomologica Argentina* which featured ten papers by project partners or authors working on material collected during the project. These papers were presented orally at a special session of the Argentinean Entomological Congress in October 2008 and generated a lot of interest amongst the audience who wanted to know more about Darwin Initiative and also of how academics could work closer with APN.

The database of insect and wetland distribution in NHNP has been made fully accessible to APN who are using it to prioritise their wetland conservation strategy. The project

partners will continue to add to the database as more of the material collected during the project is worked up.

Information emanating from the project will continue to be made available through the project website [<http://aipa.myspecies.info>] and also through CENAC. The project website will be linked to the CBD website during November 2009. Data will continue to be published in the scientific literature and disseminated at conferences as work progresses on the material collected during the project. Once most of the material from all of the localities sampled has been identified we will be in a position to analyse the distribution of the insects against environmental variables and vegetation types using the GIS.

5.1 Darwin identity

Every opportunity was taken to publicise the Darwin Initiative. Project members wore especially designed Darwin logo T-shirts and caps when conducting field work. The project vehicles had Darwin Initiative logos applied to them. The Darwin logo was used at all workshops, training courses and lectures. The Darwin Initiative project was acknowledged at the Argentinean Entomological Congress and acknowledged in the publications. In all media articles, website pages, radio and television interviews the Darwin Initiative was given a high profile. The logo also appeared on all the posters, leaflets, calendars and guides we produced. As a result the Darwin Initiative as a sponsor of our project and a potential sponsor of other similar projects is well-known.

Our project had its own distinct identity and did not form part of a larger programme, although now as a result of our project a larger programme has begun to emerge through CENAC.

I would expect that many people within active conservation circles and biodiversity researchers would know of the Darwin Initiative both through our project, but also through two previous projects one in Patagonia and another in northern Argentina. In the Bariloche area, where we were working most of the time, we were known by many people as the 'Darwin people'. The new CENAC research centre will have its own logo but will also include the Darwin Initiative logo in acknowledgement of the contribution Darwin Initiative made to kick-starting this programme.

6 Monitoring and evaluation

There were no major changes in the project design or log frame. Prior to the start of our project there were no baseline data available on the wetlands of NHNP or the insects that lived in them. We also established that APN had little in the way of a conservation strategy for wetlands in NHNP or protocols for biomonitoring wetlands. Similarly there was very low awareness within wider society of wetland conservation or biodiversity issues and human impacts on wetlands.

The logframe indicators were useful in providing a measure of project outputs and goals. They were also used to monitor the progress and steer the direction of the project. This could be fed back to project partners as a reminder of what we had agreed to achieve. Similarly, reference to the milestones listed in the original proposal helped to keep the project on course and on time. We have asked APN to provide an evaluation of the project outputs in terms of its capacity building, conservation, educational and scientific value. This feedback has been extremely useful (in Spanish available on request).

6.1 Actions taken in response to annual report reviews

Two points were raised after the review of the last annual report to which we respond below.

1. *Do you consider that there will be funding difficulties for the remainder of the project bearing in mind the currency instability?*

Answer: There was a shortfall of £205 in the final five months of the project which was required for subsistence during the visit of Dr Massaferrero to London in October 2009 to assist with compilation of the final report and project wash-up. This money was vired from the audit budget line after receiving approval from Darwin Initiative.

2. *Will the DNA analysis be part of the Darwin funded project?*

Answer: DNA analysis of samples will be carried out after completion of the project and was not costed into the Darwin-funded project.

7 Finance and administration

7.1 Project expenditure

	Allocation £	Spend £	Difference £	% var
Salaries				
Office costs				
Travel and subsistence ¹				
Printing ²				
Capital items/equipment				
Microscopes				
Digital camera				
Fieldwork equipment ³				
Computers				
Multimedia and office furniture				
Other costs				
Software				
Satellite images ⁴				
Maps ⁵				
Laboratory consumables ⁶				
NHM indirect				
NHM estates				
Audit ⁷				
Totals				

¹ A net total of £3912 was vired away from T&S budget line over the course of the project

² £450 was sacrificed from printing budget after 06/07

³ A net total of £4934.68 was vired to this budget over the course of the project

⁴ £891.52 was sacrificed from satellite images budget after 06/07

⁵ £250 was sacrificed from maps budget after 06/07

⁶ £66 was effectively vired to the Lab consumables budget after 06/07

⁷ A net total of £905 was vired from this budget over the course of the project

⁸ An audit has never been requested thus the funds have never been used

7.2 Additional funds or in-kind contributions secured

We received substantial additional funds, over and above those identified in the original project document, from APN in logistics support for fieldwork and building overhead costs. This amounted to about £10,800 per year for provision of drivers, 4x4 vehicles, ferry costs and use of inflatable boats. APN also covered rental, heating, maintenance and security costs of EBPB and the Biodiversity Laboratory which amounted to about £37,800 per year.

Donato (UNLP) secured £7,150 additional funds to work at NHM for three months to begin taxonomic revisionary studies with Brooks on Southern Hemisphere Chironomidae.

We have an agreement from three sportswear companies (Forest Outdoor, Baruzzi Sports, Scandinavian Sports) to publish our field guide to freshwater insects of NHNP worth about £5,000.

7.3 Value of DI funding

The following achievements would not have been possible without Darwin Initiative funding:

1. Establishment of the first fully functional field station in NHNP at Puerto Blest.
2. Establishment of the Biodiversity Laboratory in Bariloche.

3. Bringing together conservation biologists, taxonomists and national park personnel under the umbrella of CENAC to coordinate conservation research and practice.
4. Provided the first baseline data on wetlands in NHNP that will enable APN to establish a targeted programme for the conservation, monitoring and sustainable use of wetlands in NHNP.
5. Establishment of the first reference collection freshwater insects from NHNP housed at UNLP.
6. Establishment of the first wetlands database for NHNP linked to GIS.
7. Publication of a suite of guides and information booklets on wetland biodiversity in NHNP aimed at non-specialists, the first of their kind anywhere in Argentina.
8. Publication of a raft of scientific papers on the taxonomy and ecology of freshwater insects in NHNP.
9. Established an educational programme to highlight the importance of wetlands for biodiversity and as providers of ecosystem services through lectures, courses, pamphlets and posters to students, school children, local residents and tourists, and through articles and interviews in the popular media.

Annex 1 Report of progress and achievements against final project logframe for the life of the project

Project summary	Measurable Indicators		Progress and Achievements September 2006 - August 2009
<p>Goal: To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but constrained in resources to achieve</p> <ul style="list-style-type: none"> • The conservation of biological diversity, • The sustainable use of its components, and • The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources 	<p>Infrastructure for study of freshwater insects and interpretative centre focussing on wetland ecosystems established at Puerto Blest</p>		<p>Baseline data available for the first time on wetland habitats and insects in NHNP to assist with conservation planning. Non-specialist identification guides available for the first time in Argentina on freshwater insects to promote amateur interest in wetland conservation, taxonomic reviews of freshwater insects to promote academic interest in the fauna.</p> <p>Students, APN rangers and local groups trained in biomonitoring techniques together with talks to local community groups and school children to promote understanding of wetlands as ecosystem service providers and their sustainable use.</p>
<p>Purpose To develop capacity in northern Patagonia for the identification, surveying, monitoring and mapping of freshwater insects.</p>	<p>Database and website detailing distribution of freshwater insects</p>		<p>All outputs have been achieved or exceeded. National and local conservation agencies confirm commitment to conservation of wetlands</p>
<p>Output 1. Inventory of freshwater insects in the NHNP available on database</p>	<p>Activity 1.1 Collect of insects from representative wetland habitats from throughout NHNP (October-March)</p>		<p>Distribution of freshwater insects in NHNP entered into database from year one and most of year two. Data from final season of fieldwork, except Simuliidae which has been entered, will be entered as it becomes available.</p>
<p>Activity 1.2 Identify freshwater insects</p>	<p>Activity 1.3 Populate database with information on collection localities and species found there</p>		<p>Complete</p>
<p>Output 2. Darwin-funded staff trained in freshwater insect taxonomy, sampling methods, GIS, collections maintenance.</p>	<p>Darwin-funded staff trained. Engaged in sampling, identification, databasing, developing interpretative material.</p>		<p>Samples taken during first two field seasons largely identified. Simuliidae from year three identified.</p>
<p>Activity 2.1. Train staff</p>	<p>Activity 2.1. Train staff</p>		<p>Database populated with species data from year one and most of year two. Physical and chemical data on sampling sites from all three years entered into database.</p>
<p>Activity 2.1. Train staff</p>			<p>All staff trained in all techniques and fully engaged in all activities</p>
<p>Activity 2.1. Train staff</p>			<p>Complete</p>

Progress and Achievements September 2006 - August 2009		
Project summary	Measurable Indicators	
Output 3. Specialist and non-specialist guides to Patagonian freshwater insects.	Identification guides available and widely disseminated.	Three non-specialist identification guides published and <i>Field guide to freshwater insects of Patagonia</i> nearing completion. Publisher identified and agreement to publish confirmed. 38 specialist papers published in peer-reviewed scientific journals.
Activity 3.1. Research, write and publish identification guides		Complete or nearing completion
Output 4. Establishment of Puerto Blest field station as centre for studying freshwater insects and freshwater ecology.	Puerto Blest regularly used by students, specialists, community groups and tourists to learn about wetlands.	Achieved
Activity 4.1 Purchase furniture and equipment for laboratory and field station.		Complete
Activity 4.2 Arrange management agreements		Management committee established between APN and UNC
Output 5. Training courses for students, Park Rangers local groups, fishermen in freshwater monitoring, surveying and insect identification	Groups involved in river monitoring, media interest and coverage to promote river monitoring schemes.	Achieved.
Activity 5.1. Training courses prepared, advertised and held		Press releases and interviews with media sustained throughout project. Training courses planned and held for students, local community groups, school children and APN rangers.
Output 6. Freshwater insect collection established with accompanying taxonomic database, GIS database, digital image archive.	Collections of freshwater insects accumulating, properly curated and stored, expandable database operational.	Achieved and on-going. Material collected during final field season still under review by specialists. Collection and database to be updated as results become available.
Activity 6.1. Curate, store and database freshwater insects collected during field campaigns		Insect collections sorted by Darwin Initiative funded assistants at Biodiversity Laboratory, passed to specialists for identification, database populated with information on species distribution and physical and chemical attributes of sampling sites, identified insects incorporated into collections established at UNLP.

Project summary	Measurable Indicators	Progress and Achievements September 2006 - August 2009
Output 7. Freshwater insect monitoring programmes run by local communities established	Trained local people running monitoring programmes on local rivers	Biomonitoring programme run by APN and local students on-going. Local people expressing an interest in water quality issues. Contacts with local people to establish biomonitoring programmes to be further developed under CENAC
Activity 7.1 Train APN rangers and students in biomonitoring techniques		Training completed and on-going.

Annex 2 Project's final logframe, including criteria and indicators

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Goal: To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but poor in resources to achieve <ul style="list-style-type: none"> • the conservation of biological diversity, • the sustainable use of its components, and • the fair and equitable sharing of benefits arising out of the utilisation of genetic resources 			
Purpose To develop capacity in northern Patagonia for the identification, surveying, monitoring and mapping of freshwater insects.	Infrastructure for study of freshwater insects and interpretative centre focussing on wetland ecosystems established at Puerto Blest	Puerto Blest field station equipped and in use as a base for field studies of wetlands	Continued national and institutional recognition of importance of freshwater studies to national conservation and biodiversity goals
Outputs Inventory of freshwater insects in the NHNP available on database	Database and website detailing distribution of freshwater insects	Database and website accessible, copy of inventory available to Darwin on request.	Representative freshwater biotopes are accessible to surveyors.
Darwin-funded staff trained in freshwater insect taxonomy, sampling methods, GIS, collections maintenance.	Darwin-funded staff trained. Engaged in sampling, identification, databasing, developing interpretative material.	Reports sent to Darwin, NHM and La Plata University, training protocol published for wider dissemination.	Darwin-funded staff become familiar with diverse insect groups and have multi-tasking abilities.
Specialist and non-specialist guides to Patagonian freshwater insects.	Identification guides available and widely disseminated.	Copies of identification guides available to Darwin and lodged in libraries of NHM and UNLP.	Taxonomy is tractable so species level keys can be produced within three years for all groups.
Establishment of Puerto Blest field station as centre for studying freshwater insects and freshwater ecology.	Puerto Blest regularly used by students, specialists, community groups and tourists to learn about wetlands.	Darwin informed of number of courses and visitors to Puerto Blest.	Support of field station by local Universities and local communities.
Training courses for students, Park Rangers local	Groups involved in	Reports on number of courses	Active participation by

Project summary	Measurable Indicators	Means of verification	Important Assumptions
groups, fishermen in freshwater monitoring, surveying and insect identification	river monitoring, media interest and coverage to promote river monitoring schemes.	established and people trained sent to Darwin.	universities, Park Rangers, fishermen and local community groups in freshwater biodiversity projects.
Freshwater insect collection established with accompanying taxonomic database, GIS database, digital image archive.	Collections of freshwater insects accumulating, properly curated and stored, expandable database operational.	Accessible collections.	Local contribution of resources sufficient to maintain and house expanding collections and databases.
Freshwater insect monitoring programmes run by local communities established	Trained local people running monitoring programmes on local rivers	Report to Darwin on number of monitoring programmes in operation.	Continuing support of local projects by Argentinean partners

Annex 3 Project contribution to Articles under the CBD

Project Contribution to Articles under the Convention on Biological Diversity

Article No./Title	Project %	Article Description
6. General Measures for Conservation & Sustainable Use		Develop national strategies that integrate conservation and sustainable use.
7. Identification and Monitoring	60	Identify and monitor components of biological diversity, particularly those requiring urgent conservation; identify processes and activities that have adverse effects; maintain and organise relevant data.
8. In-situ Conservation		Establish systems of protected areas with guidelines for selection and management; regulate biological resources, promote protection of habitats; manage areas adjacent to protected areas; restore degraded ecosystems and recovery of threatened species; control risks associated with organisms modified by biotechnology; control spread of alien species; ensure compatibility between sustainable use of resources and their conservation; protect traditional lifestyles and knowledge on biological resources.
9. Ex-situ Conservation		Adopt ex-situ measures to conserve and research components of biological diversity, preferably in country of origin; facilitate recovery of threatened species; regulate and manage collection of biological resources.
10. Sustainable Use of Components of Biological Diversity		Integrate conservation and sustainable use in national decisions; protect sustainable customary uses; support local populations to implement remedial actions; encourage co-operation between governments and the private sector.
11. Incentive Measures		Establish economically and socially sound incentives to conserve and promote sustainable use of biological diversity.
12. Research and Training	20	Establish programmes for scientific and technical education in identification, conservation and sustainable use of biodiversity components; promote research contributing to the conservation and sustainable use of biological diversity, particularly in developing countries (in accordance with SBSTTA recommendations).
13. Public Education and Awareness	20	Promote understanding of the importance of measures to conserve biological diversity and propagate these measures through the media; cooperate with other states and organisations in developing awareness programmes.
14. Impact Assessment and Minimizing Adverse Impacts		Introduce EIAs of appropriate projects and allow public participation; take into account environmental consequences of policies; exchange information on impacts beyond State boundaries and work to reduce hazards; promote emergency responses to hazards; examine mechanisms for re-dress of international damage.
15. Access to Genetic Resources		Whilst governments control access to their genetic resources they should also facilitate access of environmentally sound uses on mutually agreed terms; scientific research based on a country's genetic resources should ensure sharing in a fair

Article No./Title	Project %	Article Description
		and equitable way of results and benefits.
16. Access to and Transfer of Technology		Countries shall ensure access to technologies relevant to conservation and sustainable use of biodiversity under fair and most favourable terms to the source countries (subject to patents and intellectual property rights) and ensure the private sector facilitates such assess and joint development of technologies.
17. Exchange of Information		Countries shall facilitate information exchange and repatriation including technical scientific and socio-economic research, information on training and surveying programmes and local knowledge
19. Bio-safety Protocol		Countries shall take legislative, administrative or policy measures to provide for the effective participation in biotechnological research activities and to ensure all practicable measures to promote and advance priority access on a fair and equitable basis, especially where they provide the genetic resources for such research.
Other Contribution		Smaller contributions (eg of 5%) or less should be summed and included here.
Total %	100%	Check % = total 100

Annex 4 Standard Measures

Code	Description	Totals (plus additional detail as required)
Training Measures		
1a	Number of people to submit PhD thesis	
1b	Number of PhD qualifications obtained	
2	Number of Masters qualifications obtained	
3	Number of other qualifications obtained	7
4a	Number of undergraduate students receiving training	7
4b	Number of training weeks provided to undergraduate students	7
4c	Number of postgraduate students receiving training (not 1-3 above)	93
4d	Number of training weeks for postgraduate students	24
5	Number of people receiving other forms of long-term (>1yr) training not leading to formal qualification (i.e. not categories 1-4 above)	6
6a	Number of people receiving other forms of short-term education/training (i.e. not categories 1-5 above)	12
6b	Number of training weeks not leading to formal qualification	7.5
7	Number of types of training materials produced for use by host country(s)	7
Research Measures		
8	Number of weeks spent by UK project staff on project work in host country(s)	15
9	Number of species/habitat management plans (or action plans) produced for Governments, public authorities or other implementing agencies in the host country (s)	
10	Number of formal documents produced to assist work related to species identification, classification and recording.	1
11a	Number of papers published or accepted for publication in peer reviewed journals	38
11b	Number of papers published or accepted for publication elsewhere	
12a	Number of computer-based databases established (containing species/generic information) and handed over to host country	1
12b	Number of computer-based databases enhanced (containing species/genetic	

Code	Description	Totals (plus additional detail as required)
	information) and handed over to host country	
13a	Number of species reference collections established and handed over to host country(s)	3
13b	Number of species reference collections enhanced and handed over to host country(s)	7
Dissemination Measures		
14a	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin project work	14
14b	Number of conferences/seminars/ workshops attended at which findings from Darwin project work will be presented/ disseminated.	8
15a	Number of national press releases or publicity articles in host country(s)	10
15b	Number of local press releases or publicity articles in host country(s)	11
15c	Number of national press releases or publicity articles in UK	
15d	Number of local press releases or publicity articles in UK	
16a	Number of issues of newsletters produced in the host country(s)	3
16b	Estimated circulation of each newsletter in the host country(s)	
16c	Estimated circulation of each newsletter in the UK	
17a	Number of dissemination networks established	
17b	Number of dissemination networks enhanced or extended	5
18a	Number of national TV programmes/features in host country(s)	1
18b	Number of national TV programme/features in the UK	0
18c	Number of local TV programme/features in host country	1
18d	Number of local TV programme features in the UK	0
19a	Number of national radio interviews/features in host country(s)	5
19b	Number of national radio interviews/features in the UK	0
19c	Number of local radio interviews/features in host country (s)	2
19d	Number of local radio interviews/features in the	0

Code	Description	Totals (plus additional detail as required)
	UK	
Physical Measures		
20	Estimated value (£s) of physical assets handed over to host country(s)	£24,000
21	Number of permanent educational/training/research facilities or organisation established	2
22	Number of permanent field plots established	337
23	Value of additional resources raised for project	£350,150
Other Measures used by the project and not currently including in DI standard measures		
	Number of websites including pages on the project	21
	Number of courses related to the project organised by project members	12
	Number of weeks spent by Argentinean project members on project work in UK	33

Annex 5 Publications

Type * (eg journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £

Scientific papers during Darwin project (2006-2009)

- Borkent, A. & G.R. Spinelli. 2007. *Neotropical Ceratopogonidae (Diptera: Insecta)*. In: Adis, J., Arias, J.R., Rueda Delgado, G. & K.M. Wantzen (Eds.): *Aquatic Biodiversity in Latin America (ABLA)*. Vol. 4. Pensoft, Sofia-Moscow, 198 pp.
- Brooks, S.J., L.M. Hernández, J. Massafarro, G.R. Spinelli & M. Penn. 2009. Capacity building for freshwater insect studies in northern Patagonia, Argentina: Darwin Initiative Programme. *Revta. Soc. Entomol. Argent.* 68 (1-2): 145-154.
- Cazorla, C.G. & G.R. Spinelli. 2007. A new species of Patagonian *Stilobezzia (Acanthohelea)* and a redescription of *S. (A.) nigerrima* Ingram and Macfie (Diptera: Ceratopogonidae). *Trans. Amer. Ent. Soc.*, Philadelphia, 133 (1+2): 181-187.
- Cheli, G. & Corley, J. Descripción preliminar de la estructura y composición del ensamble de artrópodos terrestres en Península Valdés *Revta. Soc. Entomol. Argent.* 68 (1-2): 000
- Díaz, F., M.M. Ronderos & G.R. Spinelli. 2009. Biting midges of the *Dasyhelea cincta* group from Patagonia (Diptera: Ceratopogonidae). *Deut. Entomol. Zeitsch.*, Berlin, 56: 149-156.
- Donato, M, J. Massafarro and Brooks, S J. 2008. Chironomid (Chironomidae: Diptera) checklist from Nahuel Huapi National Park, Patagonia, Argentina. *Rev. Soc. Entomol. Argent.* 67 (1-2): 163-170.
- Donato, M, Brooks, S J and J. Massafarro. (in press) Revision of *Metriocnemus longicostalis* Edwards, 1931 and *Metriocnemus ancudensis* Edwards, 1931 (Diptera: Chironomidae) from Patagonia. *RSEA*
- Von Ellenrieder, N & J Muzon. 2006. The genus *Andinagrion*, with a description of *A. garrisoni* sp. nov. and its larva from Argentina (Zygoptera: Coenagrionidae). *International Journal of Odonatology* 9 (2) 2006: 205-223
- Felippe-Bauer, M.L. & G.R. Spinelli. 2009. New records, synonymy and description of the male of *Culicoides horticola* Lutz, 1913 (Diptera: Ceratopogonidae). *Biota Neotropica* 9: 27-30.
- Garré, A. y F., Lozano. 2007. Descripción del último estadio larval de *Micrathyria ungulata* (Odonata: Libellulidae). *RSEA* 66 (1-2): 5-9.
- Garre, A., J. Muzon & D. Ardohain. 2008. Description of the final instar larvae of *Erythrodiplax atroterminata* Ris and *E. corallina* (Brauer) (Odonata: Libellulidae) *Zootaxa* 1896: 45–50
- Hernández, L.M, Montes De Oca, F, Penn, M., Massafarro, J, Garre, A. & S. Brooks. 2009. "Jejenes" (Diptera: Simuliidae) of Nahuel Huapi National Park, Patagonia, Argentina: Preliminary Results. *Revista Sociedad Entomologica Argentina* 68 (1-2): 48-67
- Lozano, F., A. Garré & Pessacq Pablo. 2007. Descripción del último estadio larval de *Acanthagrion epiolum* (Odonata: Coenagrionidae). *RSEA* 66 (1-2): 1-4.
- Lozano, F, J.Muzon & S. Torres. 2009. Description of the final instar larva of *Homeoura lindneri* (Ris, 1928) and redescription of the larva of *H. chelifera* (Selys, 1876) (Odonata: Coenagrionidae). *Zootaxa* 2231: 47–54
- Marino, P.I. & G.R. Spinelli. 2008. The *Forcipomyia (Forcipomyia) argenteola* group in southern South America, with a key to the Neotropical species (Diptera: Ceratopogonidae). *Rev. Biol. Trop.*, San José de Costa Rica, 56(2): 789-794.

- Massaferro, J. 2009. Paleoecología: el uso de los quironómidos (Diptera Chironomidae) fósiles en reconstrucciones paleoambientales durante el Cuaternario. *Revista Sociedad Entomologica Argentina* 68 (1-2):145-167
- Melo, M. 2009. Biodiversidad de Heteroptera acuáticas y semiacuáticas de Patagonia (Argentina). *RSEA* 68 (1-2): 222-234
- Muzón, J., von Ellenrieder, N. Pessacq, P. 2008. Odonata de los Esteros de Iberá (Corrientes, Argentina). Inventario Preliminar y Biodiversidad. *Revista de la Sociedad Entomológica Argentina*, 67(1-2): 59-67.
- Muzon, J., S. Weigel Muñoz & R. Campos. 2009. Description of the bromeliad-dwelling final instar larva of *Leptagrion andromache* Hagen in Selys (Zygoptera: Coenagrionidae). *Zootaxa* 2089: 65–68
- Muzon, J. 2009. Estado de Conocimiento del orden Odonata en Patagonia. *RSEA* 68 (1-2): 208-214.
- Pessacq, P. 2008. Phylogeny of Neotropical Protoneuridae (Odonata: Zygoptera) and a preliminary study of their relationship with related families. *Systematic Entomology*, 33: 511-528.
- Pessacq, P. Descripción del último estadio larval de *Neofulla biloba* (Plecoptera: Notonemouridae). 2008. *Revista de la Sociedad Entomológica Argentina*, 67(3-4): 61-64.
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- Pessacq, P. 2009. El estado de conocimiento de Ephemeroptera en Patagonia. *RSEA* 68 (1-2): 215-221.
- Pessacq, P. & Brand C. (accepted). Description of the larva of *Phyllopetalia apollo* selys, 1878 and redescription of the larva of *hypopetalia pestilens* Mclachlan, 1870 (Odonata: Austropetaliidae). *Odonatologica*.
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- Ronderos, M.M., C.G. Cazorla, G.R. Spinelli & D. Silveira Carrasco. 2008. Description of immature stages and adult diagnosis of *Stilobezzia coquilletti* Kieffer 1917 (Diptera: Ceratopogonidae). *Zootaxa*, Auckland, 1958: 31-40.
- Salomón, O.D., J.R. Rosa, M. Stein, M.G. Quintana, M.S. Fernández, A.M. Visintin, G.R. Spinelli, M.M. Bogado de Pascual, M.L. Molinari, M.L. Morán, D. Valdez, M. Romero Bruno. 2008. Phlebotominae (Diptera: Psychodidae) fauna in the Chaco region and cutaneous leishmaniasis transmission patterns in Argentina. *Mem. Inst. Oswaldo Cruz*, Rio de Janeiro, 103(6): 578-584.
- Seijas, S & C. Pozzi. 2009. La investigación biológica en el Parque Nacional Nahuel Huapi: Proyecto Darwin Biodiversidad de Insectos Acuáticos de la Patagonia. *RSEA* 68 (1-2): 245-249
- Spinelli, G.R., P.I. Marino & P. Posadas. 2006. The patagonian species of the genus *Atrichopogon* Kieffer, with a biogeographic analysis based on Forcipomyiinae (Diptera: Ceratopogonidae). *Insect Systematics and Evolution*, Copenhagen, 37: 301-324.
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- Spinelli, G.R., E. Santamaría, O. L. Cabrera, M.M. Ronderos & M.F. Suárez. 2009. Five new species of *Culicoides* Latreille described from Colombia, yielding a new species list and country records (Diptera: Ceratopogonidae). 2008. *Mem. Inst. Oswaldo Cruz*, Rio de Janeiro, 104(1): 81-92.

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Books

- Borkent, A. & G.R. Spinelli. 2008. *Neotropical Ceratopogonidae (Diptera: Insecta)*. In: Adis, J., Arias, J.R., Rueda Delgado, G. & K.M. Wantzen (Eds.): *Aquatic Biodiversity in Latin America (ABLA)*. Vol. 4. Pensoft, Sofia-Moscow, 198 pp.

Leaflets and guides

- Massaferro J and Rojas, F. 2007. *Guía para la identificación de macroinvertebrados acuáticos de Patagonia*. CONICET 300 copies published.
- Darwin Initiative (DI), Nahuel Huapi National Park (NHNP), University of Comahue (APN) members. 2008. *Fauna Nativa: Invertebrados*. Leaflet 2 sides. 2000 copies
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Annex 6 Capital equipment purchased

Capital equipment purchased financial year ending 2007

<i>Description</i>	<i>Quantity</i>	<i>Where equipment housed</i>
Compound microscopes LANDSAT	8	Bariloche lab, EBPB, La Plata lab
Stereo microscopes LANDSAT	9	Bariloche lab, EBPB, La Plata lab
Desktop PC PENTIUM 4/standard	5	Bariloche lab, La Plata lab, La Plata Museum
Notebook SONY VAIO	1	La Plata lab
Printers EPSON	2	La Plata lab, Bariloche lab
CAR Peugeot PARTNER van	1	Bariloche
Digital Imaging LEICA + software	1	La Plata lab
Digital camera OLYMPUS	1	Bariloche
Tent and camping equipment		Bariloche
Cabinets for insect collection	2	La Plata Museum
Furniture (including benching, chairs, cabinets)		La Plata lab, Bariloche lab and EBPB
GPS	2	Bariloche lab
Malaise traps	5	Bariloche lab
Light traps	5	Bariloche lab
Lab glassware and utensils		Bariloche and La Plata labs

Capital equipment purchased financial year ending 2008

<i>Description</i>	<i>Quantity</i>	<i>Where equipment housed</i>
Stereomicroscope NTZ1-C2 LANCET	1	ILPLA
Vacuum pump DOSIVAC DVR-95	1	ILPLA
Oven SAN JOR SE33T	1	ILPLA
Fridge LG 12 lt	1	Biodiversity Laboratory
GPS Garmin ETREX H	1	Biodiversity Laboratory
Water chemistry meter HANNA	1	Biodiversity Laboratory
Graticule	1	Biodiversity Laboratory
Malaise traps	1	Biodiversity Laboratory

ANNEX 7 Darwin Contacts

Ref No	15/025
Project Title	Capacity building for biodiversity studies of freshwater insects, Argentina
UK Leader Details	
Name	Stephen Brooks
Role within Darwin Project	Project management, specialist in Chironomidae (immature stages)
Address	Department of Entomology, Natural History Museum, London SW7 5BD
Phone	
Fax	
Email	
Partner 1	
Name	Dr Gustavo Spinelli
Organisation	Museo de Ciencias Naturales de La Plata, La Plata, Argentina
Role within Darwin Project	National project leader, specialist in Ceratopogonidae
Address	Museo de Ciencias Naturales de La Plata
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Partner 2 (if relevant)	
Name	Susana Seijas
Organisation	Administracion Parques Nacionales
Role within Darwin Project	Coordinated APN support
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