Defra ref: 108

DEFRA
Department for Environment, Food & Rural Affairs

DARWIN INITIATIVE

APPLICATION FOR GRANT FOR ROUND 11 COMPETITION: STAGE 2

Please read the Guidance Notes before completing this form. Give a full answer to each section; applications will be considered on the basis of information submitted on this form. Please do not cross-refer to information in separate documents except where invited on the form. The space provided indicates the level of detail required but you may provide additional information on a separate A4 sheet if necessary. Do not reduce the font size below 10pt or the paragraph spacing.

Submit by 13 January 2003

1. Name and address of organisation

Institute of Zoology, Zoological Society of London, Regents Park, London, NW1 4RY, UK

2. Project title (not exceeding 10 words)

Building capacity and determining disease threats to endemic Galapagos fauna

3. Principals in project. Please provide a one page CV for each of these named individuals.

Details	Project leader	Other UK personnel (if working more than 50% of their time on project)	Main project partner or co-ordinator in host country
Surname	Goodman	Cunningham*	Cedeño
Forename(s)	Simon James	Andrew	Virna
Post held	Research Fellow	Senior Research Fellow	Research Biologist
Institution (if different to above)		*Will work less than 50% time, but with a senior role in project	Galapagos National Park & University of Guayaquil, Ecuador
Department			Dept. Biotechnology (University of Guayaquil)
Telephone			
Fax			
Email			

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

Aims

The Zoological Society of London (ZSL) is a registered charity (no.208728) whose aim is to achieve the worldwide conservation of animals and their habitats. The Institute of Zoology (IoZ), the academic division of ZSL, identifies, undertakes and communicates high quality biological research which benefits the conservation of animal species and their habitats.

Activities

IoZ carries out basic research in ecology, evolutionary biology, genetics, wildlife epidemiology; reproductive biology and wild animal health in relation to conservation, funded by research council and research charity grants. Our work is communicated through international peer reviewed publications (journal articles and books) and our programme of scientific meetings.

Achievements

IoZ is recognised as a centre of research excellence by the UK government, demonstrated by the financial support of our core activities by the Higher Education funding Council for England. IoZ has a record of securing competitive research funding and publication of high impact articles. Our staff participate in conservation programmes and organisations at the highest levels.

5. Has your organisation received funding under the Initiative before? If so, please give details.

1996 project ref: 162/06/151; 1996 project ref: 162/05/132; 1997 project ref: 162/06/126; 2000 project ref: 162/09/020; 2001 project ref: 162/10/013; 2002 project ref: 162/11/007; 2002 project ref: 162/11/013

6. Please list the overseas partners that will be involved in the project and explain their role and responsibilities in the project. The extent of their involvement at all stages in the project should be detailed, including in project development. Please provide written evidence of this partnership.

Dr. Virna Cedeño, Galapagos National Park (GNP), and Dept. Biotechnology, University of Guayaquil (UG), Ecuador: Helped us identify the need for disease monitoring in Galapagos wildlife and has been liasing with park staff to promote the proposal and gain administrative approval, including the provision of matched funding from the University of Guayaquil and Galapagos National Park Service. Dr. Cedeño will be the scientific partner for work in the Galapagos, and will also arrange logistical and administrative support. An Ecuadorian vet and research assistant, to be appointed, will carry out the survey, monitoring and diagnostic work. Four Ecuadorian funded Masters students will conduct research projects within the framework of the project. Dr. Cedeño and the other Ecudorian staff will participate in the scientific development of the project and reporting.

The Galapagos National Park and University of Guayaquil will provide space for research labs, contributions to: salaries, inter-island transportation, lodging for students conducting projects within the programme, and overheads. In addition both organisations have pledged funds to ensure the continuation of the project after Darwin funding ends.

Dr. Eric Miller (St. Louis Zoo, St. Louis, USA) and Prof. Patty Parker (Dept. Biology, University of Missouri, St. Louis, USA): Collaboration on disease monitoring and research programme, provision of some matched funding. (see also sections 18 and 32)

7. What steps have been taken to (a) engage at all appropriate levels within the host country partner organisations to ensure full support for the project and its outcomes; and (b) ensure the benefits of the project continue despite staff changes in these organisations?

The project has been discussed with the senior management of the University of Guayaquil and the Galapagos National Park. As evidenced by the letters of support, the project has the enthusiastic endorsement of the Rector of the University of Guayaquil and the Director of the Galapagos National Park. Disease monitoring has been incorporated into the strategic plan of the Galapagos National park as an activity required to ensure the long term maintenance of the islands biodiversity. Money has already been committed to the project for the period of the Darwin funding and for the continuation of the programme once Darwin funding ceases. This demonstrates a long-term commitment of both organisations to this work, that is robust to staff changes. Once the project is running a system of manuals and staff training will be established to ensure continuity in case of staff turnover.

8. What other consultation or co-operation will take place or has taken place already with other stakeholders such as local communities. Please include any contact with the government of the host country not already provided.

The project programme includes educational workshops for local communities relating to disease management and conservation. These workshops will be conducted in collaboration with the education officers of the Galapagos National Park, and Galapagos local government. The workshops are intended to make local communities aware of issues relating to the transmission of diseases from domestic animals to endemic species and the role of disease management in protecting biodiversity, and therefore tourist income.

We are currently discussing the project with the British Embassy in Quito with regard to identifying other relevant local contacts and further sources of long-term support for the project.

PROJECT DETAILS

9. Define the purpose (main objective) of the project in line with the logical framework.

To establish the ability of Ecuadorian researchers and managers in the Galapagos National Park to determine the nature and prevalence of disease threats to endemic fauna (with a focus on birds) stemming from the introduction of novel pathogens and vectors, and to build a capacity for the continued monitoring of introduced diseases in these populations by:

1. Equipping a pathology laboratory and training staff in wildlife pathology, including histological, serological and molecular identification of pathogens that threaten endemic species.

2. Establishing a programme for the systematic monitoring of pathogens in endemic birds, reservoir populations and disease vectors such as mosquitoes.

3. Quantifying the prevalence of introduced pathogens among endemic birds (and other endemic taxa where possible) by the systematic sampling and testing of live birds, and post-mortem analysis of dead birds. This information will be used in the formulation of a management plan.

4. Educating local people and tourists about disease threats to endemic Galapagos wildlife.

10. Is this a new initiative or a development of existing work (funded through any source)?

This is a new initiative for the main partners

11. How will the project assist the host country in its implementation of the Convention on Biological Diversity? Please make reference to the relevant article(s) of the CBD, thematic programmes and/or cross-cutting themes. Is any liaison proposed with the CBD national focal point in the host country? Further information about the CBD can be found on the Darwin website or CBD website.

The wildlife pathology laboratory and its staff will generate the capacity for Ecuadorian researchers to undertake research and diagnostic tests on the Galapagos islands which previously could only be conducted outside of the country in collaboration with foreign researchers. This will give Ecuadorians increased control over their biological and genetic resources by reducing reliance on foreign scientists and the export of material from Ecuador. New knowledge will be generated on the types and prevalence of disease in endemic Galapagos fauna. This knowledge will be incorporated into a management plan that will be endorsed by the National Parks authority, Galapagos and Ecuadorian governments. Following this endorsement, the implementation of the plan will include continuation of the disease monitoring programme after Darwin funding has ceased, through contributions from the Galapagos National Park and University of Guayaquil. The management plan and continuation of the disease monitoring programme are an important contribution to safeguarding endemic Galapagos fauna by providing strategies to minimise existing disease threats, and to mitigate the impact of novel outbreaks. Articles of the CBD relevant to this project are 7-8, 10-18, 20. The "Dry and sub-humid lands" and "Marine and coastal" thematic programmes fit the environment of the Galapagos. The project spans many of the cross-cutting issues identified by the CBD such as: Alien species, Biodiversity and tourism, Impact assessment liability and redress, Indicators, Protected areas and Public education and awareness. Contact will be established with the CBD national focal point if the project is successful.

12. How does the work meet a clearly identifiable biodiversity need or priority within the host country?

The “Pathogen threats to Galapagos avifauna” meeting held in 2000 at Princeton University identified introduced diseases as a serious threat to the survival of endemic bird species in the Galapagos. Introduced avian malaria, pox virus and mosquitoes have previously been responsible for extinctions of multiple species of endemic birds in Hawaii. Avian pox has already been detected in Galapagos birds and mosquito vectors have recently been introduced, but it is not known if malaria is present. The potential for disease-mediated extinction of endemic species led this workshop to call for the urgent establishment of a comprehensive survey and monitoring programme to quantify the effects of introduced pathogens on native species and to determine the prevalence of such pathogens in endemic populations. This work is required to plan conservation programmes and to mitigate the effects of future disease outbreaks which could lead to the loss of biodiversity. In addition to providing a disease management programme for the Galapagos National Park and working with local communities to increase awareness of disease threats to endemic wildlife (and therefore tourist income), the project will give Ecuadorians the capacity to conduct disease monitoring automonously in the future, reducing reliance on foreign scientist and the need to export biological material from the country.

13. If relevant, please explain how the work will contribute to sustainable livelihoods in the host country

The Galapagos and their unique fauna are an integral part of Ecuador’s economic revenue from tourism. Disease threats have the potential to seriously impact endemic island species and in some cases, such as Hawaiian avifauna, have directly resulted in extinctions. Similar loss of biodiversity in the Galapagos may result in reduction of tourist revenue impacting both the local Galapagonian and broader Ecuadorian economies. This work on disease threats will form an integrated part of the of overall strategy to protect Ecuador’s biodiversity and therefore the tourist revenue that supports local people. The training aspects of the project will inform Ecuadorian professionals on the role of disease management in conservation. This knowledge will ultimately be disseminated throughout the Ecuadorian National Park service contributing to biodiversity management nationally.

14. What will be the impact of the work, and how will this be achieved? Please include details of how the project outputs will be disseminated and put into effect to achieve this impact.

Through a combination of capacity building, basic research and monitoring of disease prevalence in endemic taxa, the major impact of this project will be the establishment of a disease management plan for the Galapagos National and disease monitoring programme continuing beyond Darwin Initiative funding, endorsed by the Galapagos National Park and Ecuadorian government. This will result in greater protection of Galapagos biodiversity from existing disease threats and strategies to deal with novel disease outbreaks. This will be achieved by establishing a wildlife pathology laboratory and training local Ecuadorian staff in wildlife pathology, and by setting up a disease monitoring programme to collect data for the management plan. The training aspects of the work will be disseminated by a series of workshops including project staff, other National Park employees and students. In addition there will be educational workshops and literature for local people produced in collaboration with the National Park education department and local government. Scientific outputs will be communicated through yearly reports, publication in peer reviewed journals and presentation at international conferences. A project website will describe the overall project and its findings for both scientific and general audience.

15. How will the work leave a lasting legacy in the host country or region?

A wildlife pathology laboratory will be established and equipped at the Galapagos National Park headquarters on Santa Cruz Island. This will enable diagnostic procedures and postmortem examinations to be conducted on the islands. This facility will be available to visiting scientists on the islands, thereby providing a lasting resource for the global scientific community as well as Ecuadorian researchers. The training programme will build expertise in wildlife pathology among Ecuadorian researchers by increasing the skills of project staff and graduate students. These people will continue to work on the monitoring programme (using the lab) after the cessation of Darwin funding. They will constitute a pool of national expertise that will be able to train other Ecuadorians, helping to establish and manage disease monitoring programmes as an integrated part of biodiversity conservation throughout the country. The management programme developed from project research work will be a lasting tool for managing current and future disease threats to endemic Galapagos fauna.

16. What steps have been taken to identify and address potential problems in achieving impact or legacy?

Spanish is the first language of Ecuador and there could be some communication problems with administration and teaching. The scientific partner Virna Cedeño has good English skills and other translators should be available through the national park or university. Continuation after the cessation of Darwin money requires ongoing funds. Such funds have already been approved by the Galapagos National Park and University of Guayaquil. Supplemental funds will be sought during the course of the project, using the existing money as leverage. Supply of perishable reagents is potentially problematic but this can be minimised by holding material at the University of Guayaquil and transporting it when park staff travel to the islands.

17. How will the work be distinctive and innovative? How will the project be advertised as a Darwin project and in what ways would the Darwin name and logo be used?

This is a new component to the strategic management of biodiversity in the Galapagos, providing the capacity to monitor and recognise disease threats to endemic taxa. We will use a mixture a of established diagnostic pathological techniques plus novel methods in pathology such a genetic identification of pathogens (This will be overseen by Dr. Simon Goodman). In addition to the work on birds we will survey pathogen prevalence in other Galapagos animals such as reptiles, rodents and marine mammals, on which little or no disease work has previously been conducted. When communicating about the project we will emphasise how the work fulfils the aims of the Convention on Biological Diversity, which is distinct from much of the basic evolutionary research that takes place on the islands.

The fauna of the Galapagos rank among the most charismatic and well known animals in the world. The wide interest from the global media in issues relating to the Galapagos, combined with the large number of scientific visitors and tourists to the islands will provide numerous opportunities for the promotion of the Darwin Initiative and dissemination of project results.

The Darwin Initiative logo showing a Darwin's finch is particularly apt for this project, as this is one of the species we aim to work with during the project. The Darwin name and logo will be used at the lab established at the Galapagos National Park headquarters. All visiting scientists using the facility will see the logo and will be aware that it is supported by the Darwin Initiative. The name and logo will be used on all official communication and educational material including reports, conference presentations, and during the training and educational workshops. The support and aims of the Darwin Initiative will be key features of presentations to local people and tourists. The name will be used in all dealings with the media, both in the Galapagos and internationally. Negotiations are taking place to feature the project in a BBC radio or TV (to be confirmed) series on wildlife disease in conservation. Finally, there will be a project website in English and Spanish.

18. Are you aware of any other individuals/organisations carrying out similar work? Are there completed or existing Darwin Initiative projects which are relevant to your work? Please give details, explaining the similarities and differences. Show how the outputs and outcomes of this work will be additional to any similar work, and what attempts have been/will be made to co-operate with such work for mutual benefits.

There are no completed or existing Darwin projects directly relevant to this proposal. Dr. Andrew Cunningham, a project team member, is a principal investigator on a Darwin project investigating vulture declines in India that are likely to involve an unknown pathogen.

Limited research has been conducted on disease threats to endemic fauna in the Galapagos. To date this research has focused on birds and has demonstrated potential serious disease risks to the persistence of several endemic bird species (for example the ornithology group at the Charles Darwin Research Station has noted the occurrence of various diseases in several species, and Dr. Birgit Fessl (Konrad Lorenz Institute, Vienna, Austria) has shown the serious impact of parasitic fly larvae on fledging success of Darwin's finches). This research has shown how little is known about the threats, and the immediate need for further work. The "Pathogen threats to Galapagos avifauna" meeting held in 2000 at Princeton University, listed further research as priority and was the stimulus for this proposal.

This project will be carried out in collaboration with Prof. Patty Parker and Dr. Eric Miller (University of St. Louis, and St. Louis Zoological Society, USA), who since 2001 have been developing a programme of disease monitoring in 3 endemic species (Galapagos Hawks, Waved Albatross, Galapagos Dove) and 3 introduced species (chickens, rock doves (pigeons), anis), funded by the University of St. Louis. While this work is already yielding valuable insights, much more needs to be done to fully protect the endemic birds of the Galapagos from disease threats. In order to expand this work to into comprehensive disease surveillance programme capable of identifying disease threats in all endemic Galapagos species, further funding is urgently needed for infrastructure, training and running costs.

Darwin funding will fuel a synergistic relationship between the Darwin partners and the St. Louis group, yielding a more comprehensive monitoring programme and insights into disease threats that neither could achieve alone, by broadening the number of species, geographic locations and pathogens that can be tested. Note, Darwin funding will not directly cover the costs of work undertaken by the St. Louis group, rather we will use our combined resources to achieve a common aim.

In addition the project work will be undertaken in co-operation with the Charles Darwin Research Station and its personnel. The relationship will be formalised if this application is successful.

Darwin funding will provide key infrastructure (the wildlife pathology laboratory) that would not be achievable by any other source. While there are already some basic lab facilities at the National Park Headquarters, these are insufficient to support the level of work required. The wildlife pathology laboratory is a key element in establishing the capacity to conduct disease monitoring work on the islands, and making the project sustainable using Ecuadorian resources in the future. It will also provide training for a pool of Ecuadorian staff to run the monitoring programme in the future that would not be met by other means. In addition it will provide the opportunity to draw on expertise from the Institute of Zoology not available elsewhere, to broaden the disease monitoring programme to other endemic taxa, including marine mammals, rodents and reptiles.

Finally this project will strengthen links between the Galapagos National Park and Charles Darwin Research Station by forming a focal point for common research interests and providing a facility available to scientists working with both organisations.

19. Will the project include training and development? Please indicate who the trainees will be and criteria for selection. How many will be involved, and from which countries? How will you measure the effectiveness of the training and will those trained then be able to train others? Where appropriate give the length and dates (if known) of any training course. How will trainee outcomes be monitored after the end of the training?

Staff training will include the scientific partner, Dr. Virna Cedeño, plus an Ecuadorian veterinary pathologist and field assistant (to be appointed). The pathologist will be selected on the basis of a veterinary degree plus experience relevant to the project (work with wildlife and conservation). The field assistant would be expected to have a degree in biological sciences and or experience in field conservation. Ecuadorian staff will be trained by UK project members through a series of 2 week long workshops (each year: 1 training workshop and 1 monitoring/research meeting; dates to be confirmed) and practical assignments within the project, while UK project members visit the islands (total UK member time on islands is approximately 2.5 months per year). The effectiveness of the training will be evaluated by the Ecuadorian staff gaining proficiency in key skills (histological, serological, molecular detection of pathogens, postmortem examination skills etc) required to run the disease monitoring programme independently, and the ability to train other people in these activities. Other National Park staff are expected to attend components of the training workshops to gain awareness of disease/conservation issues. Up to 4 Ecuadorian masters students and 9 undergraduate students will undertake research projects within the overall project, and will attend the training workshops. The training success of these students will be judged on them passing their courses. With the aid of the Galapagos National Park education department educational workshops will be run for local people and tourists explaining the role of disease management in protecting biodiversity (Yearly for local community, and a minimum of monthly for tourists).

20. How are the benefits and/or work of the project expected to continue after the end of grant period? Please provide a clear exit strategy.

Sustainability after cessation of Darwin funding is assured through: 1) The infrastructure required to continue the disease monitoring work will be established in the form of a fully equipped wildlife pathology laboratory. This will be handed over to the Galapagos National Park at the end of the Darwin project. 2) Through the project, Ecuadorian staff will be fully trained in wildlife pathology, disease monitoring and conservation biology so they will be able to run the project independently within 3 years, and will be able to train others thereby ensuring sustainability in the event of staff turnover. 3) The undergraduate and postgraduate students undertaking research projects within the framework of the Darwin project will form a pool of qualified individuals suitable for maintaining and expanding the project. 4) In order to ensure the continuity of the project post-Darwin funding the Galapagos National Park and the University of Guayaquil have already committed money too support the continuation of the work. We will use this continuing funding as leverage to add further money through the course of the Darwin project. 5) By the end of the Darwin project a disease management plan will have been formulated. This will form the basis of the future activities for the project. In the last year of Darwin funding UK input in to day to day running of the project will be stepped down in preparation for the disease monitoring programme to be run autonomously be the Ecuadorian staff.

21. Provide a project implementation timetable that shows the key milestones in project activities.

Project implementation timetable

Date	Key milestones
	Institutional Capacity Building and Training
04/2003-06/2003	Project initiation activities (Drawing up memorandum of agreements, staff selection, equipment procurement)
06-07/2003	Project initiation visit by UK staff to Galapagos: Staff orientation and planning; lab equipped; Training workshop: Avian disease, pathology and genetics (Simon Goodman, Andrew Cunningham, St. Louis Staff; 2 weeks).
09/2003	Follow up training workshop: Avian disease; Training workshop: Marine mammal pathology; Progress meeting (Simon Goodman, Andrew Cunningham, Paul Jepson 2 weeks).
11/2003	Wildlife pathology lab fully operational
02-03/2004	Training workshop (2 weeks, Simon Goodman, Andrew Cunningham)
09/2004	Follow up training, progress meeting (2 weeks, Simon Goodman, Andrew Cunningham, Paul Jepson)
02-03/2005	Training workshop (2 weeks, Simon Goodman, Andrew Cunningham)
09/2005	Follow up training, progress meeting (2 weeks, Simon Goodman, Andrew Cunningham, Paul Jepson)
02/2006	Final review meeting, project handover (1 week, Simon Goodman, Andrew Cunningham, Paul Jepson)
	Research and Disease Monitoring Programme
07/2003	Start of avian sampling and disease monitoring programme after initial training period (endemic birds and non-endemic wild birds, plus feral introduced birds. Target pathogens: Avian pox, haemoproteus, chlamidya, mycoplasma, Newcastle's disease, Marek's disease, avian malaria (In collaboration with St. Louis group). Sampling for mosquitoes, other biting insects and ectoparasites.
10/2003	Start of marine mammal disease testing and post-mortems following training workshop (conducted as carcasses become available). Other investigations of other non-avian endemic taxa e.g. iguanas.
11/2003	Routine sampling and testing (once per month) established for domestic birds around human habitation
03/2004	First year sampling completed.
09/2004	First year results compiled
03/2005	Second year sampling completed
09/2005	Second year results compiled
12/2005	Third year sampling completed
02/06	Final results compiled, monitoring programme fully handed over to Galapagos National Park.
	Education and Conservation Awareness Programme
06/2003	Educational materials prepared (posters, leaflets and presentations) for local communities and tourists in collaboration with Galapagos National Park education department. Arrange for translation in to Spanish (local community material), plus other target languages for tourists (French, German, Italian, Spanish, Dutch, Japanese).
09/2003	First local community workshop conducted

07/2003	Tourist presentations begin (where possible given by UK staff when in Galapagos, otherwise given by Ecuadorian staff, target frequency, 1 to 2 week intervals, leaflets and posters available at Park Headquarters when presentations not taking place).
11/2003	All educational materials completed, and available for distribution.
02/2004, 05, 06	Further local community workshops (With Simon Goodman and Andrew Cunningham)
	Dissemination of Results
06/2003	Initial press release produced
10/2003, 04,10/2004,05,06	News letters released with project reports, further press releases produced concurrently
11/2003	Website created and accessible, to be updated throughout project
11/2003	Tendering for features in broadcast media and popular articles completed (Including BBC radio/TV feature).
11/2003	Year 1: at least one UK seminar on project completed, further talks arranged for UK and internationally.
11/2004	Year 2: at least one UK seminar on project completed, further talks arranged for UK and internationally.
11/2005	Year 3: at least one UK seminar on project completed, further talks arranged for UK and internationally.
11/2005	Features in broadcast media and popular articles completed.
04/2006	Project results presented at at least one international conference by end of project.
04/2006	Disease management plan completed and submitted for review.
02/2007	At least 2 papers accepted by international peer reviewed journals by 1 year after end of Darwin funding.
	Reporting
	Reports produced as specified in section 27.

22. How will the most significant outputs contribute towards achieving the purpose of the project? (This should be summarised in the Log Frame as Indicators at Purpose level)

The establishment of a wildlife pathology laboratory at the Galapagos National Park headquarters and training of Ecuadorian staff in the methodology of wildlife pathology, will give Ecuadorian researchers in the Galapagos National Park the ability to determine the nature and prevalence of disease threats to endemic fauna stemming from the introduction of novel pathogens and vectors, and the capacity for continued monitoring of introduced diseases in these populations. The disease management plan developed during the course of the Darwin project will inform future biodiversity conservation in the Galapagos. Educational activities and materials for local communities contribute to reduced potential for the transmittance of pathogens for domestic animals to endemic species. Together these activities will protect Galapagonian biodiversity and therefore tourist revenue, and will give increased control over natural resources by reducing the need to export biological material from the islands for disease research.

23. Set out the project's measurable outputs using the attached list of output measures

PROJECT OUTPUTS		
Year/Month (starting April)	Standard Output Number (see standard output list)	Description (include numbers of people involved, publications produced, days/weeks etc)
		Training Outputs
2003/04-2006/03	4A	Minimum 9 Ecuadorian: 3 undergraduates per year undertaking research projects and attending training workshops.
2003/04-2006/03	4B	12 weeks, Training run for 1 month per year
2003/04-2006/04	4C	4 Ecuadorian MSc students undetaking research projects and attending workshops
2003/04-2006/04	4D	Up to 26 weeks per student
2003/04-2006/04	5	3, Training of host partner, veterinary pathologist and field assistant.
2003/04-2006/03	6A/B	Expected ~20, Primarily National Park staff attending workshops, 3 weeks
2003/04-2006/03	8	Total 7: Information leaflets, posters, slideshow (Tourist); Information pack, slideshow (Local community); Workshop manual; Protocol manual; Website
		Research Outputs
2003/04-2006/03	8	Total 33, 10 weeks year 1 & year 2, 13 weeks year 3.
2006/03	9	One: Disease management plan for endemic Galapagos fauna
2006/03	11B	Minimum of 2
2007/03	11A	Minimum of 2
2006/03	12A	Disease reference database
		Dissemination Outputs
2003/04-2006/03	14A	6 project workshop/seminars (1 project workshop per year, 1 local community seminar day per year), additional seminars anticipated at Ecuadorian Universities and other National Park Offices. Expected minimum of 25 tourist presentations per year.
2003/04-2006/03	14B	Minimum of 6, date and location not yet specified
2003/04-2006/03	15A/B	Minimum of 6, released on project reporting dates
2003/04-2006/03	15C	Minimum of 3, released on annual reporting dates
2003/04-2006/03	16A/B/C	3, 1 yearly; 200; 100
2003/11	17B	Project website created and linked to all partner institutions and relevant sites
2003/04-2006/03	18A/B/C/D	One each category anticipated
2003/04-2006/03	19A/B/C/D	One each category anticipated
		Physical Outputs
2006/03	20	£49,912 (equipment purchased under Darwin initiative to equip wildlife pathology lab at Galapagos National Park Headquarters
2006/03	21	One: Wildlife pathology laboratory at Galapagos National Park Headquarters
		Financial Outputs
2003/04-2006/04	23	Contributions in kind, salaries, consumables, field transport, overheads etc: Institute of Zoology=£72,122; Galapagos National Park=£108,000; University of Guayaquil=£76,000 University of St. Louis=£82,665 Total=£338,787
After 2006/03	23	£38,400 per year. Continuing funding by Galapagos National Park and University of Guayaquil after Darwin funding. Further continuing support will be sought during the course of the project.

MONITORING AND EVALUATION

24. Describe how the progress of the project, including towards delivery of outputs, will be monitored and evaluated in terms of achieving its overall purpose. This should be both during the lifetime of the project and at its conclusion. Please make reference to the indicators described in the Logistical Framework.

For the duration of the project progress and delivery of outputs in relation to the proposed timetable will monitored by visiting scientists with expertise relevant to the project. In addition, specific supervisory visits from UK staff (a minimum of visits 2 per year) will ensure that the core elements of the project and associated training are delivered on time and to the required standard. Monitoring activities will match progress to expected outputs using the indicators specified in the Log Frame. Written scientific outputs of the project (Indicators: papers on disease in endemic species, disease management plan) will be peer reviewed before publication thereby ensuring the highest international standards. Infrastructure and training components of the project (Indicators: operational laboratory, competent staff and students, participation of local communities and tourists in educational activities) will also be examined by outside experts, to highlight potential lessons and problems. Monitoring information will be presented as project reports (as specified in section 27), co-ordinated by the Institute of Zoology in association with the Galapagos National Park and University of Guayaquil, with additional reports from visiting scientists, plus training and workshop reports, and summaries of media coverage (with copies of articles and recordings). The final report will be compiled by all the organisations involved, with comments from outside scientists in relation to achievements of the project, its purpose and management implications.

25. How will host country partners be involved in monitoring and evaluation of the project?

Dr. Virna Cedeño of the Galapagos National Park and University of Guayaquil will be the project leader from the host country, and will be responsible for overseeing the day to day management of the project and progress towards its outputs. Dr. Cedeño will collate reports from the Ecuadorian project scientific staff and National Park education officers at least on a monthly basis and forward them to the UK staff for evaluation. Scientific data relating to disease monitoring will be continuously updated to databases as appropriate and exchanged via email. Review meetings will be held involving all project staff during visits of UK personnel to Ecuador. With the UK staff, Dr. Cedeño and the Ecuadorian scientific staff will co-author the six monthly, yearly and final reports, plus scientific papers and management plan as appropriate according to contribution.

26. How will you ensure that the project achieves value for money?

The financial management of the project will be by the Institute of Zoology in the UK together with the Galapagos National Park and University of Guayaquil in Ecuador. Each organisation has established independent audit procedures. Reporting and auditing requirements will be agreed in line Darwin guidelines including independent auditing of accounts.

The establishment of the wildlife pathology laboratory requires a significant outlay for equipment in the first year of the project. However this equipment is crucial to the success, sustainability and legacy of the project. The ultimate aim of establishing a self sufficient disease monitoring programme requires this apparatus to conduct the necessary diagnostic procedures. Once purchased this equipment will serve the laboratory for the lifetime of Darwin funding and beyond. Having an already fully equipped laboratory will make it easier lever future additional funding. Equipment will be purchased in the UK or Ecuador after comparison of prices and specification. Where possible Ecuadorian expertise and suppliers will be used.

27. Reporting Requirements. All projects must submit six monthly reports (by 31 October each year) and annual reports (by 30 April each year). Please check the box for all reports that you will be submitting, dependent on the term of your project. You must ensure that you cover the full term of your project.

Report type	Period covered	Due date	REQUIRED?
Six month report	1 April 2003 – 30 September 2003	30 October 2003	Yes
Annual report	1 April 2003 – 31 March 2004	30 April 2004	Yes
Six month report	1 April 2004 – 30 September 2004	30 October 2004	Yes
Annual report	1 April 2004 – 31 March 2004	30 April 2005	Yes
Six month report	1 April 2005 – 30 September 2005	30 October 2005	Yes
Annual report	1 April 2004 – 31 March 2005	30 April 2006	Yes
Six month report	1 April 2006 – 30 September 2006	30 October 2006	
Final report	1 April 2004 – project end date	3 months after project completion	Yes

LOGICAL FRAMEWORK

28. Please enter the details of your project onto the matrix using the note at Annex B of the Guidance Note. This should not have substantially changed from the Logical Framework submitted with your Stage 1 application. Please highlight any changes.

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 • 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			
Purpose To establish the ability of researchers and managers in the Galapagos national park to determine the nature and prevalence of disease threats to endemic fauna (with a focus on birds) stemming from the introduction of novel pathogens and vectors, and to build a capacity for the continued monitoring of introduced diseases in these populations.	New knowledge on the nature and prevalence of diseases and their vectors for endemic and potential reservoir species. A conservation management plan for endemic species in relation to disease threats endorsed by the National Park authorities and Ecuadorian government. Increased understanding of disease threats to endemic wildlife among professional and local people.	Project reports, and workshop reports involving partner organisations, publications in peer reviewed journals. Management plan document and correspondence. Records of training workshops with professional workers, and educational programme with local people and tourists, including educational materials generated for both. Students trained under programme pass their courses.	Researchers and managers use project findings to help minimise disease impacts on endemic species. Disease monitoring programme receives continued funding to maintain its activities. Note continuing funding from Galapagos National Park Service and University of Guayaquil is already agreed.
Outputs Identity and prevalence of key pathogens and vectors that threaten endemic species determined. A management plan for endemic species in relation to disease threats. An wildlife disease lab and continuing monitoring programme with trained personnel established. Educational events and materials (locals & tourists). Media representation	Findings endorsed by international conservation and scientific communities. Management plan peer reviewed and presented at international meeting on wildlife disease. Laboratory operational and at least 2 staff trained in wildlife pathology continuing to monitor disease. Participation of locals & tourists in events, material distributed. Project featured in local media	Publication of results in peer reviewed international scientific journals. Management plan published and distributed. Copies sent to Darwin Initiative. Proceedings from meeting. Annual and field reports, peer reviewed papers, continued output of data supporting management programmes. Educational leaflets and posters, press releases, reports Articles & recordings	Laboratory and monitoring programme active after year 1. Monitoring programme generates data required for management plan. Links to educational organisations and media are established (agreements are in place to do this via the Galapagos National Park Service).
Activities	**Activity Milestones (Summary of Project Implementation Timetable)**		
Capacity building and training.	Yr1: Establish pathology laboratory and run training workshop, finalise project diagnostic protocols and sampling strategy; Yr2 and Yr3 Follow up training workshops, 2 in each year		
Research & Disease Monitoring	Yr1: Develop diagnostic procedures including genetic based testing, start screening of samples collected during monitoring program. Yr2 and Yr3: Continuation of screening, Workshops to discuss results. Scientific publications and management plan written in year 3.		
Education programme	Yr1: Work with local organisiations and schools to develop educational programme and materials to inform about conservation biology and disease threats, programmes for local people and tourists. Yr2: and Yr 3. Continue to run programmes		
Dissemination of results	In each year: Annual reports and news letters, establish and up date project website. Engage local and international media interest. Yr2 and Yr3: Presentation of results at international conferences, workshops, papers submitted to international peer reviewed journals by 1 year after end of project.		