Submit by Monday 24 October 2011

DARWIN INITIATIVE APPLICATION FOR GRANT FOR ROUND 18: STAGE 2

Please read the Guidance Notes before completing this form. Where no word limits are given, the size of the box is a guide to the amount of information required. Information to be extracted to the database is highlighted blue.

1. Name and address of organisation (NB: Notification of results will be by post to the Project Leader)

Name:	**Address:**
Dr. Ken Collins	**Ocean and Earth Science, University of Southampton, National Oceanography Centre, Southampton SO14 3ZH**

2. Project title (not exceeding 10 words)

Galapagos Marine Invasive Species: Prevention, Detection and Management

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

Proposed start date:		**Duration of project:**			**End date:**	
Darwin funding requested	**2011/12 £**	**2012/13 £**	**2013/2014**	**2014/15 £**	**2015/16 £**	**Total £ 251,560**
Proposed (confirmed and unconfirmed) matched funding as percentage of total Project cost: 72%						

4. Define the purpose of the project (extracted from logframe)

To minimise negative impacts of invasive species on marine biodiversity, ecosystem services and resilience of the Galapagos Marine Reserve (GMR).

5. Principals in project. Please provide a one page CV for each of these named individuals. You may copy and paste this table if you need to provide details of more UK personnel or more than one project partner.

Details	**Project Leader**	**Other UK personnel (working more than 50% of their time on project)**	**Main project partner and co-ordinator in host country/ies**
Surname	**Collins**		**Koch**
Forename (s)	**Ken**		**Volker**
Post held	**Senior Research Fellow**		**Director of Marine Science**
Institution (if different to above)			**Charles Darwin Foundation**
Department			**Science**
Telephone			
Email			

Has your organisation received funding under the Darwin Initiative before? If so, please provide details of the most recent (up to 6 examples).

Reference No	Project Leader	Title
6174	Dr Ken Collins	Revision of the Galapagos Marine Management Plan
14-048	Prof.Terence Dawson	Galapagos Coral Conservation: Impact Mitigation, Mapping and Monitoring
EIDCF003	Prof.Terence Dawson	Developing a community-led marine management action plan for the Pitcairn Islands

7. IF YOU ANSWERED 'NO' TO QUESTION 6 describe briefly the aims, activities and achievements of your organisation. (Large institutions please note that this should describe your unit or department)

Aims (50 words)
Activities (50 words)
Achievements (50 words)

8. Please list all the partners involved (including the Lead Institution) , and explain their roles and responsibilities in the project. Describe the extent of their involvement at all stages, including project development. This section should illustrate the capacity of partners to be involved in the project. Please provide written evidence of partnerships. Please copy/delete boxes for more or fewer partnerships.

Applicant institution and website where available: **University of Southampton** **www.soton.ac.uk**	**Details (including roles and responsibilities and capacity to engage with the project):** The University of Southampton is one of the top 15 research universities in the UK. Ocean and Earth Science is based at the National Oceanography Centre, Southampton (NOCS) a collaborative Centre owned by the Natural Environment Research Council (NERC) and the University of Southampton, housing 520 research scientists, lecturing support and seagoing staff as well over 700 undergraduate and postgraduate students. Marine research spans the coast to the deep ocean, tackling the most pressing scientific questions of our age. The research mission of NOCS is to sustain international excellence, to play a key role in developing national and international research programmes, and to become Europe's leading academic centre for oceanography and marine geoscience. Collins will manage the project supported by the considerable resources of the University and the Charles Darwin Foundation

Lead Partner and website where available: **Charles Darwin Foundation, Galápagos, Ecuador** **www.darwinfoundation.org**	**Details (including roles and responsibilities and capacity to engage with the project):** The Charles Darwin Foundation (CDF) is the leading research institution in Galapagos with 52 years experience working directly with local managers as technical advisor to the Ecuadorian government. CDF will provide staff, equipment, and logistical support, and will be responsible for sampling design, field work, monitoring, data analysis and interpretation, development of the risk assessment tools, and conduct capacity building, training and outreach components

Partner Name and website where available:	Details (including roles and responsibilities and capacity to engage with the project):
Galapagos National Park www.galapagospark.org	The Galapagos National Park Service (GNPS) is the legal management authority for the Marine Reserve and will provide logistical support, staff for field work and monitoring, and contribute to the outreach program
Ecuadorian Navy: Instituto Oceanográfco de la Armada www.inocar.mil.ec	INOCAR is the Ecuadorian Institute of oceanography of the Navy, and will provide logistical and technical support (research vessel, equipment, divers).
DIRNEA Dirección Nacional de Espacios Acuáticos www.dirnea.org	DIRNEA is the leading national maritime authority and responsible for ballast water treatment protocols in Ecuadorian waters, and will provide logistical and technical support and conduct ballast water control on vessels as well as access and security for hull surveys.
AGROCALIDAD Agencia Ecuatoriana de Aseguramiento de la Calidad del Agrio www.agrocalidad.gov.ec	AGROCALIDAD is the authority responsible for the prevention and treatment of invasive species in Galapagos, and will be involved in monitoring, and provide lab space for analysis and personnel for fieldwork. It will also incorporate recommendations for marine invasive control and eradication within the developing Biosecurity Institute.
University of Dundee www.dundee.ac.uk	Professor Terence Dawson, School of the Environment, University of Dundee, brings extensive management and stakeholder engagement experience of an earlier Darwin Initiative project in Galapagos (14-048). He will be supporting fieldwork surveys as well as work with the CDF to establish the risk-based framework for invasive species management.

9a. Have you consulted stakeholders not already mentioned above? ☐ **Yes** ☒ **No**
If yes, please give details:

9b. Do you intend to consult other stakeholders? ☒ **Yes** ☐ **No**
If yes, please give details:
Naturalist guides, tour operators and fishermen will be contacted and informed about the project, explaining the benefits of the prevention and early detection of marine invasive species monitoring program that will be established. Given their regular access to different parts of the archipelago, their active collaboration is important in designing a citizen science component that greatly improves detection of possible invasive problems.

9c. Have you had any (other) contact with the government not already stated? ☒ **Yes** ☐ **No**
If yes, please give details:
The project proposal is presented within the CDF annual planning process for 2012 to the Ecuadorian government World Heritage Coordination, Ministries of the Environment and External Relations as part of an ongoing stakeholder engagement process. This encourages buy-in and coordination within national planning mechanisms and regional development plans for the Islands.

9d. Will your project support any work in the UK Overseas Territories? ☐ **Yes** **X No**
If yes, please give brief details stating which Territory/ies will be involved.

PROJECT DETAILS

10. Please provide a Concept note (Max 1,000 words) (repeat from Stage 1, with changes highlighted)

The marine ecosystems of Galapagos harbour unique biological communities, and have a high incidence of endemic species (18.3%, Hickman 2009). Galapagos is a UNESCO world heritage site, renown for its high biodiversity and extraordinary oceanographic features that provide a great variety of habitats in a unique environmental setting. Ecuador's investment in the protection and sustainable development of Galapagos has been very significant. However, due to exponential growth of tourism, maritime traffic and urban development, the sustainability of the archipelago and its unique ecosystems is at great risk. Recent assessments show that 45 marine species in Galapagos are now considered globally threatened and are included on the IUCN Red List.

Development in the archipelago is mostly oriented towards tourism, which is ship-based and growing at a rate of 14%/year. Around 240 (mostly foreign) vessels, visited Galapagos from 1997-2006. Five cargo ships from ports in mainland Ecuador supply the archipelagos ever growing population and tourists. All this results in intense national and international maritime traffic, where each vessel acts as a potential vector for invasive species. As a result, the number of introduced terrestrial and marine species increased by an order of magnitude in the past 100 years (112 to 1321). Invasive species are considered as the second most important cause for biodiversity loss by the IUCN. While their impacts have been studied extensively in the terrestrial environment, and promising quarantine protocols are now in place, few data is available for the marine realm. In fact several species with high invasive potential, such as the algae *Caulerpa racemosa* and *Asparagopsis taxiformis*, are already established. No data on their dispersion and competition with native species are available as yet, but the destructive potential of invasive species in general has been demonstrated extensively in marine ecosystems worldwide.

In other parts of the world, governments have established programmes and protocols for prevention, early detection and management of marine invasive species. Examples include the Marine Biosecurity Program in New Zealand, the National System for the Prevention and Management of Marine Pest Incursions in Australia, and the Aquatic Nuisance Species (ANS) Task Force (ANSTF)in the U.S.. Examples of successful actions include Australia, where in 1999, the highly invasive black striped mussel, Mytilopsis sp., was detected in three marinas in Darwin. An immediate containment and eradication programme was implemented and eradication was achieved in less than a month after the first detection. In December 1999, the ANSTF in the USA established the *Caulerpa taxifolia* (Mediterranean strain) Prevention Committee and just two months later *C. taxifolia* was detected off the coast of California. The infestation sites were surveyed and eradication was conducted successfully.

These and other examples prove that early detection of new invaders greatly increases the likelihood that a response will be effective and cause less collateral damage. Appropriate surveillance programs that target high-risk vectors, species, and sites have arguably been the most successful measure to evade the introduction and establishment of invasive species in the marine environment (e.g. Myers et al. 2000; Bax et al. 2001). The investment required to control invasive species once established is often disproportionately large compared to the measures required for prevention and the potential loss/cost incurred to ecosystem services such as fisheries or nature based tourism.

Thus, an in-depth study of introduced/invasive species and the implementation of a comprehensive monitoring, early alert, and treatment system in close collaboration with local authorities will help to mitigate one of the greatest threats to biodiversity in the GMR.

For this study, we propose to 1) gather concise baseline information on marine introduced and invasive species, 2) install a monitoring and early alert system to detect potential invaders, 3) study distribution, abundance and interactions of introduced species already established, 4) conduct threat assessments by coupling ocean circulation models with dispersal capabilities and habitat requirements of potential invaders, 5) train staff from National Park, the Biosecurity agency (AGROCALIDAD) and national students in monitoring techniques, taxonomy, and data analysis, 6) establish a community outreach program to convey the threats and impacts of invasive species to the GMR to the general public.

The proposed project will have the following outcomes:

1. A baseline compilation of all existing information on marine invasive species in the Galapagos and their distribution, from literature research and census/monitoring in ports of entry and the whole archipelago.

2. Risk assessment tools for prevention, early detection and manage of marine invasive species in the GMR:
    a) A risk assessment categorization for incoming ships, combining their providence and recent shipping route with the identification of hotspots of transmission and propagation of invasive species in the Eastern Pacific (from Literature analysis and directed work groups with ETP regional marine experts and global invasive authorities).
    b) Sensitivity maps with spatial data on distribution and sightings of invasive species combined with traffic routes and density of maritime traffic within the GMR.
    c) An ocean circulation model coupled with a habitat map and life cycle information of the worst invaders of the Eastern Tropical Pacific to predict vector dispersal from maritime traffic routes and ports of entry.
    d) Inter-institutional planning document for rapid response protocols when introduced species are detected.
3. Community outreach program on invasive species and the threats they pose for the Galapagos Marine ecosystems, including identification guides for marine invasive species present in the Eastern Pacific for naturalist guides and tourism operators.
4. Capacity building in local community through:
    a) Key staff members of Galapagos National Park Service, Agrocalidad, and INOCAR trained in monitoring techniques for marine invasive species.
    b) Local students trained in scientific method and aspects of the aforementioned monitoring and modelling efforts.

As a necessary future step, surveillance efforts need to be accompanied by rapid response protocols, which enable effective action when introduced species are being detected. However, this is the responsibility of the government authorities that are collaborating in the proposed project. Continued technical assistance by the CDF will accompany the implementation process after the end of the project.

11a. Is this a new initiative or a development of existing work (funded through any source)? Please give details:

The proposed project is a new initiative. The CDF has several decades of experience in eradication of invasive species in the terrestrial environment, and has also played a key role in planning and implementing the quarantine system that is currently in place. However, in the marine environment, no concise efforts have been developed for the prevention and management of invasive species. Ecuador has signed international protocols for the treatment and management of ballast water, but currently implementation and enforcement are lacking. DIRNEA (Dirección Nacional de Espacios Acuáticos) and INOCAR (Instituto Nacional de Oceanografía de la Armada), the responsible agencies on a national level, are very interested in setting up the first system of prevention, detection and management of marine invasive species in Galapagos.

11b. Are you aware of any other individuals/organisations/ projects carrying out or applying for funding for similar work? ☐ **Yes** x **No**

If yes, please give details explaining similarities and differences, and explaining how your work will be additional to this work and what attempts have been/will be made to co-operate with and learn lessons from such work for mutual benefits:

11c. Are you applying for funding relating to the proposed project from other sources? x **Yes** ☐ **No**

If yes, please give brief details including when you expect to hear the result. Please ensure you include the figures requested in the spreadsheet as Unconfirmed funding.

CDF has submitted a proposal to Fundación Biodiversidad in Spain, a public foundation of the Spanish Government, and part of the Ministry of Environment and Rural and Marine Affairs. The proposal was falls within the Natural Heritage Conservation and Biodiversity Strategy: Program 1.9. Combating Invasive Alien Species. The proposal is for a one year grant to kick-start the project with preliminary monitoring and inventory work. If successful it would allow us to also monitor the most important harbours in mainland Ecuador (Guayaquil and Manta) during the first year, and it facilitate extended monitoring for invasive species across the archipelago towards a more thorough inventory.

12. Please indicate which of the following biodiversity conventions your project will contribute to: -
At least one must be selected.
- Only indicate the conventions that your project is directly contributing to.
- No additional significance will be ascribed for projects that report contributions to more than one convention

Convention on Biological Diversity (CBD)	**X Yes** ☐ **No**
CITES	☐ **Yes** ☒ **No**
Convention on Migratory Species (CMS)*	☐ **Yes** ☒ **No**

*If CMS please indicate whether it is the main Convention or one or more of the daughter agreements/MoUs (ACAP, AEWA etc)

Is any liaison proposed with the CBD/CMS/CITES focal point in the host country? ☒ **Yes** ☐ **No**
If yes, please give details:
CDF works closely with the National Park Service, operational arm of Ministry of Environment in direct contact with the World Heritage Coordination Ministry for Ecuador. These agencies are responsible for responding to Ecuador's obligations under CBD/CMS and CITES treaties including information requests and scenario development.

What specific issues covered by the Convention(s) will this project address and how were they identified? (150 words)
This project will provide with a baseline work on marine invasive species, their monitoring and risk assessment tools (CBD Art 7), with the aim of establish a preventive program into Galapagos regional plans (CBD Art 6). The project will be developed in the GMR, preventing the introduction of marine invasive species and controlling its impacts (CBD Art 8h), with a direct benefit for the local sustainable livelihood (CBD Arts 8i and 8j).
Local authorities staff will be trained and integrated in the project (CBD Art 12) in close collaboration with international experts and its technical resources (CBD Arts 16 and 18).
The project's outreach program will inform and encourage local community participation (CBD Art 13). Open on-line databases will be updated and available for information exchange (CBD Art 17).
These issues have been identified after a risk analysis process conducted by the CDF in a stakeholder engagement process.

What will change as a result of this project? (150 words)

We expect that this project will establish effective prevention, detection and quarantine measures that will significantly diminish the introduction of alien species in the marine environment. This will allow for a rapid detection of threats, improving coordination between local stakeholders and authorities such as port captain, Biosecurity, Navy and and Park, developing both an informal and formal detection network. The project will provide to authorities, GMR users and local population in general, access to relevant materials, including a guide of potential invasive species and a rapid response protocol, encouraging citizen science engagement and wider awareness. Local authorities will be able of implement rules and standards using the results of this project and thereby limit the risk to introduce invasive species in Galapagos. The implementation of the terrestrial quarantine system with the help of CDF has been a great success, and has significantly reduced the introduction of alien species in Galapagos.

Why is the project important for the conservation of biodiversity? (150 words)
The conservation of biodiversity and uninterrupted ecosystem processes will ensure GMR marine ecosystems resilience against climate and human perturbations, its two greatest threats. Invasive species alter biodiversity and functional diversity, reducing the capacity of the natural system to bounce back under diverse interacting pressures, directly impacting native and endemic species. Such disturbances can cause trophic cascades and shifts in biodiversity states of entire ecosystems. Galapagos are protected in large part through recognition of their intrinsic natural heritage value and local communities depend upon those resources for artisanal fisheries and nature-based tourism. If the biodiversity capital is diminished, the Islands become more attractive to traditional development concerns that do not prioritize on nature conservation and sustainable livelihood for local communities.

13. How will the results of the project be disseminated; how will the project be advertised as a Darwin project and in what ways will the Darwin name and logo be used? (max 200 words)

The CDF´s communications and education department will disseminate the project objectives, justification, and results through annual reports, press and media publicity (radio spots and TV interviews and programs), on the CDF website, and through educational programs for the local community. This will provide numerous opportunities for promoting the project, highlighting and acknowleding the key role of Darwin Initiative in this project. In addition to this the project will be cited as a Darwin project, including its logo, in all published materials, presentations, resulting databases, reports, announcements and scientific papers produced within the project. In this sense, the outreach materials produced will have a significant diffusion, considering that the identification guides and other materials distributed to naturalist guides will reach a good proportion of the more than 120,000 tourists who visit the Islands each year.
The Galapagos Conservation Trust (a London-based charitable organization in which Terence Dawson is a member of the Trustees) will facilitate additional outreach activities in the UK, including newsletters, web-site updates and presentations to its membership and more widely at appropriate public events.

14. What will be the long-term benefits (particularly for biodiversity and local communities) of the project in the host country or region and have you identified any potential problems to achieving these benefits? (max 200 words)

In Galapagos the Ecuadorian government is working, with support of the CDF, to develop the appropriate framework for a sustainable livelihood. Tourism represents the mainstay of local economy and is based on the natural wealth of the Islands, represented by its unique ecosystems and many endemic species, which are icons for conservation worldwide. Artisanal fishermen represent another socially and economically influential sector in Galapagos, and have been working with direct support of CDF, GNP and other institutions, to develop sustainable fisheries. Degraded marine ecosystems, local extinctions and drastic changes in marine communities caused by invasive species, would thus greatly harm the economy of the archipelago and the base for a sustainable livelihood. As the archipelago is one of the marine areas with the highest endemism worldwide, and invasive species are recognized as the second largest threat to biodiversity, this project is very important to maintain the unique biodiversity of the archipelago. Thus there is great ecological, economic and social benefit in maintaining the marine biodiversity in Galapagos.

Potential problems: lack of inter-institutional collaboration, overlapping responsibilities, bureaucracy, lack of political will or change thereof during the project and lack of local institutions engagement and support at the end of the project.

15. State whether or not the project will reach a stable and sustainable end point. If the project is not discrete, but is part of a progressive approach, give details of the exit strategy and show how relevant activities will be continued to secure the benefits from the project. Where individuals receive advanced training, for example, what will happen should that individual leave? (Max 200 words)

The project will not reach a stable end point. It is designed to jump-start the process for the implementation of an effective system of prevention, detection and also management of marine invasive species by the local authoritie. To achieve this aim, training will be conducted for technical staff at each institution, providing them with the necessary skills, resources and knowledge to train new staff if needed. This ongoing training will include a progresive integration in monitoring, prevention and analytical tasks during the project development, thus ensuring optimal results. A database will provide full information to local authorities at the end of the project, including current status of marine invasive species in the GMR (presence and distribution), an evaluation of potential risks and pathways, as well as appropriate monitoring procedures for prevention and early detection. The CDF works to incorporate criteria for prevention of invasive species in conservation policy for the Islands as part of the new Biosecurity Institute planned to be working between 2011 to 2015. After the end of the project, the CDF will continue to act as an advisor to the government, which it has been doing successfully over more than 50 years.

16. If your project includes capacity building in local communities in the host country, please indicate how you will assess the training needs in relation to the overall purpose of the project. Who are the target groups? How will the training be delivered? What skills and knowledge you expect the beneficiaries to obtain and how these may be used beyond the life of the project and any wider application How will you measure training effectiveness. (max 300 words)
You should address each of these points.

The target groups for training are the technical staff of the three participating institutions: GNP, INOCAR/DIGMER and AGROCALIDAD.

In the initial phase of the project a training course will be carried out to ensure that technical staff is able to conduct sampling procedures, analyse samples, identify species and handle the database.. Prior to the beginning of the course, relevant knowledge and skills of the participants will be evaluated to define specific training needs and ensure that the course covers all relevant areas. The course will include two stages, theoretical and practical, divided into four main subjects: scientific diving, underwater survey techniques, marine invasive species identification and analysis of results in order to provide relevant information for management and quick response actions to any invasive species detected.

Trainees will be progressively integrated in the project, coached by scientific divers and personnel from the CDF. This ensures further in-depth training of the knowledge and skills acquired during training, and provides ongoing evaluation and supervision by the project coordinators.

Tests will be conducted with the trainees before, during and after training, and thereafter periodical evaluation of their skills will be done. The aim is to have at the end of the 3-year project, a group of trained staff from several institutions that can conduct the port and vessel monitoring, analyse samples and maintain the alert and early response system. The CDF will continue to function as an external technical advisor after the closure of the project, as it has been doing for over 50 years.

LOGICAL FRAMEWORK LOGFRAME WAS REWORKED!

17. Please enter the details of your project onto the matrix using the note at Annex 3 of the Guidance Note. This should not have substantially changed from the Logical Framework submitted with your Stage 1 application. Please highlight any changes. (Use no smaller than Arial 10 pt)

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Goal: Effective contribution in support of the implementation of the objectives of the Convention on Biological Diversity (CBD), the Convention on Trade in Endangered Species (CITES), and the Convention on the Conservation of Migratory Species (CMS), as well as related targets set by countries rich in biodiversity but constrained in resources.			
Sub-Goal: Minimise negative impacts of invasive species on marine biodiversity, ecosystem services and resilience of the Galapagos Marine Reserve (GMR).	• No. population impacts in GMR indicator species are attributable to invasive species. • No. Galapagos marine endemic or native species have been re-categorized to endangered status with invasive species being the cause. • Social, economic and environmental benefits derived from Galapagos natural wealth are not affected by marine invasive species.	• CDF Biodiversity assessment of the GMR reports. • CBD, CDF and GNPS reports. • IUCN red list data. • Social, economic and other relevant government reports in Galapagos.	
Purpose Establish a baseline for marine invasive species in the Galapagos archipelago, and implement preventative, detection, control and mitigation measures within the new government biosecurity framework (Agrocalidad 2011-2015) and regional planning.	• Prevention and early detection monitoring plan accepted and implemented with collaboration of government agencies. • Increased knowledge on the presence, distribution of invasive species and their impacts upon native species and communities. • New records of invasive species in GMR restricted to early stage of appearance, long before definitive settlement happens and impact on ecosystems have started. • Government agencies (GNPS, Agrocalidad and INOCAR) have access to databases and risk assessment tools and are trained in their use.	• Monitoring plan and protocol finished and agreed with local authorities. • Technical reports to the government agencies involved (GNPS, Agrocalidad and INOCAR). • Baseline report updated with new invasive species records and distribution maps. • Reports of training conducted. • Scientific publications.	The safeguarding of native and endemic species, local community livelihoods (tourism and fisheries), island food security and wellbeing also depend upon multiple socio-political and environmental (climatic) factors that will be recognised, but understood to be beyond the scope of the project.

Outputs **1.** A baseline compilation of historical records and updated information on marine invasive species in GMR and their distribution, from literature research and census/monitoring in ports of entry and the whole archipelago.	**1.1** GMR invasive species historical records in depth researched. **1.2** Invasive species monitoring plan for GMR and Galapagos main ports implemented. **1.3** Invasive baseline database updated and integrated into national GNPS/ local government database under development (online).	• Marine invasive species baseline database on-line. • CDF taxonomic on-line database updated. • Project monitoring reports. • Technical participatory workshops with government agencies reports. • National GNPS/local government on-line database (under development).	Coordination between key associates (Navy, Port Authority, National Park, etc.).
2. Marine invasive species risk assessment tools and rapid response protocols for their control/eradication for the GMR.	**2.1** Marine invasive species risk assessment tools (incoming ships classified into risk categories depending on their providence, sensitivity maps, oceanographic modelling and dispersal scenarios for potential invaders) for the GMR implemented. **2.2** Rapid response protocols finished and handed over to local authorities.	• Risk assessment report and tools (maps, dispersal scenarios, risk categorization for incoming ships). • Rapid response protocol document.	Counterpart (US NCSU/UK National Oceanographic Centre) with high resolution (4Km nested) Hybridised Coordinate Model (HyCom) provided for future development.
3. Community outreach program on invasive species and the threats they pose for the Galapagos marine ecosystems, including their active collaboration in the detection program.	**3.1** GMR invasive species identification guides produced and distributed. **3.2** 500 Naturalist guides and other GMR users informed and trained in the identification guides use through workshops. **3.3** Reporting hotline and procedures for new findings of invasive species established (mainly for guides). **3.4** Number of media dissemination (news articles, radio, TV interviews and websites).	• GMR invasive species identification guides. • Report of GMR users workshops and outreach activities conducted. • Reporting hotline files. • CDF and The Galapagos Conservation Trust websites, videos, newspaper articles, radio spots	Assumes an active interest and participation by local communities and GMR users, with special focus on naturalist and dive guides.
4. Capacity building in local community: a) Key staff members of GNPS, Agrocalidad, and INOCAR trained in monitoring techniques for marine invasive species. b) Local students trained in scientific method and writing their thesis on marine invasive species topics.	**4.1** 9-12 staff members of GNPS, Agrocalidad, and INOCAR trained in monitoring techniques, and risk assessment and integrated in the implementation stage. **4.2** Three national bachelor students, one masters, and one PhD student with finished thesis on invasive species ready to graduate and orientated towards complementary positions in new government biosecurity initiative.	• Training workshops reports and evaluation. • References to marine invasive species prevention, early detection and management plans in government agencies reports and programs involved. • Thesis documents or drafts.	Assumes the timely development of the new AGROCALIDAD Biosecurity Institute in the Islands. Trained staff remains active in relevant positions in government agencies.

Activities (details in workplan)

1.1 In depth review of scientific and specialized outreach literature to synthesize records of invasive species in the marine environment of the Galapagos in recent decades.
1.2 Review data of the CDF Ecological Monitoring Program of the last ten years to assess recent changes in species composition and the presence of invasive species.
1.3 Elaborate a marine invasive species monitoring plan and protocol for local authorities.
1.4 Carry out monitoring surveys in the 5 main ports of Galapagos twice a year, and in Puerto Ayora bimonthly, for higher temporal resolution.
1.5 Conduct yearly invasive species monitoring surveys throughout the GMR as part of the CDF Ecological Monitoring Program.
1.6 Determine the occurrence and spatial distribution of marine invasive species already established in Galapagos.
1.7 Establish a database with historical data and surveys results available to GNPS/ local government authorities.
1.8 Elaborate marine invasive species distribution maps in the GMR.

2.1 Elaborate a list of potentially invasive marine species in Galapagos through review of scientific literature and technical reports about potential invaders, including information provided by marine invasive species programs already established in the ETP region and expert workshops.
2.2 Elaborate a risk categorization for incoming ships, combining their providence and recent shipping route with identified hotspots of transmission and propagation of invasive species in the Eastern Pacific and elsewhere.
2.3 Elaborate sensitivity maps with spatial data on distribution of invasive species combined with traffic routes and density of maritime traffic within the GMR.
2.4 Develop ocean circulation and invasive dispersal models for the GMR.
2.5 Elaborate a risk assessment report.
2.6 Elaborate, in close collaboration with the other institution involved, a rapid response protocol applicable in case of invasive species detection within GMR.

3.1 Elaborate species identification guides for marine invasive species presents in ETP region especially for naturalist guides and tour operators and train them in their use.
3.4 Establish a reporting hotline and procedures for invasive species detections by naturalist guides to take advantage of their knowledge and year-round presence throughout the archipelago.
3.2 Organize public workshops for GMR users about marine invasive species in the main 4 population centres of the archipelago.
3.3 Elaborate annual outreach reports.

4.1 Training courses in marine invasive species identification, monitoring and database analysis for the technical staff of the three institutions involved: GNPS, Agrocalidad and INOCAR.
4.2 Organize of technical participative workshops with GNPS, Agrocalidad and INOCAR to inform about the progress of the project, advisement and results achieved so far.
4.3 Thesis projects carried out for three national students Bachelor and one national student PhD thesis on invasive species.

5.1 Elaborate an annual report to DI about the progress of the project and the results achieved.

18. Provide a project implementation timetable that shows the key milestones in project activities. Complete the following table as appropriate to describe the intended workplan for your project.

	Activity *PLEASE NOTE THAT THE PROJECT WOULD START 1APRIL 2012, QUARTERS COUNT FROM THAT DATE, FINISH 31 MARCH 2016	No of Months	Year 1				Year 2				Year 3			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1.1	In depth review of scientific and specialized outreach literature to synthesize records of invasive species in the marine environment of the Galapagos in recent decades.	4												
1.2	Review data of the CDF Ecological Monitoring Program of the last ten years to assess recent changes in species composition and the presence of invasive species.	4												
1.3	Elaborate a marine invasive species monitoring plan and protocol for local authorities.	6												
1.4	Carry out monitoring surveys in the 5 main ports of Galapagos twice a year, and in Puerto Ayora bimonthly, for higher temporal resolution,	30												
1.5	Conduct yearly invasive species monitoring surveys throughout the GMR as part of the CDF Ecological Monitoring Program.	6												
1.6	Determine the occurrence and spatial distribution of marine invasive species already established in Galapagos.	30												
1.7	Establish a database with historical data and surveys results available to GNPS/ local government authorities.	9												
1.8	Elaborate marine invasive species distribution maps in the GMR.	12												
2.1	Elaborate a list of potentially invasive marine species in Galapagos after review scientific literature and technical reports about potentially invaders, including information provided by marine invasive species programs already established in the ETP region and expert workshops.	8												
2.2	Elaborate a risk categorization for incoming ships, combining their providence and recent shipping route with the identification of hotspots of transmission and propagation of invasive species in the Eastern Pacific.	9												
2.3	Elaborate sensitivity maps with spatial data on distribution of invasive species combined with traffic routes and density of maritime traffic within the GMR.	9												

2.4	Develop ocean circulation and invasive dispersal models for the GMR.	12													
2.5	Elaborate a risk assessment report.	30													
2.6	Elaborate, in close collaboration with the other institution involved, a rapid response protocol applicable in case of invasive species detection within GMR.	9													
3.1	Elaborate species identification guides for marine invasive species presents in ETP region especially for naturalist guides and tour operators and train them in their use.	6													
3.2	Establish a reporting hotline and procedures for invasive species detections by naturalist guides to take advantage of their knowledge and year-round presence throughout the archipelago.	2													
3.3	Organize public workshops for GMR users about marine invasive species in the main 4 population centres of the Archipelago.	6													
3.4	Elaborate annual outreach reports.	3													
4.1	Training course in marine invasive species identification, monitoring and database analysis for the technical staff of the three institutions involved: GNP, Agrocalidad and INOCAR.	6													
4.2	Organize technical participative workshops with GNP, Agrocalidad and INOCAR to inform about the progress of the project, advisement and results achieved so far.	6													
4.3	Thesis projects carried out for three national students Bachelor and one national student PhD thesis on invasive species.	30													
5.1	Elaborate an annual report about the progress of the project and the results achieved.	9													

19. Please indicate which of the following Standard Measures you expect to report against by providing indicative figures. These will help gauge project achievements if you receive funding. You will not necessarily plan to cover all these Standard Measures in your project. Separate guidance on Standard Measures can be found at http://darwin.defra.gov.uk/resources/reporting/standard_measures/

Standard Measure	Description	Estimate
1A	Number of people to submit thesis for PhD qualification (in host country)	1
1B	Number of people to attain PhD qualification (in host country)	
2	Number of people to attain Masters qualification (MSc, MPhil etc)	1
3	Number of people to attain other qualifications (Bachelors degree)	3
4A	Number of undergraduate students to receive training	3
4B	Number of training weeks to be provided	26
4C	Number of postgraduate students to receive training	2
4D	Number of training weeks to be provided	50
5	Number of people to receive at least one year of training (which does not fall into categories 1-4 above) Scientific divers group of CDF	4
6A	Number of people to receive other forms of education/training (which does not fall into categories 1-5 above) 9-12 Staff of GNPS, INOCAR/DIGMER, 3-5 volunteers	12-17
6B	Number of training weeks to be provided	8
7	Number of (ie different types - not volume - of material produced) training materials to be produced for use by host country (ID guides, dive and safety protocol, methods protocol, presentations for training purposes	4
8	Number of weeks to be spent by UK project staff on project work in the host country	20
9	Number of species/habitat management plans (or action plans) to be produced for Governments, public authorities, or other implementing agencies in the host country (monitoring plan, rapid response protocols)	2
10	Number of individual field guides/manuals to be produced to assist work related to species identification, classification and recording	1
11A	Number of papers to be published in peer reviewed journals	2+
11B	Number of papers to be submitted to peer reviewed journals	4+
12A	Number of computer based databases to be **established** and handed over to host country	1
12B	Number of computer based databases to be **enhanced** and handed over to host country	2
13A	Number of species reference collections to be **established** and handed over to host country(ies)	
13B	Number of species reference collections to be **enhanced** and handed over to host country(ies) (integrated in the species collection of the CDF)	1
14A	Number of conferences/seminars/ workshops to be **organised** to present/disseminate findings	3
14B	Number of conferences/seminars/ workshops **attended** at which findings from Darwin project work will be presented/ disseminated.	3
15A	Number of national press releases in host country(ies)	3-5
15B	Number of local press releases in host country(ies)	12-15
15C	Number of national press releases in UK	1
15D	Number of local press releases in UK	1
16A	Number of newsletters to be produced	9
16B	Estimated circulation of each newsletter in the host country(ies)	national
16C	Estimated circulation of each newsletter in the UK	national
17A	Number of dissemination networks to be **established**	1 (local)
17B	Number of dissemination networks to be **enhanced/ extended**	1 (CDF)
18A	Number of national TV programmes/features in host country(ies)	1-2
18B	Number of national TV programmes/features in UK	1
18C	Number of local TV programmes/features in host country(ies)	4-6
18D	Number of local TV programmes/features in UK	1
19A	Number of national radio interviews/features in host county(ies)	4-6
19B	Number of national radio interviews/features in UK	1
19C	Number of local radio interviews/features in host country(ies)	9-12
19D	Number of local radio interviews/features in UK	1
20	Estimated value (£'s) of physical assets to be handed over to host country(ies)	~16K GBP
21	Number of permanent educational/training/research facilities or organisations to be established and then continued after Darwin funding has ceased	n/a
22	Number of permanent field plots to be established during the project and continued after	n/a

	Darwin funding has ceased	
23	Value of resources raised from other sources (ie in addition to Darwin funding) for project work	~130K GBP

PROJECT BASED MONITORING AND EVALUATION

20. Describe, referring to the Indicators in the Logical Framework, how the progress of the project will be monitored and evaluated, including towards delivery of its outputs and in terms of achieving its overall purpose. This should be during the lifetime of the project and at its conclusion. Please include information on how host country partners will be included in the monitoring and evaluation.

The work-plan timetable provides a useful tool to measure if the project is progressing on time and if the planned activities have been carried out in a timely manner. For this purpose, the project team will elaborate annual reports, which will measure and assess the progress of the project and compliance with planned achievements. These reports will be provided to the Darwin Initiative and to local partners (GNPS, Agrocalidad and INOCAR) during annual participatory workshops that include progress evaluations. After the feedback and advice received from Darwin Initiative and local partners, the project work-plan may be modified. The project success in achieving its overall purpose will be assessed at the end, in a final workshop, which will enable identification of procedures and areas to improve for future development, all of which will be included in the final report to DI. Partner institutions will be an active part of the monitoring and evaluation throughout the duration of the project.

% progress of the indicators/milestones noted in the log-frame will be used to describe and measure if the project is being carried out in a timely manner. All written products will be handed over to DI, accompanied by a letter of receipt of the target institution in Ecuador. Workshop reports, participation lists and short evaluations will also be provided. Commitment of the government institutions involved will be measured in terms of their participation, the amount of actions taken, and by their ability and willingness to adopt and implement the procedures and protocols established during the course of the project.

Internally CDF incorporates the project activities and indicators presented into its annual operating plan under a similar log framework to that presented. As well as providing a tool for evaluation, each year the same operating plan, including the proposed work is approved with Government of Ecuador as part of an emerging National prioritization of Investigation towards conservation and sustainable development concerns in the Galapagos Islands.

FUNDING AND BUDGET

Please complete the separate Excel spreadsheet which will provide the Budget information for this application. Some of the questions below refer to the information in this spreadsheet.

NB: Please state all costs by financial year (April to March). Use current prices – and include anticipated inflation, as appropriate, up to 3% per annum. The Darwin Initiative cannot agree any increase in grants once awarded.

21. How is your organisation currently funded? (max 100 words)

Southampton has over 22,000 students and 5,000 staff, with an annual turnover of over £370 million, from research grants and contracts, HEFCE and student tuition fees www.soton.ac.uk/finance/central/FA2010.pdf Southampton's record for success in spinning out its research excellence into business ventures has made it one of the leading entrepreneurial universities in the UK, producing twelve successful spin-out companies since 2000, three of which have a combined market capitalisation value of £160 million. Marine science research is principally supported by NERC and the EU

22. Provide details of all confirmed funding sources identified in the Budget that will be put towards the costs of the project, including any income from other public bodies, private sponsorship, donations, trusts, fees or trading activity. Please include any additional unconfirmed funding the project will attract to carry out addition work during or beyond the project lifetime. Indicate those funding sources which are confirmed.

Confirmed:

Existing and new (from Tsunami RRF) CDF Dive Research equipment (£XXX)

Unconfirmed:

There is a current Spanish Fundación Biodiversidad fund application which would contribute paid staff time to this project (£XXXX)
Boat hire and fuel - WWF & Galapagos Conservation Trust (£XXXX)
Science communicator time – MAVA (£XXXX)

23. Please give details of any further resources (confirmed or unconfirmed) for this project that are not already detailed in the Budget or Question 22. This will include donations in kind or un-costed support eg accommodation. (max 50 words per box)

Possible additional financial resources (not yet applied for):

Postgraduate/postdoctoral studentship based on strong links (MOU & current student exchange programme) between Ocean and Earth Science University of Southampton and University of North Carolina Wilmington

Funding in kind:

Staff time: Dr Ken Collins & Jenny Mallinson,; Prof Terry Dawson, University of Dundee (~20 man weeks in Galapagos + project administration = £XXXX)
International students - research programmes, (£XXXX)
University of North Carolina, Wilmington - intensive computer modelling & staff time (£XXX0) There has been extensive previous collaboration by UNCW & NCSU with CDRS

FCO NOTIFICATIONS

Please check the box if you think that there are sensitivities that the Foreign and Commonwealth Office will need to be aware of should they want to publicise the project's success in the Darwin competition in the host country. ☐

Please indicate whether you have contacted the local UK embassy or High Commission directly to discuss security issues (see Guidance Notes) and attach details of any advice you have received from them.

Yes (no written advice) ☒ **Yes, advice attached** ☐ **No** ☐

CERTIFICATION 2011/12

On behalf of the University of Southampton

I apply for a grant of £251,559 in respect of all expenditure to be incurred during the lifetime of this project based on the activities and dates specified in the above application.

I certify that, to the best of our knowledge and belief, the statements made by us in this application are true and the information provided is correct. I am aware that this application form will form the basis of the project schedule should this application be successful. (*This form should be signed by an individual authorised by the lead UK institution to submit applications and sign contracts on their behalf.)*

I enclose CVs for project principals and letters of support. Our most recent audited accounts and annual report can be found at: www.soton.ac.uk/finance/central/FA2010.pdf

Name (block capitals)	JOANNA MILLER
Position in the organisation	RESEARCH ACCOUNTS MANAGER

Signed		**Date:**	24.10.11

Stage 2 Application - Checklist for submission

	Check
Have you provided actual start and end dates for your project?	x
Have you provided your budget based on UK government financial years ie 1 April – 31 March?	x
Have you checked that your budget is complete, correctly adds up and that you have included the correct final total on the top page of the application?	x
Is the concept note within 1,000 words?	x
Is the logframe no longer than 3 pages and have you highlighted any changes since Stage 1?	x
Has your application been signed by a suitably authorised individual? (clear electronic or scanned signatures are acceptable in the email, but a wet signature should be provided in the hard copy version)	
Have you included a 1 page CV for all the Principals identified at Question 5?	x
Have you included a letter of support from the <u>main</u> overseas partner(s) organisations identified at Question 5?	x
Have you checked with the FCO in the project country/ies and have you included any evidence of this?	x
Have you included a copy of your most recent annual report and accounts? An electronic link to a website is acceptable.	x
Have you read the Guidance Notes ?	x
Have you checked the Darwin website immediately prior to submission to ensure there are no late updates?	**x**

Once you have answered Yes to the questions above, please submit the application, not later than midnight GMT on Monday **24 October 2011** to Darwin-Applications@ltsi.co.uk using the application number (from your Stage 1 feedback letter) and the first few words of the project title **as the subject of your email**. However, if you are e-mailing supporting documentation separately please include in the subject line an indication of the number of e-mails you are sending (eg whether the e-mail is 1 of 2, 2 of 3 etc). **In addition**, a hard copy of the signature page should be submitted to Darwin Applications, c/o LTS International, Pentlands Science Park, Bush Loan, Penicuik EH26 0PL **postmarked** not later than Tuesday 25 October 2011**.**

DATA PROTECTION ACT 1998: **Applicants for grant funding must agree to any disclosure or exchange of information supplied on the application form (including the content of a declaration or undertaking) which the Department considers necessary for the administration, evaluation, monitoring and publicising of the Darwin Initiative. Application form data will also be held by contractors dealing with Darwin Initiative monitoring and evaluation. It is the responsibility of applicants to ensure that personal data can be supplied to the Department for the uses described in this paragraph. A completed application form will be taken as an agreement by the applicant and the grant/award recipient also to the following:- putting certain details (ie name, contact details and location of project work) on the Darwin Initiative and Defra websites(details relating to financial awards will not be put on the websites if requested in writing by the grant/award recipient); using personal data for the Darwin Initiative postal circulation list; and sending data to Foreign and Commonwealth Office posts outside the United Kingdom, including posts outside the European Economic Area. Confidential information relating to the project or its results and any personal data may be released on request, including under the Environmental Information Regulations, the code of Practice on Access to Government Information and the Freedom of Information Act 2000.**