Darwin Initiative Annual Report

Important note:

To be completed with reference to the Reporting Guidance Notes for Project Leaders: it is expected that this report will be about 10 pages in length, excluding annexes

Submission Deadline: 30 April 2013

1. Darwin Project Information

Project Reference	19-009
Project Title	Galapagos marine invasive species: prevention, detection and management
Host Country	Ecuador
UK contract holder institution	University of Southampton
Host country partner institutions	Charles Darwin Research Station, Galapagos
Other partner institutions	Galapagos National Park, Ecuadorian Navy:Instituto Oceanográfco de la Armada DIRNEA Dirección Nacional de Espacios Acuáticos AGROCALIDAD Agencia Ecuatoriana de Aseguramiento de la Calidad del Agrio
Darwin Grant Value	£ 251,560
Start/end dates of project	April 2012 – March 2015
Reporting period	April 2012- March 2013, Annual Report 1
Project Leader name	Dr Ken Collins
Project website	http://www.southampton.ac.uk/oes/research/ projects/galapagos_ marine_invasive_species_prevention_detection_and_management.page?
Report authors, main contributors and date	Dr Ken Collins, University of Southampton Prof Terry Dawson, University of Dundee Stuart Banks, Charles Darwin Foundation, Galapagos 1 March 2013

2. Project Background

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, renowned 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 an 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.

3. Project Partnerships

The host country leader is the Charles Darwin Foundation (CDF), Galapagos which both the UK project leader, Collins and the other UK partner, Dawson have successfully collaborated with previous DI projects:

1997-2000, 6174, Collins, Revision of the Galapagos Marine Management Plan

2005-2007, 14-048, Dawson, Galapagos Coral Conservation: Impact Mitigation, Mapping and Monitoring

The CDF, project leader, Banks, a former postgraduate research student of Collins was sent to Galapagos to complete the former DI project and was the CDF project leader for the latter. Banks has led the CDF marine programme since 2003. In 2008 Collins visited Banks/CDF to formulate an unsuccessful DI proposal that year by Collins & Dawson: Strengthening Galapagos Marine Reserve adaptive management through integrated MPA science. Collins and Dawson have in the UK to discuss the project and communicate routinely with Banks via email and Skype. Further regular communication has been maintained with Inti Keith, an Ecuadorian employed on the current project, who has recently been registered for a project linked PhD at the University of Dundee supervised by Dawson with Collins as an external supervisor.

Soledad Luna initially led the CDF field project team until June and was replaced by Keith. Collins and Mallinson met with Luna in Cambridge during a GIS training workshop at the end of March, providing an invaluable update on preparations for the project

Collins, Mallinson (Southampton) and Dawson (Dundee) visited CDF for much of February to participate in survey fieldwork with the marine team and meet with Ecuadorian government project partners. This has also enabled Dawson, Collins and Banks to spend time with Keith mapping out her PhD programme.

Collins and Dawson have met several times with the Galapagos Conservation Trust (GCT) prior to its new director Ian Dunn visiting CDF in November 2012. We are hopeful that GCT will secure extra funding to support Keith's PhD studies. This project is only funding her PhD fees.

CDF is working closely with the Biosecurity Agency for Galapagos, formerly AGROCALIDAD in charge of quarantine measures and now has greater autonomy

The CMAR Marine Corridor project for Eastern Tropical Pacific, currently involves Costa Rica, Panama, Columbia, but Ecuador government is holding back. However within this CDF formed a technicalcommittee for Mallpello, Gorgona, Cocos and Galapagos

CBD

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. CDF routinely responds to questions on all three treaties. And is actively contributing to the ESBA (ecologically significant biological areas) dialogues set up jointly by UNESCO,IOC and OBDI

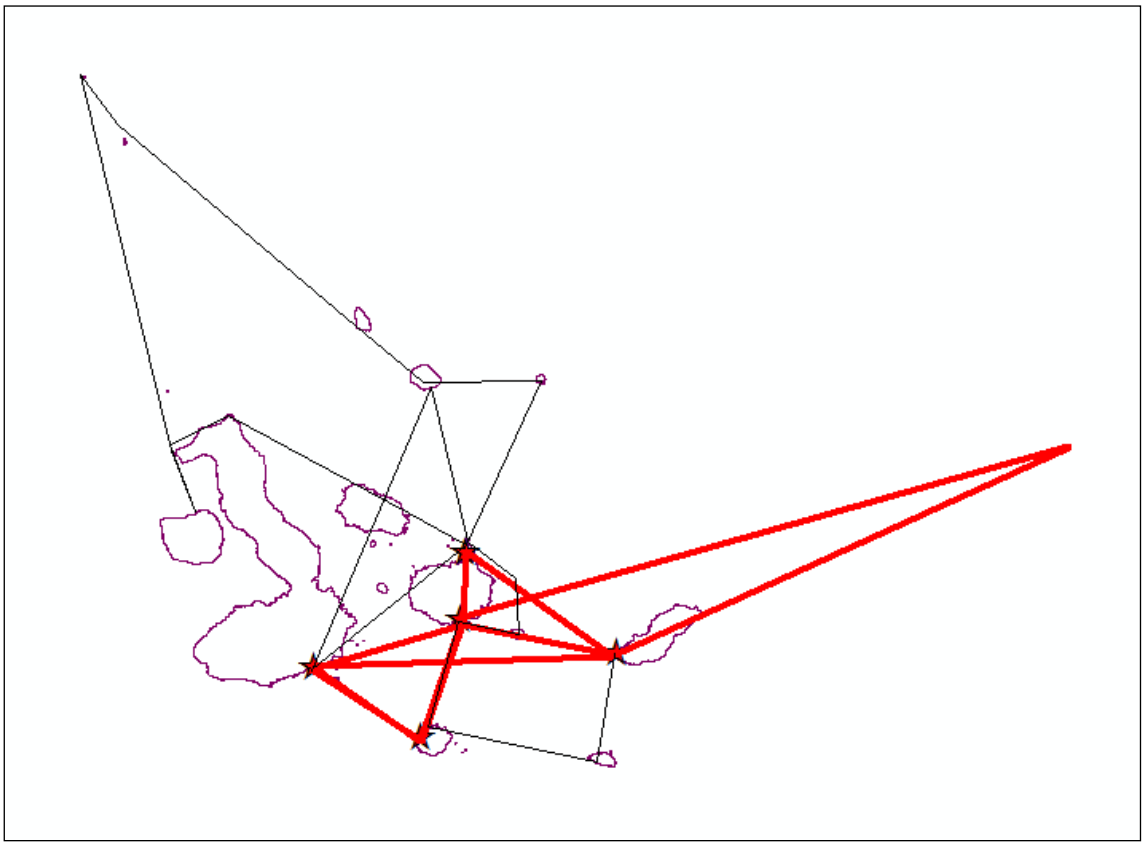

Fig.1. External boat traffic (red) supply mainland South America and internal tourist and fishing boats (black)

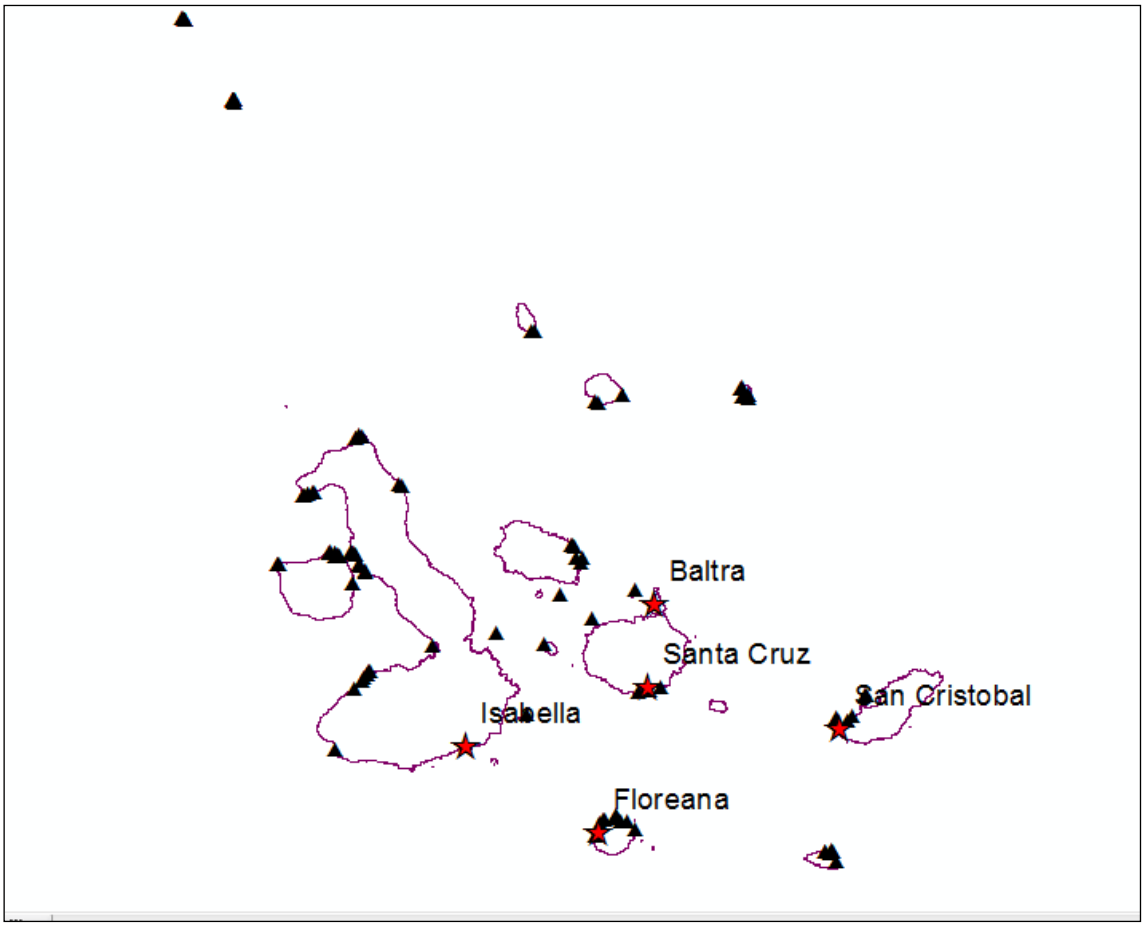

Fig.2. Galapagos ports (red stars) and marine monitoring sites (black triangles)

4. Project Progress

In July 2012 Volker Koch was replaced as CDF, project leader by Stuart Banks. The field work team was led by Soledad Luna until June when she was replaced by Keith. The other current team members are:

- David Acuña, Marine Ecologist,
- Nathalia Tirado, ecologist, zooplankton specialist and marine collections curator, (curator of CDF marine collections also for GNP, recently moved to Quito but still working on database and collections)
- Jennifer Suarez, junior ecologist
- Marina Andres, Macarena Parra, support (with a primary interest in turtles)
- Roby Pepolas – diving officer and fish specialist

There has also been input from Martin Kjellberg an Anna Dolma, database programmers working on the marine invasive database for future link up to a citizen science program and the online CDF Datazone, and Graciela Monsalves, science communicator. A principal target for this programme is the creation sensitivity layers GIS to make understanding and analysis of threats readily understandable and accessible to government authorities,

In the first year of the project the team have surveyed 102 monitoring sites around the entire Galapagos archipelago. (see Fig.2)

In September 2012 Inti Keith attended a Marine Invasive Course, and received training as a quarantine inspector Guayaquil. Stuart Banks has been meeting with government authorities in San Cristobal to discuss a Galapagos "single entry" port in Baltra as part of the on-going territorial planning and new inspection dock for construction in Guayaquil.

A 2 day Marine invasives workshop was held at CDF with INOCAR port captains and counterparts from government agencies (October 2012).

The UK Team (Dawson, Collins and Mallinson) plus the CDRS team (Banks, Keith and Acuña) met with Biosecurity, INOCAR and the Ecuadorian Navy 16 Feb13.

4.1 Progress in carrying out project activities

The project outcomes and activities are documented upon in Annex 1 Logframe and workplan commentary.

The original DI funded Galapagos Reserve management Plan (1997-2000) established an extensive monitoring programme which is still running over 12 years later and has enable this project to hit the ground running with a comprehensive knowledge base of what species are established and what are more recent changes and introductions.

Longer term aims are:

- The production of readily understandable GIS layers of species occurrence, ecology, oceanographic, sensitivity, intensity of use, for the statutory authorities
- Risk analysis modelling to answer question such as: “a boat arrives from x, what is the risk and, how should we respond?” Initial review shows that this still needs more information on international marine traffic

One useful development since the original submission of the proposal for this project is that following an international workshop in Australia in 2012, Banks & Dawson are working on 3000 site international database of marine surveys directly comparable to those undertaken in Galapagos. This will further help understand the ecological sensitivity of the species already present in the Galapagos marine ecosystem.

4.2 Progress towards project outputs

The project outcomes and activities are documented upon in Annex 1 Logframe and workplan commentary.

4.3 Standard Measures

See Annex 2, Table 1. Project Standard Output Measures

Table 2 Publications

Type (eg journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £
None to date				

4.4 Progress towards the project purpose and outcomes

The project outcomes and activities are documented upon in Annex 1 Logframe and workplan commentary.

4.5 Progress towards impact on biodiversity, sustainable use or equitable sharing of biodiversity benefits

This is a difficult answer to address because of the nature of this project which aims to develop mechanisms to forestall the introduction of marine invasives, thus technically blocking an increase in biodiversity which is far from desirable with the unique Galapagos marine ecosystem. Of course the whole point of highlighting marine invasives is that thes could potentiallyoust native species causing a decline in biodiversity.

5. Monitoring, evaluation and lessons

Collins, Dawson and Banks are all experienced project managers with a combined track record of >£10m project value. The rationale behind the Collins and Dawson visit to CDF near the end of the first year was to review the project progression and plan ahead. The original intentions of the project, desired, relatively straightforward outcomes still remain appropriate

6. Actions taken in response to previous reviews (if applicable)

n/a

7. Other comments on progress not covered elsewhere

n/a

8. Sustainability

The most surprising aspect of this project has been the early, wholehearted and enthusiastic adoption by the stakeholders, i.e. the full range of Ecuadorian government agencies. The very fact that AGROCALIDAD has been renamed and focussed as the Biosecurity Agency shows a strong government commitment to both terrestrial and marine invasives control. The exit strategy is the intention of this project to provide the monitoring and risk assessment tools.

9. Dissemination

Close collaboration with the other institutions involved to produce a rapid response protocol applicable in case of invasive species detection within GMR is in progress with active programme of meetings, surprising amount of government enthusiasm. GNP has recently written marine invasives and climate change in their management plan. Biosecurity agency writing marine invasives into their operating plan for 2013 onwards.

Stakeholder meetings are taking place every 2 months along with training and awareness raising workshops. A marine invasives module will be included in the next Galapagos Guide training course (involving 500 naturalist guides who lead 180,000 tourists/year)

Whist the project is still at awareness raising stage, it will combine with existing wildlife help/reporting and strandings hotlines.

The recent Ecuadorian Presidential elections returned the incumbent along with an assurance of stability in government and its current expenditure commitment across its various agencies including those who will run quarantine and biosecurity measures in the future. The nightmare scenario would have been the election of a populist president who would have drastically cut government agency funding, threatening the considerable progress made to date

10. Project Expenditure

Table 3 project expenditure during the reporting period (1 April 2012 – 31 March 2013)

Item	**Budget**	**Expenditure**	**Variance/ Comments**
Staff costs specified by individual			
Overhead costs			
Travel and subsistence: UK+CDRS			
Operating costs+consumables			
Capital items/equipment (specify)			
Others: Oureach			
Others: PhD fees			
TOTAL			

11. OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum). This section may be used for publicity purposes

I agree for LTS and the Darwin Secretariat to publish the content of this section

The most surprising aspect of this project has been the wholehearted and enthusiastic adoption by the stakeholders, i.e. the various government agencies

The original DI funded Galapagos Reserve management Plan (1997-2000) established an extensive monitoring programme which is still running over 12 years later and has enable this project to hit the ground running with a comprehensive knowledge base of what species are established and what are more recent changes and introductions.

We are very fortunate to have recruited Inti Keith as the PhD student fully linked to this project. She is an Ecuadorian who has been working in the Galapagos for the past decade. Travelling around the Galapagos archipelago with her has made us aware of how widely she is known and respected. The relatively modest project investment in her PhD will pay enormous dividends in the future.

Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2012-2013

Project summary	Measurable Indicators	Progress and Achievements April 2012 - March 2013	Actions required/planned for next period
Goal: *To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but constrained in resources to achieve* ⇒ 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		Threats to biodiversity First step is checklist and verification no. of spp.	[redacted]
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.	Connections made incorporating knowledge into and informing government strategies	All Ecuadorian government agencies have access to databases.
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).	These outputs remain appropriate and progress has been made towards these as indicated within the detailed activities reports below. • Historical records reviewed • Port monitoring trialled and will be fully implemented Y2 • Government authorities have access to the existing databases and the intention is to make these available live on-line	

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.	This is an ultimate aim of the project which requires the results of oceanographic modelling and will be delivered Y3 These are being developed in the 2 monthly government stakeholder meetings and workshops. Additionally this is an iterative process, being incorporated into revised management plans.
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).	Drafts produced as laminated sheets A marine invasives module will be added to future Galapagos Guide training course (500 naturalist guides who lead 180,000 tourists/year) Still at awareness raising stage, will combine with existing wildlife help/reporting and strandings hotlines. Detailed under Project Standard Output Measures
4. Capacity building in local community: a) Key staff members of GNPS, Agrocalidad, and INOCAR trained in monitoring techniques for marine invasive species. 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.	One agency training course (2-4 October) has been completed at CDF, more similarly planned for years 2&3 I finished June 12, Planned 2 for summer 2013 and 2104 PhD registered Hopeful for a masters funded by the Ecuadorian government

Annex 2 Project's full current logframe

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: b) Key staff members of GNPS, Agrocalidad, and INOCAR trained in monitoring techniques for marine invasive species. c) 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.

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 1
			Q1	Q2	Q3	Q4	comments
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					Literature review 80% complete for each of the established and potential invasives. This is the key introductory chapter to Keith's PhD
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					Has been completed and is under continuous review
1.3	Elaborate a marine invasive species monitoring plan and protocol for local authorities.	6					Plans in place for ports and general marine reserve monitoring (50m transects) use student project and biosecurity agencies feasibility analysis. (scraping hulls is not easy physically, and paperwork)
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					Target ports: Baltra, Puerto Ayora, San Cristobal, Floreana, Puerto Villamil. First pilots in San Cristobal and Puerto Ayora,will implement routine monitoring from April 2013
1.5	Conduct yearly invasive species monitoring surveys throughout the GMR as part of the CDF Ecological Monitoring Program.	6					An extensive marine reserve monitoring programme is in place (50m transects, covering fish, and benthic organisms) 102 sites have been examined this year
1.6	Determine the occurrence and spatial distribution of marine invasive species already established in Galapagos.	30					Approaches: general monitoring , historical data, opportunistic surveys, citizen science (aliens, pollution, strandings, rare species, the basis for a large proposal by Galapagos Conservancy, US, including resources for dive tour guides)
1.7	Establish a database with historical data and surveys results available to GNPS/ local government authorities.	9					First draft prepared as a module within the CDRS database, will eventually be on-line but immediately is being sharing with GNP and other government authorities
1.8	Elaborate marine invasive species distribution maps in the GMR.	12					started
2.1	Elaborate a list of potentially invasive marine species in	8					Master sheet prepared

	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.						ID sheets for guides and others in preparation for outreach to disseminate information and raise awareness
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					started
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					Planned based on data gathered to date
2.4	Develop ocean circulation and invasive dispersal models for the GMR.	12					This will be based on the HyCoM hybridised coordinate model funded by NASA (2004-2007) produced by University of Miami, North Carolina State University and University of North Carolina, Wilmington
2.5	Elaborate a risk assessment report.	30					In progress
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					In progress with active programme of meetings, surprising amount of government enthusiasm. GNP has recently written marine invasives and climate change in their man plan. Biosecurity agency writing marine invasives into their operating plan for 2013 onwards .Marine Invasives are now high priority for endowment funds set up under GEFproject through FEIG (Fondo de Especies Invasories Galapagos) based in Quito.
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					Drafts produced as laminated sheets
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					Still at awareness raising stage, will combine with existing wildlife help/reporting and strandings hotlines.
3.3	Organize public workshops for GMR users about marine invasive species in the main 4 population centres of the Archipelago.	6					Several on San Cristobal and Puerto Ayora(3) and plan to include a marine invasives module in the next Galapagos

							Guide training course (500 naturalist guides who lead 180,000 tourists/year)
3.4	Elaborate annual outreach reports.	3					Stakeholder continuous meeting every 2 months with an summary planned annually
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					One (2-4 October) at CDF, more similarly planned for years 2&3
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					16 meetings to date (including the regular meetings 3.4)
4.3	Thesis projects carried out for three national students Bachelor and one national student PhD thesis on invasive species.	30					I finished June 12, Planned 2 for summer 2013 and 2104 PhD registered Hopeful for a masters funded by the Ecuadorian government (Jennifer)
5.1	Elaborate an annual report about the progress of the project and the results achieved.	9					This document + attachments

Annex 2 Section 4.3. Table 1 Project Standard Output Measures

Standard Measure	Description	Year 1	Year 2	Year 3	Total to date	Estimated Total
1A	Number of people to submit thesis for PhD qualification (in host country)	registered				1
1B	Number of people to attain PhD qualification (in host country)					
2	Number of people to attain Masters qualification (MSc, MPhil etc)	hopeful				1
3	Number of people to attain other qualifications (Bachelors degree)	1				3
4A	Number of undergraduate students to receive training	4				3
4B	Number of training weeks to be provided	10				26
4C	Number of postgraduate students to receive training	1				2
4D	Number of training weeks to be provided	20				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	3				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	15				12-17
6B	Number of training weeks to be provided	3				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				4
8	Number of weeks to be spent by UK project staff on project work in the host country	9				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)	3 in progress See note1				2
10	Number of individual field guides/manuals to be produced to assist work related to species identification, classification and recording	1 draft				1
11A	Number of papers to be published in peer reviewed journals	0				2+
11B	Number of papers to be submitted to peer reviewed journals	0				4+
12A	Number of computer based databases to be **established** and handed over to host country	In progress				1
12B	Number of computer based databases to be **enhanced** and handed over to host country	1				2
13A	Number of species reference collections to be **established** and handed over to host country(ies)	1				
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				1
14A	Number of conferences/seminars/ workshops to be **organised** to present/disseminate findings	6				3
14B	Number of conferences/seminars/ workshops **attended** at which findings from Darwin project work will be presented/ disseminated.	14				3
15A	Number of national press releases in host country(ies)	0				3-5
15B	Number of local press releases in host country(ies)	5				12-15
15C	Number of national press releases in UK	1				1

15D	Number of local press releases in UK	1				1
16A	Number of newsletters to be produced	1 (GCT)				9
16B	Estimated circulation of each newsletter in the host country(ies)	?				national
16C	Estimated circulation of each newsletter in the UK	5000				national
17A	Number of dissemination networks to be **established**	1				1 (local)
17B	Number of dissemination networks to be **enhanced/ extended**	1				1 (CDF)
18A	Number of national TV programmes/features in host country(ies)	0				1-2
18B	Number of national TV programmes/features in UK	0				1
18C	Number of local TV programmes/features in host country(ies)	1				4-6
18D	Number of local TV programmes/features in UK	0				1
19A	Number of national radio interviews/features in host county(ies)	1				4-6
19B	Number of national radio interviews/features in UK	0				1
19C	Number of local radio interviews/features in host country(ies)	1				9-12
19D	Number of local radio interviews/features in UK	0				1
20	Estimated value (£'s) of physical assets to be handed over to host country(ies)	~£10K				~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				n/a
22	Number of permanent field plots to be established during the project and continued after Darwin funding has ceased	n/a				n/a
23	Value of resources raised from other sources (ie in addition to Darwin funding) for project work	£62K See note 2				~130K GBP
New -Project specific measures						

Note 1. Managenent plans in progress which are now including marine invasives: Revised Galapagos National Parrk management plan, National Territorial and the Biosecurity Agency operating plan

Note 2. £50K salary, cruises £12K,

Annex 3 Onwards – supplementary material (optional but encouraged as evidence of project achievement)

This may include outputs of the project, but need not necessarily include all project documentation. For example, the abstract of a conference would be adequate, as would be a summary of a thesis rather than the full document. If we feel that reviewing the full document would be useful, we will contact you again to ask for it to be submitted.

It is important, however, that you include enough evidence of project achievement to allow reassurance that the project is continuing to work towards its objectives. Evidence can be provided in many formats (photos, copies of presentations/press releases/press cuttings, publications, minutes of meetings, reports, questionnaires, reports etc) and you should ensure you include some of these materials to support the annual report text.

Checklist for submission

	Check
Is the report less than 5MB? If so, please email to Darwin-Projects@ltsi.co.uk putting the project number in the Subject line.	
Is your report more than 5MB? If so, please discuss with Darwin-Projects@ltsi.co.uk about the best way to deliver the report, putting the project number in the Subject line.	
Have you included means of verification? You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	
Do you have hard copies of material you want to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number.	
Have you involved your partners in preparation of the report and named the main contributors	
Have you completed the Project Expenditure table fully?	
Do not include claim forms or other communications with this report.	