Post 530

Submit by 21 January 2005

DARWIN INITIATIVE: APPLICATION FOR POST-PROJECT FUNDING 2005

Please read the Guidance Notes before completing this form. Give a full answer to each section; applications will be considered on the basis of information submitted on this form and on the merit of your current / recently completed Darwin Initiative project. The space provided indicates the level of detail required. Please do not reduce the font size below 11pt or alter the paragraph spacing. Please note the additional information requirements (CVs and letters of support as detailed in the Guidance for Applicants). Application is by invitation only.

1. Name and address of UK organisation

UNIVERSITY OF HULL,
DEPARTMENT OF BIOLOGICAL SCIENCES,
COTTINGHAM ROAD,
HULL, HU6 7RX

2. Post-Project details

Project Title: Darwin Initiative For The Sustainable Use Of Sea Cucumbers In Egypt And The Red Sea					
Proposed start date: **May 2005**			**Duration of project: 2 years**		
Darwin funding requested	**Total**	**2005/06**	**2006/07**	**2007/08**	**2008/09**
	£ 80176	**£ 40088**	**£ 40088**	**£**	**£**

3. Original Project Title and Defra reference number (162/10/027)

DARWIN INITIATIVE FOR THE SUSTAINABLE USE OF SEA-CUCUMBERS IN EGYPT

REFERENCE NUMBER: 162/10/027

4. Principals in project. Please provide a one page CV for each of these named individuals where different from the original project. Letters of support must also be provided from the host country partner(s) endorsing the partnership and value of the Post-Project funding.

Details	**Project leader**	**Other main UK personnel (**working more than 50% of their time on project)	**Main project partner or co-ordinator in host country**
Surname	LAWRENCE	PAGET	DR IBRAHIM & DR GABR
Forename(s)	ANDREW JOHN	TIMOTHY	ASHRAF & HOWAIDA
Post held	Senior Lecturer In Marine Biology	SENIOR LECTURER IN BIOMEDICAL SCIENCES	LECTURERS
Institution (if different to above)			SUEZ CANAL UNIVERSITY
Department	BIOLOGICAL SCIENCES	BIOLOGICAL SCIENCES	DEPARTMENT OF MARINE SCIENCE
Telephone			
Fax			
Email			

5. Define the purpose (main objective) of the Post-project in line with the logical framework. How is it linked to the objectives of the original Darwin project?

To further embed, and expand regionally, the aim of the original project to develop a sustainable sea cucumber fishery in Egypt and the Red Sea by:

- Encouraging the relevant agencies in Egypt to adopt the recommendations from the Sea Cucumber Management and Monitoring Plan and by initiating a post-project monitoring programme to assess the recovery of depleted commercial stocks in Egypt during the period of the continued project. The monitoring to be undertaken primarily by EEAA Rangers (under supervision of the previously trained student) thereby further embedding and transferring skills within the relevant agency. This continued monitoring is essential for potential CITES listing under Appendix III

- Further examining and elucidating the relationship between some sea cucumbers ability to modify the secondary compounds that they produce in different environments, to establish the relationship between environmental and genetic components of this relationship so that these can be interpreted in relation to taxonomy and any future release of cultured animals (highlighted as an important consideration both by the current project referee and in relation to ex-situ conservation/release of captive animals) and to optimise future mariculture conditions for the production of specific metabolites. This will represent an organism level of biocatalysis - a biological route of compound synthesis as opposed to chemical route. Biocatalysis is potentially easier and cheaper in the production of complex compounds such as the saponins found in sea cucumber).

- To begin the process of broadening the project and technology transfer (in relation to species identification, monitoring of stocks, and adoption of sustainable fishery practices at a Red Sea/ East African regional level through the running of two regional workshops. Highlighted as crucial by Dr M. Fouda, Director of Conservation at EEAA, (and independently by participants at a CITES meeting exploring the issues of trade in sea cucumber) the future conservation of the commercial species will depend on regional cooperation. This will be both in the monitoring of stocks and fishing activities but also in the monitoring of trade and identification of sea cucumber products. At a regional level, potential listing of any species of sea cucumber under Appendix III of CITES is dependent upon the signatories being able to monitor their stocks, to prove sustainable exploitation levels.

- **In relation to the objectives of the original project**: the original project has clearly identified overfishing of sea cucumber in the Egyptian Red Sea, the management plan developed from the stock assessment makes a number of recommendations which the new project could encourage the relevant agencies to adopt. Ultimately, these recommendations should help in stock recovery and the future sustainable use of the resources, the principle goal of the original Darwin Initiative project.

In addition, data from the original Darwin project suggest that environmental factors may alter secondary metabolism in sea cucumbers. This is not unique as other systems have been studied - mostly microbial. We will be able to use the analytical techniques developed during the original Darwin project to look at a greater range of samples from a wider range of species and from multiple individuals from the same species to examine secondary compound production in relation to specific environmental data (temperature, pH, salinity, DO, turbidity, depth, habitat type). This will allow us to determine any correlation between environmental factors and variation in secondary metabolite production.

Alongside this, we will develop genetic tools to re-examine the speciation of sea cucumbers in the Egyptian Red Sea together with methods to determine sub species genotypes - (use microsatellites analysis and or RFLP). These methodologies are all available within Hull's molecular genetic group and through the use of our Genome Analysis Suite.

Use of this data to either identify useful genotypes (ie. those associated with variable secondary metabolism production) or environmental conditions that will modify secondary metabolite production can then be used to generate novel products (scaffolds for biosynthesis) for use in the pharmaceutics industry. This might be by future mariculture - of these /conditions or genotypes. Whilst the mariculture aspect of the original project is not being extended within this project, we have been invited by UNFAO to submit a Technical Cooperation Project to further this aspect of the original project. This TCP is currently being drafted.

Finally, to further promote the development of a sustainable fishery in the Red Sea, regional cooperation is required. Based on the skills developed in the original project, we intend to run two regional workshops that work towards this goal. Participants will be invited from appropriate agencies in neighbouring countries. Skills, in species identification, monitoring and stock assessment will be explored and training sessions provided together with discussion on the development of strategies for regional cooperation, and management of sea cucumber stocks and trade.

6. What have been the main outcomes (achievements) of the original project to date?

Area and seasonal surveys have been completed for the main commercial species of sea cucumber. Results from this are being presented in a Sea Cucumber Fishery Management and Monitoring Plan. Distribution patterns of species have been evaluated in relation to region, habitat type and depth profiles. A student will gain an MPhil from the University of Hull in relation to this work. He is now receiving training in GIS and remote sensing and distribution patterns, as revealed by the surveys are being mapped using a GIS system. The results of the field surveys have been reported at two international meetings over the past year. Thirty two different species of sea cucumber have been found in the Red Sea. Seven have not previously been described in these waters, and one is yet to be identified and may be a new species.

The student working with the bioactive substances has made excellent progress and the University of Hull has provided the additional funding to allow him to submit a PhD. Antipathogenic activity against *Candida albicans* and *Trichosporon beigelii* has been detected. Three of the four species that are being studied in detail have shown reactivity to Leshmania and high anti-tumor activity has also been detected. The chemical nature of the active compounds continues to be elucidated. Significantly, variation in expression of antipathogenic responses has been observed. Although the mechanisms underlying this variation are yet to be elucidated, it is proposed that differences in local environments may drive some of the observed variation. This has significant implications for the potential production of novel compounds under specific mariculture conditions but also for the taxonomy of sea cucumber (genotypic adaptation/ speciation) and the potential re-stocking of depleted populations in the Red Sea.

Mariculture work has not made the level of progress achieved in the other areas of the project, suffering a number of setbacks. For example, the fact that the commercially most important species, *Holothuria scabra*, for which most is known with regards to mariculture, is now so over-fished it has not been possible to find enough specimens to provide brood stock. The Project is now working with *Actinopyga mauritiana*, but as there is little published on the culture of this species it is taking time to establish the necessary protocols and methods. The annual reproductive cycle of *Actinopyga mauritiana* has been determined together with other important demographic parameters. The relevant MSc student (EEAA Ranger) will also have received specific mariculture skills training from experts in China through a period of training at a facility in China. The UNFAO has invited the project partners to submit a proposal for further funding in relation to mariculture work.

In addition to the training of the students in the relevant aspects of the project work, one is being trained in GIS. Rangers have been trained in the identification and monitoring of sea cucumber. In addition, a workshop in Egypt has highlighted the issue with other Agencies who now wish to participate in any future developments. A simple training leaflet, highlighting the importance of sea cucumber and how to identify the important commercial species is being produced in Arabic, to begin the training and to raise awareness of issues with fishermen and fishing communities.

7. What steps have been taken to ensure that project purpose and outputs will be achieved within the original project term?

The current project has developed a very strong partnership of organisations and individuals, highly motivated to achieve previous and future outputs. Previously trained students will continue within the project (one as a Darwin Research Fellow and the other as a Graduate Teaching Assistant) and will oversee their relevant aspects of the project whilst continuing to transfer technology to others in Egypt and beyond.

The overall progress of the project will continue to be monitored by the Scientific Committee, made up by representatives of each partner organisation and Chaired by Dr Mostafa Fouda. In addition, regular meetings between the project leader and Egyptian coordinators will continue.

The internet, web based, Merlin communications system developed during the original project to oversee, coordinate and manage the project on a daily basis will be continued and additional partners and contacts at a regional level given access to the system.

Contacts developed during the original project, eg with Alesandro Lovatelli (UNFAO), Dr Yves Samyn (CBD Assistant National Focal Point, Belgium Royal Institute of Natural Sciences) re: taxonomy of Indian Ocean and East African Holothuroidea, Dr Sven Ulthicke (Australian Institute of Marine Science) re: holothurian genetics), Veronica Torel (Darwin Research Foundation, Galapagos) re: species ID & Trade, a current USAID project in Egypt and others will be maintained and developed to ensure successful completion of appropriate objectives.

8. Please list the overseas partner organisation(s) that will be involved in the Post-project and explain their role and responsibilities in this work and in the original project (if applicable).

Department of Marine Science, Suez Canal University: overall coordination of the project and project budget in Egypt. Provide facilities (laboratories, equipment, computing, truck, boat) etc. to support both the monitoring programme and bioactive substances work. This is mostly in line with their role in the original project. In addition, the Egyptian Coordinators (Ibrahim and Gabr) will organise each of the regional workshops.

The Egyptian Environmental Affairs Agency They will continue to provide logistic support for the project (laboratory and office space, boat and trucks, diving equipment, man-power as required). Dr Mahmoud Hanafy and Dr Mostafa Fouda will be involved in the coordination management of the project through the Scientific Committee. The EEAA will continue to represent the project in Egypt at a political level. (This is mostly in-line with the EEAAs previous role. In addition, the EEAA will provide Rangers to undertake the post-project monitoring programme on a full-time basis, further developing the in-house expertise in this field. It will provide representatives to the Regional workshops and support the coordinating roles of Drs Ibrahim and Gabr in the organisation of the workshops.

The Red Sea Governorate will continue to provide what support they can at a political level. The Governor has been extremely supportive to now, instigating fishing bans in the area within his jurisdiction. The Governorate will continue to provide a representative to the Scientific Committee and take on-board the advice from the Committee. It will represent the project at a political level within Egypt. This continues the Governorates previous role.

The General Authority for Fish Resources Development (GAFR) is a new partner. The GAFR oversees fishery issues and policy in Egypt. As a new partner the GAFR will provide a representative on the Scientific Committee and to the Regional Workshops. This representative will work with others at a political level to agree a policy for the future management of the sea cucumber fishery.

The Gulf of Aquaba Governorate in a new partner. It will also provide a representative to the Scientific Committee who will work with those other institutions at a political level to adopt an agreed management plan for the fishery.

The Fishermen's Society will continue to be involved in the project, helping in the dissemination of information and advice to fishermen in relation to the Management Plan.

9. Please provide written evidence of commitment and capability of overseas partner in achieving the purpose and outputs of this project. Are formal agreements in place for overseas partner responsibility in this project?

Letters of support are attached from the main Egyptian partners (hard copy of application form). Formal agreements are in place with the Suez Canal University, EEAA and Red Sea Governorate. New agreements will be needed with the Gulf of Aquaba Governorate and GAFR.

In addition, a number of additional organisations have shown their support for the project intention to be involved in the success of the project in which ever capacity (see attached e-mails).

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

In addition to the contact with the government and engagement with the Fishermen's Society previously outlined, we have worked with local fishermen and traders in the past to help to determine the fishing level, look at processing and other issues. In addition, we developed a leaflet in Arabic to raise awareness of the conservation and sustainable use issues related to sea cucumber in Egypt

These contacts will continue, both to collect new information on the fishery in Egypt but also to continue to train and raise awareness of management and conservation issues within these stakeholders. Relevant stakeholders from the fishing and trade communities will also be invited to meetings in which the future management of fish stocks is approved.

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

Yves Samyn has undertaken taxonomic work on the sea cucumber of the East African region and has recently published a guide on these. Yves is currently helping us on the identification of a few species from the Red Sea. Consequently, Yves has good contacts in the East African region as well as excellent taxonomic experience of the species in this region. We will continue to liaise with Yves particularly in regard to broadening the project regionally.

Veronica Torel, from the Charles Darwin Foundation in Galapagos has gained CITES III listing for sea cucumber in this region and has, therefore, developed regional collaboration in monitoring trade. In addition, she is looking for ways to monitor trade of specific species (ID of dried products, spicules etc). This was highlighted as an issue at the recent CITES Technical Workshop. We will continue to liaise with Veronica both to help with the development of appropriate tools for monitoring trade but also to learn from her experiences in developing a regional approach to sea cucumber conservation.

Sven Ulthicke from AIMS has undertaken some molecular genetic studies of sea cucumber but not specifically in relation to potential genotypic adaptation to local conditions. We have liaised with Sven and provided him with material for some of his studies. This contact will continue and it is hoped that Sven's group may have developed markers etc appropriate to our study.

No one has looked at environmental influence on secondary compounds in animals although it has been studied, mostly in microbial systems and in some plants. Methods for the development of anti-infective and anti cancer agents have significantly improved over the past decade - with the emergence of combinatorial chemistry and metabolic pathway engineering (transcriptomics and metabolomics). However this has not kept pace with the search for new natural medicinal products. It is imperative therefore that we identify new sources of these materials and obtain an understanding of the factors that control their production - Studies at the whole animal level allow us to identify physical environmental factors as well as cell interactions (microbial - other organisms - feeding) that modify production of secondary metabolites.

The idea of using sea cucumber cultured under specific environmental conditions to optimise specific secondary compound production is a unique idea and could potentially lead to a new field in biotechnology. If successful and strong correlations can be found between environmental conditions and secondary metabolites, we can generate novel products (scaffolds for biosynthesis) for use in pharmaceutics industry this would be extremely interesting to the industry and follow up funding extremely likely.

12. How will the project assist the host country in its implementation of the Convention on Biological Diversity? Please make references to the relevant article(s), of the CBD thematic programmes and/or cross-cutting themes (see Annex for list and worked example) and rank the relevance of the project to these by indicating percentages. Is any liaison proposed with the CBD national focal point in the host country? Further information about the CBD can be found on the Darwin website or CBD website.

The Egyptian National Biodiversity Unit (NBU) has published its National Biodiversity Strategy and Action Plan (NBSAP). This highlights marine and coastal biodiversity as a high priority in Egypt but also recognises that limited resources are affecting the countries ability to act on the plan. The NBSAP and National Environmental Action Plan (NEAP) also states that Egypt affords high priority to sustainable use. Furthermore, inventory and monitoring have been given special importance in Egypt by the NBU but with limited resources "monitoring schemes only under development and only limited monitoring at a genetic level" has taken place. No specific work has been done in relation to genetic resources.

Consequently, the continuance of funding and expansion of the original Darwin Initiative project to run a monitoring programme for sea cucumber would significantly help Egypt to move forward in meeting its goals in the NBSAP and obligations under the CBD. In particular:

In relation to fishery management, it will further Identify components for conservation and sustainable use and monitor these components as well as identify activities that have a significant adverse impact on this conservation and sustainable use (Article 7a-c). It will help to regulate and manage a resource within and outside of protected areas to ensure its sustainable use (Article 8c) and encourage cooperation between government authorities in developing methods for sustainable use (Article 10e) and minimise impacts on biodiversity (Article 10b). Total 40%

With regard to the biotechnology component of the project, it will enable Egypt to facilitate access to genetic resources for environmentally sound uses, carry out research based on genetic resources and share in a fair and equitable way the results of research and development, and benefits arising from these (Articles 15.1, 15.6 and 15.7). Furthermore it will give access and allow transfer of technology and biotechnology relevant to conservation and sustainable use (Article 16) and establish means to regulate or control risks associated with the use and release of living modified organisms from biotechnology which could affect the conservation and sustainable use of biodiversity (Article 8g). Total 25%

Through the Regional workshops, it will develop cooperation with other contracting parties in matters of mutual interest for the conservation and sustainable use of biological diversity and promote international technical and scientific cooperation in a specific field of conservation and sustainable use (Article 5 and Article 18.1). Total 20%

Finally, it will establish and maintain programmes for scientific and technical education and training in the identification, conservation and sustainable use of biodiversity and promote research which contributes to this sustainable use (Articles 12a, 12b) and promote the understanding of the importance for conservation of biodiversity and cooperate in developing public awareness programmes (Article 13 a-b) Total 15%

This will be achieved because Dr Mostafa Fouda is the Primary National Focal Point for Egypt. As the Representative for the EEAA in the project and Chair of the project Scientific Committee this means that the outputs of the project will be directly available to the CBD representative.

13. How does the work meet a clearly identifiable biodiversity need or priority defined by the host country? Please indicate how this work will fit in with the National Biodiversity Strategies or Environmental Action Plans, if applicable.

As noted in Section 12, the National Biodiversity Strategy and Action Plan (NBSAP) highlights marine and coastal biodiversity as a "high priority" in Egypt. In addition, The NBSAP and National Environmental Action Plan (NEAP) also states that Egypt affords "high priority" to sustainable use of biological diversity. Inventory and monitoring have also been given special importance in Egypt by the NBU but with limited resources "monitoring schemes only under development and only has only been limited monitoring at a genetic level in relation to agricultural crops".

The new study will clearly, therefore, help Egypt meet its biodiversity priorities by initiating a monitoring programme for sea cucumber to assess recovery of stocks in relation to future sustainable use. An aspect of this monitoring will also involve continued maintenance and updating of an inventory of shallow water holothuria. Furthermore, the genetic aspect of the study will allow Egypt to begin an inventory of genetic components of biodiversity in the marine environment. In addition, it will help establish a skills base in the country for future examination of biodiversity at this molecular level and allow an assessment of the consequences of any release programme.

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

If the current ban is successful, and stocks are seen to show some recovery, then the baseline information is available to help estimate sustainable yields and future harvest quotas. Furthermore, with a group of well trained EEAA Rangers in place and trained staff at Suez Canal University to coordinate data, the potential for future monitoring of the success of any quotas can be monitored and adapted as required.

It is hoped that future funding of the mariculture project will be made available by UNFAO. Potentially the development of specific mariculture techniques, under specific environmental conditions could lead to a new form of biocatalysis and new biotechnology industry further promoting the mariculture of these animals and development of new industries to further contribute to sustainable livelihoods in Egypt.

15. What will be the impact of the work and how will this be achieved? How will these help to strengthen the long-term impact and legacy of your original Darwin project? Please include details of how the results of the project will be disseminated and put into effect to achieve this impact.

The issue of sea cucumber fishery management and conservation will be further publicised in Egypt and regionally. This, together with transfer of species identification and monitoring approaches to other agencies regionally will help to underpin the work in Egypt and expand the principles of sustainable use and conservation within the participants regionally. Transfer of technology in regard to identification of processed animals and parts will help to monitor trade regionally which may be fundamental if listing under CITES Appendix III is considered appropriate. Following a period of assessment and preparation of a regional status report, issues relating to trade, monitoring and listing under CITES will be explored and agreed strategies formulated among the workshop participants.

Results from the project will be disseminated through the internet based Merlin communications system and presented on a new Project website. An updated field guide and management plan will be produced. In addition, a Regional Status Report and Strategic Plan will be produced. Specific aspects of the science will be published in the scientific literature.

16. Explain how gains from the Post-project work will be distinct and <u>additional</u> to those of the existing project. Show where possible how these gains require limited resources and could not be achieved without the funding.

Outputs from the monitoring programme will allow an assessment of any recovery of stocks following the adoption of appropriate recommendations from the original Management Plan. This will also lead to a new management plan and updated field guide. Additional data will be collected regionally from appropriate individuals and agencies and a regional status report produced based on the available information. Issues of trade and the monitoring of trade will be discussed regionally and agreed strategies for the future monitoring agreed.

The bioactive substances study will focus on the expression of modified secondary compounds between species and within species populations. This study is new and unique. Correlates between environmental parameters and the expression of modified compounds will be determined and any genetic component of this chemical diversity elucidated. If strong relationships are found this will lead to a novel approach for biocatalysis. The molecular genetic component of the study is also completely new but will also allow a re-examination of the species identified in the original project as well as between populations of these species.

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

The Suez Canal University will support the project beyond the lifetime of the additional Darwin Funding. The two trained post-graduate students (GTA and Research Fellow) will be given permanent posts within the Department of Marine Science. The Research Fellow will continue to undertake research within the field of bioactive substances with possible industrial support. The benefits of the development of these products will be shared between the partner institutions as identified in the original proposal.

With the additional training of EEAA Rangers in sea cucumber identification and monitoring, it is anticipated that this aspect of the study will be incorporated into the routine activities of the EEAA. In addition, it is anticipated that the skills and reputation developed by M Ahmed in species identification, monitoring and molecular biology, during the original and post-project periods, will provide him with his future research direction, further embedding these elements of work in Egypt.

The links between both the GTA and Darwin Fellow with the EEAA will ensure the continued provision and sharing of information at a government level. Furthermore, both will be involved in the training of undergraduates in Egypt, further transferring the technology and skills developed during the project in the host country.

The outputs from the workshops undertaken to expand the work to a regional level (status report and strategic plan) are anticipated to form the basis of a proposal for a large grant application to be submitted by the partners and other national agencies within the region. It is acknowledged that several of the representatives from other countries in the region will not have the resources or expertise to perform stock assessments or monitor trade. Lead by Dr M. Fouda, an application for funding to support a detailed study at this regional level will be sought through GEF.

18. Please provide a clear exit strategy and describe what steps have been taken to identify and address potential problems in achieving impact and legacy

A clear aspect of the exit strategy is to be in position to apply for further funding, on a much larger scale, by the end of the project. The aim is to use the information collected during the post-project, in Egypt but also through the regional workshops, together with the regional network created by the workshops, to submit a proposal for large scale support via a facility such as GEF. The focus of this application is likely to be in relation to monitoring, sustainable use and trade of biodiversity at a regional level. This application will be lead by Dr M. Fouda, the Egyptian Focal Point for the CBD.

The training components of the project will be achieved and this will leave a lasting legacy in Egypt. Those trained will be able to pass on those skills to others in the relevant agencies etc nationally and regionally. However, given the limited resources in Egypt and several of the other countries regionally, the instigation of longer term monitoring programmes in the region will depend on the project successfully attracting further funding.

In addition, given the novel nature of the work, the alternative approach to biocatalysis and its potential cheapness in relation to chemical synthesis, it is anticipated that the work on bioactive substances will have progressed to the point where the partners will be able to attract industrial support towards further (post-project) development. This will, however, depend on clear environmental or genetic components of the variation in chemical production within a species being elucidated within the proposed project timeframe.

With regard to the impact and legacy of the project the likely problems will be in relation to the limited funds to support the regional workshops (notably to support the costs of appropriate participants who themselves cannot fund their expenses). The Project Scientific Committee will try to find additional funding with the countries in the region to help support the expenses of individuals to attend the workshops.

19. How will the project be advertised as a Darwin project and in what ways would the Darwin name and logo be used?

The project is called the Darwin Initiative for the Sustainable use sea cucumbers in Egypt and the Red Sea. The **Darwin logo will be used in all written communications and publications,** It will appear on the Website front page (which itself will be linked to the Darwin Initiative website) and the support of the Darwin Initiative will be recognised in scientific literature and at scientific meetings. The logo will also be included in all other materials including letterheads, national and local press releases, leaflets and reports.

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

Mohamed Ahmed was involved in the taxonomy and stock assessment aspects of the original project. He has been selected because of his intimate knowledge of the original project and because the skills he developed are essential to the future good progress of the project. He will be employed as a Graduate Teaching Assistant at Hull University, to oversee and train the EEAA rangers, in these aspects of the monitoring programme. In addition, he will receive specific training in molecular genetic techniques to further explore differences between species at a genetic level and intra-specific variation in species populations from different areas, habitats and environmental conditions. These skills will again build on Mohamed's previously acquired skills in species taxonomy. Four Rangers will be involved in the monitoring programme per month. However, these will be taken from a pool of 20 Rangers and rotated so that as many as possible can receive training and field experience of the monitoring programme.

Rafat Afifi was involved in the bioactive substances component of the original project. He will be employed as a Darwin Research Fellow. Again this will ensure the continued good progress of this aspect of the project. Based in Egypt, Rafat will train a minimum of two Egyptian students in the methods developed during the original project to help support the sample processing and screening for novel compounds within and between species. He will mostly be employing the techniques and methods developed in the original project. He will also receive some additional training in the UK in new and improved analytical and chemical techniques such as the new MS + NMR.

LOGICAL FRAMEWORK

21. Please enter the details of your project onto the matrix using the note at Annex 1 of the Guidance Note.

Project summary	**Measurable indicators**	**Means of verification**	**Important assumptions**
Goal: To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but poor in resources to achieve • the conservation of biological diversity, • the sustainable use of its components, and • the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources			
Purpose • To monitor recovery of sea cucumber stocks in Egypt and move towards a sustainable fishery in Egypt and Regionally in the Red Sea and East coast of Africa	• Updated Species List and GIS Database • Updated Species Reference Collection • Darwin Project 6 month, Annual & Final Report. • Stock Monitoring Final Report • GTA Final Report • Research Fellow Final Report • Regional Workshop Reports • Production of Project Website	• Additional information included in NBUs NBS • Updated Fieldguide to Holothuria of the Red Sea Region • Updated Computer database and GIS system • Final Report of project Scientific Committee • Final Reports from the Monitoring, Bioactive Substances & Regional Workshop groups • Publications in scientific literature • Minutes and reports of all progress meetings	• Recommendations from the original Management Plan are adopted in part or in full by the relevant agencies in Egypt • That stock recovery is detectable with a 2 year period • That Agencies in neighbouring countries show a commitment to the project • That enough additional funding can be found to support the attendance at workshops of those with insufficient funding to cover own expenses.

Outputs

- Stock Monitoring Final Report & Modified Management Plan
- Field Guide to the Holothuria of the Red Sea and East African Region
- GTA Species Diversity & Population Genetics Final Report
- Research Fellow Final Report on Bioactive Substances
- Publication of a Status Reports and Proposed Strategic Plan for Sustainable Use and Conservation of Sea Cucumber in the Red Sea/ East African Region
- Production of a project website
- Further training of EEAA Rangers in Stock Monitoring.
- GTA trained in appropriate Molecular Genetic Methods
- Annual and Final report from the monitoring Team
- GTA project report and a minimum of two Scientific papers
- GTA research report on species diversity and population genetic structuring
- Research Fellow report and publication of a minimum of 4 scientific papers
- Workshop reports
- Workshop final report and recommendations
- Strategic Plan for Regional Cooperation in the Sustainble Use and Conservation of Sea Cucumber
- Final Reports from the Monitoring, Bioactive Substances & Regional Workshop groups
- Publications in scientific literature
- Minutes and reports of all progress meetings
- Final report of project scientific committee
- Press releases/ newsletter articles
- A Representative from the Darwin Initiative Secretariat and/or Monitoring Team given access to the Merlin internet management system
- Copies of all Publications sent to Darwin Initiative
- That a publisher for the modified field guide can be found
- That a publisher for the Regional Status Report and Strategic Plan can be found.
- That publishable data can be generated quickly enough to allow publication of scientific papers within the time-frame of the project
- That Agencies in neighbouring countries show a commitment to the project
- That, if required, enough additional funding can be found to allow participants from other countries to collect or provide a level of baseline information or samples from their countries.

Activities

- To initiate and embed a monitoring programme for sea cucumber in Egypt
- To elucidate the genetic/ environmental drivers of modified metabolite production between species populations
- To run regional workshops and move toward a Red Sea/ East African Regional Strategy for the Sustainable use of Sea Cucumber
- To train additional EEAA Rangers in sea cucumber monitoring and embed these skills into the individuals through an on-going monitoring programme
- To train the GTA in molecular genetic techniques and for the Darwin Research Fellow to pass on current training to others in Egypt
- To update the Merlin system and develop a Project Website

Activity Milestones (Summary of Project Implementation Timetable)

	Year 1				Year 2			
Yr Quarters from May	1	2	3	4	1	2	3	4
Scientific Cttee Meets	■			■		■		■
Monitoring Project	■	■	■	■	■	■	■	■
Genetic Study	■	■	■	■	■	■	■	■
Bioactivity study	■	■	■	■	■	■	■	■
Project Progress Repts		■		■		■		■
Website launched			■					
Regional Workshops				■				■
Draft & Final reports				■				■
GIS/ collection update			■	■	■	■	■	■
Scientific submissions								■
Darwin Reports		■		■		■		■

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

Project implementation timetable		
Date	Financial Year	Key milestones
	Apr – Mar 2005/06 Apr – Mar 2006/07 Apr – Mar 2007/08	
May	2005/06	Begin the training of EEAA Rangers and initiate the monitoring programme. Also, begin collection of material for molecular genetic study and bioactive substance study
May	2005/06	Begin training in molecular methods for GTA
May	2005/06	Update the Merlin system with new partners/ exchange areas etc
June	2005/06	First meeting of Scientific Committee, agreement on the adoption of part/ all of the recommendations from the first management plan, confirmation of work programme and scope of the first regional workshop
July	2005/06	Prepare materials for the first regional workshop, prepare list of potential participants and begin mailings.
July	2005/06	Begin preparation of the project website
May/ June	2005/06	Begin training of Darwin Research Fellow in project goals, requirements and updating of techniques
July onward	2005/06	Begin programme of screening for bioactive compounds, broadening out to examine a wider range of species and between populations of species across habitat types/ environmental gradients
August	2005/06	Confirm venue for the first regional workshop and agenda for the event
September	2005/06	Training manual prepared for first regional workshop
September	2005/06	Have website up and running
October	2005/06	First 6 month reports prepared by GTA and Research Fellow
December	2005/06	Confirm venue for the Second Regional Workshop and draft outline agenda for the event. Have materials ready for first workshop. Contact potential publishers for the Status Report
February	2005/06	Completion of the first Regional Workshop on Monitoring and Sustainable Use of Sea Cucumber in the Red Sea and East Coast of Africa. Solicit presentations/ articles for the second workshop and for the regional status report
February	2005/06	Meeting of the Scientific and Technical Committee to review the workshop, project progress against milestones
March	2005/06	First annual reports on monitoring and bioactive substances prepared by the GTA and Darwin Research Fellow
April	2005/06	Submission of Darwin Annual Report
April	2005/06	First draft updates of the Fishery Management and Monitoring Plan and the GIS system

July	2006/07	Gather country/ region status reports to referee/ edit to have
July	2006/07	6 month meeting of the Scientific Committee, assess progress against milestones, preparation for 2nd workshop
October	2006/07	6 month reports prepared by the GTA and Research Fellow
February	2006/07	Second Regional Workshop on Monitoring and Sustainable Use of Sea Cucumber in the Red Sea and East Coast of Africa
February	2006/07	Meeting of the Scientific Committee
March	2006/07	4 reports: A new regional species status report and an updated Egyptian Management and Monitoring Plan produced. One final report on the monitoring and molecular genetic study produced and One final report on the bioactive substances study produced
April	2006/07	Project final report prepared and submitted
April	2006/07	Submission of scientific papers to relevant journals

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

PROJECT OUTPUTS		
Year/Month	**Standard output number (see standard output list)**	**Description (include numbers of people involved, publications produced, days/weeks etc.)**
May 2005	5	(4 EEAA Ranger equivalents per year over 2 years, rotated from a pool of 20 rangers) trained in identification and survey methods, and engaged in monitoring programme
May 2005	4c	1 postgraduate student to receive training in molecular genetic techniques appropriate to identification of species and intra-specific variation between populations
July – January 2005/06	4d	26 weeks of intensive training in molecular techniques
May 2005 May – August 2005	4c 4d	Darwin Research Fellow to receive training and supervision in project goals and methods, updating of improved chemical methods 16 weeks training
May 2005	15a, 15b, 15c, 15d	An (appropriately modified) local and national press releases sent out in host country and UK to announce the new project
May 2005 onward	12b, 13b	1 species reference collection and 1 GIS database to be continuously updated/ enhanced in response to the new monitoring programme
June 2005	19c and 19d	Local radio interviews undertaken in host country and UK in response to press release announcement
June/ July 2005	8	Two UK staff to spend a total of 6 weeks in Egypt
July 2005	17a	One dissemination network to be set up. This will form the basis of the regional network
September/ October 2005	10	A training manual to be produced in Arabic for the first regional workshop
February 2006	14a	First Regional Workshop to take place in Egypt

March 2005	15a, 15b, 15c, 15d	local and national press releases in Egypt and UK to announce the workshop and its outcome
June/ July 2006	8	Two UK staff to spend a total of 6 weeks in Egypt
February 2007	14a	Second Regional Workshop to take place in Egypt.
February 2007	15a, 15b, 15c, 15d	Local and national press releases in Egypt and the UK to announce the workshop and its outputs
March/ April 2007	9	4 reports: A new regional species status report and an updated Egyptian Management and Monitoring Plan produced. One final report on the monitoring and molecular genetic study produced and One final report on the bioactive substances study produced
March/ April 2007	15a, 15b, 15c, 15d	Local and national press releases in Egypt and the UK to announce the outcomes of the project
April 2007	11a, 11b	Minimum of 6 scientific papers submitted to scientific journals

MONITORING AND EVALUATION

24. 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 monitoring and evaluation.

The current Scientific Committee will continue and be expanded to include participants from the additional partner institutions. It will be Chaired by Dr Mostafa Fouda, Director of the Natural Conservation Sector of the EEAA and Principal National Focal Point for the CBD in Egypt. He will be supported Dr Andrew Lawrence, Dr Tim Paget and Dr Ashraf Ibrahim and Dr Howaida Gabr who will act as Deputy Chairs. The role of the Committee will be to monitor progress during the period of the project, check that work is progressing at the right pace and meeting targets, via the following mechanisms:

1 Six monthly written progress reports will be submitted to the Deputy Chairs by the GTA and Darwin Research Fellow. Two of these will be in the form of an annual report which will be appended to the Darwin Annual and Final Reports.

2 Monthly meetings will take place between the GTA/ Research Fellow and one or more of the Deputy Chairs (The specific Deputy Chair depending on the location of the researcher at that time)

3 There will be a 6 month and Annual meeting of the Scientific Committee to monitor progress (July and December/ January) of each year. Two of these meetings will coincide with the two regional workshops

4 A Regional Status Report and Strategic Plan for the Conservation and Sustainable Use of Sea Cucumber in the Red Sea and East African coast will be published at the end of the project.

5 Monitoring of the project by all partners will also be possible continuously through the Merlin web based system

FINANCIAL ASPECTS

25. Please state costs by financial year (April to March). Post-project funding will be provided for up to a maximum of 2 years. Use current prices - do not include any allowance for assumed future inflation. For programmes of less than 2 years' duration, enter 'nil' as appropriate for future years. Show Darwin funded items separately from those funded from other sources.

Please note that although four financial years are shown here, funding will only be awarded for a maximum period of two calendar years

Table A: Staff time. List each member of the team; their role in the project rate and the percentage of time each would spend on the project each year.

	2005/2006 %	2006/2007 %	2007/2008 %	2008/9 %
Dr Andrew Lawrence (Leader, supervisor stock survey, genetic study and bioactive study)	50	50		
Dr Tim Paget (supervisor, bioactive substances)	50	50		
Dr David Lunt (supervisor, molecular genetics)	20	20		
Mohammed Ahmed, (Graduate Teaching Assistant) monitoring of stock and molecular genetic study of species and populations	100	100		
Rafat Afifi (Darwin Research Fellow) bioactive study and training of other staff in Suez Canal)	100	100		
Dr A. Ibrahim (Coordinator in Egypt)	30	30		
Dr H. Gabr (Coordinator in Egypt)	30	30		
Dr S. Khalifa (Supervisor, bioactive substances)	30	30		
Head of Dept (Scientific Committee)	15	15		
Dr M. Kotb (?) (Supervisor, monitoring project)	30	30		
Dr M. Hanafy (Scientific Committee, Advisor to EEAA and Red Sea Governorate	20	20		
Dr M. Fouda (Chair Scientific Committee, Negotiate adoption of Management Plan)	10	10		
DAFR (Member of Scientific Committee & Regional Network)	10	10		
Gulf of Aquaba Governorate (Member of Scientific Committee & Regional Network)	10	10		
EEAA Rangers (4 per trip from a pool of 20 staff)	30	30		

Table B: Salary costs. List the project team members and show their salary costs for the project, separating those costs to be funded by the Darwin Initiative from those to be funded from other sources.

Project team member	2005/2006		2006/2007		2007/2008		2008/2009	
	Darwin	Other	Darwin	Other	Darwin	Other	Darwin	Other
Dr Andrew Lawrence								
Dr Tim Paget								
Dr David Lunt								
Mohammed Ahmed								
Rafat Afifi								
Dr A. Ibrahim								
Dr H. Gabr								
Dr S. Khalifa								
Head of Dept								
Dr M. Kotb (?)								
Dr M. Hanafy								
Dr M. Fouda								
4 EEAA Rangers (per diem for field work)								
DAFR								
Gulf of Aquaba Governorate								

Table C. Total costs. Please separate Darwin funding from other funding sources for every budget line.

	2005/2006	2006/2007	2007/2008	2008/2009	TOTAL
Rents, rates, heating, lighting, cleaning,					
• Darwin funding					
• other funding					
Office costs eg postage,					
• Darwin funding					
• other funding					
Travel and subsistence					
• Darwin funding					
• other funding					
Printing					
• Darwin funding					
• other funding					
Conferences, seminars					
• Darwin funding					
• other funding					
Capital items/ equipment (please break down)					
• Darwin funding					
• other funding					
Other costs (please specify and break down)					
• Darwin funding Grant Audit					
Consumables					
• other funding Consumables					
Salaries (from previous					
• Darwin funding					
• other funding					
TOTAL PROJECT COSTS	126335	126335			
TOTAL COSTS FUNDED FROM OTHER SOURCES	86247	86247			
TOTAL DARWIN COSTS REQUESTED	**40088**	**40088**			

25. Please provide a written justification of why alternative funding is not available from within your own organisation or from other sources.

None of the partners in the project are able to provide direct funding to support a project of this nature. However, each is able and willing to provide equivalent funding "in kind" (see Section 27).

The project has, however, been invited to apply for additional funding to support the mariculture aspect of the original project. The UNFAO have suggested that funding from the agency may be available through a Technical Cooperation Project (TCP). An application for support via this mechanism is currently being drafted.

26. Will matched funding be provided? Provide details of all other funding sources 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 funding the project will lever in to carry out additional work during or beyond the project lifetime. Indicate those funding sources that are confirmed.

We would anticipate that if the current proposal is successful, and given the potential links between this project and future mariculture of the sea cucumber, this would be very influential in securing possible funding from the UNFAO for the TCP. This funding is not confirmed.

In addition, the Department of Biological Sciences, University of Hull, has confirmed that if this proposal is successful, and the GTA's progress is good, it will honour the offer it made during the original project to upgrade Mr Mohamed Ahmed's study to a PhD. It will provide the additional funding to cover tuition fees for a 3rd year of study to allow Mr Ahmed to submit a PhD. This third year would obviously occur outside of the 2-year post-project framework. Consequently, the additional costs and outputs (PhD thesis) are not directly included in this proposal.

As part of the exit strategy, the project aims is to submit a proposal for additional funding to support the work at a regional level. It is likely that this funding may be through a GEF bid although this will be confirmed by partners during the extended project phase. Consequently, this funding is not confirmed.

27. Please give details of any further funding resources sought from the host country partner institution(s) or others for this project that are not already detailed above. This will include donations in kind and un-costed support eg accommodation.

Each of the partners will provide in kind donations which will more than match the funding sought from the Darwin Initiative. The Suez Canal University will provide office and laboratory space, field and biotechnology equipment to support the project. The Egyptian Environmental Affairs Agency will also provide manpower, vehicles and equipment to support the monitoring programme. Office and laboratory space will also be made available as will access to their dedicated Remote sensing and GIS laboratory in Hurgada. Each of the other partners will provide cover staff time for attendance at meetings and workshops. The University of Hull will provide staff time, laboratory space and equipment. It has also agreed to waive its overhead (normally 45% total project costs). Finally, it is anticipated that a number of invited participants to the Regional Workshops will be able to fund their own travel/ accommodation expenses.

28. What was the amount of funding for the original Darwin Project?

	Total Project Costs £
Amount of original Darwin Initiative project funding	**160700**
+ Funding/Income from other sources	**170308**
= Total original project cost	**331008**

FCO NOTIFICATION

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 details of the Darwin Post-project and the resultant work in the UK or in the host country. ☐

CERTIFICATION 2004/5

On behalf of the University of Hull

I apply for a grant of £80176 in respect of expenditure to be incurred in the financial year ending 31 March 2007 on the activities specified in the Logical Framework.

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.

I enclose a copy of the CVs for project principals and letters of support.

Name (block capitals)	
Position in the organisation	

Signed		**Date:**	

Please return this form by e-mail to ECTF at darwin-applications@ectf-ed.org.uk **by 21 January 2005**. Please put the title of the proposed project into the subject line of the e-mail. As much of the supporting documentation as possible should be sent along with the e-mailed application. 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**, hard copies of all applications and supporting documents should be submitted to the Darwin Applications Management Unit, c/o ECTF, Pentlands Science Park, Bush Loan, Penicuik EH26 0PH **postmarked not later than 21 January 2005**.

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.