

# ***Darwin Initiative for the Survival of Species***

## ***Annual Report***

### **1. Darwin Project Information**

Project title	<i>Effective management for biodiversity conservation in Sri Lankan coastal wetlands (EMBioC)</i>
Country(ies)	<i>Sri Lanka</i>
Contractor	<i>Centre for the Economics and Management of Aquatic Resources (CEMARE), University of Portsmouth</i>
Project Reference No.	<i>09/002</i>
Grant Value	<i>£145,741</i>
Start/Finishing dates	<i>May 2000/April 2002</i>
Reporting period	<i>01.05.2000 to 31.03.2001</i>

### **2. Project Background**

- Muthurajawela Marsh, Negombo Lagoon and Chilaw Lagoon, Sri Lanka are the locations of this project. These are important coastal wetlands in the Colombo suburbs that have been selected for restoration under the Wetland Conservation Project of the Government of Sri Lanka, and because of this they are ideal locations to weigh the wetland benefits against other development options.
- Many wetland ecosystems in Sri Lanka have been, and to large extent still are, indiscriminately exploited for commercial, agricultural, residential and industrial development, and at an increasing pace, as dumping grounds for domestic, agricultural and industrial waste. If the total benefits (use and non-use values) of wetlands are identified, the benefits of conservation of wetlands can outweigh the benefits of other development activities. Since economic valuation of natural resources has been accepted as a tool in Sri Lanka, this is the best way to address the development forces that threaten biodiversity at the local level. However, the national report prepared for the seventh meeting of the conference of the contracting parties to the convention on wetlands (Ramsar) has identified that economic valuation in the natural resources sector was not properly developed. As a result of this the economic value of natural resources is always underestimated in Sri Lanka even though the economic valuation of natural resources has been accepted as a tool in national planning and policy formation (Ramsar COP7, 1999). Therefore, proper guidelines and indicators have yet to be developed.
- The aims of the project are to estimate the relationship between human and wetland ecosystems and the socio-economic carrying capacities of the ecosystems and to measure the human impact on wetland ecosystems due to the use of mangrove and fish resources.

### **3. Project Objectives**

- The main objective of the project is to extend the current understanding of specific socio-economic and institutional factors and processes that mediate the relationship between humans and wetland ecosystems and the socio-economic carrying capacity of those ecosystems. The value of wetland ecosystems and the linkages between human usage and the state of those ecosystems in Sri Lanka, has been extensively investigated in the past from an ecosystem perspective (CCD, 1990). However, rarely have the linkages and consequences been estimated in terms of their socio-economic dimension. The second objective is to extend current understanding of the potential held by natural wetland ecosystems to assist in addressing the challenges of population growth and consumer demand on wetland resources. The third objective is to advise and train users of mangroves on best management practices while maintaining mangrove eco-system integrity. The final objective is to estimate the human demand for wetland resources and eco-system services– the ecological footprint – functionally required to support human activities, specifically prawn farming, in the project area.
- The proposed operational plan and objectives of the original proposal has not been modified over the last year.

### **4. Progress**

- The purpose of this project is to weigh the benefits of restoring (conservation) wetlands against other development options. We have conducted several planned research activities to achieve the objectives of the project. Meetings conducted on a monthly basis in UK have been used to monitor the progress of the project. The bibliographic search and literature review has been completed of the methodologies identified for the purposes of the research. The UK researchers made first field visits to the Sri Lanka site in July/August 2000. The purpose of this visit was to discuss the practicalities of the fieldwork in 2000/2001 and formalise the collaborators' input to the project. Extensive field visits were made to the various study sites. In addition to this a workshop was held in Sri Lanka with respective government organisations, university departments and NGOs. The aims being to identify key problems and research priorities in the project area. This workshop was a day in duration and had a total of 21 participants. The proceedings of the workshop (some 10 manuscripts) are currently being edited. When complete, these will be published by the University of Portsmouth. A field trip report has been compiled for both visits and can be found in the appendices.
- A Sri Lankan researcher/lecturer at the University of Colombo, Sri Lanka has been selected and enrolled for the MSc in Coastal and Marine Resources Management programme at the University of Portsmouth. The selected candidate will attend lectures from September 2001.
- The workshop conducted in Colombo in July 2000 has helped the team to prioritise research objectives and also to avoid duplication of previous research. Participants of various government departments, NGOs and universities have expressed their agreement to the type of research and confirmed the relevance of it to control current problems associated with wetlands.
- Three members of the project have spent 5 weeks (15 man-weeks) in Sri Lanka during the year assessing the research problems and carrying out initial investigations. Several field visits were made to the project site to get familiar with the problems by discussing the issues with people living in the area.

- A field survey team was selected from a group of undergraduates of the Department of Forestry and Environment at the University of Sri Jayawardanapura. Training in ecological techniques applicable to mangroves was conducted with USJP students. This consisted of two days in the field plus a theory session at the University. They were also trained in CVM and socio-economic survey techniques (questionnaire enumeration).
- A paper will be submitted for publication in a peer-reviewed journal before the end of month 18. Indeed, the first draft of the paper is being revised at the moment. This paper addresses theoretical aspects of non-use values (passive use) estimation in coastal wetlands. It has been identified that at least 5 peer-reviewed journal articles will be published at the end of the project period.
- Participatory Rural Appraisal, ecological techniques for measuring mangrove ecosystem functioning and structured survey questionnaire enumeration training materials will be prepared before July 2001 for the UK partners next trip to Sri Lanka. Field survey questionnaires were designed for the pilot socio-economic survey and the CVM study and was field-tested using selected and EMBioC trained enumerators in January 2001 and was subsequently reviewed to overcome some difficulties encountered in the enumeration. The pilot CVM and socio-economic survey incorporated all of the study sites, and households were selected on a random basis. The main survey will be carried out on households from a randomly selected sample of the total population. The draft questionnaire, presented in Appendix I, was designed to be easily understood and filled out without external consultation. Many parts were self-explanatory but, where it was necessary, clear explanations were provided. The opportunity cost, was reduced by keeping the questionnaire brief. This was also emphasised by writing clearly and using easy-to-follow instructions. With the help of a trained survey team it took about 50-60 minutes to complete a questionnaire in the pilot test. The survey is scheduled for completion in July 2001. The data will be analysed to enable preparation of a computer database of findings before the month 18 of the project. Guidelines and indicators will be developed based on the findings of the survey. Five newsletters will be produced and circulated before the end of month 18.
- The two senior members of the UK team also undertook a number of lectures on the theoretical background to the project to post graduate students at the Department of Town and Country Planning, University of Moratuwa, and to a mixed group at the Department of Geography, University of Colombo. They have also conducted lectures for staff and students at the University of Sri Jayawardanapura.
- A Darwin Fellow (full time) attached to the Project EMBioC office at the University of Moratuwa is acting as a liaison officer and is co-ordinating members of the team in the work programme.
- The programme of meetings with NGO's and Government agencies has revealed a wide range of good quality information about the functioning of Sri Lankan mangrove ecosystems. Much of this information is not available in the primary literature. Furthermore, no integration of the various types of information is available. A critical review and synthesis of this information will be completed in the summer of 2001, with a view to publication.

- The project's research, training and/or technical work during the last year were successful according to the progress given in the previous section. Literature reviews of the major research methodologies were first carried out and submitted to the Darwin Initiative along with the six months report. This was helped in identifying previous research carried out in this subject area and in refining methodologies that are suitable for this research. In designing the research work it was made clear that partners in developing countries should be involved in all stages of the project, from design to implementation and evaluation. It has included a strong component of capacity building, so the results will have long lasting effects that extend beyond the life of the project for many years to the future. Each of the resource personnel (3 UK researchers and 3 Sri Lankan researchers) attached to the project has been allocated a part of responsibility of the research under the supervision of the project leader.
- Any international project of a multidisciplinary nature faces some difficulties in its implementation. Due to the pressures of routine, non-project duties on participants, obtaining timely contributions to the work programme has only been possible thanks to a very vigorous programme of follow-up correspondence. This programme has enabled us to keep on schedule.
- The design of the project has not been altered over the last year, however, it is expected to find out the stakeholder preferences for conservation and development in the project area using Analytical Hierarchy Process (AHP) and Participatory Rural Appraisal (PRA). The AHP is a theory of measurement for dealing with quantifiable and/or intangible criteria that has found rich applications in decision theory and conflict resolution. This is another way of validating the WTP value measurements.
- The work plan suggested in the project proposal for the year two has not been changed.

## **5. Partnerships**

- The knowledge and experience of host country partners on the research problems in the present location and the region are an advantage for the successful completion of the project. Resource partners from the host country have been working on different objectives in wetland research, this brings valuable inputs to the project.
- The first workshop conducted in Sri Lanka has helped to identify similar or related research that has been carried out by other governmental and international organisations. In addition to this several meetings were held with parties that have been involved in similar research. For example, IUCN is conducting similar research in Sri Lanka. They are more active in biodiversity related research in the region and have advantages of regional office being located in Sri Lanka. In order to avoid duplication of research and to gain advantages of complementary work an attempt was made to collaborate with similar projects in Sri Lanka. Accordingly new links have been established between local or international organisations involved in biodiversity conservation.

## **6. Impact and Sustainability**

- The Darwin Initiative for the Survival of Species seeks to safeguard the Earth's biodiversity by drawing on UK strengths to assist those countries that are rich in biodiversity but poor in financial and research resources. The initiative helps these countries to implement the Convention on Biological Diversity through the

identification of most appropriate projects. Sri Lanka, like the majority of developing countries requires assistance in carrying out work on conservation and the sustainable use of biodiversity. Wetlands are an integrated sector in protected area management and biodiversity conservation in Sri Lanka. As a party to the Ramsar convention, the government is concerned about the conservation of Ramsar sites as well as other important wetlands. The Ramsar status is very useful in dealing with other development priorities in relation to land allocations, funding etc. Many wetland ecosystems in Sri Lanka have been, and to large extent still are, indiscriminately exploited for commercial, agricultural, residential and industrial development, and at an increasing face, as dumping grounds for domestic, agricultural and industrial waste. The common opinion is that wetlands are wastelands and thus are considered to be reclaimed for economic benefits. If the total benefits (use and non-use values) of wetlands are identified, the benefits of conservation of wetlands outweigh the benefits of other development activities. Since economic valuation of natural resources has been accepted as a tool in Sri Lanka, this is the best way to address the development forces that threaten biodiversity at the local level. Muthurajawela Marsh, Negombo Lagoon and Chilaw Lagoon, are important coastal wetlands in Colombo suburbs that has been selected for restoration under the Wetland Conservation Project, are ideal locations to weigh the wetland benefits against other development options. With the funding of the Darwin Initiative this research has raised awareness of the real worth of natural resources and promotes their sustainable use. This project has multi-objectives and a diverse approach to reach its target, which will be achieved at the end of the project. The project will also set strategies and management plans for specific areas and species with the help of local interests. EMBioC will also provide training and education for people at all levels and ages including grass roots level. Darwin funding has been used this year as a catalyst to lever project works on biological diversity which might not otherwise be forthcoming. This legacy should continue, as we discover and describe our natural surroundings, and design ways to conserve it for the future, and find ways to ensure that the people can benefit from it in an equitable way. Findings of this research at the end of the project will be included in the government policy decisions. These findings will also be incorporated in the postgraduate teaching programme and the research programme at the University of Moratuwa. The university is planning to set up a centre to carry out similar work in future and this project will have a real and lasting impact on setting up the foundation.

## 7. Outputs, Outcomes and Dissemination

**Table 1. Project Outputs (According to Standard Output Measures)**

Code No.	Quantity	Description
2	1	A candidate (Darwin Fellow) has been selected and she will begin studies on MSc Coastal and Marine Resource Management at the University of Portsmouth in September 2001. This is a full-time one-year master's degree programme. She is currently attached to the University of Colombo and will continue research on the project subject areas after completion of the MSc Programme.
4A	20	Selected 20 undergraduates from the Forestry and Environment Programme at the University of Sri

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		Jayawardanapura and trained them on socio-economic survey conducting methodologies. They have also been trained on field sample selection methods on mangrove plantations. During the second year the group will work on contingent valuation and socio-economic surveys and the field testing of mangrove plantations in the project area.
6B	20 Post-grads 10 Staff 65 Undergrads	Two senior members of the UK team also undertook a number of lectures (8 hours in total) to Master's students at the University of Moratuwa, Department of Town and Country Planning, members of the Forestry club at the University of Sri Jayawardanapura and to a mixed group at the Department of Geography, University of Colombo.
7	1	Field questionnaire and the manual
8	3 (15 man-weeks)	Three UK members of the project have spent 5 weeks (15 man-weeks) in Sri Lanka during the year formulating the research problems and carrying out initial investigation.
10	Guidelines and indicators	Will be produced at the month 18 as scheduled.
11B	Journal paper	Reviewing a theoretical paper on estimation of non-use (passive-use) values of coastal wetlands to be published in a peer reviewed journal before the month 18.
12A	One Questionnaire	Field survey questionnaires were designed for socio-economic survey and the CVM study. It was field-tested using selected and trained enumerators in January 2001 and reviewed to overcome some difficulties encountered in the pilot survey. The universe of the study is the entire project area and the sample population was collected from the list maintained by the district councils. The survey will be carried out in houses on a randomly selected sample out of the total population. Survey results and computer database will be prepared before the month 18, as scheduled.
14A	One workshop and proceedings.	Held a workshop in August 2000 in Sri Lanka with participants from governmental and non-governmental organisations such as ministries, universities, government departments and NGOs to identify key problems and research priorities in the project area.  Workshop proceedings.
16 A & B		Newsletters will be produced using findings of field studies before the month 18, as scheduled.

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- There are no differences in actual outputs against those agreed in the initial ‘Project Implementation Timetable’ and the ‘Project Outputs Schedule’. Some of the outputs that have not been achieved by the end of year one are supposed to be achieved by month 18 (according to the initial project implementation timetable). Although this was not agreed originally we have prepared a publication based on the workshop conducted in Sri Lanka and a web-site describing the project details. This was featured in the “one-fish” web-site of the Food and Agricultural Organisation (FAO).
- Project publications will be available in the month 18, as scheduled. The URL of the web-site is <http://www.pbs.port.ac.uk/econ/cemare/darwin.htm>.
- The proceedings of the first workshop conducted in Colombo will be distributed before the end of year one to all participants. Most of the dissemination activities are planned for year 2 of the project. Findings will be incorporated in the postgraduate teaching programme and the research programme at the UoM. The UoM is planning to set up a centre to carry out similar work in future and this project will have a real and lasting impact on setting up the foundation.

## 8. Project Expenditure

- Please expand and complete Table 3.

**Table 3: Project expenditure during the reporting period**

Item	Budget	Expenditure
Total	74773.00	68905.76

- Changes have not been made to the original budget, however, expenditure allocation for the year was under utilised. Some of the travel cost and survey cost will take place later in the year will match the underspent amount of £5,867.24.

## 9. Monitoring, Evaluation and Lessons

- In the UK the project progress was monitored in monthly meetings conducted by the UK project team. All the minutes of the meetings were recorded. The main method employed during this year to monitor and evaluate the project activities in Sri Lanka was an e-mail link between partners. In addition to this the UK partners have spent 15 man-weeks in Sri Lanka. The outputs achieved by the project so far demonstrate that outcomes of the project actually contribute to the project purpose. It is still premature to judge the indicators of achievements (both qualitative and quantitative), however, we are confident that we are on the right track to achieve the project purpose.

- One of the lessons we learned during the year was to plan well ahead and leave a sufficient margin to get work done by our collaborators. It was difficult to blame any individual for the drawbacks; however, it comes with the system, which will be difficult to correct in one years work experience. The challenge of working in developing countries is to achieve set targets overcoming these difficulties. We also anticipate greater levels of expenditure now that the fieldwork is in full swing.
- The project has been just come to the end of year one, as a consequence of this it is not anticipated to have any peer reviewed journal outputs completed for submission until at least month 18. As mentioned previously, a theoretical paper on methodological difficulties is currently in review. A draft copy of the workshop proceedings is currently being edited. A total of 10 manuscripts have been submitted giving an overview of the data and knowledge currently available in the study areas. The proceedings will be released by June 2001. The literature review of project methodologies was submitted to the Darwin Initiative along with the six months report.

## **References**

Coastal Conservation Department (CCD) (1990) *Coastal Zone Management Plan*, CCD and Coastal Resources Management Project of the University of Rhode Island, Colombo.

Ramsar COP7 (1999) *National Report of Sri Lanka for COP7*, National report prepared for the 7<sup>th</sup> meeting of the conference of the contracting parties to the convention on wetlands (Ramsar, Iran, 1971), Department of wildlife conservation, Sri Lanka.



## **List of Annexes:**

- I. Survey questionnaire
- II. Field visit 1 report
- III. Field visit 2 report