

Darwin Initiative Annual Report

Darwin Project Information

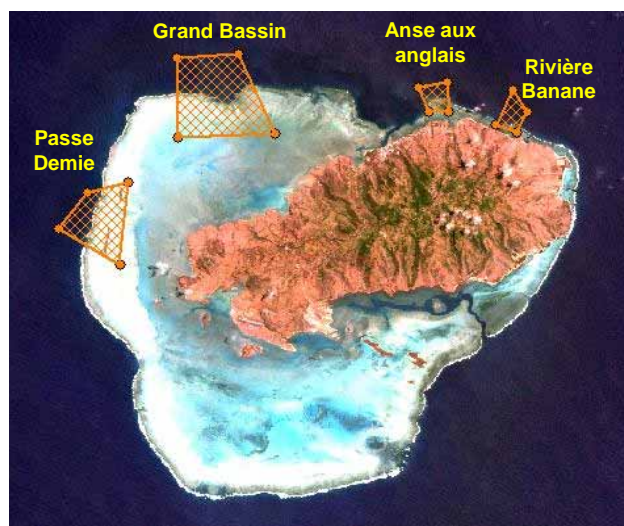
Project Ref Number	162/13/027
Project Title	Developing reserves for biodiversity conservation and sustainable fisheries in Rodrigues
Country(ies)	Mauritius
UK Contract Holder Institution	Newcastle University
UK Partner Institution(s)	
Host country Partner Institution(s)	Shoals Rodrigues (primary collaborator); Fisheries Research and Training Unit (FRTU), Fisheries Protection Service (FPS), National Coastguard, Rodrigues Regional Assembly (RRA)
Darwin Grant Value	£155,164
Start/End dates of Project	1 Feb 2005/31 Jan 2008
Reporting period	1 Apr 2006 to 31 Mar 2007 – Annual Report No. 2

Project Leader Name Dr Alasdair Edwards

Project website	www.ncl.ac.uk/tcmweb/tmr/aje_darwin_rodrigues.html http://www.shoals-rodrigues.org/
Author(s), date	Alasdair Edwards, Emily Hardman, Eric Blais 30/04/2007

1. Project Background

The project is located on the island of Rodrigues (a semi-autonomous region of Mauritius) in the western Indian Ocean. Fishing is one of the largest employment sectors on Rodrigues, as there is a lack of industrial development and tourism is in its infancy. Nearly 20% of the total workforce are full-time, registered fishers, with a further 2000 people fishing on a casual basis. Subsistence fishers, who operate almost entirely in the 240 km² lagoon surrounding Rodrigues Island, are already amongst the poorest members of the community, and the situation looks set to worsen if the lagoon fisheries continue to decline. By working with stakeholders to develop a strategy that will



allow lagoon fish stocks to recover and be exploited more sustainably, this project seeks to support the livelihoods of the fishing community.

The project seeks to assist the Rodrigues Regional Assembly in their goal to establish a network of four marine reserves in the northern Rodrigues lagoon (see map) and is evaluating further resource management strategies which can help to protect the unique biodiversity of the island's coral reef ecosystem and to improve the sustainability of the artisanal fisheries. An integral part of the project purpose is to utilise UK expertise to build local capacity in marine and fisheries science skills in Shoals Rodrigues (a local NGO) and in the Fisheries Research and Training Unit (FRTU) and Fisheries Protection Service (FPS) of the government. Raising environmental awareness across the community (with a focus on both schools and fishers) in order to influence attitudes towards biodiversity conservation is a further project objective. Capacity building and education are both important factors in improving the likelihood of long term success of the initiative.

2. Project Partnerships

Collaboration between UK and the main Rodrigues partner, the NGO *Shoals Rodrigues* has continued to be close and friendly. The training of Shoals personnel has continued and their skills have continued to develop, such that they are seen by the island government, the Rodrigues Regional Assembly (RRA), as the principal repository of skilled capacity for advice on marine management and biodiversity conservation issues, as well as leaders in environmental education and developing public awareness of environmental concerns. As the RRA are aware, the latter is needed to underpin political support for conservation measures. A key legacy of the project will be the cadre of well-trained and highly motivated local people that comprise *Shoals Rodrigues*.

Two unforeseen problems with other local partners have continued to cause anxiety.

Firstly, the Fisheries Department of the RRA did not progress the gazetting of the marine reserves in accordance with assurances given during the planning of the project in 2003. At that time the RRA indicated that they envisaged that the four marine reserves would be gazetted by early 2005 at the latest. Details of the history of the reserve gazetting were provided in our Half Year Report in October 2006. Since then the RRA was dissolved by the Prime Minister with fresh elections held in December 2006. These were won by the Mouvement Rodriguais led by M. Johnson Roussety and true to his word, the marine reserve legislation was placed before the RRA at the earliest opportunity. The reserves were discussed on 13 February 2007 with any objections invited within one month. They were officially gazetted on 9 April. The Rivière Banane reserve will be the first to be demarcated. This work is being funded by the Indian Ocean Commission/WWF Madagascar through their programme "Creation of a regional network of MPAs in the islands of the Indian Ocean Commission". The delay has meant that the work of Dr Gell at the start of the project can only really now be acted on by the RRA, some two years into the Darwin project.

Secondly, due to pressures of work at FRTU (due to loss of personnel without replacement) we have found it difficult to build effective collaboration with key personnel there despite a stated need for inputs from the project by the head of FRTU (Mr Sylvio Perrine) and a clear willingness to collaborate. We had hoped to remedy this in late 2006 and raised the matter with Mr J.T. Genave (then Divisional Head of the Fisheries Department), who agreed to facilitate time-off for Mr Perrine to work collaboratively with Dr Edwards in September 2006. In the event continued pressures of work at FRTU and the change of administration prevented any progress on this front.

Other collaborations:

The project has established good links with staff of the large (US\$ 4,293,260) UNDP project to set up a Marine Protected Area (MPA) in the southern lagoon of Rodrigues. The RRA has approached Shoals Rodrigues to solicit their help on monitoring techniques, environmental education and community sensitisation work for this project, which has been suffering from the lack of local capacity. The UNDP team have been invited to presentations and training sessions

given by Darwin Initiative visiting scientists (e.g. those by Dr Anderson and Dr Gell) and requested a training session from Dr Edwards during his last visit in September 2006. The MPA and 4 proposed reserves in the northern lagoon will effectively form a reserve network and coordinated management will be key to their success. Use of Shoals staff to assist the UNDP project effectively involves cascading training carried out for the Darwin Initiative project into the UNDP project.

It is very likely that Shoals Rodrigues personnel will be asked to manage the stakeholder sensitisation programme, providing training sessions for fishers from 10 villages in marine ecology, based on Shoals Rodrigues' current fisher training programme. It is hoped that initiatives that are developed as part of the MPA project (such as alternative livelihood schemes/fisher compensation) will also be applied to the 4 marine reserves.

In the reporting period, *Shoals Rodrigues* has had active collaborations on education projects with *Reef Conservation Mauritius* and *Blue Ventures* (Madagascar) and on education and training with the *Mauritius Wildlife Foundation*. It has also worked with the *SocMon* (socio-economic monitoring) project of CORDIO (Coral Reef Degradation in the Indian Ocean) East Africa with a pilot study of the Rivière Banane site, which will be important in the development of alternative livelihoods.

The marine reserves workshop planned for May 2007 has been broadened following discussions with regional organisations and is now a collaborative venture between the Darwin Initiative, WWF, Shoals Rodrigues, The Indian Ocean Commission, the Western Indian Ocean Marine Science Association (WIOMSA), and the Marine Education Trust (UK). The workshop is now entitled "A Regional Perspective on MPAs in the Western Indian Ocean" and will be held on Rodrigues Island, from 9-14 May 2007. About 40 people are attending from outside Rodrigues and we have managed to leverage co-funding of € 40,000 (ca £27,500) to support the broader and expanded workshop and supplement the ca £12,500 in the Darwin Initiative project budget. The aims of the workshop are partly to expose local decision makers and NGO staff on Rodrigues to lessons that have been learnt in MPA development in other parts of the region (and wider), and partly to promote the development of more effective, better managed Marine Protected Areas in the Western Indian Ocean region by bringing together MPA staff to share experiences. As part of the workshop IOC and WWF will be defining an action plan to make the Western Indian Ocean Marine Ecoregion Forum operational. We have been very fortunate in having the support of the Marine Education Trust (UK) in organising the workshop.

3. Project progress

3.1 Progress in carrying out project activities

Training visits

Dr Fiona Gell made her second visit to Rodrigues between 27 March and 16 April 2006. Dr Gell developed further recommendations for the management strategy for the marine reserves relating to: 1) awareness raising, 2) stakeholder concerns, 3) responsibility for reserve implementation, 4) the intermediary (between RRA and fishing communities) and facilitating role of Shoals Rodrigues, and 5) the urgent need for research into alternative livelihoods. She also met with FRTU to develop a collaborative monitoring programme of the basket trap and line fisheries; gave a presentation to Club Mer students about marine reserves and a presentation on "Key issues in marine reserve development", concentrating on the need for enforcement and alternative livelihood projects to an audience of FRTU, FPS and the National Coastguard. She also met with the Departmental Head, Thomas Genave, to discuss the progress of the marine reserves regulations.

Dr Alasdair Edwards visited from the 3-12 September 2006. The visit had originally been intended to focus on developing a database to automate much of the FTRU data collection and analysis activities as requested by Mr Sylvio Perrine, the officer in charge and agreed by his Department Head, Mr Genave in March. However, Mr Perrine is still having to carry out two jobs, his previous one as head of statistics and that of his previous immediate superior. He thus was unable to find any time for the necessary collaborative work and appeared harassed. Dr

Edwards thus undertook a range of fisheries analysis and database training activities requested by Shoals Rodrigues, FPS and UNDP Marine Protected Area project staff. Following the change in government, a meeting was also arranged with the new Chief Commissioner, Mr Johnson Rousetty, to discuss the Darwin Initiative project and the delays in implementing the Marine Reserves (discussed in Annex 1 of the Half Year Report, October 2006).

Shoals Rodrigues education campaign

20 fisher training sessions were held at 3 fishing villages (Roseaux, Grand Baie and Songes) during 2006, discussing topics such as coral reefs, octopus and fish biology and fisheries management. Fisher training sessions are now planned for the villages of St François, Plaine Mapou and Anse Nicholas to start at the end of April 2007.

Club Mer (a weekly club for young Rodriguans) has also progressed well and Saturday sessions have included presentations on topics such as 'Coral Reefs', 'Rocky Shores' and 'Pollution' as well as coral reef, seagrass and rocky shore field studies. There has also been a beach trail and swimming sessions are given to *Club Mer* members and the general public every Saturday. Environment Week took place in June and involved a Coastal Clean-up at Pointe Monier, in collaboration with Club Mer, FRTU, FPS and the National Coastguard; an Open Day and film presentation at the Shoals Rodrigues Centre and a Try Dive session in the swimming pool, which was attended by approximately 30 Club Mer students. School groups from Rodrigues and Mauritius (including 40 students from Roche Bon Dieu in February 2007) have also visited the *Shoals Rodrigues* Centre and in July, 50 students from Lorette College, Curepipe in Mauritius were taken on a rocky shore walk. The 2007 "Introduction to Marine Ecology" course in March was attended by 38 students. The first session was "Shore Safety" and 7 sessions have been held so far, discussing topics such as "Tides, Waves and Currents" and "Plankton". A presentation session was held in February, at which students who followed the 2006 course were presented with their course certificates and badges. The Reef Snorkeller course also started in March and 3 snorkelling sessions have now been attended by 7 students.

Shoals Rodrigues won the \$100,000 AGFUND International prize for pioneering development projects for their "Discovering the Ocean World" primary school pack. There were 37 nominated projects from 23 states. The education team is 25% funded through the Darwin Initiative. This prize is well-deserved international recognition of the education work of Shoals, which has been supported in part by this Darwin Initiative over the last two years.

Fisher consultation sessions (stakeholder meetings)

As part of the continuing stakeholder meetings with fishers, started in 2002 (when fishers helped to delineate the marine reserve locations and boundaries) and continued in 2006, meetings were held with fishers at 7 fishing villages during January and February 2007, talking to 150 fishers. The sessions discussed the progress of the marine reserves in Rodrigues and their implications for fishers. In particular, the sessions discussed alternative livelihood options, investigating what alternative jobs fishers would consider and what support they would require. The meetings highlighted the fact that all fishers are very concerned about potential loss of livelihood, but would be willing to give up fishing if offered an alternative. They suggested planting trees, cutting down invasive plant species, beach cleaning, off-lagoon fishing and working as rangers for the new marine reserves. Many fishers were interested in setting up their own businesses such as raising livestock or planting vegetables and a number showed an interest in aquaculture. They highlighted a number of problems and asked for financial help to start up new businesses as well as training and business advice.

Educational poster

The second poster (produced in late 2006) is entitled "Too Small to Die" ("Trop Tipiti Pou Mort" in Creole) and shows why fish shouldn't be caught before they reach maturity. The poster was a collaboration between the education team of Shoals who understand how to get a message across to the public, and the research team, which provided the technical data on fish growth and reproduction with input from Dr Edwards. 200 posters have been printed and distributed to all primary and secondary schools, FRTU, FPS as well as the fishing communities. To maximize impact the poster is in French with a Creole title. The poster was officially launched in

February 2007 at the Shoals Rodrigues Centre. The launch was attended by local fishers, personnel from the FPS, the National Coastguard as well as Shoals Rodrigues members. Shoals Director, Eric Blais gave an introductory speech in which he described the aims of the poster. The poster was then launched by the Deputy Chief Commissioner, Mr Gaetan Jabeemissar, who gave a short speech discussing the importance of the marine environment in Rodrigues and praising the work of Shoals Rodrigues. Copies of the poster were then distributed to the guests. The ceremony was filmed by the Mauritius Broadcasting Corporation and shown on the TV programme "Reflets de Rodrigues" on 2 March.

Shoals Rodrigues Fisheries monitoring programme – lagoon seine net fishery

A key effect of the marine reserves should be additional protection for fish species targeted by the lagoon seine net fishery. A better understanding of the population dynamics of these species is being built up using *Shoals* monitoring data on length-frequency distributions and gonads and FRTU data on catch and effort. The Darwin Initiative grant is providing 30-40% support to several *Shoals* staff to ensure this vital monitoring data continues to be collected.

Assessments of the seine net catches have been carried out on 27 fishing days between 1 March and 30 September, working with 4 fishing teams (Port Sud Est, Pointe Corail, Pointe l'Aigle and Baie du Nord). The lengths of 17,676 fish were measured and fish were also brought back to the laboratory for length-weight measurements and assessment of gonads. The data were analysed using the database system developed by Dr Edwards, which greatly reduced the time needed for this. Data were analysed and reported in December 2006 (see Table 2). The monitoring reports for 2006 were distributed to: Mr Pierre Louis (Island Chief Executive), Mr Jean Paul Colin (Departmental Head for Fisheries), Mr Sylvio Perrine (Head, FRTU), Mr Henri Felicité (Environment Unit), Rodrigues Public Library, Dr Bhikajee (Director of the Mauritius Oceanography Institute) and the Albion Fisheries Research Centre Mauritius.

The 2007 fisheries monitoring programme commenced on 2 March 2007 and surveys are being carried out with the same 4 cooperatives.

With five years of fisheries data now available, we are in the process of preparing two papers on the lagoon fishery and its status. One is focused on describing the fishery, the catch composition, catch per unit effort and the variations from year to year. The other is focused on detailed analysis of the length-frequency data to determine rates of fishing mortality for the main species caught, whether these appear sustainable, and also lengths at first capture and whether mesh size changes might be appropriate.

The second paper is in the final stages of preparation for the journal *Fisheries Management and Ecology*. A key finding, in terms of management options for the large seine net lagoon fishery, is that although several of the main species appear severely overexploited, several others appear either optimally or underexploited. The rate of exploitation is largely related to the length/age at first capture, which varies dramatically between species depending on body shape. Deeper bodied species (e.g. surgeonfishes, rabbitfishes) tend to be overexploited, whereas the shallow bodied species (e.g. goatfishes, mullets) appear to be exploited at sustainable levels. Studies of the selection curves for the species indicate that the legal mesh size of 9 cm is being adhered to by all the fisheries cooperatives sampled. It also shows that any increase in mesh size sufficient to benefit the deeper bodied species, would mean that the shallow bodied species would largely die of old age. Thus changes in mesh size are not a viable management option. This suggests that the route being taken by the RRA in developing additional reserve areas within the lagoon is probably the best option in terms of ensuring the sustainability of the fishery and preserving the marine biodiversity of the island.

Assessments of the line and basket-trap fisheries were started in September 2006 working in collaboration with FRTU enumerators. Surveys are carried out at approximately one fish landing station per week and so far have been undertaken on 12 fishing days and different landing stations. Fishers are asked questions about time spent fishing, where they were fishing, and techniques used. The catch is measured.

Shoals Rodrigues Habitat monitoring programme

The first round of coral reef monitoring was carried out during March-April 2006 at the 13 monitoring sites (six reef slope and seven reef flat stations) using the Line Intercept Transect (benthos) and Belt Transect (fish and invertebrates) techniques. Stations are split more or less equally between proposed marine reserve sites and non-reserve sites so that the impact of the reserves (once fully implemented) can be measured. Temperature loggers were also placed at 10 sites to record changes in sea surface temperature in order that any anomalous warming events causing coral bleaching and mortality can be recorded. The second period of coral reef monitoring was carried out in October/November 2006. This monitoring now provides a 5-year baseline against which the effects of the proposed reserves and the southern lagoon MPA can be judged. The data will also be useful in helping the UNDP MPA project to delimit the proposed MPA. Data were reported in January 2007 (see Table 2). For the new monitoring season, a training session for the habitat monitoring was held in early March 2007 to ensure that all team members were fully prepared (as recommended in earlier reports). The monitoring is now underway and surveys have been undertaken at 10 of the 13 monitoring sites.

Monitoring of the lagoon habitats took place at 8 sites during May 2006 (following recommendation to discontinue surveys of fine sediment areas), using a timed-swim technique to survey three 500m transects at each of the sites. Surveys over 4 years suggest a decline in seagrass, a decline in larger carnivorous fish (e.g. jacks, snappers), and in sites in the southern lagoon a decline in coral and increase in algae. The latter may be a result of coral bleaching in 2005. Data were reported in September 2006 (see Table 2). These will be repeated in May 2007.

Dive Training

Jovani Raffin gained his PADI Instructor and Emergency Response Instructor qualifications with Dive Mauritius on 13 August. He is now in charge of dive training activities at *Shoals Rodrigues*. Five students (M.M. Azie, F. Bernard, J.C. Jean, M. Perrine, (Mauritius Wildlife Foundation) and C. Speville (*Club Mer* member)) gained their PADI Open Water qualification in July. F. Allas successfully completed his PADI DiveMaster training in late 2006; S. Perrine and H. Ally hope to finish in the near future. E. Momus, A. Auguste and D. Allas completed their Advanced Open Water course in January 2007 and S. Meunier and E. Larcher started their Open Water training during December 2006.

3.2 Progress towards Project Outputs

A plan for how a management strategy for the reserves should be developed by the competent authorities (RRA) with stakeholder participation, was presented to the RRA via Shoals and the Co-ordinating Committee on Fisheries and Marine Resources in early 2005. Stakeholder meetings have continued in 2006 and 2007 to keep fishers informed of progress (or lack thereof), and find out their key concerns and views on how the reserves should be managed/enforced. Both stakeholder concerns and views on implementation/enforcement are fed back to the Co-ordinating Committee. This has prompted the RRA to pay serious attention to the issue of 'alternative livelihoods' originally flagged up in 2005. Some external funding has been obtained from SocMon (CORDIO) and IOC to investigate alternative livelihoods and pay for demarcation at Rivière Banane reserve and alternative livelihoods is now a key item on the agenda of the UNDP MPA project.

The Shoals monitoring programmes are running smoothly following the training inputs from the UK in year 1. The relational database for the seine-net fishery, which features data input forms, a wide range of queries and tailored reporting and was designed and developed in Microsoft Access by Dr Edwards in 2005-2006, now allows rapid analysis and output of results. Training sessions have transferred the necessary skills to run this to Shoals Rodrigues. Although joint-monitoring with FRTU is ongoing and will allow a broader understanding of biodiversity impacts of the lagoon fishery, a lack of leadership and political will at FRTU means that progress towards meaningful data collection in that organisation is slow. FPS have participated in various training activities, which have inter alia improved their ability to find and confiscate nets dumped underwater by illegal fishers, but their prime involvement was envisaged once the

reserves were implemented. Following the two year delay in gazetting, it is unclear how far FPS involvement will develop in the remaining year.

Education campaigns for fishers, children, young people and the wider community have progressed well. *Club Mer* and involvement with primary and secondary school children of both Mauritius and Rodrigues continues and *Shoals Rodrigues* won the \$100,000 AGFUND International prize for pioneering development projects for their “Discovering the Ocean World” primary school pack. The fishing villages most affected by the marine reserves are being targeted for the fisher training sessions. This work helps build trust and feeds into the stakeholder meetings, where fishers arrive well-informed. The second poster, *Trop tipiti pou mort*, in Creole and French, was launched by the Deputy Chief Commissioner and featured on TV.

The marine reserves workshop (*A Regional Perspective on MPAs in the Western Indian Ocean*) planned for 9-14 May 2007 is on track. It has been broadened and is now a collaborative venture between the Darwin Initiative, WWF, Shoals Rodrigues, The Indian Ocean Commission, the Western Indian Ocean Marine Science Association (WIOMSA), and the Marine Education Trust (UK). About 40 people are attending from outside Rodrigues and we have managed to leverage co-funding of € 40,000. Total attendance is now over 70 with 13 countries represented.

3.3 Standard Output Measures

Table 1 Project Standard Output Measures (Note: Year 1 includes 2 months at start of project in February/March 2005)

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	TOTAL
3	Divers trained to PADI Open Water / Advanced Open Water and Divemaster qualifications (Mauritian)	5	10			
6A	Number of people receiving other forms of education/ training (18 Mauritians/2 UK – yr 1; 15 Mauritians/1 UK – yr 2)	20	16			
6B	Number of training weeks provided	4	2			
7	Number of training materials (poster) produced for use by host country	1	1			
8	Number of person-weeks spent by UK project staff on project work in the host country	8	4			
11B	Number of papers to be submitted to peer reviewed journals (in progress)		1			
12A	Number of computer databases to be established and handed over to the host country		1			
14B	Number of conferences attended at which findings		1			

	from Darwin project presented					
15A	Number of national press releases in host country	1				
15B	Number of local press releases in host country	1	1			
18C	Number of local TV features in host country		1			
19A	Number of national radio interviews in host country		2			
19C	Number of local radio interviews in host country	2	4			
22	Number of permanent field plots established	13				
23	Value of resources raised from other sources for project work	£35272	£27125			

Table 2 Publications

All publications below (except the poster) can be publicly accessed from the website: www.ncl.ac.uk/tcmweb/tmr/aje_darwin_rodrigues.html

Type	Detail	Publishers
Report	Hardman ER, Blais FEI, Desiré MS, Raffin JSJ, Perrine S, Raffaut R, Chinien-Chetty M, Towill J (2007) <i>Annual report of benthos, reef fish and invertebrate surveys for reef slope and reef flat areas in Rodrigues 2006.</i>	Shoals Rodrigues: Pointe Monier.
Report	Hardman ER, Blais FEI, Desiré MS, Raffin JSJ, Perrine S, Chinien-Chetty RM, Meunier S (2006) <i>Annual report on the status of the artisanal seine net fishery of Rodrigues 2006.</i>	Shoals Rodrigues: Pointe Monier.
Report	Hardman ER, Gell FR, Blais FEI, Desiré MS, Raffin JSJ, Perrine S, Chinien-Chetty, M (2006) <i>Marine Reserves for sustainable fisheries management in Rodrigues.</i>	Shoals Rodrigues: Pointe Monier.
Report	Hardman ER, Blais FEI, Raffin JSJ, Perrine S, Chinien-Chetty M (2006) <i>Annual report of benthos, reef fish and invertebrate surveys for lagoon areas in Rodrigues 2006.</i>	Shoals Rodrigues: Point Monier.
Report	Gell FR (2006) <i>Development of a strategy for marine reserve management in Rodrigues using community consultation and stakeholder participation. Report on a second visit to Rodrigues, 27 March to 16 April 2006.</i>	Port Erin
Poster	<i>Trop tipiti pou mort</i> (Poster on dangers of overfishing, in Creole and French – prepared by the Shoals Education team in consultation with Dr Edwards and Shoals Research team)	Shoals Rodrigues: Point Monier.

3.4 Progress towards the project purpose and outcomes

If the findings of the Mid-term Review are accepted by the Darwin Secretariat, we are likely to revise the logframe. Meanwhile the 4 marine reserves have been gazetted and these and the UNDP MPA will provide a network of reserves in the lagoon which should go a long way to protecting the fish stocks, the habitat and biodiversity (including endemics). Analysis of the fisheries data (scheduled once five year baseline was available, which was in December 2006)

show that several of the main species are overfished and that changes in mesh size are not a management option (contrary to initial belief). Thus the only real management options are changes of gear or establishment of marine reserves. The increased local capacity developed by the Darwin project within Shoals Rodrigues is being increasingly recognised and called upon by the RRA to assist the government with implementing the new National Biodiversity Strategy & Action Plan. This will be an important legacy.

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

The declaration of the 4 marine reserves is clearly a step forward. Sensitising the RRA to the need for serious consideration of alternative livelihoods is another. Measurable impacts are not likely to be seen until beyond the life of the project.

4. Monitoring, evaluation and lessons

The Mid-term review looked at these issues in relation to the logframe and suggested changes. There was concern that Purpose level statements were more akin to Outputs, whereas Outputs were more akin to output indicators. We await formal notification of the review findings.

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

A critical issue highlighted in the Annual Report and noted by its reviewer as needing to be addressed in the next half-year report to ECTF was the lack of progress in gazetting the 4 marine reserves. This complex issue was addressed in some detail in an annex to the half-year report. By forceful lobbying, primarily through our Rodriguan counterparts (as outside pressure, even from Mauritius is resented), the reserves have now been gazetted.

The project has always maintained close regional links and links with other Mauritian NGOs and relevant governmental organisations. These have been emphasised more in this report as the reviewer appeared concerned about this.

A mid-term review was undertaken by Dr Patrick Abbot in November/December 2006. The findings of this and potential solutions to some issues identified were discussed in Rodrigues with Shoals Rodrigues and back in the UK with the project leader. The draft report was commented on by both parties in early 2007. The review was very helpful and constructive. We await its official communication to us so that we may see the final recommendations and go ahead and implement approved changes as far as is feasible for the remaining year of the project. In particular, a number of weaknesses in the original logframe were identified and a revised logframe suggested.

6. Other comments on progress not covered elsewhere

The recommendations of the Mid-term Review are likely to improve the design of the project.

7. Sustainability

Shoals Rodrigues is the only environmental NGO based in Rodrigues; as such, it is much called upon by the RRA on account of its unique marine research and educational capacity. This was recently recognised by the award to Shoals of the *Medaille de la Reconnaissance Rodriguaise* for their work over the past 7 years. The medal was presented to Shoals Director, Eric Blais by the Commissioner for Health during an awards ceremony held in Port Mathurin to celebrate the 4th anniversary of Rodrigues' accession to autonomy.

Support for on-going monitoring of the marine reserves in the long-run (post-Darwin Initiative project) is being sought from the Indian Ocean Commission (IOC), European Union (alternative livelihoods project), Dubai International Award and the Royal Caribbean Ocean Fund. The

\$100,000 AGFUND International prize for Shoals education work will help to maintain the NGO post-Darwin but continuing funding remains a problem. The IOC are supporting demarcation work for the first of the 4 marine reserves.

8. Dissemination

Publicity for the Darwin Initiative work has included an interview on the Mauritius Broadcasting Corporation (MBC) morning news on 17 June about the work of Shoals Rodrigues which led to a 1 hour radio slot and phone-in on the programme *Rodrigues en Question* on 23 June by Eric Blais, Director of Shoals. He appeared on the same programme again on 20 September discussing further aspects of Shoals Rodrigues' work in relation to the marine reserves. Eric Blais also wrote an article on the marine reserves for *Le Nouveau Rodriguais* newspaper on 2 September. Eric Blais appeared on Radio 1 and MBC Radio on 18 November 2006 and 26 January 2007 discussing the Agfund Prize and Shoals Rodrigues' marine education work. Shoals Science Team, Emily Hardman and Sabrina Desiré were interviewed for "Rodrigues en Question" on 17 January 2007, discussing the problems with overexploitation of sea cucumbers in Rodrigues. The launch of the Darwin-funded poster was shown on the MBC production "Reflets de Rodrigues" on 2 March 2007.

Dr Edwards presented a paper at the Reef Conservation UK 9th Annual Meeting at the Zoological Society of London in December 2006. This was entitled *Using length-frequency data to identify management options: a case-study based on five years monitoring of the large seine net fishery of Rodrigues Island, Indian Ocean* and was co-authored by Emily Hardman and Jovani Raffin of Shoals Rodrigues. This paper is currently being prepared for submission to the journal *Fisheries Management and Ecology*.

9. Project Expenditure

Table 1 Project expenditure during the reporting period (Defra Financial Year 01 April to 31 March)

Item	Budget	Expenditure	Balance
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- 10. 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 ECTF and the Darwin Secretariat to publish the content of this section](#)

Annex 1 Report of progress and achievements against Logical Framework for Financial Year: 2006/07

Project summary	Measurable Indicators	Progress and Achievements April 2006 - March 2007	Actions required/planned for next period
<p>Goal: <i>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</i></p> <p><i>The conservation of biological diversity,</i></p> <p><i>The sustainable use of its components, and</i></p> <p><i>The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources</i></p>			<p><i>(do not fill not applicable)</i></p>
<p>Purpose Marine biodiversity in Rodrigues protected and sustainability of fisheries improved through the establishment of marine reserves, increased capacity in marine research skills, and raising environmental awareness across the community.</p>	<p>Development of management strategy for marine reserves and setting up of marine reserves in yr 1 with full stakeholder support</p> <p>Monitoring programme for reef and lagoon habitats and fisheries set up in yr 1 and fully collaborative between NGO and Government by yr 3</p> <p>Evidence of effectiveness of management strategy, habitat regeneration and improved fish stocks by yr 3.</p> <p>Education campaigns begin in yr 1 and reach a wide cross-section of the community by yr 3.</p>	<p>The reserves were finally declared in April 2007. The strategy for developing a management plan for the reserves with stakeholder support, presented to the RRA in 2005, can now be acted on.</p> <p>Monitoring programmes have been enhanced by UK inputs and are fully operational. Collaboration with FRTU on line and basket trap fishery monitoring was started during the year. Analysis is now delivering outputs which allow fisheries management options to be refined.</p> <p>Clearly, due to late gazetting of reserves no measurable biological benefits will accrue during the lifetime of the project.</p> <p>Education campaigns at schools, <i>Club</i></p>	<p>We plan to implement the recommendations of the mid-term review (broadly agreed in draft by Shoals Rodrigues and project leader) once/if these are approved by the Darwin Secretariat and transmitted to us officially.</p> <p>We hope the major regional meeting on MPAs being held in May in Rodrigues in collaboration with WWF, IOC, WIOMSA, etc. will further sensitise key government personnel to what is needed to make the network of 4 marine reserves and one MPA work.</p> <p>IOC and Darwin funding will allow us to start to assist the RRA in implementing the strategy outlined in</p>

		<i>Mer</i> , fisher training sessions, reserve stakeholder meetings, and via radio, poster and newspaper are building support and awareness in the community.	2005 at the Rivière Banane reserve.
Output 1. Management strategy developed and approved amongst stakeholder groups.	Stakeholder groups are well represented at meetings of the Co-ordinating Committee. Meetings are held in fishing communities to disseminate results of Committee meetings.	The MTR discusses the appropriateness of this indicator. Via the stakeholder meetings Shoals provide a critical link between the fishers and the RRA. These meetings are essential if the reserves are to have any chance of successful implementation.	
Activity 1.1 Stakeholder meetings in fishing villages to discuss progress and likely impacts of reserves, elicit concerns of fishers, and feedback concerns to RRA via Coordinating Committee.		Building on meetings in 2006, stakeholder meetings were held with fishers at 7 fishing villages during January and February 2007, talking to 150 fishers. The sessions discussed the progress of the marine reserves in Rodrigues and their implications for fishers. In particular, the sessions discussed alternative livelihood options. Feedback to the Coordinating Committee made the RRA aware of the importance of alternative livelihoods and prompted them to seek additional funding from IOC to progress this issue.	
Output 2. Monitoring programmes for biodiversity in lagoon and reef habitats and status of fisheries established and carried out by 2 partner agencies.	At least 15 people in total from the 2 partner agencies (NGO and Government) trained in monitoring and data processing techniques, and associated diver training given, with full participation by members of both agencies in monitoring activities ensured by yr 3.	16 people from Shoals/FRTU/FPS and the UNDP MPA project have received targeted training on aspects of both socio-economic and biological monitoring, and on database and spreadsheet techniques for data handling and analysis. Joint monitoring with FRTU is operational. Diver training has progressed well. The MTR discusses the appropriateness of this indicator.	
Activity 2.1. Follow up training in fishing and habitat survey techniques and data processing.		Successfully carried out such that Shoals now has necessary skills in-house and is no longer dependent on outside inputs for these. Database automation has meant that the fisheries monitoring report appears several months earlier	

		than in the past, freeing time for other activities.
Activity 2.2. Continuation of habitat and population monitoring in Feb/Mar/Apr and Aug/Sept/Oct each year and fisheries monitoring throughout the year.		The three principal monitoring reports (Table 2) were produced within time and circulated to all relevant authorities in Rodrigues and Mauritius.
Output 3. Education campaigns for fishers, children, young people and the wider community.	At least 10 fishing villages, 8 primary schools, 2 secondary schools and 250 independent young people reached by yr 3. 200 copies of each of 3 different posters circulated, with one produced each year. At least four radio broadcasts and newspaper articles produced each year.	So far 7 fishing villages, 13 primary schools, 4 secondary schools and Club Mer children (65: 2005; 42: 2006; 38: 2007) have been reached. 200 copies of the second poster (<i>Trop tipiti pou mort</i>), which was launched by the Deputy Chief Commissioner in early 2007, have now been produced and circulated. 6 MBC radio broadcasts, 1 newspaper article (<i>Le Nouveau Rodriguais</i>) and 1 television slot kept Shoals' reserves and education work in the news in Rodrigues/Mauritius during the year. Appropriateness of indicator discussed in MTR.
Activity 3.1. Fisher training		20 fisher training sessions were held at 3 fishing villages (Roseaux, Grand Baie and Songes) during 2006, discussing topics such as coral reefs, octopus and fish biology and fisheries management. These are key to building bridges between the RRA and the fisher communities and building the fishers' understanding of why the reserves are needed and their support for them.
Activity 3.2. Outreach activities to primary and secondary schools and Club Mer activities		<i>Club Mer</i> (a weekly club held at the Shoals Centre on Saturdays) involved 42 young Rodriguans in 2006 with 38 enrolling in 2007. School groups (often 40-50 students) from Rodrigues and Mauritius have also visited the <i>Shoals Rodrigues</i> Centre. The Reef Snorkeller course also started in March and 3 snorkelling sessions have now been attended by 7 students.
Activity 3.3. Posters, radio broadcasts and newspaper articles		Publicity for the Darwin Initiative work included an interview on the Mauritius Broadcasting Corporation (MBC) morning news in June which led to a 1 hour radio slot and phone-in on the programme <i>Rodrigues en Question</i> by Eric

		<p>Blais, Director of Shoals, with a further appearance in September to discuss the marine reserves. He also wrote an article on the marine reserves for <i>Le Nouveau Rodriguais</i> newspaper in September and appeared on Radio 1 and MBC Radio in November 2006 and January 2007 discussing the Agfund Prize and marine education work. Shoals Science Team were interviewed for <i>Rodrigues en Question</i> in January 2007. The launch of the Darwin-funded poster was shown on the MBC TV programme “Reflets de Rodrigues” on 2 March 2007.</p>
<p>Output 4. Lessons learned and best practice guidelines</p>	<p>Workshop on marine reserves organised attended by representatives from Rodrigues, Mauritius, Comores, Madagascar, Seychelles and Reunion, and 200 copies of the proceedings published and circulated in yr 3.</p> <p>Report on project successes and failures produced in yr 3 including quantification of all participation, difficulties encountered, and qualitative and quantitative evidence to support progress towards overall project purpose.</p>	<p>The marine reserves workshop planned for May 2007 has been broadened following discussions with regional organisations and is now a collaborative venture between the Darwin Initiative, WWF, Shoals Rodrigues, The Indian Ocean Commission, the Western Indian Ocean Marine Science Association (WIOMSA), and the Marine Education Trust (UK).</p>
<p>Activity 4.1. Workshop on marine reserves for delegates from western Indian Ocean island states, production of workshop proceedings within six months</p>		<p>The workshop is now entitled “A Regional Perspective on MPAs in the Western Indian Ocean” and will be held on Rodrigues Island, from 9-14 May 2007. About 40 people are attending from outside Rodrigues; co-funding of €40,000 (ca £27,500) has been leveraged to support the broader and expanded workshop and supplement the ca £12,500 in the Darwin Initiative project budget.</p>

Annex 2 Project's full current logframe

This is likely to be revised following the mid-term review. We await formal notification of the findings of the review so that we may progress with this.

Project summary	Measurable indicators	Means of verification	Important assumptions
<p>Goal:</p> <p><i>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</i></p> <ul style="list-style-type: none"> • <i>the conservation of biological diversity,</i> • <i>the sustainable use of its components, and</i> • <i>the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources</i> 			
<p>Purpose</p> <p><i>Marine biodiversity in Rodrigues protected and sustainability of fisheries improved through the establishment of marine reserves, increased capacity in marine research skills, and raising environmental awareness across the community.</i></p>	<p><i>Development of management strategy for marine reserves and setting up of marine reserves in yr 1 with full stakeholder support</i></p> <p><i>Monitoring programme for reef and lagoon habitats and fisheries set up in yr 1 and fully collaborative between NGO and Government by yr3</i></p> <p><i>Evidence of effectiveness of management strategy, habitat regeneration and improved fish stocks by yr 3.</i></p> <p><i>Education campaigns begin in yr 1 and reach a wide cross-section of the community by yr 3.</i></p>	<p><i>Minutes of meetings of the Co-ordinating committee on Fisheries and Marine Resources and reports from village meetings.</i></p> <p><i>Attendance at training courses and subsequent participation in field surveys.</i></p> <p><i>Reports on field surveys by partner institutions.</i></p> <p><i>Statistics on infringement of marine reserve regulations.</i></p> <p><i>Statistics on number of individuals and types of community groups reached by education campaigns.</i></p>	<p><i>Rodrigues regional Assembly and stakeholder groups remain supportive of the initiative.</i></p> <p><i>No other developments that could impact on the reserves (through increased pollution levels for example) are permitted.</i></p>
<p>Outputs</p> <p><i>Management strategy developed and approved amongst stakeholder groups.</i></p>	<p><i>Stakeholder groups are well represented at meetings of the Co-ordinating Committee.</i></p> <p><i>Meetings are held in fishing communities to disseminate results of Committee meetings.</i></p>	<p><i>Minutes of Co-ordinating Committee meetings.</i></p> <p><i>Reports of and attendance records from, meetings at village level.</i></p>	<p><i>Stakeholder groups are motivated to participate in the process.</i></p>

<p><i>Monitoring programmes for biodiversity in lagoon and reef habitats and status of fisheries established and carried out by 2 partner agencies.</i></p>	<p><i>At least 15 people in total from the 2 partner agencies (NGO and Government) trained in monitoring and data processing techniques, and associated diver training given, with full participation by members of both agencies in monitoring activities ensured by yr 3.</i></p>	<p><i>Training attendance records.</i></p> <p><i>Databases of species, habitat and fishery data.</i></p> <p><i>Field survey reports, with evidence of co-authorship between the two partner agencies.</i></p>	<p><i>Personnel from partner agencies available to attend training and motivated to participate in monitoring activities.</i></p>
<p><i>Education campaigns for fishers, children, young people and the wider community.</i></p>	<p><i>At least 10 fishing villages, 8 primary schools, 2 secondary schools and 250 independent young people reached by yr3.</i></p> <p><i>200 copies of each of 3 different posters circulated, with one produced each year.</i></p> <p><i>At least four radio broadcasts and newspaper articles produced each year.</i></p>	<p><i>Attendance records at education sessions.</i></p> <p><i>Progress reports from partner agencies.</i></p> <p><i>Copies of posters and newsletters and recordings of radio broadcasts.</i></p>	<p><i>The community is sufficiently interested in the protection of their marine environment to attend education sessions.</i></p> <p><i>The local media is willing to carry newspaper articles and broadcast radio programmes written by project partners.</i></p>
<p><i>Lessons learned and best practice guidelines</i></p>	<p><i>Workshop on marine reserves organised attended by representatives from Rodrigues, Mauritius, Comores, Madagascar, Seychelles and Reunion, and 200 copies of the proceedings published and circulated in yr 3.</i></p> <p><i>Report on project successes and failures produced in yr 3 including quantification of all participation, difficulties encountered, and qualitative and quantitative evidence to support progress towards overall project purpose.</i></p>	<p><i>Workshop proceedings.</i></p> <p><i>Project report, together with copies of all reports and publications sent to Darwin Initiative, Government, stakeholder groups and other interested parties.</i></p>	<p><i>Personnel from Governments and NGOs in other island states attend, and fully participate in, workshop.</i></p>
<p>Activities</p> <p><i>Discussion and training</i></p>	<p>Activity Milestones (Summary of Project Implementation Timetable)</p> <p><i>Yr 1: Project planning to identify participants and priorities, discuss monitoring and education programmes, define project schedule and give input into reserves management strategy (2 weeks Mar 05); Evaluation of existing fisheries research programmes and data, training in data processing techniques and training in additional practical techniques (2 weeks Mar 05). Training in habitat and population survey techniques (2 weeks Mar 05); Diver training (during Feb and July/Aug 05);</i></p> <p><i>Yr 2: Follow up training in fishing and habitat survey techniques and data processing x 2; Discussion meeting on progress and any problems with management strategy for marine reserves x 1.</i></p> <p><i>Yr 3: Review meetings on progress of project components and degree of success of reserve management x 2.</i></p>		

<p><i>Habitat and Fisheries monitoring</i></p>	<p><i>Yr 1: Sites and protocols for habitat and population monitoring programmes agreed Mar 05, monitoring commences Mar 05; Fisheries monitoring methods agreed Mar 05, monitoring commences Mar 05.</i></p> <p><i>Yrs 2 & 3: Continuation of habitat and population monitoring in Feb/Mar/Apr and Aug/Sept/Oct each year and fisheries monitoring throughout the year. Reports produced at the end of each calendar year; 2 peer reviewed publications by Yr 3.</i></p>
<p><i>Education campaign</i></p>	<p><i>Yr 1: Subject areas and outreach strategy for different target groups agreed Feb 05, draft, campaigns commence Feb 05; draft materials prepared by end Jun 05; First poster circulated Sep 05;</i></p> <p><i>Yrs 2 & 3: One poster, 2 radio broadcasts and 2 newspaper articles per year</i></p>
<p><i>Best practice guidelines disseminated</i></p>	<p><i>Yr 3: Workshop on marine reserves for delegates from western Indian Ocean island states, production of workshop proceedings within six months</i></p>

