

## *Darwin Initiative Annual Report*

### **Darwin Project Information**

Project Ref Number	16002
Project Title	Building capacity for sustainable fisheries management in the Wallacea region
Country(ies)	Indonesia
UK Contract Holder Institution	Operation Wallacea Trust
UK Partner Institution(s)	-----
Host country Partner Institution(s)	FORKANI
Darwin Grant Value	£150,000
Start/End dates of Project	May 2007 to March 2011
Reporting period (1 Apr 2007 to 31 Mar 2008) and annual report number (1,2,3..)	Annual Report 1
Project Leader Name	Dr Tim Coles
Project website	<a href="http://www.wallaceatrust.org">www.wallaceatrust.org</a>
Author(s), date	Dr Tim Coles, April 2008

### **1. Project Background**

One of the main problems on Indonesian coral reefs is over-fishing by local people using small scale or artisanal techniques. Until recently artisanal fishing has been regarded by the Indonesian government as too small scale to have any significant impact on reef fisheries. As a result there has been no legislation to restrict fisheries on coastal reefs and in many parts of the archipelago the reef fishery has been seriously impacted. An example of this is on the reefs around Kaledupa Island in the Wakatobi Marine National Park, SE Sulawesi in Indonesia. Scientists and university students as part of annual biodiversity and fisheries surveys funded through Operation Wallacea have studied these reefs and the fishery since 1996. The results from these surveys demonstrated a fishery that was in serious decline with average catch per unit effort at 10% of levels in other parts of the Pacific and evidence of some species being commercially extinct.

The Darwin Initiative funding was obtained to demonstrate how a reef fishery could be managed sustainably by using financial incentives. The advantage of using Kaledupa Island was the long-term presence of Operation Wallacea at the site to provide the monitoring data to assess the effectiveness of the scheme, the support (with powers devolved from central government) of the Wakatobi government in implementing the political changes needed, the existence of a strong fishers based NGO and a strong desire from the local fishers to manage their own fishery and stop the decline in their incomes.

The proposed scheme works by registering all the fishers and their boats on Kaledupa. This registration has proved popular with Kaledupan fishers since it prevents fishers from other islands utilising their reefs. Once the scheme is fully implemented though the objective is to reduce overall fishing effort to ensure the fishery begins to recover by offering businesses for up to 30% of the fishers in exchange for surrendering their licences. The fishers coming out of the fishery would therefore only do so if the businesses created more income than continuing to fish the reefs, whilst those that remain in the fishery then have a licence with a value equal to that of the income created from the businesses for those 'selling' their licences. These remaining stakeholders would be allowed to trade the licences amongst those on Kaledupa or

use them as collateral for raising funds. This scheme needs local byelaws introducing by the Wakatobi government and a Kaledupa Fishers Forum created to actively manage the reef fishery. A weekly fishery monitoring programme is to be implemented to provide data by which the Forum can take the necessary decisions to maximise the sustainable yield from the reefs.

## **Project Partnerships**

### *FORKANI*

Forkani are the main partners implementing the fisheries monitoring, development of the Kaledupa Fisheries Forum, development of proposed byelaws and boat and fisher registration. Forkani have turned out to be very reliable and are doing an excellent job on the ground. The training their staff have received as part of the Darwin project has given them a much greater understanding of how to manage reefs sustainably.

### *Coral Reef Research Unit*

The CRRU at Essex University is the main partner for the biological monitoring of the reefs around Kaledupa. Their production of research papers from the programme has been outstanding.

### *Wakatobi Government*

Contacts with the Wakatobi Government either through the head of the government (Bupati) or through the Fisheries department have become more and more frequent over the year. The Bupati in particular is supportive of the project and is keen to work with the project on developing the Wakatobi as an ecotourism destination with accommodation supplied by local homestays (the most efficient of all the options available at ensuring a high percentage of any spend remains within the communities). He has also been very helpful in advising on the best strategy to successfully implement the introduction of fisheries byelaws and the creation of a Kaledupa Fisheries Forum.

### *COREMAP*

From the very start of the Darwin project the head of the COREMAP project in eastern Indonesia instructed all his staff in the Wakatobi and those on Kaledupa in particular to ensure that the objectives and activities of COREMAP on Kaledupa were fully aligned with the activities of the Darwin project. COREMAP regard the Darwin Kaledupa project as an excellent prospect for establishing a flagship example of how fisheries can be managed throughout eastern Indonesia. Their remit covers the whole of eastern Indonesia and they do not have the facility to concentrate all their efforts on one island as is being undertaken by the Darwin project on Kaledupa.

## **2. Project progress**

### **2.1 Progress in carrying out project activities**

August 2007 Completion of database development and fisheries landing data system finalised and documented with weekly monitoring completed thereafter.

This activity was completed ahead of schedule. Fisheries monitoring was started in mid July covering 9 villages where all catches landed over a 24 hour period were recorded once a week. These villages represent 70% of fishing effort for the whole island. Monitoring was checked over an initial 6-week period until early September during which Fisheries Monitors performed perfectly and staff showed good attention to detail, dedication and understanding of the importance of the quality of data collection for analysis. From September to March the fisheries monitoring continued on a weekly basis run entirely by local Indonesian staff from Forkani. By the 2 February 2008 there had been 252 surveys performed which had sampled 994 fishing

operations (on average 4 per day) and that data collection has continued uninterrupted until present.

The database (see appendix 3 for earlier version) was designed by Dr Duncan May (the Project Manager) and implemented by Nathan Engler, a database specialist from the University of Waterloo in Canada. It is designed to produce weekly reports on catches, catch per unit effort (cpue) and species and size selectivity of the various fishing techniques used. The database also contains a census of all fishers in the 9 monitored villages. The database has now been supplied to the \$200 million World Bank funded COREMAP sustainable reef fisheries project in eastern Indonesia, following a request from them to use this database instead of the one developed by the COREMAP project itself. Additional output routines are being added to the database (currently on version 11), and these will be completed by early April.

A few issues arose during the first few months that need to be addressed. The lack of reliable internet facilities on Kaledupa Island has made sending copies of the database to be checked, back to the UK, a major task involving a 17 hour (one way only) journey to Kendari. This had the effect of slowing down modifications to the database and also meant that monitoring the results being obtained was not frequent enough. The head of the Wakatobi Government (Bupati) has agreed to install broad band internet on Kaledupa Island and once installed this will considerably ease the problems of monitoring progress with the data collection.

### **September 2007 Completion of fisheries monitoring of 108 fixed transects around Kaledupa**

This activity was completed on time. The Coral Reef Research Unit at Essex Unit funded through Operation Wallacea successfully completed the fish and coral surveys on the 108 fixed transects around Kaledupa Island to gather data for a sixth year. Appendix 4 contains an analysis of changes in hard and soft corals and fish populations over the period 2002 – 2007 on the Kaledupa Island reefs.

### **October 2007 Completion of business plans for alternative businesses to provide income in exchange for 'buy outs' of 30% of the licences**

This activity was completed on target. Piotr Kalinowski, a fish farmer from the UK visited the Wakatobi site to gather the data for developing business plans for culturing and growing on *Tridacna* clams and *Parhippolyte uveae*, a rare red shrimp species and growing on reef fish pre-settlement larvae collected using light traps and crest traps, for marketing to the European aquarists market. Piotr Kalinowski is also a patent holder for plant processing techniques and he also gathered the data needed for processing the *Kappaphycus alvarezii* seaweed to supply European Union markets with an approved food additive E407a. In addition Dr Caroline Karp from Brown University in the US visited the Wakatobi in July and August to gather data on the opportunity for utilising areas of Kaledupa to gain income under the carbon credits scheme. Dr Julian Clifton from the University of Western Australia also visited in August to compile data to produce a business plan on the income opportunities for ecotourism development for the island. A number of fishers are also part time farmers so the opportunity to sell their agricultural products at Fair Trade equivalent prices under the Wildlife Conservation products scheme run by the Operation Wallacea Trust has also been investigated during an on site visit by Dr Tim Coles.

These proposals were presented to a meeting of the Operation Wallacea Trustees on 14 November 2007. The Trustees decided that the most promising of the options was the proposal to develop a carrageenan extraction plant on Kaledupa (appendix 5) which if implemented fully would have the potential to double the income for up to 600 sea weed farmers and fishers on Kaledupa. Participation in the scheme would be tied to surrender of fishing licences so that it provides an alternative income for those coming out of the fishery. This opportunity would provide the economic activity needed to buy out sufficient of the reef fishers to reduce fishing effort in the short term to allow the fishery to recover and then be exploited at maximum sustainable yield levels. Piotr Kalinowski has therefore been contracted to re-visit the site and develop a costed business plan and operational model for the extraction

plant. COREMAP which has funds earmarked for viable alternative income businesses will then be approached with a costed proposal to fund the start up costs for the business (estimated initially at around £200,000).

The next most promising of the proposals was the one for a multi-use aquaculture facility on Kaledupa Island to grow on pre-settlement fish larvae, giant clam and a red coloured shrimp species for export to the western aquarist market.. The proposal would be to form a co-operative from existing licenced reef fishers who would surrender their licences in exchange for becoming shareholders in the business. The establishment and operational costs of the facility would be in the order of £100,000. Given the limited funds available through the Darwin Initiative for the business development elements of the project it was decided to delay detailed estimates of costs and production of a business plan for this facility until the 2009/10 season.

A report on the opportunities to develop ecotourism in the Wakatobi islands now the government has invested in a new runway on Wanci was prepared for the Wakatobi government (see Appendix 7). The Wakatobi Government is now implementing most of the recommendations so there is no need to pursue this aspect of business development independently. A locally owned NGO called Lembaga Alam has been formed from long-term staff with Operation Wallacea. Control of the facilities on Hoga Island was handed over to this organisation in March 2008 and they successfully supported university training course visits by Essex and St Andrews Universities. Lembaga Alam has also attracted additional Indonesian training courses to the facilities on Hoga. Management of the facilities by the local community ensures a higher percentage of the income from the visitors stays on site and also allows for operation of the facilities year round to provide more reliable income streams than just relying on the Operation Wallacea season.

The Operation Wallacea Trust has developed markets in the UK for coffee and cashews at enhanced farm gate prices sourced from communities that live around the edge of the forest in Indonesia and Honduras that Operation Wallacea is trying to protect. These products are being marketed under the Wildlife Conservation products scheme and are purchased from the farmers at greatly enhanced prices (compared even to the Fair Trade scheme). However, the final sale price in the UK is competitive because the supply chain has been considerably shortened. Extending this scheme to communities that have agreed to help with the management of the Kaledupa fishery could be done with little investment needed. This option is being pursued in 2008/9.

The carbon trading option investigated by Brown University did not appear to offer a viable business option for the Kaledupa fishers although it did appear to offer the opportunity to help conserve an old stand mangrove on the island.

November 2007 Completion of Training Workshop and on site training of local fisheries monitors and fisheries staff for registration process.

This activity was completed on time. Forkani were trained in the selection criteria and recruited 26 Fisheries Monitors based on their ability for the task and respected status among fishers. The 4 Forkani staff were trained for 3 days to give fisheries monitoring presentations and run the training course on Hoga, supervised by the fisheries scientist. The training course consisted of morning lectures and practical monitoring simulations and debriefing in the afternoon. A course handbook in Indonesian was prepared (see appendix 8 for the manual in English and Indonesian and training materials) and distributed describing recording procedures and theory and monitoring equipment was distributed to the fisheries monitors for their use in the field. In addition to the 26 Fisheries monitors the course trained Wakatobi government officials, COREMAP staff, Fisheries department and Park Rangers.

After training the fishery monitors were observed in the field to assess how well they were complying with the agreed methodology. The monitoring appeared to be going well and from December 2007 the Indonesian staff employed by FORKANI were solely responsible for the

weekly data collection. When Dr Duncan May visited again in March 2008 all the fishery monitor led catch surveys had been completed using the agreed methodologies but the data entry was behind schedule. The data from the traders in the target villages though was not collected according to the agreed methodology up to the end of February 2008. The traders have now been re-trained and the data collection from these traders was collected properly in March 2008.

December 2007 Completion of first locally run weekly fisheries landings exercise (which will then run weekly with local staff only)

The weekly landings monitoring was actually started in July 2007 well ahead of the original schedule and was entirely locally run from December 2007.

### **December 2007 Submission of report on proposed legislation for Kaledupa fisheries to Wakatobi Government**

This activity has been postponed because during consultation a much more effective way of achieving the same objective was discovered. In March 2008 a recommendation from the Bupati and island heads was given for formation of a Kaledupa Fisheries Forum, completing a census in the remaining villages, registration of boats and the development of village Perdes (byelaws). In late March 2008 training was given for the Forkani team for them to work as mentors to village heads and village government helping them to propose village byelaws. 27 FORKANI mentors (there are now 27 villages on Kaledupa after government re-organisation) and 4 Darwin team members were trained by a WWF trainer with a legal background. Details of the course material delivered for this 4-day training course are included in appendix 9. During April 2007 the trained Forkani staff visited all the villages on Kaledupa and explained the concept of the villages working together to develop byelaws, as well as the need for a census of all fishers, registration of the boats and fishers and the creation of the Forum. This was very well received and there is strong support on the island for this development and interest in working together to form island level byelaws. Each of the meetings was run to the following agenda:

1. Opening statement regarding the state of the fisheries around Kaledupa and the need to cut fishing effort by at least 30% to allow the fishery to recover and higher catches obtained.
2. Forbidden fishing techniques
3. Suggested adjustments to fishing techniques (eg limiting gill nets to a maximum length of 100m)
4. Registering fish fences, nets and bubus, Invertebrate traders and all boats used for fishing
5. Economic compensation for registered fishers
6. Community patrolling
7. Fish fence issues
8. Size restrictions for invertebrates
9. Invertebrate traders
10. Mechanisms for monitoring, reporting, forum and funding fisheries management system
11. Function of the forum

From July to December 2008, Forkani mentors will complete byelaw synchronization across all villages with 4 formal and 4 informal follow-up meetings in each village. 5 months is required for this process that involves many people with divergent beliefs. The first meeting of the Kaledupa Fisheries Forum is scheduled for September 2008 and at this meeting the first of a series of island level byelaws will be presented. Note the consultation has to be ongoing for longer periods because there will be byelaw areas where there is less agreement at first and additional consultation will be required. Once a byelaw is proposed by the villages of Kaledupa and endorsed by the Kaledupa Fisheries Forum then the Wakatobi government endorsing it into Wakatobi level legislation is just a technicality. Also in agreeing to local byelaws all village citizens sign written agreements to abide by the law and everything is clear to all, rather than trying to introduce legislation from the top down. Using the originally proposed approach of

submitting a report to the Wakatobi government on possible byelaws would have resulted in them going back to the islanders for consultation and a considerable delay in implementing the necessary fishery byelaws.

March 2008 Registration process for boats and fishers initiated after formal launch of Kaledupa Fisheries Forum. Monthly KFF meetings thereafter

The permission granted by the Wakatobi Bupati and island heads to meet with each of the villages on Kaledupa to explain how the registration scheme was going to be implemented was the first stage in getting the registration scheme launched. So this activity was achieved on target. However, note the approach recommended by the Bupati and the village heads was to start on the byelaw development and fishers registration consultation **before** the KFF was formed. That would give the team time to introduce the concept of a democratic process by which each village would have its own Forum consisting of a representative from local government (BPD) and all the fishers from that village to meet regularly to discuss ways in which the fishery on the local reefs can be managed. A representative from each of the village Forums would then be elected to a Kaledupa Fisheries Forum to work alongside the sub-district heads (Camats), and police, army and Park ranger representatives.

The first meeting of the Forum has been scheduled for 16 September 2008 to discuss and implement the proposed fisheries law through local byelaws and to make an application for Wakatobi level byelaws to be implemented to underpin the island level byelaws. The national TV, radio and Press are being invited to this first meeting since it will be the first community reef fishery management Forum. The original proposal was to invite the Village Mentor from each of the villages to be the representative on the KFF. However, whilst this would have enabled the Forum to have been established much quicker, it would not have created the sort of legitimacy for the Forum that the longer process recommended by the Wakatobi Government will do. So a delay in completing one of the activities is in this case likely to lead to a much stronger project.

A precursor to registering all the fishers in a village is the need to complete a census. A census has been completed on the 9 villages where weekly catches are being recorded and entered in the database. 2105 individuals were recorded within the 9 villages, of which 1251 individuals had an income, and of these 780 had incomes from fishing or trading in fished products. Appendix 10 shows the census interview sheet giving details of questions asked. Censuses of the remaining villages will start on the 1 May 2008 and will be completed by the 15 of July 2008. The names of villages and numbers of inhabitants are unclear at present due to political change in village status in December 2007, though the number of fishers is confidently expected to be less than in the 9 villages already recorded. Legal registration of boats will occur after local byelaws have been created in each village. Boat numbering is scheduled to start on the 17 July 2008 and to be completed by the 1 September 2008, using government codes for islands and villages, and a unique boat code within the village, e.g. K 001 SB – Kaledupa boat number 001 from village Sama Bahari. Boat numbering by stencil and spray paint will be executed by a team of two in each village, overseen by the Darwin team. Canoes and Kayaks will be exempt from registration.

## **2.2 Progress towards Project Outputs**

The project started in May 2007 with the appointment of Dr Duncan May as the Fisheries Scientist for the project. Dr May went to Indonesia in June 2007 and held meetings with COREMAP to explain the strategies being used by the Darwin Initiative project in the Kaledupa area of the Wakatobi Marine National Park. There was strong support and all the COREMAP

funding focussed on Kaledupa Island is now aligned to provide a joint COREMAP/Darwin approach to establishing Kaledupa Island reef fisheries as an example of best practice, which could be replicated elsewhere in eastern Indonesia if successful.

Meetings were also held in June with the head of the Wakatobi Government (Bupati) to ensure the Fisheries department for the Wakatobi was also fully behind the Darwin project. The support from the Wakatobi government was very strong and instructions were issued to all government staff and police to fully co-operate with the project. Meetings were also held with the National Park staff, an independent body from the Wakatobi Government, to explain the Darwin project focussed on Kaledupa Island. Again there was strong support and co-operation with the WWF/TNC project that is aimed at strengthening the National Park enforcement activity.

After this initial round of consultation the project then achieved the implementation of weekly fisheries landing monitoring in the 9 villages that constitute 75% of the island catch from the Kaledupa reefs. A database has been developed and the Indonesian team have proved to be reliable at continuing the surveys unsupervised. Two quarterly reports have been produced (Appendices 11 and 12) from analysis of these data. Further minor modifications are required to the database outputs so production of standard fishery performance criteria can be obtained automatically and data entry needs to be kept up to date. In general though the system for collecting weekly fishery data and collating it into a form that can be utilised by the Kaledupa Fishery Forum is close to being fully functional.

The independent monitoring system examining coral and reef fish communities from surveys of 108 transects around Kaledupa is working well and papers from the various academics in the team are being submitted at a rate that is likely to exceed the target for the project overall.

Much progress was also made on examining alternative income opportunities. The carrageenan extraction plant coupled with growth of ecotourism encouraged by the Wakatobi government and the possibility of marketing products through the Wildlife Conservation products scheme provide ample opportunity for sufficient income to be created to 'buy out' the 30% of fishing effort proposed as a first step to restoring the fishery. The challenge will be to bring these income streams on quickly enough for them to provide realistic alternative income for those wishing to sell their licences. If anything holds up full implementation of this project it is likely to be the time needed for the businesses to be established.

The second round of consultation with the Wakatobi government and island heads resulted in very strong political support for the whole concept. However, it also brought a slight change to the order in which some of the elements of the project are being implemented. The advice from the Bupati was to complete consultation at village level and formation of village level forums first, before attempting to constitute an island level Forum. Doing it that way created greater legitimacy and it also allowed a representative from each of the village forums to be elected to the Kaledupa Fisheries Forum rather than having individuals appointed. It also allowed consultation over the formation of byelaws so that when the first Kaledupa Fisheries Forum meeting was held on 16 September 2008 that they would be in a position immediately to recommend those island level byelaws that were generally agreed by all communities. Once the Forum had recommended these island level byelaws the Wakatobi government would have no difficulty passing them into Wakatobi level legislation. It also had the advantage that each village could approve the registration process and create village byelaws to implement it before the registration process occurred. Whilst this change in approach will delay achievement of some of the targets, they will still be achieved within a few months of the original timetable, and the process by which they will have been implemented will be much stronger.

Progress overall though in this first year has been very good. Of the 27 output measures identified at the outset of the 4 year project, 33% have been achieved after year 1, a further 33% are on or above target for achievement and 30% are not applicable to year 1 of the project are only scheduled to be implemented at a later stage. Only 1 output measure was behind

target and that was the production of quarterly newsletters from the KFF. However, this was due to the delay in forming the KFF as explained above.

## 2.3 Standard Measures

**Table 1 Project Standard Output Measures**

Code No.	Description	Year 1 Total	Performance to date	Total planned from application
6a	Number of people to receive other forms of education/training (which does not fall into categories 1-5 above) *	26 fishery monitors, 1 Wakatobi fisheries officer, 3 COREMAP staff, 2 Park rangers and 2 WWF/TNC staff trained in fishery monitoring – <b>appendix 8</b> .  27 potential Forum members (one from each sub district) and 4 FORKANI staff trained in fishery management options and how to develop local byelaws – <b>appendix 9</b>	Output measure completed after year 1	20 Fishery Monitors and 3 Fisheries Scientists  20 KFF members
6b	Number of training weeks to be provided	2 X 1 week training courses completed	Output measure completed after year 1	2 X 1 week training courses and mentoring for 3 months
8	Number of weeks to be spent by UK project staff on project work in the host country	40 man weeks	25% of 4 year output measure achieved after year 1. On target	160 man weeks
9	Number of species/habitat	2 quarterly fisheries	On target since the	12 quarterly fishery management reports

	management plans (or action plans) to be produced for Governments, public authorities, or other implementing agencies in the host country	reports produced – <b>appendices 11 and 12</b>	monitoring programme started in July 2007 as scheduled.	
10	Number of individual field guides/manuals to be produced to assist work related to species identification, classification and recording	1 fisheries monitoring manual produced – <b>see appendix 8</b>	Output measure completed after year 1	1 Fisheries Monitoring Manual.
11a	Number of papers to be published in peer reviewed journals	6 – <b>appendices 13, 14, 15, 16, 17 and 18</b>	40% of output measure achieved after year 1	15 papers to be submitted
11b	Number of papers to be submitted to peer reviewed journals	1 – <b>appendix 19</b>	47% of papers already published or submitted after year 1	15 papers to be published
12a	Number of computer based databases to be <b>established</b> and handed over to the host country	1 – <b>appendix 3</b>	Output measure completed after year 1	1 fishery database
14a	Number of conferences/seminars/workshops to be <b>organised</b> to present/disseminate findings	0	This output measure not scheduled to be start until 2008/9	2 workshops to be organised (fishery survey, KFF management training).
14b	Number of conferences/seminars/workshops <b>attended</b> at which findings from Darwin project work will be presented/ disseminated	0	This output measure not scheduled to start until 2009/10	3 presentations at seminars
15a	Number of national press releases in host country(ies)	0	This output measure not scheduled to start until 2008/9	3 national Indonesia newspaper articles
15b	Number of local press releases in host country(ies)	3 – Kendari Post (2 pages – <b>appendix 20</b> ), Media Sutra (1 page), Kendari Express (0.5 page).	50% of output measure target completed after year 1	6 local paper articles
15c	Number of national press releases in UK	0	This output measure not	3 UK national Press releases

	press releases in UK		scheduled to start until 2009/10	releases
16a	Number of newsletters to be produced	1 – <b>appendix 21</b>	8% of this output measure achieved by year 1	12 X quarterly KFF newsletters
16b	Estimated circulation of each newsletter in the host country(ies)	1000	This output measure is on target	1000 readership in Indonesia
16c	Estimated circulation of each newsletter in the UK	25	This output measure is on target	25 readership in UK
17a	Number of dissemination networks to be <b>established</b>	1 – information network established by COREMAP on Kaledupa <a href="#">Web site</a> established to disseminate results.	Output measure exceeded after year 1	1 information network established by COREMAP
18a	Number of national TV programmes/features in host country(ies)	0	Not scheduled until 2008/9	3 Indonesian national TV programmes
18b	Number of national TV programmes/features in UK	0	Not scheduled until 2009/10	1 national UK TV programme
18c	Number of local TV programmes/features in host country(ies)	Kendari TV – 1hour – <b>appendix 22 a and b</b> Bale Bale KTV – <b>appendix 23</b> Berita Lingkinan TV – <b>appendix 24</b> Documentary Kendari TV -1 follow up interview –	50% of output measure achieved after year 1	4 local Indonesian TV programmes
19a	Number of national radio interviews/features in host county(ies)	0	Not scheduled until 2008/9	3 Indonesian national radio programmes
19b	Number of national radio interviews/features in UK	0	Not scheduled until 2009/10	1 national UK radio programme
19c	Number of local radio interviews/features in	50 completed. 2 interviews	Output measure	4 local Indonesian radio programmes

	host country(ies)	<b>(appendix 25)</b> circulated to 23 separate local radio stations. Monthly broadcasts on Radio Vatalolo in Kaledupa since January 2008	massively exceeded by end of year 1	
20	Estimated value (£'s) of physical assets to be handed over to host country(ies)	£1000 .	Output measure achieved after year 1	£1000
21	Number of permanent educational/training/research facilities or organisations to be established and then continued after Darwin funding has ceased	1 fishery and biodiversity research centre established on Kaledupa	Output measure achieved after year 1	1 fishery and biodiversity research centre will continue after Darwin
22	Number of permanent field plots to be established during the project and continued after Darwin funding has ceased	108 X 50m transects established .	Output measure achieved after year 1	108 X 50m transects
23	Value of resources raised from other sources (ie. in addition to Darwin funding) for project work	£60,000 from Operation Wallacea towards survey costs £60,000 from Wakatobi Govt on tourism development in Kaledupa £125,000 from COREMAP on expenditure in Kaledupa (estimated at 25% of total expenditure from COREMAP in Wakatobi	61% of total matching funding obtained after year 1	£402,750
New - Project specific				

measures				
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**Table 2 Publications**

Type *	Detail	Publishers	Available from	Cost £
(eg journals, manual, CDs)	(title, author, year)	(name, city)	(eg contact address, website)	
<i>Marine and Freshwater Research</i> , 2007, <b>58</b> , 1008–1018	Faunal relationships with seagrass habitat structure: a case study using shrimp from the Indo-Pacific Unsworth, R.K.F., de Grave, S. Jompa, J. Smith, D.J and Bell, J.J. (2007)	CSIRO Publishing	Appendix 13	Not applicable
International Journal of Interdisciplinary Social Sciences <b>2</b> (1) 289 - 299	Links Between Local Ecological Knowledge and Wealth in Indigenous Communities of Indonesia: Implications for Conservation of Marine Resources Leanne Claire Cullen, Jules Pretty, David Smith and Sarah Elizabeth Pilgrim (2007)	Common Ground Publishing Pty, Melbourne	Appendix 14	Not applicable
Ecological Applications, <b>17</b> (6), 2007, pp. 1742–1751	A cross-regional assessment of the factors affecting Ecoliteracy: implications for policy and practice Sarah Pilgrim, David Smith, & Jules Pretty (2007)	Ecological Society of America	Appendix 15	Not applicable
Estuarine, Coastal and Shelf Science <b>74</b> (2007) 53e62	The contribution of scarid herbivory to seagrass ecosystem dynamics in the Indo-Pacific Richard K.F. Unsworth, Joe D. Taylor, Abigail Powell, James J.	Elsevier	Appendix 16	Not applicable

	Bell, & David J. Smith (2007)			
Marine Ecology Progress Series Vol. 353: 213–224, 2008	High connectivity of Indo-Pacific seagrass fish assemblages with mangrove and coral reef habitats  Richard K. F. Unsworth, Pelayo Salinas De León, Samantha L. Garrard, Jamaluddin Jompa, David J. Smith, James J. Bell (2008)	Inter Research	Appendix 17	Not applicable
	Tidal fish connectivity of reef and sea grass habitats in the Indo-Pacific  Richard K.F. Unsworth, James J. Bell and David J. Smith			
To be submitted to Conservation Biology 2008	Fish Fences as a Model of Extreme Overexploitation of Coral Reef Subsistence Fisheries Exton, D.A., Cullen, L., Pretty, J., May, D., Tibbott, C., Smith, D.J. (2008)	Unpublished	Appendix 18	Not applicable

## 2.4 Progress towards the project purpose and outcomes

The purpose of the project is to build capacity for sustainable fisheries co-management in the Wakatobi Marine National Park. The assumptions that national & regional government act on policies that support community based co-management, that the political climate remains stable and that fishers remain receptive to programme have all held true. The implementation of the fisheries monitoring programme, the development of business opportunities to provide alternative income streams and the support from the Wakatobi and island level government for the concept indicates that the project has a strong chance of success.

The indicators originally proposed will reflect the success or failure of the project. However the timing of the functioning of the Kaledupa Fisheries Forum needs to be moved back to year 2 given the change in approach to developing support for this concept that was outlined above.

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

As noted from the reports on the coral reef and fish community monitoring (Appendix 4) and the quarterly fishery reports (Appendices 11 and 12) there has been no progress towards achievement of stabilising of negative impacts on the fish and reef communities from the fishery

in the first year of the project. Indeed it would have been surprising had there been give that the first year was designed to develop monitoring, establish the legal framework and and identify potential business opportunities.

### **3. Monitoring, evaluation and lessons**

Four outputs were proposed in the original proposal

#### *1. Fisheries co-management established and functioning under the KFF*

This output had two suggested measurable indicators; that KFF members are trained in fisheries management by year 2 and that island wide fisheries regulations are introduced by year 2. Both of these indicators are likely to be achieved given the current rate of progress. However, it was originally proposed that the means of verification should be KFF quarterly meeting reports, field survey reports and database, ranger and local community enforcement records, budgets and project technical reports. These are likely to still be the best means of verifying the effectiveness of the KFF as a fishery management body. None of these means of verification though apply to the project in year 1

#### *2. Effective enforcement of fisheries regulations*

This output had two suggested measurable indicators that the KFF develop and maintain effective surveillance and collaborative policing strategy by year 2 and that there are reduced levels of non-compliance by year 3. These are likely to still be the best means of verifying the effectiveness of enforcement activity but neither of these means of verification apply to the project in year 1

#### *3. Fisheries & biodiversity assessment program established & functioning*

This output had four suggested measurable indicators; that the Senior Fisheries Manager, 3 Fisheries Scientists and 20 Fishery Monitors are trained in fisheries monitoring programme, that weekly fish landings surveys are completed and interview data from fishers registration recorded, that the CRRU completes fish and biodiversity monitoring on 108 transects and that data condensed into reports and proposed management actions for KFF to use for decision making. The means of verification for these indicators were training workshop attendance, provision of database, CRRU reports and Quarterly reports to KFF. All of the reports required to verify these indicators have been provided with this report.

#### *4. Alternative income sources developed to provide 'buy out's of fishing licences and reduce fishing effort*

This output had four suggested measurable indicators; development of business plans to provide income for 30% (in fishing effort terms) of fishers to sell their licences, exchange of licences for businesses and generation of sufficient business income to complete the buy outs. The means of verification for these indicators were: business plans, data on numbers of fishing licences bought out and budgets from year 3. Of these the only one applicable to year 1 was the production of business plans and these are attached as Appendices 5, 6 and 7.

The main lessons learned this year have been in the way in which the development of the KFF is implemented (explained above).

### **4. Actions taken in response to previous reviews (if applicable)**

Not applicable

## **5. Other comments on progress not covered elsewhere**

None

## **6. Sustainability**

The four staff employed by Forkani and the 26 Fishery Monitors employed to implement the fish landings surveys as well as consultation with fishers in each of the communities has increased their skills in reef fishery management. The handover of the ecotourism operation on Hoga Island to Lembaga Alam has enabled local staff to develop skills in looking after visitors to the area whose main motivation for visiting is to see the diversity of the reefs.

The main approach for ensuring the project continues long after the Darwin funding finishes is to ensure that the alternative income streams (carrageenan extraction, ecotourism, Wildlife Conservation products) being developed produce enough income for the necessary buy outs to continue. The Operation Wallacea Trust and Operation Wallacea are committed to continue working in the area after the Darwin project finishes and Operation Wallacea has a sustainable business model independent of grant aid.

## **7. Dissemination**

The project was publicised in Indonesia through the WWF funded Media 3 (M3) programme based in Kendari who funded the production of local TV, radio and newspaper press releases on environmental issues. 16 media personnel came to Kaledupa for the fisheries monitor training in July and showed them the issues facing local fisheries by taking media groups out to villages. As a result 3 local newspaper articles were produced, 2 local radio interviews were completed which were repeated in 23 local radio stations and one 1-hour live local TV interview and project description was transmitted. Within Kaledupa the project has been promoted by meetings with all fishers in each of the village.

The main promotion work though needs to be held back until the Forum is formed and the boat and fisher registration is completed. Before then too much publicity raises expectations too soon. A second wave of publicity would be targeted at when the businesses have been developed and the buy outs have started. Operation Wallacea, which has a sustainable business model is committed to working in the Kaledupa area long after the Darwin project finishes and will be continuing with the publicity.

## **8. Project Expenditure**

Please expand and complete Table 3.

**Table 3 Project expenditure during the reporting period (Defra Financial Year 01 April to 31 March)**

Item	Budget	Expenditure	Balance
Rent, rates, heating, overheads etc	28,625.00	28,733.00	-108.00
Office costs (eg postage, telephone, stationery)	3,000.00	3,000.00	0.00
Travel and subsistence	2,400.00	2,307.88	92.12
Printing	3,360.00	4,014.27	-654.27
Conferences, seminars, etc	500.00	497.46	2.54
Capital items/equipment	2,365.00	2,297.55	67.45
Others	4,250.00	3,653.52	596.48
Salaries (specify)	500.00	0	500.00
<b>TOTAL</b>	<b>45,000.00</b>	<b>44,503.68</b>	<b>496.32</b>

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

The project is just in the start up phase and it would be presumptive to promote it too widely until at least the Forum is formed and the boat registration completed.

## Annex 1 Report of progress and achievements against Logical Framework for Financial Year: 2007/08

Project summary	Measurable Indicators	Progress and Achievements April 2007 - March 2008	Actions required/planned for next period
<p><b>Goal:</b> <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>(report on any contribution towards positive impact on biodiversity or positive changes in the conditions of human communities associated with biodiversity eg steps towards sustainable use or equitable sharing of costs or benefits)</i></p>	<p><i>(do not fill not applicable)</i></p>
<p><i>Purpose</i> To build capacity for sustainable fisheries co-management in the Wakatobi Marine National Park</p>	<p>KFF functioning effectively by yr1</p> <p>Fisheries monitoring and assessment functioning by yr1</p> <p>Effective enforcement system by yr3</p> <p>Initiation of 'buy outs' by year 2</p> <p>Evidence of recovery of fisheries by yr4</p>		<p>(Highlight key actions planned for next period)</p>
<p>1. Fisheries co-management established and functioning under the KFF</p>	<p>KFF members trained in fisheries management by yr2</p> <p>Island wide fisheries regulations by yr2</p>		
<p>Training &amp; Capacity Building</p>		<p>Training completed in development of local byelaws</p>	
<p>2. Effective enforcement of fisheries regulations</p>	<p>KFF develop and maintain effective surveillance and collaborative</p>	<p>Not applicable for year 1 of the project</p>	

	<p>policing strategy by yr2</p> <p>Reduced levels of non-compliance by yr3</p>	
<p>3. Fisheries &amp; biodiversity assessment program established &amp; functioning</p>	<p>Senior Fisheries Manager, 3 Fisheries Scientists and 20 Fishery Monitors trained in fisheries monitoring programme.</p> <p>Weekly fish landings surveys completed and interview data from fishers registration recorded</p> <p>CRRU completes fish and biodiversity monitoring on 108 transects</p> <p>Data condensed into reports and proposed management actions for KFF to use for decision making</p>	
<p>Training &amp; Capacity Building</p>		<p>Fisheries Monitors trained in fishery monitoring programme</p>
<p>Field Research Program</p>		<p>Fisheries monitoring programme up and running, database developed and quarterly reports produced.</p> <p>Coral and fish surveys on 108 transects completed</p>
<p>4. Alternative income sources developed to provide 'buy out's of fishing licences and reduce fishing effort</p>	<p>Development of business plans to provide income for 30% (in fishing effort terms) of fishers to sell their licences</p> <p>Exchange of licences for businesses</p>	

	Generation of sufficient business income to	
Training and capacity building		Business plans developed for carrageenan extraction, aquaculture for the aquarist trade, ecotourism and Wildlife Conservation Products.

## Annex 2 Project's full current logframe

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<b>Goal:</b> 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 <ul style="list-style-type: none"> <li>• the conservation of biological diversity,</li> <li>• the sustainable use of its components, and</li> <li>• the fair and equitable sharing of benefits arising out of the utilisation of genetic resources</li> </ul>			
<b>Purpose:</b> To build capacity for sustainable fisheries co-management in the Wakatobi Marine National Park	KFF functioning effectively by yr1 Fisheries monitoring and assessment functioning by yr1  Effective enforcement system by yr3  Initiation of 'buy outs' by year 2  Evidence of recovery of fisheries by yr4	KFF quarterly meeting reports Field survey reports and database  Ranger and local community enforcement records Budgets  Project technical reports	National & regional government act on policies that support community based co-management  Political climate remains stable  Fishers remain receptive to programme
<b>Outputs:</b> 1. Fisheries co-management established and functioning under the KFF	KFF members trained in fisheries management by yr2 Island wide fisheries regulations by yr2	KFF training workshop attendance  Village and KFF meeting records	KFF members remain committed to program  KFF legislation and zonation accepted by National Park and regional government
2. Effective enforcement of fisheries regulations	KFF develop and maintain effective surveillance and collaborative policing strategy by yr2	Community and Ranger training (funded by COREMAP) workshop attendance levels	Local Rangers co-operate with KFF policing strategy Communities are proactive in self-policing

	Reduced levels of non-compliance by yr3	Park Ranger & community records	High legitimacy of regulations
3. Fisheries & biodiversity assessment program established & functioning	<p>Senior Fisheries Manager, 3 Fisheries Scientists and 20 Fishery Monitors trained in fisheries monitoring programme.</p> <p>Weekly fish landings surveys completed and interview data from fishers registration recorded</p> <p>CRRU completes fish and biodiversity monitoring on 108 transects</p> <p>Data condensed into reports and proposed management actions for KFF to use for decision making</p>	<p>Training workshop attendance</p> <p>Database</p> <p>CRRU reports</p> <p>Quarterly reports to KFF</p>	Trained project staff continue to operate under KFF and use skills provided
4. Alternative income sources developed to provide 'buy out's of fishing licences and reduce fishing effort	<p>Development of business plans to provide income for 30% (in fishing effort terms) of fishers to sell their licences</p> <p>Exchange of licences for businesses</p> <p>Generation of sufficient business income to</p>	<p>Business plans</p> <p>Data on numbers of fishing licences bought out</p> <p>Budgets from year 3</p>	Businesses develop sufficient income

Activities	Activity milestones (summary of project implementation timetable)	Assumptions
Co-management Framework	Yr 1 Establish fisheries monitoring programme; Yr 2 Ensure KFF functions as a decision making body and registration process completed Yr 3 Ensure KFF has partial funding from business income Yr 4 Ensure KFF is self-sufficient from business income	District government and National Park support legislation and zonation to establish KFF Business income from ecotourism and marine aquarist supplies is sufficient
Training & Capacity Building	Yr 1 Training for project team on monitoring and assessment techniques, database analysis and reporting to KFF; Yr 2 Sustainable fisheries management workshop for KFF members; Yr 2 Workshop to develop collaborative enforcement strategies (police, park rangers and communities)	Local partners remain committed to project and are effective in transferring knowledge and skills
Field Research Program	Yr 1 Development of biological and socio-economic program; Economic study for alternative incomes Yr 2 Establish scientific basis for a sustainable fishery using field data;; Yr 3 Analysis of biological and socio-economic time series data	Local communities remain willing to comply with fisheries and socio-economic monitoring
Dissemination & Publicity	Quarterly KFF info bulletin & annual report Yr 2 Manual produced on fisheries assessment and management Yr 2 - 4: radio and TV broadcasts, and national and local newspaper articles Yr 3 Film produced to increase public awareness of the importance of sustainable resource use; Scientific publications.	Local and national press remain interested in project progress

**[Appendix 3 Copy of earlier version of fisheries database](#)**

(Format: Microsoft Access)

**[Appendix 4 Result of the coral and reef fish community transect surveys](#)**

(Format: PDF)

**[Appendix 5 Proposal for a carrageenan extraction plant in the Wakatobi](#)**

(Format: PDF)

**[Appendix 6 Proposal for an aquaculture facility in the Wakatobi](#)**

(Format: PDF)

**[Appendix 7 Suggestions for developing ecotourism in the Wakatobi](#)**

(Format: PDF)

**[Appendix 8a Manual for training of fisheries monitors \(English version\)](#)**

(Format: PDF)

**[Appendix 8b Manual for training of fisheries monitors \(Indonesian version\)](#)**

(Format: PDF)

**[Appendix 9 Materials used for byelaw skills training course](#)**

(Format: HTML web index)

**[Appendix 10 Example data sheets for registration of fishers](#)**

(Format: Microsoft Excel)

**[Appendix 11 Kaledupa fisheries report December 2007](#)**

(Format: PDF)

**[Appendix 12 Kaledupa fisheries report March 2008](#)**

(Format: PDF)

**[Appendix 13 Marine and Freshwater Research paper](#)**

(Format: PDF)

**[Appendix 14 Journal of Interdisciplinary Social Sciences paper](#)**

(Format: PDF)

**[Appendix 15 Ecological Applications paper](#)**

(Format: PDF)

**[Appendix 16 Science Direct paper](#)**

(Format: PDF)

**[Appendix 17 Marine Ecology Progress Series paper](#)**

(Format: PDF)

**[Appendix 18 Journal of Marine Biological Association UK paper](#)**

(Format: PDF)

**[Appendix 19 Fish fence paper to be submitted to Conservation Biology](#)**

(Format: PDF)

**[Appendix 20 Kendari Post article](#)**

(Format: PDF)

**[Appendix 21 WWF newsletter released about Darwin project](#)**

(Format: PDF)

**[Appendix 22a Kendari TV 1 hour documentary](#)**

(Format: Microsoft Windows Media)

**[Appendix 22b Kendari TV 1 hour documentary](#)**

(Format: Microsoft Windows Media)

**[Appendix 23 Bale Bale KTV programme](#)**

(Format: Microsoft Windows Media)

**[Appendix 24 Berita Lingkungan TV programme](#)**

(Format: Microsoft Windows Media)

**[Appendix 25 Radio interviews used by local radios in SE Sulawesi](#)**

(Format: MP3 audio)

### ***Checklist for submission***

	Check
<b>Is the report less than 5MB?</b> If so, please email to <a href="mailto:Darwin-Projects@ectf-ed.org.uk">Darwin-Projects@ectf-ed.org.uk</a> putting the project number in the Subject line.	
<b>Is your report more than 5MB?</b> If so, please advise <a href="mailto:Darwin-Projects@ectf-ed.org.uk">Darwin-Projects@ectf-ed.org.uk</a> that the report will be send by post on CD, putting the project number in the Subject line.	
<b>Do you have hard copies of material you want to submit with the report?</b> If so, please make this clear in the covering email and ensure all material is marked with the project number.	
Have you completed the Project Expenditure table?	
Do not include claim forms or communications for Defra with this report.	