

Darwin Initiative – Final Report

Darwin project information

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| Project Ref Number | 17-011 |
| Project Title | A Participatory Conservation Programme for the Comoro Islands |
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| Host country Partner Institution(s) | The Ministry for Agriculture, Fishing and the Environment; the University of the Comoros |
| Other Partner Institution(s) | Durrell Wildlife Conservation Trust; Agronomes et Vétérinaires Sans Frontières |
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| Project Leader Name | Neil Maddison |
| Project website | www.ecddcomoros.org ; www.bcsf.org.uk/comoros |
| Author(s) and main contributors, date | Hugh Doulton, Sven Ten Napel and Misbahou Mohamed (Director of NGO Dahari) wrote the bulk of the report with contributions in English and translated from French from other members of the management team in the Comoros. The report was then reviewed by the project management committee in the UK: Neil Maddison, Christoph Schwitzer (both BCSF), Andrew Terry and Rich Young (both Durrell). Government and University partners discussed and commented on the French FDA report during the latest steering committee meeting, but did not contribute to writing. |

Acronyms and abbreviations

AVSF - Agriculteurs et Vétérinaires Sans Frontières
 BCSF – Bristol Conservation and Science Foundation
 CBD – Convention on Biological Diversity
 Durrell – Durrell Wildlife Conservation Trust
 ECDD – Engagement Communautaire pour le Développement Durable (project name)
 FAO – Food and Agriculture Organisation of the United Nations
 FDA – French Development Agency / Agence Française de Développement
 IUCN – International Union for the Conservation of Nature
 PES – Payment for Environmental Services
 PMC – Project Management Committee
 PoWPA – Programme of Work on Protected Areas
 SAFAD – Cranfield University NGO
 SCV – conservation agriculture techniques
 WWF – World Wildlife Fund

1 Project Background

The project focused its work in nine villages surrounding the Moya region of Anjouan in the Comoro Islands (Figure 1). Anjouan is the poorest and most densely populated of the islands, and has suffered from some of the highest deforestation rates in the world in the last twenty years according to the FAO. Poverty, lack of alternative economic options, increasing population pressure, a lack of governance, and unsustainable agricultural methods are the main factors contributing to ongoing deforestation. The deforestation puts at risk the endemic terrestrial biodiversity, including the flagship Livingstone's fruit bat, and is causing acute problems for the human population, particularly through loss of water resources and soil fertility, leading to increased poverty and vulnerability.

The project aimed to contribute to protecting endemic terrestrial biodiversity and its forest habitat, and to improving the livelihoods of the human population.

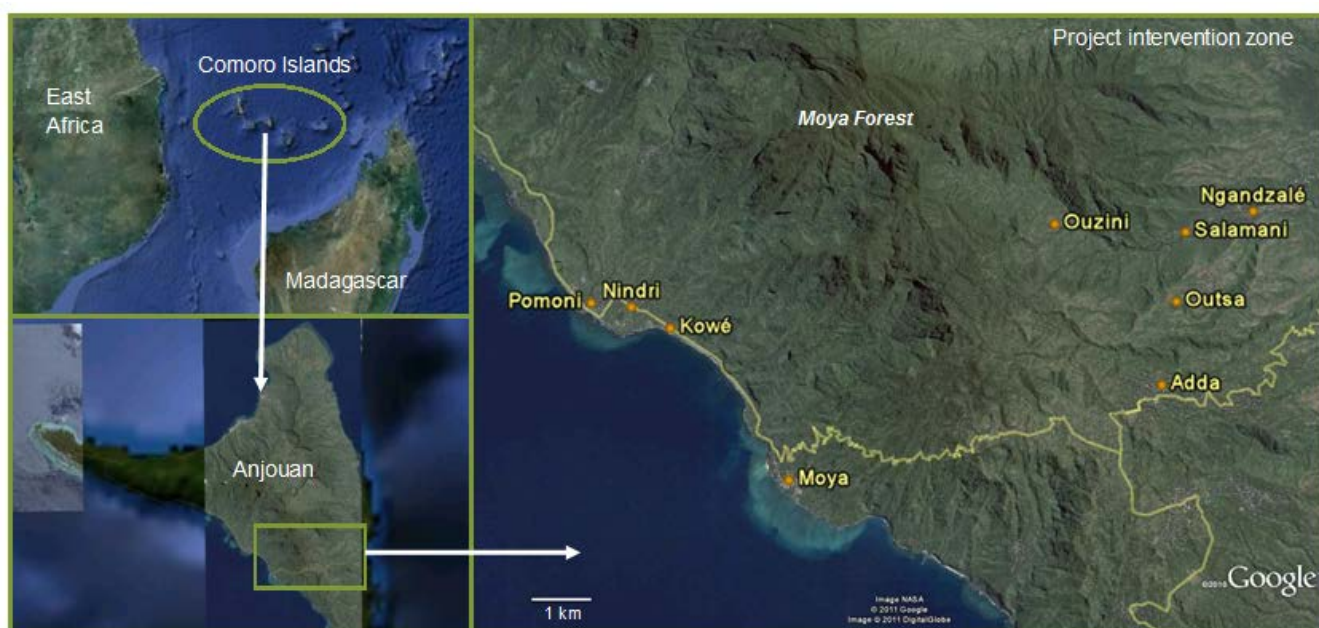


Figure 1: Images taken from Google Earth highlighting the Moya forest and the surrounding villages where the project's community actions are focused. Ecological monitoring and research is carried out on Grande Comore, Anjouan and Mohéli.

The **project purpose** was twofold:

1. Threatened forest areas managed more sustainably by communities in Anjouan
2. To ensure livelihoods of nine communities surrounding the remaining forest are more compatible with forest conservation

The **outputs** were:

1. Innovative participatory biodiversity conservation and community sustainable development model defined for the Comoro Islands, understood by local policymakers, and publicised locally and internationally
2. At least 9 local communities surrounding remaining forest on Anjouan empowered to develop sustainably in a manner compatible with forest conservation and management
3. Protected area zoning plan produced from a biodiversity perspective, and biodiversity and habitat quality monitoring system created
4. A realistic foundation established for a new local NGO to lead conservation and sustainable development in the Comoros

Key achievements included:

- ❖ Securing co-funding from the FDA of €750,000
- ❖ Creation of a local NGO which is already generating widespread regional support, and building the team to run it
- ❖ Supporting over 1700 farmers to improve soil fertility and increase their yields from market gardening and staple crops, reaching over 6500 direct beneficiaries
- ❖ Developing five village natural resource management committees to implement collective projects improving access to water for 8000 beneficiaries
- ❖ Completing the first ever forest maps based on high-resolution satellite imagery for the three islands
- ❖ Producing species distribution models for key indicator taxa across the three islands

2 Project support to the Convention on Biological Diversity (CBD)

The project contributed to the CBD objectives in particular by:

- ❖ Providing a major contribution to the first objective of the national biodiversity strategy and action plan to better understand national heritage by producing the first ever high-resolution forest maps and species distribution models for key taxa across the three islands, and performing more detailed studies on two flagship endemic endangered species; all to assist with identifying conservation priorities and providing a baseline for future monitoring
- ❖ Contributing to objective three by promoting understanding of the Comoros biodiversity, problems and solutions at local, national and international levels through regular media outputs, and updates on project activities through newsletters, blogs and social media updates
- ❖ Developing an intervention strategy to ensure sustainable use of biodiversity (objective four) through the development of a suite of agricultural techniques that improve productivity in lowland fields and reduce pressure on forest areas important for biodiversity

One of the key constraints for biodiversity conservation in the Comoros is the lack of reliable and capable institutions, which affects sustainability of actions. A key result of this project was therefore the creation of a new local NGO with wide government and civil society participation. This NGO is already generating widespread support at the regional level and developing projects in partnership with several international institutions (in addition to the existing project partners), including CIRAD, WWF and Blue Ventures. It is envisaged that this NGO will play a key role in driving forwards efforts in the Comoros to meet the government's CBD targets, based largely on the team that received comprehensive training and capacity building throughout the Darwin project. The project also developed the ecological research skills of students from the University of the Comoros.

The project worked in close collaboration with the national CBD focal points, with both previous and current post-holders sitting on the project's steering committee in the Comoros. This allowed them a formal opportunity to input into project strategy every six months.

The project was not directly related to the CMS or CITES biodiversity conventions

3 Project Partnerships

This project grew out of a pilot phase from late 2007 to early 2009 that was implemented by BCSF in partnership with a local NGO in two villages in the south of Anjouan. The government then requested that the project expanded to work in further villages in Anjouan, and eventually to the other islands.

Partners in the Comoros: The main local partner was the Ministry for the Environment of the Government of the Union of the Comoros (with which an MoU was signed), in addition to the University of the Comoros and the initial committee involved in creating the local NGO.

A project steering committee including members of these bodies and other Comorian institutions from the sector was created early 2010 and later formalised through a Ministry decree. This committee met every six months to review project reports and plans, and was chaired by the General Secretary of the Ministry. This was thus a regular platform that allowed exchange between the different actors involved in the project, and gave the Ministry a formal input into project management. The steering committee became a particularly useful tool in keeping the project partners' in the Comoros up-to-date with progress, as well as ensuring support.

International Partners: The partnership with Durrell Wildlife Conservation Trust was key to the successful implementation of the project. Drs Andrew Terry and Richard Young were part of the project's senior management team, which met in the UK or via Skype every 3-6 months to discuss project progress, and whenever events required. Durrell had a particular responsibility for the ecological side of the work, and recruited a second expatriate field biologist who worked within the BCSF team in the Comoros. Durrell also supported the project through their Madagascar programme, in particular with the development of regional partnerships.

An agreement was signed with Agronomes et Vétérinaires Sans Frontières at the end of 2011, who provided expert support on agricultural development and training of the team. Additional expertise was provided by Dr Gill Shepherd of the IUCN, on the landscape management process, and by Dr Tim Brewer of Cranfield University, who supported the development of the landcover maps.

4 Project Achievements

4.1 Impact: achievement of positive impact on biodiversity, sustainable use or equitable sharing of biodiversity benefits

The main impact of this project has been to support the transition of farming practices to a more sustainable model that is more compatible with forest conservation. The project has focussed on promoting techniques to increase productivity in lowland fields, thus reducing the pressure to create new fertile fields higher up the mountain slopes by cutting down forest. This therefore reduces pressure on the forest habitat upon which much of the endemic biodiversity depends. In addition it will assist in adaptation of agricultural systems to the effects of climate change.

The project has streamlined the delivery of agricultural techniques and support that already existed on Anjouan and introduced new techniques that have proved successful in the region, particularly in Madagascar. Over 1700 households and thus over 6500 direct beneficiaries have been supported through technical training, through the creation of peer-to-peer learning groups, and through subsidising seeds, tools and fertilisers. The techniques have been introduced to a wider group of indirect beneficiaries through the creation of demonstration plots in visible locations, exchange visits and through distribution of communication products including films. This impact will increase over the next few years as the longer-term benefits become more visible to the farmers and the uptake of innovations continues to expand.

The project has also created natural resource management groups in five villages that will support implementation of habitat protection areas to improve the sustainability of landscape management. Test micro-projects managed by the committees were implemented through a model based on voluntary work by local communities, and improved access to water for 8000 beneficiaries.

The expansion of uptake of the agricultural techniques and the implementation of habitat and biodiversity protection measures will be supported by the new local NGO that has been created.

4.2 Outcomes: achievement of the project purpose and outcomes

1. *Threatened forest areas managed more sustainably by communities in Anjouan*

The development of collective management is especially complicated in the Comoros where there is a lack of effective governance institutions at all levels. This is particularly the case on Anjouan where traditional village power structures have broken down and there is a lack of social cohesion in comparison to the other islands. The project concentrated its efforts on developing effective management institutions at the village level and improving their capacities to implement collective projects as first steps towards achieving forest management.

Management groups were created in five villages and another already in existence supported. Collective management projects linked to natural resources and agricultural development were developed as a way of testing and helping these groups to improve their capacities whilst providing direct and short-term benefits to local communities. There were over 8000 beneficiaries of projects to improve water infrastructure, all using a model based on voluntary work by villagers unique for the Comoros that leads to greater sustainability of the intervention. Now that these have proved successful, the next step will be to develop collective initiatives on forest management and biodiversity protection.

2. *To ensure forest based livelihoods of at least 9 communities surrounding the remaining forest are more compatible with forest conservation*

The project has made impressive progress on this outcome, expanding to work in the last of the nine villages in early 2011. Over 90% of the population of these villages depend mainly on agriculture, and agricultural expansion coupled to wood-cutting for construction are the two main reasons for deforestation. Developing systems for managing wood-cutting suffers from the same difficulties as other collective management initiatives, and the project thus concentrated on demonstrating and implementing intensification of production in lowland fields as this was both a more tangible way of transforming livelihoods in the short-term, and involved a much greater percentage of the population.

The project has worked with over 15 % of the total population of these nine villages to improve yields and improve the sustainability of their agriculture. Data on the impact on yields is being collected in a subset of fields to evaluate impact more closely and reinforce future communications on the benefits. See section 4.3 for more details.

4.3 Outputs (and activities)

Output 1: Innovative participatory biodiversity conservation and community sustainable development model defined for the Comoro Islands, understood by local policymakers, and publicised locally and internationally

The model for biodiversity conservation and community sustainable development evolved throughout the four years of the project. Innovations of particular importance to the Comoros included the development of a model for communal village development projects linked to natural resources that relies on voluntary work from villagers; the introduction of agricultural techniques new to the Comoros that improve yields whilst assisting in the transformation of agricultural systems to a more sustainable system; the development of farmer-to-farmer learning groups for the dissemination of agricultural advice and as a first step towards the creation of village-level cooperatives; the completion of the first scientific delimitation of priority conservation targets.

This model will now be taken forwards and further developed by the new local NGO with the support of the project partners. The different elements now need to be consolidated and brought together and a particular attention given to the integration of habitat and biodiversity protection, especially in those areas identified as having high conservation value, but that are not of importance to local people. The lack of sound data, the reliance on expatriate managers, and the lack of capable local management institutions all meant that progress on implementing habitat protection measures was slower than might have been hoped. During the next year, it is envisaged that systems of payment for environmental services (PES) will be developed and tested for key biodiversity areas - as this is regarded as the only realistic practical route to

targeted biodiversity protection - and habitat regeneration areas identified in partnership with village management committees.

The project steering committee (see part 3) served as the main tool for informing policy makers of project progress, getting their input into strategy, and gaining their support for the project's approach. The committee met every six months from the start of 2010, and was attended by the National Director of the Environment and representatives of the Commissariat for Agriculture and Environment on Anjouan as well as being chaired by the General Secretary from the Ministry. A final meeting of this committee is planned for June 2013 at which project results will be presented and recommendations made for the continuation of activities under the local NGO. The Ministry has at all stages maintained its support for the project and has assisted with the search for new funding and the development of the NGO.

Policy-makers were also informed of progress through the regular production of communications outputs throughout the duration of the project as well as the organisation of publicity events. All these also served to inform the wider public in the Comoros and interested institutions in the region and internationally of the problems the project was addressing and the solutions it was implementing. These efforts to publicise the project included: publication of over 20 articles in the national press; the production of five paper and electronic newsletters which by the end of the project were being sent to over 500 national and international contacts; the creation of a dedicated bilingual website in 2012 and the regular production of blog articles;; creation and updating of a Facebook page that has over 260 followers; creation of a thirty-minute film about the problems the project was addressing that won the second prize at the Comoros International Film Festival and was repeatedly shown on national television and widely distributed within the intervention villages.

All these activities contributed to creating an important presence for the project both within the Comoros, within the diaspora, and with potential international partner institutions. For this reason the newly created NGO is already generating widespread support, as detailed under output four.

Output 2: At least 9 local communities surrounding remaining forest on Anjouan empowered to develop sustainably in a manner compatible with forest conservation and management

As described above, activities under this output focussed on reducing pressure on remaining forest by intensifying agricultural production in lowland fields, and in developing collective management committees and supporting them to implement pilot communal projects. Particular difficulties on this side of the work centred on moving beyond the approaches of previous development interventions whose failure had led to great apathy within the villages, who had also got used to being paid to participate in project activities, something that negatively impacted on the sustainability of these interventions.

The efforts in the first two years of the project were concentrated on introducing techniques and seed types that had already proved successful on Anjouan, but that had not yet been applied in the project's intervention zone, whilst trying to improve the efficacy of delivery. Over the four years of the project over 650 farmers were supported to improve fertility in their fields and reduce erosions through the planting of tree cuttings, 580 farmers were supported to grow market garden crops, 150 farmers supported to intensify banana cultivation away from the forest, of which 115 in 2012, and 130 farmers on other staple crops. 155 farmers have been supported on better integration of livestock farming and crop agriculture. These activities were supported by communication activities that included the organisation of exchange visits, the distribution of visual supports, and the creation of films and organisation of film projections in the villages.

Table1: Numbers of beneficiaries of agricultural support over the 9 intervention villages

| Theme | Activity | 2010 | 2011 | 2012 | total |
|--|--|------|------|------|-------|
| | | 342 | 713 | 621 | 1712 |
| Support to planting of tree cuttings | N beneficiaries | 221 | 395 | 36 | 652 |
| Support to staple cropping systems integrating conservation techniques | N beneficiaries improved banana cultivation | 15 | 21 | 115 | 151 |
| | N beneficiaries improved manioc and sweet potato cultivation | 6 | 75 | 50 | 131 |
| Support to market gardening systems | N beneficiaries traditional salad crops | 76 | 120 | 227 | 423 |
| | N beneficiaries seed potatoes | 0 | 48 | 121 | 168 |
| Support to crop-livestock integration systems | N Loan-cows and model fields | 0 | 4 | 9 | 9 |
| | N beneficiaries trained on compost/manure production | 34 | 50 | 44 | 128 |
| | N beneficiaries crop livestock integration systems | 0 | 0 | 17 | 17 |

Whilst these activities continued in the following years, with the consolidation of the strategy for implementation of these techniques, additional effort was put into the introduction of techniques new to the Comoros and the establishment of demonstration plots to promote uptake. Based on estimations every demonstration plot reaches 35 villagers on average, which corresponds to a total of over 5500 farmers reached over 9 villages for the 163 plots conducted on different techniques.

| Activity | Appreciation of results | N fields established | | | |
|--|--|----------------------|------|------|-------|
| | | 2010 | 2011 | 2012 | total |
| Total demonstration plots | | 23 | 58 | 82 | 163 |
| Total demonstration plots demonstrating improvements to proven techniques | | 27 | 31 | 56 | 104 |
| Demonstration plots on improved market gardening using local and natural pesticides and fertilizers techniques | Appropriation by local farmers seemed very difficult from year one on as this technique is too complicated and time consuming. Activities have been stopped. | 5 | 0 | 0 | 5 |
| Demonstration plots on improved market gardening promoting rational application of manure and pesticides | This activity was a success as a correct use of these techniques impacts directly on production quality and quantity. Particular success on promoting manure application but much work still is to be done to improve approach on pest management. | 3 | 5 | 7 | 15 |
| Demonstration plots on improved staple cropping integrating anti-erosion techniques | Successful as all 38 plots have demonstrated improved anti-erosion as well as introduced improved varieties of staple crops (manioc, tarot, sweet potato, potato) in the villages. | 15 | 14 | 9 | 38 |
| Demonstration plots on intensification of banana cultivation | Successful, with density of 2 x 2 m shown to be more productive particularly with application of manure, this will be now disseminated more intensively through the NGO. | 2 | 8 | 25 | 35 |
| Demonstration plots for integrated large-scale anti-erosion measures | This activity can be considered also as a success of the project as all 21 establish plots were all identified specifically for their erosion and land degradation issues and have demonstrated conservation techniques in situ. | 2 | 4 | 15 | 21 |
| Total demonstration plots demonstrating newly introduced agro ecology innovations | | 0 | 0 | 49 | 49 |
| Demonstration plots on SCV | Have not yet been fully adopted, partly because these techniques do not increase income in the short-term. Successful in Madagascar and very pertinent to the environmental context of Anjouan, more support should be accessed to help the NGO to pursue this activity in the future. | 0 | 0 | 18 | 18 |
| Demonstration plots on crop livestock integration | This activity has been successful in its first year and is promising. Appropriation remains in the first year relatively small but the NGO will have to improve further and pursue support to these farmers. | 0 | 0 | 9 | 9 |
| Demonstration plots on improved market gardening using micro irrigation kits | This activity has also been a success and is very promising for the future development of the Dahari NGO. Revenues doubles and many farmers and partner institutions interested in uptake. | 0 | 0 | 22 | 22 |

All innovations were developed based on their potential to improve both yields and the sustainability of agricultural systems of Anjouan. Three are of particular importance:

- 1) Madagascar has a long experience with conservation agriculture techniques (SCV) that improve yields, reduce labour, and protect the soil and other natural resources by maintaining a permanent vegetative cover throughout the agricultural calendar. The project worked to introduce these techniques and crop associations to the Comoros for the first time, adapting the itineraries to the Anjouan context. The project started by establishing over 18 demonstration plots on SCV for different crops including maize, manioc and beans across the nine villages in our intervention zone.
- 2) Introduction of low cost micro-irrigation kits from Madagascar. Sufficient water supply is a key factor for maximizing production of market gardening crops, but watering is very labour demanding. 22 demonstration plots with 100 m² of piping were installed in 2012, with results showing that production is doubled and labour reduced by 2/3 compared to reference plots. This is therefore a very promising technique, although it has to be promoted carefully as it is complicated and requires substantial support until farmers are fully independent with the technique.
- 3) Increasing integration of livestock farming with crop agriculture. Current systems are extensive, with farmers often keeping their cattle far away from the village. This not only impacts on forest zones and natural regeneration zones where they are held, but also makes it very difficult for the farmers to apply the manure on their fields close to the village. A suite of techniques have been proposed, including support to construct a low-cost cowshed out of local materials. Training and support are given for manure and compost production, planting of improved food crops for animal feeding close to the village, and assistance with veterinary requirements.

The project also sought to innovate in terms of the methodology it applied. In particular the Farmer Fields School approach was applied in the last year of the project, with regular practical training delivered to groups of farmers, promoting peer-to-peer learning and experimentation. There are now 150 members of these groups, and the eventual aim is that the better ones will turn into agricultural cooperatives. The project also worked to improve advice given to farmers by gathering participatory data on financial and labour inputs and techniques applied so that farmers could begin to monitor their benefits and understand which techniques were best – something where Comorian farmers have little knowledge and are way behind their neighbours in, for example, Madagascar. This was all made possible because the community team slept three days a week in the village they worked in, the first time that a project team has shown this level of commitment to providing quality support to farmers.

At the communal level, collective work to improve water infrastructure was completed in five villages. Traditional power structures involving elected village heads have broken down in Anjouan over the last twenty years, with the only replacement being appointed mayors who usually have little support from the communities they represent. With no legitimate structure on which to base intervention, communal activities are thus especially hard to develop. These clearly-defined projects bringing short-term benefits have thus been designed to test ways to achieve collective results as a first step towards achieving more complex collective natural resource management. Close integration between project staff and the inhabitants of each village is essential, and successful completion of activities in all five villages on a voluntary basis shows that the relationships are working and will provide a solid foundation for more complex natural resource management interventions in the future.

Since May 2012, with the arrival of technical assistant Sven Ten Napel, the project has developed more intensively its landscape management component towards forest and biodiversity protection, with several key orientations taken:

- Selection of three pilot village where the conditions were analysed as most favourable to rapid evolution towards habitat protection (Outsa, Ouzini and Adda)
- Focus on development of activities which are of direct interest to the farmers who occupy the landscape; agriculture interventions have since been orientated on income-generating activities
- Reinforce capacities of technicians as well as village committees

- Start to empower village committees and associations in the uptake of activities within their communities

Presidential elections were carried out and associations legally registered. The project was confronted by some major difficulties related to the low leadership and management capacity of the local committee and associations. Training and workshops with committees and associations have not been very effective as these do not lead to short-term benefits; the project is thus now focussing on developing projects that bring clear advantages. This includes the development of small scale irrigation sites and the management of tree cutting plantation projects, reinforcement of leadership and management committees is now to be done through these activities. Others projects with more direct impact on forest issues are being identified, with key areas for forest regeneration under investigation.

Output 3: Protected area zoning plan produced from a biodiversity perspective, and biodiversity and habitat quality monitoring system created

The project took on a large task to produce scientifically robust data to inform terrestrial conservation planning across the three islands of the Comoros. This effort involved three years of field data collection across all terrain, coupled with spatial analysis using GIS and non-spatial statistical analysis. The work was greatly complicated by the difficult terrain of the Comoros, whose steep slopes prevented surveying away from paths and resulted in a large percentage of cloud cover and shadow on the satellite images that were procured for the landcover mapping. These factors increased the time required to complete the work and increased the error margins on results.

Despite these difficulties the goals were all achieved, with the first high-resolution landcover maps and species distribution models for key taxa produced for the three islands of the Comoros, and detailed studies conducted on two flagship endangered species. These results will now be integrated into the government-led protected area planning process in partnership with the UNDP. They will also be used as a baseline for a monitoring system to assess the levels and impact of continued habitat degradation and the affect of conservation measures.

Landcover mapping

The landcover mapping process started in April 2010. Satellite images were purchased from RapidEye (5m resolution imagery) using Darwin funds and ERSI ArcGIS and Definiens eCognition software provided through Planet Action. Object-based classifications were conducted to produce the maps. Data used for training and testing these classifications was collected in the field using a hand-held Garmin GPS unit from July to September 2010. The major difficulty encountered was sourcing a suitable classification from the large areas of cloud cover in the RapidEye imagery. For Grande Comore and Mohéli no other imagery was available so the use of a previous land cover classification supplied through a collaboration with Oliver Hawlitschek of Munich University was necessary. However this classification used Landsat imagery of 15m resolution compared to the 5m resolution of the RapidEye imagery, so for Anjouan a higher resolution solution was sought. This involved a mosaic of RapidEye, GeoEye and manual interpretation of Google Earth scenes. The final maps are attached to this report.

Species distribution modelling

A full dataset of both wet and dry season surveys of habitat, and the presence of butterflies, birds, mammals, and reptiles for the three islands was obtained. Transects and point counts were conducted at 17 survey sites in Anjouan and 14 each in Mohéli and Grand. Opportunistic surveys were carried out in Anjouan and the Karthala region of Grande Comore to explore further areas and gain valuable presence-absence data for integration in the species distribution mapping. Six additional transects have been established within the Moya forest to enable future intensive surveying of the project intervention zone. A combined total of 67 species of bird (72% endemic), 46 species of butterfly (57% endemic) and 16 species of reptile (44% endemic) were recorded across all three islands.

This biodiversity data was then combined with seven environmental layers (slope, aspect, elevation, habitat derived from the land cover maps, distance from forest, distance from rivers, and distance from roads and urban areas) to produce niche suitability models for all endemic species using the software MaxEnt. Using a given threshold from the model, presence-absence maps for each species were produced which gave a predicted species distribution. These maps were then combined to produce maps for vulnerable species (based on the IUCN red list) and irreplaceable species (based on endemism) for both Anjouan and Grand Comore (see attached report). The results will be used to inform the landscape management planning process within the project intervention zones.

Detailed research into flagship endangered species

Surveys collecting presence-pseudo absence data for the Critically Endangered Anjouan scops owl (*Otus capnodes*) were conducted during the wet season 2009, the dry season 2010, and the wet season of 2010-2011. From this data the population size was estimated using distance sampling at 3450-5450 individuals. A niche suitability model for this species was produced and its area of occupancy estimated. Its extent of occurrence was calculated using a minimum convex polygon. These results showed that the owl's population size and distribution is much larger than previously expected. Although natural forest appears to be an important habitat for the species, its distribution reaches into non-forest areas. A paper on this work is currently being finalised for submission to a peer-reviewed journal.

Wet season counts of the Endangered Livingstone's Fruit Bat (*Pteropus livingstonii*) and habitat data collection were conducted in Anjouan at all previously known roost sites in the wet season of 2011/12 and the dry season of 2012. The estimated population size for the 14 roost sites surveyed (a 15th site was inaccessible) was 749 individuals. One new site was discovered in Anjouan but three were found to be abandoned, six sites were identified in Moheli and a seventh site unverified. Dry season population estimates are 584 for Anjouan and 333 for Moheli, much lower than the wet season. These estimates show a distinct reduction in population since the last publication in 2005, which estimated 1200 individuals. A paper highlighting the worrying decline in the population and the threats to its habitat is currently being finalised for submission to a peer-reviewed journal.

Output 4: A realistic foundation established for a new local NGO to lead conservation and sustainable development in the Comoros

The Comorian NGO 'Dahari' was legally created in February 2013, with 17 founding members signing the statutes including prominent members of the government and other civil society institutions in the environmental and agricultural sectors, as well as key figures from the ECDD project team. Best practise ideas from the Malagasy and Comorian NGOs visited and consulted over the previous two years were put in place, including the organisation of a steering group linking team members and more experienced figures which was charged with preparing legal documents and deciding on the framework of the NGO.

The key elements voted at the first General Assembly were:

- ❖ The name chosen was Dahari, meaning sustainable or long-lasting, with a strapline of *Komori ya Leo na Meso*, meaning the Comoros of today and tomorrow
- ❖ The NGO was created under Comorian law as a Comorian NGO with statutes and internal rules and regulations signed
- ❖ The governance structure consists of a General Assembly composed of all the active members (currently 17), who vote a Conseil d'Administration (CA, French equivalent to a Board of Trustees) of a maximum of seven individuals for three years, including a President and Vice-President. The CA recruits and manages an Executive and Technical Director, who then recruit and manage the rest of the personnel
- ❖ Different types of members are laid down including in the future the possibility for villages to nominate representatives for the General Assembly, as well as the recruitment of donor members

- ❖ The mission, vision and strategic areas of intervention were laid down, these focussing on rural production (forestry, agriculture and livestock), natural resource management, and biodiversity conservation
- ❖ A logo is currently being finalised, with other branding material to follow

The NGO will concentrate in its first year of existence on building on the work of the ECDD project in the current intervention villages, focussing on putting in place protection of key forest and biodiversity areas potentially using Payment for Environmental Services schemes, whilst building its brand and developing revenue-generating activities including ecotourism, consulting and the sale of improved seed varieties.

Whilst the NGO is young, it is already generating wide interest from regional partners and funders due to the achievements of the ECDD project and the lack of other NGOs in the sector in the Comoros. In addition to continuing activities with its core international partners BCSF and Durrell, specific projects are under development with CIRAD-Réunion, WWF, Blue Ventures, with various other partnerships developing with institutions in Mayotte and Madagascar. The two NGO directors have also won prestigious international fellowships with the Darwin Initiative and the Kinship Institute – this latter in particular to support the development of Payment for Environmental Services systems to protect biodiversity hotspots in the Comoros.

The Comoros remain one of the more challenging countries in which to achieve conservation and development results and to develop sustainable institutions, but the support that the NGO is garnering locally and internationally shows that a strong platform has been laid down.

4.4 Project standard measures and publications

See annex 4

4.5 Technical and Scientific achievements and co-operation

Biological research:

1. Production of landcover maps for the three islands of the Comoros. This was conducted by Katie Green with support of Dr Tim Brewer, with ground-truthing data collected by the local team. Methods and findings are detailed in the report on this work that is available as an annexe. High-resolution satellite imagery was exploited using object-based classification with Definiens software. Due to a high volume of cloud cover manual classification was required for large areas using Google Earth. This work has not yet been sent for peer review.
2. Production of species distribution models for the three islands of the Comoros. This was conducted by Katie Green with support of Dr Richard Young, with a large effort put into collection of field data for different taxa by the local team and expatriate managers. Methods and findings are detailed in the report on this work that is available as an annexe. Seven different environmental variables and species presence data were combined in the models using MaxEnt software, with maps of niche suitability produced for all endemic species and combined into maps of vulnerability and irreplaceability. This work has not yet been sent for peer review.
3. Detailed population estimate and distribution of *Otus capnodes*. Field data was collected by the local team, expatriate managers and two students (one UK, one Comoros). Analysis was performed by Katie Green using MaxEnt software for modelling distribution, and distance sampling for producing population estimate. The population was estimated at between 3450 and 5450, and the distribution map is available as an annexe. A paper is being finalised and will shortly be submitted to Bird Conservation International.

4. Detailed population estimate and assessment of threats for *Pteropus livingstonii*. Field data was collected by the local team and Bronwen Daniel, with analysis performed by Bronwen Daniel with assistance from the local team. Roost counts were used to produce a population estimate, with habitat data collected to assess threats to roost sites. Results showed that the population had decreased since the last published assessment of 1200 in 2005, with several roost sites under immediate threat from encroachment. A paper is being finalised for submission to a peer-reviewed journal.

Socio-economic research/ technical work:

1. The project community team has collected reference data on farmer yields linked to farmer typologies with the support of AVSF. This was done using participatory field questionnaires and is ongoing. These are the first efforts in the Comoros to monitor the direct impact of different techniques on yields, and will be used as a basis for communication of successes to promote wider uptake, and to better adapt advice for different types of farmers. Another year's data collection is needed before this can be exploited to evaluate impact. There are no plans for peer-review of this data.
2. Research on the introduction of new crop varieties and agricultural techniques in partnership with the government using two research plots (led by Sven Ten Napel and Christian Rakotoarinivo), as well as through the demonstration plots put in place in the villages. No plans for peer-review.
3. Research on the hydrogeology context of Anjouan and intervention villages was carried out by a specialist volunteer recruited through AVSF, Dr Arnaud Chamaille, and another volunteer recruited through the Cranfield University-linked NGO SAFAD. This involved literature review and field data collection including water analyses and catchment mapping. The results are a hydro-geological profile of Anjouan which identified what is needed to protect water resources in the project intervention zone. Papers are being considered.
4. Student Masters research projects were undertaken on the ecological and economic role of different agro-forestry systems, and a characterisation of different farmer types. Reports are available upon request.
5. Research was undertaken by the project team into the different causes of deforestation using questionnaires and simple statistical analysis. These showed that collection of wood for cooking and for distillation have little impact on remaining natural forest, justifying the project's focus on agriculture as well as the need to develop interventions surrounding tree-cutting for timber. Further research is planned to confirm and extend these results before submission for publication.

4.6 Capacity building

Capacity building was focussed on the development of the personnel of the local NGO Dahari, which have been recruited directly from the project as planned from the start of the intervention. All staff have benefited from constant mentoring from expatriates, as well as exchange visits to spend time with partner institutions in Madagascar.

The field team for the community side of the work have received regular training from the expatriate agricultural experts, and during 2012 from consultants sent by the project partner AVSF. These trainings have been wide and varied, including methods to analyse farmer agricultural systems or to conduct farmer field schools, techniques for conservation agriculture, micro-irrigation or composting, and creation and maintenance of databases and report-writing. There has also been ongoing training in key skills such as IT, planning and facilitation.

On the ecological side, a second expatriate was employed to accelerate training of the local team as capacity was particularly low. The field surveying skills of the field team have been the primary focus for capacity development activities; all three local field staff have also received

training in field work planning and administration, species identification, data logging and organisation; and two have also developed skills with the use of Map Source, Google Earth, GIS (Quantum GIS), excel for exploratory analysis, PowerPoint for presentations, report writing and critical reviewing of peer-reviewed journals. The local team were able to complete alone the latest surveys of the Livingstone fruit bats in early 2013, proving their evolution since the beginning of the project.

The local assistant project coordinator Misbahou Mohamed has received additional mentoring and support to increase his capacities as part of the project management team in the Comoros. Two other local team members are now taking up management positions replacing expatriates – one has head of administration and finance, and the other as the agro-ecological manager. Reducing dependency on expatriates is key to the sustainability of the local NGO, and this is important proof of the efficacy of knowledge transfer.

The NGO will work to provide further opportunities for staff development during its first years of operation. Field technician Amelaid Houmadi is currently being supported to complete a distance Masters during which he has acquired proficiency with the use of Distance and R software, as well as developing his writing and analytical skills. Misbahou Mohamed has won a Darwin Initiative fellowship which will take him for training and on-the-job experience in Madagascar and the UK.

All these efforts contribute to the development of the local NGO, for which institutional strategic planning is also being supported by the international partners. Wide regional and international partnerships to further support the development of the structure are being organised, and funding connections developed with a range of regional funders.

The project also sought to support development of students from the partner the University of the Comoros. Over ten students have participated in surveys and benefited from training, and two students also completed their Master's projects with the project.

4.7 Sustainability and Legacy

The creation of the local NGO Dahari, which has absorbed the contracts of the local ECDD staff, aims to leave a lasting legacy for the project in the Comoros. As described above, the structure has been given the best possible chance of success due to the best-practice process that was followed towards its creation, the participation of prominent government and civil society figures as members, the high level of capacity-building with which the team members have been provided, and the wide regional and international support that is already in evidence. The NGO has already won funding from the Swiss Embassy in Madagascar, with further dossiers under development with the Australian Embassy in Mauritius, the French Embassy in the Comoros, and the Conseil Généraux of Réunion and Mayotte.

The over-arching goals and purpose of the Darwin project can only truly be assessed on a longer timeframe of at least 10-15 years, and if the NGO is successful then it will ensure that all project achievements are secured and built on into the future. The international project partners will continue to provide close support to the NGO: BCSF is paying the salaries of two expatriates to support the NGO, the transfer of project resources will form part of a partnership agreement to be signed with the NGO by the end of June, and the UK project steering committee involving BCSF and Durrell staff remains in place.

5 Lessons learned, dissemination and communication

The Comoros are recognised as one of the more difficult countries in which to achieve results through overseas development assistance initiatives, and the project has gone through a steep learning curve. That it has laid down a platform from which to achieve sustainable change is testament to an adaptive management approach that has sought to learn from errors and continually evolve.

The low level of local capacity has been a constraint on implementation since the start, and it was only in the last 12-18 months of the project that a full team was in place with the recruitments of further expatriates. Budgetary constraints and funder directives required the use of local managers, but the project would have achieved more if these expatriates had been in place earlier and in any case this is the only way of delivering on capacity transfer, so this needs to be well explained to future funders. Specific attention needs to be paid to administrative requirements of different funders and the level of expertise required to handle these.

Anjouanese society is complex and individualistic, social cohesion is lacking, and the influence of failed development initiatives dominates the relationships between beneficiaries and projects. It took a long time for the project to work round these and start generating genuine interest and take-up of activities. Due to the lack of effective governance and the failure of management committees previously created, collective work was especially hard to dynamise. The project found that the only way of developing effective management institutions at the village level was through implementing projects that show short-term effective benefits at the community level. This builds villager buy-in to collective initiatives and is an effective way of testing institutions and their leaders, and helping everyone to learn together. Success was dependent on the personal knowledge and relationships of the field technicians, developed due to their constant presence in the communities.

Communications became a strong point of the project, and this allowed it to build a substantial profile in the Comoros where there is a paucity of news stories. The steering committee created in 2010 was particularly useful in this sense, and especially with developing relationships with partners and the authorities. The project would have benefited from clearer and simpler messages in the villages at the start of the project. The use of key communication channels and the development of strong visual communication tools were particularly important to later success in outreach at this level.

Dissemination of results was a key activity throughout the project, with a dedicated expatriate communications manager recruited mid-2010 to enhance this aspect of the work.

Building our international and national profile - Target audience: current and potential partners, funders and decision makers both internationally and within the Comoros; Comorian society and diaspora

- A dedicated project website www.ecddcomoros.org created showcasing the overall approach, and providing a platform to publish regular updates about activities and results through our blog
- Facebook and Twitter also proved to be a successful way to communicate with new audiences, with over 260 supporters of the project's facebook page
- A regular newsletter was produced every six months, by the end over 500 national and international contacts
- The project also built relationships with regional initiatives such as the Acclimate project run by the Indian Ocean Commission and the Bio&Agri online portal for the Indian Ocean. Articles about the project and its results have been published on both of these sites. A story about the Livingstone Fruit Bat surveys was covered in a photo gallery on the BBC Nature web page

Raising awareness at the local (community) and national level

- Creation of a powerful 30-minute film to engage local audiences in sustainable agricultural methods and natural resource protection by telling the true story of a farmer who gets involved with the project and learns about different agricultural and environmental issues in Anjouan and how to avoid them while making a good living out of agriculture. The film was broadcast on local and national TV and received second prize in the Comoros International Film Festival in December 2012. Launch events for the film and the film festival were widely covered by national and regional media outlets. A previous film to encourage participation in field improvement activities was widely shown in the intervention zone.

- Media coverage: Over 20 articles about project activities were published in the national press. We also secured over five pieces on the national TV news, and regular coverage on the radio and local/regional TV. A 30 minute programme was also produced by the regional TV station covering the project's experimental market garden.
- Village festivals were organised at the completion of collective management projects which were widely attended and to which local authorities were invited

Communication of project results will continue into 2013 as the official end of the ECDD project will be June 2013. Further content will be developed for the website showcasing final results and project impact, and academic publications are also in development. After June the ECDD website and facebook page will be absorbed by the new NGO for its own communications.

5.1 Darwin identity

All material disseminated by the ECDD project has acknowledged the Darwin funding. The logo has been included on all printed and online material, and where appropriate the funding has been acknowledged within text as part of the description and background of the project, for example in press releases, media interviews, presentations and on the website.

The Darwin Initiative support was for the ECDD project as a whole, rather than for any specific aspect, so we have ensured it is recognised on all core materials to reflect this. The Darwin Initiative has received particularly strong exposure amongst government staff and decision makers due to the ECDD project's relatively high profile, especially within the environmental and agricultural departments of both national and regional government.

At the same time it should be acknowledged that due to the FDA's presence in the Comoros and its participation in steering committee meetings it has had wider exposure than the Darwin Initiative. Efforts have been made at all times to underline the importance of the UK government funding.

6 Monitoring and evaluation

- Sustainability of the project was initially based on the development of a local partner NGO Action Comores, but this proved to lack the capabilities and reliability to transform into a strong institution for conservation, so a decision was taken to create a new NGO
- Planned expansion to the island of Mohéli was cancelled early Year 2 as this proved to be over ambitious. Salaries for Mohéli personnel were used to increase the team on Anjouan, including part-funding expatriate posts
- No-cost extension agreed to Dec 2012 due to the delays in accessing FDA funding
- Integration of model into government policy proved too ambitious for this initial phase, so modified to the government being aware of and supporting the approach – achieved in particular through the steering committee

The indicators at output level evolved through the project with minor adjustments agreed during official logframe changes in Years 2 and 3. This allowed them to be refined to fit to the evolution of the project and ensured that they remained a useful and relevant tool, both in explaining where the project wanted to go and in what it had already accomplished. The vast majority of indicators at this level were also clearly met.

At the output level, and for the reasons discussed, it proved too ambitious to have forest management mechanisms in place during this first phase. The livelihood monitoring scheme initially developed was also too broad to begin with, and baseline data was lacking. The use of demonstration plots and the targeted data collection underway for these will allow the NGO to demonstrate improved yields and revenues to both beneficiaries and technical and financial partners. Current data on livelihood impacts is currently thus the number of beneficiaries as described above, with the first impact data on yields to be published end 2013.

Monitoring and evaluation to goal level was dependent on data on the state and threats to habitat and biodiversity. This was unavailable pre-project, but the results from the project's ecological work will form the baseline from which the impact of the project at this level can be assessed in the future.

An evaluation of the project's approach was performed by Oliver Springate-Baginski of the University of East Anglia at the beginning of the intervention, by Gill Shepherd of the IUCN at the mid-way point, and by AVSF in Year 3. All these helped to orient activities to achieve better results. A final evaluation has not yet been performed, but a further assessment is planned by Gill Shepherd and/ or the French Agricultural institute CIRAD in the next six months.

6.1 Actions taken in response to annual report reviews

Actions were taken in response to comments raised on the first year's annual review: a list of acronyms is provided at the start of this report, and basic socioeconomic data for the villages of intervention was included as an appendix in Year 2.

No further issues were raised by reviewers in response to annual reports.

7 Finance and administration

7.1 Project expenditure

| Item | Original budget | Accepted budget changes | Expenditure | Variance (Budget + budget change - expenditure) | % Variance | Details of accepted budget changes from formal change request documents |
|--|-----------------|-------------------------|-------------|---|------------|---|
| Salaries | | | | | | |
| Richard Young | XXX | XXX | XXX | XXX | 0% | |
| Hugh Doulton (PM) | XXX | XXX | XXX | XXX | 1% | |
| Anjouan coordinator | XXX | XXX | XXX | XXX | 1% | |
| Anjouan facilitators | XXX | XXX | XXX | XXX | 1% | |
| Moheli salaries | XXX | XXX | XXX | XXX | 0% | |
| Ecological Manager | XXX | XXX | XXX | XXX | 6% | |
| Agricultural Manager | XXX | XXX | XXX | XXX | 0% | |
| Communications Manager | XXX | XXX | XXX | XXX | 2% | |
| Overheads - UK | XXX | XXX | XXX | XXX | 9% | |
| Comoros | XXX | XXX | XXX | XXX | 4% | |
| Audit | XXX | XXX | XXX | XXX | 0% | |
| Travel and subsistence - UK | XXX | XXX | XXX | XXX | 0% | |
| Comoros | XXX | XXX | XXX | XXX | 1% | |
| Operating costs incl conferences– Comoros | XXX | XXX | XXX | XXX | 1% | |
| UK | XXX | XXX | XXX | XXX | 0% | |
| Consultancy - Dr Oliver Springate Baginski/ Dr G Shepherd | XXX | XXX | XXX | XXX | 2% | |
| GIS support | XXX | XXX | XXX | XXX | 1% | |

| Item | Original budget | Accepted budget changes | Expenditure | Variance (Budget + budget change - expenditure) | % Variance | Details of accepted budget changes from formal change request documents |
|------------------------------------|-----------------|-------------------------|-------------|---|------------|---|
| Other - village events and actions | XXX | XXX | XXX | XXX | 0% | |
| Capital items - Satellite images | XXX | XXX | XXX | XXX | 0% | |
| Second-hand bus | XXX | XXX | XXX | XXX | 0% | |
| Laptops | XXX | XXX | XXX | XXX | 0% | |
| Google earth licenses | XXX | XXX | XXX | XXX | 0% | |
| TOTAL | XXX | XXX | XXX | XXX | 0% | |

7.2 Additional funds or in-kind contributions secured

BCSF contributed an extra £20,000 in cash for different costs

Durrell contributed an extra £45,000 in cash to recruit a second expatriate field biologist, pay for a motorbike, and flights

FDA contributed 750,000 euros in total but BBC Wildlife Funding was not successful

An additional office was provided for the project by the government from the start of 2012

7.3 Value of DI funding

The Darwin funding was critical to the realisation of this project. Without the boost to the project's credibility and visibility that Darwin funding provided, it is doubtful whether the FDA would have decided to co-fund. The success of the overall project was thus reliant on Darwin funding.

It is also worth noting that Darwin funding was subject to much fewer strictures than that of the FDA. This was very important in two respects: by allowing a large proportion of its funds to be used on salaries Darwin ensured that the project could be staffed as per needs in the field in a country with exceptionally low capacity rather than as per funder decisions on percentages that should be applied to salaries; and secondly by providing the flexibility through management change requests to allow the project to evolve and react to the financial implication of project needs as they arose. It is doubtful whether the project could have been successful without these two elements.

Annex 1 Report of progress and achievements against final project logframe for the life of the project

| Project summary | Measurable Indicators | Progress and Achievements April 2009 - December 2012 |
|--|---|---|
| <p>Goal: To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but constrained in resources to achieve</p> <ul style="list-style-type: none"> The conservation of biological diversity, The sustainable use of its components, and The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources | | <p>Innovative agricultural model developed and implemented to transform systems to a more sustainable basis, with over 6500 direct beneficiaries. Collective management system devised with over 8000 beneficiaries of micro-projects.</p> |
| <p>Purpose</p> <p>1. Threatened forest areas managed more sustainably by communities in Anjouan</p> <p>2. To ensure livelihoods of 9 communities surrounding the remaining forest are more compatible with forest conservation</p> | <p>Agreements on natural resource management of remaining forest operational by End of Project</p> <p>Livelihood monitoring shows improved sustainability and reduced poverty by End of Project</p> | <p>Key forest areas for biodiversity and water identified, natural resource management committees developed and supported in five villages.</p> <p>Over 1700 families supported to improve agricultural yields and revenues in a sustainable manner.</p> |
| <p>Output 1 Innovative participatory biodiversity conservation and community sustainable development model defined for the Comoro Islands, supported by local policymakers, and publicised locally and internationally</p> | <p>Process recorded and evaluated by partners;</p> <p>Government participation in process development;</p> <p>Successful local awareness campaign established in partnership with local media</p> | <p>Regular steering committee meetings and field visits, chaired by Environment and Agriculture Ministry. Continued production of publicity material and sustained media presence, website and newsletter available internationally. Final results and outputs to go on website mid-2013.</p> |
| <p>Activity 1.1 Participatory conservation model elaborated and published based on community engagement during first two and a half years of project</p> | | <p>Forest maps and species distribution models completed. Innovative model for agro-ecological interventions developed. Model for communal village projects linked to natural resource management developed.</p> |
| <p>Activity 1.2 Creation of government-led project steering committee; discussion of wider application of project results</p> | | <p>Six meetings held often with additional partners and media present. Presentation to government on results of ecological monitoring work</p> |
| <p>Activity 1.3 National communication strategy launched</p> | | <p>Stand-alone website and facebook page produced, over 20 articles in national press and three national tv features, newsletter sent to over 500 contacts</p> |
| <p>Activity 1.4 Publication of academic articles</p> | | <p>Two ecological articles being finalised for submission</p> |
| <p>Output 2 At least 9 local communities surrounding remaining forest on Anjouan empowered to develop sustainably in a manner compatible with forest conservation and management</p> | <p>Success of micro-solutions implemented by each community;</p> <p>Operational agreements active on natural resource management;</p> <p>Livelihood monitoring shows empowerment progress</p> | <p>Over 1700 families and thus 6500 beneficiaries supported to improve yields, 8000 with improved water supplies. New agricultural innovations introduced from the region. Collective management institutions created in five villages and collective micro-projects implemented. Landscape management planning underway in three villages.</p> |

| Project summary | | Measurable Indicators | Progress and Achievements April 2009 - December 2012 |
|--|--|-----------------------|--|
| Activity 2.1 Training in participatory approaches to community work | | | Training delivered continuously in-house and also by REPC – Madagascar in 2011 |
| Activity 2.2 Awareness raising, rapport-building and engagement interactions with forest adjacent communities | | | Outreach programme developed and reinforced with recruitment of expatriate communications manager in 2010. Series of visual tools produced, village events organised to celebrate successes. Participatory workshops organised towards natural resource management. |
| Activity 2.3 Facilitating communities' to analyse the forest conservation and sustainable livelihood situation, and to envision and develop 'win-win' solutions that reduce poverty and protect forest habitat for biodiversity, with the support of community facilitators | | | Creation of farmer field schools to facilitate peer-to-peer exchange and learning with regular trainings supplied. Over 150 demonstration plots put in place to test different techniques and show benefits. Research undertaken on wood-use towards identifying more sustainable use. |
| Activity 2.4 Support for self-implementation of community pilot actions and self-development plans, including strengthening of support networks and creation of links with funders and the necessary expertise at all levels | | | Over 1700 families supported to increase yields in a sustainable manner. New techniques introduced from the region. Collective management committees created and supported to implement micro-projects. Over 8000 direct beneficiaries of micro-projects to improve water supply. |
| Activity 2.5 Creation of community conserved areas | | | Key areas for biodiversity and water supply mapped; management committees to put in place protection measures created and developed at the local level |
| Output 3. Protected area zoning plan produced from a biodiversity perspective, and biodiversity and habitat quality monitoring system created | Full set of monitoring manuals produced in French; Data collection and analysis reviewed and published annually; Zoning plan created in consultation with government and local communities | | Habitat maps produced for the three islands, species distribution models for Grande Comore and Anjouan. Two papers being finalised to be sent for publication. Presentation of results to government, working with UNDP to produce set of recommendations for decision-makers |
| Activity 3.1 Training in biodiversity and habitat monitoring techniques | | | Continual on-the-job training in field techniques, and latterly building skills of two team members in GIS and data analysis |
| Activity 3.2 Annual surveys of forest quality, butterflies, birds, mammals and reptiles | | | Full two-year data set completed for the three islands. Additional targeted surveying of zone around the project's community activities. First in-depth survey of Livingstone's fruit bat and Anjouan scops owl populations undertaken. |
| Activity 3.3 Development of models and gap analysis based on monitoring data | | | Forest maps and species distribution models of key taxa produced for the three islands . |
| Activity 3.4 Development of zoning proposal based on models and gap analysis | | | Presentation to government and partners on results and implications mid 2012. Collaborating with UNDP to produce a set of conservation recommendations for decision-makers |
| Activity 3.5 Publications of results and model participatory ecological monitoring system | | | Two academic papers being finalised for submission on Anjouan scops owl and Livingstone's fruit bat. Full results manuals published and available with this report. |

| Project summary | Measurable Indicators | Progress and Achievements April 2009 - December 2012 |
|--|--|--|
| <p>Output 4 A realistic foundation established for a new local NGO to lead conservation and sustainable development in the Comoros</p> | <p>Capacity building of local project team;</p> <p>Development of partnerships with Comorian, regional and international institutions</p> <p>Strategic pathway for NGO creation elaborated</p> | <p>NGO legally created February 2013 after first General Assembly. 17 founder members, 7 of whom formed board of trustees. Local team members offered NGO contracts. Funding applications under development with regional partners CIRAD, WWF, Blue Ventures, Mayotte. First activities identified</p> |
| <p>Activity 4.1 Personalised development plans created for local team members</p> | | <p>Full annual evaluations completed for each local staff member including identification of ongoing training needs. Local Coordinator awarded Darwin fellowship based on personal development plan needs</p> |
| <p>Activity 4.2 In-house training programme developed, with higher-level training delivered through Madagascar networks</p> | | <p>Constant staff development from in-house training on project management, IT skills, technical skills.</p> <p>External training delivered through REPC Madagascar network, AVSF, SAFAD volunteer on GIS</p> |
| <p>Activity 4.3 Engagement of further local, regional and international partnerships through development of steering committee and Madagascar exchange visits</p> | | <p>Steering committee created early 2010 and meetings held every six months. Exchange visit to Madagascar in 2011 to develop partnerships. Four Malagasy and two Comorian NGOs selected for particular exchanges and lesson-learning. Visits by project manager to Réunion, Madagascar and Mayotte December 2012 to February 2013 successfully developed partnerships.</p> |
| <p>Activity 4.4 Strategic planning workshops</p> | | <p>First workshop held in 2010. Committee charged with finalising NGO creation first brought together mid 2012 and final meeting held November. First General Assembly of NGO held in February 2013 and NGO legally created.</p> |

Annex 2 Project's final logframe, including criteria and indicators

| Project summary | Measurable Indicators | Means of verification | Important Assumptions |
|--|--|--|--|
| Goal: Effective contribution in support of the implementation of the objectives of the Convention on Biological Diversity (CBD), the Convention on Trade in Endangered Species (CITES), and the Convention on the Conservation of Migratory Species (CMS), as well as related targets set by countries rich in biodiversity but constrained in resources. | | | |
| Sub-Goal: Anjouan endemic forest biodiversity conserved through sustainable management of remaining forest | GIS monitoring shows reduced forest loss; Ground habitat surveys show forest regeneration; Biodiversity monitoring surveys show stable populations (all within 2 years of End of Project) | Data from local NGO's annual ground surveys and government and NGO's annual GIS models | |
| Purpose: 1. Threatened forest areas managed more sustainably by communities in Anjouan 2. To ensure livelihoods of 9 communities surrounding the remaining forest are more compatible with forest conservation | Agreements on natural resource management of remaining forest operational by End of Project Livelihood monitoring shows improved compatibility with forest conservation by End of Project | Accords signed and published; community conserved areas created Data published from locally-adapted livelihood monitoring in each engaged community at halfway stage and End of Project | Political situation remains stable; Government remains committed to project; Remaining unengaged communities support project following initial contact |
| Outputs: 1. Innovative participatory biodiversity conservation and community sustainable development model defined for the Comoro Islands, supported by local policymakers, and publicised locally and internationally | Process recorded and evaluated by partners; Government participation in process development; Successful local awareness campaign established in partnership with local media | Evaluations published and reviewed by external consultants; At least 2 academic papers published; Steering committee minutes; 'How-to' guide published locally, and regionally/ internationally if demand At least 3 films shown and 10 articles published in local press | Sufficient alternatives to unsustainable actions can be defined and implemented; Government remains committed to learning from new approach, and integrating lessons into conservation and rural development plans |
| 2. At least 9 local communities surrounding remaining forest on Anjouan empowered to develop sustainably in a manner compatible with forest conservation and management | Success of micro-solutions implemented by each community; Operational agreements active on natural resource management; Livelihood monitoring shows empowerment progress | Internal project reports on communities' progress; Evaluation reports by consultants at halfway stage and End of Project; Data from livelihood monitoring | Communities commit to long-term empowerment for sustainable development following engagement; Macro-level issues do not cancel out local-level improvements |
| 3. Protected area zoning plan produced from a biodiversity perspective, and biodiversity and habitat quality monitoring system created | Full set of monitoring manuals produced in French; Data collection and analysis reviewed and published annually; Zoning plan created in consultation with government and local communities | Protocols printed and available electronically on partner websites; Biodiversity data published annually; Data analysis reviewed annually; At least 2 scientific papers published; Zoning plan published | Levels of capacity within local team to carry out biodiversity assessment work maintained and developed Issues surrounding cloud cover over highland forest areas on satellite images can be resolved |

| | | | |
|--|---|---|---|
| 4. New local NGO created and shows commitment to be developed into a major independent force for conservation in the Comoros | Capacity building of local project team; Development of partnerships with Comorian, regional and international institutions Strategic pathway for NGO creation elaborated | Personal development plans and training reports; Partnership agreements and records of collaboration, participation in steering committee; Workshop reports, strategic plan for NGO development | Local project team remains committed to development route; Local and regional partners remain committed to supporting development of a new local NGO |
|--|---|---|---|

| |
|---|
| <p>Activities (details in workplan)</p> <p>1.1 Participatory conservation model elaborated and published based on community engagement during first two and a half years of project 1.2 Creation of government-led project steering committee; discussion of wider application of project results 1.3 National communication strategy launched 1.4 Publication of academic articles</p> <p>2.1 Training in participatory approaches to community work 2.2 Awareness raising, rapport-building and engagement interactions with forest adjacent communities 2.3 Facilitating communities' to analyse the forest conservation and sustainable livelihood situation, and to envision and develop 'win-win' solutions that reduce poverty and protect forest habitat for biodiversity, with the support of community facilitators; 2.4 Support for self-implementation of agricultural innovations and community natural resource management plans, including strengthening of support networks and creation of links with funders and the necessary expertise at all levels 2.5 Creation of community conserved areas</p> <p>3.1 Training in biodiversity and habitat monitoring techniques 3.2 Annual surveys of forest quality, butterflies, birds, mammals and reptiles 3.3 Development of models and gap analysis based on monitoring data 3.4 Development of zoning proposal based on models and gap analysis 3.5 Publications of results and model participatory ecological monitoring system</p> <p>4.1 Personalised development plans created for local team members 4.2 In-house training programme developed, with higher-level training delivered through Madagascar networks 4.3 Engagement of further local, regional and international partnerships through development of steering committee and Madagascar exchange visits 4.4 Strategic planning workshops</p> |
|---|

| |
|--|
| <p>4. Monitoring activities:</p> <p>Indicator 1: Participatory community livelihood, institutional development, and attitude monitoring implemented in engaged communities. Indicator 2: Annual analysis of biodiversity and habitat data by DWCT; Indicator 3: Project mid-term and final evaluation by consultants (University of East Anglia – community aspects; DWCT – biodiversity aspects; Partner from Madagascar – Local NGO progress)</p> |
|--|

Annex 3 Project contribution to Articles under the CBD

Project Contribution to Articles under the Convention on Biological Diversity

| Article No./Title | Project % | Article Description |
|---|-----------|---|
| 6. General Measures for Conservation & Sustainable Use | 15 | Develop national strategies that integrate conservation and sustainable use. |
| 7. Identification and Monitoring | 25 | Identify and monitor components of biological diversity, particularly those requiring urgent conservation; identify processes and activities that have adverse effects; maintain and organise relevant data. |
| 10. Sustainable Use of Components of Biological Diversity | 50 | Integrate conservation and sustainable use in national decisions; protect sustainable customary uses; support local populations to implement remedial actions; encourage co-operation between governments and the private sector. |
| Other Contribution | 10 | Smaller contributions (eg of 5%) or less should be summed and included here. 5% to article 13, 5% to article 11 |
| Total % | 100% | Check % = total 100 |

Annex 4 Standard Measures

| Code No | Description | Year 1 Total | Year 2 Total | Year 3 extended total (to end Dec 12) | Total |
|---------|---|-------------------|--|---------------------------------------|---------|
| 2 | Number of Masters Students research dissertations supported | 2 | 4 (1 French, 1 British, 2 Comorian) | 2 (French) | 8 |
| 4A | Number of undergraduate students to receive training | 0 | 4 (Comorian) | 0 | 4 |
| 4B | Number of training weeks to be provided | | 4 | 0 | 4 |
| 5 | Comorian project staff trained in participatory engagement methodologies | 6 | 8 | 2 | 16 |
| | Comorian project staff trained in agricultural support | 8 | 2 | 4 | 14 |
| | Comorian project staff trained in ecological monitoring techniques | 2 | 3 | 1 | 6 |
| 6A | Comorian project interns trained in participatory engagement methodologies | 2 staff x 2 weeks | 3 staff x 2 weeks | | 100 wks |
| 6B | Comorian project interns trained in agricultural support | 6 staff x 1 week | 3 staff x 2 weeks | | |
| | Comorian project interns trained in ecological monitoring techniques | 4 staff x 2 weeks | 3 staff x 6 weeks | | |
| | Comorian project staff with improved IT skills | 6 staff x 1 week | 11 staff x 2 weeks | 12 staff x 2 weeks | |
| 8 | UK project leader visits | 4 weeks | 2 weeks | 2 weeks | 413 wks |
| | UK Project Manager | 49 weeks | 45 weeks | 63 weeks | |
| | UK Head of Ecological Research and Monitoring | 29 weeks | 47 weeks | 37 weeks | |
| | UK Field Biologist (Durrell post) | n/a | 4 weeks (first recruit) 7 weeks (new recruit) | 67 weeks | |
| | UK Communications and Outreach Officer | n/a | 47 weeks | 63 weeks | |
| | Durrell staff visits | 3 weeks | 1 week | 1 week | |
| | UEA – project evaluation and livelihood consulting | 2 weeks | 0 weeks | 0 weeks | |
| | IUCN – project evaluation and orientation | n/a | 2 weeks | 0 weeks | |
| 12A | Ecological monitoring and agricultural support monitoring databases established | 2 | 0 | 1 | 3 |
| 15A | Number of national press releases in Comoros | 3 | 0 | 4 | 7 |
| 15B | Number of local press releases in Comoros | 5 | 0 | 4 | 9 |
| 15C | Number of national press releases in UK | 2 | 0 | 1 | 3 |
| 15D | Number of local press releases in | 2 | 0 | 1 | 3 |

| Code No | Description | Year 1 Total | Year 2 Total | Year 3 extended total (to end Dec 12) | Total |
|---------|--|--------------|--------------|---------------------------------------|-------|
| | UK | | | | |
| 16A | Number of newsletters produced | 0 | 1 | 4 | 5 |
| 16B | Estimated circulation of each newsletter in host country | | 80 | 250 | 250 |
| 16C | Estimated circulation of each newsletter in the UK | | 50 | 130 | 130 |
| | (Estimated circulation to regional institutions) | | 80 | 120 | 120 |
| 18A | Number of national TV programmes/features in Comoros | 1 | 0 | 2 | 3 |
| 18C | Number of local TV programmes/features in Comoros | 3 | 0 | 3 | 6 |
| 19A | Number of national radio interviews/features in Comoros | 2 | 0 | 2 | 4 |
| 19C | Number of local radio interviews/features in Comoros | 3 | 0 | 3 | 6 |
| 22 | Number of permanent field plots to be established during the project and continued after Darwin funding has ceased | 45 transects | | | 45 |
| 23 | French Development Agency – €750,000 signed | XXX | XXX | XXX | XXX |
| | Bristol | XXX | XXX | XXX | |
| | Durrell | XXX | XXX | XXX | |
| | Global Environment Facility | XXX | XXX | XXX | |
| | Planet Action – satellite images and software | XXX | XXX | XXX | |
| | Birdlife International – scops owl research | XXX | XXX | XXX | |
| | Comorian government - office | XXX | XXX | XXX | |
| | British High Commission Mauritius | XXX | XXX | XXX | |

Annex 5 Publications

| Type * | Detail (title, author, year) | Publishers (name, city) | Available from (eg contact address, website) | Cost £ |
|-----------------|--|--|--|-----------|
| Master's thesis | El-Yamine Ali Mohamed. Study of the distribution and habitat of nocturnal reptiles, Anjouan-Comoros (2012). | University of the Comoros | The project and soon www.ecddcomoros.org | |
| Master's thesis | Lloyd, S. P. Habitat Suitability Modelling For The Anjouan Scops Owl, A Cryptic Unstudied Species (2010). | Imperial College London | The project and soon www.ecddcomoros.org | |
| Master's thesis | M'Madi Soufiani. Study of the distribution and population estimate of Otus capnodes to inform conservation strategies (2012). | University of the Comoros | The project and soon www.ecddcomoros.org | |
| Master's thesis | Amelaid Houmadi. Evaluation a l'etude comparative des populations de l'avifaune endemique d'Anjouan et de leur repartition spatiale. (In Prep). Masters Thesis, | Universite Polytechnique de Bobo-Dioulassa, Burkina Faso | The project and soon www.ecddcomoros.org | |
| Master's thesis | 'Agroforesteries, processus d'innovation et gestion locale des ressources naturelles à Anjouan, Union des Comores' by Dorian Felix (2010). = | SupAgro, Montpellier | The project and soon www.ecddcomoros.org | |
| Master's thesis | 'Diagnostic des systèmes d'élevage bovin et des pratiques de fumure animale dans les villages de Kowet et Ouzini, Anjouan, Union des Comores' by Yuselys Abreu (2010). | SupAgro, Montpellier | The project and soon www.ecddcomoros.org | |
| Master's thesis | Etude des modalités d'exploitation des terroirs villageois et de la ressource forestière dans 2 villages riverains de la forêt de Moya à Anjouan : Adda et Outsa (Union des Comores), Baudouin Xavier (2010). | Université Paris I | Université Paris | |
| Master's Thesis | Typologie des paysans dans deux villages d'Anjouan aux Comores. Preschoux, Vivien 2012 | ISTOM | The project and soon www.ecddcomoros.org | |
| Master's thesis | L'AGROFORESTERIE EST-ELLE CAPABLE D'APPORTER LE DEVELOPPEMENT ECONOMIQUE AUX COMMUNAUTES RURALES D'ANJOUAN, TOUT EN PRESERVANT LES RESSOURCES NATURELLES, DANS UN CONTEXTE DE PRESSION FONCIERE EXACERBEE ? CAS DE LA FORET DE MOYA (ANJOUAN, COMORES) Scholle, Justine 2012 | ISTOM | The project and soon www.ecddcomoros.org | |

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|---------|---|---------------------------------|---|--|
| | IUCN Red List of Threatened Species (2011) Contribution for Otus capnodes. | IUCN | www.iucnredlist.org | |
| Journal | Contributed to: McCarthy D. P et al., Financial Costs of Meeting Global Biodiversity Conservation Targets: Current Spending and Unmet Needs, 2012: providing information about the Anjouan Scops owl and Grand Comoro Flycatcher. | | Birdlife International | |
| Journal | Hawlotschek, O., Bruckmann, B., Berger, J., Green, K and Glaw, G. (2011) . Integrating field surveys and remote sensing data to study distribution, habitat use and conservation status of the herpetofauna of the Comoro Islands. ZooKeys 144: 21-78 | ZooKeys | http://www.ncbi.nlm.nih.gov/pmc/articles/pmc3233692/ | |
| Manual | Ecological training manual and methods manual prepared by Katie Green and Bronwen Daniel. | Project | The project and soon www.ecddcomoros.org | |
| Journal | Population estimate and habitat distribution of the Anjouan Scops Owl Otus capnodes. Lead author: Katie Green, academic supervisor: Dr Richard Young. | Bird Conservation International | The project and soon www.ecddcomoros.org | |
| Journal | Population estimate and identified threats to the Livingstone's fruit bat Pteropus livingstonii. Lead author: Bronwen Daniel, academic supervisor: Dr Richard Young. | | The project and soon www.ecddcomoros.org | |

Annex 6 Darwin Contacts

| | |
|---------------------------------------|---|
| Ref No | 17-011 |
| Project Title | A participatory conservation programme for the Comoro Islands |
| UK Leader Details | |
| Name | Neil Maddison |
| Role within Darwin Project | Project leader |
| Address | Bristol Zoo Gardens, Clifton, Bristol, BS8 3HA |
| Phone | |
| Fax | |
| Email | |
| Other UK Contact (if relevant) | |
| Name | Hugh Doulton |
| Role within Darwin Project | Project Manager |
| Phone | |
| Email | |
| Partner 1 | |
| Name | Dr Andrew Terry |
| Organisation | Durrell Wildlife Conservation Trust |
| Role within Darwin Project | Biodiversity and scientific support; support to NGO formation, member of project management team. |
| Address | Les Augres Manor, La Profonde Rue, Trinity, Jersey, JE3 5BP |
| Fax | |
| Email | |
| Partner 2 | |
| Name | Aboubacar Ben Allaoui |
| Organisation | Comorian Ministry for Environment and Agriculture |
| Role within Darwin Project | Main government contact |
| Email | |
| Partner 3 | |
| Name | Misbahou Mohamed |
| Organisation | Comorian NGO Dahari |
| Role within Darwin Project | Local Coordinator and now NGO director |
| Email | |
