# *Darwin Initiative Annual Report*

**Important note:**

*To be completed with reference to the Reporting Guidance Notes for Project Leaders: it is expected that this report will be about 10 pages in length, excluding annexes*

**Submission Deadline: 30 April 2013**

## 1. Darwin Project Information

| | |
|---|---|
| Project Reference | **18-009** |
| Project Title | **Saving the Madagascar Pochard: the world's most endangered duck** |
| Host Country/ies | Madagascar |
| UK contract holder institution | Durrell Wildlife Conservation Trust |
| Host country partner institutions | Durrell – Madagascar, Asity Madagascar and Le Ministère de L'Environnement et Forêts (Government of Madagascar). |
| Other partner institutions | The Wildfowl & Wetlands Trust, The Peregrine Fund, |
| Darwin Grant Value | £282, 441 |
| Start/end dates of project | 1st April 2010-31st March 2014 |
| Reporting period and number | 1st April 2012-31st March 2013<br>**Annual Report number 3** |
| Project Leader name | H Glyn Young |
| Project website | |
| Report authors, main contributors and date | H Glyn Young (Durrell), P Cranswick (WWT), L Woolaver and Felix Razafindrajao (Durrell Madagascar) and L-A Rene de Roland (TPF). 30th April 2012 |

## 2. Project Background


The Madagascar Pochard (*Aythya innotata*), the rarest duck and possibly rarest bird in the world, was believed extinct for 15 years until rediscovered in 2006. Historically best known from the extensive wetlands around Lake Alaotra, today around 20 birds exist in the wild primarily on one of four small lakes, in north-western Madagascar near Bemanevika; the species is classified as Critically Endangered by IUCN. Birds breed in a tiny area of one of the lake's shorelines, and although more than 10 nests were found in 2007 and 2008, no ducklings survived in 2008. Observations in 2009 revealed a skewed sex ratio, with just 6–8 females. The lake now has temporary statutory protection with the aim of completing full protected area status.

Given the imminent risk of extinction, Project partners undertook emergency action in October 2009. Three clutches of eggs were extracted from the wild and 24 ducklings were reared. Following the transfer of the new captive population to Ampijoroa Field Station (Ankarafantsika NP) in December 2009 the birds were returned to the Sofia Region, to a newly built facility in Antsohihy, in September 2011. The facility was officially opened, by Dr Lee Durrell, in November 2011 and the first captive-bred ducklings were hatched and reared in 2011. Our methodology to date has been shown to be successful, and sufficient to overcome logistical and practical difficulties of working, and applying UK rearing practices, in this part of Madagascar. The conservation-breeding programme will ensure that the species will survive even if it becomes extinct in the wild and produce birds for re-introduction at other sites.

The long-term aim of this project is to establish a viable population of Madagascar Pochard in the wild, through a conservation-breeding and release programme to restore the species in its former range. The purpose of this project is to ensure the immediate survival of the species, initiate the breeding programme through development of a purpose built Pochard Conservation Breeding Centre (PCBC) near the regional town of Antsohihy and facilitate participation of the local community in conservation actions at the breeding lakes.

Pair Madagascar pochard *Aythya innotata* at Lake Matsaborimena. Photo by David Gibbs

## 3. Project Partnerships

This project has three local and three international partners and has collaborated through signed MoUs since 2009.

The three host country partners are: Durrell Wildlife Conservation Trust Madagascar (Durrell Madagascar), Asity Madagascar (a BirdLife Affiliate) and le Ministère de L'Environnement et des Forêts (for the Government of Madagascar). All three organizations have offices in Antananarivo. Asity Madagascar is responsible for awareness programmes (CEPA) and undertakes this work principally in the area of the existing wild pochard population and in the vicinity of the captive population. Asity and Durrell signed an MOU for co-operation in the Environmental Education Programme in April 2011 and co-ordinator Jacques Live Rajaonarison is based in Bealanana in the TPF office. Jacques Live spent most of his time in the field, reports monthly and held meetings with the partners in Antsohihy and Antananarivo. Following completion of the Darwin project in 2013/2014 and establishment of one or more release sites, the partnership with Asity Madagascar will be re-assessed in order to better utilise this NGO's strengths. Durrell Madagascar provides full logistical support and all locally-employed project staff and temporary technicians are employed through this partner.

There are two further, international, partners: The Peregrine Fund (TPF) and the Wildfowl & Wetlands Trust (WWT). TPF, who rediscovered the pochard during fieldwork in the area, are responsible for site protection at the Bemanevika lakes including the development of plans for full national site recognition. TPF are represented in Madagascar through their in-country office and full-time local staff; however, the Project also maintains contact with USA-based personnel. TPF scientists undertake monthly systematic pochard counts at the four lakes at the Bemanevika site and undertake directed research projects on pochard ecology. TPF has five technicians based at the Bemanevika site mainly in charge of collecting research data on bird species, especially red owl *Tyto soumagnei* and Madagascar serpent-eagle *Eutriorchis astur*,

and in monitoring the wild pochard population and other waterbirds on the four lakes. One further technician is in charge of the socio-economic aspect of the project and ensuring awareness of the protected area and bird projects within the local communities.

WWT provide essential expertise in management of wild and captive wildfowl populations and methodologies for emergency extraction of birds from the wild. WWT provide avicultural expertise, are undertaking the design and planning of development at the breeding centre and have raised extensive funds (*c*. £180,000) for this part of the project from several donors (e.g. Mitsubishi Corporation Fund for Europe and Africa, MCFEA).

The Project partnership has been very effective and well received. Durrell Madagascar organise monthly meetings between in-country partners (Durrell Madagascar, TPF and Asity Madagascar) in Antananarivo. Regular meetings are held with government and elected officials at national, regional and local level.

Other collaborations during this Project year have been in research and veterinary support:

A research programme, jointly supervised by WWT and Durrell, began in earnest in July 2011 with the arrival in Madagascar of Dr Andy Bamford after WWT secured £60,000 from the BBC Wildlife Fund for two years study. Andy (employed by WWT) works under Durrell's accord with the Madagascar government and has established a field team ("the research team") that included Project member Felix Razafindrajao, TPF's Sam The Seing and Rabenosy Médé who has been employed as a full time research team member. This research project worked closely with the TPF team at the Bemanevika lakes and is based at the established field camp. The research team's work has included monthly sampling for invertebrates at the Bemanevika lakes and at a wide selection of other wetlands in Madagascar including Lake Alaotra. The team began an extensive analysis of wetlands on the High Plateau in early 2012 in order to identify potential sites for reintroduction of captive-bred birds and was joined in November 2012 by Rob Shore, Head of Wetland Conservation at WWT.

Felix Razafindrajao and Sam The Seing are registered to do pochard ecology-based PhD's at the University of Antananarivo.

Professor Mike Bruford, Cardiff University, is undertaking genetic studies aimed to determine relationships of the captive population.

Tsanta Fiderana Rakotonanahary, a veterinary student from Université d'Antananarivo, Faculté De Médecine, has continued her studies of the captive pochard. Tsanta undertook a period of internship on the Durrell (Jersey) Veterinary Department and visited WWT at Slimbridge in 2011. Tsanta has continued to provide veterinary support to the pochards and completed her project: *Assessment of the antibodies response to selected vaccines against fowl cholera and Newcastle disease in the captive Madagascar pochards Aythya innotata* in 2013 and will finish her defence later this year. Tsanta is one of the first ever wildlife vets in Madagascar and Durrell Madagascar are hoping to keep her in conservation work and as consultant to the Pochard Project for the long term.

Zoavina Randriana, a second Université d'Antananarivo veterinary student and Durrell, Jersey, veterinary intern in 2012 has assisted Tsanta with veterinary duties at Antsohihy and also defends her degree later in 2013.

## 4. Project Progress

The captive pochard population has settled well at the Antsohihy facility following their move from Ampijoroa in 2011. All 18 of the ducklings hatched in the first breeding season (2011-2012) have thrived. The husbandry team has developed well and, with support throughout from WWT and Durrell technicians on site, are increasingly competent in necessary avicultural skills. Low hatch rates from eggs laid in the first season have been attributed to high ambient temperatures and humidity (often 40°C and 95%) affecting the eggs during storage and artificial incubation. Standard husbandry methodologies typical of European conditions have been modified but the inclusion of air-conditioning in the Incubation Room is probably the most important improvement.

Electricity and water supplies at the facility may be interrupted almost daily through lack of local infrastructure and contractors have improved these as much as is feasible. A water tower holds sufficient piped water to allow maintenance of pond levels and daily cleaning even if there is no power. Essential electricity is maintained through generators and battery storage. A third block of four aviaries was completed in December 2012 allowing the adult birds to be separated into pairs rather than being kept in small groups of females with a single male as in the first season. This change appears to have settled the birds and in the second breeding season (November 2012-February 2013) egg-laying females were calmer and prepared to incubate their eggs naturally. Holding facilities available at Antsohihy are finite and, to avoid overcrowding until larger holding areas are developed and suitable release sites identified, a breeding strategy was prepared in advance of the season. Highest value pairings were identified and a restricted number of eggs incubated artificially, after a short period of natural incubation, before pairs were broken up to prevent over-production and a potential reduction in fitness of breeding females. Twenty ducklings were hatched from 23 eggs incubated and the captive population increased to 55 on 31st March 2013 (37 birds on 31st March 2012).

Observations of the population of wild Madagascar Pochard at Bemanevika indicate that there are around 22 birds remaining. Initial results suggest that fledging success in this population is extremely low, and that this may be caused by poor quality habitat for a diving duck, with a shortage of benthic invertebrate food being the most immediate problem. Low water temperatures that may have, advantageously for waterbirds, prevented successful introductions of exotic fish may also affect brood-rearing by pochards.

Ecological surveys away from the Bemanevika site suggest that is unsurprising that the Madagascar pochard is in such a critical state. None of the sites surveyed including Lake Alaotra appear able to support pochards in their current state. The lakes at Bemanevika appear to be the best condition wetlands in the plateau region of Madagascar and one, Lake Andriakanala, is one of only two lakes visited that could be described as pristine. The other, Andasinimamba in Marotandrano Special Reserve, does not seem to hold anything of interest to pochards: no marsh for nesting and no food.

## 4.1 Progress in carrying out project activities

1. Research prioritisation and development of collaborative studies

*Analyse genetic diversity of captive founders and recommend pairings*

Blood samples from all surviving pochards were collected by Tsanta and exported to the UK. Unexpectedly, the samples arrived after lengthy delays in a condition that prevented successful analysis. Further samples were collected early in 2013 during routine vaccinations and will be sent to the UK in April. All birds in the captive population have been included in a studbook using the Single Population Analysis & Records Keeping System (SPARKS) programme. Further analysis of the studbook using PM2000 software for analysis and management of pedigreed populations allowed a list of recommended pairings to be made. The 18 captive-bred birds were not included in the analysis as their mothers were not identified so all surviving founders (from 2009) had equal importance except for male MP0012 who, as the only surviving male of clutch two, is a high priority bird and fathered five ducklings in 2012-2013.

*Hold Recovery Plan workshop, action plan published and circulated*

A full Recovery Plan workshop has not yet been held but is planned for the second half of 2013. A one-day workshop was held in the Durrell Madagascar Office in Antananarivo on 16th November 2012 following a tour of potential release sites to exchange information on wetland conservation and restoration in Madagascar with partner organisations. Representatives from TPF (Madagascar), Asity Madagascar, Durrell Madagascar, Durrell Jersey, WWT, Conservation International (Madagascar), WWF (Madagascar), Madagascar Voakajy, The Ministère de L'Environnement et des Forêts, Aquaterre and The Hydrologic and Agronomic Department, University of Antananarivo attended. Following brief presentations on the Madagascar Pochard and the Project to date, the search for potential release sites and the benefits of restoring and conserving wetland ecosystems the remainder of the day was made up with a discussion amongst all present about the hopes for the pochard and on other wetland conservation and restoration projects undertaken in Madagascar. It was particularly

encouraging for the Project to learn of methods and success of strategies underway in other wetland projects. A report on the trip and workshop will be produced.

The production of an Action Plan will be postponed until the identification of a trial site for reintroduction and the identification of the habitat restoration required.

2. Build captive-breeding facility

A third block of four enclosures (NB Block) was completed in December 2012 using four fibreglass ponds manufactured by Polyma in Antananarivo for the facility in 2011 and transported more than 600km by lorry. These ponds arrived in Antsohihy too late for initial construction phase in 2011 and concrete ponds were made by local contractors in their place. The provision of further enclosures meant that the birds held before the 2012-2013 breeding season could be separated as pairs allowing for controlled breeding following breeding recommendations (see above).

Air-conditioning was introduced to the Incubation Room allowing stored eggs to be kept cool and the temperatures of the electronic incubators to be much better controlled. Without air-conditioning potential ambient temperatures of more than 40°C and humidity of 95% in the Incubation Room had made egg-storage and incubation in the 2011-2012 season difficult.

Work was started on a fourth, specialized, block of aviaries, early-stage-rearing units (ESRUs), in February 2013. These 12 smaller enclosures (with 2.5 x 2.5m ponds) are being prepared for ducklings as a step in their rearing between indoor Hatchery brooders and full size enclosures with ponds. These units can also be used to hold full-grown birds outside of the rearing season. The overall footprint of the facility will be increased in time for the 2013-2014 breeding season with larger holding enclosures built and able to hold small flocks of ducks before release. Negotiations are underway with the site's landlord about extending the footprint and with neighbours about renting further land. Siting of further drains and soakaways has been identified and the line of a potential future perimeter fence mapped.

A small gîte will be built at the facility in 2013 in order to rationalize storage space and guardien areas in the current house and to provide accommodation for staff and visiting technicians who currently stay in the neighbouring motel.

The role of land allocated at Anjingo will be re-assessed in 2013 in light of the successful use of the site at Antsohihy and scope here for extension.

*Recruit avicultural and support staff*

The most significant change to the Antsohihy facility was the promotion of Rabenalimanana Samuelson (Samuel) to the full time avicultural team joining Floriot Randrianarimangason and Mahazaka Ratsimalandy. Samuel was formerly a guardien at the site and was replaced in this role by Jaozandry. Rabenosy Médé from the research team based at Bemanevika spent time at Antsohihy during the wet season in order to learn this side of the project. Driver Rasolofinirina Andrianarivony (Nary) remains with the Project and spent time with both the Antsohihy and Bemanevika teams.

3. Collect eggs from wild birds and establish breeding pairs in captivity

The return of the captive birds to Sofia was well received and local government officials and other guests from Antsohihy and Bealanana were regular visitors to the facility. The Prime Minister Omer Berizik visited on 5th December 2012. However, collection of further eggs has been postponed until the facility is fully in a position to hold all the proposed birds and is planned for Year 4.

4. Develop local partner's capacity for CEPA training and establish CEPA training in Bemanevika area

Asity Madagascar and Durrell signed an MOU for co-operation in the Environmental Education Programme (EEP) established through this project in April 2011. Jacques Live Rajaonarison is, based in Bealanana in the TPF office, has spent the majority of his time in the field and become very self-sufficient. Jacques Live reports monthly and holds regular meetings with the partners in Antsohihy and Antananarivo. Jacques Live has held regular presentations at schools in Antsohihy, in the Bealanana area and at village schools near the Bemanevika site. Several thousand students have been involved in the project and establishment of environmental clubs (*Vintsy* groups through Asity Madagascar).

5. Protection of Bemanevika site

The site is still under a temporary protection. The necessary stages to set up the permanent protection status of the site are still underway despite delays at national government level. The Management Plan and Social and Environmental Safeguard Plan have been updated and await approval by SAPM Commission at Forest General Directorate level.

TPF has five technicians based at the Bemanevika site. The camp has been moved back from the lake edge to avoid any possible disturbance and pollution. In 2012, nine groups of visitors came at Bemanevika site to see key bird species: Madagascar Pochard, red owl, Madagascar serpent-eagle, Madagascar harrier *Circus macrosceles* and slender-billed flufftail *Sarothrura watersi*. Part of fees and donations collected from visitors were dedicated to pay the wages of the teacher in the Bemanevika Primary School.

During February and March 2012, TPF managed a programme of reforestation in the Bemanevika area. Villagers planted 13.359 young plants, a mixture of native species and eucalyptus for firewood. Following assistance by TPF in setting up beehives, local beekeepers collected 53 litres of honey from nine beehives in 2012.

6. Establish national awareness programme through local media and publicity materials

The improvement of the 'political' status of the captive pochards following their return to Sofia has allowed the project to be widely promoted in the region and nationally. Facebook is a very popular social media outlet in Madagascar and the pochard has featured regularly in the Durrell Madagascar site www.facebook.com/DurrellMadagascar. In 2012, Kitty Brayne joined Durrell Madagascar as press and publicity co-ordinator and has begun to promote the pochard within the national media. Jacques Live Rajaonarison has made monthly radio interviews in Sofia both in Antsohihy and Bealanana.

## 4.2 Progress towards project outputs

1. Key conservation needs for Madagascar Pochard identified

Andy Bamford's parallel research programme has been wide-ranging and, based at the Bemanevika site, has included direct observation of nesting birds and sampling of water (depths and composition), substrates, aquatic invertebrates and plant life. The research team have undertaken similar studies at Lake Alaotra and a series of other lakes in Sofia and elsewhere on the High Plateau as far south as Lake Itasy and the Vakinankaratra Region. Feather samples of museum specimens have been collected to undertake stable-isotope analyses to determine diets of birds in the past.

Results of the ecological studies at Bemanevika will be published in due course and included in the theses of Felix Razafindrajao and Sam The Seing. Initial findings do suggest that while the pochard survived at Bemanevika the crash in numbers and range that affected the species across Madagascar the conditions at this site are far from perfect for a diving duck. Very poor survival of ducklings (overall fledging rate for 2012 was 4%. Sadly, this is still an improvement on the 2% seen in 2011) may be due to low numbers of benthic invertebrates, depth of the lake bed (ducklings need to forage themselves and dive for food) and often low water temperatures and restricted opportunities for females to brood young. To date hatchability and survival in

captivity suggest that the species is not badly affected by inbreeding and that this is not the cause for such poor breeding results in the wild.

The research team looked at wetlands in Sofia and at selected other sites in order to establish which ones are potentially suitable for trial reintroductions of captive-bred birds. Criteria for site selection were established at a Project meeting at Slimbridge in February 2012. Andy, Felix and the research team visited the chosen wetlands over several months. From this survey, it seems unsurprising that the Madagascar pochard is in such a critical state. None of the sites away from Bemanevika that were visited appeared able to support pochards in their current state. The lakes at Bemanevika appear to be the best condition wetlands in the plateau region of Madagascar and Andriakanala one of only two lakes visited that could be described as pristine. The team were joined by Rob Shore, Head of Wetland Conservation at WWT in November 2012 and revisited three sites (Lake Sofia watershed, Lake Antsomangana and Lake Amparahinandiambavy) to further assess suitability. One wetland site, the Lake Sofia, watershed was considered to have enough potential to begin further investigation into restoration needs and impacts that a release project would have on local communities and to scope for partnerships with local associations (villages, fishermen etc.) at the wetland and its catchment.

2. Conservation-breeding programme and Malagasy capacity for aviculture established

The Malagasy husbandry team has proven itself to be highly motivated and, while having mostly learned *in situ*, extremely skilled in duck husbandry. Wildfowl technicians from WWT and Durrell have continued spend time at the Antsohihy facility for short periods in rotation and act as advisors at the facility and to oversee staff development. Durrell Madagascar expects to continue the rotation of overseas technicians on site for the near future but this may be reduced to cover the most sensitive periods such as the breeding season.

Husbandry guidelines in English and French were produced in July 2011 and have been modified/updated several times: the most significant in March 2012 following transfer of the birds from Ampijoroa to Antsohihy and the required inclusion of incubation and rearing sections. Daily reports from the captive population have been submitted to Durrell in Jersey for inclusion in the ARKS record keeping system and distributed through Dropbox since June 2011. A record keeping manual for Madagascar pochard was produced in 2011. All the captive birds have been included in an International Studbook using SPARKS software (initiated in November 2011 – see Annex 3). *In situ* training has also included collection of biometric data, record keeping, report writing and problem solving. Each of the technicians has maintained support for their local counterparts after their return to the UK and one, Roland Digby (WWT), has established a regular phonelink to assist in staff development. Facebook is a popular medium for communication and all Malagasy staff keep in touch with their overseas colleagues. Supervision for veterinary student Tsanta Fiderana Rakotonanahary has been maintained by former Durrell Vet Javier Lopez (now at Chester Zoo), current Durrell veterinarians (particularly Alberto Barbon) and by the technicians who have been well placed to train in practical skills such as routine worming and faecal sampling.

3. Malagasy capacity for environmental CEPA of Madagascar Pochard established

Jacques Live Rajaonarison has established an impressive ‘team’ and ‘pochard roadshow’ through his work through schools and other groups in the Bealanana area. Jacques Live uses the pochard (*fotsimaso*) as a flagship for wetlands conservation in general. The team recruit young volunteers (scout groups, environmental clubs) for further extending the message and incorporate other themes such as work with DREF on “the fight against bushfire”.

4. Long-term protection of Bemanevika secured

The site remains under a temporary protection. The necessary stages to set up the permanent protection status of the site are still underway despite delays at national government level. The Management Plan and Social and Environmental Safeguard Plan have been updated and await approval by SAPM Commission at Forest General Directorate level.

## 4.3 Standard Measures

**Table 1 Project Standard Output Measures**

| Code No. | Description | Year 1 Total | Year 2 Total | Year 3 Total | Year 4 Total | Total to date | Number planned for reporting period | Total planned during the project |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| 3 | Qualification | 1 | 1 | 1 | | 1 | | |
| 4B | No. of training weeks | 7 | 10 | | | 17 | | |
| 6A | No. of people receiving training | 1 | 3 | 4 | | 4 | | |
| 6B | No. weeks training | 18 | 100 | | | 118 | | |
| 8 | No. weeks UK staff in host country | 44 | 58 | | | 102 | | |
| 15C | No. UK press | 1 | 1 | 3 | | 5 | | |
| 15D | No. UK local press | 1 | 1 | 1 | | 3 | | |
| 16A | No. newsletters | 11 | 12 | 12 | | 35 | | |
| 19A | Radio in host country | 1 | 5 | 5 | | 11 | | |
| 19B | Radio in UK | 2 | 2 | 2 | | 6 | | |
| 23 | Resources raised from other sources | £25,000 | 105,000 | 11,000 | | £240,000 | | |

**Table 2 Publications**

No significant publications available in Year 3.

## 4.4 Progress towards the project purpose and outcomes

The project has progressed extremely well. Key personnel have all stayed with the project and further staff have been recruited and trained. The Antsohihy breeding facility has functioned well and extensions have been undertaken to further improve holding capacity. The birds bred successfully for a second season and management was on a level expected in more established facilities. Although there have been delays in genetic analysis of founder birds, use and analysis of a studbook have ensured ideal breeding. Further collection of eggs from the wild population to increase genetic representation in the captive population has been delayed. Planned further extension at Antsohihy in 2013-2014 will lead to reappraisals of the role of land marked out at Anjingo.

The research team's assessment of potential release sites in Sofia and elsewhere on the High Plateau has highlighted the poor state of Madagascar's freshwater wetlands. The survey has, however, found at least one site that may, with some restoration, be suitable for a trial release of captive-bred birds in 2-3 years.

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

Protection of the site at Bemanevika and establishment of a Nouvelles Aires Protégés by TPF in partnership with the Project has had a remarkable impact on biodiversity protection in this area of Madagascar. Besides the pochard, this site holds several identified endangered and highly localised bird, mammal, reptile and amphibian species. Further biological assessment of this area of rare north-western High Plateau forest will undoubtedly yield even more plants, animals and habitat types of significance. TPF and Asity Madagascar have developed community based programmes of co-operation and environmental education that will ensure understanding and protection of the NAP and local resources. TPF have managed interest in Bemanevika from foreign visitors and have used fees and donations in the local community.

Staff Antsohihy facility and Bemanevika camp have assisted in local tree-planting programmes.

## 5. Monitoring, evaluation and lessons

Regular monitoring of Project progress is achieved through a number of means:

A daily record is maintained by aviculturists at the breeding facility, comprehensively documenting all significant activities. Records are input into the ARKS computerised records system and ensures standardised recording Both daily records and ARKS reports are passed back to HQs in Antananarivo, Jersey and Slimbridge;

Management reports are provided each month by key personnel for each main aspect of the Project (breeding, research *etc*) and compiled and circulated between management teams at Durrell and WWT;

A monthly report of progress is maintained by Durrell's Project manager, and circulated to all partners;

Regular progress meetings are held in Antananarivo between Madagascar partners;

Regular (often weekly) Skype conferences are held between Durrell, Durrell Madagascar and WWT Slimbridge and, when the internet allows, with the facility at Antsohihy;

The Durrell Veterinary Department and former Durrell vet Javier Lopez (now at Chester Zoo) have maintained contact with Tsanta and staff at the Antsohihy facility. Visiting technicians each maintain contact with their Malagasy counterparts and a protocol for any emergency advice has been installed.

The Project managers from Durrell and WWT Slimbridge visited the Project sites in Madagascar in November 2012, to review progress and meet with Project personnel;

Reports are also provided to other funders (e.g. MCFEA and BBC Wildlife Fund) according to their reporting schedules.

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

## 7. Other comments on progress not covered elsewhere

The Project has to be adaptive as work in often difficult conditions and where local politics can be very intrusive is always challenging. Sickness and injury to key personnel is also an ever present worry (in 2012-2013 this included broken limbs and malaria). Any new management programme of an endangered species, however familiar its larger taxonomic grouping is, will need to be flexible in its approach. This is best achieved with this Project through a highly motivated and experienced team from the avicultural and other personnel on the ground in Madagascar to the partners' management structure overseas. There is a strong commitment to this project throughout that stems perhaps from a feeling that we almost lost this species once and we are not going to again!

## 8. Sustainability

The Madagascar Pochard has been identified as one of the rarest vertebrates in the world and this duck has a very high profile. Significant amounts of funding have been received from outside of the Darwin Initiative grant and conservation work for the bird and the Bemanevika Protected Area will continue. The pochard has become a *cause célèbre* locally and this public mood will be utilised to further ensure support. The Antsohihy facility represents significant investment both financially and logistically by the partners. Durrell Madagascar will continue to co-ordinate management of the facilities and their associated personnel and expects this project to become as well established as that for the Angonoka (Madagascar ploughshare tortoise) which celebrated its 25th Anniversary in 2011.

## 9. Dissemination

Monthly reports have been produced throughout this project and are sent each month to all members of Project team, including all personnel who have worked with the captive duck population in Madagascar, and valued supporters such as Mauritian Wildlife Foundation, Fota Wildlife Park and BirdLife International. These reports are e-mailed to nine Madagascar addresses within local, regional and national government. A dedicated Project website is under development and, following delays, will go live in 2013 when the Project logo will be launched.

A WWT-produced DVD of the 2009 collection of eggs from the wild was distributed to partners, stakeholders and potential funders in the UK and in Madagascar and has been used by Jacques Live Rajaonarison during school and village presentations in the Bealanana and Antsohihy areas. The video is shown regularly at WWT visitor centres (which have a combined annual visitation of one million visitors) and was added to several conservation-based websites in 2011 and can be viewed at www.youtube.com/watch?v=WcdolbS7VzY&feature=relmfu Further videos of the pochard project can be viewed at www.youtube.com/durrellvideos and www.youtube.com/user/wwtconservation1

In addition, there has been frequent and wide dissemination in the UK:

WWT's stand at the UK Birdwatching Fair (held at Rutland Water in August each year – approx 20,000 visitors) focuses upon saving threatened species, prominently featuring the Madagascar Pochard Project;

Presentations about the Project have been made by WWT and Durrell at various events for the public, conferences and to wildlife or birdwatching clubs and societies including the Anglo-Malagasy Society in London.

## 10. Project Expenditure - draft

**Table 3 project expenditure <u>during the reporting period</u> (1 April 2012 – 31 March 2013)**

| Item | **Budget** | **Expenditure** | **Variance/ Comments** |
|---|---|---|---|
| Staff costs specified by individual | | | -4.7%<br>Some local staff add-ons have been allocated to field subsistence |
| Overhead costs | | | Audit postponed until 2014 |
| Travel and subsistence | | | |
| Operating costs | | | |
| Capital items/equipment (specify) | | | |
| Others: Consultancy | | | |
| Others (please specify) | | | |
| **TOTAL** | | | |

Costs will be finalised for Q4 actual claim.

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

I agree for LTS and the Darwin Secretariat to publish the content of this section (please leave this line in to indicate your agreement to use any material you provide here)

The world's population of the Madagascar Pochard has almost quadrupled thanks to the conservation efforts of Darwin Initiative project **Saving the Madagascar Pochard: the world's most endangered duck**. This phenomenal success story will help to secure the population of this Critically Endangered duck.

Twenty Madagascar Pochards were successfully hatched and reared during the 2012-2013 breeding season, bringing the world population of this species to around 80 birds. To date, 38 ducklings have successfully been reared in the specially developed breeding centre at Antsohihy, Madagascar, since the captive breeding programme commenced in 2009.

Building and running a breeding centre for this species in a rural town in Madagascar is a real challenge for the field teams. Clean water and electricity supplies in the area are unpredictable but thanks to contingency measures such as water storage tanks and generators; coupled with the hard work and commitment of the team, many of the everyday practical issues surrounding the project have been overcome.

Importantly during this, the second breeding season, the number of enclosures at the centre was increased meaning that staff could pair up specific single males and females, thus providing vital information on genetic management for the species.

The project team is unique in Madagascar as it includes probably the only professional Malagasy wildfowl aviculturalists and sepecialised avian veterinarian. Developments and enhancements are now underway at the Antsohihy centre in preparation for the next breeding season for the captive ducks.

## Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2012-2013

| Project summary | Measurable Indicators | Progress and Achievements April 2012 - March 2013 | Actions required/planned for next period |
|---|---|---|---|
| ***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*<br>⇒ The conservation of biological diversity,<br>⇒ The sustainable use of its components, and<br>⇒ The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources | | Protection of Bemanevika site will contribute to safeguarding a potentially unique biodiversity in Madagascar. Several other critically endangered vertebrates are present in the protected area. Work by Project and parallel work by TPF is ensuring co-operation of local communities and ensuring that they benefit through many schemes such as forest resource protection etc. | |
| ***Purpose***<br>To avert imminent extinction of the Madagascar pochard through recovery planning and capacity building for a conservation breeding programme, site protection and public engagement. | • Conservation breeding programme established in- country<br>• Species' current habitat at Bemanevika officially protected.<br>• Community outreach programme established<br>• Species recovery plan developed with all stakeholders | | |
| **Output 1.**<br>Project effectively managed and coordinated | • Annual reports and finance claims delivered on time and in budget | | |
| Activity 1.1 Establish Project management team and planning structure | | Management structure established, based from Durrell in Jersey and WWT in UK. Managed in host country by Durrell Madagascar in communication with Durrell and WWT through e-mail, weekly Skype conference calls and telephone. Durrell and WWT meet annually at WWT, Durrell Madagascar organise monthly meetings with TPF and Asity Madagascar in Antananarivo. Monthly reports are circulated throughout the Project and all partners. | |
| **Output 2.**<br>Key conservation needs for Madagascar pochard identified | • Analyse genetic diversity of captive founders and recommend pairings<br>• Key limiting factors at site identified<br>• Species recovery plan endorsed by Government by Y3<br>• | | |

| Project summary | Measurable Indicators | Progress and Achievements April 2012 - March 2013 | Actions required/planned for next period |
|---|---|---|---|
| Activity 2.1. Research prioritisation and development of collaborative studies | | Research priorities have been identified and include both ecology of the Madagascar pochard and husbandry related to the captive-breeding programme. WWT Senior Research Officer Andy Bamford and research team working with Project including Felix Razafindrajao have continued to establish baseline ecological data at current and former sites and wetlands across High Plateau. Birds have been monitored monthly throughout year at Bemanevika and such as benthic invertebrate abundance, water depth and ambient temperatures identified as possible limiting factors. | |
| Activity 2.2. Analyse genetic diversity of captive founders and recommend pairings | | Blood samples have been collected from all birds but there were problems with transfer to University of Cardiff and further samples were collected in March 2013. The captive population is managed through a studbook (SPARKS) and recommended pairings are identified through PM2000. | |
| Activity 2.3. Hold Recovery Plan workshop, action plan published and circulated | | The full Recovery Plan workshop was postponed; however, a workshop was held in November 2012 in Antananarivo to present findings from survey of potential release sites for captive-bred birds in Sofia and on High Plateau to partners and other local NGOs. | |
| **Output 3.**<br>Conservation-breeding programme and Malagasy capacity for aviculture established | • Captive breeding population producing around 20 birds Y1<br>• Three Malagasy staff trained in aviculture, and endangered species management<br>• Preliminary assessment of wetlands as sites for release of captive-bred birds | • Twenty young were hatched and reared in second breeding season (2012-2013)<br>• Three avicultural staff, a student vet and a field manager plus Project driver and two site guardiens were employed in Y3<br>• Andy Bamford, Felix Razafindrajao and research team undertook widescale survey of potential release sites in Sofia and on High Plateau. Priority sites were re-visited in November 2012 with further Project members and WWT's Head of Wetland Conservation | |
| Activity 3.1. Build captive-breeding facility | | A new block of aviaries was constructed at Antsohihy in Y3 and construction of specialised MSRUs was begun (finished April 2013). Further modifications were made to all areas of Antsohihy facility and plans prepared for significant extension before 2013-2014 breeding season. | |
| Activity 3.2. Recruit avicultural and support staff | | Avicultural and support staff (Field Manager, Captive Manager, aviculturalists (2), Project driver, site guardiens (2) and trainee veterinarian) remain in place. | |
| Activity 3.3. Collect eggs from wild birds and establish breeding pairs in captivity | | The return of the birds to Sofia was well received by the local authorities and communities; however, collection of further eggs has again been postponed. | |
| **Output 4.**<br>Malagasy capacity for environmental CEPA of Madagascar pochard established | • Minimum of 20 school teachers and local groups and NGOs trained in environmental CEPA<br>• Ten Malagasy project staff trained in environmental CEPA. | Full details will be provided in Final Report. | |

| Project summary | Measurable Indicators | Progress and Achievements April 2012 - March 2013 | Actions required/planned for next period |
|---|---|---|---|
| Activity 4.1. Develop local partner's capacity for CEPA training and establish CEPA training in Bemanevika area | | Project Environmental Education Officer, Jacques Live Rajaonarison, is based at Bealanana working in villages and towns in the Bemanevika/Bealanana area. Jacques Live has established local groups through Asity Madagascar model and is working with schools and scout groups to train teams in each area. | |
| **Output 5.**<br>Long-term protection of Bemanevika secured | • Site included within the new Protected Areas framework by Y3<br>• Site support group in place Y2 | • The Bemanevika site still has temporary protected status and process of upgrading to full protection is currently with the Government<br>• TPF work closely with local communities | |
| Activity 5.1. Maintain protection of Bemanevika site | | The Peregrine Fund team have maintained their camp at Bemanevika and undertake protection of the forest and wetlands while working closely with local villages and National Government in establishing full statutory protection for the site. TPF manage visitors to the site and use fees and donations within the local village communities. | |
| Activity 2.2. Establish statutory protection for site | | TPF have succeeded in getting the site, Bemanevika Protected Area, established as a Nouvelles Aires Protégés: a significant feat in current political conditions. A Management Plan Environmental and Social Safeguard Plan (ESSP) have been completed in collaboration with the local communities. During the lengthy process of developing a NAP, the site is given the status of 'Temporary Protected Area' giving it the full legal protection of a NAP but with a time limit).<br>NAP boundary markers were designed with panels within local communities following a meeting in June 2010. A local committee for wildfire prevention was established and functioning: each village has their own local fire prevention agents who were equipped with uniforms provided by TPF. A reforestation plan was established in collaboration with the local forest officer and TPF built nurseries at four localities around the NAP. | |
| **Output 6.**<br>Local community and national audiences support conservation of the species. | • Rapid assessment of social, cultural and economic situation of communities undertaken<br>• At least 80% of schoolchildren aware and supportive of conservation activities around the target species by Y3<br>• Legal status of local communities to manage Bemanevika established | Full details will be provided in Final Report. | |
| Activity 6.1. Establish national awareness programme through local media and publicity materials | | Madagascar pochard now freely reported on since the return of the captive population to Sofa. Species features in social media such as Facebook page of Durrell Madagascar | |
| Activity 6.2. Assess communities and undertake questionnaire surveys in Bemanevika area | | Not yet undertaken. | |

## Annex 2 Project's full current logframe

| Project summary | Measurable Indicators | Means of verification | Important Assumptions |
|---|---|---|---|
| **Goal**:<br>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**:<br>Extinction of Madagascar Pochard averted, and its long-term future secured in the wild. The conservation of the Pochard is used to promote wetland restoration through community involvement and human livelihood support | • Madagascar Pochard IUCN status downgraded from CR to EN within 10 years<br>• Existing and one new population self-sustaining in the wild within the species' historic range within 25 years<br>• Resident community engaged in conservation activities, and environmental awareness increased by project completion | • IUCN Red List<br>• Population monitoring reports<br>• Reports on awareness campaigns. Numbers of nationals employed by the project | [redacted] |
| **Purpose**<br>To avert imminent extinction of the Madagascar Pochard through recovery planning and capacity building for a conservation breeding programme, site protection and public engagement. | • Conservation breeding programme established in-country<br>• Species' current habitat at Bemanevika officially protected.<br>• Community outreach programme established<br>• Species recovery plan developed with all stakeholders | • Conservation breeding programme assessed against *IUCN Technical Guidelines on the Management of Ex Situ Populations for Conservation*<br>• Site included in Government official list of protected areas<br>• Regular field reports produced.<br>• Species recovery plan endorsed by Government of Madagascar | • Current level of Government support for conservation continues<br>• Stochastic events do not lead to extinction of the wild population before *ex-situ* population is established<br>• Political stability in Madagascar allows project to be completed |
| **Outputs**<br>1. Project effectively managed and coordinated | • Annual reports and finance claims delivered on time and in budget | • Annual reports and finance claims to Darwin | |
| 2. Key conservation needs for Madagascar Pochard identified | • Analyse genetic diversity of captive founders and recommend pairings<br>• Key limiting factors at site identified<br>• Species recovery plan endorsed by Government by Y3 | • Species recovery plan published, and widely circulated in-country and abroad<br>• One scientific publication | |

| Project summary | Measurable Indicators | Means of verification | Important Assumptions |
|---|---|---|---|
| 3. Conservation-breeding programme and Malagasy capacity for aviculture established | • Captive breeding population producing around 20 birds Y1<br>• Three Malagasy staff trained in aviculture, and endangered species management<br>• Preliminary assessment of wetlands as sites for release of captive-bred birds | • Updates posted in project website<br>• Studbook created<br>• Reports on breeding success and survival of birds in captivity<br>• Annual avicultural assessment reports for all staff<br>• Husbandry guidelines produced<br>• Two scientific papers published | • Fecundity of birds not affected by inbreeding depression<br>• Political support is national stability are maintained |
| 4. Malagasy capacity for environmental CEPA of Madagascar Pochard established | • Minimum of 20 school teachers and local groups and NGOs trained in environmental CEPA<br>• Ten Malagasy project staff trained in environmental CEPA. | • Training reports produced.<br>• Ten CEPA certificates awarded. | |
| 5. Long-term protection of Bemanevika secured | • Site included within the new Protected Areas framework by Y3<br>• Site support group in place Y2 | • Necessary documentation produced to justify declaration of site as protected area<br>• Site management plan produced | • Assignation of protected area status compatible with the long-term survival of the Pochard and other key species in the site |
| 6. Local community and national audiences support conservation of the species. | • Rapid assessment of social, cultural and economic situation of communities undertaken<br>• At least 80% of schoolchildren aware and supportive of conservation activities around the target species by Y3<br>• Legal status of local communities to manage Bemanevika established | • Project start and end questionnaire surveys<br>• Awareness and education material produced in Malagasy for communities and schools<br>• Training reports produced. | |

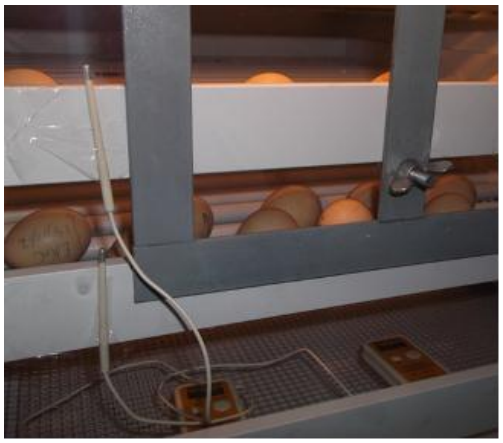
| Project summary | Measurable Indicators | Means of verification | Important Assumptions |
|---|---|---|---|
| **Activities** (details in workplan)<br>1.1 Establish Project management team and planning structure<br>2.1 Research prioritisation and development of collaborative studies<br>2.2 Analyse genetic diversity of captive founders and recommend pairings<br>2.3 Hold Recovery Plan workshop, action plan published and circulated<br>3.1 Build captive-breeding facility<br>3.2 Recruit avicultural and support staff<br>3.3 Collect eggs from wild birds and establish breeding pairs in captivity<br>4.1 Develop local partner's capacity for CEPA training and establish CEPA training in Bemanevika area<br>5.1 Maintain protection of Bemanevika site<br>5.2 Establish statutory protection for site<br>6.1 Establish national awareness programme through local media and publicity materials.<br>6.2 Assess communities and undertake questionnaire surveys in Bemanevika area. | | | |
| **Monitoring activities:**<br>Indicator 1: Project leaders to track and report progress against measurable indicators and institutional workplans to ensure timely delivery of project outputs<br>Indicator 2: Constant monitoring of key demographic rates in captive population as part of adaptive management of the captive breeding programme<br>Indicator 3. Repeat appraisals to monitor staff skill development and knowledge generation of CEPA techniques<br>Indicator 4. Evaluation of change in community awareness of the pochard and conservation intervention through repeated questionnaires. | | | |

## Annex 3 Onwards – supplementary material (optional but encouraged as evidence of project achievement)

**Tsanta Fiderana Rakotonanahary and Floriot Randrianarimangason vaccinating Madagascar Pochards. Photo by Floriot Randrianarimangason**

**The new aviary block, November 2012. Photo by Glyn Young**

**The new aviary block, November 2012. Photo by Glyn Young**



**Photos by Floriot Randrianarimangason and Martin Brown**

| Pair | Enclosure | No. eggs | No. fertile eggs | No. soft-shelled eggs | No. eggs hatched | Fertile eggs failing to hatch and potential cause. |
|---|---|---|---|---|---|---|
| ♂MP0012, ♀MP0024 | S1 | 6 | 6 | 0 | 5 | 1, malpositioned embryo |
| ♂MP0004, ♀MP0015 | L1 | 3 | 2 | 0 | 1 | 1, the embryo died c. 2 days before pipping internally, misshapen head (more so than would be normal). The egg also had a large air pocket whilst developing. |
| ♂MP0004, ♀MP0014 | L1 | 5 | 4* | 0 | 3 | *1 egg was laid after the females were separated after fighting in the nest box, given that at the time we had more eggs than ducklings we could rear, it was not incubated. A second egg, laid after the batch of eggs had been set in the incubator; this was incubated by MP0015 for 16 days. The egg was, however, thrown out of the box, most likely because of large infestation by ants. |
| ♂MP0019, ♀MP0016 | L2 | 4 | 0 | 2 | 0 | |
| ♂MP0001, ♀MP0011 | L3 | 6 | 6 | 0 | 6 | |
| ♂MP0007, ♀MP0018 | L4 | 4 | 2 | 0 | 1 | 1, Embryo died c. 2 days before internally pipping. Although not soft, the egg was very thin shelled and consistently lost too much weight when incubated normally and failed to lose any when wet, even gaining weight on occasions. |
| ♂MP0023, ♀MP0006 | L5 | 7 | 4 | 1 | 4 | |

**Breeding record for pochards at Antsohihy 2012-2013 breeding season**

**Madagascar Pochards at Antsohihy breeding facility. Photos by Elaine Jackett and Colin Stevenson**


**Floriot Randrianarimangason and Roland Digby tree planting in Antsohihy 2013. Photos by Floriot Randrianarimangason**

**The American Cultural Center visits the pochard facility. Photo by Floriot Randrianarimangason**

**Roland Digby meets the Prime Minister of Madagascar Omer Berizik. Photos by Floriot Randrianarimangason**

**Lake Nanilezana. Photo by Andy Bamford**

**Felix Razafindrajao and Andy Bamford sampling for invertebrates. Felix and Rob Shore interviewing villagers. Photos by Glyn Young and Lance Woolaver**

**Discussing potential wetland restoration with lakeside villages in 2012. Photos by Lance Woolaver and Glyn Young**

## Checklist for submission

| | Check |
|---|---|
| **Is the report less than 5MB?** If so, please email to Darwin-Projects@ltsi.co.uk putting the project number in the Subject line. | √ |
| **Is your report more than 5MB?** If so, please discuss with Darwin-Projects@ltsi.co.uk about the best way to deliver the report, putting the project number in the Subject line. | X |
| **Have you included means of verification?** You need not submit every project document, but the main outputs and a selection of the others would strengthen the report. | √ |
| **Do you have hard copies of material you want to submit with the report?** If so, please make this clear in the covering email and ensure all material is marked with the project number. | X |
| Have you involved your partners in preparation of the report and named the main contributors | √ |
| Have you completed the Project Expenditure table fully? | √ |
| Do not include claim forms or other communications with this report. | |