# *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

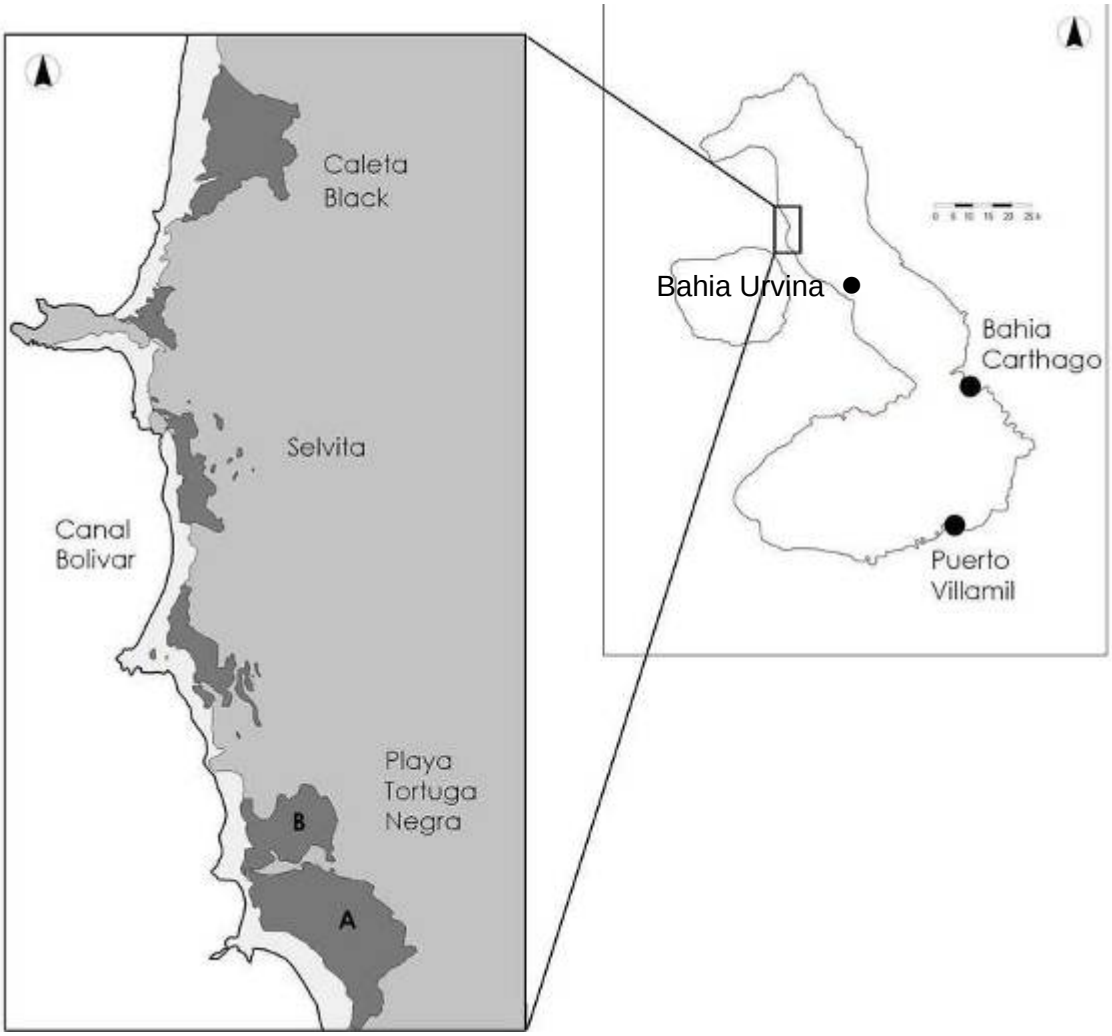
Submission deadline 30 April 2010

## Darwin Project Information

| | |
|---|---|
| Project Ref Number | EIDPO031 |
| Project Title | Restoration of the Mangrove Finch in Isabela, Galápagos |
| Country(ies) | Ecuador |
| UK Contract Holder Institution | Durrell Wildlife Conservation Trust |
| Host country Partner Institution(s) | Charles Darwin Foundation |
| Other Partner Institution(s) | Galápagos National Park |
| Darwin Grant Value | £171,484 |
| Start/End dates of Project | 1st July 2009-30th June 2011 |
| Reporting period (1 Apr 200x to 31 Mar 200y) and annual report number (1,2,3..) | To 31 Mar 2010. Annual Report number 1. |
| Project Leader Name | H Glyn Young |
| Project website | |
| Author(s) and main contributors, date | H Glyn Young & Francesca Cunninghame |

## 1. Project Background

This project is a continuation of **Project 15005** (2006-2009) Conservation of the Mangrove Finch (*Cactospiza Heliobates*). During this project we estimated a total population of no more than 90 Mangrove Finches distributed in three locations. The two main populations are in western Isabela Island (approximately 50 birds in Playa Tortuga Negra (PTN) and 30 in Caleta Black(CB)). A further population is located in eastern Isabela at Bahía Cartago where only four birds have been recorded. A PVA analysis (in November 2008) using available demographic parameters, showed that due to the low reproductive success due to predation, without intervention the two western finch populations are threatened with extinction in less than 10 decades. The small eastern population is not viable. Rats are the principal problem followed by the fly parasite *Philornis downsi*. With efficient rat control (as established through the first project) the two western populations can stabilize and even increase in numbers. However, due to the small extent of these mangrove patches, it is likely that carrying capacity will soon be reached. Because the two sites are within 3km of each other, the species is also susceptible to catastrophic events (volcanic eruption, arrival of new disease etc.) as both sites would probably be affected at the same time. Project partners believe that invasive species and disease and parasite control will go along way to assist in its recovery, but that the establishment of a new population at one or more former sites will further ensure survival.




The Galápagos National Park (GNP) has carried out intensive rat controls in their annual work plan eventually leading to a local extirpation of rats around the main western populations. GNP also controls other introduced species like cats and smooth-billed anis.

Success of controls will be measured by nesting success as well as through annual censuses. We expect the two main populations to reach carrying capacity (after the reproductive phase in 2010) and birds to disperse thereafter. The expectation is that the three mangrove patches interlinking the main sites would be colonized first, from which birds should migrate to Fernandina; thus, at least two visits per season are planned to this island (CDF). A viable population of finches in the main sites could permit harvesting of eggs/ juveniles or even some adults for restocking e.g. at Cartago, or to create a new (captive) population.

According to our habitat analyses, two possible sites have been identified for establishing a third viable MF population: One is Cartago with a currently very low number of MF and the other is the Ramsar site close to Puerto Villamil where MF has been recorded historically.

In Cartago, only intense control of invasive species and supplementing with translocated or captive-bred birds could restore this site. More information is needed about this site e.g. is it suitable for holding a larger population, current rat and *Philornis* densities, and diseases?

The Ramsar site, near Villamil, has habitat features that are important for the species, e.g. leaf litter, high amount of dead wood and separation from the sea. However, this site also poses several problems that have to be addressed such as introduced but little studied species (frogs, wasps), invasive grass that closes the lagoon, closeness to the village and thus problems with contamination, rats, cats, chickens and their diseases etc. However, this would facilitate post-monitoring of a release. The restoration of the Villamil site is a political decision and we can thus not guarantee that the existing plan will be fulfilled. However, we would initiate a health study around the site and an invertebrate collection in the key substrates as done in PTN and

CB. An awareness campaign should be started to increase the number of community members aware and concerned about protection and conservation of the Ramsar site and to strengthen the cooperation between GNP, CDF and the municipality towards its restoration. The campaign includes the design of a mascot (link between Project and Ramsar site), posters, banners, interpretation signs, education pack for schools and capacity-building for local guides.

## 2. Project Partnerships

Project partnerships:

This project has two local partners and has collaborated through a signed MoU since 2006.

Charles Darwin Foundation (CDF)

CDF remains the main partner and the field manager is employed through them. Opportunities to involve other CDF staff have been limited this year due to the length of field trips; however, Sharon Deem, a wildlife vet, has been consulted throughout and will be present in forthcoming translocation trials. Sharon's knowledge of other finch species and diseases will be invaluable and consequently she will learn about Mangrove Finch. Having a locally based vet with experience in this rare species will be a great asset. Staff turnover at CDF remains a problem and the fifth counterpart co-ordinator for this project (started in 2005) took over in 2010.

Galápagos National Park (GNP)

The GNP continued to be involved in the Mangrove Finch Project; however, staff shortages in recent months have prevented park rangers from joining field trips since the new project manager arrived in November 2009.

Recent active involvement from GNP in relation to Mangrove Finch management has been in invasive species control. Victor Carrion (GNP Introduced species eradication and control) has suggested getting the GNP staff based fortnightly at their base in the Bolívar Canal to conduct routine checks and refill peripheral rat bait stations at PTN and CB. This would increase the frequency bait stations can be refilled through constant presence of rangers at the base. Moreover, as rangers working there are from the Marine Department, ultimately more people with knowledge and skills to conduct predator control for finch protection would eventuate.

Although there has been little field involvement from GNP recently, support offered by Victor Carrion in terms of logistical help has been of great benefit to the Project. Regular meetings continue to keep GNP updated with project actions and plans.

If the planned translocation is a success then previously trained GNP staff must participate in field trips to Bahía Urbina so that they become experienced at the new site and can independently continue to manage the population.

The **Action Plan**: Galápagos Mangrove Finch *Camarhynchus Heliobates* Recovery Plan 2010-2015 was completed in March and after final review submitted to CDF and GNP in April.

Other collaborations during this Project year have been in:

*Remote sensing*

Benjamin Heumann from the University of North Carolina, USA, is using remote sensing mapping techniques to map the mangroves of Isabela. Preliminary results from this work have already been made available to the Mangrove Finch Project and are valuable for helping to assess potentially suitable release sites for translocated finches.

*Philornis Project*

The Mangrove Finch Project continues to coordinate and assist with the CDF *Philornis* Project. Angel Ulloa, a Project field assistant finds and monitors Darwin's finch nests in the Santa Cruz highlands. Once nests are brought to CDF, David Anchundia and Francesca Cunninghame extract and package the larvae and pupae which are sent out weekly to the US (SUNY).

170 *Philornis* pupae were extracted from a failed Common Cactus-finch *Geospiza scandens* nest found on CDF grounds, this is an extremely high count from a single nest and stresses the importance of developing some form of control for this fly.

Sabine Tebbich from the University of Vienna, Austria, arrived in Galápagos in January to continue research into the impacts of *Philornis* by conducting a comparative nest success study of Warbler Finch *Certhidea olivacea* and Small Tree-finch *Camarhynchus parvulus* in the highlands. The results were alarming with both species having extremely low nesting success, *Philornis* parasitism was the most common cause of chick death. This highlights the need to develop a control method for this invasive threat. Another collaborative scientist, MSc student Robert Collignon from the SUNY College of Environmental Science and Forestry Syracuse, New York, is working on developing a pheromone trap, for this he needs to work with live flies.

*Scale beetle biocontrol*

Monitoring for presence of introduced scale beetle *Icerya purchasi* and the biocontrol agent, the Australian ladybird *Rodolia cardinalis*, was carried out at PTN and CB during January to increase area to be monitored as part of a project run by Roy Vandries, a visiting scientist from the University of Massachusetts. Neither the ladybird nor invasive scale beetle were detected.

*Genetics*

The Project continues to send blood samples to the Ken Petren Lab, Cincinnati, US, for population genetics studies. Results will be published soon.

## 3. Project progress

Dr Birgit Fessl, Field Manager for the Mangrove Finch Project 15005 (2006-2009) resigned from the Project in 2009 in order to return with her family to Europe. The vacant position was advertised following the successful application to Darwin for an extension and Francesca Cunninghame from New Zealand was employed after interviews were held by CDF and Durrell. Francesca was unable to begin in Galápagos until November. Birgit Fessl remains a consultant to the Project and spent November 2009 with the Project in order to develop protocols with Francesca and visited Jersey in order to meet her successor and prepare plans for 2009-2011.

### 3.1 Progress in carrying out project activities

1. Invasive species control, finch censuses and capacity building

*Invasive species control*

Impact of rat monitoring and initial control programme on Mangrove Finch numbers was published in 2010 (Fessl *et al* 2010: see Table 2). Introduced rats *Rattus rattus* were monitored within the mangrove forest at PTN during March 2010. Established monitoring sites were used and 24 tomahawk traps were baited and set for three consecutive nights (72 trap nights). No rats were caught demonstrating that they are currently scarce and possibly absent through the ongoing poisoning programme. Maintenance and baiting of poison bait stations at PTN and CB within the mangroves continues to be done by Project staff with assistance from GNP which supplies the Project with poison (wax based Klerat baits). In January 25kg of poison was put out and in March 30kg. Twice a year (December and April) GNP staff conducted a predator control field trip visiting several mangrove sites along the Western coast of Isabela. During these trips they refilled peripheral bait stations at PTN and CB, in addition to hand placing 1080 laced fish baits for cat control along 3.5km of coastline, from North of CB to south of PTN.

*Improving invasive species control*

At present vast amounts of bait are being consumed by hermit crabs and large native cockroaches. This is a waste of bait and jeopardises the efficacy of the bait stations should rats re-invade. New bait station designs, developed in crab infested tropical islands, are being discussed with experts from Island Conservation to try and resolve this issue.

GNP, in collaboration with Island Conservation, are planning a trial aerial broadcast of 1080 (Sodium fluoroacetate) laced baits developed in Australia for cat control. Trials with non-target species will be conducted later this year (involving Mangrove Finch Project staff); if baits do not risk non-target species then it presents opportunities for better control for cats at PTN and CB.

Mangrove Finch

*Distribution*

Point counts were conducted at PTN and CB during January and March 2010. The distribution of singing Mangrove Finches was similar to that found in 2009, with singing males being recorded from the majority of the points. The distribution was greater during March with finches being recorded at 88.5% of the sites compared to only 65% in January. This was likely due to the increase in nesting and consequent singing activity of male birds. As in the past, few females were recorded.

*Nesting*

Mangrove Finch nests were found and observed at PTN and CB during January and March. A total of 26 nests were observed. Of these, 14 were still in incubation and two in construction at time observations finished: outcome of these is currently unknown. Three nests were observed to be abandoned during incubation, of these only one was low enough to be accessible: it contained a single abandoned egg. One nest from January successfully fledged a single chick. An upcoming trip in April will focus on trying to locate fledglings from nests found in March. Two young fledglings and an older juvenile were observed in March, however, it is unknown whether they came from monitored nests or not.

Six lone males were observed singing beside nearly completely constructed nests without attracting female mates, it appears that the population may be male biased.

2. Bird ringing and blood sampling

No finches were handled during Year 1. Birds captured for the translocation trial (see below) in May or June 2010 and blood samples will be taken and each bird given a full health check.

3. Translocation

A trial translocation of Mangrove Finches is in the final stages of planning and will be conducted during May following cessation of breeding. A strong *El Niño* has lengthened the breeding season of terrestrial birds in Galápagos and delayed collection for translocation.

The proposed release site at Bahía Cartago was visited during February 2010 for 10 days. A total of 950m of transects were cut, allowing access into the mangroves. Though this site presents the largest area of continuous mangrove forest on Isabela, there were several aspects that made it appear unsuitable for the first ever translocation of Mangrove Finches. Logistically the site is difficult to manage due to limited access making monitoring the birds, even with the use of radio telemetry, problematic. In addition, its distance from PTN (70km in direct line, >160km by sea) makes the transportation of the birds risky, especially as the birds would have to be transported by boat, resulting in a long journey if using a smooth slow boat (>12hours). This was decided to be preferable than a faster but rougher journey with a smaller boat.

Further to the obvious logistical problems, extremely high numbers of at least four species of mosquito, active both by day and night, are seen as a disruption to initial field work!

These factors led to restructuring of translocation plans. The Project and its consultants were in agreement that a site presenting a lower risk to the birds would be used as a trial to understand how the birds will react to capture, boxing and travel, release and willingness to settle into a new mangrove. The long term plan remains to translocate individuals to Bahía Cartago the following year, once we have experience in catching, transporting and releasing them.

An area of mangrove forest at Bahía Urbina will be assessed in late April. This site is only 25km by sea from PTN and was identified as having potential following a habitat survey conducted in

1998. Initial rat and invertebrate monitoring will be conducted and consequently a final decision will be made on the suitability of the site.

If Bahía Urbina is suitable then no more than 10 Mangrove Finches will be translocated once breeding activity ceases. Birds will be caught in mist-nets, targeting independent juvenile birds, and they will be fitted with 0.43g transmitters with a nominal battery life of 22 days (Hollohill Systems Ltd), placed in transfer boxes (30 x 30 x 40cm) and moved along the coast by slow boat. The birds will be released the same day that they were caught. Following release, staff will camp at release site and radio track the birds on a daily basis until transmitter batteries run out. Shorter visits will be conducted monthly to locate birds. Once it is apparent where the birds settle, transects will be cut and rat bait stations put in place prior to onset of the next breeding season, during which time Mangroves Finches are at greatest risk from rat predation. Mangrove Finch Project staff will initially be responsible for refilling bait stations and cat control will be conducted biannually by GNP.

*Invertebrate sampling*

Invertebrate abundance was measured at possible reintroduction site at Bahía Cartago during February 2010. The purpose of this monitoring was to assess whether the area had sufficient invertebrates to support a population of Mangrove Finches. Samples were collected from leaf litter, fallen trunks and Red Mangrove buds. The same methods as those used by Loaiza in 2009 at PTN were used to gain comparative results. Results will be ready at the end of April.

4. Awareness campaign

*Awareness raising on Isabela*

The CDF Isabela Island educator position has been vacant for the past four months; however, it is soon to be filled. Mangrove Finch awareness raising has been included as part of the job. Currently few locals on Isabela know of Mangrove Finches and it is hoped that the educator will work with schools and municipality to increase awareness. It has been decided that Mangrove Finch awareness raising should start with the community on Isabela (Puerto Villamil) as it is the only inhabited island on which the birds are found.

*Mangrove Finch Comic*

An informative five-page full colour comic strip has been produced in collaboration with the CDF Education Department and Alan Hesse, a contracted artist. The comic outlines current situation of Mangrove Finches and highlights the reason for the proposed translocation. At the end of the picture frames there is a paragraph of informative text. 1000 copies are due to be printed in April or May for distribution throughout schools at Puerto Villamil. This is the first education product to be completed this year.

5. Capacity building

The Mangrove Finch Project has been involved in CDF and GNP capacity building programmes since 2006. The presence in Galápagos of the Project's experienced field scientist and visiting collaborators has allowed Project to take on many important training roles including bird handling and husbandry, census techniques and predator monitoring.

Abraham Loaiza completed his thesis *Comportamiento de alimentación del pinzón de manglar (Cactospiza heliobates), comparado en dos estaciones climáticas (Feeding behaviour of Mangrove Finch over two seasons)* as partial requirement for a Bachelor of Science in Pure Biology at Universidad Central Del Ecuador in July (see photographs in Appendix 3).

### 3.2 Progress towards Project Outputs

1. The three existing Mangrove Finch populations are restored and healthy

Rat control measures at PTN and CB have proven very effective (see Fessl *et al*. 2010) and population here is expanding. Males considered to be recent recruits to the population have been located in the Selvita (small mangrove patches between PTN and CB) since 2008 and

there are now credible records of birds from Fernandina (population and sightings are detailed in Annexe 3: Table 1).

Other invasive vertebrates are being controlled. However, *Philornis* control methods are still being developed (see above).

2. Population size, breeding status, habitat suitability and disease risk known for eastern population

Bahía Cartago was visited in February 2009 (by Birgit Fessl) and only two birds were located (there were five in 2008). One bird was captured, ringed and sampled for DNA analysis but a full analysis in relation to western populations is not yet complete. Cartago was visited again 10th-20th February 2010 to assess site and cut transects. A full invertebrate sampling survey was undertaken in order to compare with PTN and CB (report will be completed in May 2010).

3. Ramsar site restored and evaluation finished for suitability

Work in Puerto Villamil has not started properly and will begin with awareness campaign in local community and schools. The finch comic has been drafted and will be printed and distributed in 2010.

4. Birds released in suitable site

No birds have been released yet as ant *El Niño* event this year has lengthened the breeding season. Following discussion between Project members and consultants it is proposed that finches will be captured in early May, fitted with transmitters and released at Bahía Urbina.

### 3.3 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 this reporting period | Total planned from application |
|---|---|---|---|---|---|---|---|---|
| 3 | Qualifications | 1 | 1 | | | | | 2 |
| 4B | Training weeks | | | | | | | |
| 4C | Postgraduate volunteers | 2 | | | | | | |
| 5 | People trained | 1 | | | | | | |
| 7 | Training material | 1 | | | | | | |
| 8 | UK project staff weeks in host country | | | | | | | |
| 10 | Manuals etc | 2 | | | | | | |
| 11A | Peer reviewed papers | 1 | | | | | | |
| 11B | Submitted papers | 1 | | | | | | |
| 12A | Computer databases | | | | | | | |
| 14A | Conferences | | | | | | | |
| 15A | National press | | | | | | | |
| 15B | Local press | | | | | | | |
| 15C | UK press | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 15D | UK local press | | | | | | | |
| 18A | TV programmes | | | | | | | |
| 19A | Radio interviews | | | | | | | |
| 21 | Permanent facilities (aviaries) | 1 | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

In Table 2, provide full details of all publications and material produced over the last year that can be publicly accessed, eg title, name of publisher, contact details, cost. Mark (*) all publications and other material that you have included with this report.

**Table 2 Publications**

| Type (eg journals, manual, CDs) | Detail (title, author, year) | Publishers (name, city) | Available from (eg contact address, website) | Cost £ |
|---|---|---|---|---|
| Journal paper* | How to save the rarest Darwin's finch from extinction: the mangrove finch on Isabela Island. Fessl, Young, Young, Rodriguez-Matamoros, Dvorak, Tebbich and Fa. 2010.* | Philosophical Transactions of the Royal Society of London | http://rstb.royalsocietypublishing.org/content/365/1543/1019.abstract | N/A |
| Manual* | Galápagos Mangrove Finch *Camarhynchus heliobates* Recovery Plan 2010-2015.* | Durrell, CDF and GNP | Will be made available on Darwin Initiative, Durrell and CDF websites in 2010 | N/A |
| Report | Taller Internacional sobre manejo del Pinzón del Manglar (*Cactospiza heliobates*) | CBSG Mesoamérica | www.cbsgmesoamerica.org/leer.php/3750995 | N/A |

### 3.4 Progress towards the project purpose and outcomes

This Project has built on results of the original project which identified the main causes of decline as parasites and nest predators and increased the population size in the two populations in the west. Project will increase knowledge of the eastern population and study the prevalence of bird diseases or their vectors in potential release sites.

Actions taken during the project will be in line with the Action Plan developed in November 2008 and completed in March 2010.

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

Mangrove habitat is very rare in Galápagos and has been very poorly studied. The Project will have improved knowledge of this habitat in the archipelago through mapping, bird study,

invertebrate sampling and tree surveys. The study of mangrove in the Ramsar site will be of major importance to management of this valuable and highly vulnerable site.

## 4. Monitoring, evaluation and lessons

Direct monitoring of this project is difficult through the remote location of all field sites and difficulty in accessing them. However, all results have been widely disseminated to Project members and consultants through monthly reports and publications. A workshop was held with partners and consultants in Puerto Villamil in 2008 with outcomes of this meeting produced by CBSG Mesoamérica and the Project in 2010. Andrew Terry and John Fa (Durrell), Rachel Atkinson and Mark Gardener (CDF) and Victor Carrion (GNP) have supported monitoring.

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

Not yet applicable for this project.

## 6. Other comments on progress not covered elsewhere

Captive management of finches either for breeding birds for release, for head-starting young or eggs collected in the wild or for temporarily holding birds prior to release has been an integral component during Project planning. However, following discussion between Project members, consultants and other experts, this strategy has been postponed. Threats from insect borne diseases that become difficult to manage in aviaries and logistical difficulties in building aviaries in Bahía Cartago or Puerto Villamil (aviaries built in Santa Cruz can not be used as Mangrove Finch can not be taken from Isabela/Fernandina) have led to this change in translocation protocol. Birds will be collected directly from source and translocated to receptor site.

## 7. Sustainability

The Mangrove Finch has been identified, following initiation of the Project, as the most endangered bird (animal?) in Galápagos and the importance of this species' conservation is now taken very seriously by GNP and CDF. It has been made highest priority, with Floreana Mockingbird, and is prominent in publicity material from CDF (e.g. on CDF website www.darwinfoundation.org). Conservation work will now be continued by partners after duration of Project. The presence of dedicated project manager has been well received in Galápagos conservation and will become a model for other projects. Durrell, CDF and GNP have begun a joint project to establish ecology of Floreana Mockingbird in preparation for translocation to Floreana.

## 8. Dissemination

Monthly reports have been produced throughout project 15005 and continue in the same format for this Project. These reports are distributed to all partners and consultants including those personnel previously involved. All publications and the Action Plan have been distributed.

## 9. Project Expenditure

**Table 3 Project expenditure during the reporting period (Defra Financial Year 1 April 2008 to 31 March 2009)**

| Item | Budget | Expenditure | Variance |
|---|---|---|---|
| Rent, rates, heating, overheads etc | | | |
| Office costs (eg postage, telephone, stationery) | | | |
| Travel and subsistence | | | Travel costs lower as field manager did not start until Nov 09. |
| Printing | | | |
| Conferences, seminars, etc | | | |
| Capital items/equipment (specify) | | | Proposed aviary building has been postponed |
| Others (specify) | | | |
| Salaries (specify by individual) | | | Staff costs lower as field manager did not start until Nov 09. |
| TOTAL | | | |

Highlight any agreed changes to the budget and explain any variation in expenditure where this is +/- 10% of the budget. Have these changes been discussed with and approved by LTS?

Changes to budget resulting from postponement of aviary construction and late start of Field Manager have not yet been sought. Transfer of staff wages and field travel expenses.

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

Surveys at Playa Tortuga Negra and Caletta Black in 2009 and 2010 have shown the success of the first project (15005) in reducing threats to the Mangrove Finch population allowing this critically endangered bird to fill vacant territories in the mangrove forest at these sites and begin to disperse to former areas. Birds have once again been recorded in Fernandina.

The Galápagos Mangrove Finch *Camarhynchus heliobates* Recovery Plan 2010-2015 was completed in March 2010. This report was produced following the Mangrove Finch Workshop held in Isabela in November 2008.

# Annex 1 Report of progress and achievements against Logical Framework for Financial Year: 2009/10

| Project summary | Measurable Indicators | Progress and Achievements July 2009 - March 2010 | 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><br>*The conservation of biological diversity,*<br><br>*The sustainable use of its components, and*<br><br>*The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources* | | | *(do not fill not applicable)* |
| **Purpose**<br>Increase of population size in the two well known populations in the west; increase of knowledge of the eastern population and establishment of an additional viable population.<br>Implementation of the Action Plan and, if needed, the emergency plan developed during the original Project. | Intensive rat eradication programme and establishment of a buffer zone in year 1. Population growth confirmed by field research in all three sites Y2. Health assessment in historical sites (including Cartago) Y1. Establishment of aviaries in Villamil (if necessary) Y2. of birds to Cartago if research proves it necessary (Y2). Ramsar site restored (part one) : depending on co-funding from other organisations Y2 Education programme started and continued throughout Y1+2. Supplementation | | |

| | | |
|---|---|---|
| **Output** 1. The three existing mangrove finch populations are restored and healthy | Population has grown by at least 25% in all known sites (PTN, CB, Cartago Y2<br>Monitoring programme implemented by GNP Y2<br>Populations of rats, cats and anis reduced drastically Y1 | |
| Activity 1.1 Intense rat, cat and ani control campaign | | Control programmes continue from Project 15005 and are part of GNP annual workplan |
| Activity 1.2 Population estimate updated and breeding success study | | |
| Activity 1.3 2 GNP guards trained in bird monitoring | | GNP guards continue to assist in field work but staff turn-over high. |
| **Output 2**. Population size, breeding status, habitat suitability and disease risk known for eastern population | Invertebrate community in key substrates assessed Y1<br>Population size and breeding status known Y1 | |
| Activity 2.1 Status of eastern (Cartago) population assessed | | Only two birds located. PVA predicts extinction. |
| Activity 2.2 Disease risk analysed for Cartago site | | Mosquito levels high but prevalence of avian malaria and avian pox not yet established. |
| Activity 2.3 Habitat suitability of eastern site assessed | | Invertebrate study completed and results expected May 2010. |
| **Output 3.** Ramsar site restored and evaluation finished for suitability | Introduced species eradicated or drastically reduced Y1+2<br>Natural hydrological conditions restored Y1<br>Disease risk assessed Y1<br>Invertebrate community in key substrates assessed Y1 | |
| Activity 3.1 Co-funding obtained (triggering other activities) – open | | Unable to start in Year 1. |

| | | |
|---|---|---|
| Activity 3.2 Aquatic community assessment completed | | Unable to start in Year 1. |
| Activity 3.3 Health study on passerines and domestic chicken (as well for decision for aviaries) | | Unable to start in Year 1. |
| Activity 3.4 Habitat suitability of Ramsar site assessed | | Unable to start in Year 1. |
| **Output 4.** Birds released in suitable site | Aviary built in Villamil Y1<br>Suitable site identified (see also point 2, 3). Y1<br>Captive Management Plan established and implemented and birds released Y2<br>4 GNP & CDF staff fully trained Y1+2 | Bahía Cartago site examined and Bahía Urbina will be visited in April 2010. |
| Activity 4.1 Aviary construction | | Postponed following consultation – translocation(s) will now proceed by hard release of birds captured at source sites. |
| Activity 4.2 2 GNP and 1 local staff trained in captive care | | Unnecessary |
| Activity 4.3 First birds/ eggs brought into aviary | | Unnecessary |
| Activity 4.4 First birds translocated | | Delayed through extended 2009/10 breeding season. Planned for May 2010. |

# 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>Assure stabilization of two main mangrove finch populations and establishment of a third viable population. | Restored populations are self-supporting and need minimal intervention.<br>A third viable population established. | Field survey reports and publications from CDF and GNP. | |
| Purpose<br>Increase of population size in the two well known populations in the west; increase of knowledge of the eastern population and establishment of an additional viable population.<br>Implementation of the Action Plan and, if needed, the emergency plan developed during the original Project. | Intensive rat eradication programme and establishment of a buffer zone in year 1. Population growth confirmed by field research in all three sites Y2. Health assessment in historical sites (including Cartago) Y1. Establishment of aviaries in Villamil (if necessary) Y2. of birds to Cartago if research proves it necessary (Y2). Ramsar site restored (part one) : depending on co-funding from other organisations Y2 Education programme started and continued throughout Y1+2. Supplementation | Husbandry guidelines finished<br>New invasive species management in the areas implemented in long term work plan of GNP.<br>Local guides trained.<br>Park guards trained in census techniques.<br>Scientific papers<br>Project reports<br>Education material<br>Ramsar site Action Plan implemented<br>Mangrove finch Action Plan implemented | Full cooperation from GNP and CDF will be required. The restoration of the Ramsar site is dependent on external funding. Invasive species control in inhabited area (Villamil) needs support from municipality. |

| | | | |
|---|---|---|---|
| Outputs (add or delete rows as necessary)<br>1. The three existing mangrove finch populations are restored and healthy | Population has grown by at least 25% in all known sites (PTN, CB, Cartago Y2<br>Monitoring programme implemented by GNP Y2<br>Populations of rats, cats and anis reduced drastically Y1 | Bird census and monitoring of breeding success<br>Rat monitoring | Extreme weather conditions or other catastrophic events (e.g. volcanic eruption)<br>Political decision preventing GNP actions |
| 2. Population size, breeding status, habitat suitability and disease risk known for eastern population | Invertebrate community in key substrates assessed Y1<br>Population size and breeding status known Y1 | Bird census and monitoring of breeding success<br>Health report<br>Invertebrate community in key substrates analysed | |
| 3. Ramsar site restored and evaluation finished for suitability | Introduced species eradicated or drastically reduced Y1+2<br>Natural hydrological conditions restored Y1<br>Disease risk assessed Y1<br>Invertebrate community in key substrates assessed Y1 | Monitoring of introduced species<br>Monitoring of aquatic community<br>Health report<br>Invertebrate community in key substrates analysed | No co-funding obtained<br>Municipality and/or community opposed to project |
| 4. Birds released in suitable site | Aviary built in Villamil Y1<br>Suitable site identified (see also point 2, 3). Y1<br>Captive Management Plan established and implemented and birds released Y2<br>4 GNP & CDF staff fully trained Y1+2 | Captive Management Plan<br>Workshop of captive breeding<br>Assessment of survival of released birds | Health risks prevent captive breeding and/or translocation |

| |
|---|
| Activities (details in workplan)<br><br>1 Predator control, censuses and capacity building<br>2 Bird ringing and blood sampling for genetic analysis and disease check and habitat surveys<br>3 Reduce significantly invasive species (rats, cats, ani, domestic chicken, *Paspallum vaginatum* (a grass) and work with restoration of Ramsar site. Impact study of<br>introduced competitors and health risks.<br>4 Building aviaries and harvesting of eggs/chicks or adults (according to captive management plan).<br>5 Diagnostic study of community perception of conservation.<br>6 Awareness campaign. |
| Monitoring activities:<br>Indicator 1 Density of rats in areas after intense control measurements<br>Indicator 2 Mangrove finch population estimate established through point count method<br>Indicator 3 Breeding success established through direct nest observations<br>Indicator 4 Survival of translocated birds through telemetry<br>Indicator 5 Prevalence of disease vectors in birds in relevant mangroves areas<br>Indicator 6 Attitude of local community towards conservation aims before and after awareness campaign |

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

1. Identified threats to Mangrove Finch survival.

**Table 1.** List of potential causes of population decline of the Mangrove Finch with extent of current knowledge, the level of impact the threat may pose, its priority for actions and feasibility of reducing threat levels.

| Cause | Extent of knowledge | Importance of impact | Priority for action | Feasibility |
|---|---|---|---|---|
| Black Rats | Good | High | High | High |
| *Philornis downsi* | Good | High | High | Low |
| Diseases | Low | High | High | Medium |
| Habitat change | Medium | High | Low | Low |
| Smooth-billed Ani | Medium | Medium | High | High |
| Fire ants | Medium | Medium | Medium | High |
| Extreme climate variation | Good | Medium | Low | Low |
| Inbreeding | Good | Medium | Low | Low |
| Hybridisation | Good | Medium | Low | Low |
| Feral cats | Medium | Low | Medium | High |

2. Recent records of Mangrove Finches outside the current breeding sites

In 2008 and 2009 three sightings outside the main breeding area were documented. On 22nd March 2008, Godfrey Merlen and Noemi d´Ozouville observed and photographed a non-singing bird in the mangroves area El Estero (to the west of Puerto Villamil. This bird showed a strong facial pattern, a dark mottled breast and a comparatively short bill. These characters combined identify this individual as a certain Mangrove Finch. During four subsequent visits to this site by Birgit Fessl and Michael Dvorak the presence of Mangrove Finches at this site and its vicinity could not be confirmed. On 26th November 2008 birding guide Nick Athanas (*Tropical Birding*) together with his group observed a tentative Mangrove Finch in a small mangrove stand at the visitor site in Punta Espinoza on Fernandina Island. Identification of this bird was not as straightforward as for the Villamil bird. However, the rather short bill, the strong facial pattern and the overall greyish mantle and head all point to Mangrove Finch. The plain breast, however, is shared by the Woodpecker Finch but falls within the variation of Mangrove Finches; several Mangrove Finches caught in PTN looked very similar to this bird. Picture and film material of this record are available online at

http://www.webfoundations.com/temp_photos/finch/Possible_Mangrove_Finch.wmv.

On 25th November 2009, another Mangrove Finch was observed and photographed at Punta Espinoza by Andrés Vásquez (*Tropical Birding*) and a birding tour group. This bird was discovered by its song and photographed. It showed all the main characters of a typical Mangrove Finch (bill shape, facial pattern, greyish-brown mantle, mottled breast).

**Table 2.** Global population, distribution and trends (increasing, stable or decreasing) of the Mangrove Finch. The reliability of parameter estimates are coded using the quality codes (A = reliable, B = incomplete; C = poor; U = unknown) used in BirdLife International's World Bird Database.

| Island | Population (quality code) | # birds | Population trend ( quality code) | Sporadic sightings | Notes |
|---|---|---|---|---|---|
| Isabela | PTN (A) | 51 (25-103) | Stable (A) | | Counts in 2007, 2008, 2009 |
| Isabela | CB (A) | 49 (24-101) | Stable (A) | | Counts in 2007, 2008, 2009 |
| Isabela | Cartago (C) | 2-5 | Decreasing (A) | | Searches in 1997,1998, 2008, 2009 |
| Isabela | El Estero - Villamil | | | X (B) | By G. Merlen in March 2008 |
| Fernandina | Punta Espinosa | | | X (A) | By guides in Nov 2008, 2009 |
| Fernandina | Punta Mangle | | | X (C) | By G. Jimenez (2007) |
| Total | Individuals | 110 | | | |

3. Field work

**Table 3.** Field excursions undertaken in Year 1

| Date | Transport | Location | Purpose |
|---|---|---|---|
| 29th Nov-8th Dec 2009 | GNP | Various mangrove patches on W coast of Isabela and E Fernandina | **MF staff**: Initial visit to PTN and CB<br>**GNP**: Cat and rat control. |
| 7th-21st Jan 2010 | GNP | Playa Tortuga Negra | Point counts, nest finding, rat control |
| 10th-20th Feb 2010 | MF project | Bahía Cartago | Assess release site, invertebrate monitoring |
| 3rd-19th Mar 2010 | GNP | Playa Tortuga Negra | Point counts, nest finding, rat monitoring and control |

4. Capacity Building

Abraham Loaiza receives his Bachelor of Science degree in Pure Biology from the Universidad Central Del Ecuador (see above).

## *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 advise Darwin-Projects@ltsi.co.uk that the report will be send by post on CD, putting the project number in the Subject line. | |
| **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. | |
| 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. | |