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

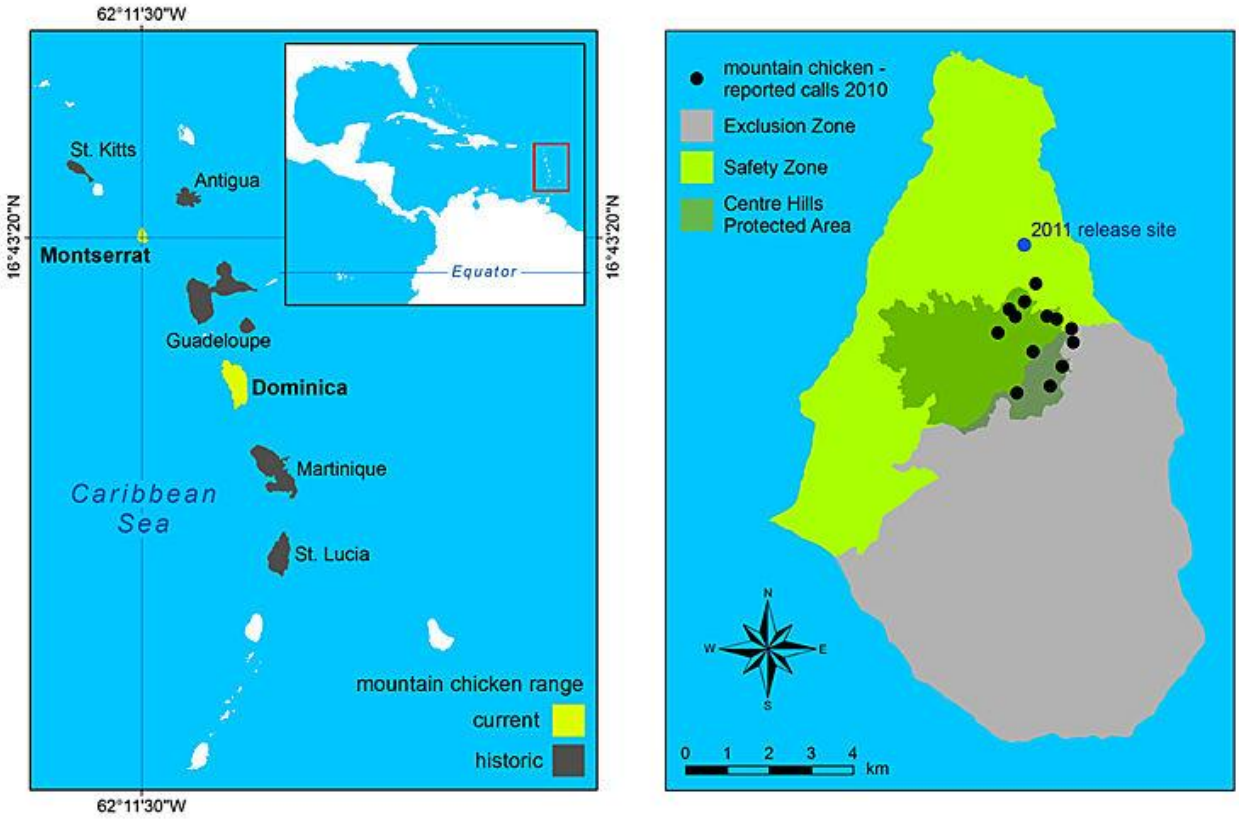
Project Reference	18018
Project Title	Enabling Montserrat to Save the Critically Endangered mountain chicken
Host Country/ies	Montserrat
UK contract holder institution	Durrell Wildlife Conservation Trust (Durrell)
Host country partner institutions	Department of Environment (DoE), Ministry of Agriculture, Land, Housing and Environment (MALHE), Montserrat
Other partner institutions	Zoological Society of London (ZSL)
Darwin Grant Value	£232,484
Start/end dates of project	1st July 2010 to 30th November 2013
Reporting period	1st April 2012 to 31st March 2013 Annual report 3
Project Leader name	Matthew Morton
Project website	www.mountainchicken.org
Report authors, main contributors and date	Sarah-Louise Adams, Matthew Morton, Andrew Terry 30th April 2013

2. Project Background

Once found on seven islands, the mountain chicken frog *Leptodactylus fallax* (Critically Endangered, IUCN) is now restricted to Montserrat and Dominica, where it has declined through historical habitat destruction and hunting. However, the emergence of the disease chytridiomycosis (chytrid), caused by the fungus *Batrachochytrium dendrobatidis*, in 2002 in Dominica resulted in catastrophic declines of 80% within 18 months of being detected. Following this, the Mountain Chicken Species Action Plan, (2007-2012, OTEP funded) prioritised biosecurity at the ports of entry in Montserrat to stop chytrid arriving on the island. Despite these efforts, chytrid was discovered on Montserrat in February 2009 by the Department of Environment. In May 2009, 50 uninfected frogs were evacuated to an *ex situ* captive breeding programme at Durrell (Jersey), ZSL (London), North of England Zoological Society (NEZS, Chester Zoo, UK). In July 2009, chytrid arrived in the last healthy mountain chicken population resulting in the deaths of many frogs.

The goal of this project is to enable Montserrat to safeguard the future of the mountain chicken by: (1) establishing the evidence-base on mountain chicken and chytrid ecology in Montserrat; (2) putting in place a long-term restoration plan and steering committee; (3) developing a reintroduction and adaptive management plan and (4) generating pride and understanding among Montserratians in the restoration of this species and communicating essential bio-security management information. It sits within a longer-term Mountain Chicken Restoration Programme (MCRP), a collaboration between the Governments of Montserrat and Dominica, Durrell, ZSL and NEZS, Chester Zoo.

When the project was first planned, the goal was to initiate a series of trial releases of frogs to an isolated area of the island. The team hypothesised that this area could be free from chytrid because it was isolated from the known infected zone within Montserrat's Centre Hills by volcanic pyroclastic flows. However, after the project was awarded, but before it began in July 2010, a mission to test this hypothesis found the disease present within tree frogs in May 2010. Therefore there were no chytrid free areas on the island. This required us to adapt our plans, the major change being to release frogs into chytrid positive areas of Montserrat, but the core objectives of the Darwin project remained unchanged.



Global distribution of mountain chicken (left) and evidence of remaining population on Montserrat in 2010, showing the 2011 release site, which has also been the site of subsequent releases.. The remaining population currently appears to be very small and at low densities.)

Releasing frogs into chytrid positive areas is a contentious move that was carefully assessed and consulted with partner organisations, the IUCN Reintroduction Specialist Group and DEFRA. Although mortality from chytrid is to be expected, we also predict that a proportion of this release population will survive and breed. Our aim is to identify those factors – such as age-at-release cohorts and release season (wet vs. dry) – under our control that optimize future release and maximize our chances of establishing a viable *in situ* population of mountain chickens. In order to test this, the number of planned releases has increased from 2 to 4 over the project period.

Throughout this report we refer to: **surviving** mountain chickens or frogs, meaning frogs that persist in small numbers in Montserrat since the arrival of chytrid; **released** frogs, meaning captive-bred animals we have released into Montserrat during this project; and **other amphibians**, referring to sympatric non-native cane toads (*Rhinella marina*) and tree frogs (*Eleutherodactylus johnstonei*) that may act as chytrid reservoirs and vectors.

3. Project Partnerships

This project forms a major component of a larger collaboration between the Governments of Montserrat and Dominica, Durrell, ZSL, and NEZS (Chester Zoo) called the Mountain Chicken Recovery Programme (MCRP). For more information on this collaboration and on the project team go to www.mountainchicken.org/partnership/team/. Parken Zoo left the programme in Year 3 following internal issues at their institution. The remaining mountain chickens kept in their quarantine facility will be transferred to a new institution once one has been recruited by the MCRP. Plans to recruit at least one more institution to the programme were discussed in March 2013 at a meeting of project partners (Annex 3.1).

The Durrell Wildlife Conservation Trust (Durrell) provides project leadership from Matt Morton, based in Saint Lucia, with day to day project management in Montserrat from Sarah-Louise Adams, Project Coordinator. Durrell provides technical support from Richard Young (research design), Mike Hudson (statistical analysis), Matt Goetz (herpetology and captive management),

Andrew Routh (veterinary science) and Andrew Terry (project management and oversight), both in the UK and in the field. Staff changes were made to Durrell this year with Gerardo Garcia and Javier Lopez moving to our partner institution NEZS (Chester Zoo) where they both continue to provide herpetological and veterinary support through their new positions at NEZS (Chester Zoo). The in-country project leader is Gerard Gray, Director of Montserrat's Department of the Environment (DOE, in the Ministry of Agriculture, Housing, Lands and the Environment, MAHLE).

Sarah-Louise provides day-to-day in-country coordination, based fulltime in Montserrat and is contracted to DOE, working closely with her departmental colleagues on all aspects of project delivery. Being embedded within DOE as part of their staff structure was identified as an important way of integrating the project with DOE activities. DOE provide invaluable governmental backing to the project, with field and administrative support from DOE staff and inter-departmental linkages such as to the Physical Planning Unit (for GIS support) and the Veterinary Department of MAHLE. Durrell and DOE have collaborated for over 10 years prior to this project on biodiversity conservation initiatives in Montserrat.

A Montserrat-based Project Steering Committee brings together in-country stakeholders. Overseas PSC members receive agendas and minutes for each meeting to allow them to contribute, input, and also attend some meetings in Montserrat. The Project Leader also attends PSC meetings each year and, with the Project Coordinator, annual meetings with European Partners either in person or by skype conference call.

The Project Coordinator is based in DOE, working alongside Lloyd Martin, a DOE Forestry Technician contracted as the Project Research Officer. Calvin Fenton is contracted as the Primary Field Assistant. Sarah-Louise reports directly to Gerard Gray and, via email and Skype, to Matt Morton who also visits Montserrat regularly. She also circulates weekly tabular progress reports to all project partners (PSC members). Other DOE staff participate in project activity planning through monthly meetings with the project staff. Veterinary and herpetological support from Durrell and NEZS is via regular email/Skype communication with Sarah-Louise and Matt and on-the-ground support during frog releases.

Andrew Cunningham, Head of Wildlife Epidemiology and Deputy Director of the Institute of Zoology provides technical guidance on epidemiology from the UK, which builds on previous experience through the Darwin funded project (Ref 13032) on chytridiomycosis in the Eastern Caribbean. All swabs taken from frogs in the wild are analysed for the presence of chytrid by ZSL's laboratory in London, partly with Darwin funding and ZSL co-funding. Andrew Cunningham, Richard Young and Richard Griffiths (Durrell Institute of Conservation Ecology, University of Kent) are supervising Mike Hudson on a PhD investigating chytrid ecology in Montserrat that started in Year 3. This PhD is not funded by the current project but is providing statistical support for analyses of project data.

4. Project Progress

The project started in Quarter 3 of year one and so the period covered by this report covers Quarter 4, Year 2 through Quarter 3 Year 3 in the Activity Timetable.

In October 2012, en route to a visit to Montserrat to assist with the third release of mountain chickens, Mike Hudson was involved in a plane crash immediately after takeoff from Antigua airport. Mike was the sole survivor of this crash and was badly injured. Project staff were able to assist in arranging Mike's repatriation to the UK where he spent five months recovering from his injuries. Mike rejoined work on his PhD at the beginning of March 2013. This event has had an impact on project progress in the following ways: firstly, the third release was delayed by a month while staff efforts concentrated on repatriating Mike back to the UK and assessing airline safety. The radio transmitters used to track the frogs were already implanted in preparation for release meaning one month of battery life in the transmitters was used up while the frogs remained at Durrell during this period. Secondly, Mike is to analyse the large data set generated by this project to allow decision-making on optimal release and management strategies; this analysis has been delayed. Thirdly, the planned workshop in March 2013 to develop a Long Term Restoration Strategy will be informed by these analyses and has also been delayed until July 2013.

In March 2013, DEFRA approved a 6-month no-cost extension to the project which will now finish on 30th November 2013. Hence, we have submitted this report in the standard annual format with the final report due on the 28th February 2014.

4.1 Progress in carrying out project activities

Output 1. The evidence base for the restoration of the mountain chicken and mitigation of the impacts of chytrid is established.

1.1 Establishment of project basis and staff in Montserrat

This activity was completed in Year 1 with the Project Coordinator, Research Officer and Field Assistant contracted to DOE. No staff changes have been made this year, although the Project Coordinator married, changing her name to Sarah-Louise Adams.

1.2 Research prioritisation exercise

The research prioritisation exercise which led to the development of the project research strategy (Annex 3.2) was completed in Year 2 and the research activities in this strategy continue to be implemented throughout Year 3. The results of these activities are to be presented to the Long Term Restoration Strategy workshop during the 6 month extension period.

1.3 Develop, test and implement population estimation method

In Year 3, 51 surveys were conducted throughout the Centre Hills in Montserrat searching for surviving mountain chickens; five individuals were captured (see below). This encounter rate continues to be too low to allow a meaningful mark-recapture estimate of population size and we are monitoring area of occupancy instead of abundance. Frogs are still marked (PIT-tagged) on capture, however, so we can attempt to track individual fates. To sample a wider area, we increased our permanent transects from five to eight with each transect now visited once every four weeks instead of once every three.

Following the scoping visit made by the Project Field Assistant to Dominica in Year 2, a second visit was made this year to provide training for Dominican forestry staff in the same survey and biosecurity techniques currently in use in Montserrat. During this visit 14 mountain chickens were PIT tagged and 6 of the 17 transect surveys were new additions in areas not previously searched but were guided by local reports of calls heard (Annex 3.3). A proposal has been submitted to the Foreign and Commonwealth Office to fund further visits by Montserratian staff to Dominica and extend survey effort beyond the scope of this project

Following a trial of SongMeters (automated call recorders) in Year 2 they were deployed this year at 5 different sites across the Centre Hills in an effort to further extend our search area. A few calls have been found using a customized software recogniser in locations where we know mountain chickens to be present but so far no calls have been identified in new areas. Further refinement of this recogniser may improve detection rate but calls appear to be very infrequent in most recordings examined to date.

1.4 Network of chytrid monitoring sites identified

The identification of three sites for monitoring environmental chytrid load (in sympatric non-native amphibians) was completed in Year 1 and monthly monitoring at these sites has continued in Year 3.

1.5 Monitoring programme

In Year 3 we have continued to monitor (a) surviving frogs; (by) chytrid loads in other amphibians; and (c) frogs from the first three releases. Monitoring of the latter is covered in section 2.5 (monitoring release success).

Surveys for surviving frogs were conducted twice a week throughout Year 3 over eight permanent transects and in total 51 surveys were conducted. No new frogs were identified this year and 5 frogs identified in Year 2 were not seen in Year 3 meaning over all encounter rates were lower this year. It is suspected that these lower detections are due to the reduced amount of rainfall that occurred during the frog's calling season. The onset of rain causes the male frogs to call continuously and makes them easier to detect. In total 20 swabs from surviving frogs were collected and have been processed.

Five SongMeters were deployed at five sites over a seven month period corresponding to the species' normal calling season. 496 GB of recordings were collected and following refinement of the recogniser, scanning of these data files for calls has begun.

Chytrid loads in other amphibians were monitored monthly, to detect seasonal fluctuations, throughout Year 3 at the release site and two control sites, one within the known range of surviving mountain chickens, the other outside this range. Twenty four surveys were conducted and 1,312 swabs collected in Year 3; these have been screened.

In Year 3 an additional 11 people (5 from Dominica, 1 Montserrat and 5 overseas volunteers) were trained to use the monitoring protocols established in Year 1 (available online at www.mountainchicken.org/resources/reports). These include biosecurity at field sites, frog health screening and swabbing for chytrid loads. Progress is tracked through weekly reports from the field team to the PSC in Montserrat and overseas (including veterinary support) and data are maintained in spreadsheets in the Microsoft Excel database and the ArcGIS databases. The Research Officer regularly maintained and updated these databases throughout Year 3.

To date, this project has generated a database of 1,720 swabs for screening at ZSL. Processing of these swabs is now up to date, following a bottleneck in Year 2 caused by problems with chytrid DNA amplification. Analysis of this dataset has started and is allowing us to examine seasonal fluctuations of chytrid load in surviving mountain chickens and other sympatric amphibians. It will also provide a rich source of data to help explain patterns of survival and mortality in released frogs in an effort to develop mitigated release and management strategies.

Output 2. Trial re-introduction of mountain chickens into Montserrat completed.

2.1 Survey trips to candidate introduction sites

This activity was completed in Year 1 when a selection of candidate introduction sites were assessed and one site chosen (Annex 3.4). The same site was used for the third release conducted this year.

2.2 Development of predator control programmes

Field sites with released and surviving mountain chickens continued to be monitored for evidence of predator impacts as outlined in the contingency plan developed during Year 1 and this was reviewed and updated in Year 3 (Annex 3.5). There were 10 sightings of non-native predators including domestic cats and brown rats at the release site in Year 3 and no sightings of predators in surviving mountain chicken transects. Also no evidence of predation (despite intensive monitoring of frogs) was found meaning the threshold to execute the plan was not crossed.

2.3 Development and approval of plans for trial introduction

This was completed in Year 1.

2.4 Release of mountain chickens

After frog fatalities during transport of the first release in Year 1 caused by failures within the aircraft hold heating systems, we tested the temperature profile inside a dummy shipping crate modified with additional insulation, fitted with data loggers flown from the UK to the Eastern Caribbean. We found the temperature range in the crate during air freight was within safe margins for this species, amended our protocols, and the second release, in Year 2, saw no fatalities during transport.

Despite these precautions, nine frogs died during transport of the third release (Annex 3.6). Data loggers in the crates showed the temperature profiles markedly different from those in the test crate. British Airways and the Animal Health and Veterinary Laboratories Agency (DEFRA) are currently completing an investigation and new insulated crates are being tested as risk mitigation for future releases (Annex 3.1)

Despite these casualties, twenty four mountain chickens were successfully transported to Montserrat in good health and released in the Centre Hills during the wet season in November 2012 (Annex 3.6). This is the third release, but the first during Montserrat's wet season. It

brings the total number of released frogs to 121. Due to local sensitivities surrounding the plane crash, which occurred 4 weeks earlier, we elected to keep media coverage low, however a radio interview with the local radio station ZJB was later conducted with the Project Coordinator and Project Research Officer in Montserrat explaining the purpose behind the release and updating on the current progress of the project.

2.5 Monitoring release success

To improve monitoring of individual fates, frogs were fitted with transmitters with a 6-month battery life. This provided an extra two months of data compared with previous releases (taking into account the initial delay of the release). 1,032 GPS locations of frogs and 388 swabs were collected during Year 3. Progress of the monitoring was tracked through weekly reports and the data was transferred to the Excel and GIS databases.

Three months after release, 67% of the frogs were known to be alive. Three months after each of the first two releases only 12% and 42% were known to be surviving because the fates of most were unknown once they could no longer be radio-tracked. Five months into this release, 4% of the frogs were known to be alive, 25% were confirmed dead and 71% were 'missing'. These missing frogs were a combined result of abnormally high 'failure' rate in the transmitters and low broadcast range of internal transmitters which remains a problem. External transmitters, fitted using belts, will have a much higher range and also the advantage that before batteries fail, they can be replaced with surgery. Trials to test of the safety of belt attachments for frogs will be carried out first on captive frogs (Annex 3.7) then, if successful, later during the fourth release.

Some differences between wet season and dry season releases were detected. Clinical signs of chytrid were not detected in the population until nine weeks post-release compared with six and seven weeks in the previous releases. In addition, all dead frogs were found at a single location while in the dry season releases deaths were more dispersed.

More signs of breeding were observed during this release compared with previous releases. This is the first release that a female has been observed building and guarding a foam nest in a burrow in an attempt to breed. The frog was observed with the foam just 5 days after being released and stayed with the burrow for a period of 18 days before discarding it. A male was also seen calling near to the burrow. These are promising signs, though no eggs were laid in this nest. Lateral spots on females are also a sign of attempts at mating and were observed for the first time on a different female 10 days after release. Males were recorded calling in the release site up to one month after release.

Following expiry of the internal radio transmitter batteries, monitoring using aural and visual encounter survey began in April using the same methodology as last year.

2.6 Adaptive management plan for reintroduction and predator management

This activity was planned for Year 3 as a component of the Long Term Restoration Strategy and has been postponed. Ongoing review of reintroduction protocols and the predator control contingency plan along with results from the three releases will inform the development of this plan.

The adaptive management plan will sit within the Long Term Restoration Strategy which will be developed through a local workshop with key project partners and stakeholders. It will also incorporate a review of the Mountain Chicken Species Action Plan (2007-2012) conducted by the Project Research Officer as part of his DESMAN project.

This workshop is arranged for July 2013 during the 6-month extension period with dates agreed by project partners at a MCRP meeting in March 2013 (Annex 3.1).

Output 3. Long term restoration strategy for the mountain chicken established and agreed with regional partners.

3.1 Formation and meeting of regional steering committee

The regional PSC continue to meet every quarter to discuss progress of the project and the international MCRP PSC met twice in the reporting period. Minutes are kept as a record of the meeting of both these groups.

3.2 Review of regional captive breeding opportunities

No frogs were bred at the Dominican facility in Year 3 and so the review completed in Year 1 which found the facility in a position where it was unable to provide frogs for reintroduction remains unchanged. As long as the facility continues to be operational, project partners will continue to keep this under review.

3.3 Training two Montserratian staff on DESMAN course

Project Research Officer and DOE staff member, Lloyd Martin completed the DESMAN (Diploma in Endangered Species Management) Diploma at Durrell's HQ in Jersey in Year 2, passing with merit (Annex 3.8). Jervaine Greenaway, a staff member at the DOE in Montserrat started the same diploma course which he will complete next month.

As a part of his diploma, Lloyd developed and is now executing the project outlined below, while Jervaine is developing a project on invasive species threats to mountain chicken which he will execute during the next reporting period.

3.4 Development of Long Term Restoration Strategy

This activity was planned for Year 3 and has been postponed until the 6-month extension period. The Long Term Restoration Strategy will be developed during a local workshop arranged for July 2013. Project partners and other stakeholders will participate in this workshop and many different aspects will be considered during the development of this strategy.

Lloyd's diploma project (Annex 3.9) is a wide-ranging review of all mountain chicken conservation activities in Montserrat, Dominica and overseas during the last 15 years. It will provide a foundation for developing a Long Term Restoration Strategy for the species. He is gathering all published and unpublished outputs from these activities into an electronic resource library and has started a series of questionnaire surveys for technical and policy-making partners currently, or previously, involved in mountain chicken conservation. These surveys will canvas opinions on successes and failures to guide the development of future strategy.

Another foundation of the Long Term Restoration Strategy will be the evidence base amassed during the project. After an extended delay occasioned by his accident, Mike Hudson has now started analyses of these datasets.

The workshop will also be presented with findings from other MCRP activities outside of, but running in parallel with, the current project. These include laboratory trials of chytrid treatment options such as naturally-occurring pro-biotic bacteria that repel chytrid; analyses of a microsatellite library recently completed for the species and Mike's recently (re)started PhD on chytrid ecology.

Output 4. The restoration of the mountain chicken is a source of national pride and benefits from long-term collaboration between national, regional and international partners.

4.1 Communication strategy completed

This activity was completed in Year 2 (Annex 3.10). The document is a strategic plan for the completion of the public awareness campaign that is now being implemented (see below).

4.2 Communications materials produced – posters, calypso

200 educational posters were produce and distributed across the island including to schools, the public library, and the National Trust visitors centre amongst others. Publicity surrounding the release of this poster was picked up on at least four international websites.

16 blog entries were added to the website, including 2 from forestry staff in Dominica, which generated 70,723 visits by 31,951 unique visitors over the past 12 months. A project facebook page was set up in January 2012 and to date has 153 'likes' and the last post was seen by 792 people.

Four radio interviews on the project were broadcast this year and four local press releases were published, four online and 1 in the local newspaper covering the visit of His Excellency the Governor Adrian Davies to the release site (Annex 3.11).

The project took part in Montserrat National Science Week in collaboration with the Montserrat Volcano Observatory (MVO) during which 2 radio programmes were broadcast promoting project work, the Project Coordinator gave a community presentation to over 40 people, a library display promoting project activities was on display for 2 weeks and a section of the project was included in the 'Scavenger Hunt' when students were asked to complete questions relating to the project which they could find either on the library display or on the project website.

The project also participated in 2 film documentaries, one with Steward McPherson as part of a project filming biodiversity in all the UK overseas territories due to be aired at a National Geographic conference in London in December 2013 and one with Pumpkin Interactive Ltd who were filming an educational video entitled 'Living with Volcanoes' due to be published in July 2013.

A full page section about the project was also printed in the 'Guide to Montserrat' published by the Montserrat Tourist Board which is distributed in Antigua and Montserrat and they have also agreed to promote the project on their website.

4.3 Schools presentations

This activity was completed in Year 2 (Annex 3.12) but extra activities involving schoolchildren were completed this year. As part of the Montserrat National Science Week a 'Fun Day' was organised by the MVO which the project participated by running a 'Toad Swabbing Stand'. A local artist also assisted the children in creating 'I love mountain chickens' posters (Annex 3.13). Also an educational initiative by the Department of Environment delivered prize-winning quiz questions about the mountain chicken on the local radio. Questions were provided for primary, secondary and adult level.

4.4 Behavioural and attitudes surveys and reporting

The second behavioural survey questionnaires have been distributed and are being collected as they are completed. To date 21% of our target responses have been collected. Results from this second round of surveys will be compared with the baseline survey collected in Year 1 to assess the effectiveness of the raising awareness campaign.

4.2 Progress towards project outputs

Output 1. The evidence base for the restoration of the mountain chicken and mitigation of the impacts of chytrid is established.

The research prioritisation exercise was completed in Year 1 and this produced the research strategy (Annex 3.2) which is being used to guide project research. Two databases were established in Year 1, an ArcGIS database and a Microsoft Excel database which the Department of Environment (DOE) staff use to collate data collected under research strategy field activities. These databases are shared with project partners and the ecology PhD student through a series of online dropbox folders.

The GIS database is used to map the occurrence and distribution of surviving mountain chickens across the Centre Hills as encounter rates are too low to use a method of mark-recapture to estimate population estimation methods. Three permanent transects were added to the existing five permanent transects in the GIS database this year in order to extend the search area. The Excel database includes spreadsheets which are used to store the data collected during surveys of these transects for surviving mountain chickens. In addition 496 GB of data was collected using the SongMeters.

A network of 3 chytrid monitoring sites, one at the release site (Sweetwater ghaut) and two control sites, namely Fairy Walk ghaut (surviving mountain chicken site) and Collins ghaut (former mountain chicken site), was established in Year 1.These sites are mapped in the GIS database. Data collected during the chytrid monitoring surveys is also stored in a spreadsheet which is part of the Excel database.

The assumption that an MSc student from Montserrat would be available failed in Year 1 and the Research Officer role was amended with Terms of Reference of his role produced (Annex 3.14). This role included completing the DESMAN course which was achieved in Year 2, with

merit (Annex 3.8). The research into the ecology of chytrid which was meant to be covered by the masters is now being conducted by the ecology PhD student who was recruited in September 2012 (http://www.zsl.org/science/ioz-staff-students/hudson,2132,AR.html).

Continued employment of Project Field Assistant and Project Research Officer and support from DOE staff means assumption that enough staff are available to support project activities remains true.

Output 2. Trial re-introduction of mountain chickens into Montserrat completed.

The assumption that the reintroduction site remains free from chytrid failed at the beginning of the project leaving no chytrid free sites remaining on island. Therefore we adapted our hypothesis to testing the effect on survival of different variables through a series of releases into chytrid positive areas as outlined in the research strategy (Annex 3.2). This meant that the assumption of maintaining collaboration with the Montserrat Volcano Observatory for access to the original release site, in the volcanic Exclusion Zone, is no longer necessary.

A report from a survey of 14 potential candidate sites was produced in Year 1 and one release site was chosen (Annex 3.3). This site has been used for all three releases as it remains the most suitable site for intensive monitoring using radio-tracking.

Monitoring for presence or absence of chytrid in the reintroduction site has been altered due to the change in the original reintroduction site (it is present at the new site) and the early warning monitoring plan for chytrid in the reintroduction site is no longer necessary. These indicators have been altered to collecting data on seasonal and spatial patterns in chytrid loads of sympatric amphibian species that may impact mountain chicken survival as outlined in the research strategy (Annex 3.2) and progress is reported in output 1 of this section.

The indicator to release 100 mountain chickens into Montserrat was completed this year during the third release and a report was produced as part of this output (Annex 3.6). Release protocols have been developed from lessons learnt during these releases (available online at www.mountainchicken.org/resources/reports) and are reviewed by project partners. The last review took place this year after the second release and a further review of these protocols from the third release will take place pending completion of investigation of nine frog casualties during air freight for this release.

Post-release monitoring methods were developed in Year 2 after the first release and have been implemented after each release (www.mountainchicken.org/resources/reports). Like the release protocols they are also reviewed after each release by project partners.

Due to the change in release site an active predator control programme was found no longer necessary therefore a contingency plan was developed in Year 1 (Annex 3.5), with thresholds to trigger it identified. A revision of the plan was conducted this year and will remain as a contingency.

The Adaptive Management Plan is currently based on the release and post-release monitoring protocols and the predator contingency plan and an ongoing review of the mountain chicken Species Action Plan (2007-2012) and other mountain chicken conservation activities conducted since 1997 both in Montserrat, Dominica and overseas. This will be finalised at the Long Term Restoration Strategy workshop during the next reporting period.

A review of the overseas captive breeding programme was conducted in Year 2 (Annex 3.15) and the mountain chickens released this year were provided by the 50 founder frogs in this programme. So far this programme continues to provide frogs for release and this assumption remains true.

Output 3. Long term restoration strategy for the mountain chicken established and agreed with regional partners.

Terms of Reference have been finalised for the regional Project Steering Committee which was formed in Year 1 (Annex 3.16). In Year 2 this was integrated into the wider international MCRP group and minutes are kept as a record of the meeting of both these groups.

Two update reports were presented to the Mountain Chicken Recovery Programme partners this year on the ex situ facilities in Dominica. The facility continues to maintain captive stock of 11 local mountain chickens though no signs of breeding were seen this year. This means the assumption that mountain chickens can be brought into the facility has been proven true. This facility continues to be supported and monitored by international volunteers and the purpose remains to supplement the overseas captive breeding programme and produce frogs for release. The assumption that the Dominican authorities will continue to support the facility has remained true.

An outline Restoration Strategy was formed and agreed by the PSC in Year 1 from *ex situ* breeding, experimental releases and the research strategy. All aspects have been reviewed in the last year in the form of a report on the update of the captive breeding programme with recommendations to the MCRP (Annex 3.1), the third experimental release (Annex 3.6) testing new hypothesis parameters leading to recommendations of the adaptive reintroduction plan and ongoing execution of the research strategy (Annex 3.2) including commencing lab experiments and recruitment of ecology PhD student (http://www.zsl.org/science/ioz-staff-students/hudson,2132,AR.html).

The Long Term Restoration Strategy for the mountain chicken will be finalised and approved by project partners during a workshop held in the 6-month extension period. The strategy will incorporate the Adaptive Management Plan.

A field report has been produced following a visit by the Project Field Assistant to Dominica to train five local forestry staff in PIT tagging, monitoring and biosecurity techniques and tree frog swabbing in order to broaden regional capacity. Details of this training along with that of a further two Montserratians has been recorded in the Excel database in the training log spreadsheet (Annex 3.17). At least three DOE staff members are competent in health screening, swabbing and radiotracking and this year the Project Research Officer and Project Field Assistant have been responsible for delivering the training to Montserratians, Dominicans and overseas volunteers.

The Project Research Officer gained a diploma through completing the DESMAN course in Year 2 which included modules in project management, fundraising and leadership. As part of this course he produced a project proposal to review the outdated Species Action Plan (2007-2012) of the mountain chicken (Annex 3.9).

A second DOE staff member, Jervaine Greenaway, is close to completing (in May) his diploma through the DESMAN course and developing a project relating to the mountain chicken project This will increase his skill level and further increase capacity within the DOE.

Output 4. The restoration of the mountain chicken is a source of national pride and benefits from long-term collaboration between national, regional and international partners.

The communications strategy was completed in Year 2 and is a strategic plan for the completion of the public awareness campaign (Annex 3.10). A number of outputs from this strategic plan have been achieved including, 4 national press releases, two international press releases, 4 national radio interviews and participating in two international documentaries and three international presentations. The Montserrat Tourist Board's 'Guide to Montserrat' for visitors now includes a full page on the project (available for download at http://www.visitmontserrat.com/downloads/guidetomons.pdf see page 37).

In total 200 posters have been printed and distributed around Montserrat: 50 large posters describing the ecology and threats to the mountain chicken and 150 leaflets describing the aim of the project along with project activities with a poster on the reverse showing the signs of chytrid on an infected frog on the back.

A report was produced in Year 2 on the five presentations made to local schools by the Project Coordinator, Project Research Officer and DoE's Education and Awareness Officer (Annex 3.12).

In Year 1 a baseline survey of the attitudes, behaviour and awareness of local Montserratians was conducted and the results have been recorded in the Excel database. So far 24% of a repeat survey has been collected and the results of both these surveys will be used to assess

the effectiveness of the raising awareness campaign. As this is the last indicator of this output to be completed and there are no assumptions for this output it is likely it will be completed by the end of the project period. The level of support locally from the general public remains high as many people have commented to both the Project Coordinator and the Research Officer about listening in to radio programmes and asking further questions about topics discussed and about reading the posters and requesting copies. All public awareness activities completed by the project have received much support from the local community including a high attendance to the public events and high level of participation in the radio quizzes. The Montserrat Tourist Board have dedicate one page of their guide book to work conducted by the project and no active hunting of the mountain chicken has been reported to the Department for the year.

4.3 Standard Measures

Table 1 Project Standard Output Measures

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Number planned for this reporting period	Total planned from application
2	1 Montserratian to complete an MSc on mountain chickens in Montserrat	0	0	0	0	0	1
3	2 Montserratians to complete the DESMAN course accredited by University of Kent	0	1	1	2	0	2
5	1 Montserratian appointed Research Officer and complete more than 1 year of on the job training with Project Coordinator	0	1	0	1	0	1
6A	5 Montserratians and Dominicans to be trained in techniques involved in monitoring mountain chickens and chytrid.	4	7	2	13	0	5
6B	33 weeks spent training Montserratians and Dominicans	10.2	15.1	6.4	31.7	2.6	33
7	A release manual including standardized protocols and data entry sheets.	1	0	0	0	0	1
8	12 weeks spent by staff from UK institutions in Montserrat or Dominica	9	6	0	15	7.4	12
9	1 Research Strategy and 1 Long-term Restoration Strategy produced	1	0	0	1	1	2
11A & B	3 papers to be published in peer reviewed journals	0	0	0	0	3	3
12A	2 computer databases to store monitoring information of release and surviving mountain chickens and chytrid monitoring in sympatric species.	0	0	2	2	2	2
14A	1 workshop on the development of the Long-Term Restoration Strategy; 1 conference in Montserrat to present results of the releases	0	0	0	0	2	2
15A, B,	12 national and/or local press releases in Montserrat	1	7	4	12	0	12
15C	4 national press releases in the UK	0	0	2	2	4	4

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Number planned for this reporting period	Total planned from application
16A	4 newsletters promoting project activities	0	0	0	0	4	4
16B	Newsletters to be circulated to an estimated 600 people.	0	0	0	0	600	600
17A	Create the Project Steering Committee dissemination network.	0	0	1	1	1	1
18A	1 national TV programme featuring the project in Montserrat	0	1	0	1	0	1
19A & C	6 national and/or local radio interviews in Montserrat	2	6	4	12	1	6
22	5 permanent field transects established for monitoring surviving mountain chickens and chytrid in sympatric species	5	0	3	8	0	5
23	Value of resources raised from other sources (ie in addition to Darwin funding) for project work	55,500	102,034	68,000 (cash)			225,534
	Release at least 100 mountain chickens into the wild	64	33	24	121	33	100

Table 2 Publications

Type (eg journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £

4.4 Progress towards the project purpose and outcomes

An assumption of no catastrophic eruption of the Soufriere hills volcano has held true. The failure of a second assumption of a chytrid-free site on Montserrat meant the plan for releasing mountain chickens had to be adapted in Year 1. We have successfully carried out two dry season releases and one wet season release to date and will carry out a second wet season release before the end of the project. DEFRA have agreed a no-cost extension of the project until the end of November this year following the crash of a plane en route to Montserrat in which project member Mike Hudson was the sole survivor but badly injured. Mike is leading the analysis of the project evidence base which, inter alia, will provide an important foundation for the development of a Long Term Restoration Strategy for the mountain chicken. Analysis of the datasets generated by this project has started, but the five month delay caused by Mike's recovery has mean that outputs from the evidence base, including the Restoration Strategy, will now be completed later this year.

A substantial evidence base has, however, been amassed, with the problems in screening swabs for chytrid in Years 1 and 2 now addressed and the bottleneck of unscreened swabs cleared. Although full analyses are pending, with our first wet season release this year we have already seen differences, compared to the dry season releases, of frog movements and habitat use; slower onset of infection; and a more localised pattern of die-off. Additionally, an extended period of radio-tracking during this release has shown that many of the frogs that would have had a status of "fate unknown" (as in the first two releases) have continued to survive. In our final frog release we plan to extend this intensive monitoring period further and are now trialling

an alternative method of attaching radio transmitters to allow this. Through the monitoring of released animals, the intensive analysis of disease status and the longer-term research efforts now in place, this is will be one of the most complete and best described case studies in the world attempting to restore an amphibian species threatened by chytrid.

As planned, the project's Montserratian Research Officer is now using his diploma training from last year to implement a comprehensive review of mountain chicken conservation activities dating back 15 years. The various outputs he is collating and the opinions he is canvassing from technical and policy-making practitioners who have worked on this species will provide another important part of the evidence base for the Restoration Strategy. All project partners will participate in the development of this strategy at a workshop in Montserrat.

Collaboration between project stakeholders continues to be strong, with a second visit by a Montserratian project member to Dominica to provide training in project protocols to Forestry Department staff there. As throughout the project, the Project Coordinator and the Research Officer continue to circulate informative weekly progress reports to project members and receive strong technical input and guidance in return. Durrell's long-standing relationship with Montserrat's DOE has ensured stakeholder engagement remains, and will remain, high. It is pleasing that a second DOE staff member is now completing a diploma at Durrell's International Training Academy and will implement a project on invasive species threats to mountain chickens on his return.

Montserrat has a national human population of about 5,000 making it relatively easy to reach the Montserratian public and gauge their support. Ongoing support for the goals of this project is evidenced by the informal word of mouth feedback to the Project Coordinator, people calling into radio programmes and consistently good attendance to community presentations.

The indicators remain adequate for measuring the outcomes and all are projected to be completed within the extension granted to the project.

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

The aim of this project is to enable Montserrat to ensure the survival of the mountain chicken and its restoration in the long-term. We are establishing the necessary skills, knowledge and responses to meet this aim. The species is a native apex predator on Montserrat and Dominica; a flagship species for both islands and their forests; and an important model for amphibian conservation worldwide. The species has an important role in the culture of both islands and is the national dish in Dominica, although hunting has ceased while the species is so threatened.

The species is globally threatened, primarily by a disease that threatens many amphibian species worldwide. Progress in tackling this problem will be slow, but we are continuing to demonstrate it is possible to successfully breed a large amphibian, under biosecure conditions, in sufficiently large numbers to support a reintroduction. We have demonstrated it is possible to conduct releases of these animals that are at least successful in terms of the captive-bred frogs acclimating to release into natural habitat, maintaining body condition and showing signs of breeding behaviour, including signs of mating and foam nest building this year. We will share this experience with other amphibian restoration programmes through publications, conference presentations and online resources as we believe there are very few similar restoration projects for amphibians of this scale worldwide. The success of our releases in terms of frog survival in a chytrid-infected environment is still uncertain. There have been some fatalities, as predicted, but the fact there have been indications of breeding behaviour – and on Dominica, this year, further direct evidence of ongoing reproduction in a surviving population – gives us some grounds for optimism. The same is true of the persistence of surviving mountain chickens in both Montserrat and Dominica. Our intensive tracking of chytrid loads in both mountain chickens and other sympatric amphibians, and the development of a microsatellite library, will help us investigate why these surviving frogs are persisting. We hope that our evidence base from these releases and the responses of these frogs to chytrid will also be of wider applicability. The development of parallel research into field treatments of the disease is very exciting and has now started with some preliminary clinical trials at ZSL and a new PhD on chytrid ecology. These will extend beyond the lifetime of the current project but are focussed on

the mountain chicken and, if lab trials are promising, our ongoing *in situ* work can provide a model system with which to evaluate future treatments. This will require strong support from Montserrat but we have already deliberated on the subject with stakeholders and approval has been given to the lab-based work, with strong interest in, but also some concerns over, subsequent field trials.

5. Monitoring, evaluation and lessons

This project is running within the Mountain Chicken Recovery Programme (MCRP) which is governed by a hierarchy of structures to provide guidance and oversight. At the highest level is the MCRP Programme Steering Committee containing the representatives from Durrell, ZSL and Chester Zoo, and the Governments of Dominica and Montserrat, who oversee implementation of the overall restoration of the species in its entire range. The PSC also acts as Project Steering Committee to this project which reports its results and findings to that group.

Within Durrell the Head of Field Programmes and Conservation Science provide oversight of project progress and financial management from the Headquarters in Jersey and the Project Leader in Saint Lucia and Project Coordinator in Montserrat lead daily management and implementation. The Project Leader and Coordinator are in weekly communication concerning implementation and progress.

The Montserratian members of the PSC, made up primarily of local stakeholders and the Project Coordinator and Research Officer, meet quarterly. It is chaired by the In-country Project Leader, Mr. Gerard Gray, Director of DOE. Overseas partners representatives are provided with agendas, to which they contribute and minutes are provided online for partners to provide further input. All international project partners communicate using an email network which has been enhanced to include Montserratian as well as Dominican members. Weekly progress reports are emailed to PSC members in Montserrat and overseas to allow for ongoing technical input including intensive veterinary support from overseas.

Activities are implemented following the log frame timetable and are discussed with the PSC ahead of time. The Project Leader, In-country Project Leader and Project Coordinator meet in Montserrat each year to review progress and a planning meetings of the European partners has been held in Europe each year to review and plan the wider MCRP strategy with feedback into this project. Durrell's vet and herpetologist have also overseen the first two releases in Montserrat. As in Year 2, an annual report on the current status of the ex situ population will be submitted to the PSC in Montserrat.

Budget oversight is provided from Jersey where funds are disbursed to the host country partner, Department of Environment, and managed by the Project Coordinator, who reports quarterly on expenditure. Each disbursement from Durrell is only made on the receipt of financial reports on current expenditure. Project accounts in Montserrat are handled by the Department of Environment's Senior Clerical Officer who provides monthly reports to the Project Coordinator. Items purchased for the project is done through a purchase order system which must be approved by the Ministry of Agriculture finance officer.

The key indicator at the moment is the number of frogs released that are surviving, and the data that has been generated as a result. Equally the number of hours of training and hours of fieldwork from the host country partner indicates the extent of their integration, which is essential for future sustainability.

The large number and geographic spread of partners and institutions involved in this project means the time required to initiate project activities where the participation of other partners is required can take a long time and this is now factored into project planning.

Helen Meredith (DICE, University of Kent) has started a PhD examining the relationship between the practice and perceptions of success in amphibian conservation, especially between different groups such as scientists and practitioners, and high income vs. low income countries. She has proposed applying a version of the Conservation Excellence Model to this project. This will provide an independent evaluation of the work to date.

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

Not Applicable

7. Other comments on progress not covered elsewhere

Significant difficulties encountered over the last year include the ecology PhD student Mike Hudson being badly injured in a plane crash en route to Montserrat, and the delays this has caused in delivering some outputs, as outlined in section 4. To extend the monitoring of frog fates on release, we used 6-month radio transmitters but it was not possible to track all individuals for the whole of this period because of an abnormally high failure rate in the transmitters. 70 mountain chickens were hatched this year, for the first time, at ZSL but juvenile growth was slower than predicted. These frogs have now been transferred to Durrell to grow them to an appropriate size for release. Prior to this, Durrell had been the only institution to breed mountain chickens within the biosecure colony, and it will be advantageous to develop this capacity in a wider range of institutions. The risk of difficult-to-predict natural catastrophes, primarily as volcanic eruptions and tropical storms will always be present for Montserrat, but our release site is outside the country's volcanic Exclusion Zone and tropical storms are a phenomenon that native Caribbean fauna and flora are resilient to.

8. Sustainability

The mountain chicken has a high public profile in Montserrat and there is considerable Governmental buy-in for the restoration of this species, with approval and ongoing support at the Ministerial level for the actions undertaken to date. Preliminary findings of an awareness questionnaire campaign indicate good public support. DOE, in collaboration with Durrell and other overseas partners (notably RSPB, Royal Botanic Gardens, Kew and Fauna & Flora International), have an established track record for resourcing and sustaining conservation efforts in Montserrat, and in particular for the mountain chicken. Frog monitoring has been carried out annually since 1998 by DOE, primarily with local resources, and this was instrumental in the early detection of the arrival of chytrid on the island, allowing a rapid response (emergency evacuation of uninfected frogs to biosecure facilities) by calling in overseas partners (Durrell). All of the sites at which field activities are currently undertaken are within or cross the boundary of a large (for Montserrat) Protected Area, The Centre Hills, which has been the focus of other Darwin Initiative projects (14-027 and EIDPO027) which have put in place effective management systems for the site. The Conservation and Environmental Management Act (CEMA) has been drafted as a Bill. When enacted by the Government of Montserrat it will provide additional support for managing Montserrat's mountain chicken.

Project partner ZSL also has a long history of lab and field based initiatives addressing the problem of chytridiomycosis and the mountain chicken in particular. Under the Darwin Initiative (project 13-032), they have established an *ex situ* facility in Dominica which also provides regional capacity for chytrid surveillance (testing of swabs) that has been used in MCRP and as of Year 2 has been stocked with mountain chickens from Dominica for breeding. More sensitive health screening capacity is available at ZSL's Institute of Zoology. Durrell and other European partners have established world leading expertise in captive husbandry for this species and have made a long-term commitment to the species since they began working with it in 1997.

We have secured an additional £50,000 from a private trust in Jersey to fund activities and the Project Coordinator position for another year. Funding has also been secured for two PhDs researching chytrid in mountain chickens. One aims to develop field treatments the other will look at the environmental context of the disease in Montserrat and Dominica. The latter has now started; the former started by is currently suspended because the student resigned from it.

Our exit strategy for this project is partly determined by the fact that it is part of a longer-term Recovery Programme, with commitments from European and Montserratian partners to continuing these recovery efforts for this species. The purpose of this project is to establish an evidence base, and the in-country capacity, for this work to continue. Mountain chicken conservation efforts have been sustained by DOE will help from overseas partners for over 15 years now and government interest and support for this remains high. Under this project, one

DOE staff member has obtained a diploma and another is about to. The Project Research Officer who got his diploma last year has an increased capacity for conservation project management (a module in the diploma) and is increasingly leading project activities.

9. Dissemination

Montserrat is a small country of under 5,000 people where word of mouth and radio are effective means of communicating with the nation. There is only one radio station, one local television channel and one newspaper. Due to natural disasters affecting the island, including hurricanes and volcanic eruptions, there is a culture of listening to the local radio as the government uses this as the main method to communicate with the general public and to issue warnings and evacuation procedures. A high percentage of the population works for the Government of Montserrat and has access to computers and the internet. Facebook is also widely used.

As in previous years, we have continued to use these channels of dissemination, as detailed in the activities for this year (section 4.1) falling under Output 4. The project blog and Facebook page were updated regularly throughout the year. There were two radio programmes, four radio interviews on the project and a mountain chicken quiz broadcast in Montserrat, and the project calypso recorded in Year 2 continued to be played on the radio. The project also appears in two films made in Year 3, which will be broadcast in Montserrat next year. This information targets all members of the Montserration public, including policy makers and people using The Centre Hills reserve that the mountain chicken is restricted to. Another group of users of this site are visitors to the island. A full page section on the project is now included in the 'Guide to Montserrat' published by the Montserrat Tourist Board which is distributed in Antigua and Montserrat. The Tourist Board have also agreed to promote the project on their website.

School children and the general public were also targetted with 200 educational posters distributed to the public library and schools across the island, accompanied by an informative press release that received national and international attention. The project also participated in National Science week with exhibits and activities and five additional presentations to schools were made.

Internally, the Project Coordinator and Research Officer continued to circulate weekly progress reports to project partners.

Most dissemination of information this year, as in previous years, has been with the assistance of Government of Montserrat and it will be relatively easy and of minimum cost for them to continue this post-project. The Outreach and Education Officer (Stephen Mendes) and Research Officer have been trained in the copy management system Wordpress to continue posting blogs and updating the project website and Stephen has been given administrative rights to the facebook page. The website will continue to be hosted by ZSL. A longer term communication strategy for continued dissemination will be a component of the Long Term Restoration Strategy.

10. Project Expenditure

Table 3 project expenditure during the reporting period (1 April 2012 – 31 March 2013)

Item	Budget	Expenditure	Comments
Matthew Morton			
Andrew Cunningham			
Richard Young			
Matt Goetz			
Andrew Routh			
Sarah Louise Smith			
Lloyd Martin			
Calvin Fenton			
Overhead costs			
Travel and subsistence			
Operating costs			
Capital items/equipment (consumables)			
Others: shipping costs frogs			
Others: Swabs			
Others: vehicle maintenance, fuel, communications			
TOTAL			

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.

Chytrid fungus reached Montserrat in 2009 followed rapidly by a catastrophic death rate amongst the island's population of Critically Endangered mountain chicken frogs. Durrell, working with Montserrat's Department of the Environment, evacuated 50 remaining healthy frogs to biosecure captive facilities and began breeding healthy stock to augment the island's now devastated wild population.

Three releases have taken place over the lifetime of this project returning 121 mountain chickens back to their native country of Montserrat. The third conducted this year was the first wet season release and was handled entirely and by Department of Environment and local project staff, demonstrating their capacity to successfully receive and release mountain chickens without outside assistance.

As expected, there have been losses to chytrid, which remains in the environment, however, some individuals have survived for extended periods and due to improved monitoring techniques more frogs were found to survive the chytrid longer in the wet season. This gives credibility to our hypothesis that the season of release will effect survival rates.

Despite only knowing captivity, released frogs adapted quickly to their new surroundings and this was the first year that a female release frog built a foam nest in the wild in an attempt to breed. Whilst she laid no eggs this was good evidence that the captive frogs instinctively know what they must do to reproduce and this was enhanced by the sound of male frogs making their distinctive 'whooping call' to advertise they are ready to breed.

The future is still uncertain for the mountain chicken but we are making progress towards addressing the severe threats it faces.

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* ⇒ The conservation of biological diversity, ⇒ The sustainable use of its components, and ⇒ The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources		The Critically Endangered mountain chicken continues to survive at low numbers under threat of chytid. We are continuing to build the capacity to manage releases of captive frogs back to their native range and establish an evidence base to understand the strategic options available for doing this. This will be of relevance to a wide range of amphibian species globally	[redacted]
Purpose Enabling Montserrat to save the Critically Endangered mountain chicken through a programme of research, re-introduction, strategic planning and awareness-raising.	▪Evidence base documented to support the long term restoration of mountain chickens and the management of chytrid in Montserrat. ▪Long-term species restoration plan agreed. ▪Trial re-introduction of mountain chickens completed. ▪Pride in the conservation of the species among Montserratians increased and public support for the species restoration strategy secured. ▪Regular collaboration between the necessary stakeholders underpins the restoration of the species.	Our large database on chytrid loads in surviving mountain chickens, released mountain chickens, and other sympatric amphibia has been further augmented and swab screening problems resolved. A third, and penultimate, release of frogs is completed. The Programme Steering Committee continues to meet regularly and exciting new research (PhDs to run parallel with, and beyond this project) on clinical trials of chytrid treatments and on chytrid ecology have started. Many awareness activities have been completed and met with enthusiastic responses.	Complete analysis of the evidence base to identify the most important explanatory factor for persistence or not of released and surviving frogs. Produce a Long Term Restoration Strategy and frog release management plan Further strengthen monitoring of released frogs by extending radio tracking surveillance Complete a second wet season, release, and fourth in total, of frogs Analyse baseline survey of awareness, attitudes and behaviours.
Output 1. 1. The evidence base for the restoration of the mountain chicken and mitigation of the impacts of chytrid is established.	▪Research prioritisation exercise to identify key information gaps completed in Year 1. ▪Population estimation methodology developed for mountain chickens	We have continued to track surviving mountain chicken populations through mapping distribution as encounter rate remains too low to attempt abundance estimates. Additional permanent transects have been established. Fates of individually marked survivors are intensively monitored. Dominican Forestry Department staff have been trained in, and	

Project summary	Measurable Indicators	Progress and Achievements April 2012 - March 2013	Actions required/planned for next period
	and used to generate estimates for Montserrat and Dominica by mid Year 2. ▪Network of chytrid monitoring sites on Montserrat established by the end of Year 1. ▪Database designed and used by Montserrat DOE and project Partners. ▪At least one MSc by a Montserratian student on the environmental dynamics of amphibians as vectors for chytrid on Montserrat	have deployed, our protocols this year, with further surviving, and breeding frogs being found. The remaining indicators are still considered appropriate: Our chytrid monitoring sites remain operational and contributing useful data that will inform future management strategies Spreadsheet and GIS databases are in use by Montserrat DOE and other project Partners The MSc position had to be adapted in Year 1 to a Diploma in Endangered Species Management (DESMAN; Durrell and Kent University). The Project Research Officer completed this in Year 2 and has started a post diploma project to review 15 years' of mountain chicken conservation and provide one foundation for the Long Term Restoration Strategy. A second DOE diploma student enrolled in Year 3 and is due to complete his course next month.	
Activity 1.1 Establishment of project basis and staff in Montserrat		Completed Year 1	
Activity 1.2 Research prioritisation exercise		Completed Year 1, but additional research (2 PhDs), mostly beyond the lifetime of this project, were started in Year 3	
Activity 1.3 Develop, test and implement population estimation method		Implemented as distribution mapping. Individual marking (PIT tagging) allows monitoring fates and will allow mark-recapture estimates if encounter rate increases.	
Activity 1.4 Network of chytrid monitoring sites identified		Completed Year 1; operational through Years 2 and 3	
Activity 1.5 Monitoring programme		Operational through Year 3: released frogs; surviving frogs (3 additional permanent transects added); chytrid in other amphibia	
Output 2. Trial re-introduction of mountain chickens into Montserrat completed.	▪Two survey trips completed to identify primary re-introduction site within Montserrat in Year 1 and 2. ▪Presence/absence of chytrid and amphibians at target sites established. ▪Minimum of 100 adult mountain chickens introduced to primary	Original supposed chytrid-free site rejected Year 1, surveys adapted to candidate sites in Centre Hills and completed in Year 1; used in Year 2 and again this year Chytrid swabbing is ongoing; the Year 2 backlog in swab screening has been cleared this year and analyses started. 24 frogs were released in Year 3, bringing the total released to 121. A final release is planned for the next period to give a total of 2 dry season and 2 wet season releases for comparison. Acclimation to native habitat, feeding	

Project summary	Measurable Indicators	Progress and Achievements April 2012 - March 2013	Actions required/planned for next period
	location, targeted for the end of Year 2. ▪Introduced predator control programme implemented around release sites at the time of introduction and monitored annually. ▪ Early warning monitoring plan for chytrid in the reintroduction site implemented with Montserrat DOE and Volcano Observatory teams. ▪Lessons learnt from trial reintroduction are documented and communicated by mid Y3. ▪A post-release frog monitoring scheme implemented and an adaptive management plan completed for the trial reintroduction by end of Year 3.	has again been successful and this year there have been increased signs of breeding behaviour. Predator control contingency plan in operation but not triggered (predator levels appear much lower at adapted release site than original chytrid-free site) Early warning chytrid monitoring was only applicable when original chytrid-free site was planned, but background chytrid monitoring (in sympatric amphibia) has continued in Year 3 These indicators are still considered appropriate but the longer term intensive monitoring of released frogs needs to be strengthened. Progress in this regard was made in Year 3, and trials have started in captive populations on further improvements to radio tracking technology	
Activity 2.1 Survey trips to candidate introduction sites		Completed Year 1	
Activity 2.2 Development of predator control programmes		Contingency plan in place; reviewed and updated Year 3	
Activity 2.3 Development and approval of plans for trial introduction		Completed Year 1	
Activity 2.4 Reintroduction of mountain chickens		Third, penultimate, release completed in Year 3	
Activity 2.5 Monitoring release success		Intensive monitoring period (using radio-tracking; 5 months) completed. Non-radio-tracking surveys ongoing	
Activity 2.6 Adaptive management plan for reintroduction and predator management		For Year 3 6-month extension (postponed due to plane crash)	
Output 3. Long term restoration strategy for the mountain chicken established and agreed with regional partners.	▪International/regional re-introduction steering committee established by the end of Year 1. ▪Use of facilities on Dominica to breed frogs for re-introduction to Montserrat assessed by the end of Year 2.	Breeding facility in Dominica is breeding sufficient live food and, as of Year 2, is stocked with mountain chickens sourced from Dominica but it has still to produce any stock. The restoration strategy currently consists of the documented strategy behind the releases protocols; the research strategy; and the project communication strategy. These have all been approved by the PSC and	

Project summary	Measurable Indicators	Progress and Achievements April 2012 - March 2013	Actions required/planned for next period
	▪Draft Restoration strategy prepared by the Steering Committee and agreed with all stakeholders by end Year 1 and continuously evaluated throughout project. ▪Strategy completed by end Year 3 and published ▪Sufficient capacity in place to manage species restoration long term.	will be developed, using the evidence base, by project end. We have continued to build capacity to plan, implement and monitor frog releases into Montserrat, and to monitor the surviving mountain chicken population and background chytrid levels in sympatric amphibia. We have also built capacity to collect, handle and report on monitoring data. As noted, The Project Research Officer completed a Diploma in Endangered Species Management (Durrell and Kent University) in Year 2 and a second DOE staff member is near completion of the same diploma. We continue to consider these appropriate indicators.	
Activity 3.1 Formation and meeting of regional steering committee		Completed Year 1	
Activity 3.2 Review of regional captive breeding opportunities		Assessed as currently unable to provide stock for release, but status is being kept under review. The European *ex situ* population will also reviewed again in the next reporting period	
Activity 3.3 Training two Montserratian staff on DESMAN course		Completed by the Project Research Officer in Year 2. A second DOE staff member is near completion of the same diploma	
Activity 3.4 Development of long term restoration plan		For Year 3 6-month extension (postponed due to plane crash)	
Output 4. The restoration of the mountain chicken is a source of national pride and benefits from long term collaboration between national, regional and international partners.	▪Communication strategy developed for mountain chickens in Montserrat within Year 1. ▪Minimum of 200 posters produced profiling the species and highlighting core conservation areas by the end of Year 1. ▪A calypso on the mountain chicken crisis written and broadcast on Montserrat radio by end Year 1. ▪At least 5 presentations made to local schools during Year 2. ▪Awareness, attitudes and behaviours surveys shows increased understanding of the conservation value of the mountain	The communication strategy was postponed from Year 1 by bringing forward the first release of frogs. It was completed in Year 2 and implemented in Years 2 and 3. 200 posters (of 2 designs) were produced in Year 2 and distributed in Year 3. 2 radio programmes, 4 radio interviews and a radio quiz broadcast in Year 3. The calypsos written in Year 2 continue to be broadcast on national radio in Year 3 Exhibits and activities were conducted as part of National Science Week. We continue to consider these appropriate indicators.	

Project summary	Measurable Indicators	Progress and Achievements April 2012 - March 2013	Actions required/planned for next period
	chicken by Year 3.		
Activity 4.1 Communication strategy completed		Completed Year 2	
Activity 4.2 Communications materials produced – posters, calypso		Poster and 3 calypsos produced in Year 2	
Activity 4.3 Schools presentations		Completed Year 2 with additional associated activities.	
Activity 4.4 Behavioural and attitudes surveys and reporting		Baseline completed; returns from repeat survey in Year 3 currently being collected	

Annex 2 Project's full current logframe

Project summary	Measurable Indicators	Means of Verification	Important Assumptions
Goal: Effective contribution in support of the implementation of the objectives of the Convention on Biological Diversity (CBD), the Convention on Trade in Endangered Species (CITES), and the Convention on the Conservation of Migratory Species (CMS), as well as related targets set by countries rich in biodiversity but constrained in resources.			
Sub-Goal: The probability of long-term survival of the Critically Endangered mountain chicken frog is significantly enhanced on the Caribbean island of Montserrat.	▪Mountain chickens reintroduced to Montserrat establish a self-sustaining population within 5 years of project completion. ▪Management of the mountain chicken restoration plan continues to be led by regional partners through long-term within 3 years of project completion.	▪CBD national biodiversity strategy reports. ▪Montserrat DOE staff work plans. ▪Scientific literature. ▪Monitoring and evaluation reports	
Purpose Enabling Montserrat to save the Critically Endangered mountain chicken through a programme of research, re-introduction, strategic planning and awareness-raising.	▪Evidence base documented to support the long term restoration of mountain chickens and the management of chytrid in Montserrat. ▪Long-term species restoration plan agreed. ▪Trial re-introduction of mountain chickens completed. ▪Pride in the conservation of the species among Montserratians increased and public support for the species restoration strategy secured. ▪Regular collaboration between the necessary stakeholders underpins the restoration of the species.	▪Project annual reports ▪Scientific literature ▪Government ratified management plans ▪Monitoring data from introduced animals collated annually in database ▪Results presented to international bodies ▪International media coverage ▪Project partner website hit count ▪Public awareness survey results	▪No catastrophic eruptions of the Soufriere volcano during the lifespan of the project prevent safe access to reintroduction site(s) ▪Reintroduction sites remain chytrid free
Output 1. 1. The evidence base for the restoration of the mountain chicken and mitigation of the impacts of	▪ Research prioritisation exercise to identify key information gaps completed in Yr 1. ▪Population estimation methodology	▪Minimum of three scientific papers by the end of Year 3. ▪Monitoring manuals produced. ▪Workshop meeting minutes.	▪MSc student available to implement studies ▪Sufficient field staff available from Montserrat DOE and Veterinary

Project summary	Measurable Indicators	Means of Verification	Important Assumptions
chytrid is established.	developed for mountain chickens and used to generate estimates for Montserrat and Dominica by mid Year 2. ▪Network of chytrid monitoring sites on Montserrat established by the end of Year 1. ▪Database designed and used by Montserrat DOE and project Partners. ▪At least one MSc by a Montserratian student on the environmental dynamics of amphibians as vectors for chytrid on Montserrat completed by end Year 2.	▪Project progress reports. ▪IUCN specialist group materials and website. ▪Project partner websites ▪International meeting proceedings or publications	services.
Output 2. Trial re-introduction of mountain chickens into Montserrat completed.	▪ Two survey trips completed to identify primary re-introduction site within Montserrat in Year 1 and 2. ▪Presence/absence of chytrid and amphibians at target sites established. ▪Minimum of 100 adult mountain chickens introduced to primary location, targeted for the end of Year 2. ▪Introduced predator control programme implemented around release sites at the time of introduction and monitored annually. ▪ Early warning monitoring plan for chytrid in the reintroduction site implemented with Montserrat DOE and Volcano Observatory teams. ▪Lessons learnt from trial re-	▪Trip reports. ▪Data logger records and recordings. ▪At least two articles peer reviewed scientific publications. ▪Re-introduction plan published. ▪Adaptive management plan. ▪Articles in international print and web media. ▪IUCN specialist group reports.	▪Strategic partnership established with the Volcano Observatory and maintained during lifespan of project enables helicopter access to volcano exclusion zone in Montserrat. ▪Chytrid-free areas identified in the project remain unaffected by disease. ▪The 50 founder frogs provide sufficient basis for a long term captive breeding programme.

Project summary	Measurable Indicators	Means of Verification	Important Assumptions
	introduction are documented and communicated by mid Y3. ▪A post-release frog monitoring scheme implemented and an adaptive management plan completed for the trial reintroduction by end of Year 3.		
Output 3. Long term restoration strategy for the mountain chicken established and agreed with regional partners.	▪International/regional re-introduction steering committee established by the end of Year 1. ▪Use of facilities on Dominica to breed frogs for re-introduction to Montserrat assessed by the end of Year 2. ▪Draft Restoration strategy prepared by the Steering Committee and agreed with all stakeholders by end Year 1 and continuously evaluated throughout project. ▪Strategy completed by end Year 3 and published ▪Sufficient capacity in place to manage species restoration in long term.	▪Restoration strategy document. ▪Annual progress reports. ▪Steering committee meeting reports ▪Evaluation mission report. ▪Training reports and manuals. ▪Montserrat staff member trained at Durrell and ZSL on captive management of mountain chickens.	▪Dominican authorities continue to support the captive facilities for the lifetime of the project. ▪Mountain chickens can be brought to the captive breeding facility.
Output 4. The restoration of the mountain chicken is a source of national pride and benefits from long-term collaboration between national, regional and international partners.	▪Communication strategy developed for mountain chickens in Montserrat within Year 1. ▪Minimum of 200 posters produced profiling the species and highlighting core conservation areas by the end of Year 1. ▪A calypso on the mountain chicken crisis written and broadcast on Montserrat radio by end Year 1. ▪At least 5 presentations made to local schools during Year 2.	▪Posters and pamphlets printed. ▪School visit reports. ▪Awareness survey results. ▪Communications strategy. document printed. ▪Media reports, articles and TV transcripts.	

Project summary	Measurable Indicators	Means of Verification	Important Assumptions
	▪Awareness, attitudes and behaviours surveys shows increased understanding of the conservation value of the mountain chicken by Year 3.		

Annex 3 Onwards – supplementary material

Please note that the following documents will be provided as a separate folder attached to the email containing this report.

3.1 Mountain Chicken Recovery Program Partners Meeting Minutes 2013
3.2 Mountain Chicken Research Strategy
3.3 Dominican Fieldwork Report 2012
3.4 Potential Release Site Report
3.5 Introduced Predator Control Contingency Plan
3.6 Release Report Nov 2012
3.7 Ethical Review of Belt Harness Trials 2013
3.8 Lloyd Martin DESMAN Certificates
3.9 Lloyd Martin DESMAN Project Proposal: Review of mountain chicken Species Action Plan (2007-2012)
3.10 Communications Strategy for Mountain Chicken Project
3.11 Press release - Governor visits the release site of the Critically Endangered Mountain Chicken
3.12 School Visits Report
3.13 Photo: 'I love mountain chickens' poster
3.14 Research Officer Terms of Reference
3.15 Status of Mountain Chicken *Ex Situ* Population Report 2012
3.16 Project Steering Committee Terms of Reference
3.17 Montserrat and Dominica Training Log

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.	Yes
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.	No
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.	Yes
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.	No
Have you involved your partners in preparation of the report and named the main contributors	Yes, No*
Have you completed the Project Expenditure table fully?	Yes
Do not include claim forms or other communications with this report.	

* Yes they have been consulted and kept apprised, but only the authors have been named