



Darwin Initiative – Final Report

(To be completed with reference to the Reporting Guidance Notes for Project Leaders (<http://darwin.defra.gov.uk/resources/>) it is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)

Darwin project information

Project Reference	18018
Project Title	Enabling Montserrat to Save the Critically Endangered mountain chicken
Host country(ies)	Montserrat
Contract Holder Institution	Durrell Wildlife Conservation Trust
Partner Institution(s)	Department of Environment (DoE), Ministry of Agriculture, Land, Housing and Environment (MALHE), Montserrat Zoological Society of London
Darwin Grant Value	£ XXX
Start/End dates of Project	1 st July 2010 to 30 th June 2013 (extended with Darwin until 30 th November 2013)
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Project Website	www.mountainchicken.org
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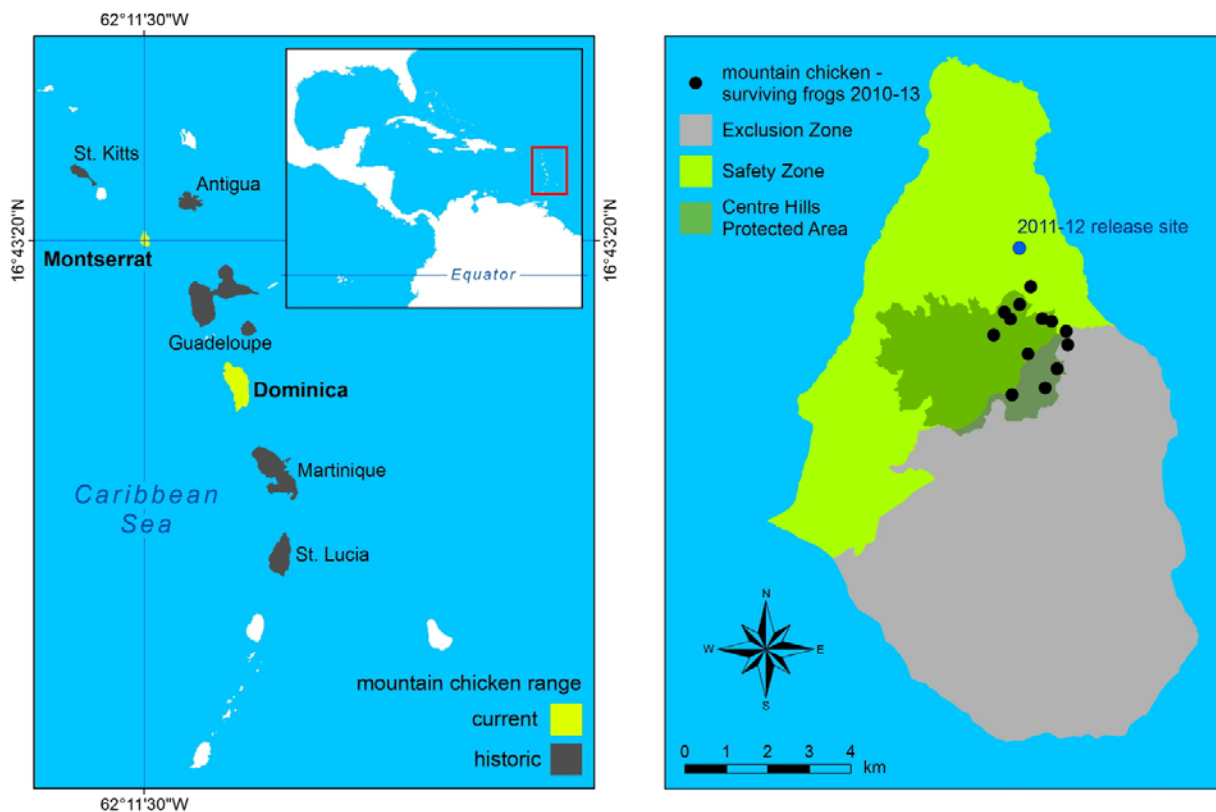
1 Project Rationale

The mountain chicken frog, *Leptodactylus fallax*, is the largest living *Leptodactylus* species and one of the largest of all living frog species. Once found on seven islands, the mountain chicken (Critically Endangered, IUCN) is now restricted to the islands of Montserrat and Dominica, where it has declined through impacts from invasive species, historical habitat destruction and hunting pressure from humans.

In 2002, the presence of the chytrid fungus *Batrachochytrium dendrobatidis* (hereafter Bd) was confirmed in Dominica. The fungus caused the outbreak of the fatal fungal disease, chytridiomycosis within the mountain chicken population which resulted in catastrophic declines of 80%, estimated within 18 months of being detected. In 2008 surveys failed to detect any surviving mountain chickens in the wild in Dominica.

In response, the Montserrat Mountain Chicken Species Action Plan, (2007-2012, OTEP funded) prioritised biosecurity at the ports of entry in Montserrat to stop Bd arriving on the island. Despite these efforts, Bd was detected on Montserrat in February 2009 by the Department of Environment (DOE). In May 2009, 50 uninfected frogs were evacuated to an *ex situ* breeding programme at Durrell (Jersey), ZSL (London), Parken Zoo (Sweden) and later North of England Zoological Society (NEZS, Chester Zoo, UK). In July 2009, Bd arrived in the last healthy mountain chicken population resulting in the deaths of many frogs.

This project was designed to address the imminent threat of chytridiomycosis to the remaining surviving mountain chickens in Montserrat and to assist Montserrat in securing the future restoration of the species. This project sits within a longer-term Mountain Chicken Recovery Programme (MCRP); a collaboration between the Governments of Montserrat and Dominica, Durrell, ZSL and NEZS, Chester Zoo.



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

2 Project Achievements

2.1 Purpose/Outcome

The overall purpose of this project was “Enabling Montserrat to Save the Critically Endangered Mountain Chicken” and was achieved by completing four main components: 1) a programme of research underpinning the long term restoration of the mountain chicken; 2) trial re-introductions of mountain chickens; 3) development of and commitment to a long-term species recovery plan and 4) an increase in Montserratian pride in the conservation of the species securing public support for the recovery strategy.

A research strategy was developed and has guided completion of research activities which have provided a base to support the long term restoration of the species and management of Bd (see Annex 7.1). Knowledge concerning the presence and status of surviving mountain chickens in Montserrat and Dominica has been increased along with understanding of the seasonal trends of the chytrid fungus Bd in sympatric amphibian populations in Montserrat, both by collecting extensive longitudinal monitoring data in long-term databases.

The trial reintroduction of mountain chickens to Montserrat was successfully completed (see Annexes 7.2 and 7.3). A series of experimental releases have proved that releasing mountain chickens into a Bd positive area with no intervention post-release is not a viable management strategy. The releases have shown, however, that manipulation of some variables (frog size,

sex and season) at the point of release can have an effect on frog survival probability. The reintroductions have provided good baseline data for future experimental releases.

Based on results from this project, a detailed long-term recovery strategy for the mountain chicken, in the form of a logical framework, has been developed to guide conservation efforts for the species across its global range (Montserrat and Dominica) for the next twenty years (see Annex 7.4). The strategy has been developed with both the Montserrat and Dominican governments and at least three international organisations have committed to collaborating with the host countries to complete the conservation activities outlined in the strategy logframe.

Finally, island wide surveys have verified that the communications strategy developed and executed by the project in Montserrat over the last three years has successfully increased pride and awareness of mountain chicken conservation in local people (see Annex 7.5).

2.2 Goal/ Impact: achievement of positive impact on biodiversity and poverty alleviation

The main focus of the project was on the mountain chicken as an apex native predator on Montserrat and a flagship for the conservation of the Centre Hills forest; the last remaining large area of contiguous forest on the island following the volcanic eruptions in 1995. Through communications activities we aimed to raise pride in the species and the conservation of Montserrat's natural heritage within the Centre Hills.

With the sub-goal of significantly enhancing the probability of long-term survival of the Critically Endangered mountain chicken frog, we can state that without our interventions this species would most likely be functionally extinct on Montserrat. In 2009, 50 frogs were caught to create an *ex-situ* population which has yielded 121 offspring that have been experimentally released back to the island to help develop future restoration strategies. This would not have been possible without the project.

The project had set two indicators to measure the realisation of the sub-goal: 1) mountain chickens reintroduced to Montserrat establish a self-sustaining population within 5 years of project completion and 2) management of the mountain chicken recovery strategy is led by regional partners into the long-term (+3 years of project completion).

The project is not yet on track to complete the first indicator as the assumption that reintroduction sites remain Bd free failed between the submission of the proposal and awarding of the grant. Therefore the experimental releases were conducted to investigate the impacts of Bd on mountain chicken survival under different release scenarios, manipulating factors under our control, and increased understanding of mountain chicken ecology. Increased knowledge from monitoring surviving mountain chickens (frogs that persist in small numbers in Montserrat since the arrival of Bd) and investigating patterns of Bd in sympatric amphibian species is building a picture of the interactions between Bd and its amphibian hosts in Montserrat's forest ecosystem. This research was conducted as part of a wider programme executed by the project which contributed to several articles outlined by the CBD including articles 6, 7, 8, 9, 12, 13, 15, 16, 17, and 18. More details on these contributions are given under section 3 of this report.

Through the project we have established strong collaboration between international organisations and the host country partners. A long-term recovery strategy ending in 2033 was developed at an international participatory workshop held in Montserrat and is under review by both regional and international project partners who have committed to adopting the full strategy. Local capacity within governmental and non-governmental conservationists was increased through a dedicated training programme (see Annex 7.6) ensuring key skills are accessible to conduct future *in situ* and *ex situ* conservation activities outlined in the long-term plan. We have also secured continuation funding for the collaboration to continue and therefore we believe that through the Darwin project, we will meet the second indicator for locally led management of the project to extend into the long term.

2.3 Outputs

Four principle outputs were outlined in the original logical framework for this project and all four were achieved as follows:

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

With full collaboration from our host country partners, a research programme was developed and delivered, the results of which have achieved the evidence base outlined in this output (see Annex 7.1). The full results of project research will be submitted as part of a PhD thesis entitled “The emergence, epidemiology and impact of chytridiomycosis in the mountain chicken frog” in September 2016. Major achievements of this output include: increased knowledge of the presence and absence of surviving mountain chickens across Montserrat, now represented in GIS databases, and a recorded decrease in the number of individuals detected over the three year project period. Surviving mountain chickens have been recorded as testing positive for Bd and the temporal changes in Bd infection status of these surviving frogs is now known. Long term monitoring of Bd levels in sympatric amphibians has shown seasonal patterns and these results have contributed to our knowledge of the ecology of Bd. Long-term monitoring databases have been established and Government of Montserrat staff have been trained and are now responsible for the management of these databases and ongoing training of Montserratian and Dominican forestry staff in field skills. This training along with the development of rigorous protocols has increased the capacity for the local governments to continue monitoring and management on both islands (see Annex 7.7 and 7.8 and www.mountainchicken.org/reports).

In addition, genetic samples gathered during project activities have allowed an assessment of the genetic differences between the populations on both Montserrat and Dominica, and the potential loss of genetic diversity as a result of the chytridiomycosis related population crash (this assessment currently exists as an internal report and can be made available upon request).

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

The original purpose of reintroducing mountain chickens into “key Bd-free sites on island” was altered after the project confirmed the presence of Bd at all target introduction sites. Following consultation with project partners and the PSC, a reintroduction plan was agreed and approved following assessment by Durrell’s ethics committee and discussion with DEFRA and the Darwin Initiative secretariat. Through execution of this plan, the project tested the viability of releasing amphibians into a Bd positive area as a management strategy by completing three successful releases of 121 mountain chickens into Montserrat. Intensive monitoring of the fates of released frogs and Bd prevalence and infection rates has increased knowledge on the interaction with Bd in the wild from a known point of exposure and the results of these experimental releases now provide a baseline of knowledge on the responses and survival rates of mountain chickens when released under seasonal, and age related variables. The ability of captive bred mountain chickens to behave naturally and maintain good body condition once released has been recorded for the first time, along with the minimal impact of invasive predators on small released populations. Knowledge on the ecology of mountain chickens has been increased by monitoring the movements of released frogs and the differences between males and females, different age cohorts of frogs, and between frog behaviour in the wet vs. dry season have been documented (see Annex 7.3).

Pioneering methods on how to successfully reintroduce mountain chickens from overseas facilities into the wild have been tested and protocols on transportation, construction of temporary facilities, veterinary recommended care and soft release methods have been completed for use by host countries for future releases (copies of the project protocols are available to download from the project website, www.mountainchicken.org/reports). Radio-tracking has been developed as a successful method of intensively monitoring mountain chickens post-release and improvements on techniques are currently being tested in captivity

using external belts. Training of local forestry staff on how to conduct the releases led to Montserrat's Department of Environment leading the third release without any direct external assistance, demonstrating local capacity to conduct future releases has been secured (see Annex 7.2).

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

The successful completion of this output is one of the major positive changes realised by this project as it has secured the future restoration efforts for the mountain chicken frog. The foundation for the development of this plan was laid with the formation of a locally focussed Project Steering Committee (PSC) including members from the governments of both Montserrat and Dominica and was chaired by Montserrat's Director of the Department of Environment (DOE) (see Annex 7.9). The PSC was instrumental for securing permission for project activities to take place and maintained local support from Government and stakeholder level.

The strategy entitled "Long-term Recovery Strategy for the Critically Endangered Mountain Chicken 2013-2033" identifies critical objectives and conservation activities for the species over the next twenty years and was developed over a four day participatory workshop attended by regional governmental and non-governmental stakeholders, technical advisors and other international partners of the Mountain Chicken Recovery Programme (see Annex 7.4 and 7.10). The strategy is underpinned by institutional support from three different organisations as well as commitment from both the Governments of Montserrat and Dominica and has been adopted by the local Programme Steering Committee we have formed from this Project's Steering Committee.

Capacity to execute this long term strategy has been secured through completion of a three-year programme of training activities. Two forestry staff members from Montserrat's DOE have completed a three month residential course in Britain and have earned diplomas from the University of Kent in Endangered Species Management (DESMAN) (see Annex 7.11) and two staff also completed Durrell's Island Species Management (ISLA) course in the Dominican Republic improving their skills in project management. Three staff exchange visits have taken place between Montserrat and Dominica facilitating the sharing and strengthening of skills in mountain chicken monitoring and field biosecurity, resulting in improved and increased monitoring and tracking of individual mountain chickens in Dominica (see Annex 7.12, 7.13 and 7.20). A Research Officer was identified from within DOE and following completion of the DESMAN course and three years of his role as Project Research Officer has gained sufficient knowledge and experience to coordinate mountain chicken conservation activities and manage projects locally, a role that is now being assigned to him by DOE (see Annex 7.8).

Implementation of the strategy has already begun as it has been used to write a detailed workplan for Montserrat for 2014, adopted by the Department of Environment and with funding secured from a private trust (see Annex 7.7 and 7.14). The Research Officer will manage this workplan as the new Project Coordinator for DOE in collaboration with Durrell.

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.*

Sustained, consistent outreach efforts over this three year project were guided by a communications strategy developed with Montserrat DOE's Environment Technician responsible for education. The activities identified in the communications strategy were based on the indicators outlined in the project proposal all of which were completed (see Annex 7.15).

Surveys measured the baseline level of public behaviour and awareness to mountain chicken conservation at the beginning of the project and repeating this survey in the final months of the project showed an increase in the knowledge, understanding and empathy towards the conservation of the species (see Annex 7.5).

Education and public awareness of mountain chicken conservation and the global issues associated with the chytrid fungus Bd were increased through a multimedia outreach programme including a national poster and leaflet campaign, schools and community presentations, television and radio documentaries and calypsos, all of which were captured on an educational DVD which was distributed to local schools and NGO's. Local pride and cultural integrity of the species was notably increased as support for the project was communicated often to project staff and shown through attendance to public events such as presentations and calypso shows.

3 Project support to the Conventions (CBD, CMS and/or CITES)

Activities completed by this project have supported Montserrat in its contribution to the Convention on Biological Diversity (CBD). As the mountain chicken is neither threatened with international trade nor a migratory species, CITES and CMS do not apply.

Details of which articles listed under the CBD text this project has assisted Montserrat in contributing to are outlined below:

Article 6. *General Measures for Conservation and Sustainable Use*

This article was supported by the development and adoption of a work plan of conservation activities by the Montserrat Department of Environment (DOE) (see Annex 7.7) to be carried out by local forestry staff with support from Durrell Wildlife Conservation Trust (Durrell) in 2014. Activities include continuous monitoring of surviving mountain chickens, surveys of Bd levels in sympatric amphibians and a fourth experimental release of captive bred mountain chickens which contribute to the conservation of the species. Future conservation workplans will be guided and supported by the long-term recovery strategy developed by the project (see Annex 7.4).

Article 7. *Identification and Monitoring*

The research strategy developed by the project under output 1 (see Annex 7.1) guided the completion of monitoring activities supporting this article by establishing an evidence base for the restoration of the mountain chicken and mitigation of the impacts of Bd. Outputs include long-term monitoring databases collating longitudinal Bd infection data from surveys of surviving mountain chickens and sympatric amphibian species as well as GIS databases mapping presence and absence of individual surviving mountain chickens.

Article 8. *In-situ conservation*

Results from the monitoring programme were used by the Montserrat DOE to submit a change in the legislation to increase the level of national protection of the mountain chicken from no protection to fully protected. This application is currently under review by the Montserrat legislative council.

The Centre Hills, where most surviving mountain chicken sites are found in Montserrat, was already established as a protected area. The project contributed knowledge of specific sites where surviving mountain chickens occur, including those found outside the Centre Hills, to the Government's Physical Planning Unit which has included this data in the Montserrat Physical Development Plan 2012-2022 (see Annex 7.16) to ensure any proposed development of these sites was restricted and done in consultation with DOE.

The outreach programme conducted by the project has increased knowledge of the threats to the mountain chicken and increased empathy of local Montserradians to the conservation of the species (see Annex 7.5) thereby decreasing the threat of hunting.

Article 9. *Ex-situ Conservation*

Although not directly funded by this project, the biosecure captive breeding programme was initiated through in-kind support from Durrell, ZSL and Parken Zoo to support the experimental release of mountain chickens which was an output of this project.

Article 12. *Research and Training*

The delivery of a comprehensive research programme was guided by a research strategy developed by the project (see Annex 7.1). The results of this programme have contributed to a long-term recovery strategy which includes a research objective (see Annex 7.4).

Training was implemented through a programme focussed on increasing local capacity within Montserrat's DOE. This programme successfully increased project management and leadership skills as well as survey and biosecurity techniques of local forestry staff (see Annex 7.6).

Article 13. *Public Education and Awareness*

An educational and awareness programme was guided by a project communications strategy (see Annex 7.15), and survey results showed an increase in understanding and empathy towards the conservation of the mountain chicken (see Annex 7.5).

Article 15. *Access to Genetic Resources*

A memorandum of understanding was established when the founder mountain chickens were taken into captivity in order to breed offspring for release. This agreement clearly defines the captive mountain chickens as property of the Government of Montserrat and all decisions pertaining to the management of these animals must be approved by the Government of Montserrat. The Project Steering Committee established as one of the indicators of this project provides platform for obtaining these permissions and also the approval of proposed project activities (see Annex 7.9).

Article 16. *Access to and Transfer of technology*

This project facilitated access to different technologies that assisted with the collection of data and conservation of the mountain chicken. This includes but is not limited to radio-tracking technology to monitor released frogs, the use of GIS to map occurrence and monitor movement of mountain chickens, SongMeter automated audio recorders to detect calling male frogs and qPCR equipment to analyse swab samples to monitor Bd infection rates. Marking (PIT tagging) technology and skills were transferred from Montserrat to Dominica, along with the requisite biosecurity skills through the training given by the project Primary Field Assistant during his visits to Dominica in 2011 and 2012 (see Annexes 7.12 and 7.13).

Article 17. *Exchange of Information*

All outputs generated from project activities were made available to all project partners and members of the MCRP via Dropbox, email exchange lists and the project website (www.mountainchicken.org). This includes partners from the host country Montserrat and regional partners in Dominica. More details are given in section 5.2 of this report.

Article 18. *Technical and Scientific Cooperation*

Details of contributions to this article are given in section 5.1 of this report.

4 Project Partnerships

This project forms a major component of a wider collaboration between the Governments of Montserrat and Dominica, Durrell, ZSL, and NEZS (Chester Zoo) named the Mountain Chicken

Recovery Programme (MCRP). For more information on this collaboration and on the project team, see www.mountainchicken.org/partnership/team/. Parken Zoo left the programme in Year 3 following internal issues at their institution which led them to withdraw from conservation projects. However the MCRP has now been joined by Nordens Ark, a Swedish zoo and foundation, which aims to support both the captive management of the species but also conservation in the wild.

The Durrell Wildlife Conservation Trust (Durrell) provided project leadership via Matt Morton, based in Saint Lucia, with day to day project management in Montserrat by Sarah-Louise Adams, Project Coordinator. Durrell provided 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 in Year 3 with Gerardo Garcia and Javier Lopez moving to our partner institution NEZS (Chester Zoo) where they both continued to provide herpetological and veterinary support through their new positions at NEZS (Chester Zoo). The in-country project leader was Gerard Gray, Director of Montserrat's Department of the Environment (DOE, in the Ministry of Agriculture, Housing, Lands and the Environment, MAHLE).

Sarah-Louise provided day-to-day in-country coordination, based fulltime for the full three years of the project in Montserrat, contracted to DOE, working closely with her departmental colleagues on all aspects of project delivery. Embedding the Project Coordinator within DOE as part of their staff structure was identified as an important way of integrating the project with DOE activities. DOE provided 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. During the lifetime of the project, DOE also hosted two international workshops. 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 brought together in-country stakeholders. Overseas PSC members (including representatives from the Government of Dominica) received agendas and minutes for each meeting to allow them to contribute, input, and also attend in person some meetings in Montserrat. The Project Leader also attended 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 was based in DOE, working alongside Lloyd Martin, a DOE Forestry Technician contracted as the Project Research Officer. Calvin Fenton was contracted as the Primary Field Assistant. Sarah-Louise reported directly to Gerard Gray and, via email and Skype, to Matt Morton who also visited Montserrat regularly. She also circulated weekly tabular progress reports to all project partners (PSC members). Other DOE staff participated in project activity planning through monthly meetings with the project staff. The Director of Forestry in Dominica, Mr Minchinton Burton supported staff exchange visits and field surveys in Dominica by hosting the Primary Field Assistant Calvin Fenton and providing support staff in the field. Veterinary and herpetological support from Durrell and NEZS was facilitated 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 provided technical guidance on epidemiology from the UK, which built on previous experience through the Darwin funded project (Ref 13032) on chytridiomycosis in the Eastern Caribbean. All swabs taken from frogs in the wild were analysed for the presence of Bd 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 Bd 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 and delivery of the research plan.

All project partners and collaborators within the MCRP will continue to meet annually and have all signed up to the Long-term Recovery Plan developed by the project which will be used as a platform to continue collaborating to restore the mountain chicken.

5 Contribution to Darwin Initiative Programme Outputs

5.1 Technical and Scientific achievements and co-operation

A research programme was completed by the project in full collaboration and support from host country partners and staff (see section 2.3 and 4). The results of this research are being analysed as part of a PhD thesis entitled “The emergence, epidemiology and impact of chytridiomycosis in the mountain chicken frog” which is due to be submitted and reviewed in 2016 and will significantly contribute to an evidence base supporting the long term recovery of the mountain chicken and global understanding of the chytrid fungus Bd. During the lifetime of this PhD (which was postponed for an extended period after the candidate survived a plane crash en route to Montserrat) results from this project will be used to produce a minimum of three peer reviewed manuscripts for publication.

Data collected under this programme has been made fully available to host country partners, including GIS maps and monitoring manuals, and the Government of Montserrat is now taking on the responsibility for managing three long-term monitoring databases established by the project.

A survey on the awareness and behaviour of Montserratians capturing 3% of the island population was conducted twice during the project and showed an increase in the level of understanding and empathy towards the conservation of the mountain chicken (see Annex 7.5). These results were also made available to the Government of Montserrat and along with all project partners.

5.2 Transfer of knowledge

The continuing decline of mountain chicken numbers documented by the project was communicated to the Government of Montserrat and has helped to ensure the species was included in the draft of the new Conservation and Environmental Management Act (CEMA) as a fully protected species.

Knowledge gained during project activities has been used to create a number of different manuals and protocols to guide both Montserratian’s and Dominican’s in field techniques and best practices. These protocols have been shared with the Governments of Montserrat and Dominica to provide to staff as well as being made available on the website for the wider herpetological and conservation community (see www.mountainchicken.org/resources/reports).

The Research Officer who is a permanent staff member of DOE has been trained to use the monitoring databases and GIS and is available as a local contact for information on the status of the mountain chicken.

Monitoring data of surviving mountain chickens was shared with the Montserrat Physical Planning Unit during the development of the Government of Montserrat’s Physical Development Plan 2012-2022 (see Annex 7.16) which now incorporates areas of importance for the mountain chicken. These areas were detailed in the plan to ensure conservation of the mountain chicken is taken into account during future planning applications.

The project website (www.mountainchicken.org) was used to share much of the outputs and knowledge gained from project activities with the public. The website will remain live after the project has ended and the responsibility of running the website has been handed over to DOE in Montserrat.

5.3 Capacity building

The project implemented a training programme which focussed on building local capacity within DOE as our key in-country partners (see Annex 7.6). It was recognised that the forestry staff working for DOE had good knowledge of the local biodiversity and good exposure to a wide range of international institutions, including Kew gardens and RSPB, through various local

projects. Through these projects staff had developed good forestry skills but none had undertaken project management level training.

The completion of this training programme ensured two forestry staff members, one of which was employed as project Research Officer, were identified and funded and have each completed a Diploma in Endangered Species Management (DESMAN) (see Annex 7.11), including modules on project management and leadership. Both staff since completing their course have initiated their own projects through DOE (see Annex 7.17 and 7.18) and the Research Officer has accepted a position as Project Coordinator and will be responsible for the completion of the 2014 mountain chicken workplan in Montserrat (see Annex 7.8).

One forestry staff member and a contracted project field assistant also completed the Island Species-Led Action course (ISLA) run by Durrell which is designed to “equip conservation professionals with the skills and understanding necessary to recover endangered species from immediate extinction and to plan for their long term recovery”. These courses have assisted DOE staff in improving their project management, implementation and leadership skills and enhanced their ability to engage with the conservation projects currently being implemented. Both staff have been contracted to assist with mountain chicken conservation activities for 2014.

A total of 19 additional workers, not all based at DOE, have received training in field skills and biosecurity techniques and training in the office on data base management, inputting and error checking. Completion of this training has strengthened their survey and monitoring skills as well as their ecological knowledge and data management and has enhanced their capacity for future work within the environment sector in Montserrat. Details of who has been trained are in the training log (see Annex 7.6).

Since completion of the project and the training programme, the ability of DOE to lead project activities from within its own forestry team has greatly improved. Staff capability has increased with some members actively managing and leading local projects and international partner involvement locally has been decreased to a minimum hands-on supporting role.

Durrell continues to support Montserrat by assisting with writing funding proposals and securing grants to complete the 2014 workplan. Training has been given to project staff in grant proposal writing and Durrell supporting staff will continue to assist these individuals in their development and has been included in Objective 1 of the long-term recovery strategy (see Annex 7.4).

5.4 Sustainability and Legacy

The successful development of the long-term recovery strategy and the increased local capacity within the Government of Montserrat have been key in securing commitment from the regional and international partners to the long-term restoration of the mountain chicken.

The workshop held to develop the strategy was hosted by the Government of Montserrat and partners and stakeholders, both regional and international, participated in the discussions which identified key objectives and activities included in the strategy (see Annex 7.10).

Increased local capacity to support the management and leadership of projects in Montserrat by DOE has strengthened ownership by the Montserratians and safeguarded collaboration between regional and international partners. Training and development of staff, as well as the provision of manuals and databases, has enabled DOE to manage and lead the 2014 workplan activities with minimal external support.

The international Project Steering Committee established by the project will continue to meet and be chaired by the Director of DOE and will continue to work with the MCRP to provide guidance and permissions for key activities proposed by the strategy (see Annex 7.9).

All capital equipment purchased by the project have been handed over to DOE including a project laptop, GPS units and other monitoring equipment, mountain chicken pre-release

holding ponds and radio-tracking equipment for future releases and, most importantly, a project vehicle which will continue to be used by DOE for mountain chicken fieldwork.

Educational DVD's documenting all outreach materials produced by the project have been created and distributed to all schools, NGO's and other public services, such as the library, as a record of mountain chicken project efforts and the two mountain chicken calypso's are part of the local radios playlist and will continue to be aired as part of the cultural legacy of this precious species.

6 Lessons learned

An issue experienced by this project was getting access to the funds sent from Durrell, through the Government of Montserrat treasury, to the project account. A complicated and lengthy paperwork trail would often result in months of delayed payments reaching the accounts to be accessed by the Project Coordinator. This resulted in funds not being available when needed and a build-up of money which often came through in one large sum. This was dealt with by DOE subsidising the project allowing essential payments to be made to keep the project functioning until the backlog of funds were made available. This allowed project activities to continue but sometimes led to inconsistent project work flow. The benefit to using the Government accounts to handle the funds was that they employ a full accounting system, 'Smart Stream', used by trained clerical staff, and rigorous processes ensured that underspend, overspend or misuse of funds could not occur. This issue has been addressed by making larger more infrequent payments to DOE, when grants allow, limiting the number of times money has to travel through the Montserrat treasury.

Midway through the project, our PhD student, Mike Hudson, was travelling to Montserrat for his first full field season, which would have united data collection and research between the two islands. On leaving Antigua his light aircraft suffered a major engine failure and crashed soon after take-off. Mike was the only survivor on board. This incident was communicated to Darwin immediately and we were grateful for the kind and supportive response given. The accident had a major impact on everyone involved in the project. Mike suffered relatively light injuries, although their impacts will continue throughout his life. Between the project partners and Mike's university, we think we took the appropriate actions to support him and the team members in the region who had to respond to the crisis. We also had another volunteer who was travelling out to support work and we helped her return home; she later returned to Montserrat as a volunteer assistant. We learnt lessons over how to communicate and manage major incidents. We also carried out an assessment of access to and from Montserrat and reviewed our field safety procedures. Mike returned to his research project and is now coordinating field data collection in Dominica and Montserrat from the UK.

Delays in analysis of results were also an issue experienced by this project. Large backlogs of swabs waiting to be processed at the Institute of Zoology (IoZ) laboratories in London occurred due a failure of the standard qPCR processing protocols leading to a large number of false negative results. This was caught and addressed by IoZ staff by developing a more sensitive protocol and the recruitment of volunteers to re-analyse the swabs and the backlog was successful cleared in 2012 (see Year 2 Darwin Annual Report) .The installation of a new PCR machine to the micro-lab in Dominica has also been identified by the long-term strategy as an activity with high priority to address future issues with delays in swab analysis. Once the results of the swabs were available, delay in the analysis of these results occurred when the appointed PhD student was involved in a plane crash en route to Montserrat. The lack of specialist skills required to analyse the results led to a delay in this part of the project, which is now due to be completed in 2016 and has also been incorporated into the long-term strategy as an activity to completed as a high priority. Complications with creating an effective software recogniser used to analyse the data recorded by the SongMeters continues to be an unresolved issue.

Discussions with technical staff within the RSPB have confirmed this software as being complicated to work with. Searches for alternative software and a student with the skills to analyse the data as part of a separate project is ongoing.

Other issues have been experienced by the project including delays to releases due to the detection of an unknown virus (subsequently shown to be a false positive) which were handled as they arose and had minimal overall impact on project success. Fatigue from some members of DOE staff was addressed by training internship students from the local secondary school along with new members of staff within the department. To address general public fatigue on being approached about conservation issues from previous projects run in Montserrat, collaboration with the Montserrat Volcano Observatory allowed us to present information to the general public through a national science week which we found generated larger audiences and more interest from the local community.

6.1 Monitoring and evaluation

The only major change made to the original design of this project was in response to a lack of Bd-free sites being found on Montserrat. The response was to change the reintroduction plan to release mountain chickens into Bd positive areas as part of an experimental study to test survival rates under varying conditions (see www.mountainchicken.rog/reports). These releases successfully increased our knowledge on the interaction with Bd in the wild and responses of mountain chickens when released into Bd positive environments under varying seasonal change, and age related parameters and contributed to the research programme and to the overall goal of securing long term survival of the species.

The monitoring and evaluation structure applied throughout this project proved very effective. This project was run 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.

Regular face to face meetings between the Project Coordinator, Research Officer and Director of Environment in Montserrat, along with Skype calls between the Project Coordinator, Project Leader in Saint Lucia and the Head of Field Programmes at Durrell, Jersey ensured timely completion of project activities and reports. Monthly reports (and weekly reports during the intensive release monitoring periods) were circulated to project partners and members of the MCRP and provided a basis for discussion on project progress with wider project partners. Activities were implemented following the Darwin log frame timetable which proved a vital part of project planning. Veterinary support was given by the Head Veterinarian at Durrell and Deputy Veterinarian of IoZ throughout the project, who advised on animal welfare issues during releases and monitoring of surviving mountain chickens. Training was also given to the Project Coordinator and local veterinary assistants within the Ministry of Agriculture in mountain chicken post-mortem protocols.

Guidance and permissions for project activities were provided by the local Project Steering Committee and the Ethics Committees of Durrell, IoZ and NEZS. Chaired by the Montserrat's Director of Environment, the PSC was established at the beginning of the project and included key local partners and stakeholders who met quarterly (see Annex 7.9). Minutes from these meetings were circulated to the rest of the MCRP. Regional members from Dominica sat on this committee and attended two meetings in person and were able to comment on minutes and contribute any issues to proposed agendas when they were not able to attend meetings directly.

The large number and geographic spread of partners and institutions involved in this project meant the time required to initiate project activities where the participation of other partners is

required could take a long time and this is was factored into project planning and is incorporated into the Long Term Recovery Strategy.

6.2 Actions taken in response to annual report reviews

No feedback or issues were received from reviews of previous reports and therefore no actions have taken place. There are no outstanding issues to our knowledge to comment on.

7 Darwin identity

Although this project was part of a wider programme led by the Mountain Chicken Recovery Programme, the activities conducted with Darwin Initiative support were concentrated on the island of Montserrat and so it was easy to separate this as a distinct project, at the forefront of mountain chicken conservation in Montserrat for the lifetime of the project. Also, the Darwin Initiative has funded projects in Montserrat before (“Centre Hills Project”; “Feral Livestock Project EIDPO027”) and, given the island’s small population of only 5,000 residents, residual recognition of the Darwin logo was already in place. The project itself was referred to by local organisations and the Government, as well as local project staff, as the “Darwin Mountain Chicken Project” and the Darwin logo was used on all outputs including monthly reports, manuals, protocols, public leaflets and posters, surveys, conference and community presentations along with the project website and documentaries. The logo was also displayed on project equipment including the fridge to store swabs and on the project vehicle. The Darwin Initiative was also mentioned in all national press and radio interviews.

8 Finance and administration

8.1 Project expenditure

Project spend since last annual report	2013/14 Grant (£)	2013/14 Total actual Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)	XXX	XXX	0	
Overhead Costs	XXX	XXX	0	
Travel and subsistence	XXX	XXX	0	
Operating Costs	XXX	XXX	0	
Capital items (see below)	XXX	XXX	0	
Others (see below)	XXX	XXX	0	
TOTAL	XXX	XXX		

Staff employed (Name and position)	Cost (£)
Matthew Morton, Project Leader	XXX
Andrew Cunningham, Institute of Zoology Deputy Head	XXX
Matt Goetz, Durrell Head of Herpetology	XXX
Andrew Routh, Durrell Head of Veterinary Department	XXX
Richard Young, Durrell Head of Conservation Science	XXX
Sarah-Louise Adams, Project Coordinator	XXX
Calvin Fenton, Primary Field Assistant	XXX

Lloyd Martin, Research Officer	XXX
TOTAL	XXX

Capital items – description	Capital items – cost (£)
Consumables	XXX
TOTAL	XXX

Other items – description	Other items – cost (£)
Petrol	XXX
TOTAL	XXX

8.2 Additional funds or in-kind contributions secured

DOE contributed salary time for Mr. Gerard Gray, Director of Environment and in-country Project Leader as an in-kind contribution which is estimated at £XXXX for the duration of the project. Signification in-kind contributions were made by volunteers throughout the project. A total of ten volunteers contributed over 27 months of full-time post-release monitoring effort. Accommodation and a weekly stipend was provided by the project but volunteers contributed their own flight costs which are included in the table below. Local volunteers also contributed over 200 hours in monitoring efforts including volunteers provided by a local Coral Cay Conservation base established in 2013.

Source of funding for project lifetime	Total (£)
Net Trust	XXX
Durrell in kind	XXX
Durrell animal management	XXX
ZSL disease analysis	XXX
ZSL London Zoo	XXX
NEZS Zoo	XXX
Parken Zoo	XXX
Volunteer flight costs	XXX
TOTAL	XXX

Source of funding for additional work after project lifetime	Total (£)
Private Jersey Trust funding to complete 2014 work plan activities	XXX
Durrell animal management	XXX
ZSL London Zoo	XXX
NEZS Zoo	XXX
TOTAL	XXX

8.3 Value for Money

None of the outputs and achievements outlined in this report would have been possible without the Darwin Initiative as the funding supported completion of all the activities conducted in Montserrat. The majority of the funds were disbursed through the Government of Montserrat's Treasury which has strict protocols on the expenditure of funds to ensure value for money is attained and often assisted the project by voiding certain taxes that would normally have been applicable.

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

Note: For projects that commenced after 2012 the terminology used for the logframe was changed to reflect DFID's terminology.

Project summary	Measurable Indicators	Progress and Achievements March 2013 – November 2014
<p>Goal: <i>To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but constrained in resources to achieve</i></p> <ul style="list-style-type: none"> ⇒ The conservation of biological diversity, ⇒ The sustainable use of its components, and ⇒ The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources 		<p>The Critically Endangered mountain chicken continues to survive at low numbers under the threat of Bd and without this project this species would most likely be functionally extinct on Montserrat. Experimental releases have assisted in the development future restoration strategies and increased knowledge from monitoring surviving mountain chickens and investigating patterns of Bd in sympatric amphibian species is building a picture of the interactions between Bd and its amphibian hosts in Montserrat's forest ecosystem. This has contributed to the conservation of the mountain chicken and is relevant to a wide range of amphibian species globally.</p>
<p>Purpose Enabling Montserrat to save the Critically Endangered mountain chicken through a programme of research, re-introduction, strategic planning and awareness-raising.</p>	<ul style="list-style-type: none"> ▪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. 	<p>A research strategy guided research activities which have provided an evidence base to support the long term restoration of the species and management of Bd in Montserrat. Long-term monitoring databases have been established and staff from the Governments of Montserrat and Dominica have been trained in field protocols and data management which has increased the capacity for these governments to continue monitoring on both islands. The trial reintroduction of mountain chickens to Montserrat was successfully completed with the release of 121 captive-bred mountain chickens into the wild and the results have provided valuable baseline data for future experimental releases; we believe our post-release monitoring is amongst the most comprehensive for any amphibian species. The results from the releases and the research programme were used to develop a detailed long-term recovery strategy for the mountain chicken, structured as a logical framework, to guide conservation efforts for the species across its global range (Montserrat and Dominica) for the next twenty years. The regionally-based Project Steering Committee established by the project will continue to meet as a Programme Steering Committee led by regional partners to oversee the implementation of this strategy with support from other Mountain Chicken Recovery Programme partners. Finally, island-wide surveys have verified that the communications strategy developed and executed by the project in Montserrat over the last three years has successfully increased pride and awareness of mountain chicken conservation in local people. All the indicators outlined to support the achievement of the project purpose are</p>

		considered complete.
Output 1.1. The evidence base for the restoration of the mountain chicken and mitigation of the impacts of chytrid is established.	<ul style="list-style-type: none"> ▪Research prioritisation exercise to identify key information gaps completed in Year 1. ▪Population estimation methodology 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 	The research strategy was completed in the first year of the project and successfully guided research activities throughout the three years. Consistent low numbers of surviving mountain chickens in both Montserrat and Dominica remained too low over the three years to develop a population estimation methodology but data from continuous surveys allowed distribution mapping to record occurrence in Montserrat. These protocols are now being used to map distribution in Dominica. A network of Bd (“chytrid”) monitoring sites was also successfully established in Year 1 and continuous sampling throughout the project has provided the first longitudinal data set of Bd levels in the region. All data captured from the monitoring programme has been documented in established spreadsheet and GIS databases which have been handed over and are now managed by DOE staff. It was clear early on in the project that there were no suitable candidates in Montserrat to complete an MSc but due to the success of the research strategy in generating data it was possible to upgrade the research objective of the environmental dynamics of Bd into a PhD and an international student began work on this in 2013. This indicator was therefore adapted and instead a Montserratian Research Officer was appointed, trained to Diploma level and mentored. Through the project he has developed the knowledge and experience that he is now using to lead on key project activities and project management.
Activity 1.1 Establishment of project basis and staff in Montserrat		The project base was established within the Department of Environment offices in Year 1 and was maintained throughout the duration of the project. Staff recruited including Project Coordinator, Research Officer and Primary Field Assistant, two of which were Montserratian, maintained their positions for the full three years, and continue to do so at project end, into 2014.
Activity 1.2 Research prioritisation exercise		Completed in Year 1 this formed the basis for the Research Strategy which was finalised at an international conference in Year 2 and guided project research throughout the three years of this project. This strategy was also used to develop the research objective in the long-term recovery plan in Year 3.
Activity 1.3 Develop, test and implement population estimation method		Limited data due to small numbers of surviving animals meant distribution mapping was more appropriate than a population estimation method. Therefore we created GIS maps based on survey data collected over 174

		surveys across a total of 12 transects over three years which were used to monitor the status of the mountain chicken on Montserrat. In addition, over 2 TB of data were collected from distributed Songmeters used to record the calls of male frogs but problems were encountered with the analysis of this data which have so far prevented us from including it effectively in the population monitoring.
Activity 1.4 Network of chytrid monitoring sites identified		Three Bd monitoring sites were established in Year 1 and sampling was continuous until the end of Year 4. The analysis of the samples collected was completed and the results will be published as part of a PhD thesis on Bd ecology in 2016.
Activity 1.5 Monitoring programme		The monitoring programme was set up in Year 1 to support the delivery of the research activities and was completed successfully for each year of the project. Bd levels in surviving mountain chickens, released mountain chickens and sympatric amphibian were all monitored intensively. The behaviour, health and fates of released mountain chickens were also intensively monitored. Training in field skills was delivered in country to support the completion of this activity.
Output 2. Trial re-introduction of mountain chickens into Montserrat completed.	<ul style="list-style-type: none"> ▪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 reintroduction are documented and communicated by mid Y3. 	Reintroductions of mountain chickens into Montserrat were completed but not in the belief this would establish self-sustaining populations, as was originally planned. This was due to the lack of Bd-free sites on Montserrat which was captured as one of the assumptions of this output. Surveys were adapted to determine an appropriate Bd positive release site in the Centre Hills once experimental releases were approved and the site chosen was used for all three releases. This also made redundant the indicator of an early warning monitoring plan for Bd in the reintroduction site. The minimum target for released mountain chickens was exceeded by 21 mountain chickens and the foundation has been laid for another 70 animals to be released in May 2014. The assumption that the founder frogs would continue to provide enough offspring for release remained true. The indicator to implement a predator control programme was altered as continuous monitoring of released animals showed impacts of predators were negligible. A contingency plan with a response threshold was developed but never triggered. Release methods and practices and lessons learnt were fully documented in a set of protocols which were used successfully by DOE during the third release which they conducted with remote supervision from overseas staff. A successful post-release monitoring scheme was implemented and adapted after each release trialling different radio transmitters to improve the length of monitoring and detection rates. The results of these releases has increased knowledge on

	<p>▪A post-release frog monitoring scheme implemented and an adaptive management plan completed for the trial reintroduction by end of Year 3.</p>	<p>the interaction with Bd in the wild from a known point of exposure and the results of these experimental releases now provide a baseline of knowledge on the responses and survival rates of mountain chickens when released under varying seasonal, and age related parameters.</p>
Activity 2.1 Survey trips to candidate introduction sites		<p>This activity was completed in Year 1 when 15 ghauts (watercourses) were surveyed across the Centre Hills and a report was produced recommending one site for release. This was in response to results from the preliminary search of our suspected Bd-free refugia site which confirmed the presence of Bd. Sites were assessed for suitable habitat, seasonal water availability, access for monitoring and levels of introduced predators. Sites with potential or confirmed surviving mountain chicken populations were discounted and a suitable site successful chosen and was used as the site for all three releases conducted over the lifetime of the project.</p>
Activity 2.2 Development of predator control programmes		<p>This activity was adapted as the original (believed Bd-free) site had very elevated predator levels not found at the new release site. Instead monitoring of the impacts of predators on the release frogs was conducted and a contingency plan was developed to be deployed in the event that data from the monitoring showed that impacts had reached a predetermined threshold (see Annex 7.19). This threshold was never reached, the plan remains a contingency measure, with response readiness in place. Impacts of predators on release populations remains low.</p>
Activity 2.3 Development and approval of plans for trial introduction		<p>A reintroduction plan was developed to support the first release in Year 1. This plan was adapted based on issues faced with transportation and to modify the soft release method for the second and third release. All three release plans were approved by the PSC, Government of Montserrat, DEFRA and Durrell's ethics committee and the IUCN reintroduction specialist group.</p>
Activity 2.4 Reintroduction of mountain chickens		<p>Three successful releases were conducted over the lifetime of this project reintroducing a total of 121 mountain chickens into the wild in Montserrat.</p>
Activity 2.5 Monitoring release success		<p>Radio-tracking methods were utilised to ensure intensive monitoring of individuals post-release. Surgery techniques, including pioneering amphibian anaesthesia protocols were developed to implant the transmitters which were then used to track fates of individual frogs for a period of between 3 to 6 months before battery failure. Various data were collected during this period including swabs to monitor Bd infection, habitat preference, weight and body measurements as well as GPS</p>

	waypoints to record movement of frogs. An spreadsheet and GIS database were established and used to capture data from all three releases.
Activity 2.6 Adaptive management plan for reintroduction and predator management	The aim of the releases was changed to test the response and survival rates of mountain chickens when released into Bd positive environments. Therefore as part of the study, a hands-off approach to the release populations was necessary to investigate the natural responses of the frogs to Bd infection under varying conditions and an adaptive management plan was not required. As explained above, impacts of predators were low and so the predator contingency plan now forms the basis of the predator management plan.
Output 3. Long term restoration strategy for the mountain chicken established and agreed with regional partners.	<ul style="list-style-type: none"> ▪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 long term. <p>A regional Project Steering Committee (PSC) was successfully formed in the first year of the project and continued to meet and provide the project with advice and permissions throughout all three years of the project. The international MCRP committee continued to meet annually and provide guidance and oversight to project activities. The ability of the Dominican facility to breed frogs for introduction has been assessed and though this has been improved by the movement of wild frogs into the facility, these animals have yet to breed and this facility will be kept under review as part of the long-term recovery strategy captive breeding objective. A long-term recovery strategy has been drafted by members of the international MCRP committee, the regional PSC and local stakeholders. This strategy covers mountain chicken conservations efforts for the next twenty years and is currently being reviewed by project partners and members of the MCRP. A finalised and printed version will be available in April 2014 and will be sent to Darwin on completion. A strong emphasis was placed on increasing capacity within DOE to execute local activities under this strategy and a full training programme was completed which improved field skills and data management skills along with many members of staff undertaking international courses, including the DESMAN Diploma and Durrell ISLA course. The project Research Officer has been promoted to Project Coordinator on completion of this project and will manage future local projects, including the Montserrat 2014 workplan and fourth experimental release. A full set of protocols covering monitoring and release methods have been handed over to DOE staff as well as the project databases which will be used by DOE to collect data and report results from future monitoring efforts to project partners.</p>

<p>Activity 3.1 Formation and meeting of regional steering committee</p>	<p>A regional PSC was formed in the first year and met each quarter throughout the duration of the project. The committee was kept up to date and advised on new proposed elements of the project and permissions were sought and received from the committee when required, including permissions for all three releases. Members of this committee included the Director of the National Trust, a representative from the Tourist Board and various stakeholders from other backgrounds. Four governmental representatives from Dominica are also on the committee and attended two meetings in person as well as providing input and feedback remotely through minutes and agenda proposals. The Director of DOE, the in-country Project Leader, chaired the committee and a Terms of Reference was completed and signed by the members. This committee have agreed to continue to meet once this project has finished to provide guidance and advice on the implementation of activities outlined in the Long-Term Recovery Strategy.</p>
<p>Activity 3.2 Review of regional captive breeding opportunities</p>	<p>During the lifetime of this project the first mountain chickens were brought into the Dominican captive breeding facility. Despite maintaining a number of animals in the facility, various health issues with captive animals have arisen and so far none of the captive frogs have bred. Therefore the facility has been assessed as currently unable to provide stock for release or a sufficient safety net population. This assessment was presented to the long-term recovery strategy workshop and it was determined that the <i>ex situ</i> captive breeding programme remained a vital component of the long term safeguarding of the species and activities to improve this programme were included in the strategy.</p>
<p>Activity 3.3 Training two Montserratian staff on DESMAN course</p>	<p>Lloyd Martin, the Project Research Officer and Montserratian Forestry Technician, was identified as the first candidate to complete the DESMAN Diploma course. He successfully completed this in March 2012 and will use his new project management skills to lead project activities as the new Project Coordinator for Montserrat under the Mountain Chicken Recovery Programme. The second candidate was Jervaine Greenaway, also Montserratian Forestry Staff who achieved a merit from the DESMAN course. Since completing the course Jervaine has become more involved in project activities including running a project to determine the prevalence and levels on Bd in cane toads in Montserrat.</p>
<p>Activity 3.4 Development of long term restoration plan</p>	<p>A participatory workshop was held in Montserrat over four days and was attended by twelve international partners and experts, nine regional partners and seven local stakeholders. A recovery strategy was developed for the next twenty years and will guide future efforts of the MCRP to continue the restoration of the mountain chicken. The strategy is</p>

		currently in draft and is being reviewed by project partners and a printed copy will be sent to Darwin on completion, estimated April 2014.
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.	<ul style="list-style-type: none"> ▪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 chicken by Year 3. 	A communications strategy was completed in Year 2 by the Project Coordinator, Research Officer and DOE Environment technician-education officer who worked together throughout the project to successfully implement the outlined activities. Fifty educational posters on mountain chicken ecology and 150 leaflets explaining the impacts of Bd on the mountain chickens were produced and distributed around public places. Two calypsos, one adult one junior, were written and produced professionally in a studio. Both of these are part of the local radios playlist and have been broadcast and copies were distributed to local schools and NGO's as part of an educational DVD of outreach materials produced by the project. A total of nine presentations were made to local schools and an additional four community presentations were made to the general public. An awareness and attitudes survey was conducted at the beginning and end of the project and the results showed that the projects outreach programme successfully increased understanding and empathy towards mountain chicken conservation on island.
Activity 4.1 Communication strategy completed		A communications strategy was completed in Year 2, drafted by the Project Coordinator, Research Officer and DOE Environment technician-education officer. This strategy was used to guide a multimedia outreach programme which successfully delivered activities including a national poster and leaflet campaign, schools and community presentations, television and radio documentaries and calypsos, all of which were captured on an educational DVD which was distributed to local schools and NGO's.
Activity 4.2 Communications materials produced – posters, calypso		During Year 2 the project had two poster designs printed and distributed around public places on Montserrat, including the library, government offices, schools, bars, supermarkets and the airport. The first poster gave information about mountain chickens and their ecology, fifty of which were displayed across the island. The second design, 150 of which were distributed, was a leaflet which gave information about the impacts of chytridiomycosis of mountain chickens and included a poster on the reverse which showed the clinical signs of the fungal disease.
Activity 4.3 Schools presentations		Educational presentations covering the importance of amphibians and the threat of Bd and chytridiomycosis to mountain chickens were given to four schools in Year 2. Further presentations were given to the same four

	schools in the 6 month project extension period including a showing of the documentary “The Golden Eyes of the Volcano” which depicts the key activities conducted by the project including releases and surviving mountain chicken monitoring. A field trip was also organised in Year 2 for a group of school children during which they were shown how process and swab cane toads using biosecurity protocols.
Activity 4.4 Behavioural and attitudes surveys and reporting	The first survey was conducted in Year 1 and the second in the final months of the six project extension. In total, the first survey collected 151 responses and the second survey 125 responses representing approximately 3% of Montserrat’s population. The results showed that the outreach programme guided by the local communications strategy was effective, with awareness and empathy towards mountain chicken conservation having increased.

Annex 2 Project’s full logframe, including indicators, means of verification and assumptions

Note: Insert your full logframe. If your logframe was changed since your Stage 2 application and was approved by a Change Request the newest approved version should be inserted here, otherwise insert the Stage 2 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.	<ul style="list-style-type: none"> ▪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. 	<ul style="list-style-type: none"> ▪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.	<ul style="list-style-type: none"> ▪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 	<ul style="list-style-type: none"> ▪Project annual reports ▪Scientific literature ▪Government ratified management plans ▪Monitoring data from introduced animals collated annually in database ▪Results presented to international 	<ul style="list-style-type: none"> ▪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

	<p>chickens completed.</p> <ul style="list-style-type: none"> ▪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. 	<p>bodies</p> <ul style="list-style-type: none"> ▪International media coverage ▪Project partner website hit count ▪Public awareness survey results 	
<p>Output 1. 1. The evidence base for the restoration of the mountain chicken and mitigation of the impacts of chytrid is established.</p>	<ul style="list-style-type: none"> ▪ Research prioritisation exercise to identify key information gaps completed in Yr 1. ▪Population estimation methodology 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. 	<ul style="list-style-type: none"> ▪Minimum of three scientific papers by the end of Year 3. ▪Monitoring manuals produced. ▪Workshop meeting minutes. ▪Project progress reports. ▪IUCN specialist group materials and website. ▪Project partner websites ▪International meeting proceedings or publications 	<ul style="list-style-type: none"> ▪MSc student available to implement studies ▪Sufficient field staff available from Montserrat DOE and Veterinary services.
<p>Output 2. Trial re-introduction of mountain chickens into Montserrat completed.</p>	<ul style="list-style-type: none"> ▪ 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. 	<ul style="list-style-type: none"> ▪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. 	<ul style="list-style-type: none"> ▪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.

	<ul style="list-style-type: none"> ▪Lessons learnt from trial re-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.	<ul style="list-style-type: none"> ▪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. 	<ul style="list-style-type: none"> ▪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. 	<ul style="list-style-type: none"> ▪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.	<ul style="list-style-type: none"> ▪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 chicken by Year 3. 	<ul style="list-style-type: none"> ▪Posters and pamphlets printed. ▪School visit reports. ▪Awareness survey results. ▪Communications strategy document printed. ▪Media reports, articles and TV transcripts. 	

Annex 3 Project contribution to Articles under the CBD

Project Contribution to Articles under the Convention on Biological Diversity

Article No./Title	Project %	Article Description
6. General Measures for Conservation & Sustainable Use		Develop national strategies that integrate conservation and sustainable use.
7. Identification and Monitoring	40%	Identify and monitor components of biological diversity, particularly those requiring urgent conservation; identify processes and activities that have adverse effects; maintain and organise relevant data.
8. In-situ Conservation		Establish systems of protected areas with guidelines for selection and management; regulate biological resources, promote protection of habitats; manage areas adjacent to protected areas; restore degraded ecosystems and recovery of threatened species; control risks associated with organisms modified by biotechnology; control spread of alien species; ensure compatibility between sustainable use of resources and their conservation; protect traditional lifestyles and knowledge on biological resources.
9. Ex-situ Conservation		Adopt ex-situ measures to conserve and research components of biological diversity, preferably in country of origin; facilitate recovery of threatened species; regulate and manage collection of biological resources.
10. Sustainable Use of Components of Biological Diversity		Integrate conservation and sustainable use in national decisions; protect sustainable customary uses; support local populations to implement remedial actions; encourage co-operation between governments and the private sector.
11. Incentive Measures		Establish economically and socially sound incentives to conserve and promote sustainable use of biological diversity.
12. Research and Training	40%	Establish programmes for scientific and technical education in identification, conservation and sustainable use of biodiversity components; promote research contributing to the conservation and sustainable use of biological diversity, particularly in developing countries (in accordance with SBSTTA recommendations).
13. Public Education and Awareness	20%	Promote understanding of the importance of measures to conserve biological diversity and propagate these measures through the media; cooperate with other states and organisations in developing awareness programmes.
14. Impact Assessment and Minimizing Adverse Impacts		Introduce EIAs of appropriate projects and allow public participation; take into account environmental consequences of policies; exchange information on impacts beyond State boundaries and work to reduce hazards; promote emergency responses to hazards; examine mechanisms for re-dress of international damage.
15. Access to Genetic Resources		Whilst governments control access to their genetic resources they should also facilitate access of environmentally sound uses on mutually agreed terms; scientific research based on a country's genetic resources should ensure sharing in a fair and equitable way of results and benefits.

Article No./Title	Project %	Article Description
16. Access to and Transfer of Technology		Countries shall ensure access to technologies relevant to conservation and sustainable use of biodiversity under fair and most favourable terms to the source countries (subject to patents and intellectual property rights) and ensure the private sector facilitates such assess and joint development of technologies.
17. Exchange of Information		Countries shall facilitate information exchange and repatriation including technical scientific and socio-economic research, information on training and surveying programmes and local knowledge
19. Bio-safety Protocol		Countries shall take legislative, administrative or policy measures to provide for the effective participation in biotechnological research activities and to ensure all practicable measures to promote and advance priority access on a fair and equitable basis, especially where they provide the genetic resources for such research.
Other Contribution		Smaller contributions (e.g. of 5%) or less should be summed and included here.
Total %	100%	Check % = total 100

Annex 4 Standard Measures

Code	Description	Totals (plus additional detail as required)
Training Measures		
2	Number of Masters qualifications obtained	0
3	Number of other qualifications obtained	2 Montserratians earned Diplomas by completing the DESMAN course accredited by University of Kent
5	Number of people receiving other forms of long-term (>1yr) training not leading to formal qualification(i.e. not categories 1-4 above)	1 Montserratian appointed Research Officer completed 3 years of on the job training with Project Coordinator
6a	Number of people receiving other forms of short-term education/training (i.e. not categories 1-5 above)	20 local staff both Montserratians and Dominicans were trained in techniques involved in monitoring mountain chickens and chytrid.
6b	Number of training weeks not leading to formal qualification	39 weeks spent training Montserratians and Dominicans
7	Number of types of training materials produced for use by host country(s)	9 fieldwork manuals including standardized protocols and data entry sheets
Research Measures		
8	Number of weeks spent by UK project staff on project work in host country(s)	26 – 15 weeks by staff over two releases and 11 weeks by staff over one workshop
9	Number of species/habitat management plans (or action plans) produced for Governments, public authorities or other implementing agencies in the host country (s)	1 Long-term recovery strategy
12a	Number of computer-based databases established (containing species/generic information) and handed over to host country	2 computer databases are used to store monitoring information of release and surviving mountain chickens and chytrid monitoring in sympatric species.
Dissemination Measures		
14a	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin project work	2 - 1 workshop on the development of the Long-Term Recovery Strategy; 1 conference in Montserrat to present and approve research strategy
15a	Number of national press releases or publicity articles in host country(s)	12
15c	Number of national press releases or publicity articles in UK	4
17a	Number of dissemination networks established	1 project steering committee dissemination network established
18a	Number of national TV programmes/features in host country(s)	1 national TV programme featuring the project in Montserrat
19a	Number of national radio interviews/features in host country(s)	6 national radio interviews in Montserrat

Code	Description	Totals (plus additional detail as required)
Physical Measures		
22	Number of permanent field plots established	8 permanent field transects established for monitoring surviving mountain chickens and chytrid in sympatric species
23	Value of additional resources raised for project (See Section 8.2 above)	XXX

Annex 5 Publications

Type * (e.g. journals, manual, CDs)	Detail (title, author, year)	Publisher s (name, city)	Available from (e.g. contact address, website)	Cost £
Manual	Morton, M.N., Terry, A., Adams, S.L., Lopez, J. & Garcia, G. & Gray, G. (2011) Mountain Chicken Project Background, Problem Statement & Strategy for Releasing Mountain Chickens into Montserrat		www.mountainchicken.org/reports or PDF from authors	Free
Manual	Lopez, J. & Garcia, G., Adams, S.L., Morton, M.N., Terry, A. (2011) Mountain Chicken Project Biosecurity Protocols		www.mountainchicken.org/reports or PDF from authors	Free
Manual	Terry, A., Lopez, J. & Garcia, G., Adams, S.L., Morton, M.N., Martin, L., Fenton, C. (2013) Transport and release of mountain chickens into Montserrat		www.mountainchicken.org/reports or PDF from authors	Free
Manual	Terry, A., Adams, S.L., Morton, M.N., Lopez, J. & Garcia, G., Martin, L., & Fenton, C. (2013) Mountain Chicken Project Monitoring Radio Tagged Mountain Chickens		www.mountainchicken.org/reports or PDF from authors	Free
Manual	Adams, S.L., Morton, M.N., Terry, A., Lopez, J. & Garcia, G., Martin, L., & Fenton, C. (2011) Mountain Chicken Project Monitoring Wild Mountain Chickens		www.mountainchicken.org/reports or PDF from authors	Free
Manual	Lopez, J., Routh, A., Adams, S.L. & Morton, M. (2013) (G) Managing the Welfare of Mountain Chickens (<i>Leptodactylus fallax</i>) Infected with		www.mountainchicken.org/reports or PDF from authors	Free

	Chytridiomycosis			
Manual	Adams, S.L., Morton, M.N. & Terry, A.(2013) Mountain Chicken Project Health and Safety for Fieldworkers		www.mountainchicken.org/reports or PDF from authors	Free
Plan	Morton, M. N. & Adams, S.L. (2011) Introduced Predator Control Contingency Plan		www.mountainchicken.org/reports or PDF from authors	Free
DVD	Educational DVD, Adams, S.L. & Hives, N. (2013)		Project Coordinator (a hard copy will be sent to Darwin following submission of this report)	£2 each
Strategy	Mendes, S.L. & Adams, S.L.(2011) Mountain Chicken Project Communications Strategy *		Submitted as part of the annexes	Free
Poster	Mendes, S.L. & Adams, S.L.(2012) Mountain Chicken Poster			
Leaflet	Mendes, S.L. & Adams, S.L.(2012) Mountain Chicken Leaflet	Signs & Impressions, Antigua	Submitted as part of the annexes	£190
Photo Library	Mendes, S.L. & Adams, S.L.(2012)	Signs & Impressions, Antigua	Submitted as part of the annexes	£240

Annex 6 Darwin Contacts

Ref No	18018
Project Title	Enabling Montserrat to Save the Critically Endangered mountain chicken
Project Leader Details	
Name	Matthew Morton
Role within Darwin Project	Project Leader
Address	c/o - Forestry Department, Ministry of Sustainable Development, Energy, Science & Technology, Gabriel Charles Forestry Complex, Union, Castries, St. Lucia, West Indies
Phone	
Email	
Partner 1	
Name	Gerard Gray
Organisation	Department of Environment, Government of Montserrat
Role within Darwin Project	Host country Project Leader
Address	MAHLE, PO Box 272, Brades, Montserrat, West Indies
Email	
Partner 2	
Name	Sarah-Louise Adams
Organisation	Durrell Wildlife Conservation Trust
Role within Darwin Project	Project Coordinator
Address	Les Augres Manor, La Profonde Rue, Trinity, Jersey, JE3 5BP, Channel Islands
Email	

Annex 7 Onwards – supplementary material

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

- 7.1 Mountain Chicken Research Strategy
- 7.2 Release Report Nov 2012
- 7.3 Results from radio tracking Montserrat mountain chickens in 2011
- 7.4 Long-Term Recovery Strategy for the Critically Endangered Mountain Chicken 2013-2033
- 7.5 Changes in behaviour and attitudes towards mountain chickens on Montserrat from 2010 to 2013
- 7.6 Montserrat and Dominica Training Log 2010-2014
- 7.7 Mountain Chicken Project Montserrat workplan 2014
- 7.8 Mountain Chicken Project; Project Coordinator (LM) Terms of Reference 2014

- 7.9 Project Steering Committee Terms of Reference
- 7.10 International Long-Term Restoration Workshop for the Mountain Chicken
- 7.11 Lloyd Martin DESMAN Certificates
- 7.12 Dominican Fieldwork Staff Exchange Report 2011
- 7.13 Dominican Fieldwork Staff Exchange Report 2012
- 7.14 DOE_DURRELL agreement 2014 continuation
- 7.15 Communications Strategy for Mountain Chicken Project
- 7.16 Physical Development Plan for North Montserrat 2012-2022
- 7.17 Lloyd Martin DESMAN Project Proposal Review of Mountain Chicken Species Action Plan 2012
- 7.18 Jervaine Greenaway DESMAN Project 2013
- 7.19 Introduced Predator Control Contingency Plan
- 7.20 Dominica Fieldwork Report JULY 2013
- 7.21 Mountain Chicken Project Poster
- 7.22 Mountain Chicken Project Leaflet