

CEPF FINAL PROJECT COMPLETION REPORT

Organization Legal Name:	Royal Society for the Protection of Birds
Project Title:	Safeguarding the Endemic Henderson Crane (<i>Porzana atra</i>) During the Restoration of Henderson Island World Heritage Site
Date of Report:	15 th March 2012
Report Author and Contact Information	Jonathan Hall, jonathan.hall@rspb.org.uk

CEPF Region: Polynesia Micronesia

Strategic Direction: 1. Invasive species prevention

Grant Amount: \$129,425

Project Dates: Oct 1, 2010-Jan 31, 2012

Implementation Partners for this Project (please explain the level of involvement for each partner):

Pitcairn Islands Government: The overall Henderson Island Restoration Project was implemented in joint-partnership with the Government of the Pitcairn Islands. The Natural Resources Division was responsible for inputting into project planning, community relations and the recruitment of avicultural team assistants and operational volunteers from the Pitcairn community. The Pitcairn Islands Government will also be responsible for the long-term biosecurity of Henderson Island. Please note that no CEPF funding went to the Pitcairn Islands Government.

The Royal Zoological Society of Scotland (RZSS): RZSS provided expert input into the planning of the avicultural expedition, and seconded an aviculturist to the project team who spent 5 months on Henderson island (including leading the team for the final two months of the project).

The Royal Forest & Bird Protection Society of New Zealand: The RSPB's BirdLife partner in New Zealand, Forest & Bird, was responsible for sourcing and purchasing all the equipment and provisions needed for the avicultural team, and transporting them to the avicultural vessel before its departure from New Zealand.

Conservation Impacts

Please explain/describe how your project has contributed to the implementation of the CEPF ecosystem profile.

Please summarize the overall results/impact of your project.

Planned Long-term Impacts - 3+ years (as stated in the approved proposal):

The long-term impact of the overall eradication programme on Henderson will be that the endemic Henderson petrel will be saved from global extinction, and that the numerous other taxa that are currently being harmed by Pacific rats will recover and increase. These will include the four endemic land birds found on Henderson and the wide variety of other seabirds that breed there, numbers of which are believed to have been at least an order of magnitude higher before

rats were introduced. Eradication is also expected to benefit endemic and other invertebrates and plants.

The long-term impact of the crake safeguarding project that forms the subject of this proposal will be that the endemic, globally threatened Henderson crake will form part of the suite of species that recovers and expands after rat eradication. This process will result from reduced nest predation and increased invertebrate populations.

Actual Progress Toward Long-term Impacts at Completion:

The rat eradication programme took place in August 2011 according to plan, and we are confident that long-term beneficial impacts resulting from the removal of rats will be evident across a wide range of taxa. Whilst the success of the eradication cannot be confirmed for two years, we are optimistic that we have eradicated all the rats as the methods utilized have never failed against this species of rodent. Further baseline surveys were undertaken at the time of the baiting operation so as to allow the expected increase in bird populations to be monitored, whilst abundance surveys of plant and invertebrate numbers have also been completed.

Initial monitoring was also undertaken in the 3 months after the baiting took place. This suggested a significant improvement in Murphy's petrel fledging rates, as well as a strong positive population response from the Henderson Reed-warbler. Further surveys in 2013 will confirm these initial impacts.

We are confident that the endemic Henderson crake population will form part of the suite of species that recovers and expands after rat eradication. Previously, over 25% of crake chicks were predated by rats within a week of hatching, so numbers are expected to increase in the absence of predation pressure (and also through reduced competition for invertebrate food).

Planned Short-term Impacts - 1 to 3 years (as stated in the approved proposal):

The short-term impact of the overall eradication programme will be that Pacific rats will be completely eradicated from Henderson Island. The short-term impact of the crake project will be that a large number of crakes will definitely survive the eradication campaign, to form the basis for population recovery and expansion thereafter. As mentioned previously, it is considered highly unlikely that the crake population will be reduced to a level from which it cannot recover during the eradication. However, the safeguarding project will make absolutely certain that this is the case - which is clearly of vital importance given that the crake occurs nowhere else on Earth.

Actual Progress Toward Short-term Impacts at Completion:

Considerable progress has been made against the short-term impacts. The baiting operation successfully took place between 15-22 August 2011. This went very smoothly, and no rats were observed between mid-September and end-November (when the avicultural team left the island).

A captive population of 84 crakes was successfully maintained during the baiting operations. These were released over the course of October and November, along with 6 chicks that had been bred in captivity, a world-first. The released birds were monitored and all re-adapted successfully to the wild- 15 had hatched chicks by the time of the avicultural team's departure. The wild population of crakes, which showed some impact from the baiting, was also observed breeding in the period after the bait drop. It is expected that the crake population will quickly return to and then surpass pre-operational populations levels in the absence of rat predation and competition.

Please provide the following information where relevant:

Hectares Protected: 4310

Species Conserved: 55+ endemic species will benefit from this ecosystem restoration

Corridors Created: N/A

Describe the success or challenges of the project toward achieving its short-term and long-term impact objectives.

Short-term Impacts

84 crakes were captured, slightly lower than the target level. The project planning always recognised the potential difficulty of capturing the crakes, and this difficulty was highlighted in the initial proposal as an external assumption. The difficulty of the task was compounded by the drastic population reduction the birds had experienced since the 2009 research expedition (most likely due to a major drought in the region earlier in the year), as well as the unseasonably high levels of rainfall experienced reducing the effectiveness of water-baited traps. The reduced population meant that crakes were found at much lower density levels than anticipated, drastically increasing the amount of track that had to be cut in order to reach sufficient bird territories. It is important to note however that the planning decision tree outlined in the avicultural plan recognised 60 captive crakes as the absolute minimum required for the baiting operations to proceed, and different actions were outlined that were to be followed in different catching scenarios. Apart from a new and additional catching method that was introduced, the avicultural plan was followed throughout by the avicultural team. The overall goal of the crake-safeguarding project was moreover still fulfilled.

Were there any unexpected impacts (positive or negative)?

Yes. A ground-breaking partnership was established with two other island restoration projects taking place in the Pacific in 2011- one on Palmyra Atoll (USA), the other on two of the islands in the Phoenix Islands Protected Area (PIPA, Kiribati). By utilising the same operational vessel and helicopters, we were able to achieve not only significant cost savings, but also considerable technical advantages by allowing the helicopter pilots and ship's crew to gain experience of working together, and providing the opportunity to address any technical issues which may have emerged before operations began on Henderson. Such a link-up was a major conservation milestone for the Pacific region, as was the demonstration that a ship-based aerial eradication is a feasible and effective method for eradicating introduced rodents from remote islands. The project has therefore had important long-term impacts which were not originally envisaged.

Another unexpected positive impact was that the avicultural team was able to successfully breed the Henderson crake in captivity: a world-first. This increases the conservation knowledge of this single-island endemic and could potentially enable a robust conservation response in the case of a stochastic event in the future. This captive-breeding, as well as a general husbandry report, will be written up for publication in a scientific journal.

Project Components

Project Components: *Please report on results by project component. Reporting should reference specific products/deliverables from the approved project design and other relevant information.*

Component 1 Planned: Complete all necessary off-island preparations

Component 1 Actual at Completion:

i) Avicultural team in place, consisting of one expert Aviculturalist, one Avicultural Assistant, and three Field Assistants

The final avicultural team was slightly different from originally envisaged, so as to ensure sufficient capacity for all the required tasks. It consisted of 6 people at any one time (with the Pitcairn Field Assistants rotating between 4 people):

- 1) Principal Conservation Scientist
- 2) Henderson Expedition Manager
- 3) Aviculturist
- 4) Field Assistant
- 5) Pitcairn Field Assistant
- 6) Pitcairn Field Assistant

A highly experienced avicultural team were successfully recruited: the participation of Dr. Michael Brooke of the University of Cambridge, the world's leading expert on the ecology of Henderson Island, was secured, as were the services of a highly experienced aviculturist from the Royal Zoological Society of Scotland (RZSS), Gavin Harrison. Gavin was not only able to bring much personal experience to the team, but also the extensive institutional resources and veterinary expertise of RZSS should the need arise. Four Pitcairn Field Assistants were also employed to join the operational team. It was originally envisaged that only two field assistants would be recruited, but considerable local interest allowed us to split the roles in two, with one pair working on the project for the first 6 weeks, the other pair for the second part of the project. Employing Pitcairners to participate in the operation helped increase their ownership of a rodent-free Henderson Island and thus ensure its rat-free status is maintained in the longer term. The Pitcairn Field Assistants were employed by the Pitcairn Government, so were not funded by CEPF.

ii) All necessary materials and equipment purchased

All the supplies for the avicultural team, the crake husbandry and the capture of crakes were successfully obtained or constructed in New Zealand, where they were loaded directly onto a ship bound for the Pitcairn Islands.

iii) Detailed action plan for crake trapping and keeping finalised

A detailed action plan for crake trapping and keeping were developed in partnership with the Royal Zoological Society of Scotland (RZSS) and Dr. Mike Brooke from the University of Cambridge. In April 2011, all the operational plans for the Henderson rodent eradication were submitted to the New Zealand Department of Conservation's Island Eradication Advisory Group as part of a 'readiness check'. This body comprises many of the leading experts on island eradications, and has advised many of the world's largest operations. No major issues were identified by the review team. The RSPB received particular praise for the high standard of all the planning documents which had been produced. These documents will be of long-term use for other Pacific projects, as will the lessons learned document which is currently being produced by collating notes from the project review meeting held in the UK in December 2011.

iv) All travel and other logistical arrangements finalised

Two vessels were chartered to drop off and pick up the avicultural team from Henderson Island. Four expressions of interest were received for the boat charter contract, and these were shared with CEPF before a final decision was made. Flights to French Polynesia (the nearest airport to the Pitcairn islands) were also arranged without problem.

Component 2 Planned: Travel to Henderson and complete all necessary on-island preparations

Component 2 Actual at Completion:

i) Avicultural team and all materials and equipment delivered to Henderson as planned

The avicultural team arrived on Henderson on 8 July. All team members and equipment were successfully delivered.

ii) Base camp established

Base camp was established between 8-10 July, with trail-cutting and crake-catching effort commencing on 10 July.

iii) Trails cut to allow the deployment of crake traps

Trails were safely and effectively cut during July and August.

iv) 120 cages constructed ready to receive captured crakes

Cages were constructed during July and August in the shaded beach-back area behind North Beach. Each was filled with natural vegetation and a shelter so as to allow the crakes to find protection out of the rain. Cages were constructed as required so only approximately 90 cages were built.

Component 3 Planned: Trap Henderson crakes and place in purpose-built cages before bait drops begin

Component 3 Actual at Completion:

i) 20 spring flipover traps baited with water deployed on the coral plateau in the centre of the island

The spring flipover traps, which had been constructed in New Zealand, were deployed along the paths in July and August. Due to unseasonably wet weather, the initial catching success of these water traps was very low in July, but improved markedly in August. Another trapping method of laying mist-nets along the forest floor and flushing the crakes into them was also developed and deployed.

ii) 20 spring flipover traps baited with small hermit crabs removed from their shells deployed in the wooded areas behind the beaches

The finalised avicultural plan did not include this measure. Some flipover traps were baited with hermit crabs during wet weather, but longer-term deployment of the water traps was found to be more successful.

iii) 100-120 crakes (approximately 50% male and 50% female) captured from different parts of the island and placed in cages

Upon arrival at Henderson, it swiftly became clear that crake numbers were markedly down on previous years (in the region of 50%), most likely due to a major drought that had occurred for 4 months at the beginning of the year. Low crake numbers, combined with unseasonably wet weather, made trapping very difficult. At the final count, 84 crakes were successfully captured and held in captivity for the duration of the baiting operations. A minimum of 60 birds was required before the baiting operations could proceed.

Component 4 Planned: Maintain caged crakes in good health until monitoring shows that it is safe to release them

Component 4 Actual at Completion:

i) Crakes provided with ample food, water and shelter throughout period of captivity

The crakes were kept in captivity from mid-July to October-November 2011. They were provided with ample food, water and shelter.

ii) Crakes observed daily and weighed regularly to ensure that they remain in good health

Crakes were observed daily and weighed regularly to ensure that they remained in good health.

On top of the 84 crakes kept in captivity, a further 13 crakes were captured that did not condition to captivity but died within 72 hours of capture. This was due to the stress of being captured and remains within the expected mortality levels for the capture of a wild bird species.

Of the 84 crakes that did start feeding within the first 72 hours, all remained very healthy throughout their captivity and were recorded as having notably low parasite counts.

iii) Island monitored for the presence of bait and free-living crakes

The final baiting operations occurred on 22 August. Bait monitoring commenced then and continued until 3 October, by when the last of the bait had disappeared. Monitoring of the wild crane population revealed mortality, but also showed a substantial population survived and was breeding rapidly. Previously, approximately 25% of rail chicks were lost to rats within one week of hatching. The crane population is expected to recover quickly and then increase beyond pre-operational population levels in the absence of rat predation and competition.

Component 5 Planned: Release crakes and depart island with all materials and equipment

Component 5 Actual at Completion:

i) Crakes released into the areas from which they were captured

The 84 captive crakes were released and monitored in 5 separate batches between early October and mid November. All birds were released successfully and remained healthy after leaving captivity. By the time of departure in late November, the teams were able to confirm that 100% of the first batch of crakes (the early October release) had successfully bred and were raising chicks. One significant success was also achieved in that the team were able to release 90 crakes in total, with 6 chicks having been born in captivity; a world-first captive breeding.

ii) Base camp and crane cages taken down and prepared for removal from island

All cages were taken down and camp was dismantled without problem.

iii) Remaining members of avicultural team removed from island with all materials and equipment

The remaining members of the avicultural team, along with all their materials and equipment, were removed from the island on 25th November. The two Pitcairn field assistants returned to Pitcairn, whilst the aviculturalist and contingency field assistant headed on to New Zealand.

Were any components unrealized? If so, how has this affected the overall impact of the project?

No components were unrealized in their entirety.

Please describe and submit (electronically if possible) any tools, products, or methodologies that resulted from this project or contributed to the results.

A large number of plans and documents were prepared for the implementation of the Henderson Island Restoration Project:

- Operational Plan for Pacific Rat *Rattus Exulans* Eradication from Henderson Island (Revised Draft) Derek Brown (February 2011)
- Henderson Rail: Procedures for catching, keeping and releasing during the Henderson Island rat eradication. M de L. Brooke, G. Harrison & R.J. Cuthbert (2011)
- Henderson Island Restoration Project: Operational Biosecurity Plan. Jonathan Hall et al. (2011)
- Environmental Impact Assessment for the eradication of introduced rodents from Henderson Island World Heritage Site. RSPB (2011)
- Henderson Island Restoration Project: Ethical Review Process. Jonathan Hall (2011)
- Henderson Island Restoration Project: Rail, Bait and Non-Targets Monitoring Plan. RSPB (2011)
- Memorandum of Understanding RSPB – Pitcairn Council

Lessons Learned

Describe any lessons learned during the design and implementation of the project, as well as any related to organizational development and capacity building. Consider lessons that would inform projects designed or implemented by your organization or others, as well as lessons that might be considered by the global conservation community.

As this was the first aerial eradication operation undertaken by the RSPB, a two-day post-operational review was undertaken in December 2011 in order to capture lessons learned for future work. This was attended by RSPB staff members and the two highly experienced New Zealand operational managers, and also received written contributions from contractors, suppliers, stakeholders and the Pitcairn community. Overall, the project has contributed significantly to developing RSPB's capacity to implement major island restorations.

Project Design Process: (aspects of the project design that contributed to its success/shortcomings)

Key project design lessons identified by the post-operational review included:

- A huge amount was achieved in a short timeframe (i.e. implementation preparations started in 2010, baiting occurred in 2011). We should plan with a longer project development time frame for similar operations in the future.
- The order of operational planning was important. A desktop feasibility study and initial operational plan were produced which identified further issues for research. The operational plan was then revised throughout the planning period, and all documentation was reviewed twice by the New Zealand Department of Conservation's Island Eradications Advisory Group (IEAG). The IEAG contains many of the world experts on island eradications and should always be used to review RSPB operations.
- Having a full-time project co-ordinator was key. Preparing the EIA and other plans, as well as engaging local communities and making sure appropriate legislation and permits are in place is a major part of the workload of such operations that is often underestimated (and was also much easier for this small Overseas Territory than it would be for elsewhere).
- The split project structure of running the overall programme, stakeholder relations and financial management from the RSPB Overseas Territories Team in the UK, whilst hiring expert New Zealand Operational Managers and enabling them to focus solely on logistical operational planning, was very good. RSPB management was very good at trusting the Operational Managers and did not interfere in their work.
- The world-leading expertise of the operational managers and eradication pilots (all New Zealanders) was crucial. Aerial eradication operations should always recruit such external expertise. The operational managers also had a history of working with one of the RSPB staff members, so were able to ensure good team-working despite being based in New Zealand.
- Involving RZSS and having both a professional aviculturist on the ground and institutional support was essential. The aviculturist should have been brought in earlier than late 2010 however, and been part of the 2009 research expedition to the island.
- The avicultural plan and decision trees were not ready until April 2011, and it would have been better to have completed this earlier. In future operations, alternative capturing methods would be established in advance, whilst even longer than a month would be arranged as the capturing window.

Project Implementation: (aspects of the project execution that contributed to its success/shortcomings)

- The on-the-ground team was excellent and felt trusted to get on with the job without undue interference. All involved, including crucially the ship's captain and crew, got on well with each other and wanted the project to succeed.
- Flying the helicopters from the deck of a pitching boat was a challenge, especially given the turbulence created by the boat's super-structure, but world-leading pilots were hired.
- The need for flexibility in capturing methods, as well as allowing sufficiently generous time to establish a captive population in advance of baiting operations, are the key lessons learned from the implementation period.

Other lessons learned relevant to conservation community:

- It is feasible and highly cost-effective, especially for remote Pacific islands, to conduct a rodent eradication operation from the deck of a ship. Multiple island restorations can be successfully joined together to into one 'voyage of conservation'.
- The consultation, buy-in and inclusion of the Pitcairn community was essential. A preliminary trip to consult the Pitcairn community took place in February 2010, and this resulted in a contract being signed with the Pitcairn Natural Resources Division (NRD) to formalize and support their input into the project design and management. Regular newsletters and updates were sent to the NRD and circulated around the community. We also worked to maximize the number of Pitcairners involved on the ground during the project, as it is the Pitcairn community which will be responsible for maintaining the (hoped for) rat-free status of the island in the long term. 4 Pitcairners were employed as part of the avicultural team on-island, whilst a further 3 members of the community joined the operational vessel as volunteers.

Additional Funding

Provide details of any additional funding that supported this project and any funding secured for the project, organization, or the region, as a result of the CEPF investment in this project.

Donor	Type of Funding*	Amount	Notes
David and Lucile Packard Foundation	A	\$4,650	
The Royal Society for the Protection of Birds (RSPB)	A	\$101,041	
UK Government Joint Nature Conservation Committee (JNCC)	A	\$9,300	
UK Government Overseas Territories Environment Programme (OTEP)	A	\$305,710	
The Royal Zoological Society of Scotland (RZSS)	A	\$10,000	

***Additional funding should be reported using the following categories:**

- A** *Project co-financing (Other donors or your organization contribute to the direct costs of this project)*
- B** *Grantee and Partner leveraging (Other donors contribute to your organization or a partner organization as a direct result of successes with this CEPF funded project.)*
- C** *Regional/Portfolio leveraging (Other donors make large investments in a region because of CEPF investment or successes related to this project.)*

Sustainability/Replicability

Summarize the success or challenge in achieving planned sustainability or replicability of project components or results.

The two main sustainability/replicability risks identified in the project application were that the project team would be unable to capture a sufficient number of crakes, and that the captive crakes would suffer high levels of ill health or mortality.

The first risk did pose a challenge, but by using an experienced team who had been on the island before to capture crakes, plus adopting a flexible approach to capturing methods, we were able to overcome this challenge and capture 84 birds. Whilst 13 crakes did not adjust to captivity and were lost, the 84 which did start feeding in captivity were all kept in very good health and experienced no further mortality. Testament to the skill of the avicultural team was that they were able to breed the crakes in captivity.

Summarize any unplanned sustainability or replicability achieved.

Safeguard Policy Assessment

Provide a summary of the implementation of any required action toward the environmental and social safeguard policies within the project.

N/A

Additional Comments/Recommendations
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Information Sharing and CEPF Policy

CEPF is committed to transparent operations and to helping civil society groups share experiences, lessons learned, and results. Final project completion reports are made available on our Web site, www.cepf.net, and publicized in our newsletter and other communications.

Please include your full contact details below:

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*****If your grant has an end date other than JUNE 30, please complete the tables on the following pages*****

Performance Tracking Report Addendum

CEPF Global Targets

(Safeguarding the Endemic Henderson Crake (Porzana atra) During the Restoration of Henderson Island World Heritage Site)

Provide a numerical amount and brief description of the results achieved by your grant.
Please respond to only those questions that are relevant to your project.

Project Results	Is this question relevant?	If yes, provide your numerical response for results achieved during the annual period.	Provide your numerical response for project from inception of CEPF support to date.	Describe the principal results achieved from July 1, 2007 to June 30, 2008. (Attach annexes if necessary)
1. Did your project strengthen management of a protected area guided by a sustainable management plan? Please indicate number of hectares improved.	Yes. Henderson Island World Heritage Site (Total area: 4310 ha)	4310 hectares	4310 hectares	Please also include name of the protected area(s). If more than one, please include the number of hectares strengthened for each one.
2. How many hectares of new and/or expanded protected areas did your project help establish through a legal declaration or community agreement?	n/a			Please also include name of the protected area. If more than one, please include the number of hectares strengthened for each one.
3. Did your project strengthen biodiversity conservation and/or natural resources management inside a key biodiversity area identified in the CEPF ecosystem profile? If so, please indicate how many hectares.	Yes	4310 hectares (NB Henderson is approx. 600 ha bigger than had previously been recorded)	4310 ha	
4. Did your project effectively introduce or strengthen biodiversity conservation in management practices outside protected areas? If so, please indicate how many hectares.	n/a			
5. If your project promotes the sustainable use of natural resources, how many local communities accrued tangible socioeconomic benefits? Please complete Table 1 below.	n/a			

If you answered yes to question 5, please complete the following table

