



Captive management for Woodhen and LHI Currawong associated with the Lord Howe Island Rodent Eradication project

March 2014

This report details work that occurred in the provision of captive care of Lord Howe Island Woodhen and Lord Howe Island Currawong between July 22 and October 18 2013. It details some of the preparatory work, but concentrates on recommendations for proposed work an order of magnitude larger in 2017.



1. Executive Summary

The Lord Howe Island Board has been granted approximately \$9 million to conduct an eradication program of introduced rats and mice from Lord Howe Island (LHI). This work is jointly funded through the Australian Government's Department of Environment, and the NSW Government's Environmental Trust and was announced on July 15 2012. The eradication will be via the dense distribution of a bait containing brodifacoum in a single 100 day baiting operation.

Ship rats are implicated in the extinction of at least five endemic birds and at least 13 invertebrates. They are also a recognised threat to at least 13 other bird species, 2 reptiles, 51 plant species, 12 vegetation communities and numerous threatened invertebrates¹.

Taronga Conservation Society Australia (Taronga) was contacted in July 2009 about potential involvement in the program. It initially played an advisory role, though with the clear intention of operational involvement should the funding application be successful.

A detailed risk assessment is presented which determines the risks to the environment (including wildlife, freshwater and marine habitats), humans, livestock and pets. Measures to ameliorate any adverse impacts are also detailed. These include the establishment of captive populations of a number of species: LHI woodhen, LHI pied currawong, LHI golden whistler, LHI silvereye and emerald ground-dove.²

Advice from the steering committee was that only woodhen and currawong were at such a risk that they required captive management. Ultimately, Taronga entered a Service Agreement with the Lord Howe Island Board, jointly agreed to a Captive Management Project Plan, and successfully submitted a budget predicated upon cost recovery. The project in 2013 was to design and test assumptions around animal husbandry, *in situ*, with both species of birds most at risk during the baiting program scheduled for 2016. Taronga designed enclosures and managed their construction on LHI. Taronga provided animal husbandry staff and veterinary services, and had staff live on LHI for the period of the trial, 22/7/13 - 18/10/13.

Taronga, through its Taronga Education Centre, were engaged to work with students of the Lord Howe Island Central School. Two educators, Paul Maguire and Nikki Bodel visited the Central School May 15 - 17 and commenced work. Unfortunately, some members of the deeply divided community of LHI wrote to the NSW Government and were successful in convincing the Central School to abandon that part of the project.

¹ Lord Howe Island Board 2009, *Draft Lord Howe Island Rodent Eradication Plan*, Lord Howe Island Board, Lord Howe Island.

² *ibid.*



2. Key Personnel and Contacts

Name, Position, Institution. Summary of role, communication, further contact required

- Paul Andrew, Curator, Taronga Zoo
 - Scientific advice; population management responsibilities
- Simon Duffy, General Manager, Life Sciences Research and Conservation, Taronga Conservation Society Australia
 - Taronga responsibility for project; financial responsibility
- Frances Hulst, Veterinary Officer, Taronga Zoo
 - Veterinary advice; clinical responsibilities on LHI at capture and release; point of contact for keepers on all veterinary matters
- Paul Maguire, Manager Learning and Experience, Taronga Conservation Society Australia
 - Managed school's education component
- Rodd Stapley, Australian Fauna Precinct Manager, Taronga Zoo
 - Responsible for all operational requirements including staffing and enclosure design.
- Erna Walraven, Senior Curator, Taronga Zoo & Taronga Western Plains Zoo
 - Main contact with Taronga Zoo Project Manager (Gary Fry).
- Mark Williams, Media Relations Manager, Taronga Conservation Society Australia
 - Taronga's media and public relations link.
- Hank Bower, Manager Environment/World Heritage, Lord Howe Island Board, hank.bower@lhib.nsw.gov.au
 - Initial primary contact on LHI
- Pete McClelland, Lord Howe Island Rodent Eradication Project Manager, Lord Howe Island Board, pete.mcclelland@lhib.nsw.gov.au
 - Manager, Rodent Eradication project
- Veronica Blazely, Director, National Natural Heritage, Department of the Environment, veronica.blazely@environment.gov.au
 - Australian Government funding
- Peter Dixon, Senior Manager Grants, Environmental Trust, NSW Government, peter.dixon@environment.nsw.gov.au
 - NSW Government funding
- Chia Moan, Partner and Director, Make Stuff Happen, chia.moan@makestuffhappen.com.au
 - Community engagement
- Gary Fry, Bio-logical, gary.fry.biological@gmail.com
 - Taronga Zoo Project manager



3.Reiteration of Goals

The Lord Howe Woodhen and Lord Howe pied Currawong are identified as being at risk from primary and secondary poisoning during the eradication project and a large proportion of the population need to be held in captive management for the duration that bait is expected to persist in the environment. 0.0.22 woodhen and 0.0.10 currawong will be held during a trial period to test assumptions of behaviour of the two species and determine the best methods of housing, maintaining and caring for the birds during the eradication project. Some woodhen will be held on mainland Australia, during at least the period the rodent eradication is underway, as a hedge against a catastrophic event on Lord Howe Island.

The project also becomes part of Taronga’s ‘Project Insitu’ education program where Taronga’s education team train and build the capacity within local school students to engage their local community to take action in helping save a locally threatened species. The goal of the project is motivate the students to become a part of the solution and for them to be challenged to create awareness and behaviour change in their local community³.

The trial program tested a number of aspects of the program, other than the obvious and primary husbandry aspects. These are no less important and the relatively few changes required have been tabulated below.

Managing staffing requirements so that there was appropriate expertise and decision-making ability on LHI, without compromising the daily work at Taronga was important. The numbers of husbandry, veterinary and CWI and project staff who worked on LHI were judged at appropriate levels.

The provision of a house for those staff staying for long periods was appropriate, and for resort accommodation for those staff staying shorter periods, was also appropriate.

4.Outline of Activities/Timeline

Date	Activity	Note
7/2009	Taronga SMT advised of possible role for Taronga on LHI in project involving eradication of rodents.	Announcement of joint funding for this project by Australia and NSW governments was made 15/7/2012.
17 - 21/12/12	Gary Fry and Rodd Stapley visited LHI for site assessment.	
18/2/12	Agreement with OEH on numbers of birds to be brought into captivity.	This was set at 0.0.10 Currawong, and 0.0.20 Woodhen. Woodhen numbers were later lifted to 0.0.22 to avoid the need for a future application should there be deaths. This was unnecessary.
18/3/2013	LHIB in principle agreement of Taronga budget.	
8/4/2013	Commencement of Service Agreement for	

³ Error! Main Document Only.LORD HOWE ISLAND BOARD Project Plan



Date	Activity	Note
	'Captive management for Woodhen and LHI Currawong associated with the Lord Howe Island Rodent Eradication project' between LHIB and Taronga.	
30/4/13	Purchase Order issued by Taronga to aviary manufacturers.	
15-17/5/13	Paul Maguire and Nikki Bodel worked with Central School students on LHI.	
10/6/13	Aviaries transported to and constructed on LHI.	
14/7/13	Three staff and a volunteer to LHI for commencement of captive phase.	
22/7/13	OEH commenced capturing birds and delivering to Taronga staff at aviaries.	Taronga Zoo Veterinarian present for this work.
8/8/13	First and only full communications meeting across all partners (LHIB, OEH, DSEWPaC, Taronga, Make Stuff Happen).	This meeting was facilitated by Taronga.
11/8/13	One staff member leaves LHI once birds settled and routines established.	The balance of 3 staff and 1 volunteer continued for the remainder of the captive phase.
18/10/13	All birds returned to OEH staff for release.	Taronga Zoo Veterinarian present for this work.
25/10/13	Final staff member and volunteer leave LHI having completed all works.	

5. Outcomes and Outputs

The trial program tested a number of aspects of the program, other than the obvious and primary husbandry aspects. These are no less important and the relatively few changes required have been tabulated below.

6. Conclusions and new knowledge / learnings

Project area	Problem / Issue	Solution / Note	Budget implication
Husbandry	Increased numbers of birds in 2017 will increase rubbish produced tenfold.	Access to vehicle twice per week to remove rubbish	Nil - use of LHIB vehicles
	Poor service with animal food delivery	Formal contract as per Taronga protocols with mainland supplier	Nil.
	Initial weight gain by Woodhen	All birds commence on 45g food each.	Nil.
	Currawongs regularly left food.	Reduce currawong diet to 1 cup.	Positive.
	Too much animal food	Experience of 2013 instructive	Positive.



Project area	Problem / Issue	Solution / Note	Budget implication
	ordered initially	for 2017.	
	Inability to medicate currawong	Include pinkies in diet	Negative (minimal)
	Earthworm harvesting time consuming for keepers.	Engage Lord Howe Islanders.	Nil.
	Chick starter too powdery.	Substitute with grain or pellet.	Nil.
	Animals (Currawong) being pre-fed ahead of capture to facilitate capture.	Use elements of captive diet to facilitate adaption to captive diet.	Minimal.
Veterinary	No baseline data on health of LHI currawong population	Conduct basic health assessment and disease screening of currawong prior to 2017, similar to what was done for Woodhen in 2007. Could be tied in with catch up for banding.	Negative. Pathology. Transport.
	Veterinary requirements	The presence of a clinician at the catch up of all birds, and at release, was considered a suitable amount of time on LHI.	Nil
Infrastructure	Restricted airflow in currawong aviaries	Suggest no shade-cloth at ends of aviaries, and shade-cloth in sections rather than full wall	Yes. Modified design.
	Possible dampness on floor of currawong aviary.	No leaf litter on floor of currawong aviary.	No
	Sand on base of currawong aviary.	Access to sand	No.
	Access to leaf-litter during baiting period.	Stockpile of leaf-litter for woodhen. Hand-baiting within period.	No
	Limited taps within aviaries.	Plumbing to more water points within complex	Yes
	Aviary doors unable to be latched closed from inside	Attach fittings to facilitate single person operation	Yes
	Woodhens dig beneath internal dividing walls	Increase depth of walls into ground	Yes
	Currawong aviaries – mesh rusting where welded to frames	Consider other attachment, especially if aviaries not to be single use	Yes
	Currawong aviaries had multiple entry points for mice: around keeper doors, between panels, beneath walls,	Better contract management; more stringent design	Yes
	Tool storage area within domes	Provide	Yes
	Require ability to subdivide	Design	Yes



Project area	Problem / Issue	Solution / Note	Budget implication
	woodhen pen during project if required		
	Domestic freezer space required to freeze leftover food to kill mealworms. Used domestic freezer in office area.	Design / purchase. Won't have access in 2017.	Yes
	Require walk-in cool-room for storage of food stuffs	Used cool-room north of office area	Yes
	Measure site for works for 2017.	Completed by Paul Fittolani, LHI Builder.	No.
School education	LHI Central School abandoned program when some families became strident in opposition.	Re-engage with Central School and determine best strategy to re-engage.	No – allowed for in 2016 budget
Media	Initial engagement with communications managers within other partners late.	Early engagement through LHIB.	No
Human Resources	Transport around LHI	One bike per staff member when on LHI	Yes.
	Confusion within staff group.	Clarity of Taronga delegations manual.	Nil.
	Communication with Taronga	Access to desk at Admin, or internet access at nursery	Yes
	Staffing	Establishment of staffing early to minimise disruption to the core work required at Taronga, and ensuring that the LHI project has the appropriate expertise.	Nil
	Staffing levels	Staffing levels were considered appropriate for this component of the project. Even though there were times that staff had completed work early, communication with LHI confirmed the need to maintain staffing levels should they be required in an emergency.	Nil
Logistics / project management	Current systems within Taronga not designed for management of large remote projects. Consequently, there were a number of procedural breaches within Taronga, especially around purchasing.	Work with Taronga departments to establish systems / protocols that pay heed to remote work on LHI.	Nil



Project area	Problem / Issue	Solution / Note	Budget implication
	Confusion over payment of freight costs.	All freight to be paid by LHIB under contract, and Taronga subsequently invoiced. Procedure established between LHIB and Taronga.	Yes. Expect reduced costs
	Staff rostering created challenges with contact re ordering.	Develop Standard Operating Procedure	Nil.
	Maintain kingfisher and / or emerald doves during baiting period.	Maintain 20:20 individuals sourced from across LHI. Assumption that will be maintained separately, in pairs for kingfisher and group for ground-doves in 50% of currawong aviary (doves and kingfishers)	Yes. Substantial impact.

7. Next steps/follow up

2017

Initial thinking was that the rodent eradication phase would occur in 2015. This is likely to now occur in 2017. It has become apparent that this project is more divisive within the Lord Howe Island community that was previously considered. The LHIB Rodent Eradication Project Manager is aware that Taronga is equally able to undertake this work in 2017 as it is in 2015. It is also understood that costs will be higher due to inflation.

All documentation within Taronga has been stored electronically at ELO Professional. This documentation has been assembled to ensure that future Taronga involvement can proceed making full use of what has been learned during the trial period of 2013. It is especially important that these documents are reviewed by a couple of staff members to ensure that all information required is present, and that the information is assembled in a manner enabling staff involved in 2017 to enter the project confidently.

Kingfishers and ground-doves

The LHIB Rodent Eradication Project Manager, Pete McClelland, has suggested that Taronga may be asked to take on husbandry for Sacred Kingfisher *Todiramphus sanctus* and Emerald Ground-dove *Chalcophaps indica*⁴. Taronga's initial response has been that it is likely to be able to undertake this husbandry.

Advice from Paul Andrew is that 10:10 individuals of both species would be sufficient as an insurance population. The husbandry recommendation from Rodd Stapley's team is that the kingfishers would be housed in pairs. It is suggested that the ground-doves could be housed in groups of 10. Both species would be held in aviaries of the design used for currawongs. The kingfisher pairs would only require 50% of the space that currawongs require.

It was suggested to Pete McClelland, Lord Howe Island Rodent Eradication Project Manager that in order to provide initial and very crude costings, we would house both species in the aviaries designed for the currawongs.

⁴ Lord Howe Island Board 2009, Draft Lord Howe Island Rodent Eradication Plan, Lord Howe Island Board, Lord Howe Island.



Species	Double aviary cost 2013	Number of banks	Projected aviary cost 2017 assuming 8% inflation
Sacred Kingfisher	\$12 800	2.5	\$34 560
Emerald ground-dove	\$12 800	1	\$13 824

There has been no allowance made for transport of aviaries to Lord Howe Island. There will be about eleven times (11x) the number of aviaries constructed in 2017 than in 2013. It is unlikely that transport costs will be increased by a factor of eleven.

Staffing

It was determined that there was an adequate level of staff on Lord Howe Island in 2013. Indeed due to both species adapting to captivity better than expected, there was capacity within the keepers' working days to assume responsibilities for husbandry of Lord Howe Island Stick Insect during the 2013 trial. It is likely that once the birds are established, that these additional aviaries can be maintained by the 4 keepers budgeted for in initial quotes.

It is suggested however, that an additional keeper be allocated to assist with initial establishment. \$4 800 should be allowed.

8. Financial acquittal – income and expenditure

SUMMARY	Budget	Actual to 31 Jan 2014	Interpretation
FUNDING			
Project Funding ex gst	\$ 360,000.00	\$ 360,000.00	
TOTAL FUNDING	\$ 360,000.00	\$ 360,000.00	
EXPENDITURE			
Animal Food	\$ 6,500.00	\$ 2,060.95	<ul style="list-style-type: none"> • Currawongs adapted to captive diet earlier than anticipated. Lead to less live food. • Dietary changes due to availability reduced cost.
Consultancy Fee	\$ 80,000.00	\$ 45,082.70	<ul style="list-style-type: none"> • Efficiencies and re allocation of tasks reduced the requirement of project manager. • Linked to overspend in salaries and wages
Contract Services	\$ 77,000.00	\$ 119,168.63	<ul style="list-style-type: none"> • Cost of bird holding and freight was \$40K greater than estimated in the budget.
Laboratory Costs	\$ 11,900.00	\$ 1,571.20	<ul style="list-style-type: none"> • This was budgeted on worst case scenario of deaths and potential investigations. • Birds adapted better to captivity than anticipated.
Salaries & Wages	\$ 130,600.00	\$ 151,425.40	<ul style="list-style-type: none"> • Requirement for management and administration support was greater than anticipated. • Reallocation of tasks from Project Manager's role.
Travelling - airfare, accommodation,	\$ 43,000.00	\$ 21,642.14	<ul style="list-style-type: none"> • Able to place keeping staff on Island longer than anticipated and reduce



sustenance			number of flights. <ul style="list-style-type: none"> • Staff able to organise food delivery and cost effective options. • Did not send media, education or management staff as per budget.
Ancillary Costs	\$ 9,000.00	\$ 13,089.37	<ul style="list-style-type: none"> • Included freight costs that were not anticipated.
TOTAL EXPENDITURE	\$ 358,000.00	\$ 354,040.39	
NET RESULT	\$ 2,000.00	\$ 5,959.61	

Budget Implications for 2017

It is recommended that staffing, aviary, transport, animal food costs and inflation to be revisited, as detailed in the report, once the plan for 2017 is confirmed. The figures above should not be used as the only tool for 2017 budget projections.