

# Summary: *Draft Lord Howe Island Rodent Eradication Plan*



## Introduction

The Lord Howe Island Board has been considering the possibility of eradicating rats and mice from the Lord Howe Island Group for a number of years as part of its responsibility to protect the islands' ecosystems, the kentia palm and tourism industries, and the health and well-being of residents and visitors.

Introduced ship rats (*Rattus rattus*) and house mice (*Mus musculus*) are having a significant negative impact on the islands' unique flora and fauna, many of which are found nowhere else in the world.

This summary document provides an overview of the *Draft Lord Howe Island Rodent Eradication Plan* which has been prepared to guide the planning and implementation of a programme to eradicate rats and mice from the Lord Howe Island Group of islands (Figure 1).

If you would like more detailed information on the proposed eradication, please view the *Draft Lord Howe Island Rodent Eradication Plan*, which is available from the Board office or at: <http://www.environment.nsw.gov.au/pestsweeds/IntroducedRats.htm>.

The Draft Plan has been prepared using published information, experience obtained from successful eradications on other islands in New South Wales and around the globe, extensive advice and guidance from overseas experts in the field, local knowledge, community feedback and peer review.

The Plan will continue to be updated and refined to incorporate the most recent research findings from the island and around the world. The Plan will also be amended as a result of ongoing community consultation, public exhibition, peer review, funding availability and the statutory approval processes.

The Draft Plan will be placed on public exhibition on Friday 30 October 2009 for a period of 28 days. Members of the community, whether as individuals or as members of community interest groups, are invited to comment on the Draft Plan.

**The closing date for comments on the Draft Plan is 27 November 2009.**

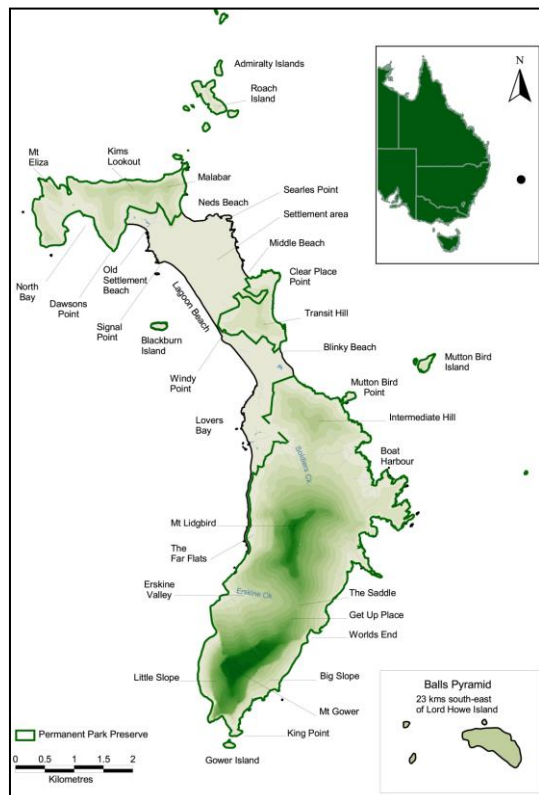


Figure 1. The Lord Howe Island Group

## Community consultation and involvement

The community's participation and commitment are vital to the success of the eradication.

The people of Lord Howe are deeply connected to the island and its history – they play an integral role in the island's management and will have an important role in planning and implementing the eradication.

Consultation and dissemination of information about the eradication programme to multiple stakeholders, both on and off LHI, will be ongoing.

## Justification for the eradication

### The impacts of rats and mice

Populations of house mouse and ship rat were accidentally introduced to Lord Howe – probably arriving around 1860 and 1918 respectively. Both species have had, and continue to have, significant adverse impacts on the biodiversity of the island.

- rats and mice have negative impacts on plants: they eat huge quantities of seeds, flowers, fruits, leaves, seedlings and bark
- rats and mice have negative impacts on animals: they eat birds, reptiles and invertebrates, they compete with endemic seed-eating animals and transmit disease
- rats and mice are a serious domestic pest: they are a known health risk to humans, they infest homes and other buildings, destroy and contaminate food, and litter homes with excrement
- rats cause considerable direct economic losses to Lord Howe's kentia palm industry and indirect economic losses to the island's tourism industry
- on Lord Howe, ship rats:
  - are implicated in the extinction of at least 5 endemic birds and 13 invertebrates
  - threaten at least 13 birds, 2 reptiles and numerous threatened invertebrates
  - are implicated in the extinction of 2 plants (bridal flower and native cucumber)
  - threaten 51 plant species and 12 vegetation communities.

### Current control efforts and why they are no longer effective

- control efforts have been waged on rats and mice since they were first introduced
- two poisons are used to control rats and mice: warfarin and brodifacoum
- since 1986, about 119 tonnes of warfarin and 5 tonnes of brodifacoum have been used
- the LHI Board spends around \$65 000 each year on rodent control: a significant ongoing expense
- control efforts cover only 10% of the island, focused on the kentia palm forests and nursery
- currently about 1000 permanent bait stations with warfarin bait are set up in the kentia palm forests, and brodifacoum baits are used in the palm nursery
- 90% of the island is not baited, so broader biodiversity benefits are minor and short-lived
- house mice have become resistant to warfarin, and its continued use could result in rats developing resistance
- resistance to brodifacoum may also develop with ongoing use, making eradication impossible.

### Why eradication is the best option

- a successful eradication programme would kill all rats and mice on Lord Howe in a single, short, concentrated effort
- success **is** feasible, as evidenced by 300+ successful eradications worldwide
- the constant presence of rodent poisons in the environment poses ongoing risks to humans, non-target native species, livestock and pets
- the benefits to the island's economy, residents, and plants and animals would be significant and immediate, including:
  - removal of the ongoing costs involved in controlling rats and mice
  - increases in returns to the kentia palm and tourism industries
  - increases in the numbers of plants, birds, reptiles and insects
  - possibility of returning species long-absent from the island (like the gerygone, fantail and phasmid)
  - return to the main island of breeding colonies of white-bellied storm petrel and Kermadec petrel

- removal of the significant health risks caused by rats and mice (including viruses, bacteria and parasites)
- removal of rats and mice from people's homes and other buildings.

## The proposed eradication programme

### The aims of the programme

- eradicate every ship rat and house mouse from the Lord Howe Island Group in a 100-day baiting operation
- minimise the adverse impacts on humans, the environment, non-target species, livestock and pets.

Planning for the eradication on Lord Howe is particularly challenging due to:

- the complexities of targeting two pest species, not just one
- the presence of non-target species that are susceptible to the poison
- the presence of a large resident population, a well-developed tourism industry, domestic livestock and pets.

### Planning to date

Planning and preparations that have occurred so far include:

- feasibility studies conducted in 2001 and 2003
- preparation of the *Draft Lord Howe Island Rodent Eradication Plan*
- numerous research projects
- preparation of a budget.

### The next step: approvals and preparations

This phase of the programme is likely to take a further 2 years. During this timeframe:

- the Plan will be publicly exhibited, refined, updated and finalised
- individual consultations will be held with each household to develop property action plans
- operational procedures will be developed in line with current best practice, research

findings, conditions placed on approvals, community feedback and peer review

- existing quarantine measures will be improved in line with a new biosecurity strategy
- tenders and contracts for aspects of the eradication will be prepared
- monitoring and research projects will be established.

The approvals and legislative requirements that need to be met before the baiting operation commences include:

- threatened species impact assessments and licences
- animal care and ethics approval for proposed research and monitoring
- approvals to use the proposed bait.

## The proposed baiting operation

**Timing and timeframe:** a single 100-day operation commencing in August of the third year of the programme.

**Poison bait:** Pestoff 20R<sup>®</sup>, a cereal-based pellet containing brodifacoum. The operation will require approximately 42 tonnes of the bait pellets, containing 840 g of brodifacoum poison. The baits take approximately 100 days to disintegrate on Lord Howe Island.

- The use of brodifacoum poison delivered in Pestoff 20R<sup>®</sup> has a number of benefits:
  - it is very effective at killing both rats and mice
  - it is highly palatable to both ship rats and house mice
  - it is highly toxic in minute quantities and a single feed of the bait delivers a lethal dose
  - an antidote for humans, livestock and pets is available
  - it does not contaminate waterways or soils
  - it has been used in 226 successful eradications in Australia and around the world
- given the highly toxic nature of brodifacoum there are risks involved with its use – these are outlined below under 'Risk Management'
- Appendix 2 of the Draft Plan includes an assessment of the likely risk (high, medium or low) to species from primary or secondary poisoning by brodifacoum

- the various other baits that were considered for use in the eradication are detailed in Appendix 3 and summarised in Section 5.1.3 of the Draft Plan.

**Area to be baited:** all islands within the Lord Howe Island Group except Balls Pyramid and its islets (Observatory Rock and Wheatsheaf Islet).

**Number of bait drops:** all areas will be baited at least twice: once at the commencement of the baiting period, and then again approximately 14 days later.

**Bait dose rate:** the bait will be distributed at a nominal rate of a total 20 kg of bait per hectare – this equates to 0.4 g of poison per hectare.

**Bait distribution technique:** the specific details of baiting on settlement and leasehold properties will be contained in the individualised property action plans. The general methods to be used are summarised here.

A combination of distribution techniques will be conducted concurrently, including:

- aerial broadcasting of bait from a helicopter
  - throughout the LHI Permanent Park Preserve, and areas on the main island outside of the settlement area and identified buffer zones
  - 10 mm baits will be applied at a rate of at least 1 bait / 2 m<sup>2</sup>
- hand broadcasting of bait
  - throughout the settlement area and in buffer zones (see Figure 2)
  - 5.5 mm baits will be applied at a rate of at least 1 bait / 0.5 m<sup>2</sup>
  - hand baiting will be conducted at higher rates within 30 m of livestock holding paddocks

- bait stations
  - in areas where aerial baiting and hand broadcasting of bait can not be undertaken
  - under agreements with householders, specially designed bait stations will be set up in houses, accessible roof cavities and under-floor cavities in buildings, and in all livestock containment areas
  - will be replenished with bait as necessary for a period of 100 days commencing on the second aerial bait drop.

The use of bait stations alone is not practical because checking and re-baiting them is extremely labour-intensive and cost-prohibitive. About 210 000 bait stations would be needed to provide an adequate coverage across Lord Howe Island and these would need to be replenished until all rodents have been eradicated.



Figure 2. Areas proposed to be hand-baited



## Risk management

Appendix 4 of the Draft Plan includes the detailed risk assessment for all aspects of the eradication programme, and Section 6 provides a summary.

The following additional actions were developed as a result of the risk assessment.

### Human health risks

- medical advice and aid will be provided on the island
- diagnostic and treatment procedures will be discussed with the island's medical doctor as part of the operational planning process
- a detailed information sheet outlining the hazards associated with brodifacoum will be prepared for residents
- talks will be given at the island's school to inform children of the operation and how they should behave around the baits
- residents will be informed of the dates of baiting well in advance, and also issued with reminders
- residents will be kept informed of progress and will be notified when the baits have fully disintegrated
- personnel distributing baits will use standard occupational health and safety procedures when conducting baiting.
- baiting will be undertaken on individual leases according to agreed property action plans.

### Tourism

- an 'interim' tourism strategy will be prepared in consultation with the LHI Tourism Association, tourism operators on the island and Tourism NSW. It will cover such issues as:
  - ensuring that visitors are informed of the date of baiting
  - issuing visitors on the island during the baiting period with information about the operation
  - consideration of promotional strategies for the island post-eradication.

## Birds

Endemic species that are known to be particularly susceptible to the effects of brodifacoum include:

- Lord Howe woodhen
- Lord Howe pied currawong.

Due to the risks posed:

- a substantial proportion of each population will be taken into captivity and housed on Lord Howe Island
- a small population of Lord Howe woodhen will be held in captivity on the Australian mainland.

There is a potential risk of seabirds being disturbed or struck by the helicopter during aerial bait dispersal. To mitigate these potential risks, the pilots will be briefed and operations managed to minimise the risks.

## Invertebrates

- brodifacoum is not expected to have significant effects on invertebrates as they have different blood clotting systems compared with mammals and birds.
- research is currently being conducted on the vulnerability of the endangered Lord Howe placostylus to brodifacoum baits
- if significant mortality occurs, snails will be collected and housed in captivity for the duration of the baiting operation.

## Soil

- baits are designed to break down over a period of about 100 days
- brodifacoum, is highly insoluble in water and binds strongly to soil particles, where it is slowly broken down by soil micro-organisms.
- tests are currently being conducted on Lord Howe to examine brodifacoum levels in soil after disintegration of baits.

## Fresh water

- studies have examined the residues of brodifacoum in water following baiting operation, and no brodifacoum residues have ever been detected in any of these water bodies following baiting operations.

- tests on designated fresh waterbodies will be undertaken to assess and monitor brodifacoum levels after the bait drop
- residents and tourists will be informed to not drink from streams until they have been tested and verified to be clear of brodifacoum

## Marine

- observational studies using local divers will be undertaken to determine which fish species consume baits
- fish that consume baits will be tested to determine if they are susceptible to brodifacoum
- additional care will be taken to prevent bait entering the lagoon
- divers will remove any bait that falls into the lagoon during the bait drop.

## Livestock

The general aim is to de-stock the island of livestock prior to the baiting operation.

Beef cattle:

- the island will be de-stocked during the year leading up to the baiting operation
- replacement stock will be brought to the island when bait breakdown in paddocks is complete and poses no further risk
- de-stocking will be subject to satisfactory compensatory arrangements.

Dairy herd, goats and horses:

- these livestock will be confined to holding paddocks and supplementary feed provided
- no aerial baiting will be conducted within 30 m of the holding paddocks
- specially designed cattle-proof bait stations will be used inside the holding paddocks
- as a precaution, milk will be tested to ensure it does not contain traces of brodifacoum.

Poultry:

- all poultry will be removed from the island or culled at least one month prior to the baiting operation

- disease-free, day-old chicks will be brought to the island as replacements when bait breakdown is complete and poses no further risk.

## Dogs

- dog owners will be provided with a sample of non-toxic bait to see whether their dog has a propensity to eat the bait
- some dogs may need to be muzzled and/or kept on a leash during the time that baits are present on the ground
- the option of removing dogs from the island and housing them in kennels on the mainland will be available to any concerned owners (at no cost to them)
- dogs will be provided with an antidote in the unlikely event of poisoning.

## Monitoring, evaluating and reporting on the eradication

- the eradication will be declared a success if rodents are not detected for a period of 2 years after the baiting operation
- a number of research and monitoring projects have been completed, are underway or are planned in conjunction with the eradication
- post-operation research and monitoring (in the fourth year of the programme) will evaluate the benefits of eradicating rodents from Lord Howe
- the various research and monitoring programs (covering brodifacoum, Pestoff 20R<sup>®</sup>, rodents, and non-target species) are discussed in Appendix 1 of the Draft Plan.

## Cost of the proposed programme

- the cost of the programme is estimated at approximately \$8 million over a four-year period
- funding has not been secured and will be sourced from grants such as those available under the Australian Government's *Caring for Our Country* programme.