

Running the gauntlet: advocating rat and feral cat eradication on an inhabited island – Great Barrier Island, New Zealand

J. Ogden¹ and J. Gilbert²

¹Great Barrier Island Charitable Trust, 123 Aotea Rd., RD 1., Great Barrier Island, New Zealand. <johnogden@farmside.co.nz>. ²Windy Hill Rosalie Bay Catchment Trust, 429 Rosalie Bay Rd, Great Barrier Island, New Zealand.

Abstract Great Barrier Island is one of the largest inhabited offshore islands in the New Zealand Group; it is scenically spectacular with large areas of regenerating forest, and rare species of plants, reptiles and birds. Many of New Zealand's worst introduced mammalian pests are absent from the island, but mice (*Mus musculus*), rats, (*Rattus rattus* and *R. exulans*), rabbits (*Oryctolagus cuniculus*), pigs (*Sus scrofa*) and feral cats (*Felis catus*) are present. The island has c. 800 permanent inhabitants, but numbers are swelled in summer by 'off-island' house-owners and visitors, whose expenditure enhances the economy. Recognisable factions in the population have divergent views on the importance of biodiversity conservation and sustainability in the future economy of the island. Since 2003, the Great Barrier Island Charitable Trust (GBICT) has advocated the eradication of rats and cats from the island, with a strategy that aims to educate and involve the local community in related conservation and educational projects, while lifting the biodiversity profile of the island within administrative agencies. This paper outlines these methods and discusses some of the successes and set-backs encountered.

Keywords: Rodent eradication, Great Barrier Island Charitable Trust, Windy Hill Rosalie Bay Trust, community-led conservation

INTRODUCTION

Successes with eradications of invasive species from uninhabited islands have inevitably led to consideration of eradications from those that are inhabited. Regardless of potential benefits to biodiversity, unless these benefits are understood and supported by local communities, eradications may be actively opposed. In New Zealand, the complete eradication of all introduced mammals has been achieved on at least 80 uninhabited islands of up to 11, 000 ha, with identified benefits for numerous native species of plants and animals. Many of the remaining large islands have resident communities. On Great Barrier, feral goats (*Capra hircus*) have already been eradicated, but other pests remain. In this paper we examine the perceived attitudes of islanders to the removal of the worst remaining pest species and local issues that will need resolution if this is to proceed.

Great Barrier is a large offshore island in northern New Zealand (ca 27,400 ha). The terrain is mostly rugged, clad in 'scrub' or forest, with steep slopes and cliffs along most of the coast. The 'scrub' is dominated by canopies of manuka (*Leptospermum scoparium*) and/or kanuka (*Kunzea ericoides*), and represents areas cleared of forest during the early days of European exploitation. Much of the scrub is now in transition to native broadleaf or conifer dominated forest (Ogden 2001).

The island has escaped introductions of some of the most serious introduced mammalian pests of New Zealand including possums (*Trichosurus vulpecula*), mustelids (*Mustela erminea*, *M. furo*, *M. nivalis vulgaris*), red deer (*Cervus elaphus*) and Norway rats (*Rattus norvegicus*). However, three species of rodents (*Rattus rattus*, *R. exulans*, *Mus musculus*), rabbits (*Oryctolagus cuniculus*), pigs (*Sus scrofa*), and feral cats (*Felis catus*) are present. Extensive areas have been grazed in the past by feral goats and cattle (*Bos taurus*), but goats have been eradicated and cattle remain only in small areas. Several endemic endangered New Zealand birds and reptiles are present. Great Barrier remains a national stronghold for brown teal (*Anas aucklandica*), kaka (*Nestor meridionalis*), black petrel (*Procellaria parkinsonii*), and chevron skink (*Oligosoma homalonotum*). The lack of some serious pests and the presence of some significant rare species, provides the basic rationale for proposals aimed at elimination of rats and feral cats. The potential economic benefits to the community, now largely reliant on tourism with a strong outdoor recreation component, are also considerable.

The island currently has c. 800 permanent human inhabitants in several small communities served by ferries and aircraft from Auckland, the nearest large city. Numbers are swelled in summer by 'off-island' house-owners, and visitors. This population can be divided into four main groups, albeit with some overlaps: 1) holiday home owners who live and work elsewhere; 2) permanent inhabitants living on the island but without deep Island roots; 3) members of the early farming families, born on the island ('the settlers'); and 4) descendants of the original Maori inhabitants, mainly members of the Ngati Rehua hapu of Ngatiwai. These groups have differing perspectives on environmental issues, conservation, land-use, and island governance. Agreement with one sector may therefore generate a reverse effect from another.

In this paper we outline the activities of two Charitable Trusts, operating as non-governmental organisations (NGOs), that promote and practice pest control on Great Barrier Island. NGOs such as these have a role in complementing the activities of established governmental agencies. Collaborations can be achieved by reaching the wider community and fostering locally derived solutions to issues that are of direct interest (e.g., Berkes 2004). The Great Barrier Island Charitable Trust (GBICT), has advocated the eradication of rats – and other mammalian pests – on Great Barrier Island since 2003 employing the strategy of conservation and education initiatives outlined in this paper. The Trust has the following vision statement:

'To protect native species through the eradication of rats and feral cats, to re-introduce species lost to the Island, and to work towards building an ecology-based economic framework for Great Barrier Island'

The Windy Hill Rosalie Bay Catchment Trust (WHRBCT) was formed in 2001 with the aim of improving biodiversity by reducing rat, cat, and feral pig numbers to facilitate natural breeding of native birds and re-introduction of species lost to Great Barrier. The ecosystem benefits of rodent control at Windy Hill are described by Ogden and Gilbert (2009). The Windy Hill Project has provided a research arm for the GBICT.

This paper describes the activities of the GBICT, outlines outcomes achieved, and the nature of opposition to our goals. In presenting our case history, we emphasise the most successful approaches and lessons learned in the belief that this will be useful to others planning eradication campaigns on inhabited islands.

ADMINISTRATIVE CONTEXT

Island infrastructure and supporting agencies

The island infrastructure is administered by Auckland Council. The interface between the islanders and the Council is provided by a locally elected Board. About 68% of the island is public reserve administered by the Department of Conservation (DOC), which has a base on the island. Policy oversight for activities conducted by DOC is provided by the Auckland Conservation Board. The island is within the Hauraki Gulf Marine Park, oversight of which is provided by the Hauraki Gulf Forum, comprising representatives of all relevant statutory agencies and Maori groups.

Funds for infrastructure, such as roads, wharves, garbage disposal, etc. are obtained from an annual levy (rates) by Auckland Council on all landowners, referred to hereafter as ratepayers. Other infrastructural facilities such as walking trails and protection of threatened species are provided by funds allocated by the government to DOC, with priorities set after consultation with community groups and the Conservation Board.

Charitable trusts

Charitable trusts are bodies set up for specific non-profit purposes under the legal requirements of the Charities Commission. The GBICT comprises seven trustees, the newsletter editor, and 120 members. Members receive an annual report and a quarterly newsletter (*GBI Environmental News*), which is also distributed free to all island residents and off-island rate-payers. The Trust facilitates information flow between the various conservation groups on the island (Fig. 1), and statutory agencies including DOC, and

Auckland Council. The activities of the trust are supported by grants, subscriptions, and donations.

The WHRBCT is based around the Windy Hill Rosalie Bay catchments at the southern end of the Island. This trust comprises four trustees, one of whom is the project manager. Since 2001, the WHRBCT has been engaged in a programme of weed, rat, feral cat, feral pig, and goat control, reintroduction of species (robin, *Petroica australis longipes*) and research. The area trapped/baited for rodents and feral cats now comprises 620ha with C. 5000 bait stations on 80 km of cut tracks. This Trust employs four full time and two part time employees funded primarily by grants.

MAIN ACTIVITIES OF THE TRUSTS

From the start, GBICT recognised the necessity of underpinning its vision with sound science, and of communicating with all segments of the island community. Two main types of activities, which are not mutually exclusive, have been undertaken by the Trust: the transfer of information to the community; and research.

Research activities

The 'referendum'

In 2006, The Trust organised an Island-wide questionnaire which became known as the 'referendum' (Fig. 2). This was intended to inform the trustees on the degree of support for/against the aims of cat and rat eradication. The questionnaire was sent to 1800 residents and ratepayers and replies were received from 585 (32%), of which over 300 were island residents; a proportional response by residents of approximately 40%.

The questionnaire asked for 'yes' or 'no' answers to the GBICT continuing to research, and work towards, the elimination of feral cats, and to research the ecological and economic benefits of a rat-free Great Barrier Island. An accompanying explanation gave the vision statement and stated that the questionnaire was not a proposal to go ahead with an eradication plan, and that there would be no further action unless it was supported and led by the Great Barrier Island community.

Over 90% of respondents supported continued research and "working towards" feral cat eradication, and 93% supported more research on the ecological and economic benefits of a rat-free Great Barrier.

Many of the returned questionnaires were annotated with comments and questions which were answered in subsequent issues of *GBI Environmental News*.

Bird counts

During 2006 and 2007, GBICT organised five-minute bird counts at 16 locations throughout the Island. The purpose of these was: 1) to provide information that might be of comparative use should rodents and feral cats be eliminated; 2) to teach local people about bird identification and ecology; and 3) to engage them in discussion about the Trust's aims. Other bird observation activities were linked to the counts, such as a survey of bittern (*Botaurus poiciloptilus*), spotless crane (*Porzana tabuensis*), and kingfisher (*Todiramphus sanctus*), and a count of beach-wrecked birds. These activities were supported by a grant from the Biodiversity Advice Fund administered by DOC. A separate series of counts were made of kaka (*Nestor meridionalis*), again involving local people. The second of these counts was planned to coincide with similar counts made on the mainland (www.kakawatchnz.org), thus linking Trust activities with wider interests.

Bird counting activities involved at least 78 members of the Great Barrier population on five occasions over two years. Results of the bird counts were summarised by Ogden



Fig. 1 Great Barrier Island showing locations mentioned in text, and the main community-based trusts engaged in pest control and/or habitat restoration.

(2009), and outlined in issues of the *GBI Environmental News* distributed to all residents. This activity increased the Trust's profile in the community and was regarded as a positive activity by most people.

Information transfer

Tiritiri Matangi Island trips

In summer 2005-06, GBICT organised three one-day trips from Great Barrier to Tiritiri Matangi Island, from which Pacific rats (*Rattus exulans*) were eliminated by aerial application of brodifacoum by Supporters of Tiritiri Matangi and DOC in 1993. This island is 40km from Great Barrier and a showcase restored island, with strong volunteer input to tree planting, species translocations, and maintenance (Rimmer 2004). The aim of these visits was to invite selected 'opinion makers' in the Great Barrier community to see biodiversity conservation achievements in the absence of rats. Trip participants completed a questionnaire about the relevance of the trip to their understanding of the Trust's vision. These trips involved 48 members of the community, and questionnaires were answered by all 33 persons on the first two trips. They were not distributed on the last trip.

The questionnaire had some questions asked on the outward boat trip, and some on the return to assess what information was gained or changed during the day.

Only eight of the 33 respondents had visited Tiritiri Matangi before, which indicates that this conservation success story, although nearby, is not well known on Great Barrier Island. The worst pests on Great Barrier were ranked as rats > feral cats > rabbits. Some respondents did not consider pigs to be pests. Asked to indicate (on a five point scale), their response to the statement: "It is very

important to make Great Barrier Island pest free", everyone marked either: "1. Strongly agree" or "2. Agree".

Knowledge of Great Barrier's endangered birds was poor, although their conservation was supported enthusiastically by almost everyone. The bird species best known were brown teal (*Anas aucklandica chlorosis*) and robin (*Petroica australis longipes*), clearly indicating the value of the publicity given to robin translocations to Windy Hill and Glenfern Sanctuary in 2004 and 2005.

Most of the respondents knew, or assumed, that poisons had been used to eliminate rats from Tiritiri Matangi, but only two people (6%) knew that an aerial drop was the method used. Natural history aspects of conservation (birds, vegetation) were consistently ranked more highly than socio-economic aspects. Comments indicated ambivalence to increased tourism on Great Barrier Island and a widespread view that the relationship between DOC and the public of Great Barrier needed improvement.

Three guidelines were gained from these trip questionnaires: 1) the role that birds could play in persuading people that pest eradication is important; 2) the general lack of knowledge about toxins and their role in New Zealand conservation; and 3) the need to address economic aspects of conservation, and specifically rat eradication.

The Environmental News and State of Environment Report 2010

GBICT has spent more time collating data about the ecology/economy of Great Barrier Island than on primary research. The data collation has enabled articles in the *GBI Environmental News*, letters to the local newspaper (*Barrier Bulletin*), and material filed in the local library. This work culminated in 2010 with the publication of a 200-page

REFERENDUM

Please answer the questions below and return in the pre-paid envelope by (date).

CIRCLE THE ANSWER YOU WISH TO AGREE WITH

1. Do you support the GBI Trust continuing to work towards the elimination of feral (wild) cats on GBI?

YES / NO

*Please note that we are **not** concerned here with domestic pets, although in the event that a plan to eliminate feral cats is initiated in future it would be necessary to have a system of registration and all domestic cats neutered.*

2. Do you support the GBI Trust continuing to explore the ecological and economic benefits of a rat-free GBI?

YES / NO

*Please note that you are **not** voting to support either rat or feral cat eradication at this point. We assume that you would want more information before doing so. You are voting to support our efforts to continue to research the pros and cons. When we have more information on the economic aspects and the actual feasibility of the eradication process we will present that to you and ask again!*

Fig. 2 The referendum document. An explanatory document accompanied this form; see text.

“*State of the Great Barrier Environment*” report. A 22-page abridged version was delivered free to all residents and ratepayers, and the full version made available on the internet (www/gbict.co.nz), in the local library, to selected agencies and to all Community Board members.

The quarterly newsletter, *GBI Environmental News*, is a sixteen-page magazine covering topics relevant to conservation on Great Barrier. Accounts of the Trust’s activities, and the results from projects such as the bird counts, are presented. The Newsletter is aimed at a general Great Barrier Island readership, and 1200 copies are printed and distributed to off- and on-island ratepayers. It has been our most important means of communication, and is well regarded by most recipients. It is distributed free of charge, using grant money.

Open days, public lectures and workshops

‘Open days’ at Windy Hill, Glenfern Sanctuary, Morton’s farm property near Awana, and a day trip to Kaitoke Swamp (Fig. 1), were designed to inform the community about activities of various trusts, and/or to allow discussion of conservation issues between trustees and the public. These were attended by 20 to 60 people.

In 2006, GBICT initiated a series of public lectures on New Zealand conservation, especially endangered birds and pest control. The ‘Summer Lecture Series’ comprised lectures on the economic and social aspects of invasive species in the Pacific region and the effects of rats on endangered New Zealand birds. Other public presentations on the birds of Great Barrier, and wetlands have been delivered in conjunction with DOC.

Workshops on methods for rat control around properties were organised in conjunction with the Windy Hill Rosalie Bay Catchment Trust, at the three main settlements. Speakers from the Biosecurity section of Auckland Council participated in these events. Workshops were designed to generate local practical involvement in rodent control. Judy Gilbert presented the Windy Hill rat trapping, baiting and tracking tunnel results, and demonstrated practical aspects of rat control. These workshops stimulated one local rat control programme, which subsequently ceased, and a pest management initiative led by local Maori at Motairehe, which is still functioning. Support was also given to rat-trapping by children at Okiwi School, in the nearby forest reserve.

Liaison with other groups

The GBICT has had Community Board and DOC representatives at its meetings since 2008, and communicated its vision to local Maori, including a presentation at the Motairehe Marae. Trustees also participate in activities organised by DOC. The community-based rat-trapping programme at Tryphena was initiated with DOC support. The GBICT has also given support to other conservation projects, such as the pest eradication on Motu Kaikoura Island, a predator-proof fence and associated activities at Glenfern Sanctuary, and the Katherine Bay Restoration Trust on iwi land. Liaison with other groups has been an important component of the Trust’s activity, culminating in a meeting of all interested parties in 2009. This meeting was organised and coordinated by the DOC, as a prelude to future networking meetings. The *State of the Environment Report* (2010) also constitutes a transfer of information between the Trust and other community groups.

DISCUSSION

Here we examine some responses to GBICT within the community, external influences on perceptions about pest control, and the role of communities in restoration initiatives.

Publicity positions of news media

From 2003 – 2005, GBICT was a regular contributor to the local newspaper, *Barrier Bulletin*, running a “Rat Chat” column, and publishing letters on topical aspects of conservation. The paper at that time provided a useful outlet for our vision of a pest-free island. It was not until after publication of the (supportive) referendum results in 2006, that any negative comment arose. It was claimed that the Trust was planning World Heritage Status for the Island, that it advocated aerial applications of poisons, and that it would impose costly biosecurity and quarantine measures at wharves. These measures would impinge further on the rights of landowners.

This negative comment escalated from letters and newspaper editorials, to the banning of GBICT members from some land areas, and local body opposition to pest management suggestions. Attempts to clarify issues, or correct erroneous statements attracted further misinformed opposition.

As a result, the Trust decided to withdraw from further public debate through the media. We now present our views in *GBI Environmental News*, and use other news media only to advertise our public activities. This ‘lower profile’ approach may have been partly successful, most of the original antagonists probably still oppose our vision statement, but there is now some support on the Community Board. Not everyone is convinced of the damage done by rats and feral cats, nor of the potential economic benefits should these pests be eliminated, and the debate now centres around the potential use of toxins.

The important conclusion from the 2006 experience was that, despite enthusiasm and strong science backgrounds, the Trust entered into the political arena without adequate planning or awareness.

Information flow problems

Two processes have resulted in a faction of Great Barrier residents becoming strongly opposed to any suggestion of rat and cat eradication.

The first is that some people read our suggestion that rats and cats could possibly be eradicated as a fact that they would be eradicated. They then promoted that as fact and concluded that there would be a mass distribution of aerially applied toxin. This therefore bypassed our ability to discuss options and built a faction opposed to our suggestions. This faction also mostly opposed a perceived increased biosecurity and dismissed any suggestion of economic benefits from rat eradication.

A second factor was a film dealing with the aerial application of compound 1080. This film was professionally presented, but contained many errors of fact, statements taken out of context and a fundamental mis-understanding of experimental techniques applicable to ecosystem management. The film was clearly intended to generate support for the banning of the aerial application of 1080 in New Zealand, and was shown to island residents with the inference that this would happen on the island. This effectively undermined the otherwise improving DOC/public consultation process on Great Barrier, and provided ammunition for the anti- GBICT faction. The use of 1080 has in fact never been suggested for rat and cat eradication. We know of no avenue to counteract such deliberate distribution of misinformation, except to keep on stating the truth.

The “bottom-up” approach

Our approach to research and information transfer rested on the assumption that eradications cannot be carried out on inhabited islands without strong community support. On Great Barrier Island, the community has until recently

been rooted in a resource exploitation ethic centred around farming, mining and logging (Armitage 2001). This early community probably had little awareness of the unique biodiversity of New Zealand, or the special role of pest-free islands in this respect, and could not have afforded some of the conservation measures we now take for granted.

Because it is an island, and inevitably somewhat isolated in consequence, these views appear to have been slower to change than elsewhere in New Zealand. However, with increased levels of communication (television, internet) and travel (especially tourists and holiday home owners who live off-island), views are changing, and a polarisation is evident. Currently there is no objective assessment of these views, which of course differ over different topics. The Trust's 'Referendum' and other related unpublished polls seem to imply strong support for investigating the feasibility of rat and feral cat eradication. On the other hand, letters and responses in the *Barrier Bulletin* indicate opposition. The Community Board has not yet agreed to support a feasibility study.

CONCLUSIONS

The Great Barrier Island Charitable Trust has considerably advanced ecological understanding and environmental awareness on Great Barrier Island. However, progress towards the main goal of rat and feral cat eradication has been slow. This is partly because of different attitudes to conservation in a segment of the Great Barrier community, and partly because of a failure, by the trustees, to perceive the importance of the power-structures on the Island.

It is also unfortunate that the editor of the main newspaper, the *Barrier Bulletin*, has opposed the Trust's vision. Our own publication *The Environmental News*, has gone a long way to counteract this opposition, and has been the most successful strategy we have employed for raising awareness of these issues in the community.

Participatory activities, such as bird counts and the trips to Tiritiri Matangi Island, have been more effective in communicating our vision than have passive activities, such as guest lectures. The latter cannot be very effective until there is an interested audience to attend them. Personal discussions between the GBICT trustees and members of the community are certainly the most effective way of explaining our vision, but they are time consuming and can be exhausting.

Further progress will involve gaining the support of the Community Board, and outside bodies, such as the Hauraki Gulf Forum and the Auckland Conservation Board. Our completed State of the Environment Report has been supported by these bodies, and may lead to more bottom-up support. Once a groundswell of support can be demonstrated, the statutory authorities appear ready to recommend a full-scale study of the feasibility of rat and feral cat eradication on Great Barrier Island.

ACKNOWLEDGEMENTS

The activities described in this paper were organized by the trustees of the GBICT (Liz Westbrooke, Fenella Christian, Tony Bouzaid, Jo Ritchie, Sue Daly) and funded mainly by grants from the Department of Conservation and Auckland Savings Bank. David Speir edits the GBICT Newsletter. Support has also come from the Auckland Regional Council, and Auckland City Council. Thanks to Igor Drecki, School of Environment, University of Auckland, for assistance with Fig. 1. Thanks also to two anonymous reviewers, Dick Veitch, David Towns and Carola Warner for substantial editorial assistance.

REFERENCES

- Armitage, D. (ed.). 2001. *Great Barrier Island*. Canterbury University Press, Christchurch, New Zealand.
- Bellingham, P.J.; Towns, D.R.; Cameron, E.K.; Davis, J. J.; Wardle, D.A.; Wilmshurst, J.M.; Mulder, C.P.H. . 2010. New Zealand island restoration: seabirds, predators and the importance of history. *New Zealand Journal of Ecology* 34 (1): 115-136.
- Berkes, F. 2004. Rethinking community-based conservation. *Conservation Biology* 18: 621-630.
- Caut, S.; Casanovas, J.G.; Virgos, E.; Lozano, J.; Witmer, G.W. and Courchamp, F. 2007. Rats dying for mice: modeling the competition release effect. *Austral Ecology* 32: 858-868.
- Clout, M.N. and Veitch, C.R. 2002. Turning the tide of biological invasion: the potential for eradicating invasive species. In: Veitch, C.R. and Clout, M.N. (eds.). *Turning the tide: the eradication of invasive species*, pp. 1-3. IUCN SSC Invasive Species Specialist Group, IUCN, Gland, Switzerland and Cambridge U.K.
- CRESA. 2006. *Great Barrier Island Visioning Statement*. Unpublished report: The Centre for Research, Evaluation and Social Assessment. Wellington.
- Gilbert, J. and Ogden J. 2010. What if we do nothing? Great Barrier Island Charitable Trust. *Environmental News* 20: 2-6.
- Great Barrier Island Charitable Trust. 2010. State of the Environment Report, pp. 200. (<http://greatbarriercharitabletrust.co.nz/SOE.htm>).
- Kirton, B.; Craig, J.; Bouzaid, T. and Gudgeon, G. 2000. Unpublished report. Petscan Survey. Great Barrier Island. 27 pp.
- Miskelly, C.M.; Dowding, J.E.; Elliott, G.P.; Hitchmough, R.A.; Powlesland, R.G.; Robertson, H.A.; Sagar, P.M.; Scofield, P.R. and Taylor, G.A. 2008. Conservation status of New Zealand birds, 2008. *Notornis* 55: 117-135.
- Ogden, J. 2001. Major ecosystems. In: Armitage, D. *Great Barrier Island*, pp. 52-81. Canterbury University Press. Christchurch, New Zealand.
- Ogden, J. 2009. Final Report on Birds of Great Barrier Island 2006-2008. Report to Dept. of Conservation, Biodiversity Advice Fund (Project AV207), 53 pp. Wellington, New Zealand.
- Ogden, J. and Gilbert, J. 2009. Prospects for the eradication of rats from a large inhabited island: community based ecosystem studies on Great Barrier Island, New Zealand. *Biological Invasions* 11: 1705-1717.
- Rimmer, A. 2004. *Tiritiri Matangi: a model of conservation*. Tandem Press, Auckland, New Zealand.
- Warren, J. 2004. Developing a shared vision for Great Barrier Island: initial scoping, funded by the Foundation for Research Science and Technology. Unpublished Report. Centre for Research, Evaluation and Social Assessment. Wellington.
- Warren J. 2005. Analysis of Great Barrier Island On-Island Residents Questionnaire, funded by the Foundation for Research, Science and Technology. Unpublished Report. Centre for Research, Evaluation and Social Assessment. Wellington.
- Wilkinson, I.S. and Priddle, D. 2011. Rodent eradication on Lord Howe Island: challenges posed by people, livestock and threatened endemics. In: Veitch, C. R.; Clout, M. N. and Towns, D. R. (eds.). *Island invasives: eradication and management*, pp. 508-514. IUCN, Gland, Switzerland.
- Windy Hill Rosalie Bay Trust (WHRBT). 2003. Unpublished Report. Telephone Survey on Rat and Feral Cat Eradication on Great Barrier Island.