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GBI Environmental News

The publication of the Great Barrier Island Charitable Trust, whose trustees are:
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Fenella Christian (Secretary)

Photo by David Mudge

Rats eat Forest
Lord Howe Profile – Pt II
Visit to Tiritiri Matangi
What's the Payoff?

Mission Statement: Our vision is 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'.

GUEST EDITORIAL

• by Liz Westbrooke •

GREAT BARRIER ISLAND has some very unique geography and an ecology which supports a number of rare and endangered species (chevron skink, brown teal ducks, black petrel, kaka, mistletoe etc). A number of the pests on the New Zealand mainland are not present there: possums, stoats, ferrets, weasels, hedgehogs and feral goats (almost).

The Great Barrier Island Charitable Trust has been working over the last three years to establish whether the eradication of rats and feral cats is feasible. DOC and the ARC have confirmed that it is probably technically possible and funding would very likely be available if the community will affirm its support. If this can be made to happen, Gt Barrier will become the largest inhabited island in the world that is free of introduced rats.

Our vision is 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

As we see it, the project will take about five years and consists of four stages:

· provide information to the community and landowners on the potential benefits of a rat / feral cat free island and carry out an economic analysis (this will examine the way the island functions economically and how that would change if it became eco-tourism based)

· detail a full technical feasibility study and find solutions for the issues with the community

· carry out the eradication programme

· expand Gt Barrier's role as a very important eco-island (re-introduce species, market to niches, gain publicity etc).

At various points, the Trust will carry out surveys to assess community and landowner opinion (there will be one mailed with our first GBI Environmental News next year).

The recent trip to Tiritiri Matangi was planned as part of the first stage - providing an experience of an island where the predators have been removed and NZ birds re-introduced. We hope to run more of these trips for islanders in future.

There are some down-sides. Domestic cats would need to be managed by spaying and possibly micro-chipping for identification from feral cats. Dogs would need to be well-controlled and managed if any ground birds such as kiwi are to return.

It's an ambitious project and a far-reaching vision..... but possible..... and one, which if the community wants, could build an economy for the islanders into the future.

Island Summer Lecture Series

THE GREAT BARRIER Island Charitable trust is pleased to announce a program of free lectures for Islanders (and visitors) this forthcoming summer.

Assoc. Professor John Ogden's first lecture on Forest Ecology on GBI was well attended and well received. Normally to hear speakers of this calibre one needs to be enrolled in a university masters course - here there is no need to take notes but simply enjoy some fascinating science, excellent visual images and studied opinion on some very relevant topics.

The first two lectures for this program are as follows:
January 10th (Tuesday):
Dr Alan Saunders (Centre for Biodiversity & Bioscecurity, Auckland University).
"Eradicating pests from Islands" — a picture of the benefits of rat eradication to conservation and economy on inhabited Islands.

The second lecture is on January 28th (Saturday):
Dr John Innes (Landcare Research, Hamilton) will speak on *"Rat impacts on birds and other biota in New Zealand: 58 bad things about rats and two good things!"* John's will talk about his work on the effects of rats on native bird-life, including some graphic night filming of predation on nests.

The lectures will be held at the new conference centre at the Claris Sports Club at times to be notified.
Both the speakers are acknowledged experts in their fields, and entertaining lecturers, so please diary this event and bring along all your visitors too!

Summer lectures for Great Barrier Island

Lecture 1: Eradicating Pests from Offshore Islands
by Dr Allan Saunders - Jan 10/06 (Tues.)
Lecture 2: Rat Impacts on NZ Biota
by Dr John Innes - Jan 28/06 (Sat.)

Location: Claris Sports Club Conference Room
(Times do be notified)

Barrier Islanders visit Tiritiri Matangi

One of the issues confronting the Trustees of the GBICT is that of painting the picture, illustrating how Great Barrier Island could once again ring out with a real dawn chorus, how its bush could be filled with life. One picture in this case is worth a thousand words, one experience worth a week of lectures and slideshows. Tiri is the live experience — just over the water but a world of difference.

Islands such as Tiritiri Matangi are being developed as open sanctuaries. This means that the public are free to visit and enjoy some of New Zealand's more unusual and rare fauna. This compares with Little Barrier Island which is managed differently – the public are restricted in access by permit to ensure that there is minimum disturbance of wildlife.

The Gt Barrier Island Trust invited a number of islanders to join the Trustees in a visit to Tiri on Thursday 10th November. Many earlier attempts had been foiled by the weather but this time a calm and beautiful day dawned. Eighteen intrepid islanders set off with Paul Downie and Fenella Christian, secretary to the Trust. John Ogden, Trust Chair, and Trustees Liz Westbrooke and Judy Gilbert joined them on the island.

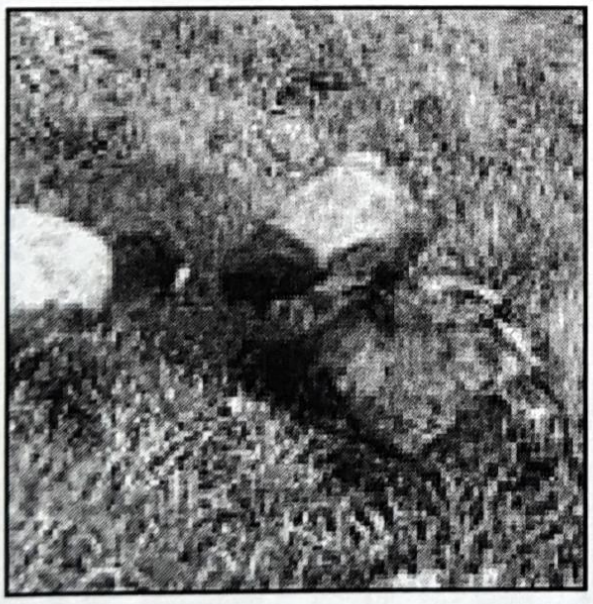
This 220 hectare island was mainly grassland due to centuries of Maori occupation and European farming. However during the nineteen eighties, the light-house became automated and the keeper became a nurseryman raising native seedlings. Many groups, school children and private individuals planted them out to accelerate the natural vegetation of the coastal forest (originally mixed pohutukawa forest with denser kohekohe and taraire forest in the sheltered valleys).

Then some of the rarer birds were reintroduced - the saddleback, takahe, parakeet, North Island robins (both Little Windy Hill and Glenfern robins came from Tiri), kokako, whitehead, little spotted kiwi, brown teal, fernbird, stitchbird and tomtit. Then tuatara in 2003.

The bird song was vociferous and we saw most of them up close..... blue penguins in the water a few yards from the shore, robins on the path right in front of us, saddleback with their orange backs above our heads, takahe bathing in the water trough up at the Visitor Centre, pateke on the pond as we returned to the boat, penguins nesting in the specially built houses with Perspex viewing roof, whiteheads, stitch birds etc etc.

The atmosphere was relaxed, uncrowded (although this was a weekday) and our arrival was free of

Back from the dead (metaphorically speaking) the NZ saddleback alive and multiplying on Tiri is an ecological success story and a very important visitor attraction.



Takahe – another species brought back from the brink – thriving in a predator-free environment.

noticeable quarantine or bag inspection - quite different from Little Barrier. Commercial activity on the island was minimal, although you could get tea and coffee at the visitors centre and (rightly so) we were required to take our rubbish home with us - how would that go on Aotea?

The purpose of the visit was to enable islanders to see the potential of the Barrier should we all agree to get it rat and feral cat free. We are hoping to run more trips in the future so more people can get to experience this wonderful place ....or you can plan a trip for yourself using the Kawau Kat from Auckland. It's a most enjoyable day out.

	Pest Animals Present / Absent													
Island	Possum	Pig	Deer	Goat	Rabbit	Hedge-hog	Mice	Ship rat	Norway rat	Kiore	Stoat	Ferret	Weasel	Cat
Browns (Motukorea)	•	•	•	•	E	•	E	•	E	•	•	•	•	•
Motuihe	•	•	•	•	E	•	E	•	E	•	•	•	•	E
Rangitoto	E	•	E	•	Y	Y	Y	Y	?	•	Y	•	•	Y
Waiheke	•	Y	•	Y	Y	Y	Y	Y	Y	•	Y	Y	•	Y
Pakatoa	•	•	•	•	•	•	•	•	E	•	•	•	•	Y
Motutapu	E	•	E	•	Y	Y	Y	Y	?	•	Y	•	•	Y
Rakino	•	•	•	•	•	•	•	•	E	•	•	•	•	Y
Noises	•	•	•	•	•	•	•	•	E	•	•	•	•	•
Tiritiri Matangi	•	•	•	•	E	•	•	•	•	E	•	•	•	•
Motuora	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Kawau	Y	•	•	•	?	•	?	Y	?	?	Y	Y	?	Y
Goat	•	•	•	•	•	•	•	E	•	•	•	•	•	•
Gt Barrier (Aotea)	•	Y	•	Y*	Y	•	Y	Y	•	Y	•	•	•	Y
Gt Barrier, Kaikoura	•	Y	Y	•	•	•	?	Y	•	•	•	•	•	?
Gt Barrier, Rakitu	•	E	•	E	•	•	•	Y	•	Y	•	•	•	•
Gt Barrier, Others	•	•	•	•	S	•	S	S	•	S	•	•	•	S
Little Barrier (Hauturu)	•	•	•	•	•	•	•	•	•	E	•	•	•	E
Mokohinau Group	•	•	•	E	•	•	•	•	•	E	•	•	•	•

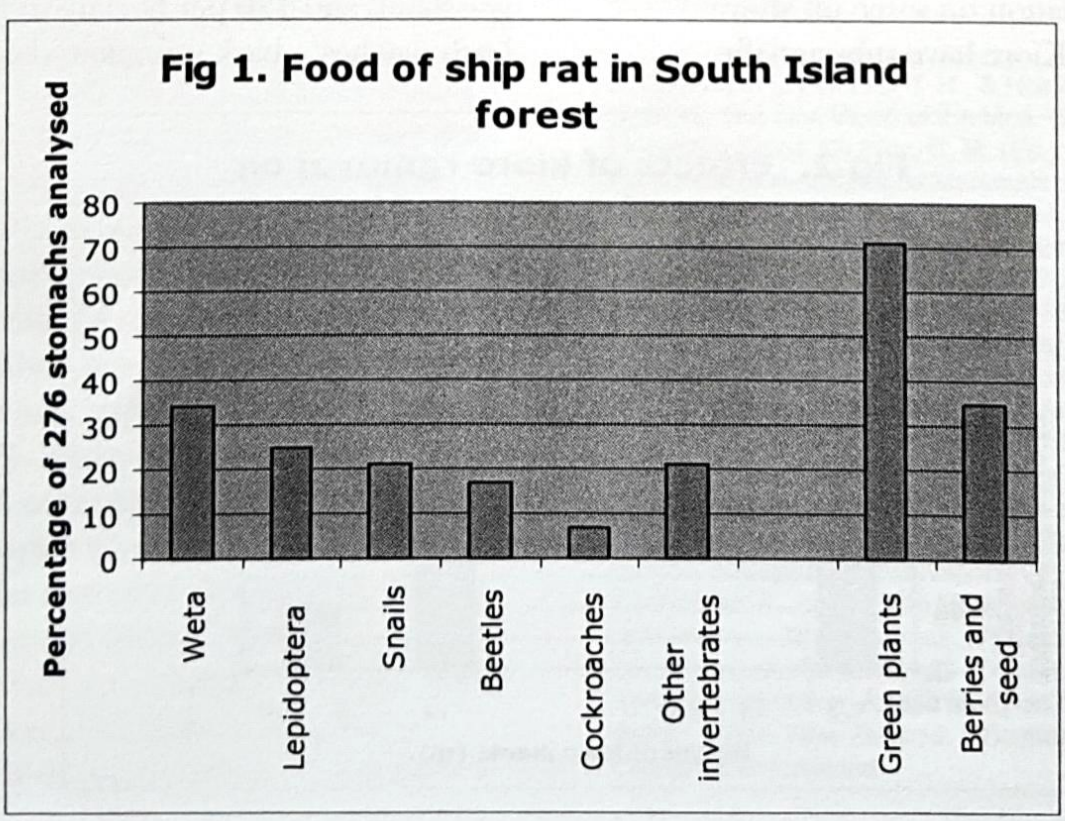
The chart gives a picture of the relative states of eradication that exist on the Islands of the Hauraki Gulf.
Information courtesy of the Auckland Regional Council and the University of Auckland
Key: • = absent, never there E = eradicated now Y = present ? = unknown S = some islands only * = final year of eradication)

Rats eat forest!

by John Ogden

Sparrows and rats and mice all evolved with the spread of seed producing plants throughout the world, and they are adapted to eat seeds. Of course, so are humans - our principle foods are grass seeds, wheat, rice, corn and barley. Like rats, we are omnivorous, and enjoy a few other items too, even on the Barrier. Rats have long incisor teeth, which grow continuously throughout their life, so they're not worn away by gnaw, gnaw, gnawing. Rat's molars grow too, and the age of a rat can be determined by the amount of wear on them, but few live long enough to need a dentist.

Kiore (*Rattus exulans*) first came to New Zealand c.750 years ago or perhaps much earlier, on board the first Maori waka. The demise of many of our large ground dwelling invertebrates (eg. large Wetas and ground snails), small ground dwelling birds (ground wrens), bats, lizards and frogs, can be attributed to the spread of these predators into our pristine forest ecosystems (1, 2). Hundreds of years later, when Norway rat (*Rattus Norvegicus*: 1790s) and ship rat (*R. rattus*: 1850's) arrived here on European ships, a further wave of extinctions occurred. Indeed, the first rat - kiore - was one of the species which suffered in competition with its larger and more belligerent cousins, and kiore populations became more or less restricted to off-shore islands. Rats not only caused declines in pollinating and seed-dispersing birds, such as kereru, tui and bellbird, but

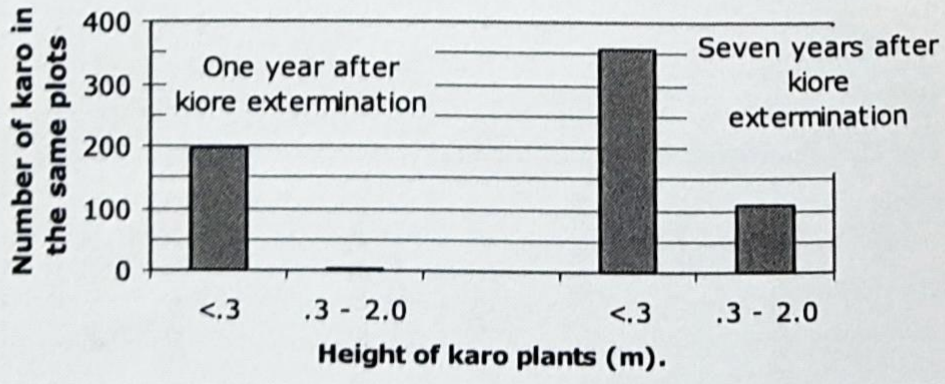


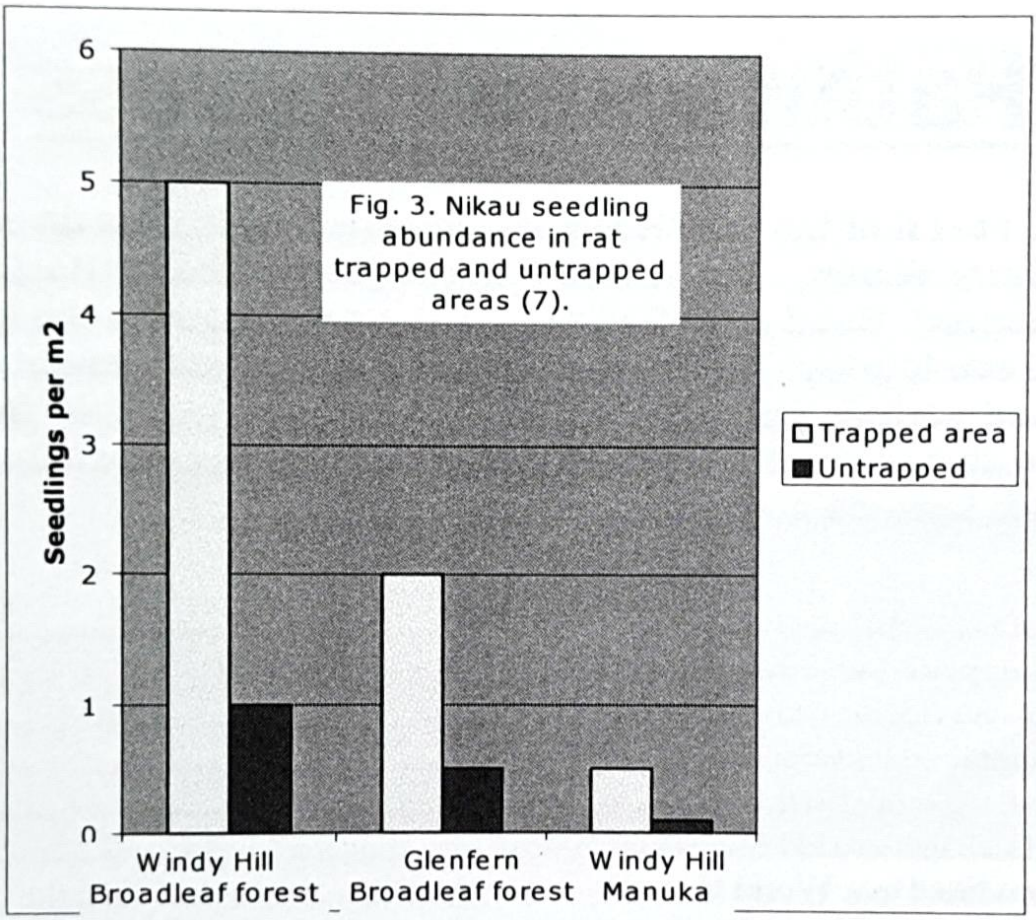
they also ate seeds and seedlings of forest trees. Even dry kauri and beech seeds were eaten, sometimes in large amounts (2). Although all three rats are primarily herbivorous (vegetarian), only recently have their continuing and disastrous effects on our flora been demonstrated (3; Fig 1). .

The effects of rats are selective, because the big-seeded trees, such as nikau palms, taraire and puriri are targeted. These trees are common, and very long-lived, so the effects of rats gnawing on their seeds is hardly obvious in our human time span – but it is happening never-the-less. Effects are often clearest on islands where tree populations are small and regeneration failure cannot be reversed by seed influx from elsewhere. Recently, by comparing islands with and without rats, and using rat-exclosure plots, Campbell and Atkinson (4, 5) have demonstrated that rats have changed the vegetation on some off-shore Islands. Kiore have substantially reduced recruitment of karo (*Pittosporum crassifolium*), milk tree (*Streblus banksii*) and maire (*Nestegis apetala*) on off-shore islands (Fig 2). Reduced seed survival of nikau palm (*Rhopalostylis sapida*), puriri (*Vitex lucens*) and kohekohe (*Dysoxylum spectabile*) has also been demonstrated. In fact 24 native tree species are now known to be vulnerable to rats on islands, and a further 11 species are probably rat-affected.

Both nikau palms and puriri trees are rare on Tiritrii Matangi island, compared to Great Barrier. In fact only two puriri trees survived until the recent revegetation program started. Rat numbers fluctuate greatly from years to year, and it is known that kiore reached plague proportions on that island when farming stopped and the growth of rank grass provided an abundant food source. Numbers reached 200 rats per hectare in the grassland, and 120 per hectare in the bush patches – bark was gnawed off

Fig 2. Effects of kiore removal on growth and survival of karo (Pittosporum crassifolium) on Double Island (Mercury Group).





shrubs and seedlings decimated (6). It is quite possible that plagues such as this, combined with persistent high abundance, almost eliminated nikau and puriri on Tiri.

In a study on Great Barrier Island, Deline Samaka (7) demonstrated that there were significantly more nikau, milk tree and taraire seedlings in rat trapped areas at Windy Hill, than in non-trapped areas of the same vegetation type. The same was true for nikau and puriri at Glenfern sanctuary (Fig 3). Although Samaka's work is based on small sample sizes, it is well supported by other data, and clearly implies that seed predation by rats is slowing the successional sequence from kanuka to broadleaf forest. Thus removing rats in these areas has a double whammy effect – it not only protects the seed pollinators and dispersers, but it also ensures that dispersed seeds stand a chance of becoming trees.

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Pathways to Progress

Here is Part II of the Lord Howe Island series - this time an article from Terry Wilson, the Island's Manager for World Heritage/ Environment. Read on to find some unique solutions to the issues around eco-tourism. These were obviously not gained without some pain and serious consultation but it has been possible for the community to work through their differences and successfully move together towards a sounder economic future.....

The Lord Howe Island Group is an outstanding place with extra-ordinary terrestrial and marine ecosystems. These natural values were formally recognised to be of global significance in 1982 when the Lord Howe Island Group was listed as a World Heritage Property under the World Heritage Convention. At the time, this was only the second listing in Australia, after the Great Barrier Reef. The significance of the Island's marine environment, the world's southernmost coral reef, was recognised in 1999 when the Lord Howe Island Marine Park was declared.

The Island's isolation and its varied landscape of mountains (over 800 metres), valleys, hills, lowlands and sea cliffs has resulted in a diverse array of habitat types supporting many distinctive flora and fauna assemblages. Vegetation associations range from exposed coastal grasses and heath to luxuriant mossy rainforest shrouded in mist. Today, approximately 75% of the Islands original natural vegetation remains intact and undisturbed. The Island has recorded 241 species of indigenous plants of which 113 or 47% are found nowhere else in the world. Typical of remote oceanic islands the vertebrate fauna is largely dominated by birds, including the Lord Howe Island Woodhen, which has been the centre of a highly successful captive-breeding programme. There are 11 species of seabirds, which continue to have important breeding populations. Lord Howe Island is reputed to have more seabird species breeding in higher numbers than anywhere else in Australia.

More than 1,600 terrestrial insect species have been recorded with approximately 60% found no where else. The rate of discovery remains high, indicating that numerous endemic species are yet to be discovered.

One of the most spectacular insects is the Lord Howe Island Phasmid, the world's largest stick insect, thought to be extinct, but rediscovered in recent years on Balls Pyamid, a 550 metre high volcanic stack rising from the sea, 23 km from the Island.

In recent year's cats, pigs and goats

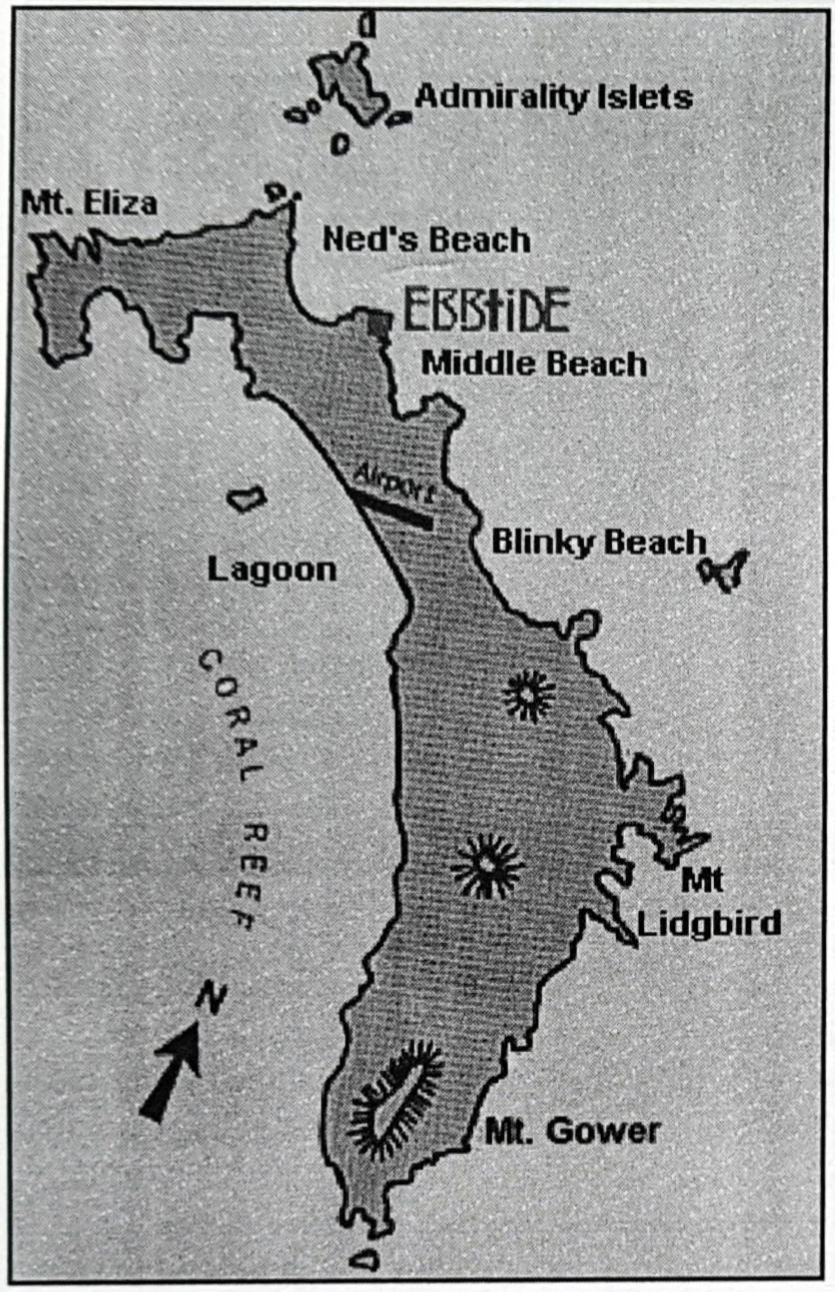
Looking south to the high peaks (875m) of Mts. Gower and Lidgbird.

have been successfully removed from the Island. These important initiatives have greatly reduced the threats to a host of native and endemic plant and animal species. The Lord Howe Island board has also investigated the feasibility of removing rodents from the Island, and has been liaising with our Kiwi counterparts in relation to future rat eradication.

The Island also has a fascinating history and a culture evolved from its isolation and sea trading links with early whaling vessels and other Pacific nations including New Zealand, Norfolk Island, the wider Pacific Islands and mainland Australia. Today the Island is governed by a Board comprising four locally elected Islanders and three appointed mainland representatives including the Chairperson.

Another unique factor of the Island is its current 400-tourist bed limit. This limit ensures an uncrowded and relaxing atmosphere and less pressure and impact on the Islands landscape. The recently adopted Regional Environmental Plan for the Island has in consultation with the local community established a housing limit of a maximum of 25 new houses over the next 25 years. Determining this limit has been a difficult and contentious process. Some people believe that no further housing should be permitted while others feel that any capping is too restrictive and limits the housing opportunity for future generations.

Listing the Island as a world heritage site has meant different things to different people. A visitor survey (Wu. S, Griffith University, 2001)



indicated that four fifths of persons visiting the Island were aware of its World Heritage status and this was a contributing factor for visiting the Island. Whilst most of the accommodation providers promote the Islands World Heritage values, some local people believe that the listing has resulted in another unnecessary layer of bureaucracy. Whilst this would be a minority view, it doesn't come as a surprise given the Islander's history of isolation and suspicion of 'inappropriate regulations and government interference'. Balancing some of these entrenched views and values whilst pushing forward with a range of environmental initiatives often provides for some lively debate! We feel we have been relatively successful in this area by working closely with the local community, often on a one to one basis as a means of building relationships and trust.

Certainly from a financial point of view, World Heritage listing has made an enormous contribution in terms funding for environmental initiatives in the areas of weed control, quarantine, ecological regeneration and restoration and visitor interpretation. It has also generated local employment. My position as Manager of Environment and World Heritage is funded through the Commonwealth while significant dollars have been provided through the Commonwealth Natural Heritage Trust (NHT) program. The NSW State government, through its Environmental Trust program has also provided substantial funding in recent years, particularly in the areas of weed control and quarantine.

Lord Howe Island is an iconic World Heritage destination, come and visit soon.

Welcome back! To the Robins of Great Barrier

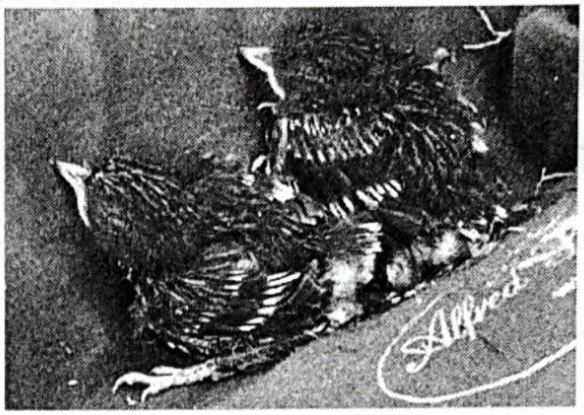
by Rebecca Lewis

The last recorded sighting of a North Island Robin (*Petroica australis*) on Great Barrier Island was back in 1865, since then 30 birds were released last year at Little Windy Hill.

Following a large-scale pest control and re-forestation project at Glenfern Sanctuary the forest was now ready for the return of the robins. In a move instigated by Tony Bouzaid, on the 3rd of April 2005 a team of Great Barrier Island residents sailed to Tiritiri Matangi to capture North Island Robins for release on the Kotuku Peninsula (comprising Glenfern Sanctuary, Kotuku Scenic Reserve, and Orama) in Port FitzRoy.

With the help of a team of specialists from Auckland Regional Council, Tim Lovegrove, Kevin Parker and Anne Kernohan, 27 robins were successfully captured and transported to Great Barrier. Twelve birds were released on the Kotuku reserve and 15 were released by the Okiwi School children in Glenfern Sanctuary.

Rowland Geraghty (ecology graduate from Ireland) spent three months pre-feeding the birds to be translocated then followed them to Great Barrier where he began monitoring the reintroduced population. By the end of June, 23 of the original 27 birds released had been located.



Photography by Rebecca Lewis and Tony Bouzaid

In September the breeding season was underway and 7 pair bonds were identified, 3 residing in Kotuku Scenic Reserve, 2 in Orama and 1 in Glenfern Sanctuary. On September 16th we banded our first 2 chicks and on the 27th of September they fledged to become the first of a new generation of Northern Barrier robins, 13 having fledged at Little Windy Hill last year.

In October Rebecca Lewis (Master's graduate in Ecology from Scotland) was employed to monitor the robins throughout the breeding season. Five breeding pairs continue to be monitored and to date there are 9 banded fledglings. New to both Great Barrier and other mainland island populations of robins was the discovery that one of the breeding pairs had nested on the ground. After a first failed attempt this unusual pair built a second nest also on the ground and successfully fledged two healthy fledglings!

For further information consult the website: www.glenfern.co.nz

Eradicating Rats – What's the pay off?

by Judy Gilbert

The GBIs Trust holds the vision of building an ecology based social and economic framework for this Island through the eradication of rats and feral cats, and the subsequent eco-tourism that would result. The creation of a 'pest free' island of this size would be unique in the world bringing significant social and economic benefits as it has to places like Stewart Island and Lord Howe, that also capitalise on their environmental strengths.

The local pest management projects at Windy Hill and Benthorn farm provide us with an example of what social and economic benefits can accrue from actively conserving our environment. Both these projects are managed under the umbrella of a charitable Trust providing a sound structure for funding and employment. Since the Windy Hill (1999) and the Benthorn Farm (2001) projects began the Windy Hill Rosalie Bay Catchment Trust has raised $332,494 through grants and $163,981 through WINZ subsidised work schemes. A total of $496,475. The bulk of this has been returned to the community in the form of wages. Ten full time positions and one part time position have been created since 1999, a significant achievement in an area of high un-employment. The social benefits of taking unemployed people, some long term, and training them to become conservation professionals can not be underestimated. Jobs that make the most of a passion for the outdoors, hunting, learning about species and the best ways to manage a balance between them, result in

Field Manager Kevin Parsons establishing a rat line on Little Windy Hill.

employees who can maximise previously undervalued skills.

To prepare for an eradication of feral cats and rats from this Island would require a large work force — work would focus on such things as establishing quarantine procedures, pre-eradication monitoring (finding out what we've got), assessing areas for hand-baiting versus aerial baiting, pre-trialling non-toxic baits etc. Post eradication mop up of feral cats alone would take a team of a dozen field workers up to five years. There will be jobs aplenty just focussed on the eradication and post eradication requirements. The subsequent ecotourism that would result as the Island is marketed on this unique point of difference is unknown at this time but we know from Stewart and Lord Howe Islands that interest in these types of places is high. Current estimates show an increase of 10% in visitors at Stewart Island since it was made a National Park.

How we manage volumes of tourists is going to need careful consideration. The aim would be to maximise accommodation and infrastructure across the entire year avoiding the 3-4 week summer peak. Marketing the Island to niche groups such as wildlife lovers, bird enthusiasts, hikers, and adventure seeking international tourists would achieve this as their interests can be provided for throughout the year. Offering a range of activities for different ages, interests and costs is also important. At the same time we need to plan to ensure we do not loose the lifestyle we enjoy nor negatively impact on our environment — that in itself could create a few jobs.

Work creation is a cornerstone of any economy and its social wellbeing — I can see no other immediate path for Great Barrier that has such potential to radically change the environmental, social and economic fabric of this place as making this Island rat and feral cat free.

The GBICT has now the beginnings of a website. A precence in cyberspace. Hopefully it is the beginning of a more accessible portal into our world for those removed from GBI. The site is still under construction but you are welcome to visit at : **www.gbict.co.nz**

• Thanks to the **Biodiversity Advice Fund** and the **ASB Charitable Trust** for their support'. •

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A clutch of robin eggs - Glenfern Sanctuary Photo: Tony Bouzaid

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