



• Nicola McDonald, Chairperson of the Ngati Rehua Ngati Wai ki Aotea Trust Board and Chris Howe, Conservation Director (NZ) for World Wildlife Fund cut the Taiko welcome cake.

Table 1: "Guestimates" of the 2015 status of some indigenous birds on Great Barrier, by the author. Those with some reported numerical data are in bold. Note: Bellbirds could be in Column 1 if they could get established, but in the absence of effective rat control they appear to be transient visitors only.

Stable or increasing	No data or conflicting evidence	Probably declining overall – or at risk of rapid decline if pest-control measures cease.
Tui Kaka New Zealand dotterel Grey-faced petrel Morepork Harrier Pukeko	Kereru Grey warbler Fantail Shining cuckoo Long-tailed cuckoo Robin (re-introduced) Banded rail White-fronted tern Banded dotterel Reef heron White-faced heron	Tomtit Kakariki Pipit Bittern Brown teal/pateke Spotless crake Fernbird Black petrel/taiko Cook's petrel (on GBI) Wrybill Caspian tern Grey duck (extinct on GBI)



Great Barrier Island
ENVIRONMENTAL TRUST
love · protect · restore | aroha · puapua · whakahaumanu

ENVIRONMENTAL NEWS



Rakitu Review • Central Bird Exchange Black Petrel Conservation In Focus Community Conversations Back of the Envelope Calculations



ENVIRONMENTAL NEWS

Editorial

Great Barrier Island on the Map?

BY JOHN OGDEN



I came back from Australia at the end of October to a pile of mail. At first I thought a lot of it was very positive – everyone from the Local Board to the Minister for Conservation and the local MP seemed to have the pest problem on Great Barrier on the radar:

- A new Regional Pest Management Strategy up for comment;
- “Building the Aotea Conservation Park” from Nikki Kaye;
- Maggie Barry backing Community initiatives for pest control in Northland;
- DOC’s “Ridge to Reef” seminars well advertised (and subsequently well attended);
- The first Report from the “Community Conversations about the future Ecology of GBI” presented to the Local Board;
- Publication of a scientific paper based on

COVER PHOTO:

A bar-tailed godwit in non-breeding plumage. Photo by Chris Mills of www.norfolkbirding.com

of the nation, but even allowing for this, the internal re-structuring seems to have fallen very hard on Great Barrier. As a result there is no money for a project coordinator to progress the promised rodent eradication on Rakitu, no money to protect the endangered kakariki and tomtits on Hirakimata, no money for research on brown teal / pateke mortality rates (although a review is in progress), no money to investigate the re-establishment of Cook’s petrel, or monitoring bitterns etc., no money for anything much except rebuilding the infra-structure destroyed by last year’s freak storm and the new visitor centre /office at Okiwi. While that is clearly important, arguably a priority, surely support should not have to come – however indirectly – by cutting local work on biodiversity protection and community relations. I may have got some of this wrong – but that is part of the problem. It is not easy to find out what is being spent on biodiversity without seeming to criticise those at Okiwi DOC endeavouring to get a huge job done with much reduced resources.

One of DOC’s responses to their parlous state nationally is to facilitate community conservation initiatives. While we applaud that, it must not be seen as an alternative to a full-time, properly funded Department, with the capacity to monitor native biodiversity, keep data on trends and initiate both research and appropriate legislation and protective actions. Volunteers can be used to do some of the work, but voluntary organisations cannot provide the long-term continuity required to protect our fauna and flora.

Meanwhile, it appears that DOC’s current Barrier budget will be allocated to track work in the new Aotea Conservation Park. Having a “Great Walk” seems to be the politician’s idea of “recreation to support conservation”, but without pest control the walker’s footsteps will echo through a silent forest. Sadly, this silence

...someone ‘down there’ seems to think that fewer staff can ‘look after’ one of the most significant off-shore islands in the country.

will become the norm; most of the urban visitors of the future will have no idea what has been lost. And it is going on right now - an estimated 86,500 native birds are being lost on Great Barrier Island every year from predation by rats and feral cats (see: “Back of Envelope” calculations and references in this issue). Why have we no resident bellbirds on Great Barrier Island? – that is why.

Table 1 (see back page) contains “Guestimates” of the 2015 status of some indigenous birds on Great Barrier, by the author.

Nikki Kaye got the pests present on Great Barrier wrong, but I can forgive that if the general message came across: the Gulf Islands – including Great Barrier – are special places in need of high levels of protection. Support for Glenfern Sanctuary was a government “commitment to contribute to the proposed purchase”. The “We will save Glenfern” announcement was made by Maggie Barry in April 2015 (see: Environmental News 34). This promise has yet to be fulfilled. Maggie has continued to support rodent control, speaking out in favour of the use of 1080 in Northland forests, which are also losing species (kakariki are the latest

to disappear from there, but as yet nothing is proposed to save the few remaining on Great Barrier).

Toxins like 1080 or brodifacoum are seen by some as a great menace, or at best, an unknown risk. It is right to be cautious because there are known manageable side-effects ('collateral damage'), and possibly unknown long-term effects. Long-term environmental persistence has been studied for all the toxins in use today. No long-term environmental build-up, or other long-term detrimental effect, has been demonstrated, only hugely increased survival for forest birds. Of course what is 'long-term' is a matter of judgement and, as in medical matters, no scientist or surgeon would claim the risk is zero. Aerially applied toxins are all we have at present to control pests over large areas of rugged terrain, and they have been proved worldwide to be the most cost efficient and effective method of pest control. If you visit somewhere where aerially delivered baits have eliminated predators—such as Hatuturu (Little Barrier) or Tiritiri Matangi Island – you will see and hear the benefits immediately.

Although new technology is likely to overtake these methods, we cannot afford to wait as several already 'at risk' bird species are declining (Table 1). New technology research is being spearheaded nationally by a group here on Great Barrier – with support from the Local Board. The Glenfern team have developed a "trapminder" system which senses when a rat enters a trap or tunnel, and sends an electronic message to the "cloud". This server accumulates the data and can be accessed at any time from a home computer or smart phone, so you can see if you've caught anything without actually getting out to have a look. While this might seem a small advance, it is crucial because it allows instantaneous calculation of trapping efficiency and should greatly reduce the time spent on checking traps,

and thus the person-power costs.

Unfortunately all the hype about Conservation Parks, protecting biodiversity, and community consultation, is not being reflected in action on the ground. This is not the fault of local DOC staff, who need more support from all of us to regain their capacity to protect the Island's taonga – forest ecosystems, birds and reptiles. As we enter 2016 the Trust and the Great Barrier community are looking for evidence that this island is indeed on DOC's map. The new Conservation Park warrants more than seven dedicated staff to deliver the stated goal of the Conservation Management Strategy (CMS)—a pest free island where kokako, black petrel, pateke, kakariki and other species thrive.

The sad bottom line: so far as I can determine from the available data—all the species which were declining ten years ago are probably still doing so.

REFERENCES

¹ Perry GLW, Wilmshurst JM, Ogden J & Enright NJ. 2015. Exotic mammals and invasive plants alter fire-related tipping points in southern temperate forested landscapes. *Ecosystems*. DOI: 10.1007/s10021-015-9898-1 (Springer Verlag Science + Business Media. New York. July 2015).

Central Bird Exchange

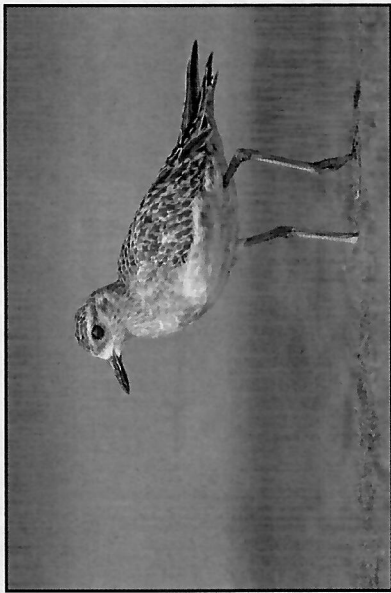
Whangapoua Estuary and Okiwi Spit in focus

BY JOHN OGDEN

In November this year I took a group of visitors attending the "Love Birds" weekend to Whangapoua Estuary and Okiwi Spit. The spit encloses the most significant wetland ecosystem for waders and ducks on Great Barrier Island. In a few hours there we saw a large flock of bar-tailed godwits (94!), a small group of Pacific golden plover, nesting pairs of New Zealand dotterel and banded dotterel, variable oystercatchers, terns and gulls.

The Whangapoua ecosystem comprises three parts: (1) the swamp system; (2) the tidal mud-flats and mangroves, and (3) the sand-dunes forming the spit. The swamp system has been formed by sedimentation and plant growth filling the inner part of the estuary, and is zoned with various species of sedges and rushes, and manuka further back. Most of this area was open water when the first waka arrived here about 750 years ago. The present mud-flats are being colonized by mangroves as this in-filling process continues. The spit mostly represents sand accumulation since sea-level reached its present level c. 6000 years ago.

The swamp system is mainly fed by freshwater streams and occasional very high tides. The dense vegetation cover is the home of bitterns, spotless crane and fernbirds, and a nesting area for pateke/brown teal. Sadly the last certain recorded bittern nesting here was in 1981¹, and spotless crane have not been heard here for many years either, but both species are probably still present occasionally or resident in small numbers.



• Pacific Golden plover Photo: Duade Paton

In contrast at low tide the estuarine mud-flats are covered in birds. As the tide enters and leaves the estuary every day it brings with it millions of marine organisms, which are fed on by worms and mollusks (formerly mussels and pipi, now mainly cockles) in the mud. These in turn form a rich food source for wading birds, which come here to fatten up again after breeding or before long overseas flights. In the winter there will be New Zealand dotterels, banded dotterels, variable oystercatchers (plus the occasional South Island pied oystercatcher), brown teal, and maybe a few long-legged godwits and pied stilts. The estuary is the main stronghold for brown teal on Great Barrier, and is actively managed by the Department of Conservation (DOC) to protect this species. Rarities such as sand dotterels, whimbrels and sandpipers may also be present, perhaps with a tiny wrybill or two. All these have been seen at low-tide from the DOC campground, though binoculars are essential for certain identification.

We can recognize three groups of birds feeding on creatures in the mud; (1) locals;

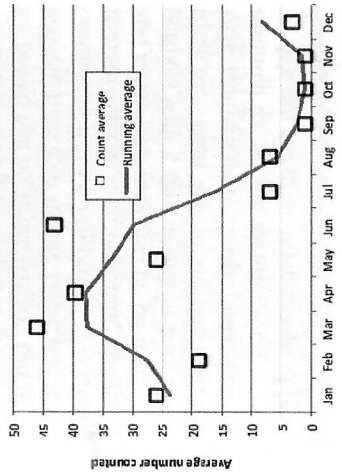


(2) visitors from elsewhere in New Zealand, and (3) overseas migrants.

Locals are present all year, but their abundance varies seasonally. For example nearly all Great Barrier's New Zealand dotterels, and many of the oystercatchers too, come to Whangapoua after breeding, and disperse again to their breeding beaches in September though a few stay and breed on the spit. There are usually approximately 60 New Zealand dotterels crouched against the wind on Okiwi Spit at high tide in the winter months¹.

New Zealand visitors are mainly from the South Island – pied oystercatchers, banded dotterels, and wrybills. The one or two pied oystercatchers are hard to distinguish from some pied versions of the variable oystercatcher. Banded dotterels in winter plumage are like small versions of winter N. Z. dotterels; on average there are 40 – 50 present in March and April (fig 1) but only a few pairs stay on to breed, when their black and orange chest bands distinguish them from New Zealand dotterels. Wrybill numbers have declined drastically – to zero in 2015. This is almost certainly a consequence of breeding failures on their nesting grounds – the braided rivers of the eastern South Island. As dairying takes more water from the rivers, the gravel bank islands on which they nest become accessible to stoats, cats and rats, and also get invaded by weeds such as lupins in which the predators can

Fig 1. Banded dotterel monthly data Okiwi Spit 2000 - 2014

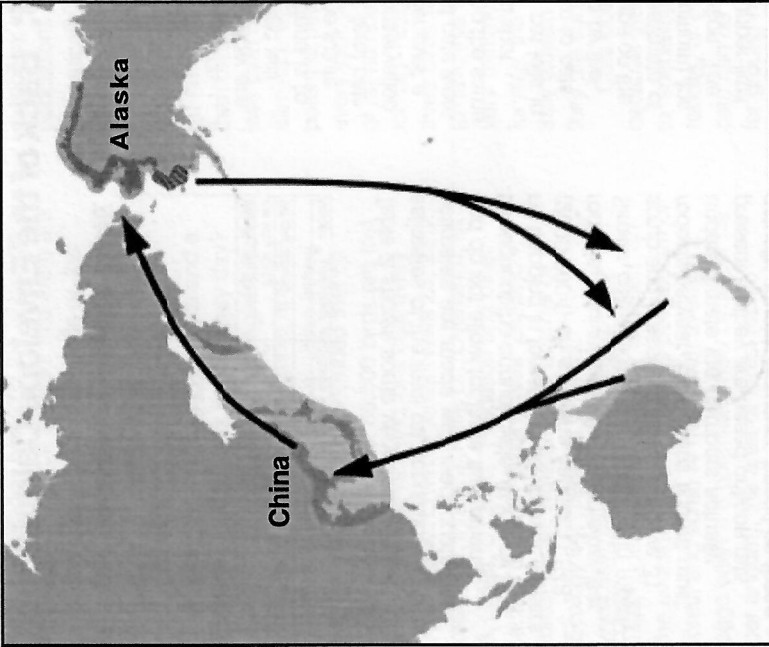
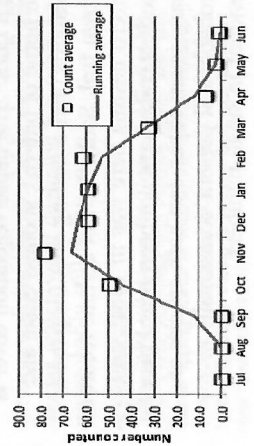


hide. (see: "Wrybills disappearing from Great Barrier". Environmental News 34, Summer 2015).

The overseas visitors are especially interesting. Bar-tailed godwits or kuaka arrive in New Zealand usually in September, having flown non-stop from Alaska. This is the longest flight of any bird – over 11,000 km – taking about 9 days, without a stop for resting or feeding! (See also www.teara.govt.nz/map/9184, or google bar-tailed godwit migration). The Whangapoua flock usually arrives in October or November, and up to sixty spend the summer feeding on the estuary (fig 2). By the time they depart again in March or April, a few of them are in their fine orange breeding plumage. Although only a dozen or less, the Pacific golden plover follows a similar pattern, most arriving in early summer and departing in early April – some in their magnificent gold and black spangled summer plumage. The migration route of these birds – which also nest in Siberia and Alaska – is less well known, but some certainly cross the Pacific, probably stopping off in Honolulu on the way! Other migrants such as curlews and whimbrels turn up occasionally, probably blown off course from Australia.

The best time and place to see these birds is near the end of the Okiwi Spit at high tide. Because the mud-flats are flooded the waders come onto the spit for a rest, usually grouped together by species. There are often flocks of white-fronted

Fig 2. Bar Tailed Godwits in different months, Combined 2000-2014 data Okiwi Spit.



• Flight paths of bar-tailed godwit, kuaka, from nesting sites in Alaska to feeding sites in New Zealand and back. The non-stop direct trans-pacific flight is c. 11,000 km, and achieved in 8 or 9 days. The return flight via Australia and the Yellow Sea takes longer, and there are some vulnerable refuelling stops. See Woodley, K. 2013. Bar-tailed godwit. In: Miskelly C. M. (ed.) New Zealand Birds on Line. From: www.teara.govt.nz/Gear/Hutching. 'Wading birds - Bar-tailed godwits', Te Ara - the Encyclopedia of New Zealand, updated 31-Mar-15 URL: <http://www.TeAra.govt.nz/en/map/9184/bar-tailed-godwits-migration-route>. Source: A. C. Riegen. Movements of banded arctic waders to and from New Zealand. Notornis 46, part 1, March 1999: 123-142.

terns and a few much larger Caspian terns. The latter are endangered in New Zealand but a few pairs nest around Great Barrier. There are usually a few red-billed gulls and large black-backed gulls with brown juveniles too.

In conclusion, the Whangapoua estuary is a very significant feeding place for many birds, at risk from predators in New Zealand, or from development in nesting grounds or along migration routes. The number of New Zealand dotterel overwintering there alone make it a site of international importance under the 1971 Ramsar Wetlands Convention (www.ramsar.org). Clearly the estuary and spit have 'international significance' for bar-tailed godwits and Pacific golden plover, not to mention our unique endemic wrybill – which has no overseas ticket.

ADDENDUM:

If you spend much time on Okiwi Spit you'll find dead birds too – wrecked on the beach after storms and often subsequently beheaded by feral cats. Penguins, fluttering shearwaters and tiny diving petrels are the most frequent. Just out to sea is Arid Island (Rakitu), where these birds may be nesting. If only the Department of Conservation would rid the island of rats we could expect these birds, and many other sea-birds to form nesting colonies on the Island.

REFERENCES:

- ¹ Ogle, C. C. 1981 Great barrier Island Wildlife Survey. *Tane* 27: 177-200. See also: Geary, A., Corin, S. & Oden, J. 2012. Monitoring Report. Australasian Birtn. GRBO 22380.
- ² Oden, J. & Dowling, J. E. 2013. Population estimates and conservation of the New Zealand dotterel (*Charadrius obscurus*) on Great Barrier Island, New Zealand. *Notornis* 60: 210-223.

CATS and RATS: Back of the Envelope Calculations

BY JOHN OGDEN

In going to into battle it is always good to know the size of the opposing army. The data are usually difficult to get, but some estimate is required. The tables below are very much 'first approximations' and will need much improvement if the island is to tackle the predation problem in the future.

Table 1 documents that 1151 feral cats (958+193) were destroyed by conservation efforts in two areas of Great Barrier over a ten year period. (At least 300 feral cats were shot by Alan Gray at Awana during the same interval, and others were trapped/shot elsewhere). Using mean annual cat kills in the two locations, converting them to cats killed per hectare, and multiplying by the total coverage of the vegetation type on the whole of Great Barrier gives an estimate of 854 (641 minimum to 1067 maximum) for the whole-island feral cat population. The true figure may be closer to the upper limit, as minimizing assumptions have been made in the calculations.

Table 1. Estimates of feral cat numbers on Great Barrier from data at Windy Hill and Okiwi Basin.

Years	ANNUAL CATCH OKIWI	ANNUAL CATCH WINDY HILL	No per ha* OKIWI (grassland & dunes)	No per ha* WINDY HILL (Scrub & indigenous forest)	Total Annual for grasslands & dunes on CBI**	Total Annual for scrub & indigenous forest CBI**	TOTAL FERAL CATS - ALL ISLAND
2005	128	32	0.13	0.04	306.18	1036.12	
2006	84	27	0.08	0.04	200.93	874.22	
2007	84	22	0.08	0.03	200.93	712.33	
2008	103	11	0.10	0.01	246.38	356.17	
2009	99	9	0.10	0.01	236.81	291.41	
2010	126	10	0.13	0.01	301.39	323.79	
2011	95	10	0.10	0.01	227.24	323.79	
2012	91	33	0.09	0.04	217.67	1068.50	
2013	69	21	0.07	0.03	165.05	679.95	
2014	79	18	0.08	0.02	188.97	582.82	
Totals	958	193			220.15	624.91	854
Mean Annual	95.8	19.3	0.10	0.03	45.90	299.12	
Standard dev	19.2	9.2	0.02	0.01	28.30	184.45	213
95% C. L.	11.8	5.7	0.01	0.01			
					Upper 95% Confidence lim	1067	
					Lower 95% Confidence lim	641	

* assumes Okiwi effectively covers 100ha; WH, 750ha.

** Scrub + Forest = 2428ha; Grassland+dunes = 2392ha. Landcare data basez.

Table 2. Estimates of total rat population

	Rats/ha (estimate)	"Equivalent vegetation" Area for whole island.	Total rats
Windy Hill data	6.4	24284.99	155423.936
Awana data	31	3074.36	95305.16
Whole island			251,000*

Note: * previous estimate was 286,000

Table 2 shows some very approximate estimates of the total rat population. These estimates are made with inadequate data and do not allow for large fluctuations throughout the annual cycle. At Windy Hill, rat trapping in forest and scrub over 4 years (2000-2004) on c. 450ha caught 11,548 rodents, equivalent to 6.4 rodents/ha/year. Similar calculations from trapping in mostly scrub and grassland at Awana gave 31 rodents/ha/year. Both these figures must underestimate the numbers actually present as they are based only on rats actually caught. However, based on these figures and multiplying by the areas of

similar vegetation types on the island, as a first approximation it appears that there are at least a quarter of a million rats on the island. To judge from annual fluctuations at Awana and Windy Hill, this could rise to a million during the autumn peak.

What are a thousand feral cats and a quarter of a million rats eating every day? The annual totals are staggering! Based on the carefully researched figures and the minimizing assumptions of John Innes and others, in 2012 I concluded that on Great Barrier at least 86,500 birds are lost to predation by rats and feral cats every year. (see: Environmental News 28, 2012, based on: Innes, J., Kelly, D., Overton, J. M. & Gillies, C. 2010. "Predation and other factors currently limiting New Zealand forest birds". *New Zealand Journal of Ecology* 34(1):86-114. View at: www.newzealandecology.org.nz/nzje/). That huge figure for mortality is based on the average number of nests per hectare of forest and scrub (4 nests with average 2 eggs each = 8 potentially new birds per ha per annum), the area of forest /scrub (24,294 ha); the percentage failure rate (73%) and the percentage of those failures due to predation, mainly by rats (61%). Thus: (((24294 x 4) x 0.73) x 2) x 0.61) = 86,545

As I said in 2012 the actual figure means diddleysquat, but even if the true figure is only 10% of that estimate, there would still be nearly nine thousand birds lost to predation every year. This is why so many of our bird species are facing

Table 3. Diet of feral cats assuming they eat the same species and proportions as domestic cats on Great Barrier Island (from data in Petscan 2000).

Diet item	No per month by 132 cats, from Petscan	Killed per cat per day	Kill /yr in grassland	Kill/yr in forest	Total feral cat kill per annum	% total rat population	Total domestic cats kill per annum	% total rat population
Rodents (rats)	233	0.0630	5272.744	14379.186	19652	6.9	3037	1.1
Mammals (rabbits)	65	0.0176	1470.937	assume zero	1471		847	
Non-native birds	33	0.0089	746.783	assume zero	747		430	
Lizards	18	0.0049	assume zero	1110.838	1111		235	
Native birds	17	0.0046	assume zero	1049.125	1049		222	
Insects	15	0.0041	assume zero	925.699	926		196	

Table 3 is based on an (Continued on page 16)

extinction, and also why bird populations seem to recover so dramatically when predators are eliminated by toxin drops.

Another way of thinking of the figure is to say that if my estimate of rat numbers (251,000) is correct, then on average one rat needs to eat less than one egg (0.34) per year to eliminate eighty-six thousand potential new birds on Great Barrier every year. Again, even if my estimate of rat numbers is way off – say 90% too big – each rat only has to destroy three birds (eggs or chicks) per year to have that effect. Thus, even with very minimum estimated numbers for rats, the figures are staggering, they explain what is happening, and they are surely cause for concern.

Cats pose another problem because individuals have a tendency to 'specialise' in rats, or lizards, or rabbits, or birds. The bird-specialist cats can be particularly devastating for ground nesting birds, such as the black petrels on Hiramimata. Some showed that mammals (rabbits, rats) were their main diet (rather than brown teal). The data on Great Barrier domestic cats, collected in the Petscan Survey in 2000, can be used to give an idea of cat diets on the island.

Rakitu /Arid Island Rat Eradication

Slow progress towards an important outcome

BY JUNE BROOKS

The GBLET Environmental News last visited the subject of Rakitu/ Arid Island in the 2012 summer edition. Since then there has been a significant Dept. of Conservation Ministerial announcement concerning the ecological enhancement of Rakitu – the proposed Rakitu Rat Eradication Programme

The former Minister of Conservation Nick Smith announced a pest eradication programme initiative for Rakitu/Arid Island in a press statement dated 8 September 2013. Rakitu was recognized as a tremendous opportunity for island restoration which even the Government seemed to support. The announcement was welcomed by many people. It was anticipated at that stage that there would be 2-3 years planning for the initiative. The Minister also stated he would be “...making a commitment with \$190,000 from the Nature Heritage Fund to rid Rakitu of rats.”

The pest eradication programme planned for Rakitu was confirmed by the Department of Conservation in 2014 in public forums and planning seemed to be well under way.

It now appears that the planned DOC pest eradication programme for Rakitu has been significantly delayed. The causes we have managed to confirm are:

The 2013 Restructure and June 2014 Storm and Floods

The 2013 DOC restructure and the June 2014 storm and floods which caused severe damage to the DOC infrastructure on Great Barrier made planning for the rat eradication program “challenging”. It is understandable that there would be some delays after an event of this

magnitude, which has necessitated a major effort to repair and replace DOCs assets on the island.

Staffing

The Department has lost some outstandingly enthusiastic biodiversity staff over the last few years: Halema Jamieson, Joanna Sim, Amelia Geary, Adam Willetts and George Wilson spring to mind. One of the three DOC biodiversity protection positions on Great Barrier has been vacant since March 2014. The reason given for this is the shortage of staff housing and damage to the DOC office complex in the storm. A consequence appears to be that the remaining biodiversity staff are not available to further a pest eradication programme on Rakitu.

Consultation With Affected Parties

The Government purchased Rakitu/Arid Island from the Rope and Foster families in 1993–1994 for \$1.8 million. As part of the sale agreement, nominated family members retained residual temporary occupation rights to the houses on the island and accordingly must be consulted by DOC about the proposed rat eradication programme. One of the family members with occupation rights has raised objections to the methodology proposed for the programme and the Department is having to work through this issue.

The Department has also been carrying out consultations with Ngati Rehua about the rat eradication program. These consultations have been carried out verbally, and there is no public record of the details. The Dept. of Conservation has not carried out any consultation with the Great Barrier community or the wider public to date and has given no indication when they will do so.



• Weka, *Maori hen or woodhen* (*Callirallus australis*) *N. Island subspecies*.

Weka Removal

The main issue which appears to be delaying the implementation of the Rakitu rat eradication programme is the difficult issue of the removal of the North Island weka population present on the island. North Island weka were translocated to Rakitu/Arid Island in 1951 when they were under threat on the mainland. There is now a sizeable population of these birds and young of Weka predate the eggs and young of seabirds and other birds, as well as lizards, skinks, land snails and invertebrates. Their presence is incompatible with the proposed restoration of the island for seabird breeding habitat. They will definitely be put at risk from any aerial rat eradication programme.

DOC Whangarei have been unable to provide any information (as of July 2015) as to when a decision will be made about this issue. Agreement has been reached with the Weka Recovery Group to remove 50 of the birds to an alternative site but no suitable site has been found. It now also appears that the considerable cost of the weka removal is a salient factor in the delay in decision making, and/or that the resources may be employed in other ways.

Scientific and Technical Issues

DOC advised in June 2015 that it was

seeking further scientific and technical advice regarding the proposed rat eradication, particularly with regard to methodology and likely success of the programme. Any planned programme implementation will be on hold until this (unspecified) advice is received.

I have been assured by the Director of Conservation Services (Acting), DOC Northern North Island, Andrew Baucke, that the promised funding of \$190,000 for the Rakitu Rat Eradication Programme has been kept aside by the Nature Heritage Fund specifically for this project. This is reassuring to hear.

Planning and implementation phases for the programme were originally to have been completed by the 2014/15 financial year. Planning (and implementation?) has now been deferred until the 2016/17 financial year. However the Department noted that this date is dependent on:

- The relocation of weka
- The assurance that all relevant consultation had been undertaken
- The new DOC office at Okiwi being completed (June 2016)
- The recruitment of a full staffing structure (approval obtained for Supervisor role including biodiversity responsibilities)
- The priority given by DOC to the rebuild of the Aotea Track (planned completion June 2016).

If planning for the removal of weka is halted now, and not recommenced until 2016/17 we are likely looking at further delays. The weka question can surely be addressed now, and a new biodiversity ranger appointed with responsibility for planning the eradication, even if he/she is not immediately based on Great Barrier. The eradication of rats from Rakitu, associated with improved access will have enormous spin-off for conservation on Great Barrier and should not be put on the back-burner.

Black Petrels:

Winner or Loser in the Conservation Game?

BY KATE WATERHOUSE

On 27 October 2015, Sanford CEO Volker Kuntzsch addressed the Hauraki Gulf Forum's State of Our Gulf Seminar in Auckland. He opened with a picture of himself holding a black petrel chick – inconceivable five years ago when before the same audience, seabird scientist Matt Rayner presented his grim assessment of the risk for black petrels from fishing. The picture he painted then was one of a bird headed for extinction and led us to found the Black Petrel Action Group. Kuntzsch went on to offer to stop commercial fishing in the Hauraki Gulf, which grabbed headlines nationally. But he also said he was glad the black petrel population had stabilised – when in fact the evidence indicates a long-term trend of decline.

This article summarises recent research on black petrel (taiko) for 2014/15 and explores the indicators for long term population decline, looks at the impact of cat predation, and current efforts to reduce the deaths of black petrels through fishing. Finally, we ask the critical question: what more should the Department of Conservation (DOC) be doing to protect this iconic bird?

An average season but habitat literally slipped away and there are worrying trends

This year GBIET secured \$15,000 from Auckland Council for ongoing research on taiko breeding site distribution and population, carried out by taiko expert Elizabeth Bell and the team from Wildlife Management International (WMIL). Bell has been working on Hirakimata (Mt. Hobson) monitoring black petrels as they



• Massive slip on Hirakimata above the Mt Heale hut. Photo: IslandStay

return, breed and fledge chicks since 1996. The team monitors burrows throughout a 35-hectare study area all over this rugged terrain, banding chicks and adults, logging returning juveniles and breeding birds.

Bell reports that breeding success (a fledged chick) was 70% in the study burrows compared to an average of 74% since 1996 – a declining trend despite the number of burrows used for breeding increasing this year. This finding is concerning as all birds reaching the 3-4 year breeding age need to breed successfully for more than 25 years to hold the population stable.

In June 2014, a huge storm wiped out about 15 hectares of black petrel habitat – visible now as massive slips on the SE face of Hirakimata. Some new burrows were found in the study area and elsewhere as a result, possibly dug by displaced birds

trying to find a new home, and fights arising over some burrows.

Fewer returned 'chicks' were caught compared to last season despite two intensive search periods with trained seabird dogs. Adult survival was higher than in the past, but juvenile survival (for birds 2-5 years old) was much lower. Bell thinks it's likely that survival of chicks younger than two years is even lower; many do not survive to return to the colony. Of the 2500 chicks banded, only 204 have so far returned (others may have returned but not been recaptured).

Seabird specialists are concerned that the population may "go off a cliff" as breeding age birds die (the oldest recorded is 29 years) and the population is not sustained by returning juveniles.

On Little Barrier (Hauturu), search teams located 90 out of 97 burrows last monitored by researcher Mike Imber in 1997. Breeding occupancy in these burrows was 29.5% (compared to 40% in 1997) and another 13% had been taken over by Cook's petrels. Twenty-five acoustic devices across Hauturu resulted in 4-230 hours of recordings. The incidence of taiko calls is low and tells us that Hauturu black petrels are likewise not doing well. Hirakimata remains the most important colony.

Getting around – are there black petrels in our back yards?

In early 2015, searches by Jo Sim and her seabird dogs Maddi and Rua covered Glenfern Sanctuary, Windy Canyon, Maungapiko, Whangaparapara, Te Ahumata, Coopers Castle and other areas. They detected active black petrel burrows at all sites, but predators had been there first in many cases. While reassuring to find birds away from the main colony, it was very frustrating to see so much evidence of feral cat impacts. Dead adult birds had wounds from claws or teeth and remains of fledging chicks were found



• Feral cat predated black petrel on Hirakimata. Photo: Biz Bell

along tracks or outside burrows. Bell reports that there was plenty of evidence of rat predation – eggshell fragments and remains of chicks with rat teeth marks. Disused burrows were also seen, suggesting taiko have been extirpated by rats and feral cats.

In "Bugger" ("Weaving the Strands' June 2015), Hauraki Gulf Forum Chair John Tregidga told the story of a chick killed by a cat at Windy Canyon. WMIL host many such visitors, this year including schools (Okwiwi and Mulberry Grove), commercial fishing crews, industry leaders, a Labour MP Jacinda Ardern and media. Coverage of the visits was carried by TV3 and Maori TV news, the New Zealand Herald and Professional Skipper magazine.

In mid-November, a large gathering at Windy Canyon welcomed back the birds to Hirakimata. The airfares for Southern Seabirds Solutions (SSS), NGOs and visiting fishers totalled more than the \$1,700 budget DOC had for cat control in the colony. The visit was just after two adult birds were discovered killed by a cat. Every breeding adult counts when there are 1200-1500 breeding pairs left. Cats are the biggest terrestrial threat to taiko, so the Trust asked the Minister to urgently look at a solution to control cats in the colony. Minister Barry's response was

disappointing – no funding for cat control this year from DOC – and contained some flawed interpretations of the threat.

Bell feels she was misquoted in the Minister's response, which focused on the few cat predation events in the study area, and the low cat catch-rate. DOC may think it is doing enough and traps on the colony are not needed, but the data on which this thinking is based only includes Bell's study burrows. Elsewhere in her report, cat predation is detailed for other burrows. She told us: "I've always said that cat trapping on Hiramakimata should occur pre-season (Sept-Oct) and pre-chick fledging (April-May) ...this is the most valuable use of funding and personnel time". Bell will now create a dedicated section on cat predation in her reports, highlighting the recommendation she makes every year about continuing cat trapping at these times.

Feral cats killing black petrels: the real story

Cat trapping began on Hiramakimata in 2011/12 when four cats were caught. Amelia Geary, the then Biodiversity Ranger on Great Barrier, set up traps on tracks around the summits of Hiramakimata and Mt Heale with annual funding of around \$4,000. In 2012/13 and 2014/15 no cats were caught and in 2013/14, just one cat was caught – which does not necessarily mean an absence of cats with factors at play such as difficulty in keeping bait fresh (cats like fresh rabbit), other baits used being less successful, and rats eating bait. Bell believes that DOC's trapping to protect pateke/brown teal in Okiwi (below Hiramakimata) has reduced cat numbers on the mountain. She believes feral cats from Okiwi travel up the mountain at fledging time to target chicks before they can fly. She supports the continuation of the Okiwi basin cat trapping programme but not as a replacement for protecting taiko breeding on Hiramakimata.



• *Black petrel on the wing over Hauraki waters. Photo: nzbirdsonline Phillip Griffin*

How did DOC come to cease funding black petrel protection on GBI?

What we are seeing here are the consequences of current government policy for a vulnerable species in a unique, nationally significant ecosystem. We have a collaborative response from fishers, scientists, iwi, NGOs and conservationists, a local DOC office trying to do the right thing, and a community motivated to help. What could go wrong? The answers, overwhelming numbers of cats and rats and diversion of DOC's Great Barrier biodiversity budget to "The Battle for the Birds" (1080 drops over South Island Beech Forests in 2015).

Hiramakimata is a key biodiversity site for the Aotea Conservation Park. However there's something very wrong with prioritisation at the regional level when it has no funding, manpower or a volunteer programme for predator control. For this reason, GBIF had already applied for funding to begin cat and rat control on Hiramakimata under a project called Friends of Hiramakimata. A big hurdle for a voluntary trust is the capability to manage the health and safety of volunteers or employees. The opportunity for partnership is clear, but DOC has not replaced the vacant partnerships officer role which could make this happen. We understand that local staff understand the need for, and preferred timing, of trapping and want to begin it again – but budget must be found.

Changing fishing practices continues to prevent black petrel deaths

On the positive side, Bell says it has been fantastic to involve the fishing industry. Raising the profile of black petrels helps fishers relate to what they see at sea. She is getting information directly from fishers, including sightings of black petrels and the problems fishers have with birds diving on baited hooks.

The effort going into changing fishing practices is encouraging. In October 2014, this culminated in fishers, NGOs, government, iwi and others pledging collaboration to help black petrels and other seabirds thrive alongside fishing in FMA1 (North Cape to East Cape). The pledge includes measurable targets and milestones that organisations report on annually. Three work streams back up the pledge: commercial fishing, recreational fishing, and working with mana whenua (Ngati Wai, Ngati Rehua and Ngati Manuhiri). Actions government has taken include the appointment of two seabird liaison officers, roll out of vessel specific seabird management plans, mitigation monitoring and adherence checks, seabird training workshops and ongoing education. We are still waiting on a measurement framework to demonstrate where in the fleet this effort has been successful.

Southern Seabird Solutions (joint funded by MPI, DOC, WWF and industry) continues to target recreational fishers with the seabird smart message. This is challenging because there is little knowledge of the extent of the problem, a huge range of fishing methods, few known mitigation options, and a large, disparate sector. Trustee Emma Cronin has been working for Forest & Bird in this area on Aotea and boat ramp surveys continue via MPI.

It is incumbent on MPI and DOC to embed actions to protect black petrels in fisheries management and annual budgets. The next priority is to understand

juvenile mortality when taiko winter in the east Pacific, and to increase engagement with the fishing fleets that operate there. Janice Molloy of SSS has been helping MPI and DOC on this front but we await a specific, outcome focused plan.

Future moves for taiko conservation

Bell's team are doing more GPS tracking of birds to determine where and when they feed to understand overlaps with fishing fleets. Differences in food availability during the El Nino/La Nina oscillation is another issue Bell is keen to explore. Birds today are lighter than in 1996 with average bird weight falling over time. Birds were about 900-1000g in 1996 vs. 690-700g weights being recorded now.

Key research gaps are to understand the reasons for this difference, and why so few young birds return to the colony to breed.

As we go to print, the Trust is using a grant from the Great Barrier Local Board to set up a stop-gap trap network around Hiramakimata before chicks leave their burrows in March. This trapping will help protect the main colony, but won't stop the levels of predation found by Bell's team, there and in other sites across Aotea.

Taiko has moved the Chief Executive of one of our largest fishing companies. Let's hope that Sanford's enthusiasm is shared and that budgets and resource for DOC on Great Barrier start to reflect the importance that iwi, our community, MPI, and the Black Petrel Working Group are now placing on its survival.

REFERENCES:

- Elizabeth Bell, personal communications 2015
- Black Petrel Population Research 2014/5 season, WWIL (see DOC website for details)
- Report of the Black Petrel Working Group, September 2015 (Southern Seabird Solutions)
- ByCatch Bylines, Department of Conservation, Jan 2016.

DONATE for black petrel conservation – search for Great Barrier Island Environmental Trust at: givealittle.co.nz

Welcoming and protecting the taiko: a personal reflection

by JOHN OGDEN

The Trust has published four pieces on black petrel or taiko (*Procellaria parkinsonii*) in Environmental News since 2011 (Issues 27, 30, 32 and 33). They represent a lot of behind-the-scenes work by trustees Kate Waterhouse and Emma Cronin, and some up-hill foot-slogging by others including Sue Daly and Emmy Pratt. Our Acting Chair Emma Cronin has even visited fishing communities in Peru to talk to local fishermen and schools to share the remarkable journeys made by these birds amongst their children. So, through raising awareness and lobbying the industry and ministry officials, the Trust can take some credit and satisfaction from the "Welcome Back Taiko" event which occurred on HIRAKIMATA in late November.

On Friday November 20th about fifty people climbed beyond Windy Canyon to the sound of the welcoming haere mai from Ngati Rehua drifting through the cloudy forest. This was a wonderful and moving experience, formally recognizing for the first time, the significance of the annual return of taiko (black petrel). These amazing sea-birds travel each year from the coastal waters of Peru, 10,000 kilometres, to their home nesting burrows on HIRAKIMATA (Mt. Hobson). You can hear their calls at night on the island as adults return to and leave the colony to feed. One male bird, on burrow preparation duties, was hoisted out by Biz Bell's skilled (and gloved!) hands and shown to everyone, while the pupils from Okiwi School sung their quiet Maori song of welcome.



• Biz Bell, Team leader of ecologists Wildlife International introduces a HIRAKIMATA local to the gathering.

The event was jointly organized by Southern Seabirds Solutions and Ngati Rehua Ngati Wai ki Aotea. The Tangata Whenua welcomed manuhiri representing the World-Wide Fund for Nature, Southern Seabirds, Hauraki Gulf Forum, Forest and Bird, the Local Board, Okiwi School, media representatives and others. Representatives from the Gulf fishing industry were also present and explained how they now educate fishing staff, and have measures in place to prevent black petrel mortality while fishing. Many of them have visited the nesting birds on the mountain. Biz Bell spoke about the lifecycle of Black Petrel, and Rebecca Gibson mentioned the Dept. of Conservation's role in cat trapping on the mountain and in Okiwi basin. I briefly outlined The GBI Environmental Trust's desire to see more active volunteer work on pest control for black petrel protection. The korero was concluded by Rodney Ngawaka stressing the significance of the mountain to Tangata Whenua and their desire to see increased petrel numbers and a functional food-chain supporting them.

All participants showed awareness of the importance of Aotea's birds, reptiles and plants that make up the ecosystem of HIRAKIMATA. The event emphasises the role of seabirds in our forests and the annual cycle of life in a forest, with trees flowering, birds arriving, nesting and leaving, at different times of year. Ceremonies such as this were once a feature of human awareness of our role in nature and it is good to see this return to Aotea.

This welcome to taiko was a very positive step – a milestone along the way to halting the decline of this bird, which is really Great Barrier's most iconic species. Apart from a few on Hauturu / Little Barrier Island, it nests nowhere else – Aotea is its island. Sadly predation of chicks and breeding adults by feral cats continues – two adult birds are known to have been dragged from burrows and beheaded already this season (see photo). With a dry summer expected, allowing more feral cat access to the upper (usually wet) forest, the prospects for the birds are not good. The GBI Environmental Trust will initiate a trapping program and are seeking the cooperation and blessing of Ngati Rehua / Ngati Wai ki Aotea, management support from DOC, and help from volunteers. So let us know if you are fit and willing to help.

Back of the Envelope Calculations

Continued from page 8

assumption that domestic and feral cats have similar prey. This is unlikely to be correct, but it provides a first approximation to the slaughter caused by feral cats. Note in particular that the estimate of birds killed by feral cats (1049 + 747 = 1796 per annum) is probably a large underestimate, as feral cats are presumably better at this form of hunting than domestic cats. Moreover, as noted, specialization on particular 'easy prey' species can have devastating effects.

Feral cats must catch all their own food, and feed their kittens. Even if their predation is the same as the domestics (and it is almost certainly greater), they would be killing over 1000 native birds/year, and even more reptiles. By the same calculations they would also account for possibly 19,652 rats, which seems like a lot, but is only 7 or 8% of

the estimated total rat population.

Many studies show that the rat population must be consistently reduced to less than 30% tracking tunnel visits per night to protect native birds. (The Dept. of Conservation uses a figure of 5% tracking tunnel visits as the guideline for bird re-introductions). *Without rat control* tracking tunnel percentages at Windy Hill range from a low of 40% to a high of 100% (average c. 76%). A 7% reduction in the rat population by cats may be exerting some control on rat numbers, but will not get tracking-tunnel percentages down to a level at which birds benefit. In any case there is also direct predation on birds by cats. Simple observation and ecological theory indicate that carnivorous mammals rarely reduce their prey by more than 10%, so these figures are much as expected. Cats do eat a lot of rats, but nowhere near enough to benefit birds. Please don't conclude that this means we need more cats!



• Auckland Conservation Board member Taiaha Rodney Ngawaka conducts traditional prayer at the welcome site.

Community Conversations

We are not alone in our polarised opinions.

JOHN OGDEN reviews Jared Diamond's "Collapse – How societies choose to fail or succeed"

Currently an independent study of Great Barrier Island is in progress, with support from the Local Board. You may have seen this mentioned in the Bush Telegraph, or been visited by Shirley Johnson or Marie McEntee who are gathering, and attempting to summarise, community perspectives. Their first report ("Enabling an ecological vision for Aotea-Great Barrier Island: Understanding community perspectives and aspirations" August 2015. Aranovus Research), has been presented to the Local Board, and the second phase of the research, concentrating more on specific stakeholder groups, is commencing.

We often buy into the argument that the community issues we face on this island are unique to us. Not so. Jared Diamond's excellent book "Collapse – How societies choose to fail or succeed" uses the Bitterroot area in Montana USA as a current example of the polarization that occurs in a community as people work towards a shared vision for their environment and future.

The issues he discusses are the same as we have here and made me realize that these are global issues faced everywhere – we are not alone on Barrier. I quote: "The polarization in community is along many axes: rich versus poor, those clinging to a traditional lifestyle versus others welcoming change, pro-growth versus anti-growth voices, those for and against governmental planning, and those with and without school age children. Fueling these disagreements are the issues of a state with poor residents but attracting rich newcomers." Sound familiar?

On rising land values, shrinking school

rolls and limited jobs: "The influx of newcomers, and the resulting rise in land prices, contribute to the plight of Montana schools.... Montana born children are leaving the state because many of them aspire to non-Montana lifestyles and because those who do aspire to Montana's lifestyle can't find jobs within the state." Insert GBI in place of "Montana" and Island for "state" and the statement sounds familiar.

On the issues of governance: Like rural communities in general, "Montanas tend to be conservative, and suspicious of government regulation. That attitude arose historically because early settlers were living at low population density on a frontier far from government centres, had to be self-sufficient, and couldn't look to government to solve their problems. Montana folks especially bristle at the remote government telling them what to do. (but they don't bristle at the Government's money of which Montana receives about a dollar and a half for every dollar sent from Montana to Washington)." (Note that currently GBIs is subsidized c. \$4 to \$1 from Auckland City).

On farming: The loss of economically viable farming as is also an issue for the state: "The shrinking profit margins, and increasing competition, have made hundreds of formerly self supporting small farms uneconomic. Land prices are now 10 to 20 times higher than a few decades ago... The farmers have no choice but to subdivide and sell their land to support themselves after retirement. For a farmer now, his land is his pension fund".

On the influx of new-comers: "The largest group of immigrants consist of early retirees, supporting themselves by

income that they continue to earn from their out-of-state businesses. That is, they are immune to the economic problems associated with Montana's environment" "Because the rich out-of-staters are attracted to Montana by its beautiful environment some of them become leaders in defending the environment and instituting land planning."

Some of them believe "The longer we wait to do planning, the less landscape beauty there will be. Undeveloped land is valuable to the community as a whole: it's an important part of that 'quality of life' that attracts people here."

The humorous comment "There is too

much raucous debate here...." could also be attributed at times to our debate about the future of Great Barrier's environment and prosperity!

This is a book worth reading. It sets out the issues. If the community, as reflected by the Local Board's decision to progress an ecological vision for the future, is to make collective decisions we need to accept differences and find the common ground. It is from that core of agreement that we can progress and protect what I believe we all value about living here: the supportive community, the bush-clad hills, the coast, the ocean.

Membership Fees

Want to keep supporting this publication and the projects in it? Renew your membership today (annual fees are due now)

By electronic banking (see below) with your name and type of membership (you can also send us your details via the form below, or get in touch by email) Thank you - we value your interest in restoring Aotea Great Barrier Island.

Annual Subscription: Ordinary : \$25.00 Senior : \$20.00 Family :\$35.00 Student: \$15.

Life: Life Senior subscriber: \$200.00 Life Subscriber \$250.00

Corporate subscriber: negotiable

Name:

Address:

.....

Phone No. **E-mail**

Type of Membership: (Please circle relevant type)

Student / Ordinary / Senior / Family / Life (senior) / Life / Corporate

post: GBI Environmental Trust, P.O. Box 35, Okia, Gt. Barrier Is. 0960

Direct pay: E. Auckland Commercial Acc. 12-3110-0058231-00 **Reference:** name

email: contact.gbiet@gmail.com **twitter:** GBIET@GBITrust

call: 02 234 GBIET (022 34 42438) and leave a message

facebook: www.facebook.com/GreatBarrierIslandEnvironmentalTrust

donate: www.givealittle.co.nz//org/gbitrust