

Great Barrier Island Charitable Trust

Environmental News



PHOTO BY BRONWYN HUNT

Kokako - Island Invasives Conference Stewart Island Report - Bitterns

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 Island.

BITTERNS are rare on GBI but judging by the occasional report of their booming calls they are not extinct. Their decline is due partly to habitat loss (swamp drainage) and partly to predation on eggs and juveniles.

The Trust would appreciate any reports of sightings or of their distinctive calls.

There is a recording of such on Radio National's website if you wish to hear an original at www.radionz.co.nz

• *Sir Walter Lairy*
Buller's painting of the New Zealand Bittern or Matuku (botaurus poeciloptilus) extracted from his landmark text "A History of the Birds of New Zealand".



Reproduced with permission from the New Zealand Electronic Texts Centre www.nzetc.org/

Kaka Count from page 14: Table 2. Comparisons with previous counts

	Number of data sheets	Maximum number counted ⁽¹⁾	Minimum no. based on locations ⁽²⁾	Maximum number ⁽³⁾	Coefficient of Variation ⁽⁵⁾	Population guesstimate ⁽⁴⁾
26/12/07	45	222	141	221	35	250+/-50
Summer 07/09/08	40	136	61	117	32	125+/-50
Winter 25/07/10	33	134	68	107	76	125+/-50

(1) Total of all AM and PM counts by all observers

(2) Total of the minima from all locations (i.e. assumes birds at different locations are different).

(3) Total of maxima for locations.

(4) Assumes that population size must be greater than the minimum number based on locations, and will also probably be greater than the maximum estimated from the data, because some locations have not been observed.

(5) A measure of the variability between locations. Higher % indicates higher variability – i.e. the kaka are more patchily distributed.

Editorial

2010 The Year of the Environment on Great Barrier



BY JOHN OGDEN

Why doesn't everyone want to get rid of rats, rabbits and feral cats on Great Barrier Island? What are the perceived downsides to an eradication campaign?

1. Cost. It is a huge task – where will the money come from? Is it worth that much?
2. More 'trouble' for residents (e.g. more biosecurity at wharves, more controls imposed over activities on private land).
3. A strongly held belief that toxins are bad for the environment.

All of these important concerns are being addressed by other Island communities throughout the world (see item on Recent Progress on Eradications on Inhabited Islands) and currently on Stewart Island, where a Technical Feasibility Study was completed by Brent Beavan in 2007 with support from the Stewart Island Rakiura Community Environment Trust (GBICT can provide this as a PDF, see also item from Brent Beavan in this Issue).

In different ways all these questions have come to the fore in 2010. Our State of the Environment Report for Great Barrier demonstrates the 'worth' of the Island. It outlines the history of environmental changes on the Island,

emphasising the National significance of the remaining biota and the potential of the natural environment to form the focus of the Island's economy in future. The Report calls for the production of a Technical Feasibility Study to explore methods, issues, costs and benefits of island-wide eradication of rats and feral cats. This call has had a positive response from potential funders. Given stronger support from the Great Barrier Island Community a feasibility study could almost certainly get started next year.

Biosecurity is clearly an issue for some residents, who imagine it will be very difficult to keep rats off the Island in future. But, there are plenty of examples throughout the world where residents have opted for biosecurity measures to keep rats out – for example rats have been eliminated from, and subsequently kept out of, the landlocked state of Alberta in Canada since 1950, despite their presence in surrounding states (Google: rat control Alberta Canada for articles). The Pribilof Islands, Alaska (U.S.A., c.700 inhabitants), have implemented a strict rat

prevention program, which includes laws barring infested ships from entering the harbor and requiring onshore industries to establish rat prevention measures (Ebbert & Byrd 2002; Fritts 2007). On Great Barrier a possum was recently thought to have jumped off a freight boat in Tryphena – demonstrating both the risks to our environment, and the need for more effective controls. The rapid response by Auckland Biosecurity staff to this event was re-assuring, but the possum should never have got to Great Barrier in the first place. The re-invasion of Motu Kaikoura (since 2008) by rats from 'mainland' Great Barrier also

provides a salutary lesson: we need to do the research and listen to all points of view before we write the cheque. Good intentions are not enough. From the biosecurity perspective this local example, and the continued efforts needed to keep rats out of Glenfern Sanctuary, are all part of the learning process. But isolated islands, such as Tiritiri Matangi, are more relevant to Great Barrier as a whole. Rats were eliminated from Tiritiri using an aerial brodifacoum drop in 1993. Thousands of visitors go to Tiritiri every year to witness the indigenous biodiversity. However, despite this influx of people, plus many others coming ashore and picnicking at Hobbs' beach from private boats anchored in the bay, there has not yet been a re-invasion by rats. Preventing colonisation by rodents is not impossible.

Mammalian toxins also came to the fore on Great Barrier in 2009 and 2010. The film on 1080 by the Graf brothers made compelling viewing, but was in my view barely relevant to an Island with neither possums nor deer, and with no conceivable use of that toxin. However, the boundaries between different toxins were blurred, and many people clearly felt strongly that the risk of 'contaminating the environment' with any sort of poison outweighed the advantages that might come from rat elimination. We pointed out the misleading way in which some of the New Zealand research on the effects of toxins on bird populations was presented in the film (see *Environmental News Issue* 20, Spring 2009), but of course science cannot answer all the questions with certainty.

The debate over mining on Te Ahumata also included toxins in the

The Trust also expresses the hope that public participation in

environmental issues will be seen as core business...

environment, but centred mainly on the nature of the Island's economy in the future. The vehemence of the Island's rejection of the inappropriate mining proposals was reassuring – mining of Schedule 4 land on Great Barrier was stopped primarily by opposition from residents. The Island residents and the 'off-islanders' spoke with one voice on this issue. Moreover, with a few individual exceptions, all segments of the Great Barrier Community were united.

In 2011 the Island's links with Auckland will be in some ways strengthened by the new structure of the Community Board, but also the Island may have more autonomy and ability to make decisions relating to Island issues. The debate over toxins and the mining issue both generated public meetings, which were well run by the Community Board. Opposing points of view were put forwards, and listened to. However, the new board may have more capacity to lead debates, and to influence and implement decisions. In congratulating the new Board Members on their election (Scott Mabe and Sue Daly) and the re-elected members (Izzy Fordham Paul Downie (Chair) and Richard Somerville-Ryan), the Trust also expresses the hope that public participation in environmental issues will be seen as core business, and incorporated into a Strategic Plan for Great Barrier Island.

Stewart Island rat, cat and possum eradication – scoping and future plans

Brent Beavan explores recent community dialogue on Rakiura, whose predator problems parallel our own on GBI.

Stewart Island and Great Barrier Island have a connection derived from the common unique experience of living in small island communities.

In recent years, both communities have started discussing the concept of eradicating several pest animals from the islands. The discussions are often emotive and sometimes heated as the topic not only includes the technical practicalities of “if” and “how” this eradication could be achieved, but also the potential impacts (both positive and negative) on the island’s individuals, the community and the very fabric of what makes island living unique.

In this article I attempt to explain how the Stewart Island community has dealt with this debate, what actions have been achieved and where we will go from here.

The feasibility Study took a year to write, involving a review of current knowledge about eradications from around the world, as well as discussions with the community about concerns and potential solutions.

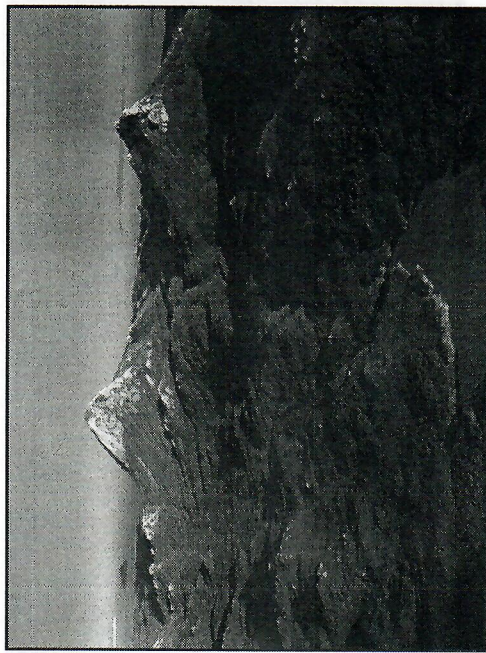
In 2006, the Tindall Foundation funded an investigation into the feasibility of eradicating rats, cats and possums from all of Stewart Island. This funding was held by the Stewart Island Community and Environment Trust (SIRCEIT), who contracted DOC to complete the work.

The feasibility study took a year to write, involving a review of current knowledge about eradications around the world, as well as discussions with the community about concerns and potential solutions. The report draws all of these together.

In general, it appears to be technically feasible to eradicate these pests from Stewart Island, but there are a number of risks and concerns that were identified that need to be managed or have solutions found. The benefits identified by the process were large. These included not only ecological benefits, but also financial and social benefits.

One of the overall principles of the process was that an eradication of this nature can’t be “owned” by any one individual or organisation. Those who are going to be affected by the operation need to have a strong say in the planning of the operation, thus a “steering group” needs to be formed if this project is to progress. The steering group will be made up of representatives of key stakeholders. This theme is further strengthened in the feasibility study through the suggested use of working groups to

- Peaks at Port Pegasus, southern Stewart Island (E. Ganley, From the Stewart Island Scoping Document, with permission).



solve some of the issues. For example, a concern was voiced about the potential impact of an eradication operation on deer and deer hunting opportunities. There are a number of management solutions, but the best people to find the solution are those who know the issue best; deer stalkers need to be strongly involved in the working group to determine how to satisfactorily address this issue.

This principle has recently been published as a model for eradicating pests from inhabited islands around the world. Oppel *et al*¹ found that involving the community in the planning of the project, right from the start, was an essential ingredient of success for eradication operations on inhabited islands.

So, in summary, the feasibility study concluded that: it appears to be technically feasible to eradicate rats, cats and possums from Stewart Island; there were some gaps in our knowledge that needed to be addressed; the community and others affected by the operation need to be actively involved in planning the operation.

Since the completion of the report in 2007, there has been a lot of thinking, but limited action. The recent draft Stewart Island Tourism Strategy has identified the eradication as a key driver to enhance the tourism product on the island. The strategy also tries to balance potential visitor growth with the protection of the community’s values. The DOC National Park Plan also had overwhelming support for the eradication principle during the public submission process. These are both positive steps that take us closer to the eradication of these three animal pests from Stewart Island.

Perhaps the key step that needs to occur now is the formation of a steering group to drive this idea forward. I am confident that this will happen and the whole island will eventually be cleared of these pests. It will happen in its own time and at a pace that suits the island. But, be it 5 or 50 years, it is an idea whose time has come.

¹ Oppel *et al* (in press). Eradication of invasive mammals on islands inhabited by humans and domestic animals. Conservation Biology.

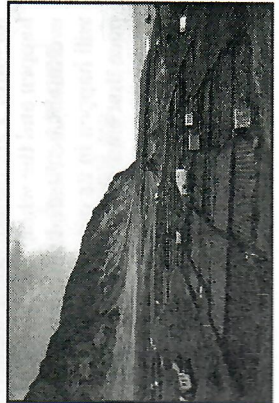
Island Invasives Conference

Recent progress in techniques for the eradication of invasive species on inhabited Islands.

BY JOHN OGDEN

Island Invasives Conference, 2010 started off well, and ended even better! In January there was a conference in Auckland entitled "Island Invasives: Eradication and Management". This conference was organised jointly by the Centre for Biodiversity and Biosecurity of the University of Auckland, and Invasive Species Specialist Group of the International Union for Conservation of Nature. About 240 people attended, from 26 countries all over the world. Fifty papers were presented in concurrent sessions over two days, and some of these were particularly relevant to the Trust's vision for a pest-free Great Barrier. In particular, in the session entitled "Social and Economic Dimensions of Eradications" there were sixteen presentations, including one from the GBICT outlining our experiences in attempting to promote our vision. Also in that session there were two

• *Tristan da Cunha – a volcanic peak in the remotest South Atlantic – the local community are scoping a rat eradicator.*

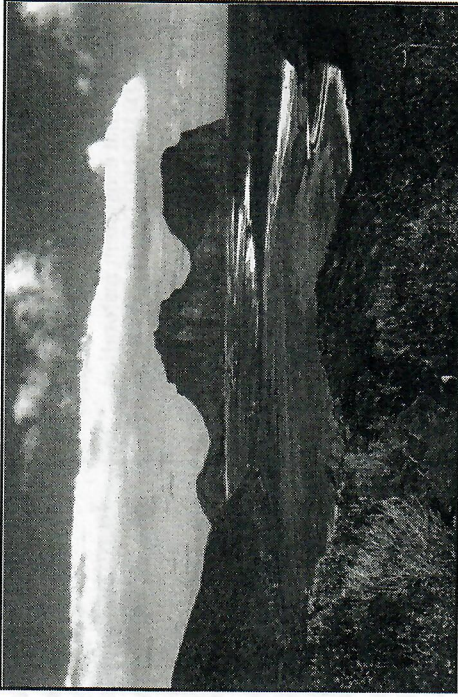


other papers specifically addressing eradications on inhabited islands: Lord Howe (Ian Wilkinson) and Tristan da Cunha (Karen Varnham). Neither of these has yet been successfully completed, but neither have they tried and failed. In both cases, as on Great Barrier, it is an ongoing process of convincing a minority of the population that the risks can be mitigated and are far outweighed by the long-term economic and conservation benefits. In the same session there was also a paper outlining the successful use of volunteer hunting for the control of pigs on Oahu, Hawaii. Most of these papers, including the paper presented by the Trust, have been reviewed and accepted for publication and will become available in 2011.

Key Paper. November saw the publication of a key review paper: "Eradication of Invasive Mammals on Islands Inhabited by Humans and Domestic Animals", by Steffen Opper, three other members of the Royal Society for the Protection of Birds, and Brent Bevan, of the Department of Conservation, Stewart Island Field Centre. The paper is a review of all the relevant literature on the topic – with about 70 papers referred to. An abstract is given below:

Non-native invasive mammal species have caused major ecological change and species extinctions on many islands. While eradications from uninhabited islands have been well documented, there is very little to

• *Lord Howe Island – subtropical and idyllic but ship rats pose a grave threat to indigenous species.*



go on when considering inhabited islands. This paper addresses the challenges associated with campaigns to eradicate invasive mammals from islands inhabited by humans and domestic animals.

On inhabited islands, detailed analyses of the social, cultural, and economic costs and benefits of eradication are required to increase the probability of local communities supporting the eradication campaign. The ecological benefits of eradication (e.g., improvement of endemic species' probability of survival) are difficult to trade-off against social and economic costs due to the lack of a common currency. Local communities may oppose an eradication campaign because of perceived health hazards, inconvenience, financial burdens, religious beliefs, or other cultural reasons. Besides these social challenges, the presence of humans and domestic animals also complicates eradication and biosecurity procedures (measures taken to reduce the probability of unwanted mammals re-colonizing an island). For example, houses, garbage-disposal areas, and livestock-feeding

areas can provide refuges for rats and therefore can decrease the probability of a successful rat eradication campaign. Transport of humans and goods to an island increases the probability of inadvertent reintroduction of invasive mammals, and the establishment of permanent quarantine measures is required to minimize the probability of unwanted re-colonization after eradication. The authors recommend a close collaboration between island communities, managers, and social scientists from the inception of an eradication campaign to increase the probability of achieving and maintaining an island permanently free of invasive mammals.

The paper discusses the 'Conditions for Successful Eradication Campaigns' under four main headings: Social Acceptability; Costs and Benefits of Eradication; Reducing the Probability of Invasion to Near Zero, and Increasing the Probability of Eliminating all Individuals. The last two headings seem at first to overlap, but one deals primarily with biosecurity, while the other deals with getting the last rat or feral cat, and

how we know when we've got it! Finally, the 'Recommendations' are highly pertinent. The first point made is that ecosystem restoration (i.e. pest eradication) on inhabited islands is essentially a social activity, and concern for the urgency of an eradication cannot preclude the importance of community control over the associated decisions and project activities. Regular public review and consultation is part of the process. A fair and transparent decision-making process may be more important to a community than technical details or even specific outcomes. Engaging the community at all stages of the project, from information gathering, to consultation, to decision making, to on-the-ground eradication work, and to final evaluation of the results is important. Such a programme avoids a 'top-down' approach and is most likely to generate public ownership of the eradication project. If members of the community see it as their project and take pride in it, complicated tasks such as maintaining high biosecurity standards, are more likely to be carried out and enforced by the community. Links to other ecological and economic benefits, such as the potential to use the project in tourism businesses will also be recognised. "Ultimately, eradication projects yield long-term benefits for native island species only if the benefits for human inhabitants are strongly linked to biological gains and are economically and socially sustainable."

A thoroughly good read. It is published in 'Conservation Biology' and can be obtained by contacting: steffen.oppel@rspb.org.uk or <http://onlinelibrary.wiley.com/doi/10.1111/j.1523-1739.2010.01601.x/abstract>

Bait Shy?

In response to issues with the use of 1080 and brodifacoum for possum control, a momentum is developing to enable the introduction of alternative toxins, baits and delivery systems.

Professor CHARLES EASON and Dr SHAUN OGILVIE, Lincoln University.

Considerable effort has been put into improving and refining the use of 1080. While there are no "silver bullet replacements", we are now moving to a time for new product registration advancement.

Collaboration between Lincoln, Otago and Auckland universities, the Department of Conservation, regional councils, pest control professionals and community groups – coupled with Animal Health Board and Foundation for Research, Science and Technology (FRST) support – is accelerating the development of new toxin research and new product registrations.

Research on biocontrol of vertebrate pests remains an important and major focus. But there is a gap between conventional poisons and hopes for the future that needs to be filled.

In response to issues with the use of 1080 and brodifacoum for possum control, a momentum is developing to enable the introduction of alternative toxins, baits and delivery systems within one-to-six years for the control of possums, rodents, other predators such as stoats and rabbits.

New tools require approval from the Environmental Risk Management

Authority (ERMA) and New Zealand Food Safety Authority (NZFSA). Consultation with Maori is a prerequisite. Welfare considerations, and the need for demonstrating effective control of pests with minimum non-target impacts, are key components.

The new tools pipeline includes: products that contain vertebrate pesticides already in use in New Zealand; products that contain vertebrate pesticides not already in use in New Zealand; and registration in New Zealand of a new generation of vertebrate pesticides.

Efforts to extend existing registrations have focused on cyanide, because, in appropriate doses, cyanide kills possums humanely without risk of secondary poisoning. Feratox® (cyanide pellets) is now also under development for control of wallabies, while work continues to produce effective formulations for ferret control. New "low residue" poisons – zinc phosphide and a combination of coumatetralyl and cholecalciferol – are being developed in multi-species bait formulations to target both possums and rodents. These are being developed as potential alternatives to 1080 and brodifacoum, respectively, and are effective for possum, rodent and rabbit control with low secondary poisoning risks and limited environmental persistence.

Zinc phosphide has been favoured for field use in the United States, as well as in Australia, China and the Asia-Pacific region for field control of rodents and some larger pests. It is quick acting in possums, rabbits and rodents and would make a suitable back-up to 1080. The first zinc phosphide containing product could be

Toxins are being developed as potential alternatives to 1080 and brodifacoum... with low secondary poisoning risks and limited environmental persistence.

available next year, subject of course to ERMA approval. Less expensive formulations of cholecalciferol should also be well advanced by next year.

In parallel, efforts to complete the registration of completely novel humane poisons have accelerated. For example, para aminopropiophenone (PAPP) – has the potential to become the second vertebrate pesticide product designed with humaneness as a primary consideration and the first new compound to be developed for 30 years. PAPP could become an important tool for stoat control and kiwi protection, it is humane, not persistent, has an antidote and does not cause secondary poisoning. Dossiers for chemistry and manufacturing, toxicology, efficacy, ecotoxicology and non-target impacts, and welfare were filed with NZFSA last year and ERMA this year. New initiatives in the FRST programme "Pest Control for the 21st Century", which started on 1 October this year, also include screening of PAPP analogues with a similar mode of action for rodents and possums, and identifying other active ingredients that cause rapid death. Looking to the future, we anticipate more and better control tools combining "low residue" characteristics with humaneness.

No Bitterns at Kiwiriki?

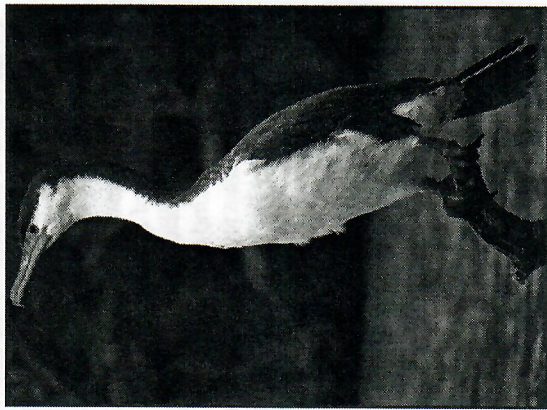
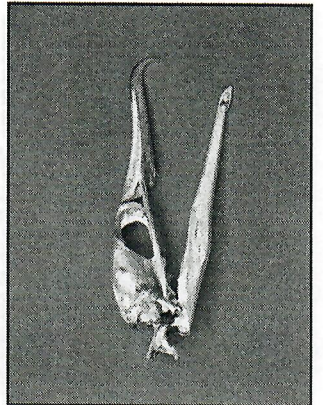
I recently walked to Kiwiriki Bay with Emma Hunt and Amanda Yates, who achieved ornithological fame in 2006 when a spotless crane attacked their tape recorder on Kaitoke swamp (*Environmental News*, Issue 8, p.9).

BY JOHN OGDEN

As we sat beside Kiwiriki creek near its confluence with the sea, we heard a strange 'booming' noise. I thought it might be a bittern, although it was not as loud or as long as bittern 'booms' I've heard before. Anyway this pesky noise set in motion a plan to kayak from Fitzroy to the Kiwiriki at dawn the following weekend to search for bitterns in the salt marsh. This plan was carried out, albeit that thanks to a cold westerly I arrived on site a bit later than intended.

I kayaked around there for a bit, and had a 'walk' through the salt marsh, but neither heard nor saw any bitterns. I tied up in some large old mangroves on the southern shore of the bay, but there is not as much tall reedy vegetation (bittern habitat) as I expected. However, I had the

• *Shag skull – it demonstrates the efficiency of the shag jaws as a fish-catching structure, and the large eye sockets.*



• *Adult Pied Shag at Kiwiriki creek*

pleasure of watching an adult pied shag (*Phalacrocorax varius*) teaching its juvenile how to catch fish! They were racing about in 30 cm of clear water in the mangroves, chasing parore. I was sitting in the kayak not paddling, and one of them passed right under me. Later I went up Coffin's Creek and again drew a blank on bitterns.

On the positive side I saw a pair of reef herons (*Egretta sacra*) on the Kaiaraara mud flats. They are seen fairly frequently at Okupu (Emmy Pratt), and I occasionally see one on the east coast near Awana. Seeing a



• *Some of the old mangroves (Avicennia marina) in Kiwiriki Bay. All photos by John Ogdén*

pair together suggests possible nesting in the area. Reef herons are 'Nationally vulnerable' in New Zealand (MisKelly et al. 2008) although the species is quite

widespread in Australia and the Pacific. We have only the grey form – a more dramatic white version of the same species occurs in the Pacific.

STOP PRESS: A NEW RECORD FOR GREAT BARRIER

WHILE IN KIWIRIKI BAY I nearly tipped up the boat pulling out a different-looking brown seaweed over a metre long. Subsequent consultation showed this to be *Sargassum scabridum*, a new species on Great Barrier. This find simply demonstrates that there is still plenty to discover about the island's flora, and brings the total number of marine algae (seaweeds) here up to 139.



• *Sargassum scabridum from the northern shore of Kiwiriki Bay. The photo shows the end of a frond which was c. 1.2m long.*

BRIEFS FROM THE CAPITAL: If is good enough for Wellington it's certainly good enough for Great Barrier.....

New Mayor of Wellington Celia Wade-Brown, has a vision for Wellington City – clean, green and pest-free. "If elected" she promised voters on her 'Celia for Mayor' website, "I would like to add the fur of the last possum in Wellington to the mayoral robes at the end of my first term". Her election platform included a goat, stoat, and possum-free Wellington. Go Celia!

Kokako

Sonya Williams illuminates the importance of the Kokako in the historic cultural fabric of Ngati Rehua – and outlines how the restoration of Te Paparahi will allow for the kokako's return.



Photo by Adrian Lambrechts

Te Paparahi, is a large forested area which makes up the northern-most portion of Aotea. Te Paparahi is of significant importance to Ngati Rehua, it holds Taonga and Spiritual values that pertain to mauri (life force) and wairua (spiritual nature/forces/ essences) of people, flora, fauna, land and water. Ngati Rehua – Ngatiwai maori land owners and the Mabey's whanau settlements are on the doorstep of Te Paparahi; they have been the kaiiaki (caretakers) of the area for as long as they have lived there. Te Paparahi was the last stronghold for kokako on Aotea. Ngati Rehua and the Department of Conservation plan to work together to ecologically restore the area in preparation for the return of the kokako and their dawn chorus.

Historically the kokako was distributed throughout much of Aotea but numbers dramatically declined over a few decades, until by the 1970s the birds were found only in Te Paparahi. Their demise was thought to be because of predation by feral cats and rats.

In the early eighties I remember my aunty telling me she had heard the kokako that morning on her way to her

cattle cull operation began. Ngati Rehua considered the cattle to be a resource (kai) that should not be wasted. Tangata whenua with DOC and contracted hunters had the opportunity to begin the cull with follow-ups to happen in the near future. The meat was given to tangata whenua and people on the island

The plan is that when all threats to kokako are removed or managed the

offspring of the relocated Aotea kokako will be brought back to Te Paparahi. Planning for these events has to be thorough and does take time. Every body that has an interest needs to be part of the process. The planned re-introduction doesn't simply represent a 'wish list' to Ngati Rehua – it is a work in progress, guided by the knowledge gained from previous conservation work and continuing research.

Great Barrier Island History Research Group Inc.

In gathering information for the Pictorial History section of the State of Environment Report, the Trust consulted many old photographs and newspaper items relating to environmental history on Great Barrier. Understanding the past is fundamental to planning our social, economic and environmental future, and it is in this context that we welcome the formation of the GBI History Research Group Inc.

Don Armitage writes:

We are a recently-formed history society for the island. We incorporated on 31st May, 2010 and at this time have about 65 members. We want to involve anyone who has had anything to do with the island. We hope you will become a member. Our society, though just 5 1/2 months old, has already published its first book, 'Great Barrier Island Shipwrecks', has established a format for all future publications to 'brand' the society's publications, and make it easier for prospective authors who are members to get into print, has successfully applied for funding to enable state-of-the-art oral history recording to go ahead (it is already under way), has a well-run website,

and is running a short story history writing competition. Many of the stories entered will be published in book form in Sept 2011. All in all, a good start, but only a start. Now that we are established, we want to widen our presence and effectiveness. Many places around New Zealand have history societies for the very good reason that they capture the past and present and allow citizens to know more about their place. Never before has this island had the opportunity to establish in such a robust way such a society. We have already met with members of the new Auckland super city's heritage department who have assured us of their full support.

Modern technology gives us further opportunities, which we are taking full advantage of.

Great Barrier Island's history is a unique and wonderful story, and there is yet more to uncover. The story writing competition is open to members and non-members alike. We hope that if you have a true story about some event and/or person or persons associated with Great Barrier Island's past to recent past, you will 'have a go' and enter the competition. Please join our society. For details:- www.greatbarrierislandhistory.org

KAKA COUNT: July 2010

BY JOHN OGDEN

Was it the third? or was it the fourth? Although it said Kaka Count 4 on the data sheets it was in fact the third, as one was missed out due to 'other commitments'!

Anyway, the previous two counts had shown a clear decline in the kaka counts between summer and winter, coinciding with an increase in kaka sightings on the mainland (Suzi Phillips - Kakawatchnz). For this reason the Trust decided to do another winter and another summer count, to confirm the supposed 'off-island' winter migration. The results for the July count are given in Table 1. This table amalgamates the results of different observers (where there was more than one at a 'location') and doesn't show the relatively high proportion of observers who gave 'nil' returns for kaka sightings on the day - seven of the 33 sheets (21%).

Indeed the general absence or low activity of kaka in July was noted by most observers and may account for the lesser response to this survey (33 sheets returned) compared to previous ones. But absences are just as important at presences when it comes to statistics, so please return the sheets for the next survey even if there are no kakas to be seen or heard! We are planning one more count in December (this year) to hopefully confirm the trends seen so far.

Another feature of the July data is the variation, especially in the 'Maximum' column. This indicates that kaka were concentrated at a few locations, while they were present

only in small numbers or absent elsewhere. Thus, in winter the kakas may be concentrated in areas where there are reliable food supplies - such as Peter Speck's orchard at Rosalie Bay, or in the Medlands valley or the Wairahi. It is interesting too to compare this with the summer count (26/12/07) which, while showing many more birds, showed much less variation between locations.

Table 2 indicates that this July's count was numerically similar to that made in early September 2008.

However, all these results are only samples of the true population size, and it is difficult to know how many birds have not been counted or estimated by the observers. The figures suggest to me that the winter population here is probably in the range 75-175 birds. The Summer population may be up to 300.

The total results from all three counts, and comparisons with kakawatch results from the mainland, suggest that about half the Great Barrier kaka move to the mainland during the winter, leaving in May, and probably returning mostly in September. What determines which birds go, and which stay, we do not know. Powlesland et al. (2009) suggested that kakas breed only in years of abundant food supply. On Great Barrier the kaka which overwinter seem to concentrate on the most reliable food supplies, suggesting that it is a general food shortage which drives the move to the mainland. On the other hand we could see the process in reverse: kaka

move to Great Barrier to breed because their main nest predators on the mainland - possums and stoats - are absent from the Island (cf. Powlesland et al. 2009).

In conclusion - we know that kaka can be a nuisance or worse, but they are also very unusual parrots, endemic to New Zealand. Their numbers have declined nationally and their range contracted to increasingly disjunct populations. Kaka are put in the 'Nationally Vulnerable' category of Miskelly et al. (2008). Great Barrier is a stronghold for the North Island, and may well provide recruits to the populations on the Auckland mainland and Coromandel peninsula. Our

Table 1. Kaka Count 25/07/10

LOCATION	No of data sheets	Total AM ¹	Total PM ¹	Minimum at location ²	Maximum at location ³
Allom Bay	1	0	0	0	6
Awana	2	4	7	5	6
Claris	1	0	3	3	6
FitzRoy	2	4	5	3	6
Harataonga	3	5	2	3	3
Kaiaraara Bay Rd	1	3	0	3	3
Kaitoke	1	0	0	0	2
Kaitoke Creek	2	0	1	1	1
Medlands	5	13	14	5	12
Mulberry Grove	1	0	0	0	0
Okiwi	1	2	8	8	8
Okupu	2	0	0	0	1
Puriri Bay	1	9	9	9	10
Rosalie Bay	1	9	5	9	12
Schooner Bay	3	3	3	1	4
Tryphena	2	3	1	3	5
Wairahi	2	2	11	11	16
Whangapara	1	0	0	0	2
Windy Hill	1	4	4	4	4
TOTALS 25/07/10	33	61	73	68	107

(1) Assumes all counts by different observers, AM and PM; were all different birds.

(2) Assumes that all birds at one 'location' were the same birds, so the maximum count by any one observer is taken as the minimum for the location.

(3) Uses the maximum estimate for birds reported at the location over the last few weeks.

community-led monitoring on Great Barrier is starting to indicate the significance of our kakas here, and to suggest new lines of research. Thanks to all participants - 101 names occur on the sheets from all 3 counts, so about 10% of the Barrier's human population has contributed so far! Special thanks to Sue Daly for organising the last count.

References: Miskelly et al. 2008. Conservation status of NZ birds. *Notornis* 55: 117-135. (www.notornis.org.nz). Powlesland et al. 2009. Breeding biology of the New Zealand kaka (*Nestor meridionalis*). *Notornis* 56: 11-33.

See also: <http://www.kakawatchnz.org> and go to "Research Publications".

Table 2 continued over page