

SUPPORTERS of



TIRITIRI MATANGI
Incorporated

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Dawn Chorus



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Tuatara breeding on Tiri!
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Information

Getting to Tiritiri Matangi

360 Discovery™, which is operated by Kawau Kat Cruises, operates a regular ferry service.

**BOOKINGS ARE ESSENTIAL!
AND AVAILABLE ONLY FROM:**

360 Discovery Bookings
on **0800 888 006** or
www.360discovery.co.nz

Departs: Every day **Wednesday to Sunday** from Pier Three, Quay Street, Downtown Auckland City at 9:00 am and from Pier Z, Gulf Harbour at 9:50 am, arriving at Tiritiri at 10.15am.

Returns: From Tiritiri at 3.30pm, arriving Gulf Harbour at 4:00 pm and Pier Three at 4:50 pm.

Includes: Return ferry to Tiritiri Matangi plus approximately 5 hrs on the island.

Weather Cancellations: Please call 0800 FANTAIL (0800 326 8245) after 7am on the morning of sailing to confirm if the vessel is sailing.

Prices:

Ex Akl: Adult \$59.00 Child \$28.00
Senior/ Student/ Backpacker \$53.00
Family \$145.00

Ex GH: Adult \$35.00 Child \$17.00
Senior/ Student/ Backpacker \$30.00
Family \$85.00

Guided Walks:

Adult \$5.00: Child \$2.50

Sorry no discounts for Supporters of Tiritiri Matangi (SoTM).

Upcoming Events 2007

May 26th – 27th

Families Weekend.

June 2nd – 4th

Queens Birthday Adults Working Weekend.

August 25th – 26th

Families Weekend.

August 26th

Kowhai Trip.

September 22nd – 23rd

Adults Non-working Weekend

October 20th – 22nd

Labour Day Adults Working Weekend

2008 January 26th – 28th

Anniversary Working Weekend

February 2nd – 3rd

Adults Non working weekend

February 6th

Waitangi Day Picnic

March 21st – 24th

Easter Working Weekend

If you wish to attend one of these exciting days or weekends they can be booked **ONLY** by contacting Megan at the shop on Tiritiri Matangi, telephone 09 476 0010 or e-mail manager@tiritirimatangi.org.nz

Prices:

Ex Akl: Adult \$38.00 Child \$20.00

Ex. Gulf Harbour \$22.00 \$14.00

For non-event days please contact 360 Discovery Bookings.

School Visits

Schools wishing to visit Tiritiri should first visit our website:

**[www.tiritirimatangi.org.nz/
SchoolVisits.htm](http://www.tiritirimatangi.org.nz/SchoolVisits.htm)**

where you can download the school guidelines. Then contact Megan either by telephone 4760010 or e-mail: manager@tiritirimatangi.org.nz.

Advance bookings are essential.

A full list of the schools that visited during February, March and April.

Overnight Visits

Overnight bookings are handled by the DOC Rangers, Ian and Jennifer. Please telephone them on:

(09) 476 0920 or e-mail:

tiritirimatangifb@doc.govt.nz

Demand on the bunkhouse is very heavy. There is a long waiting list and the policy is first in first served. But the wait is well worth while!

Tiri becomes a magical place once the ferry leaves and an overnight stay will become an experience to be treasured. Don't miss out by not turning up or spoil it for others who could have had your booking.



The Schools that Visited

February 2007:

University Of California
Birkenhead Primary
Sunnynook Primary x2
Hamilton Boys High School
Green River Community College
Otumoetai College
WaiKowhai Primary
Trident Primary
Mt Roskill Grammar
Kohia Terrace Primary

March 2007:

Mairangi Bay Primary x 2
Hebron Christian College x2
Auckland University x2
Whangaparaoa College
Auckland Girls Grammar
Kingsway College
Penrose High School
Rotorua Girls High School
University of Canterbury
Diocesson Girls.
Auckland Girls Grammar
Henderson North
Selwyn College
Kristin School
Kingsway College
Fraser High School

April 2007:

Northcote College
Kaipara Flats
Waihi College
Carmel College
St. Cuthberts College

Apology

An apology to Barbara Hughes, I failed to credit her great photographs in the Feb 07 issue of DC. For clarification her shots are the smaller ones on P8 & 9:

2 photos at the bottom of P8 with the skink on the rock with a convolvulus flower nearby, the one of Jen holding the container.

2 photos at the bottom right hand side P9 with Marlene and a volunteer at the release box and a supporter releasing a gecko.

Thanks Barbara for your help and support. *Paul*

www.tiritirimatangi.org.nz

From the Chair

One of the aspects of the Annual General Meeting is the agenda item marked "General Business". Whilst exactly what this means is not defined, it does present an opportunity for members to ask questions and express views on matters that do not warrant a separate listing on the agenda.

One issue that was raised at this year's AGM was the identification of locations when reporting incidents or events on the tracks, particularly in the case of a medical event. One suggestion was to have marker "pegs" along the tracks so that the location could relate to those marks.

As promised, this was discussed at the following committee meeting, by which time further thought had been given to the issue. It was pointed out that, in the event of an emergency, the island ranger(s) would drive to one end of the relevant track and then proceed on foot until they reached the scene. The exact location is therefore not required to be known although it would be helpful, although not essential, to know where the nearest vehicle access to the track is.

Although this discussion did not result in any change, it is always worthwhile for such issues to be

raised as it does make us think and wonder whether things should be done differently.

On another totally unrelated matter, last year we reported the need to remove some of our kokako, due to a high level of inbreeding and replace them with new genetic stock. An attempt to catch three birds last September resulted in zero catch due to a week of dismal weather. Since then, we have continued to work with Hazel Speed from DOC and have now drawn up a list of all birds that are potentials for export. Whilst this list includes the majority of the kokako on the island, it is not intended to remove birds of high advocacy value such as Zephyr & Chinook who continue to entertain around the Visitor Centre. Needless to say, Cloudsley Shovell & Te Koha Waiata will not be removed either.

Later on this month, another attempt will be made to catch kokako on Tiri, this time as many as possible. In return, we can expect to welcome three birds from captive stock that contain the rare Taranaki gene, as well as birds from Waipapa in the King Country.

Simon Fordham
Chairperson

The Tiri Gift Shop

The Gift Shop inside the fabulous 'Ray and Barbara Walter Visitor Centre' has a stunning selection of gifts and books.

Now managed by Megan, who intends to stock as many local products as possible, the shop has lots of new items to treat your family and friends. Is there a Birthday or special occasion coming soon?

Featured here are Ingrid Anderson textiles: Contemporary textile design individually hand painted. Designs are NZ inspired and all are made in NZ.

Products include a range of tea towels – fern, tui, kowhai, cushions and fashion bags in retro Kiwi and Pohutukawa.



and don't forget the polar fleece and T-shirts.

All available by visiting or calling Megan on (09) 476 0010. Hand or mail delivery available on phone orders.

The People behind Tiritiri

Continuing our series on the people behind the success of Tiritiri Matangi is a profile of Rory Renwick.



Rory Zachariah Renwick
Programme Manager Biodiversity Islands. Based at the DOC office in the Warkworth.

How long have you been with DOC?
10 Years

How long in this position?
Since December '06

How many staff do you have working with you?
4 permanent and 7 temporary staff from late winter through to early summer.

What were your previous positions?
I started doing weed control/inventory and monitoring in the Kaitaia Area Office and then secured the role of Programme Manager (PM) Weeds, I then took on the role of PM Service and continued to be manager of the weed control work in the Kaitaia Area. The PM Service role relates to the business side of the Department and co-ordinating between programmes. I then transferred to the Warkworth Area Office as PM Service in Nov 2001. I filled in as acting PM Biodiversity Islands for nearly two years while Richard Griffiths worked on the consents and planning for the Little Barrier Island Kiore Eradication, and have since continued to be involved

in a few of the capital projects on the islands such as the Tiritiri power upgrade.

What did you do before you joined DOC?

I grew up on a farm to the south of Kaitaia and with plenty of encouragement from my parents was always keen to work for conservation and the environment, which was the main focus of my degree.

Which University did you attend?
Auckland

Your qualifications?
BSC – Biology/Ecology.

What do you do in your current position?
My area of responsibility includes any work on Little Barrier and Tiritiri that is not directly related to visitor or historic work and any biodiversity related work on Motuora and Kawau. Without going into detail, I am either directly or indirectly (through the island staff who report to me) responsible for all work in these areas.

How often do you visit Tiritiri?
It will be an average of at least one day per month but it will vary depending on what is happening.

What are the biggest challenges in your role?

The challenges are many and varied. I'm really keen to have as many as possible involved in conservation on the islands, but with so many enthusiastic people/groups it is a challenge to ensure there are not conflicts between the many different projects. Although these projects have conservation benefits, there will be a point where the level of activity on the island starts to have a negative effect. We can see that facilities such as the bunkhouse are already stretched.

I see that there will be some big challenges in relation to the disease issues, as there are so many un-

answered questions. We do not fully understand the risks of transferring diseases during species transfers.

With the high numbers of visitors that come to Tiritiri there is a far greater risk of pest invasion. Minimising these risks without spoiling the outstanding island experience will be a challenge.

I am keen to work on systems and/or small changes that will help to make things easier for the staff on the islands; in particular much of the infrastructure on the islands is in need of improvement (less so on Tiritiri than the other islands thanks to the work of SOTM).

Little Barrier restoration plan and Motuora translocation plan will be priorities over the next 12 months or so; they will give us a good steer for the next 5-10+ years.

What plans are there for Tiri' in the future?

The future of Tiritiri needs to be decided in consultation with the stakeholders. The CMS (Conservation Management Strategy) that will be developed with public consultation will help with this. In talking with Ian and Jen on the island, I believe that the island is currently a very well run operation, and I do not see the need for any significant change in direction.

I do, however, see that the island will come under increasing pressure from visitors, researchers and from other conservation groups wanting to source species for transfer to other locations, and we need to ensure that we are prepared for this so we can ensure that the values of the island are not lost.

How important is the SoTM to Tiri' and DOC?

SOTM are critical to the island; it would not be what it is to day without this organisation calling on support from so many sources. The Department is grateful for the support of SOTM members.

Next Issue we hope to bring you the Jennifer Haslam profile

Tuatara breeding on Tiri!

By Taneal Cope

Tuatara were translocated to Tiri in 2003 after 100 years absence from the island. As researchers and members of the public we are so lucky to be able to come into contact with these ancient dinosaurs!

On the 3rd December 2006 the first baby tuatara on Tiri was found on the Kawerau Track, Bush 1.

I was walking along the Kawerau Track, looking for my bellbirds, when I heard a rustling next to my foot. A small lizard (at that point I had no idea what it was!) moved like lightning and suicidally launched

itself off the boardwalk to escape. I decided I HAD to find out what it was and I sat in that spot for half an hour looking for it!! - It was so well camouflaged!

Eventually I spotted the baby tuatara and it almost brought tears to my eyes! It's head was smaller than a NZ\$1 coin!

Tuatara specialist Graham Ussher determined from the photos taken that the baby was 2 – 3 weeks old!

This is the first record of tuatara breeding on Tiri.



All 3 photographs © Taneal Cope



SOSSI Upate

A report from Richard Chambers

Dear Tiri Supporters

There was good news recently for Shakespear Park, just across the water from Tiritiri Matangi. As a pre-Christmas present the Auckland Regional Council gave the go-ahead for a predator-proof fence to be built across the narrow neck at the entrance to the park. This opens the way for SOSSI (Shakespear Open Sanctuary Society Inc.) to push on with publicising and fundraising for the project. Suddenly our goal of seeing kiwi in the park seems much closer to being achieved.

The open sanctuary will require about 1 kilometer of predator

exclusion fence and is to include the defense force land and the sewerage plant operated by Rodney District Council. Okoromai Bay will be left out to allow locals to continue to walk their dogs. The date currently set for completion of this fence is five years away but with help from SOSSI members and the public we hope to be able to bring this forward substantially.

A Shakespear Park predator fence will allow a range of introduced pests to be removed from the park, and the re-introduction of rare species of birds, reptiles and insects. We already

have some interesting wildlife with ornate skinks discovered in the park last year, kakariki visiting from Tiri, and bellbirds.

You may also be interested to hear that bellbirds are still breeding in the park. In February I was in Waterfall Valley (just above the waterfall) where I saw a young bird foraging and, soon after, an adult feeding a young bird. At one time there were four bellbirds, two tui and two kereru surrounding us – not bad, but I look forward to saddlebacks, robins and kiwi joining them.

info@shakespearopensanctuary.org.nz

Little Blue Penguins on Tiritiri Matangi Island:

At present the New Zealand population of Little Blue Penguins (LBP) (*Eudyptula minor*) is classified as “threatened” and in gradual decline by the Department of Conservation (DoC), New Zealand. There is little information on the feeding and breeding ecology of the LBP, especially in the northern region of New Zealand. Therefore my study targeted the LBP population on Tiritiri Matangi Island during the 2005/ 06 breeding season.

Initial investigation of LBP within this study started with monitoring of their breeding success. A total of 87 nests were found all over the island and extended from 1 meter to 2.5 km inland. Nest types used by breeding pairs included rocks, flax, dirt holes and man made artificial nests. Breeding pairs would lay on average 2 eggs and hatched on average 2 chicks. Overall there was a 10% breeding success with a total of 17 chicks fledging from the monitored population. This is very low breeding success for seabirds in general and was relative to a very poor breeding year compared with other populations of LBP breeding in Oamaru, New Zealand and Victoria, Australia. The lay date proved to be the most influential factor associated with the success of fledging a chick, since early hatched chicks were most likely to fledge. Regardless of the different risks associated with different nesting stages (i.e. eggs or chicks) the largest cause of nest failure at both stages was due to nest desertion.

So why are LBP deserting their nests? There are several reasons as to why LBP may desert their nest despite their maternal effort; these relate to the timing of breeding, foraging, pair fidelity and survival. Initially the breeding for this year was a month later in

comparison with other years. This meant that nests laid late overlapped with the onset of moulting. During the 2 week moulting period LBP can not return to sea to feed and therefore could not feed their chicks or themselves. Furthermore, they were unable to build up fat reserves before the fast took place.

The initiation of LBP breeding is thought to coincide with low sea surface temperatures and hence prey availability. Therefore annual differences in sea surface temperatures may delay the timing of spawning of fish for any year and hence delay the breeding of LBP. Although this is true for some breeding pairs there could be another factor at play. During the start of breeding there were a series of storms which resulted in a large number of LBP being washed ashore. This also occurred after the breeding season and again after moulting. I analysed the 33 year data set of beach wrecks obtained through the Ornithological Society of New Zealand (OSNZ).

Analysis of the data showed large scale wrecks were a 10 to 11 year occurrence and on a medium scale a 3 to 4 year occurrence. More importantly wrecks peaked around winter months, post breeding months and after moulting. However, the peak month/s could vary from year to year. I performed necropsies on dead adult carcasses (n = 44) and abandoned chicks (n = 10). Histology tests showed that the major cause of death was starvation. So what could cause starvation?

My research covered the first attempt at documenting the feeding ecology of the LBP (on Tiri) via regurgitations and analysis of stomach contents which was compared with Stable Isotope Analysis (Funded by SOTM and the PADI Foundation). The stomach contents provided information on the exact prey items that the penguins were consuming. The largest prey item consumed was anchovy, followed by arrow squid, and traces of other fish species including goby sp and yellow eyed mullet.

Stable isotope analysis involves sampling the levels of delta Carbon and Nitrogen found in naturally occurring tissues (blood, bone, and feathers).

Stable isotopes were measured from LBP feathers and provided information on diet the month prior to the feather growth. Moulting birds provided information about two foraging years (2004 and 2005).

Feathers were also obtained from historical samples held at the Auckland Museum that were known to be from the Hauraki region. This meant that diet analysis of LBP would cover a 120 year period since the oldest feather record was from 1886. Sampling was also extended to include five other terrestrial bird species found on Tiritiri Matangi Island such as bellbirds, tui, pukeko, paradise duck and robins. This provided a comparison of different dietary types from nectivores, omnivores,

Why such a low breeding success?

By Jacqueline Geurts



Photograph © Jacqueline Geurts

herbivores, and insectivores.

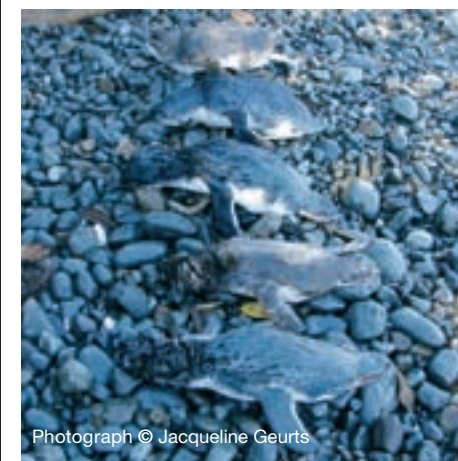
In comparison with the other terrestrial bird species the LBP, as expected, sit higher within the food chain since protein and marine items are denser prey items than sugar water and grass. Results from within species comparisons of isotope signatures showed that chicks and adults from 2005 were the same as each other, but different from 2004 feathers. The 2005 year was significantly lower in delta Carbon levels (productivity) than 2004, suggesting a poor foraging year. Foraging over the 120 year period appears to have fluctuated in both levels, suggesting that LBP prey switch between different types of prey and changes in productivity.

In contrast to the regurgitation samples, the isotope levels of nitrogen suggest that LBP have been feeding at a level lower than fish. Fish is energetically more profitable than other marine items however tracking these items may be challenging for penguins. During the breeding season penguins and other seabirds are limited in their foraging range since they have to return each day to relieve their partner from nesting duties and feed chicks. However, unlike other seabirds, penguins can not fly and may rely on prey items that are found within close range of the nest site. Localised depletion of fish stocks may be due to natural competition such as gannets and common dolphins which are highly abundant and forage largely on schooling fish species such as pilchard and anchovy. Competition may also increase through human catch efforts such as bait fisheries; however the overlap between penguins and competition requires further research.

Unfortunately, due to the inconsistent

nature of the mortality occurrences nothing can be done to inhibit them. More research needs to be directed towards the foraging ecology of the LBP within the North Island regions since this appears to be the backbone of success during the life stages. Current research involves tracking of LBP individuals within the population to identify where the birds are travelling during foraging trips. This will also be associated with the diet of the birds. I am conducting long term monitoring of LBP populations in Gisborne, which targets a mainland population. Efforts are focused towards increasing breeding numbers on the mainland by trapping potential predators and supplying artificial nests along a targeted area of coastline.

There have been a limited number of research efforts on LBP occupying Tiritiri Matangi Is over a 30 year period, therefore a baseline success rate can not be determined. Other LBP populations in Australia and Otago have been more successful and are increasing, which is associated with the knowledge obtained through the 13 years of monitoring to assist them. I believe that the population of LBP inhabiting Tiritiri Matangi would also benefit largely from simple monitoring of breeding success conducted over consecutive years. Without this basic data it will be unknown whether the birds are returning to the same place to breed (Tiritiri Matangi Is), what the levels of breeding success are for any year (high, med, low) and what the survival rate is of the population.



Photograph © Jacqueline Geurts

The full version of this edited article can be found at: <http://www.tiritirimatangi.co.nz/ResearchArticles.htm>

Profile: Jacqueline Geurts

Born and bred in Hamilton but moved to Auckland to study Marine Biology.

Study: Marine Biology and Conservation Ecology, I have always wanted to study marine mammals and consider science as a conservation tool.

Thesis: My thesis was on Little Blue Penguins as I felt that there was a great need to gather baseline data for a North Island population which could serve as a building block for long term monitoring which will increase our understanding of this sub-species.

Currently: I am working on the Dolphin explorer tourism vessel which operates within the Hauraki Gulf and gives me the opportunity to teach people about the marine environment and marine mammals. While writing my masters I also put in a proposal to increase the Little Blue Penguin population on the mainland. This was accepted and therefore I am working with an educational/commercial venture which will incorporate long term monitoring and predator trapping within an area, as well as supplementary breeding boxes to increase numbers within a selected area. This is now underway. Furthermore I have also been involved with further research which looks at tracking of the Little Blues with GPS systems to look at where they are foraging.

Other study: During the 5 years that I have been studying I have also completed a boat masters and dive certificate. Currently I am going to learn 3 dive specialities and gain my small boat skippers certificate.

I aim to work towards teaching the community about science and the links that it has with conservation initiatives.



15 Years of Research on Tiritiri Matangi Robins

By Doug Armstrong

Last month marked the 15th anniversary of the Tiri robin population. From 8-11 April 1992, a group of us caught 44 robins in the Mamaku Ranges and released them on Tiri. This reintroduction had been on the cards since 1982 when it was listed as part of Tiri's restoration plan.

However, the impetus to do the reintroduction came from a postdoctoral project I was doing with John Craig at Auckland University. John had suggested that it would be useful to test whether pre-translocation familiarity among birds made a difference to post-release survival and reintroduction, and that reintroducing robins to Tiri would provide a good opportunity to do this research. We therefore did an experiment whereby we created two familiar groups (robins from the same area) and two unfamiliar groups (robins from different areas) and released them in four patches on Tiri. It turned out that robins dispersed widely from their original release sites and showed no evidence that they could care less who their neighbours had been back in the Mamakus.

It also turned out that this was just the start. After taking on a position at Massey University in 1993,

what started as a two-year postdoc has developed into a 15-year project that has become a world-renowned case study in reintroduction biology. It turns out that the Tiri robin population has 7 characteristics that make it a great model system for addressing a range of questions. First, the friendly nature of the robins, particularly their eagerness to take mealworms, means we can catch them and

find their nests much more easily than other species. Second, the low canopy on Tiri, combined with easy access to all bush patches, means that we can access most nests by climbing or using ladders, and can therefore individually band most young. Third, DNA fingerprinting showed that there was no extra-pair paternity in the population, meaning that we could get accurate data on inbreeding just by keeping track of which juveniles came from which pairs. Fourth, being on an island, we don't have the complicating effects of immigration and emigration, and can accurately estimate survival. Fifth, because the population has remained small (< 90 birds) and confined to 15-20 ha of bush remnants, it has been possible for one person to keep track of the whole population each year. Sixth, because Tiri has been a convenient source population for further robin reintroductions (a total of 99 birds have been removed in four translocations from 1999-2007), we have been able to use the resulting manipulations of density to progressively improve our understanding of how the population is regulated. Finally, because the island has been re-planted, we have a unique opportunity to assess the long-term viability of a reintroduced population, in relation to habitat restoration.

The biggest focus of the research has been to understand the factors governing the dynamics and viability of the population, and this research has implications for reintroduction programs around the world. This understanding is encapsulated in a population model that I developed with MSc students John Ewen and Wendy Dimond, which is continually improved based on each year's results. The model is invaluable when we do translocations from Tiri, as we can project the range of possible impacts from removing a

set number of males and females. Improvement of the model primarily involves improving our understanding of juvenile survival, as this is the key factor limiting the population. The fact that juveniles faced intense competition for space also led to fundamental research, testing the idea that the delayed plumage maturation in male robins is an adaptation to this competition – i.e., that looking like juveniles or females until their second year gave males a better chance of finding a place to live. Although this hypothesis had been published in 1980, the Tiri robin system gave the first opportunity to test it, and a two-year experiment by visiting PhD student Åsa Berggren gave strong support for the hypothesis. Similarly, the Tiri robin population has provided opportunities to address a number of other issues including methods for estimating impact of poison drops, methods for estimating nest success, and value of follow-up translocations.

I currently have two burning questions for further research on this population. First, what impact will inbreeding have on the long-term viability of the population? In collaboration with Ian Jamieson from Otago University, I've recently shown that juvenile survival probability in Tiri robins is substantially lower in highly-inbred birds. We want to extend this research so that we can project the long-term impact on the population, but we are just starting to be able to do this now due to the large amount of data required. Second, what is stopping the robins expanding into the planted bush? While the carrying capacity of some areas, particularly Wattle Valley, has increased, they have had no success colonising planted areas except for a pair that had one successful nest in the Wharf Road area (the pair shifted to Wattle Valley the next year). If we can understand what limits habitat suitability, we may be able to predict the time frame over which the population will expand into the planted areas, and this will in turn allow us to predict the long-term effects of inbreeding. More importantly, we may be able

to improve the ability of future restoration programs to regenerate functional forest ecosystems.

Finally, it is important to emphasise that a long-term research program like this one has only been possible with collaboration from many people, particularly after I moved to Palmerston North. I have especially enjoyed my long-term collaboration with former MSc students John Ewen and Wendy Dimond, and with Tim Lovegrove from the Auckland Regional Council. In recent years, most of the fieldwork has been conducted by a series of highly-dedicated interns from overseas universities, including five from the van Hall Institute in the Netherlands. I am especially grateful to Renske Kwikkel who enjoyed the project so much that she came back for a second year. Amongst this large set of collaborators, there has also been the constant presence of my daughter Katerina who has grown from a 4-month-old baby into a useful research assistant over her 14 field seasons on the island. At 13.7 years, she is now slightly older than the oldest robin on Tiritiri Matangi.



Photograph © Simon Fordham



Photograph © Doug Armstrong



Photograph © Doug Armstrong



Photograph © Simon Fordham

Key research results from the Tiritiri Matangi robin project

- Familiarity at the source location had no apparent effect on survival, dispersal, behavioural interactions or reproductive success of reintroduced robins
- DNA fingerprinting over the first three years showed no egg dumping or extra-pair paternity, despite a highly male-biased sex ratio
- The 1993 follow-up translocation had negligible long-term effect on the population, and such follow-up translocations are predicted to normally be of little value
- The 1993 poison drop was estimated to kill ca. 11% of the population (one additional bird killed in a snap trap), but this had negligible long-term impact on the population
- The Tiri robin population quickly reached carrying capacity in the 15-20ha of remnant forest it is confined to, and robins have so far made little use of the planted forest
- The population is predicted to remain viable for decades, even in the remnant habitat, showing it was reasonable to reintroduce this species at any early stage of regeneration
- The population is regulated by density-dependence in juvenile survival, with juvenile survival best predicted by the number of pairs at the start of the breeding season
- The population can be sustainably harvested for reintroductions elsewhere, with at least 30 birds removed every third year
- The numbers of juvenile colonists per patch are limited only by current local densities, and there is no significant isolation among patches
- North Island robins have delayed plumage maturation (DPM), i.e., males retain grey-brown plumage similar to females and juveniles until after their first breeding season
- Juveniles with experimentally darkened plumage were less able to occupy good habitat and had lower survival, showing that DPM is an adaptation to competition for space
- Reduced productivity is predicted to have little impact on strongly-regulated populations such as Tiri robins, showing why reintroduced populations with small numbers of founders can be successful despite elevated hatching failure rates
- The Tiri robin population shows moderate inbreeding depression, expressed through poor survival of juveniles from sibling or parent-offspring crosses

Key events for the Tiritiri Matangi robin population

April 1992	Reintroduction of 44 robins from Mamaku Plateau
June 1993	Follow-up translocation of 14 robins from Mamaku Plateau
Sept 1993	4-5 robins poisoned & one snap-trapped during kiore eradication
Sept 1996	Population reaches carrying capacity of ca. 67 birds
March 1999	21 robins harvested for reintroduction to Wenderholm
Sept 2002	Population reaches new carrying capacity of ca. 90 birds*
April 2004	30 robins harvested for reintroduction to Windy Hill
April 2005	27 robins harvested for reintroduction to Glenfern Sanctuary
March 2007	21 robins harvested for reintroduction to Tawharanui

*Increased carrying capacity due to regeneration of Wattle Valley and several small remnants

All photographs on P10&11 © Doug Armstrong

Profile

Doug Armstrong did BSc and MSc degrees in Wildlife Biology in his native Canada before shifting to Australia in 1986 to do his PhD at the University of Sydney. He shifted to New Zealand in 1992 to take up a postdoctoral fellowship with John Craig at the University of Auckland, and the next year took up a job at Massey University where he is now an Associate Professor of Conservation Biology. His research focuses on developing methods for improving the performance of reintroduction programs, with emphasis on population and metapopulation dynamics. He has been the Oceania Chair of the IUCN/SSC Reintroduction Specialist Group since 1997.



Doug and Daughter Kat in 1993



Doug in Jan 2007

This article is also available on the Tiri web site complete with a full list of publications:
<http://www.tiritirimatangi.co.nz/ResearchArticles.htm>

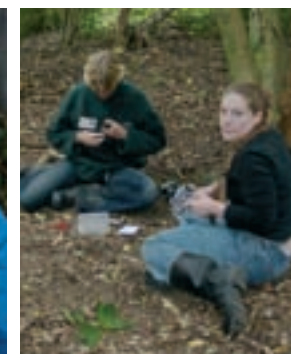
Dawn Chorus 69 May 2007

Principal field workers on the Tiritiri Matangi robin project

1992/93	Doug Armstrong (University of Auckland)
1993/94	Doug Armstrong (Massey University)
1994/95	John Ewen (Massey University)
1995/96	John Ewen (Massey University)
1996/97	John Ewen (Massey University)
1997/98	No breeding monitoring
1998/99	Wendy Dimond (Massey University)
1999/00	Wendy Dimond (Massey University)
2000/01	Åsa Berggren (Sveriges Lantbruksuniversitet), Becky Lewis (University of Glasgow)
2001/02	Åsa Berggren (Sveriges Lantbruksuniversitet)
2002/03	Angelique Hofman (van Hall Institute)
2003/04	Askia Wittern (Sveriges Lantbruksuniversitet), Elna Broesder (van Hall Institute)
2004/05	Renske Kwikkel (van Hall Inst.), Rowland Geraghty (Liverpool John Moores Univ.)
2005/06	Emilie Brugge (van Hall Inst.), Kim Engelhardt (van Hall Inst.)
2006/07	Renske Kwikkel



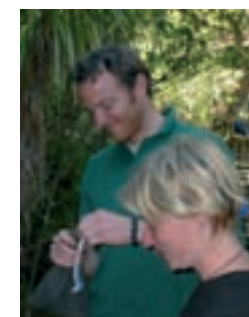
Emilie Brugge



Renske Kwikkel & Wendy Dimond



Elna Broesder, Robin hunting



John Ewen & Renske Kwikkel



Rowland Geraghty



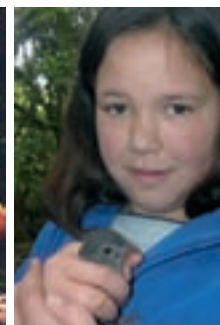
Kim Engelhardt



Åsa Berggren



Wendy Dimond & Kat Armstrong. Kat through the years...



In memoriam:

Napoleon 'Christmas'
 Robin (RM-GR) from Wattle Valley

*Haere râ e hoa
 Pôuri ana taku ngâkau
 Tçnâ koe;
 He manu môhio rawa
 Haere ake
 e karanga ana rua
 waiata ki a râua.*

*Goodbye friend
 My heart is sad
 Greetings to you;
 A very clever bird
 Go upwards
 They are calling
 Sing to them.*

Because of his bands, Napoleon was by some guides known as 'Christmas'. Without people realizing, he must have often been the only robin they would see on a walk through Wattle Valley. He was a very friendly bird and a real personality. Napoleon was found dead under a water trough on the 4th of March.

Renske Kwikkel.



Fauna Notes

Compiled by **Morag Fordham** and **Megan Wilson**

Takahe

Poor Poncho (Kristina's and Rossie's son from last season) was found about midday on Thursday 26 April near the Visitors Centre in a terrible state with a fish hook embedded in his left leg, entwined tightly with sinkers and nylon. He was rushed to the Auckland Zoo New Zealand Centre for Conservation for emergency treatment. Against all odds he survived the night but has since had to have a toe amputated as it had died where the fishing nylon was wound so tight. He is now doing very well and enjoying his specially delivered takahe pellets and a lovely get well card signed by all the guides and supporters on the island that day. We are looking forward to seeing him back on Tiri, popping into the Visitors Centre and the shop.

Rossie is missing both Poncho and his mate Kristina who disappeared a few weeks ago, now presumed dead. Blackwatch and Mahuika are around the lighthouse area and she has been seen supervising the daily clean up of the public toilets!

Blake is also in this vicinity but keeps away from the pair.

Due to her severe limp Tiri has been taken off the island twice in the last month to visit the vets at Auckland Zoo. X-rays failed to show any



Photograph © Paul Colgrave

damage and her limp is now less pronounced. She and Mungo have taken up residence along the Wharf/Ridge Roads area.

Ahikaea's and Montague's chick is very large now and can be seen with the family including last year's chick, Hauraki on the Ridge Road near the Dupont sign.

One day in early March Greg and Cheesecake came down to see the ferry off and once it had left she was seen swimming (without togs, too) back to the Wharf. In April Greg, full of post Easter spirit, was seen with a hot cross bun in his beak, being chased along Hobbs Beach by the relieving ranger!

The birds have all finished moulting and look stunning in their new plumage.

Little Spotted Kiwi

On Easter Monday a distressed bird was found at Little Hobbs Beach and taken to Auckland Zoo. Unfortunately the bird had severe spinal injuries and did not survive.

North Island Robin

21 birds were captured and after disease clearance were released on Friday 16 March into the eastern end of Ecology Bush at the Tawharanui Open Sanctuary. To date 18 birds have been seen. There are four pairs on territory in Ecology Bush along with at least 6 single scattered males, and one pair on territory in the Takatu Point Bush with two single scattered males.

Stitchbird/Hihi

In February 30 stitchbird (5 adult males and 25 mixed juveniles) were caught and successfully released into the Ark in the Park (Waitakere Ranges). With so much natural food available the birds are not using the feeder stations very much but there have been regular sightings of quite a few of these birds. A further 30 will be translocated in June. Here on Tiri the birds are using the feeders a lot at present.



Photograph © Paul Colgrave

Brown Teal/Pateke

Now that we have water back in the dams the teal are more visible. Blue Bonnet's and Finn's duckling on Pumphouse Dam has been named Tammy.

Connie (NE Bay Wetlands) has reappeared with one duckling.

Kokako

A recent survey confirms that there are approximately 18 – 20 adults plus chicks.

Eunice and Oscar successfully raised two chicks but one appears to have been predated by an Australasian harrier.

Shazbot's and Te Hari's chick died. Cloudsley Shovell and Te Koha Waiata, Kahurangi and Bel Canto, and Ruby and Russell all raised their chicks which have now fledged. Piper has now paired up with an unbanded male.

Quaver and Hammond, both males, have paired up, and Tsindi is still on his own.

Chinook is still up at the Visitors Centre but Zephyr has not been seen recently.



Photograph © Paul Colgrave

Whitehead

45 birds were caught, colour-banded and disease screened. After disease clearance they were released on Saturday 31 March at two points 700 metres apart in the Ecology Bush at the Tawharanui Open Sanctuary. They were split into two groups, based on their capture sites on Tiritiri, to try and keep potentially related birds or birds from the same flock together as best as possible. Half were released near an array of four speakers spaced at approximately 100 metre intervals on a rough line forming an auditory barrier at the end of the bush.

Over the next two weeks the sound anchors played about 5 minutes of Tiritiri whitehead songs every 30 minutes. The other birds were released with no sound anchoring. Nora Leuschner monitored the birds and although she did not see any obvious responses of the birds to the speakers she is currently analysing the data as part of her MSc research.

Since release a number of sightings have been made, including a flock of about 15 birds which appears to have settled in one area. At least 13 birds have been identified in various parts of the bush, and the flocks have contained both sound anchored and non sound anchored birds.

Unlike the Hunua and Ark in the Park releases (forests are both over 15,000ha), frequent observations are being made, perhaps due to the much smaller bush area at Tawharanui (about 100ha). It is hoped that the geography of the park, with its gaps of open country inland from the main bush areas, will constrain dispersal and hold the birds in the bush areas where they will maintain contact with each other.

Grey-faced Petrel

As they are a winter breeder, the birds are now returning to their burrows on Tiri. This species has been banded by a number of DoC and OSNZ groups throughout its range and over the years more than 450 birds have been banded on Tiri. To date, 21 new birds have been banded this year.

There are also many recaptures, including some individuals who have been regularly caught. One adult bird was banded in 1995 at Hobbs and has been recaptured in 1997, 1998, 2002, 2006 and 2007. Some recaptured birds were banded in other colonies – Bethells x1, Motuora Island x2, Motaotau Island (BoP) x1. Birds shifting colonies like this helps facilitate gene flow within the population. The two recaptured

Motuora Island birds show how long lived this species of bird is as the one bird was banded as a juvenile in 1961 and recaptured on Tiri in 1996 aged 35. The other bird was banded as an adult in 1964 and recaptured on Tiri aged 41+!

By banding these birds we can learn a lot about their population size, longevity, movements, etc. Also the grey-faced petrel is closely related to the highly endangered Chatham Island taiko, so learning about a common species can help with the management of the taiko.

There is evidence of new colonies around the island, which suggests that the population is increasing; so we can look forward to increasing night noise!

Other Birds

Bellbirds, especially juvenile males, are back en masse at the Visitors Centre feeders, where they are going through 7 litres of sugar water a day. Towards the end of March tuis were seen flying very high and then leaving the island. They come and go depending on what is in flower on the island.

A long-tailed cuckoo was seen flying over Pumphouse Dam at the beginning of March.

In January a banded adult little blue penguin was found dead on the Coromandel Peninsula, a distance of 50 km from Tiri. This bird was banded by student researcher, Monique von Rensburg, on 15 July 2006.

A rare Australian vagrant, the grass whistling duck or plumed whistling duck, was seen briefly at the NE Wetlands just before Easter.

Tuatara

Tuatara are still being seen in the usual areas, including seven in one night.

Marine

At the end of February an octopus was seen swimming under the wharf.

Two pods of about 30 dolphins were seen at Hobbs and Little Hobbs at the beginning of April.



Photograph © Simon Fordham

Flora Notes

TIRITIRI MATANGI, A 'COASTAL FOREST' Compiled by Jan Velvin.

It is time we revisited some of the plants that have adapted to living in such a harsh environment.

WHAT IS A COASTAL FOREST?

Quite simply, a forest comprising of plants which will survive under coastal conditions.

- Wind
- Sun
- Salt water/spray
- Sand blasting

Which all add up to MOISTURE LOSS = STRESS !!!



Olearia furfuraceae showing thickened and shiny leaves.

Let's have a look at these plants and the adaptations that aid the plants' survival.

- Thickened leaves.
- Hairy leaves.
- Grey leaves.
- Oil glands.

I am among the lucky few who spend their guiding days along the 'coastal strip' from the wharf to the bottom of Kawerau Track.

Good examples of many of these plants can be found in this area, showing off their advantages, and in some cases their limitations, under extreme conditions.

The first and most obvious are the *Phormium Tenax* and *Harakeke* *Flax* bushes with their thickened leaves and tight 'clumping' habit. It is interesting to think that these very adaptations were widely put to use by people as they made ropes, mats, baskets and linen from these leaves.

Under these bushes grow *Muelenbeckia Complexa* *Pohuehue* showing two other forms of adaptation. Small (reduced), though thickened, leaves and a ground hugging growth habit.

Moving along on the left we have large examples of *Myoporum Laetum* *Ngaio*. These leaves are thickened but also have distinctive oil glands in them. 'A plant that can really take a battering'. Hold one of the leaves up to the light – you will soon spot these glands.

Next come the *Coprosma*s, again with thickened leaves. *Coprosma Repens* *Taupata* has the added protection of a 'shiny coat' on its leaves, and is commonly named Mirror Plant.

Next *Metrosideros Excelsa*, *Pohutukawa*, with all the attributes for survival – thickened leaves, grey leaves and hairs on the leaves' lower surfaces.

Have a look at the new growth, the light grey shoots are like soft felt to touch.

Well I have got you on your way! It is your turn to walk this path. Stop, have a look, see what adaptations you can find.

As you reach the sand take a look at the plants bordering the beach.

Many show permanent damage from the weather, reminding us how strong and tough the survivors have to be.

MAY'S FEATURED PLANT by JAN VELVIN

PSEUDOPANAX LESSONII Family: Araliaceae Houpara

Throughout the year we have been loosely selecting plants that are providing food for the birds at the time of publication. This could be either flowering, fruiting or setting seed.

Pseudopanax lessonii is one of the last plants to flower and set fruit for the season (which begins in spring).

It flowers up to 2 months after the other Tiri members of the "5 Finger" group.

- *Pseudopanax arboreus* Puahou/ Puakou
- *P. laetus*. *Schefflera digitata* Pate is also a member of this group and a late flowerer.

Houpara is a coastal forest tree and is found in the North and as far south as Gisborne.

We mainly see this plant as a bush but it will grow into a small tree.

Its leaves are bright green and thickened (wind resistant), and although a smaller size than *Pseudopanax arboreus* and *P. laetus*, it still has the distinctive finger shaped leaves.

As with the other members in this group, the number of fingers vary on the same bush between 3 and 5.

The flowers are small, green and are found during late February/ March/ April. The seed form April/May, this is also green, but turns a purple colour as it ripens.

The best examples of Houpara are to be seen on the corner of Wharf Road and Graham's Road.

Keep an eye on these plants as

they make their new spring growth – the new growing tips are protected by a clear 'gluey' substance. Quite fascinating!

It is interesting to note that this plant was named in honour of Officer Lesson a French man from d'Urville's Corvette who, in 1824, discovered the plant in the Bay of Islands.



Pseudopanax lessonii - flowerbuds

TIRI KIDS

Hand this to your kids – or pass it on to someone else's kids – to enjoy a range of activities about Tiritiri Matangi Island.

Hi everyone!

Thanks to all of you who came to the Tiri kids' day on the 22nd of April – it was great to see you! We have a crossword for you in this issue, about finding species that you don't usually see on your visit to Tiri. So put on your detective hat and get ready for some serious investigation.

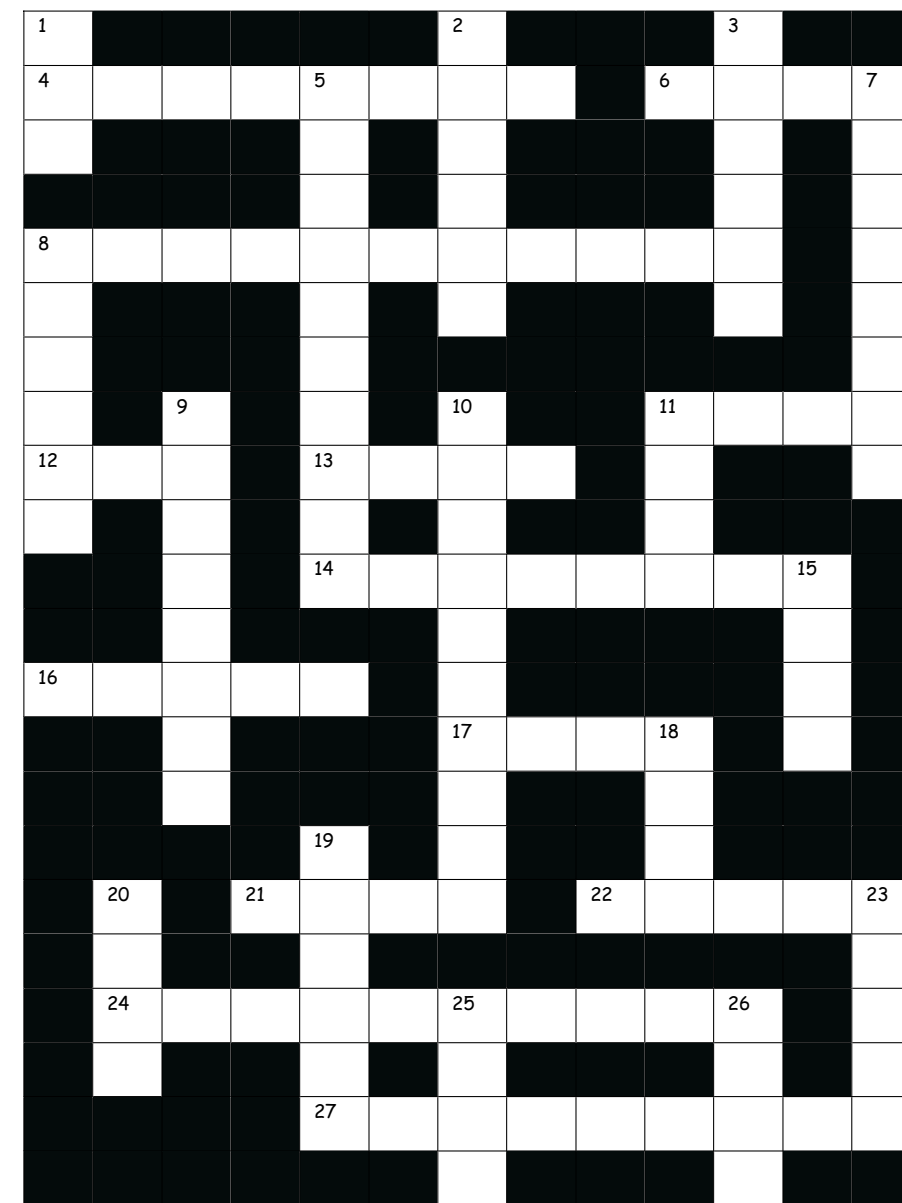
Enjoy! Jo and Tess

ACROSS:

4. A shy bird with a fern-like tail. (8)
6. You may have to _____ for clues to find the birds. (4)
8. One of the gecko species on Tiri that is found around the coast. (6,5)
11. _____, look and listen. (4)
12. The morepork is a type of _____. (3)
13. Be careful, don't scare the birds or they'll fly _____. (4)
14. A very shy, small, blue and brown rail. A _____ crake. (8)
16. You will need to be _____ or the noise will scare the birds. (5)
17. Use your eyes to _____ very carefully. (4)
21. An animal may _____ so it is hard to find. (4)
22. Watch out for _____ of the animals. (5)
24. Birds like the fernbird may seem _____ because we don't see them often. (10)
27. Some animals are hard to see because they only come out at night. They're _____. (9)

DOWN:

1. Turn cellphones _____ when in the bush. (3)
2. The water _____ is a good place to see birds. (6)
3. Some animals hide underground in a _____. (6)
5. _____ will help you see animals which are far away. (10)
7. It is hard to see birds that are high in the _____. (8)
8. The shining _____ lays its eggs in other birds nests.
9. If something is hard to find it is _____. (8)
10. _____ helps blend an animal into its surroundings so it can't be seen. (9)
11. Animals may not be in the _____ spot every time. (4)
15. If you walk too quickly you won't see anything. _____ down! (4)
18. A flightless NZ icon that is often hard to see (and only at night!). (4)



19. Use your ears to _____ very carefully. (6)
20. You may have to wait a long _____ to see some animals. (4)
23. Stay very _____ or the animals might see you move. (5)
25. Some crabs escape you by hiding under a _____. (4)
26. Each bird species has a different _____ to help you find them. (4)

ANSWERS

- don't peek!

ACROSS:

- | | | |
|-----------------|--------------|----------------|
| 8. common gecko | 14. spotless | 22. signs |
| 11. stop | 16. quiet | 24. mysterious |
| 2. fernbird | 12. owl | 17. look |
| 6. hunt | 13. away | 21. hide |
| | | 27. nocturnal |

DOWN:

- | | | | |
|---------------|----------------|------------|-----------|
| 3. burrow | 9. illusive | 18. kiwi | 25. rock |
| 5. binoculars | 10. camouflage | 19. listen | 26. song |
| 7. treetops | 11. same | 20. time | |
| 1. off | 8. cuckoo | 15. slow | 23. still |
| 2. trough | | | |

Compiled by Jo and Tess, Tiri Kids, PO Box 90-814, Auckland Mail Service Centre, Auckland 1142



STOP PRESS STOP PRESS

Public release of Kokako

The kokako release is planned for 23rd June 2007 and is the release of 3 birds that have the rare Taranaki gene from Mt. Bruce Wildlife Centre & the Kiwi House in Otorohanga.

This is a public release. Details will be on the Tiri Website as they come to hand.



STOP PRESS STOP PRESS

Dawn Chorus August Deadline **31st July 2007**

If you have anything you would like to contribute or any ideas of what you would like to see in *Dawn Chorus*, Please contact me on 09 575 4515 or email: editor@tiritirimatangi.org.nz

Here are a few photos from the popular Tirikids day on 22nd April supplied by Josie Galbraith



Supporters of Tiritiri Matangi Inc. PO Box 90814, Auckland Mail Service Centre, Auckland 1142



Dawn Chorus

