

Pukorokoro Miranda News

Journal of the Pukorokoro Miranda Naturalists' Trust

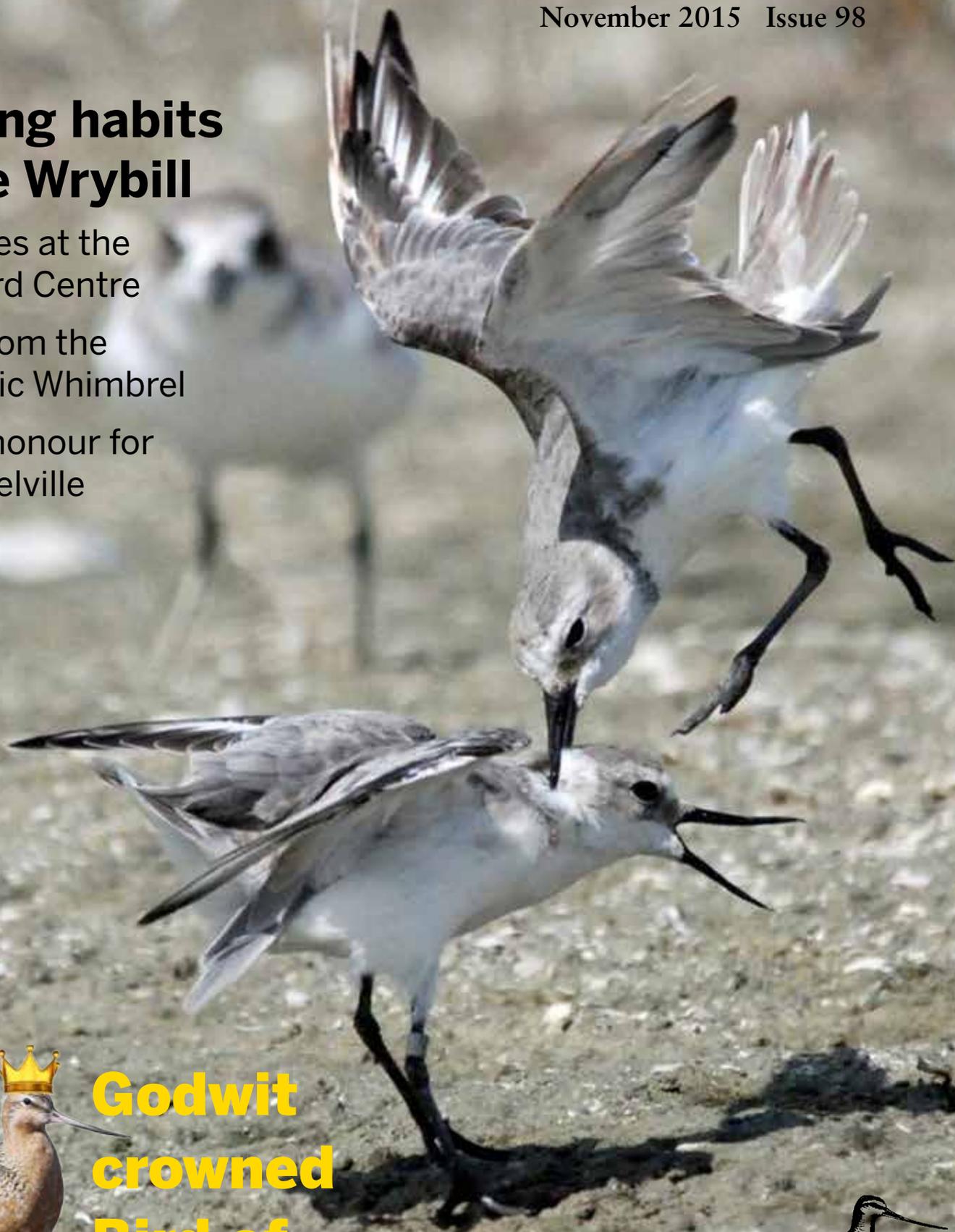
November 2015 Issue 98

Feeding habits of the Wrybill

New faces at the
Shorebird Centre

A visit from the
enigmatic Whimbrel

Extinct honour for
David Melville



**Godwit
crowned
Bird of
the Year**





KING OF THE BIRDS: Humorous messages like this, from Ann Buckmaster, played a key role in the Facebook campaign in support of the godwit

2015 truly is the Year of the Godwit

With the Bar-tailed Godwit being voted New Zealand's Bird of the Year, and the Minister of Conservation Maggie Barry visiting the Shorebird Centre two days later to announce important measures aimed at protecting our migratory birds, 2015 really has become the Year of the Godwit, writes **Jim Eagles**.

When Forest & Bird announced on Labour Day that the Bar-tailed Godwit had been chosen as New Zealand's Bird of the Year for 2015 it marked a successful end to a demanding and at times extremely tense battle.

The godwit started quietly, about 10th out of the 52 birds, while the Kaka, sponsored by Zealandia and with comedian Te Radar as its manager, rushed out to a commanding lead.

But over the next few days – as you'd expect with a long-distance flier – the campaign gradually gathered momentum. By the end of the first week it was neck-and-neck with the Kaka and after two weeks the Kuaka's long beak was definitely in front.

That success was the result of a great team effort. Campaign manager Keith Woodley sent out regular emails to members and gradually worked his way through the addresses of all those hundreds of birders who've stayed at the centre, attended courses or been in touch over the years.

The centre was set up with post-

ers, leaflets and a strategically placed computer so every visitor – including the odd busload from U3A and Probus - could be persuaded to vote and, hopefully, take the message to others.

The local community was very supportive. Hauraki District Mayor John Tregidga and local MP Scott Simpson agreed enthusiastically to promote the godwit through their columns, speeches and broadcasts. The Pink Shop in Kaiaua displayed posters and leaflets. Ecoquest offered to spread the word. Ngati Paoa urged its whanau to support the godwit. The *Hauraki Herald* ran a couple of nice stories.

The campaign had a big presence on social media (see story on page 7) with Gillian Vaughan's sister Sarah plugging the godwit on Twitter, Ann and Ray Buckmaster on Facebook, Gillian on the web page and a small new voice on Instagram. Jim Eagles contacted a niece and some old mates in Dublin, some of whom do this sort of thing professionally, and the godwit was splashed on Irish social media.

Help came from many places. One of Jim's grandsons, who won a certificate in the Godwit Poster Competition, sent out 90 emails supporting the godwit . . . just a couple of days before his school sent out one backing the Kokako. Sibson Fund Scholarship winner Rachel Withington spread the message at Massey University. A spelling mistake by Wendy Hare even gave us our own social media personality, Godwin, who starred in several cartoons by Ann.

But the key to the godwit's success probably lay in the worldwide wader network. Veterans like Keith, Adrian Riegen and David Lawrie called on their web of contacts stretching from Australia to Alaska and beyond. Charles Gao and Estella Lee plugged into their Chinese friends. While other birds tended to stay put overnight, the godwit continued to fly as folk in other time zones cast their votes.

As the vote entered the final week it all looked good for the godwit – though Keith kept the pressure on

Cover: Photo of Wrybill conflict at Pukorokoro Miranda by Nigel Voaden.

<https://www.flickr.com/photos/nvoaden/>



MASS MEDIA: Five TV crews were at the Centre to record the arrival of the Chinese Ambassador, Director-General of Conservation and Minister of Conservation.
Photos / Jim Eagles

with more emails and phone calls – but then from out of nowhere the Kokako struck. One huge surge in numbers took it into second place. A couple of days later another surge carried it past the godwit into first.

However, Forest & Bird thought the voting looked suspicious and a check revealed it was the work of two enthusiastic teenage girls who had created a couple of hundred email addresses to support their favourite bird. When their votes were cancelled the godwit was back in front. But when with two days to go Forest & Bird stopped showing the totals the Kokako was slowly closing the gap.

As a result it was a tense wait until, on Monday morning, it was announced that the godwit had held on to first place with 1957 votes, followed by the Kokako on 1814 and the Kaka well back on 988.

But, of course, the action didn't stop there. Keith had two statements ready – one modest in victory, the other gracious in defeat – and was kept busy with interviews as the godwit's success attracted valuable publicity.

Meanwhile, there was a ministerial visit in two days time to prepare for, as well as thinking how to make the best use of the godwit's success. What about a banner saying, 'Welcome to the home of the Bird of the Year'?

Ann Buckmaster found that Warehouse Stationery made banners at a reasonable price and the Thames branch was open on Labour Day, Keith did a fine design and Jim and Chris Eagles headed for Thames. Their mission took a little longer than expected

because it turned out the training on banners was done three years ago, the machine arrived in Thames one year ago and this was the first banner they'd been asked to make. But the young staff were wonderfully enthusiastic, especially when they learned what it was all about, and before the day was over a banner was erected on the front entrance to the Shorebird Centre.

The effort paid off when five television crews turned up for the ministerial visit and the message about the Bird of the Year was broadcast on TV1, TV3, Prime, Maori TV and two Chinese television channels.

Ministerial visit

The future of godwits, Red Knots and other migratory birds looks a little



BIG NEWS: Conservation Minister Maggie Barry makes her speech.

more secure following a visit to the Shorebird Centre by Conservation Minister Maggie Barry to formally announce the creation of a huge reserve in the key stopover area of Bohai Bay and to signal the forthcoming signing of an agreement between New Zealand and China on the protection of migratory birds.

In making the announcement Ms Barry paid special tribute to Chinese Ambassador Wang Lutong, who learned of the problems at Bohai Bay, where he comes from, during a visit to Pukorokoro earlier this year.

Following that visit 'Ambassador Wang has worked with authorities in Hebei Province to gain protection for a significant habitat for Red Knots and shorebirds, covering more than 3000ha, with other extensive wetland sites under consideration,' the Minister said. 'The Ambassador is a bird enthusiast who understands the crucial importance of Bohai Bay to conservation and has given generous support to this initiative.'

Ms Barry also confirmed that later this month the Director-General of Conservation Lou Sanson will lead a delegation to Beijing to finalise a Memorandum of Understanding between the two countries to co-operate on the conservation of migratory birds such as the Red Knot and Bar-tailed Godwit. PMNT will be represented by Adrian Riegen and the delegation will also include Gary Thompson, the chair of the Ngati Paoa Trust Board, and Fonterra officials in Beijing.

Sanson told the gathering that co-operation between New Zealand and China over the protection of the migratory birds we have in common was at an all-time high thanks to the work of the ambassador.

And Ambassador Wang, whose presence at the ceremony also represented a farewell visit to the Shorebird Centre because his term is about to end, repaid the compliment. With a grin he told Sanson, 'Pardon me but every time you came to visit me, it was four times I think, you nagged me about Miranda.'

All three speakers paid glowing tributes to PMNT. Ms Barry, for instance, said, 'The Trust is respected internationally for its success in protecting this important habitat, and the birds which make it their home'



NEW FACES: Louisa Chase (at left) is the new assistant manager and Rachel Hufton (at right) is the shore guide.

Shorebird chit-chat

Meet the new shop manager and shore guide

It's been all change at PMNT in recent weeks. Assistant manager Maria Staples-Page has moved on and will be replaced by Louisa Chase. Rachel Hufton from England has started work as the new summer shore guide. DoC representative Greg van der Lee has resigned from the department and, as a result, as a member of the Council, and will be replaced by Dion Patterson.

Assistant manager

Before becoming assistant manager Maria had a longstanding casual association with the Shorebird Centre. It developed further in the early 2000s when she attended a series of training days for volunteers organised by assistant manager Jenni Hensley.

Maria did the Miranda Field Course in January 2007 and when Jenni moved to Darwin she was the ideal replacement.

During her time at the Centre she took on responsibility for the shop and people will have seen the greatly increased product range available. As well as keeping the Centre functioning on a daily basis, she also co-ordinated the volunteers.

Maria has taken on a number of roles in her working life. She trained initially and subsequently worked as a Registered Valuer. She then completed a Bachelor of Science degree studying Geology.

Those who have spent time at the Centre may have shared in her many interests: playing instruments as varied as the ukulele and flute, her fabric creations, novel writing and gastronomic vegan cuisine. Never a dull moment when Maria is around.

Maria is now taking on a full-time role training as a Legal Executive in Thames but she will be back at the Centre from time to time – especially when the bike trail from Thames is up and running.

Louisa Chase, who takes over as new assistant manager, will see the role expanded from two to three days a week

She has wide experience in both not-for-profit and commercial sectors, including a long involvement with the Kaipatiki Project Environment Centre, at Birkdale on the North Shore. In 2013 and 2014 she was the Festival Manager for Ecofest North held at Kaipatiki. Now she is planning to move to the Hauraki area.

Shore guide

Rachel Hufton, the new shore guide, will be with us until 1 April and as a migrant herself she has quickly developed an affinity with the birds arriving from the Northern Hemisphere.

'My own migration experience,' she says, 'was part of a plan to make a contribution to nature conservation

at the international level. I migrated here from the UK, joining the Birds New Zealand/OSNZ conference in May, had a stopover in China where I worked on wetland bird surveys, and mist netting on the Tibetan Plateau and on a National Nature Reserve within the Sichuan Province. My second stopover was in Fiji working as a volunteer on a marine conservation project.

'I am passionate about wildlife and ecology. As a keen bird bander, my interest in shorebirds originated from cannon netting experience at the Wash in Norfolk back in the UK.'

Rachel completed an ecology degree and post graduate study and then worked with conservation groups, private consultancies and local government. 'This involved ecological surveys, impact assessments and managing environmental impact of development projects.'

She is in New Zealand on a sabbatical from her current role as an ecologist for local government in Worcestershire in the UK. 'I am looking forward to my time at Pukorokoro Miranda where I want to expand my ecological and ornithological skills/ knowledge on an international level.'

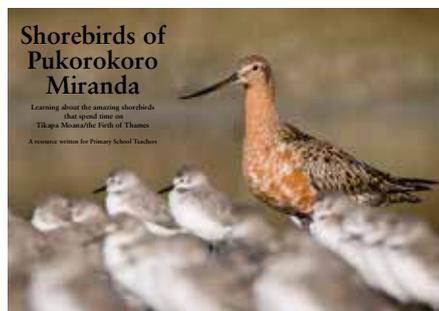
Rachel's message to members is, 'I look forward to welcoming you to the Pukorokoro Miranda Shorebird Centre and the bird hides where you're most likely to find me. I'll certainly en-

joy the opportunity of meeting people visiting the centre and helping to raise the profile of shorebirds and the conservation of their important habitats both here and overseas.'

Land purchase

Plans for the Trust to purchase the Findlay Wildlife Reserve area from the Lane family for \$400,000 are still on track. Foundation North (formerly the ASB Trust) has agreed to provide \$200,000 towards the purchase. Application for the remaining funding have been lodged with the Nature Heritage, which has asked for further information, and Waikato Regional Council.

Education resource



Over the past few months a huge effort has gone into making the Shorebird Centre an attractive place for school visits, both as a potential source of income for the Trust and a way of getting our conservation message across to the next generation.

The key task has been to prepare a teaching kit (shown above) outlining how a visit to Pukorokoro fits neatly into the curriculum as well as suggesting possible exercises to be done before a visit, at the Centre and afterwards.

Council member Ray Buckmaster, who is heavily involved with the project, says the focus in the programme is on the Trust's two poster birds, the Bar-tailed Godwit and the Wrybill, and the migration story itself. 'This has a very good fit with significant areas of the 2007 Curriculum.'

To develop the resource the trust employed Robyn Irving, who has worked on similar programmes for institutions in the Waikato, works as an mentor in environmental education and is a facilitator for several Waikato Enviroschools. 'She has a great understanding of children,' says Ray, 'and it is also obvious that she is getting a huge kick out of this project.'

The booklet Robyn has prepared



The final speaker in our Year of the Godwit programme will be Professor Theunis Piersma, a leading authority on migratory shorebirds.

Of particular significance for PMNT is his role as chair of the Global Flyway Network (GFN). It builds on demographic shorebird studies with the aim of understanding the factors determining shorebird numbers in a rapidly changing world. It also tries to fill major gaps in fieldwork coverage of the world's most threatened shorebird flyways. GFN has been monitoring the Red Knot site in Bohai Bay in China since 2009.

In 2009 Theunis was elected member of the Royal Netherlands Academy of Arts and Sciences and in 2014 awarded the Spinoza Prize by the Netherlands Organization for Scientific Research. This prize is the highest recognition of excellence in Dutch science and is awarded each year to three or four researchers working in the Netherlands who operate at the absolute top of science in their fields. Theunis received a sum of 2.5 million euro to freely spend on his research.

What's on at the Shorebird Centre

Now until 22 November, Exhibition of shorebird paintings

Watercolours by Keith Woodley at the Miranda Farm Gallery, open Wednesday-Sunday 10am-3pm.

15 November Birds NZ Firth of Thames Wader Census

Contact the Centre for details.

29 November, Special Birthday Speaker

11am Theunis Piersma, Dutch wader biologist, returns to New Zealand after 15 years. Birdwatching afterwards.

28 December, Bird Banding and Barbecue

6.30am start. Fingers crossed the Red Knots will co-operate. Barbecue later to mark the end of the Year of the Godwit.

7-13 January, Miranda Field Course

The centre's flagship course is full. Book early for the next one.

28 February, Farewell to the Birds

10am Speaker Rachel Withington on what the Wrybill eat when they holiday up here. Birdwatching afterwards.

29 May, Annual General Meeting

High tide at 12.45pm. Speaker Pip Wallace on The Nature of Protection: biodiversity law and planning.

Million year tribute to David Melville

David Melville (at right) will be a name familiar to many people involved with birds in general and shorebirds in particular. Certainly he is very well known to us at Pukorokoro Miranda Shorebird Centre. Anywhere you look – from our engagement with the EAAF, with China and North Korea, to our January field courses – his name pops up.

Now his name will be forever attached to the very shorebirds with which he spends so much time working.

Fossil deposits from an ancient lake at St Bathans in Central Otago have been identified as a new species of wading bird of a previously unknown lineage. Dated from the early Miocene, 19-16 million years ago, its closest relatives appear to be the Plains-wanderer of Australia and the seedsnipes of South America.

The authors of a recently published paper say they have named



it *Hakawai melvillei* honouring the New Zealand-based ornithologist and ecologist for his efforts in implementing conservation measures for shorebirds, locally and globally.

Taxonomically *Hakawai* is classed with the Scolopacidae, the group of shorebirds that includes not only the godwits, curlews and sandpipers, but also the New

Zealand snipes such as those still found on the Chathams and the sub-Antarctic islands.

Hakawai did not follow the path of some other endemic New Zealand birds that, in the absence of terrestrial predators, became flightless. Indeed researchers suggest it could fly better than the Plains-wanderer which is a notoriously poor flier. But the presence of fossil evidence of chicks and near-fledging birds indicates it bred in Zealandia. Evidence also indicates it was a wader, presumably occupying habitat around the margins of the ancient lake at St Bathans.

The final word should go to Theunis Piersma who offers a fine assessment of this honour for David. 'This is very, very nice! Having something extinct named in honour of the contributions to fights to save something extant from extinction is an interesting mind-twister.'

Keith Woodley

includes graphics by Keith Woodley and was laid out by Jim Eagles. The it will shortly be trialled with a sample group of teachers and, if all goes well, to print and distribute it to schools.

As part of the effort to provide an improved educational environment the Trust has also built a circle of seats at the hide to serve as a small outdoor classroom and has purchased 12 light-weight pre-focussed binoculars ideal for use by children.

To augment the existing dioramas and display boards at the Centre – which are due for an upgrade in the near future – the Trust has also bought a giant magnetic board and work is underway on a series of fun educational exercises that children can carry out on it.

The development of an educational resource – and the possible employment of a part-time educator – will be paid for from the \$38,261 bequest from Dinah Francis Gavin.

Centre refurbishment

The Shorebird Centre was closed for refurbishment for a week back in August and now has a whole new look (see the photo below). The floors

have been cleaned, sanded and polyurethaned throughout and look much lighter and brighter. At the same time the mish-mash of old furniture in the lounge area has been replaced by new units in a matching style and brighter colours. The new format had its first

trial run when around 95 people turned up for the address on satellite tracking of migratory birds by Lee Tibbitts and worked out extremely well.

The refurbishment has been paid for by the \$13,214 Fraser Murray Bequest.



COMFORT AND STYLE; The refurbished Centre, with its sanded floors and new furniture, is now a nicer place to hang out. Photo / Jim Eagles

Bringing shorebirds into the world of social media

Kingfisher toilet

Visitors to the Findlay Reserve may have noticed that the second of the information signs on the path to the hides, telling the story of Pukorokoro, has been looking a bit the worse for wear as a result of a pair of kingfishers deciding it makes a great spot to rest and relieve themselves. However, a cunning plan of providing a slightly higher perch just behind the sign has succeeded in enticing the birds to opt for the better vantage point and the sign is once again clean and readable.

Dandong delegation

A delegation from Dandong City – which includes the important Yalu Jiang Nature Reserve – is due to arrive in New Zealand this month and will be paying a visit to the Shorebird Centre.

New DoC representative



Dion Patterson (at left) is the new DoC representative on the PMNT Council. Dion will also take over responsibility for the Living Water partnership

between DoC and Fonterra in the Hauraki area.

Dion has worked for DoC since 1991, initially mainly with goat control.

From 1999-2013 he was Supervisor and Programme Manager Biodiversity in the Waikato Area Office, a role which included skippering vessels for OSNZ shorebird census work, involvement with Maui's dolphin biopsy sampling and observing on Sanford's trawlers during a Niwa snapper tagging project.

Since 2013 he has been Northern North Island Partnerships Regional Integration Coordinator which, he says, 'provided a great opportunity to function and connect across the organisation at a strategic level'.

Mass weeding

A busload of 50-60 members of the Auckland-based Chinese Conservation Education Trust will be visiting Pukorokoro Miranda on 12 December to assist in weeding the shellbank at the Findlay Reserve to keep it free for roosting birds. A group from Pukekohe High School is also due to visit next month to carry out weeding.



The Shorebird Centre has a growing presence in social media thanks to the efforts of several members.

The Facebook page recently passed the 1000 likes mark (at the time of writing it's at 1053) thanks primarily to the efforts of Council members Ray and Ann Buckmaster (photographed above with their trusty desktop computer) in posting newsy snippets and delightful pictures.

The web page, which is maintained mostly by chair Gillian Vaughan, continues to attract an audience from around the world. Considerable effort has recently been put into upgrading the on-line shop and the Council has just let a contract for an upgrade which will allow subscriptions to be renewed through the web page and making it easier to buy shop merchandise.

Once that is in place the Council will be seeking funding for a complete upgrade and re-design of the website to better carry the story of the Shorebird Centre's work to the wider world.

Past-chair David Lawrie continues his prolific Twitter efforts on behalf of birds and, in particular, the Year of the Godwit. And during the Bird of the Year campaign Gillian's sister Sarah used Twitter to get the message across to a new audience.

Chris Hannent (shown below with his ever-present smartphone), who recently launched an Instagram site for Tiritiri Matangi, has now done the same for Pukorokoro Miranda. The Council is now looking for someone interested in taking over the day-to-day running of our Instagram presence.





TASTY SNACK: A Whimbrel enjoying a crab lunch.

Photo / Brian Chudleigh

The elegant and enigmatic Whimbrel

The arrival of first one, then two and finally three Whimbrels at Pukorokoro Miranda this spring caused considerable excitement. **Keith Woodley** tells the story of this increasingly rare wader.

One of the more enigmatic of the waders associated with the Firth of Thames is the Whimbrel. This distinctive member of the curlew family is likely regularly present in small numbers on the Firth most years but is quite rare on the Pukorokoro Miranda coast.

Unlike most waders they are quite at home in and among mangroves. They often roost in branches of mangroves or sometimes underneath them, and occasionally in tall coastal trees.

Perhaps this explains their comparative rarity on this side of the bay as there are considerable mangrove roosting opportunities from here across to Thames. Perhaps that also explains why the three birds recorded in front of the hide in early September were not there for long.

They may often be seen with Bar-tailed Godwits and may not always be readily identifiable. However, on closer examination a markedly different bird is revealed.

Like all the curlews they are strikingly patterned – the upper parts brown with pale spots and notches giving a very spangled appearance. The dark brown crown and eye-stripe are separated by a pale supercilium, while the crown itself is bisected by

a pale stripe. The overall plumage makes these birds appear much darker than godwits, which are also marginally smaller. But most distinctive of all is the sturdy decurved bill which eliminates any further confusion with godwits.

The scientific name *Phaeopus* is derived from the Greek Phaios - referring to dusky, brown, or grey and *pous* for foot. It is perhaps one of the more distinctive common names among the waders, though that has not prevented it from attracting others: Jack Titterel, Mayfowl, Shipmate, or Medium Curlew being some of them.

Another very striking feature is their call, described in HANZAB thus: ‘a far-carrying rippling titter transcribed as bibibibibibi or pupupupupu.’

It is a sound that like some other waders – Common Greenshank and Ruddy Turnstone spring to mind – is immediately recognisable and may be heard on many coastlines around the world. These are extremely wary birds, often flushing well ahead of other waders nearby. So it is not uncommon for the striking trill of a Whimbrel to be heard only as the bird rapidly puts distance between it and the observer.

The breeding range of Whimbrel is extensive: from northern Alaska across the Canadian Arctic to Hudson Bay, Iceland, with a few in northern Scotland, then from Scandinavia to the Kola Peninsula and across large areas of Russian Arctic.

But dispersal during the non-breeding season is even more widespread. They occur on the coast of Africa south of Morocco to South Africa and up the east coast to the Red Sea, Arabian Peninsula and Persian Gulf. Then from the west coast of the Indian Subcontinent to South East Asia, Melanesia, Micronesia and Polynesia. In the Americas they are found in the southern US, Mexico and Central America and as far south as Uruguay.

Their range in this country is no less scattered and although they are more likely to be seen in the North Island they really could turn up just about anywhere around our coast

There are several recognised subspecies of Whimbrel two of which occur in our Flyway. The first scientific record of the species for New Zealand was a bird identified as an American Whimbrel, or *hudsonicus*, found in July 1874 at Wairau mouth, Marlborough. The next record was not until



ALL DRESSED UP: A Whimbrel in breeding plumage with not an admirer in sight.

Photo / Brian Chudleigh

June 1949 when Ross Mackenzie saw one at Ohiwa Harbour. The other subspecies Asiatic Whimbrel or *variegatus* was first recorded in June 1879 at New Brighton in Christchurch.

The two subspecies are generally separated on plumage – mainly the amount of barring occurring on the tail and rump, the American form being overall darker. However it is now understood that there is – perhaps as the name suggests – considerable variation among the *variegatus* race, and that doubt is now being cast over just how often the American form has occurred in New Zealand. It seems likely that some birds identified as being American may in fact be Asiatic Whimbrel.

My first encounter with Whimbrel occurred in 1994 under interesting circumstances. That day I had planned to

attend Dick Sibson’s funeral but then realised that we had a reservation for a couple from Newfoundland who were arriving that day, preventing me from proceeding with those plans.

That afternoon, as the service was getting underway in Auckland, I found myself at the hide with the Canadian couple. Before us was a massed flock of shorebirds – mostly godwit. Some new birds arrived and landed at the rear of the main flock and immediately caught our attention: for they were Whimbrel, 10 of them. They remained there, scattered and alert, for a few minutes before taking off and disappearing out over the firth, not to be seen again.

Some time later I related this incident to Rick Sibson who smiled and told me that Whimbrel were his father’s favourite waders. 

A new species for Widgery Lake

Several Mallard pairs nest around Widgery Lake each year so two female ducks and three ducklings is not an unusual scene out the window of the Sibson Room. Beyond a passing glance I took little notice . . . until the bright late afternoon light catching the two adults caused me to look more closely. They were surely too pale to be Mallards and also much smaller.

And that is how the first record for Grey Teal on Widgery Lake also becomes a confirmed breeding record. It is a very common species at Puko-

rokoro Miranda with large flocks regularly found on the Stilt Ponds and the Bittern Pond near the Centre, but never before on Widgery Lake.

There were at least three Mallard nests elsewhere around the lake as well. Part of the evidence for that, in the days before flotillas of ducklings subsequently appeared, were the five mallard drakes hanging around idle. I anticipated these loafers could make life difficult for the teal family, but they showed absolutely no interest in them. 

Now in residence at Pukorokoro

Arctic Migrants

<i>Bar-tailed Godwit</i>	3900
<i>Red Knot</i>	600
<i>Marsh Sandpiper</i>	1
<i>Curlew Sandpiper</i>	3
<i>Pectoral Sandpiper</i>	1
<i>Sharp-tailed Sandpiper</i>	1
<i>Pacific Golden Plover</i>	7
<i>Red-necked Stint</i>	3
<i>Turnstone</i>	3

New Zealand Species

<i>Wrybill</i>	300
<i>NZ Dotterel</i>	
<i>Banded Dotterel</i>	
<i>White-fronted Tern</i>	
<i>Hybrid Black Stilt</i>	
<i>SI Pied Oystercatcher</i>	500+
<i>Variable Oystercatcher</i>	
<i>Black-billed Gull</i>	600+
<i>Pied Stilt</i>	997
<i>Hybrid Stilt</i>	1
<i>Royal Spoonbill</i>	44
<i>Caspian Tern</i>	18



HEARTY MEAL: A Wrybill hauls out a nice fat worm from the Pukorokoro mud.

Photo / Jenny Atkins

What do Wrybills eat from the mud

Evidence that Wrybills which spend winter in the Firth of Thames feed on biofilm as well as worms has emerged in a study done by Massey University Masters student **Rachel Withington**. This finding, produced with the aid of a Sibson Fund Scholarship from PMNT, is the first evidence of biofilm feeding in a non-scolopacid shorebird.

In the summer of 2012 at Foxton Estuary, while doing some godwit monitoring for my senior lecturer at Massey University Phil Battley, I saw my first Wrybill. From that moment I knew that I wanted to know more about this strange bird. I started browsing the internet to find out what was known about them and it turned out that surprisingly little was.

Consequently, I let Phil know that I was keen to work on Wrybills for my Master's thesis. Phil pointed out that the timing of the university year meant it would be far easier to work on Wrybills on the non-breeding grounds than on the South Island riverbeds, and suggested their foraging ecology on the non-breeding grounds in the Firth of Thames would be an excellent topic.

In particular we wanted to see if there was any evidence of Wrybills feeding on biofilm. Biofilm is a mucilaginous matrix containing microbes, organic detritus and sediment, all held together by secretions from bacteria and microphytobenthos. Together these form a dense layer about 0.01–2.0 mm thick on the surface of intertidal mud flats. Biofilm was until recently thought



RACHEL WITHINGTON

to be consumed by only rasping invertebrates and some species of fish, but it has now been confirmed in the diet of some sandpipers.

In April 2014 I spent a month at Pukorokoro Miranda, spending many hours in the expansive mud counting, observing and videoing Wrybills along the tidal flats off the western shores of the Firth, and making a broad-scale grid survey of sediment composition,

invertebrate numbers and biomass, and penetrometer depth (mud softness).

We also collected blood, feathers and faeces from 40 birds caught in June. These samples were used in stable isotope analyses that would, we hoped, reveal whether Wrybills were assimilating energy from biofilm as well as polychaete worms.

Wrybill numbers, polychaete abundance and biomass, sediment water content and sediment particle size all varied across the study site. Data modelling revealed that the distribution of feeding Wrybills was best predicted by distance to shore, polychaete biomass and sediment resistance (penetrometer depth). The numbers of foraging Wrybills were highest in areas close to shore with high polychaete biomass and high sediment penetrability. These results indicate that when Wrybills are feeding, access to their benthic prey (influenced by sediment properties) is just as important as its abundance and biomass.

Wrybills could often be seen pulling out polychaete worms. However, they also spend a large amount of time



TASTY SNACK: Another Wrybill chews the mud to get at the biofilm.

Photo / Phil Battley

feeding in very soft, wet sediment close to shore. In this sediment they move their curved bill rapidly through the mud in a tactile action described as ‘scything’ or ‘sluicing’ or they tend to ‘bite’ the wet sediment. This method of feeding is distinct from what is typically seen in plovers and this distinctiveness raised the possibility among a number of people that Wrybills may be feeding on surface biofilm – a feeding method recently found in Western Sandpipers, Red-necked Stints and Dunlin.

I used videos to investigate how Wrybill foraging behaviour varied with sediment type and prey levels. The beauty of Wrybills for this part of the study was, of course, their incredible approachability which allowed me to take videos of wild foraging birds from as little as 5m away. I ended up with 200-odd videos of foraging birds, from which I extracted all foraging actions, paces, intakes, etc.

From this it was obvious that Wrybills had two main modes of foraging: visual and tactile. Visual foragers would walk slowly and periodically probe into the sediment, sometimes capturing a worm. In contrast tactile feeders would walk more rapidly, biting into the sediment every few seconds, swallowing regularly. Other birds would use a mix of these two styles.

The feeding method used was seemingly influenced by the properties of the sediment they were feeding

upon. Tactile or mixed foraging methods were seen predominantly in the wet mud close to shore, while visual foraging tended to occur in areas further from shore with a higher sand content, lower water content, and lower polychaete abundance. Tactile foraging also tended to be seen in areas



WRYBILL Photo / Jenny Atkins

of the mudflat with low gravel content, a result in-keeping with the notion that tactile feeding is better suited to fine sediments with low resistance and few pieces of coarse material. In sediments like these a bird’s bill is able to penetrate the sediment easily and there is a low risk of bill damage. In addition to this, the inherently high water content of fine sediments tends to keep benthic invertebrates closer to

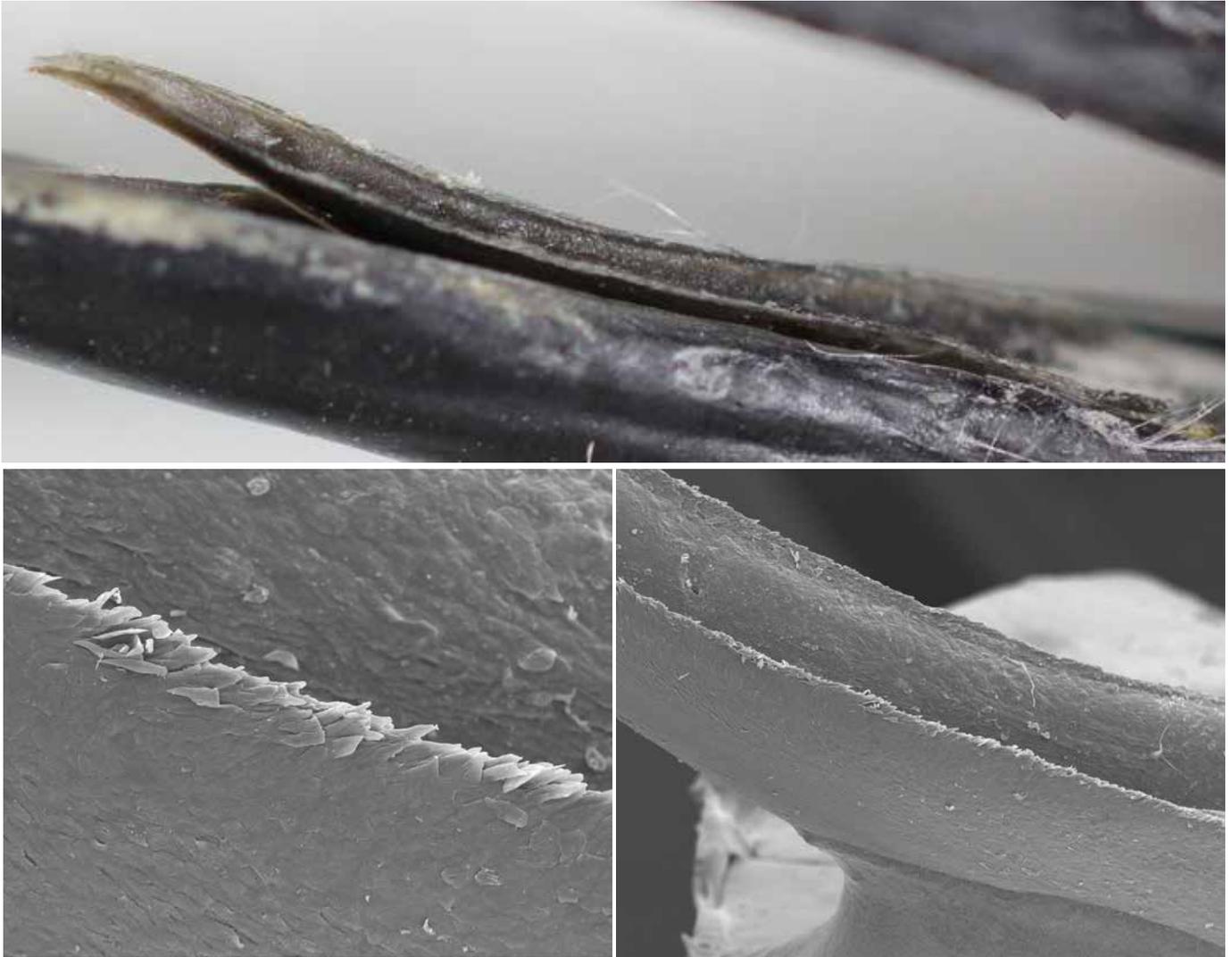
the surface and more active making them more easily accessible to tactile foragers.

Something else can be noticed in the behaviour of the visual-foraging Wrybill. Immediately after it swallowed a worm, the bird would quickly run out of the area, whereas the pacing rate of tactile and mixed foragers would stay the same.

This pattern is probably explained by the fact that visual feeders tended to capture larger worms than mixed and tactile feeders did. Larger worms took longer to swallow, so one possibility is that the act of subduing the worm would have sent vibrations through the mud and caused other nearby worms to bury themselves deeper.

As the ability of a visual forager to detect its prey is highly reliant on the activity of the prey, a deep or inactive worm may be difficult to detect or reach. An alternative is that as large worms are quite uncommon compared with smaller worms, the chance of another one being close to the one just captured is lower than the chance one is present in another place, so the bird is better off to quickly shift sites.

The foraging methods had remarkably consistent differences between them. Visual foragers made relatively few feeding actions, worm captures and unidentified swallows per minute, but most of the confirmed intakes were clearly of polychaete worms. In contrast, tactile foragers



FORK AND SPOON: The upper image shows the tongue inside the beak with the row of bristles along each edge. The lower pictures are scanning electron microscope images of the same tongue showing the bristles in more detail. Photos / Phil Battley, Manawatu Microscopy and imaging Centre, Massey University

had more paces, foraging actions, bites/slices, worm captures and unidentified swallows per minute, but fewer than 30% of their intakes were of confirmed worms.

Birds using both methods showed characteristics intermediate between visual and tactile foragers, which is expected in a feeding method that is a combination of the two.

Given that big worms have far more biomass than small worms, is a Wrybill better off to take a few big worms or lots of little worms? It turns out that it didn't matter.

When intake rates were translated into biomasses, it transpired that the total intake rates of the differing foraging modes were virtually identical. Visual foragers obtained more of their biomass intake from large worms, while tactile foragers got more from small worms. This suggests that none of the strategies is 'better' than the others, and Wrybills can

probably shift between them as they move between patches with different sediment characteristics.

This still leaves the issue of what to make of all the unexplained bites and swallows seen in the tactile feeders in particular. Could birds be taking mouthfuls of mud in order to ingest biofilm? Biofilm is present on the mudflats in the Firth of Thames and during my stay there it could be seen in various colours over the surface of the mud.

The stable isotope analysis carried out on the Wrybill blood, feather and faecal samples confirmed that (as expected) the majority of the Wrybill diet is made up of polychaete worms, with the signatures of the faeces and blood closely matching those of the polychaete worms.

However, evidence that Wrybills were incorporating biofilm into their diet also emerged. The signatures of Wrybill faeces and biofilm showed some

overlap and mixing models revealed a moderate dietary contribution of biofilm in faeces and a small dietary contribution of biofilm in blood.

These results are exciting because they are the first evidence of biofilm feeding in a non-scolopacid shorebird.

The small shorebirds in which biofilm feeding has previously been found (Western Sandpipers, Dunlins and Red-necked Stints) all utilise flexible foraging modes on mudflats and possess distinctive tongue spines, a characteristic thought to play an important role in the uptake of biofilm from the surface of the sediment.

In addition to exhibiting a foraging mode that is seemingly suited to biofilm consumption, preliminary analysis of a Wrybill tongue has revealed structures along the edges and tip of the tongue as well as a channel through the middle of the tongue that may assist in the collection of biofilm from the mud surface. 



UNDER THREAT: A Far Eastern Curlew rests alongside a sleeping turtle during a stopover in the outer Hawaiian Islands. Photo / Wikimedia

Plan to save the Far Eastern Curlew

When a Far Eastern Curlew visited Pukorokoro last summer it was a rare event because it's numbers are declining rapidly. PMNT's international representative **David Lawrie** reports on a plan to save the world's largest shorebird.

Sightings of the Far Eastern Curlew at Pukorokoro Miranda are now very unusual. In the past there were often a number of curlew on the outer shell banks roosting with the other migratory waders.

This curlew (*Numenius madagascariensis*) is endemic to the East Asian-Australasian Flyway and its large size and heavy down-curved bill make it unmistakable.

It breeds through Mongolia, Northeast China, and Siberia eastwards to Kamchatka. On migration the birds travel through Malaysia, Thailand, Vietnam, China the Korean Peninsula and Japan to their breeding grounds. Approximately 25% of the population winters in the Philippines, Indonesia and Papua New Guinea, and around 73% spend the non-breeding season in Australia.

However, evidence from Australia suggests that its numbers have declined by an estimated 81.4% over 30 years and the species is now listed as vulnerable under the IUCN Red List. This decline has been mirrored in New Zealand although the species was never common in this country.

The greatest threat to the survival of the Far-Eastern Curlew is the ongoing destruction of tidal mudflats that it utilises on migration in China and Korea. In addition it is affected by hunting and trapping in Russia, China and South East Asia as well as human disturbance, pollution, coast-

al development and the effects of climate change on habitat.

As a result of the rapid decline the Australian Government representative to the last meeting of the EAAFP asked for a single species action plan for the conservation of the curlew be prepared with some urgency. Because of the importance of Australia to this species the Australian Government offered to prepare the plan and circulate it to other country delegates for comments and approval.

The draft of this plan is now available and clearly sets out the courses of

action that need to be taken throughout the whole flyway to reduce the threats to this species. The main threat is the loss of habitat around the Yellow Sea which is a key stopover site on both northward and southward migration.

Any actions taken to improve habitat for the curlew will also protect habitat of godwit and Red Knot. PMNT is supporting the Australian Government's action plan and in future years we hope to see this majestic shorebird once again gracing our roosts at Pukorokoro. 🐦

Manukau Ecological Centre

Early this year I worked with Bronwen Turner from the Manukau Harbour Restoration Society on submissions to the Auckland Unitary Plan. During those discussions we briefly mentioned that there may be scope for an ecological centre on the northern Manukau Harbour to try to raise the profile and importance of the ecological features including birds within the harbour.

In the middle of the year Bronwen invited several people to a meeting in Onehunga to canvas the idea further. Although it was agreed that the Pukorokoro model would not necessarily work for Manukau, the meeting was unanimous that there was a need for some form of focus for ecological action.

The idea is in the very early stages but creating a focal point for conservation activity appears to be the only way to ensure that the ecology of the Manukau Harbour will be protected. Politicians appear to be only paying lip service and it requires people pressure to convince them that it is something they need to take seriously and act upon.

Ambury Regional Farm Park or Puketutu Island are areas where it was believed that such a centre may achieve the greatest benefits. Such a centre could not only fulfil a public relations role but could also be used as a field centre for universities and schools and stimulate a whole generation of young people.

If anyone has any thoughts on this idea I would like to hear them, positive or negative, so that a way ahead can be mapped.

David Lawrie



From the Chair

An amazing anniversary year

Chair **Gillian Vaughan** looks back on a 40th anniversary year which got off to a great start with a retrospective lunch and has gathered momentum as it moved from world-class speakers and research in North Korea to the godwit being named Bird of the Year.

We opened our 40th anniversary year with somewhat of a retrospective. A member's lunch hearing some of the trust's stories, looking back at some of our people and celebrating some of our successes. It was a great way to start the year.

Momentum then took over and that was probably the last chance we had to look backwards all year. I'm therefore taking this opportunity to quickly look back over our 40th year.

We stand on the shoulders of those who came before us, from members who conceived the trust and built the buildings to ornithologists like those who first mapped the shorebirds of the Yellow Sea and found a place for us there. But we cannot rest on those shoulders, rather we take the height they've given us and launch just a little bit higher.

We've gathered pace through the year. A tweet a day on godwits was followed by a visit from the Chinese Ambassador and DoC Director General, this coincided with Pavel Tomkovich's series of talks around the country. This was followed by a series of surveys and workshops in China and North Korea and development of an education kit and resources for schools here in New Zealand. Now, coming to the end of our anniversary year, we appear to be driving forward at speed.

Only a few weeks ago the birds arrived back bringing with them Lee Tibbitts and one of the bigger crowds we've seen at the Shorebird Centre for a speaker in some time.

On Labour Day the Bar-tailed Godwit was announced as Forest and Bird's Bird of the Year for 2015. This is a powerful message that New Zealand values this species and we can take this overseas to help garner support for shorebird conservation.

Today the Shorebird Centre hosted the Minister of Conservation and the Chinese Ambassador to announce the formation of a provincial reserve which contains some of the area the



WONDERFUL START: The trust's 40th birthday year was launched with a delightful retrospective lunch. Photo / Ray Buckmaster

Red Knots use on their northern migration through China. In 10 days Adrian Riegen will be heading to China with a DoC delegation that will sign a Memorandum of Understanding with the State Forestry Association, which will include provisions for the protection of migratory species.

Not long after that pre-eminent shorebird scientist Theunis Piersma will arrive and will talk not only to a crowd at Pukorokoro but students at Massey and meetings along the way. A delegation of Chinese officials is also likely in November.

All of this is in addition to the regular work of running the visitors centre, being involved in the Hauraki Gulf Forum, talking to groups as they come through, updating the website and running courses. We appear to have developed incredible momentum.

I can't help but think we've done our 40th anniversary proud.

So many people have been engaged in this Year of the Godwit, and will continue to be engaged over the next two months. A profound thank you to council members, volunteers and PMNT staff as well as Ngati Paoa and

Ngati Whanaunga members, DoC and Fonterra staff who have done amazing amounts of work to push these activities through.

For all the work and all of the politics and all of the people my personal Miranda highlight of the year so far remains an evening's birding. Not a special day, but just a few weeks ago when there were a few people at the hide, the light was behind us picking up the colours in the saltmarsh and most of the godwits were back from Alaska. There is a sense of peace knowing that the tide is coming in and the birds are coming in front of it, as well as a sense of suspense in not knowing what species will show up today (it was a Pacific Golden Plover). These are the moments that remind me why the work we do is so important.

A sad reminder about the importance of occasionally stopping to look back is that already some of those who joined us for lunch in February are no longer here. Just in the last few weeks Michael Taylor and Arn Piesse have passed away. Both were great supporters of the trust and my thoughts are with their families and friends. 



From the Manager

A pilgrimage in search of E7

Manager Keith Woodley takes Lee Tibbitts, the Alaskan scientist who tracked E7's record-breaking flight to New Zealand, on a pilgrimage to Maketu Estuary in search of our most famous Bar-Tailed Godwit

The shallow pools on the sandflats and among the seagrass presented us with a cloudless sky at our feet. Here at Little Waihi in the Bay of Plenty, we were exploring the back of the estuary, where numerous Paradise Shelduck and scattered flocks of two-legged godwits and stilts foraged. There were also Pied Oystercatchers and four Pacific Golden Plovers.

The birds and us all shared the same North American soundtrack, one that was particularly familiar to Lee Tibbitts: two strident and vociferous Canada geese. It was my first visit to this splendid place but it was a diversion from our main interest, and the reason for our being in this region on a sunny Monday morning. And that interest lay over the hill, on the sandspit at Maketu.

For Lee it was not unlike a pilgrimage, seeking completion to the story. She had tracked E7 over her migration in 2007 and had dispatched the regular email updates. Her name and that of that stellar bird had, for many of us monitoring the story, become almost fused together. Here was an opportunity to seek out this now one-legged godwit's 'retirement' location.

That there was no sign of the bird was not unexpected: there had been no reliable sighting of her for many months. Lee nevertheless expressed satisfaction in just being here, in this place that had become so much part of the E7 story.

Lee also appreciated meeting our guide for the morning Tim Barnard. Tim knows the birds of this area as well as anyone, and it was he who first located E7 after she had abandoned the Firth of Thames a few years ago.

Walking over the firm flats of Little Waihi perhaps gave a clue about why this became her new home. Possibly this firmer substrate makes it easier for a one-legged godwit to make a living than the super soft mud of the Firth.

A few days earlier Lee and I had been at the Espresso Café in Te Papa, speaking of that and other shorebird tracking stories, and the science and



PILGRIMAGE: Lee Tibbitts and Tim Barnard at Maketu and (inset) E7.

Photos / Keith Woodley and Paul Gibson

technology behind it. The Café Scientifique format was a first for both of us, but proved to be a very useful forum for exchanging information with the audience of about 80. I did a brief introduction to PMNT and Year of the Godwit, and the migration story before passing over to Lee to describe her work. There followed a 70 minute session of question and answer.

As I had with Pavel Tomkovich in March I found myself back among the collections in the basement at Te Papa in Tory St. Back then it was clarifying identification of godwit and knot specimens to sub-species level. This time it was still wader-focused but now it was one of Lee's study species, Bristle-thighed Curlew, that held out attention.

Alan Tennyson was puzzling over bones recovered from the Wairarapa coast. They were clearly that of a long-legged wader and Bristle-thighed Curlew seemed a likely candidate. The problem was the nearest record of the species in our area was a single bird seen on the Kermadecs. However, Alan has now concluded, after examining the bones under a microscope that they

were the bones of more conventional species including a couple of oystercatchers. But as we all agreed it was a tantalising theory while it lasted.

Lee also addressed enthusiastic meetings at the Centre and the University of Auckland.

Farewell to Maria

Maria Staples-Page took up the role of assistant manager towards the end of 2008.

She replaced Jenni Hensley who, among other tasks, had started the process of improving the shop. Maria carried this much further and the well-stocked shelves at the centre today are testimony to her efforts. This was a significant contribution to an organisation that depends on retail sales as a major source of income.

Another backbone of the place are our volunteers, and her maintenance of the roll of volunteers as well as organising relievers to cover during my absences, was no less important.

Maria has now left us to take up a full time position in Thames. I will miss her contributions and wish her well in her new role. 



SURVIVORS (from left): Shore Groundsel in flower; Prickly Ox-tongue hugs the ground to avoid being eaten.

Plants find many ways to survive the harsh conditions on the chenier plain

The chenier plain at Pukorokoro Miranda is quite bio-diverse and provides many interesting examples of how plants have adapted to survive in such hot, dry, salty conditions, writes **Ray Buckmaster**.

When times get tough birds pack their bags and away they go. Plants on the other hand, being wingless and rooted to the spot, lack the possibility of bettering their situation in this way.

For many plant species there is an easy solution to this predicament: have a short lifespan and thrive when conditions are good and exist only as seed when the summer drought arrives.

Many of these ephemeral species can migrate in seed form, maybe not from one end of the world to the other as godwits can, but still over considerable distances. The native Shore Groundsel, with each seed having its own parachute to catch the wind, is a good example. Often such seeds contain a dormancy factor which prevents germination too early until it is washed away by the more persistent rains of autumn.

One family of plants is particularly well represented on the cheniers and rough pastures of the land around the hides. There are 17 species of the Fabaceae family, recognisable by their pea-like flowers which are often grouped together to better attract pollinating insects. None of these is native but they all share a common feature which gives them an advantage in an environment that is low in nitrates.

As the photo (at right) shows, these plants have swollen nodules on their roots, in which live bacteria capable of taking nitrogen from the soil atmosphere and converting

it into a form that the host plant can use and other plants benefit from.

These plant species were introduced by the agricultural sector as pasture species or fodder crops. There are eight species of clover which, in the past, were grown with rye grass because of their ability to fix nitrogen. These days greater pasture productivity can be obtained by the addition of fertilisers but the plants persist as an indicator of past agricultural methods. The bio-diversity of the reserve area is high compared to the high productivity pastoral monocultures that surround us.

There is one particular growth habit that has real survival value in pasture. Ground hugging rosette plants, like Prickly Ox-tongue, keep their growing point at or just below ground level to avoid being eaten, until flowering time arrives. Back in the suburbs this feature also allows them to survive the attentions of the lawn mower.

The real challenge facing most plants is obtaining and conserving water in the dry summers. The rosette plants usually have fairly deeply pen-

etrating tap roots. The Wild Beet has roots that can reach down over a metre.

Rosette plants are also well adapted to dry conditions as their leaf pores are close to the soil, which is usually moist and also releases quantities of carbon dioxide from the activity of soil organisms.

Plants lose most of their water from their leaves. Water



GLASSWORT and Sea Blite form colourful strips.



COLONISTS (from left): White Clover was introduced for pasture; Pigweed is a C4 plant.

vapour is lost through the same under-leaf pores that the carbon dioxide required for photosynthesis enters by. A way to save water is to cut down on photosynthesis, perhaps by having fewer and smaller leaves, or even none at all, as with Glasswort plants.

Conserving water has not always been an imperative. For a long period in earth's history the climate was moist and warm and plant activity raised the amount of oxygen in the atmosphere from low levels to the present 20%.

Most plants had a form of photosynthesis that became less efficient as the levels of atmospheric oxygen rose. This was because their internal machinery often made the mistake of capturing an oxygen molecule instead of the intended carbon dioxide molecule. When this happened water evaporated from the leaf for no benefit.

But the ratio of water lost to carbon dioxide captured only became a problem when the world entered a dry phase and grasslands became predominant. As a result a more efficient form of carbon dioxide capture evolved and this reduced water loss in photosynthesis by 25%. Plants with this capability are known as C4 plants as opposed to the original C3 plants.

C4 plants are very well represented on the cheniers and the drier pasture areas. They thrive in the summer heat whilst the majority of C3 plants are struggling. One particular family is well represented in the reserve, the Chenopodiaceae or Spinach family.

The saltmarsh is dominated by Glasswort, with Sea Blite, Wild Beet and Orache being very common on the cheniers. This family is multi-adapted as it also tolerates saline conditions.

Perhaps the most impressive species of all is the White Stonecrop. Its internal physiology allows it to thrive on the very top of the cheniers through the heat of summer despite its very shallow and scanty roots. It is able to take in carbon dioxide at night when it is cooler and more humid so it loses less water through its open pores. When daylight returns its pores are closed but it can use up the stored carbon dioxide.

When conditions are extremely dry the pores remain closed and it uses the carbon dioxide it produces from life processes to photosynthesise. This is life in the slow lane because the plant slowly shrinks as the summer progresses. However it survives until the good times return when growth can resume.



SEA BLITE is found in the saltmarsh.



ROOT NODULES help plants like clover to fix nitrogen.



WHITE STONECROP is superbly adapted to chenier life.

Photos by Ray Buckmaster.

GODWIT TIMES

Good morning. It's Godfrey Godwit - your very own Bird of the Year - reporting from Pukorokoro Miranda.

The runway here is very busy at the moment with new birds arriving from all over the world daily. It's a great time of the year to come down and watch the birds. Sometimes it can be a bit tricky identifying what species of bird you are looking at, particularly when they all look the same colour, so here is a handy hint.

You might have noticed that some people are taller than you and some are shorter. The same applies with shorebirds. Size difference is often the easiest form of identification when birds are in a group. The Far Eastern Curlew (seen below at the back of the picture), at 63cm tall, is the largest wader you will see in NZ while the bird at the front of the group is one of the smallest at only 20cm (use the code cracker below to find out the name of this tiny shorebird: 23 18 25 2 9 12 12).

It can be confusing to tell what is 20cm and what is 63cm from a distance, even with a scope so compare the birds with each other to get a better idea of size differences.

The name of the handsome bird in the middle of the picture is: 7 15 4 23 9 20. (If you can't work it out the names of the three birds in the drawing are upside down at the bottom of the page.)

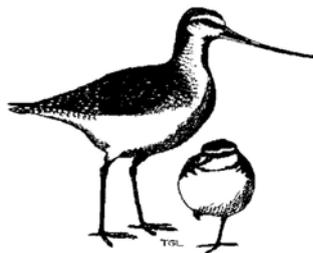
Use the code cracker underneath the picture to find out what bird we are going to be finding out about next time: 23 8 9 13 2 18 5 12. Email the answer to the editor (eagles@clear.net.nz) and you could win a book!



A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

The three birds are, from left, Wrybill, Godwit (or, to be more precise, Bar-tailed Godwit) and Eastern Curlew.

PUKOROKORO MIRANDA NATURALISTS' TRUST



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Magazine

Pukorokoro Miranda Naturalists' Trust publishes *Pukorokoro Miranda News* four times a year to keep members in touch and provide news of events at the Shorebird Centre, the Hauraki Gulf and the East Asian-Australasian Flyway. No material may be reproduced without permission.
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See the birds

Situated on the Firth of Thames between Kaiaua and the Miranda Hot Pools, the Pukorokoro Miranda Shorebird Centre provides a base for birders right where the birds are. The best time to see the birds is two to three hours either side of high tide, especially around new and full moons. The Miranda high tide is 30 minutes before the Auckland (Waitemata) tide. Drop in to investigate, or come and stay a night or two.

Low cost accommodation

The Shorebird Centre has bunkrooms for hire and two self-contained units: Beds cost \$20 per night for members and \$25 for non-members. Self-contained units are \$70 for members and \$95 for non-members. For further information contact the Shorebird Centre.

Become a member

Membership of the Trust costs \$50 a year for individuals, \$60 for families and \$65 for those living overseas. Life memberships are \$1500 for those under 50 and \$850 for those 50 and over. As well as supporting the work of the Trust, members get four issues of PMNT News a year, discounts on accommodation, invitations to events and the opportunity to join in decisionmaking through the annual meeting.

Bequests

Remember the Pukorokoro Miranda Naturalists' Trust in your will and assist its vital work for migratory shorebirds. For further information and a copy of our legacy letter contact the Shorebird Centre.

Want to be involved?

Friends of Pukorokoro Miranda

This is a volunteer group which helps look after the Shorebird Centre. That can include assisting with the shop, guiding school groups or meeting people down at the hide. Regular days for volunteer training are held. Contact Louisa Chase at the Centre for details.

Long term Volunteers

Spend four weeks or more on the shoreline at Miranda. If you are interested in staffing the Shorebird Centre, helping with school groups or talking to people on the shellbank for a few weeks contact Keith Woodley to discuss options. You can have free accommodation in one of the bunkrooms and use of a bicycle.

Firth of Thames Census

Run by Birds NZ (OSNZ) and held twice a year, the census days are a good chance to get involved with field work and research. This year's are on June 21 and November 15. Ask at the centre for details.

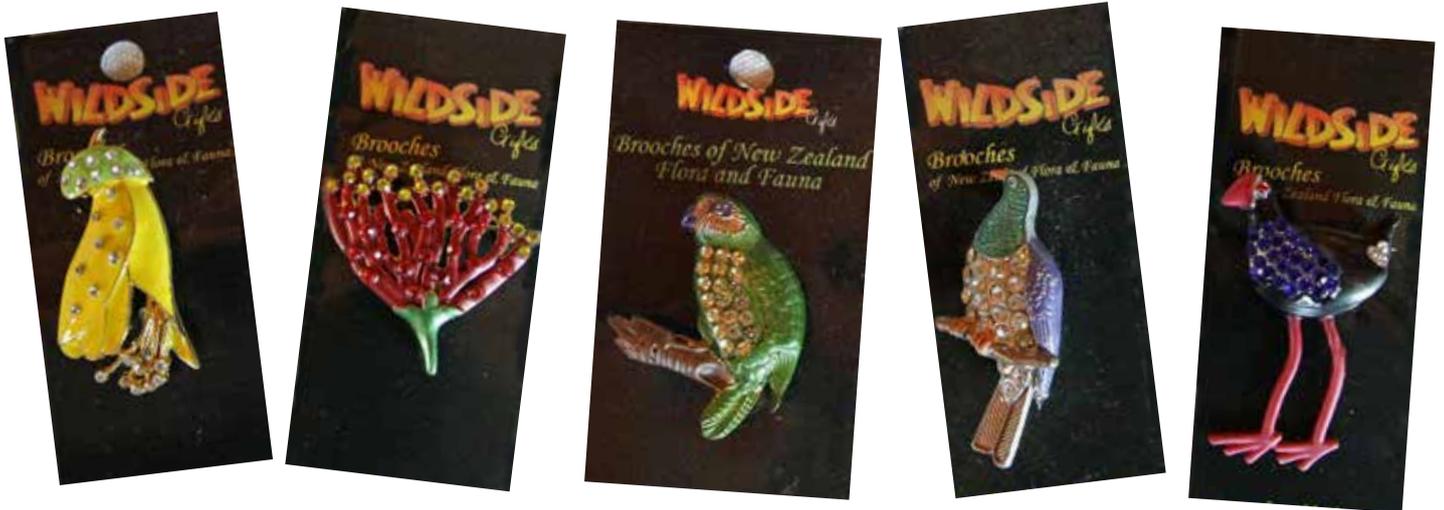
Contribute to the Magazine

If you've got something you've written, a piece of research, a poem or a photo send it in to *Pukorokoro Miranda News*. If you want to discuss your ideas contact Jim Eagles at eagles@clear.net.nz.

Help in the Shorebird Centre Garden

We can always use extra hands in the Miranda Garden, be it a half hours weeding or more ambitious projects. If you do have some spare time please ask at the centre for ideas, adopt a patch and call it your own or feel free to take up any garden maintenance you can see needs doing.

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The Field Guide to the Birds of NZ, by Hugh Robertson and Barrie Heather, illustrations by Derek Onley. \$54.90.



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Why not drop down to the centre, buy from our amazing range of gifts and then sneak out and watch the birds. Or, if you really can't find the time to visit, ring 09 232 2781 with your credit card handy.