

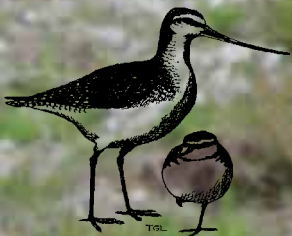
Pukorokoro Miranda News

Journal of the Pukorokoro Miranda Naturalists' Trust

August 2017 Issue 105

Where did you get that coat?

The more colourful *piersmai* subspecies of Red Knot meets the more common *rogersi*



**Wheelchair
track to hides
officially
opened**

**Trust team
does first ever
banding in
North Korea**

**Meet the new
Shorebird
Centre
assistant**



PATH TO THE FUTURE: Trying out the new walkway are Ngaakete Andrews (Ngati Paoa), Paul Graves (Fonterra), David Speirs (DOC), Mayor John Tregidga, Lorna Ratahi (Ngati Paoa) and Gillian Vaughan. Photos / Jim Eagles

Shorebird snippets

New path allows more people to see the birds

Even before it was officially opened the magnificent new track which now runs from the carpark to the bird observation hide at the Findlay Reserve had proved itself a success. Manager Keith Woodley reported that in the preceding few days two people in wheelchairs had arrived hoping to see the birds and, thanks to the new smooth, level pathway, were able to get out to the hides and observe Wrybills and godwits close at hand.

That theme, of helping more people to see and love the birds, was taken up

by other speakers at the opening.

Ngati Paoa kaumatua Ngaakete Andrews, who commenced the ceremony with a blessing, said it was very appropriate for the iwi to be involved in the opening of a pathway to the godwits – the kuaka – because tradition had it that the Tainui canoe was helped in its voyage to Aotearoa by being able to follow the flight of the kuaka. ‘So it’s only right that we should try to help more people to come and see the kuaka and learn how special they are.’

David Speirs, Department of Conservation operations manager for the region, acknowledged that there were very few DOC tracks that people relying on wheelchairs or walking sticks could use. ‘This is an issue I’m very conscious of,’ he said, ‘because my mother-in-law is in a wheelchair, so I’m particularly delighted to see what’s been done here to make these wonderful birds accessible to a wider community.’

Hauraki Mayor John Tregidga celebrated the fact that ‘upgrading this track to make it smoother, wider and wheelchair-friendly, as well as stay dry in all weathers, means everyone now has access’ to what he described as ‘an incredibly unique and beautiful world-renowned environment’.

PMNT chair Gillian Vaughan noted that to her the shorebirds were all about connections – the godwits, for instance, linked New Zealand with China – and she was heartened by how many people from different countries were now working together to try and safeguard the future of the birds. ‘Jacques Cousteau has pointed



OPEN FOR BUSINESS: Mayor John Tregidga and kuia Lorna Ratahi cut the ribbon.

Cover: Photo of *piersmai* and *rogersi* knots in breeding plumage at Miranda by Jim Eagles.

out that people protect what they care about, and they can only care about what they know, so the more people are able to see these birds and come to know them the easier it will be to ensure they have a future.'

Fonterra's head of co-operative affairs in the Waikato Paul Grave said the Living Water Partnership with DOC, which paid the \$68,000 for the new walkway, had grown out of genuine concern for the land, he said. 'What we've been able to do in this catchment, with conservationists and farmers working together to help nature, is a wonderful example of how we can join forces to create a better world for future generations.'

The new path was formally opened by Mayor Tregidga and Ngati Paoa kuia Lorna Ratahi cutting a tape across the gateway from the carpark.

New hides

The trust is going ahead with plans to build two new hides at the Findlay Reserve. One will replace the old hide which succumbed to storm damage earlier this year. The other will provide a new viewing point beside the Stilt Ponds. Living Water is providing a \$6600 grant to cover the cost of building materials. A working bee to put them up will be held on 28-29 October.

Green plans

The Trust held its annual general meeting last month when the guest speaker was Eugenie Sage, Green Party spokesperson for the environment. She talked about three big environmental challenges facing New Zealand: climate change, declining water quality and the crisis for our indigenous biodiversity with more than 2700 species facing extinction. If the government was serious about tackling these it would bring agriculture into the Emissions Trading Scheme, put a price on the commercial use of water and introduce stronger national standards for land uses which lead to water pollution.

Changes on Council

At the annual meeting Charles Gao stepped down as treasurer and was replaced by Kevin Vaughan who is also treasurer for the Supporters of Tiritiri Matangi. Cynthia Carter resigned from the Council, as she is returning to Canada, and was replaced entomologist Dr Peter Maddison, a



CENTRE ASSISTANT: Caitlin Speedy in the shop. Photo / Keith Woodley

former president of Forest & Bird, who was a Council member briefly in 1985.

Chair stays on

Chair Gillian Vaughan is continuing in the role, which she has filled since 2010, despite saying after the previous AGM that it would be her final term. Gillian accepted nomination at the first meeting of the new Council because 'there is so much going on at that it's not a good time for a change.'

Sounder sleep

Visitors to the Centre will soon be able to sleep more soundly thanks to a \$7400 grant from the Chisholm Whitney Charitable Trust to buy a full set of mattresses which are not only nicer to sleep on but also meet the current fire safety requirements.

New Centre assistant

Caitlin Speedy, a keen environmentalist and member of a well-known Hauraki Plains farming family, has been appointed as the new assistant at the Shorebird Centre.

Caitlin grew up on a farm in Ngatea, 25km south of the Centre, and – importantly for her interest in the environment – within easy striking distance of the Coromandel Peninsula.

'Frequent visits there first exposed me to the endangered Tūtorīwhatu (New Zealand Dotterel) and their major breeding sites in Opoutere and Whangamata,' she recalls. 'After high school I developed a curiosity for earth sciences and became more environmentally conscious leading me to study geology and environmental science at the University of Auckland.'

What's on at the Shorebird Centre

12 August, Winter Pot Luck Dinner and working bee

10am-2pm Working bee. 6pm Dinner and guest speaker Sonam Tashi Lama on the conservation of Red Pandas in Nepal.

2 September, Mangrove clearing

9am Join in the fun of removing mangroves from in front of the hide.

5-7 September, NZ Dotterel Management Course

Details from the Centre.

15-17 September, Nature Journaling Course with Sandra Morris

Details from the Centre.

22-24 September, Nature Photography Course with Neil Fitzgerald.

Details from the Centre.

22 October, Welcome to the Birds

Birdwatching good from 7.30am. 11am Speaker: Adrian Riegen will give an update on our work in North Korea.

28-29 October, Working bee to build two new hides

All help welcome for as long as you can spare. Barbecue Saturday night. Please let the Centre know if you think you'll be available.

After completing her studies she moved to Melbourne for 18 months and worked as an environmental consultant. In addition, during her spare time she helped as a volunteer at the Edithvale-Seaford wetlands which 'introduced me to the importance of Ramsar sites and wading birds such as the Sharp-tailed Sandpiper.'

When the time came to return home to New Zealand, she says, 'it was a timely coincidence that a part time position became available at the Pukorokoro Miranda Shorebird Centre. This sparked interest as it meant I would be able to expand my knowledge and have an opportunity to contribute to shorebird conservation efforts at home.'

Caitlin has already started her new job, working at the Centre three days a week, and says she is particularly delighted to have the chance of working alongside 'the wealth of knowledge which is Keith Woodley'.

Educator returns

The scene seems set for educator Krystal Glen to return to the educator role later this year.

Krystal, who did a wonderful job working with schools last year, has been taking a break due to a combination of the arrival of her first baby and uncertainty over funding. However, funding and childcare arrangements have now been organised to allow her to work two days a week, probably starting with a children's programme at the centre during the October school holidays, and then resuming her liaison with schools thereafter.

Sign of progress



The Shorebird Centre finally has a sign reflecting its official name thanks to action by Hauraki District Council.

Bumps in the cycle trail

The Kopu to Kaiaua extension to the Hauraki Cycle Trail is still having financial problems. The section as far as the bridge over the Pukorokoro Stream



DUSTY WORK: New Zealand Ambassador John McKinnon experiences Bohai and its birds.
Photo / Adrian Riegen

is due to be opened next month but the final stretch from there to Kaiaua still has no funding.

Meanwhile, a few issues have already arisen as a result of cyclists using the route anyway. Manager Keith Woodley said some cyclists had been arriving at the Findlay Reserve and then cycling down the path to the hides, creating a risk of bird disturbance, interference with pedestrians and a clutter of bikes around the hide. 'Once the trail is fully opened we could have dozens of cyclists arriving at the same time,' Keith said, 'and if they all cycle to the hides that will create a real problem.'

There is already a sign advising that cycles are banned beyond the carpark but the Trust is developing more persuasive signage to erect there and at the start of the track from the Shorebird Centre. It will also seek to have cycle racks installed in time for summer.

Ambassador to Bohai

The New Zealand Ambassador to China, John McKinnon, has shown great interest in shorebirds since PMNT first engaged with the Embassy in 2014 and, in particular, he has taken up the cause of the Red Knots from New Zealand that refuel on the threatened Luannan Coast of the Bohai some 200km east of Beijing.

The work done by Chris Hassell and his team from Global Flyway Network has highlighted how valuable this remaining 7km of coast is, particularly for Red Knot and the Ambassador was keen to see it for himself. Arrangements were made through Chen Kelin at Wetlands International in Beijing for a one-day visit timed to coincide with when Adrian Riegen was in China

after his annual visit to the Democratic People's Republic of Korea.

An early start was required so Adrian and wife Janice - 'who had joined me in China for the first time to see what I've been up to all these years' - were at the Ambassador's residence soon after 6am for the drive to the coast. Along the way they met up with other invited guests, mainly from the local city government and State Forestry, including Chen Fengxue, who signed the Memorandum of Arrangement at Pukorokoro last year.

At the Bohai seawall the group was greeted by the GFN team of Chris Hassell, Adrian Boyle, Bob Loos and Theunis Piersma. Unfortunately, reported Adrian, there was also 'an uninvited and thoroughly unpleasant guest in the form of a raging dust storm that arrived just before we did. Often in May the air can be thick with pollution or fog making it hard or impossible to see the birds. But this time it was the dust' that made viewing challenging.'

The dust storm spoiled the Ambassador's chances of good views of the birds. 'The scopes had to be kept low to stop them falling over. Cameras there to record the day filled with dust and malfunctioned. But we did see flocks of knots on the mudflat hunkered down and riding out the storm. We had to laugh and at least the day was a memorable one.'

Inevitably, while the group was having a formal lunch, the sky cleared and the wind dropped, but by then the tide had gone out and the birds were too far away to see.

'Still,' Adrian said afterwards, 'the day was a success. Indeed, Lu Hongqiu, the vice mayor of Tangshan (the nearby city), said she had previously no idea about these birds, so now she does. It all must help towards protecting the Luannan coast . . . something that does seem to be happening.'



MOVING IN? (from left) Dabchicks and Whimbrels may be thinking of becoming local residents.
Photos / Keith Woodley, Phil Battley

The Big Wet has been good for birds if not for birdwatchers

So far this has been the year of the Big Wet. Phenomenal rainfall in late March and April left the land around the centre saturated, and while there have been clear periods since, it seems rain has never been far away.

Rainfall figures reported in the *Kaiaua Compass* show that in the first six months of the year there were 1223mm of rain recorded, double the 675mm in the previous year, which wasn't exactly dry.

Widgery Lake reached up to the edge of the lawn and has largely stayed there. Twenty or so Mallards took up residence and by late June at least two young families had appeared.

The local swans continue to relish the damp, remaining a common feature on the Stilt Ponds. On an island in the Bittern Ponds a swan began sitting on a nest during the last week of June. One afternoon in late July its mate visited Widgery Lake for a couple of hours.

The Widgery Lake Dabchick eventually departed for the Bittern Ponds, where three others joined it. By July at least one pair remained in residence there. Hopefully the coming season will see another species added to the Pukorokoro Miranda breeding list.

Meanwhile, the Bittern which gave the ponds their name is still hanging around and from time to time offers sightings, including some recently

directly opposite the entrance to the centre.

The eight Black-tailed Godwits seen in May were a highly unusual record, but as all but one were in breeding plumage it was widely considered they would not stay long. This appears to be the case with no sightings since.

The six Whimbrel however have turned up in front of the hide periodically, with two seen in mid-July.

Also of note was the record of a Marsh Sandpiper in breeding plumage. With no confirmed sightings of this species since March it was assumed the bird that had been in residence here for several years had finally departed. Whether this was the same bird we will never know. But with ponds and puddles all over the district that could not, this year at least, be called ephemeral, the bird could have been anywhere undetected.

But as always, seemingly oblivious to met service forecasts, the South Island Pied Oystercatchers continued flying to their own rhythms. The steady departures since 24 June mainly occurred during clear afternoons. But the weather conditions predicted for their South Island destinations during the departure period often left me pondering what they were about. Then again, one has to assume they know what they are doing.

Keith Woodley

Recent sightings at Pukorokoro

Arctic Migrants

c200	Bar-tailed Godwit
10	Red Knot
2	Whimbrel
1	Turnstone
1	Marsh Sandpiper

New Zealand species

2100	Wrybill
	New Zealand Dotterel
135	Banded Dotterel
56	Royal Spoonbill
	Black-billed Gull
	White Heron
	Caspian Tern
	White-fronted Tern
	Pied Stilt
	SI Pied Oystercatcher
	Variable Oystercatcher
2	Dabchick



First banding carried out in North Korea

PMNT's latest visit to North Korea took some important steps towards filling in that missing piece of the Yellow Sea's wader jigsaw, with 38,000 birds of 32 species counted, and the first official banding in the country's history, carried out reports **Nigel Milius**.

The Democratic Peoples Republic of Korea (DPRK) has long been the blank space in our knowledge of wader staging sites round the Yellow Sea. Since 2009 our Trust, working with Nature Conservation Union of Korea, has begun filling that gap and this year saw some good progress.

It is a place not exempt from the problems the birds face in neighbouring territories but one where perhaps development is slower and there is still rich habitat they can enjoy.

This year's mission was again made possible by support from the Living Water Partnership and led by Adrian Riegen, accompanied by David Melville, Wendy Hare and Nigel Milius. In the DPRK we were joined by Mr Hong (interpreter), Ms Ju (NCUK, chief planner), Mr Ko (the big boss), Mr Ri and Mr Kim (both from the Academy of Science) and a driver.

On arrival in Pyongyang Mr Hong met us at the airport and helped get our equipment through customs, a process taking roughly as long as the 90 minute flight from Beijing. While foreign visitors are more common than you might imagine, ones carrying large telescopes, binoculars, cameras and mist nets are still rare.

The plan for our trip included not only continuation of the coastal survey

but also an attempt to catch waders for banding. DPRK is not a place where you can travel simply, permissions have to be obtained months in advance and even then you can spend 1-2 hours a day at checkpoints. But throughout the expedition our Korean colleagues cheerfully facilitated things for us.

The 40 minute drive from the airport in the spring sunshine gave us our first glimpse of the landscape. Trees coming in to leaf, a mosaic of small fields at various stages of planting and a wide road with few road markings.

I had been expecting Pyongyang to look like a typical Soviet-era city with austere, grey concrete apartment. The reality was a spotlessly clean city of brightly coloured, high rise buildings of rather appealing design, and wide, tree-lined avenues. Ample pavements provided for pedestrians and cyclists, both of which far out-numbered vehicles, though the old hands noted how much busier it was than previous years.

Zhonhgak-ku, our first birding destination, was a huge complex of fish and jellyfish ponds, with the mudflats of the Yellow Sea a short distance away over the sea wall. Amazing to think there is such a demand for edible jellyfish (I can report that if you like chewing elastic bands you'll love it).

The ponds provide an important

high tide roost and had been identified as a suitable mist netting site. Three nights had been set aside for netting but strong winds on the first two meant all we had to show was a single Kentish Plover. The last night saw better conditions and produced six Whimbrel. It may not sound much, but as a first step it was perfect. Ju, Kim and Ri all had the chance to handle and band birds (Ju was very proud to become the first woman in DPRK to band a bird) and much discussion ensued about how a banding scheme may be set up.

With no banding scheme of their own, New Zealand bands were used, requiring special dispensation from both DOC and Ministry of Foreign Affairs and Trade. Birds were also fitted with orange-over-engraved-white flags newly designated to DPRK. It's unlikely any will turn up at Miranda, but with a bit of luck there may be a resighting elsewhere on the flyway.

During the day, we surveyed the waders and wildfowl and noted other birds, all observations being of potential value in a country so little known ornithologically. Some, such as Bartailed Godwit, Turnstone and huge numbers of Far Eastern Curlews are familiar in New Zealand, others such as Dunlin and Lesser Sand Plover much rarer on our shores, while the single



HISTORIC;
(from left)
Ju Song
becomes
the first
woman
bander in
the DPRK;
checking
out the
lagoons at
Zhonghak-
ku; a huge
flock of
Dunlin.

Photos
/ Wendy
Hare, Adrian
Riegen.

Pied Avocet and Brant Goose we spotted were probably rarities for DPRK.

On our last morning we spent a couple of hours searching for flags and colour bands. It was a beautiful day with wonderful light, no wind and many birds were in their bright breeding finery. Standing ankle deep in water, we found two Dunlin from Kamchatka, Bar-tailed Godwits from Victoria, Queensland and New Zealand (one, ZWA, seen by shore guide Wendi Lane on our shellbanks on March 6). We also spotted one of the Whimbrel caught the previous evening, the first re-sighting of a DPRK banded bird.

After breakfast, we set out on the long trek north to Dongrim, our base for the remainder of the survey. The roads deteriorate north of the capital so it was no surprise when the bus stopped. Our hardworking driver eventually got us moving but it was 10.30pm before we arrived at the hotel. With a 6am departure the following day, most of us promptly turned in, though Adrian needed first to fix his scope, another casualty of the road.

The next four days were spent working along the coast northwest of where the team had been the last two years. As with Zhonghak-ku, the sites were mostly fishponds enclosed by manmade seawalls. Fortunately, a lot of the all-important mud still remains.

We first visited Jangsong-ku and Liwha-ri where the count was made from a vantage point overlooking the whole site before heading down for a closer look. Large numbers of Dunlin

and Far Eastern Curlew were recorded with smaller numbers of a whole suite of other species. Bar-tailed Godwits from northwest Australia and New Zealand were seen and, as a bonus, a Korean Bush Warbler and Meadow Buntings sang behind us while three Saunders's Gulls posed in front.

Ansan-ri and Sokwha-ri, about 15km apart along another enormous seawall, produced a stunning number of waders the next day. We split into two teams to cover the area and found more birds than had been counted in the whole of the 2016 survey. It was quite tough to count them, due to the distance they were away, but with nearly 14,000 Dunlin and over 4,000 Far Eastern Curlew, the site easily surpassed the threshold of international importance for both these species, in the case of the curlew, possibly holding over 10% of the world population.


Our third day from Dongrim was less successful. Fifteen minutes after setting out, the bus had a more serious problem. Eventually a truck arrived to tow us back to our hotel where repair work was quickly underway. By early afternoon it was operational again and, though too late to do a useful count, we headed out anyway. A few kilometers short of our destination the bus once more shuddered to a halt, this time with a terminal problem. We walked the last hour to look at the site and were comforted that it didn't look very promising. Eventually a 4WD arrived for a cramped journey home.

Our last survey day was at Komi-

yang-ri and what a great spot it was. With the bus still out of action, we shoe-horned ourselves into the 4WD. It felt like it bounced around less than the bus, but that may have been an illusion created by the fact that movement was impossible.

Dunlins and Far Eastern Curlews again accounted for the majority of the nearly 8,000 water birds counted. Redshank, Little Ringed Plover, Eurasian Oystercatcher and Kentish Plover were all breeding, and Bar-tailed Godwits from NW Australia and New Zealand were recorded. That was not the whole story as the sea wall was dripping with a variety of migrating passerines: Tristram's, Little, Black-faced and Meadow Buntings, three species of thrush, several warblers, a stunning Tricoloured Flycatcher, Brown Shrike and Chinese Penduline Tits.

By morning, the bus had been resurrected to rattle its way back to Pyongyang for a debrief and a useful discussion on plans for 2018 before catching our outward flights next day.

It was a very productive 10 days with over 38,000 shorebirds of 32 species counted. We identified individually marked birds from other parts of the flyway, introduced our colleagues to banding, and found sites of international importance. More than that, though, we had shared our passion for shorebirds with like-minded people in a very different part of the flyway and in time, those relationships may prove even more vital to the PMNT mission to 'Keep the birds coming'. 



SPOT THE DIFFERENCE: The rarely recognised *piersmai* sub-species of Red Knot (left) poses with the more common New Zealand sub-species of *rogersi* allowing plumage comparisons to be made.

A chance to identify a knot sub-species that we often see but rarely recognise

The unusual discovery of a *piersmai* Red Knot among the better known *rogersi* netted on the shellbank inspired **Jim Eagles** to trace their story . . . and he discovered that he's actually seen a lot more of them than he, or most other birders, have ever realised.

There was a fascinating bonus at the final cannon-netting session of the summer at Pukorokoro Miranda when it was discovered that we had caught not only several of New Zealand's usual *rogersi* subspecies of Red Knot but also a less frequently identified *piersmai*.

Better still, the *piersmai* was in breeding plumage, as was at least one of the *rogersi*, providing a great opportunity for comparisons.

The *rogersi*'s transition to breeding plumage wasn't complete but, nonetheless, it was easy to see the *piersmai* is the real Flash Harry in the knot family. Though both birds had beautiful reddish chests, the plumage of the *piersmai*'s upper body had much more red and black colouring, while the *rogersi*'s was largely grey-fringed. The difference was clear, and when both are in full breeding plumage it is even sharper, with *piersmai* having brick-red underparts while *rogersi* are

more of a peachy colour.

Yet, as Adrian Riegen explained as he helped Tony Habraken display the two quite distinct birds, that difference went unnoticed for a long time. '*Piersmai* didn't exist until 2001! They were all *rogersi*. Though we did occasionally see some darker birds which we thought could be the *canutus* sub-species.' How could that be?

Well, it's because the unravelling of the knot's taxonomy has been a particularly long and tricky process. To take the story briefly back to the beginning, the Red Knot was first described and named as *Calidris canutus* by the great Swedish Father of Taxonomy, Carl Linnaeus, in 1758.

It is often speculated that the scientific name, and the common name of knot, are both a tribute to the mighty King of England, Denmark and Norway, known variously as Canute, Cnut or Knut, possibly because both the bird and the monarch are famous for

waiting on the tideline. Alternatively, it may just have been based on the soft cry, variously described as 'chuk' or 'knut', the birds emit while feeding.

Within a few years Linnaeus realised that there was a need for another subspecies and so he gave the name of *Calidris canutus islandica* to the birds which we now know to breed in Greenland and the Canadian high Arctic and winter in Western Europe. The nominate race, *C.c. canutus*, was kept for those that breed around Russia's Taymyr Peninsula and migrate to Africa. Though Adrian suspects some of them might occasionally get to New Zealand and provide those darker birds he spots from time to time.

That was how things stayed until 1813 when the Scottish-American poet and ornithologist Alexander Wilson added *C.c. rufa* for the birds which breed in the Canadian low Arctic, and winter in South America.

A hundred years later, Gregory



COLOURFUL CHARACTER: (above) The *piersmai*'s wing and back feathers are spectacular even though it hasn't entirely completed the transition to breeding plumage; (below) the *rogersi*'s wing isn't quite as gaudy. Photos / Jim Eagles



Mathews, an Australian mining millionaire and amateur ornithologist, who moved to England and became chairman of the British Ornithologists' Club, realised that the knots which wintered in his native land and New Zealand, and bred in Chukotka in eastern Siberia, were another subspecies, and so *rogersi* was added to the list.

There was no further change until the advent of Pavel Tomkovich, from the University of Moscow, who has been responsible for huge advances in the study of Arctic birds. In 1990 Pavel described *roselaari*, the largest of the knots, which breeds in Siberia's Wrangel Island and northwestern Alaska and winters in Central America.

Then, in 1996, Pavel made a visit to New Zealand and, Adrian recalls, 'He and I were looking at the differences in breeding plumages and he considered skins he had in Moscow from different parts of Siberia and started putting two and two together.

'Up to then, if we had detected variations in the breeding plumage we were probably thinking that it was just

individual variation. Even now the two subspecies can only be separated in full breeding plumage - and not always then - and quite a few don't get into full breeding plumage until they get to China.'

Subsequently, in 2001, Pavel described *piersmai*, as a tribute to that other great shorebird researcher and friend of PMNT, Theunis Piersma. Further research confirmed that this new subspecies breeds in the New Siberian Islands.

Besides their plumage there are other differences between the two Australasian subspecies most notably in their size - *piersmai* are the smallest of the knots - and their migration timetables.

A recent study by a team led by Australian researcher Danny Rogers, carried out on the 20km stretch of the Bohai Sea where nearly half of the East Asian-Australasian Flyway's knots stopover, confirmed earlier findings

that the *rogersi* arrive in Bohai earlier (their average arrival date was 21 April, compared with 29 April for *piersmai*) and leave for their breeding grounds earlier (average 28 April, compared with 17 May). Both subspecies stay for an average of around 29 days but some *piersmai* stop for a very short time, with 16% there for just 21 days and 3% for only two weeks.

Those differences are assumed to be largely explained by the nature of their breeding grounds, with *rogersi* using a much wider swathe of the Arctic, including areas which lose their ice and snow earlier than the *piersmai*'s icy islands.

The Rogers paper also made some intriguing observations on the relative numbers of the two subspecies in New Zealand. It has generally been assumed that almost all *piersmai* winter in Australia - in fact some publications don't mention New Zealand at all - and that virtually all our knots are

rogersi.


The paper offers a revised calculation of overall knot numbers in Australasia, estimating the total population of both subspecies in New Zealand to be 41,927 and in Australia 63,059, or a combined total of 104,986.

But it then goes on to record that of the flagged or banded birds observed at Bohai, *piersmai* made up 83.1% of migrants from northwest Australia, 35.2% from Victoria and 24.6% from New Zealand. In other words, when the birds' plumage makes it possible to tell the difference, it turns out that nearly a quarter of those known to come from here are *piersmai*.

Those figures, together with observations by many researchers, including Adrian, Pavel, Phil Battley and the NZ Wader Study Group, lead the paper to conclude that 'there may be more geographical overlap between the subspecies on the nonbreeding grounds than previously thought.' Clearly, the *piersmai* we banded this season is not as rare at Pukorokoro Miranda as it seemed.

Unfortunately, that doesn't mean their future is any more secure because numbers of both subspecies continue to decline. In 2012 the International Union for the Conservation of Nature Red List put their status as 'least concern' but since 2015 it has been 'near threatened'.

The supporting documentation from the IUCN notes that, 'An analysis of monitoring data from around Australia and New Zealand found that *piersmai* and *rogersi* populations which use the East Asian-Australasian Flyway have experienced strong population declines, estimated at a 57.4% decrease over three generations. This decrease is supported by a study on adult survival. Survival in northwest Australia in late winter was constantly high, however survival during periods away from Australia declined in 2011, with an annual survival rate of 0.67. The study predicts the population will halve within four years. Overall the global population is estimated to be decreasing at a rate of c25% in three generations.'

Somehow it seems particularly sad to think that we're only just getting to know *Calidris canutus piersmai* and it's already under threat. 



ARCTIC VISITORS: (above) Tony Habraken and Adrian Riegen display the two sub-species of Red Knot to highlight the differences; (below) telling the difference between male and female Bar-tailed Godwits is a lot easier because the females are so much bigger in bill and body.

Photos / Jim Eagles



GODWIT TIMES

Hello friends

It's Godfrey Godwit here. Grandma Godwit has got her knitting in a knot and doesn't know which knot she was knitting a neckerchief for. Can you help her unknot her knitting and see if the neckerchief leads to Roger Red Knot or Piersma Red Knot.

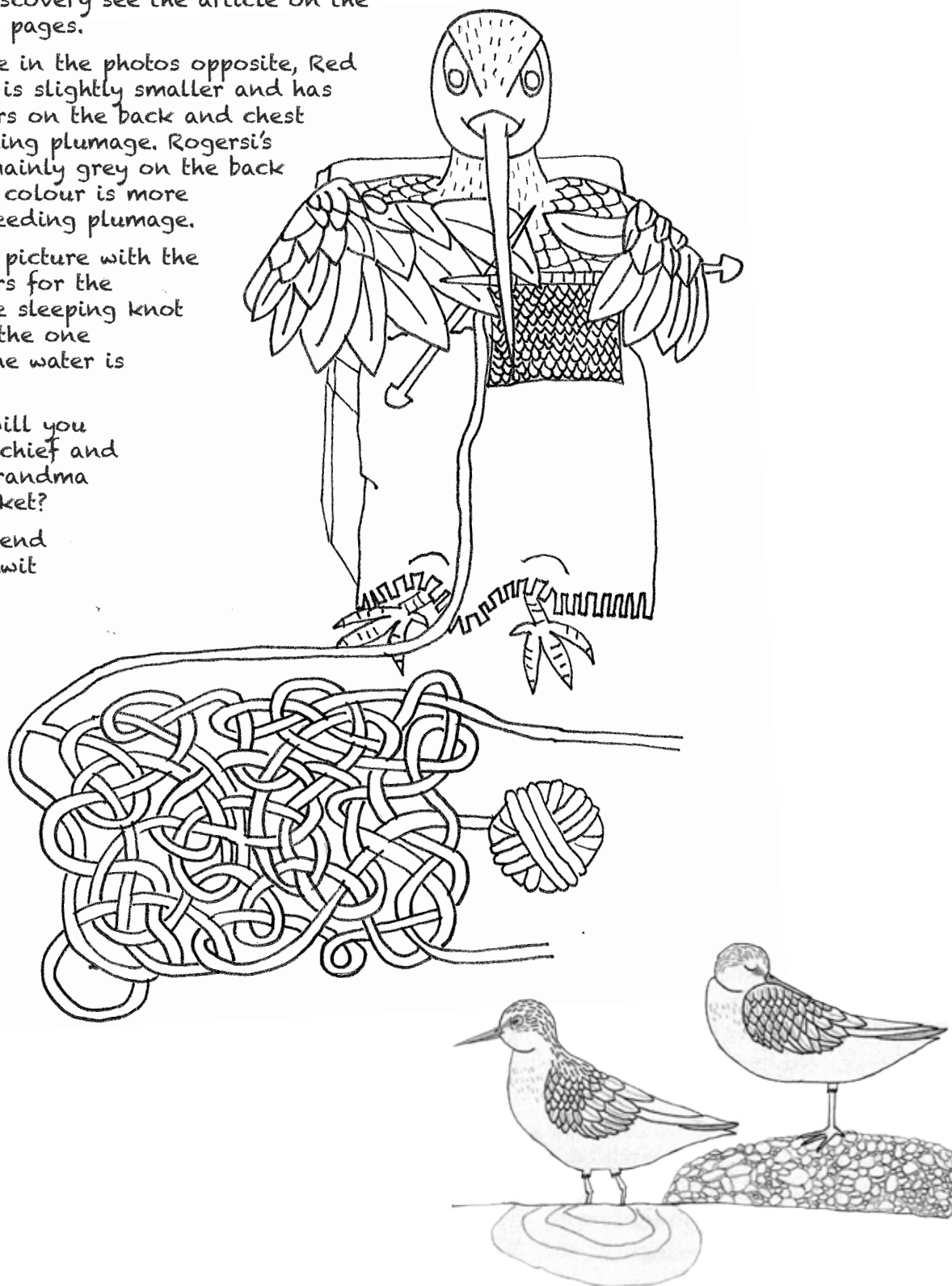
The birders at Pukorokoro Miranda have only fairly recently discovered that both these knot subspecies are quite common here. If you want to read more about this fascinating discovery see the article on the previous three pages.

As you can see in the photos opposite, Red Knot piersmai is slightly smaller and has redder feathers on the back and chest when in breeding plumage. Rogersi's feathers are mainly grey on the back and the chest colour is more orangey in breeding plumage.

Colour in the picture with the correct colours for the Red Knots. The sleeping knot is Roger and the one paddling in the water is Piersmai.

What colour will you do the neckerchief and what about Grandma Godwit's blanket?

From your friend
Godfrey Godwit





UNIQUE: The coastal strip around at Pukorokoro Miranda is internationally significant. Photo / Living Water

The powerful geological forces that created our special place

The purchase of the Robert Findlay Wildlife Reserve, the potential for involvement in the Living Water Project Area and the possibility of the wider coastal strip being treated as a single ecological area, have given PMNT a chance to play a significant role in the future of this truly unique habitat. **Ray Buckmaster** looks at the geological forces which brought it into being.

Captain James Cook probably named more geographic features than any man, many of them in New Zealand, some even adjacent to the Shorebird Centre.

Cook was familiar with glacier-carved sea valleys in his homeland and thought that he had found another here which he called the Firth of Thames. That was a mistake but it is one which has persisted for the name lives on. Not so for what he called the River Thames which is once more the Waihou or 'new river'.

Glaciation has had a big, indirect impact in the area but it did not create the Firth which has a much more exciting origin. The Firth is a rift valley which formed around two million years ago. Two parallel faults occurred and the terrain in-between dropped a couple of kilometres creating a huge valley which extends north into the Hauraki Gulf, through the Firth and south to the Hauraki Plains.

The rift valley was fed by an extensive watershed extending into the Volcanic Plateau. Until 26,000 years ago the Waikato River carried water and debris from plateau to the sea and over time material of volcanic origin gradually filled the valley.

However, that came to an end some 25,000 years ago when the massive Oraunui super-eruption produced over 1000 cubic kilometres of ash and pumice. This debris filled the river valleys of the North Island forcing the Waikato River to cut itself a new path to its present outlet on the west coast at Port Waikato.

This all happened in the middle of a prolonged and severe glacial period when sea levels were 100m or so lower than they are now. At that time there would have been no sea in the Firth, the islands of the Gulf were land-locked and accessible to flightless birds and – before it changed course – the Waikato River met the sea near

what is now Great Barrier Island. The rift valley would surely have been an interesting place for a birder.

As time passed the glacial episode slipped away and some ten thousand or so years ago rising sea levels filled the rift valley. The chenier plain that so concerns us today did not exist then and the shoreline was at the base of the gentle hills to the west of the Shorebird Centre.

This plain is a bit like a layer cake. The bottom is old mudflat and the topping is primarily shell deposited there by wave action. It is relatively modern, having not started to form until a mere 3900 years ago. First, extensive mudflats would have developed and provided habitat for the molluscs whose shells formed the chenier.

Over the centuries the shell ridges have developed roughly parallel to the coastline, some as long as 4km, and they extend back by as much as

2km in some places. The plain grows by around 70 cm each year, a process which is still active today.

Human activity has changed the cheniers. In the Findlay Reserve area shell was taken for the lime works down to the level of the original mudflat though the chenier ridges are still obvious. But the great majority of the chenier plain has been modified for agricultural purposes.

A 2015 Golder Associates report treats the entire chenier plain as a functional unit and examines the impact on the Findlay Reserve, the coastal strip and the Project Area now part of the Coxhead farm.

The report reveals that there were variations in sea level while the plain was being laid down. As a result the earliest chenier ridges are around 80 cm higher than those formed in the last 800 years. At most the ridges are 2m above extreme highwater mark and the embayments they embrace are considerably lower.

The hydrology is interesting. The Pukorokoro-Miranda stream has an extensive watershed. It borders the Project Area before discharging into the Firth beside the Findlay Reserve. The existence of this flowing surface water will be a great asset as we rehabilitate the area as wetland.

Activities in the watershed inevitably have implications downstream. The area is extensively drained, penetrating into the mudflat layer and as a result of this and normal agricultural activity the watershed is a significant local exporter of sediment into the Firth. Golder Associates consider this to be the largest management challenge for the Project Area.

Furthermore, there is also a significant ground water aquifer within the shell layer of the entire chenier plain up to 3m thick and varying seasonally in its distance from the surface. It consists of fresh water originating from both the hills and rainfall on to the chenier.

This flows within the aquifer toward the coast and in places can be seen running down the beaches. It carries enhanced nutrient levels which could be impacting on the natural vegetation of the coastal strip.

Despite this, in summer evaporation usually exceeds rainfall and the water level falls in the stilt and other ponds. The reverse occurs in the cooler months.


Another significant factor Golder Associates suggest should be included in management plans for the area is the amount of sea level rise to be anticipated. A conservative estimate

of 44-55cm by 2100 has been quoted if future carbon emission levels fall below those that are current, rising to 1m should emissions continue at the current level. A more alarming figure of 1.5m was suggested this July by scientists who included the loss of Antarctic ice shelves in their calculations.

The Golder report indicates that there are factors, like sea level rise, where we have no evaluation of the impact on the Project Area. But since 2015 some data gaps have been filled.

We now have a topographical survey which will be useful in predicting the impact of sea level rise. There is an ongoing Firth of Thames Coastal Study into the implications and impacts of climate change. Water quality monitoring has also recently started at three locations in the Pukorokoro Miranda catchment.

The more we learn of the area where the Trust is based the more we discover how special it is. The chenier plain has been recognised as having global status and of course the coast has international significance for waders.

Managing it will be a challenging exercise. But there will be also great environmental payoffs if we can overcome those challenges. 

MILLIONS
OF DEAD
MOLLUSCS:
Ridges of
shells form
the base of
the chenier
plain.
Photo / Ray
Buckmaster





New China bird tour hits the jackpot

A chance to see some of the most exciting waders on the planet - including the iconic Spoon-billed Sandpiper - as well as raise money to protect them, was a fantastic experience for Lynne Anderson, from Napier, a recent graduate of the Pukorokoro Miranda Field Course.

On the second day of our ground-breaking birding tour of China we hit the jackpot. Donning our brand new water boots we trudged out on to the Taiozini mudflats at Rudong and, even though we couldn't get too near as the birds were quite flighty, we were still able to see an estimated 11 Spoon-billed Sandpipers between us.

This delightful little bird, unaware of its rockstar status, was going about its business like a pint-sized clockwork toy, bobbing its head and mechanically trotting along in fits and starts.

It was particularly appropriate that we were able to enjoy such a great sighting of this highly endangered species because the 11-day tour we were on was the first organised by the evocatively named Spoon-billed Sandpiper in China (Shanghai) Environment Protection Technology Company Ltd as part of an effort to raise funds for its conservation work in the Yellow Sea.

This dedicated group, passionately led by Jing Li, has made a big contribution to the effort to persuade the Chinese Government to protect shorebird habitat around the Yellow Sea which does seem to be paying off.

They also run a jolly good bird tour, with knowledgeable and helpful guides, and I was also lucky enough to

be joined by a great group of birders from Australia, the UK and the US.

The tour started in Shanghai and the first six days concentrated on the coastline. Although kilometres of concrete retaining walls for reclamation of land have been built along these coasts, in some areas enough tidal mudflats have been left so the birds are still able to gather and feed and, ironically, the walls do provide excellent viewing.

The first few days we spent around the Rudong area starting with Chongming Island. There, from the grandstand viewing on a wall, Jing Li spotted

a spooner, but unfortunately it seemed to be one bird among thousands and was soon lost from view. Fortunately, the second day we had a wonderful experience with these illusive birds.

However, it was the last day spent on the coast before heading inland which I found to be perhaps the most spectacular. At the deltas of the Xin Zhang and Qing Kou rivers the spectacle of just thousands upon thousands of numerous different species of migratory shorebirds has to be one of the natural wonders of this world.

While we were again viewing from a wall, a hovering kestrel frightened the feeding birds which presented us with the wonder of the entire flock of thousands rising into the sky simultaneously. The moving black clouds that resulted performed dances in the sky, changing in shape and form to some ancient rhythm.

Species viewed on mudflats and fresh-water fish ponds on the coast included: Spoon-billed Sandpiper, Nordmann's Greenshank, Little Whimbrel, Far Eastern Curlew, Eurasian Curlew, Black-faced Spoonbill, Oriental Pratincole, Oriental Plover, Great Knot, Saunders' Gull and Relict Gull.

The last six days of the tour were spent inland in Nanjing, Huangshan



SUCCESS: Jing Li holds a tour banner.
Photo / Han Yongxian



WORTH THE EFFORT: (Far left) trudging across the Tiaozin Mudflat; (near left) the elusive Spoon-billed Sandpiper; (below, top) Nordmann's Greenshank; (middle) Oriental Pratincole; (bottom) Little Whimbrel.

Photos / Hu Zhenhong, Chen Tengyi, Tang Zenghua, Woniu.

and the Wu Yuan districts. These areas, especially the purple mountain of Huangshan, produced sightings of several sought-after species including Siberian Ruby-throat, Blue and White Flycatchers, Pied Falconet, Red-billed Leiothrix, Chestnut-headed Warbler, Grey-sided Scimitar Babbler, Dusky Fulvetta, Greater Painted Snipe and many more.

Our second big highlight of the tour was on the last day when we sighted the Blue-crowned Laughing Thrush. After numerous attempts the previous day being unsuccessful at seeing this bird, we arose at 4.30am and ventured to a different site, a small village where the bird nests in school grounds.

The headmaster and pupils diligently protect the welfare of this Critically Endangered species by not allowing photographers (or birders?) onto the school grounds. A dull drizzly morning seemed to suit the bird well and several were seen at dawn in a small area outside the school, though they weren't the best conditions for photos.

Overall on the tour we sighted about 230 different species and had a truly wonderful experience.

SBSC are planning another tour in their autumn, starting on November 2, again highlighting the Spoon-billed Sandpiper plus many more species including the Red-crowned Crane.

If you're interested in going email jing.li@sbsinchina.com. As a beginner birder I'd highly recommend it and I'm sure my more experienced companions on the tour would say the same.





RESCUE WORK: (from left) Gillian Vaughan bands a dotterel; looking for wader gold.

Photos / Ros Cole.

Helping to save the Southern NZ Dotterel

The battle to save the Southern New Zealand Dotterel from extinction has had a timely boost from PMNT members who joined a successful effort to get more of the birds banded and given health checks, reports **Adrian Riegen**.

A catch of eight Southern New Zealand Dotterel may not sound like much but banding them and taking blood and poo samples will be a big help to the DOC team trying to discover why numbers have suddenly plummeted.

In addition, the exercise has shown that it is possible to catch dotterels at their winter roost in Awarua Bay on the mainland so it can be done again. The fact is that any help we can give is important because their future looks bleak (see *PM News* 104).

John Dowding, in his keynote address at last year's Australasian Shorebird Conference in Auckland, alerted the wader world to the fact that, in spite of intensive predator control on the birds' breeding ground in the hill-tops of Stewart Island, their numbers have suddenly plummeted.

Worse still, it isn't yet clear why this is happening. Is it some new form of predation? Is there a health issue? Or is it something else? A major effort is underway to find answers, led by Kevin Carter, formerly with DOC in Thames, who is now on Stewart Island.

It would make the research work easier if more of the birds were banded and, as the Birds NZ conference was being held in Te Anau in early June this year, a team of cannon-netters decided to spend another couple of days at Awarua Bay trying to catch a sample of dotterels. What could be better than to frolic on the shore at the southernmost

point of the Mainland where winter winds arrive direct from Antarctica? When the time came, Gillian Vaughan, Ian Southey and Adrian Riegen from PMNT, plus David Melville, Rob Schukard, Neil Robertson and Rachel Hufton (ex Miranda) plus a few hardy Southerners decided to give it a try.

One of the conference field trips was to Awarua Bay and as I had never been there it was a great opportunity to see what the dotterels were up to. The visit was on a stunning day, if a wee bit frosty, and the bay was bathed in winter sunshine and full of waders and waterbirds. A few overwintering godwits went about their business on the southernmost Flyway site and a group of 48 Southern NZ Dotterel – about 25% of the total population – looked wonderful on the fine pebbly substrate at Bandy Point.

Were they catchable? Certainly, if they used the same place every day. The next day we went to check it out again and, yes, they were all there. Logistics were worked out, equipment was readied and the following morning we set up two nets in the perfect place.


The birds arrived on cue but landed 100m from the site. Some careful twinkling looked to be working but the birds, including 40-plus godwits, flew across a stream, maybe unsettled by the wind or our presence, and before we could do much about it the tide exceeded its predicted height and

swamped the nets completely.

Back we went to Invercargill to dry and clean the nets and get ready for the next day, which dawned windy and wet, but we set off once again for Awarua Bay. A text from Gillian, as the windscreen wipers worked their little arms off, questioned our sanity. A look at the rain radar suggested in no time the rain would be gone and it would be fine. Alas, not quite. Windy and squally showers were to be the order of the day.

But the dotterels were all there again, and this time with careful twinkling started to enter the catching area which was appropriately placed at the end of a rainbow.

Unfortunately, once again the wind was unsettling them and in the end, with the nets about to go under water for a second time, we fired both, although one failed to ignite (probably because the electrics were waterlogged) and caught eight dotterels.

The birds were banded and vets Janelle Ward, who has been on several catches with us at Foxton and Pukorokoro, and Kate McInnes collected poo samples as well as blood and swabs from each bird. This will help determine if there are indeed any health issues with the population. Early results indicate the birds are in good health but, either way, the findings will improve understanding of these beautiful birds. 



From the Chair

We can always do even better

Chair **Gillian Vaughan** ponders how an organisation like PMNT can measure success . . . and concludes that we're not doing badly but, given the plight of our birds, we need to do even better.

How do you measure success?

In the commercial office we talk about kpis, key performance indicators, revenue, profit, customer satisfaction, customer numbers, risk metrics, we use terms like npat, ebit, and return on capital to tell others how we are doing. We judge ourselves on these metrics, and expect others to do the same.

At home things are a bit easier – I have successfully cleaned the house when I've vacuumed, dusted and cleaned the kitchen and bathroom. I know it's not a one-off job, that by the time I'm finished something is almost certain to have dropped on the floor behind me, and I fully expect to have to do it all again next week and then the week after that. But that doesn't stop me from stepping back and thinking to myself 'job well done'.

But how do you measure success when your aim is to protect an environment that is being degraded around you? When all of the key species you work to protect are at risk or are actively in decline? If the membership of your organisation is static or falling? If Red Knot numbers are dropping each year, does that mean we are failing as an organisation?

When Green MP Eugenie Sage spoke to our AGM she commented that from a conservation perspective only the good news makes the media, and that means people don't realise how bad things might be.

On the other hand Brigid Glass, PMNT's field course convenor, has told us specifically that if we spend too much time on how bad things really are, no one new can engage with us on shorebird protection because it's too depressing, too intimidating, too hard.

People protect what they care about, and they care about what they know. It's been said by Jacques Cousteau, David Attenborough and many others, and it's something that, as an organisation, we are generally good at, with those that walk through the door, that we meet at the hide, as well



SIGN OF SUCCESS: Educator Krystal Glen takes the story of our shorebirds into the schools.
Photo / Jim Eagles

as with people who meet us on facebook or twitter, or with people along a seawall in China or the Democratic People's Republic of Korea. But it's also something we need to get better at.

The work we have achieved with the help of the Living Water Partnership has shown how much can be achieved when we engage with commercial organisations. Having Krystal Glenn onboard as an educator last year only showed how much more there is to achieve through engagement with schools. The more people we can show the birds to – their amazing flights, the fabulous flocks, the close-ups with a Wrybill – the better chance we have of protecting them.

Because they do need our help. I consider myself an old Shorebird Centre hand these days, but I don't really remember curlews being common, and it was sometime before that when there were flocks of Curlew Sandpipers at Access Bay.


Eugenie Sage and Brigid Glass are both right. Most people who visit the Shorebird Centre casually will not

walk away with a clear picture of how steep the cliff is these birds are facing and that's a problem. But if they did they may never come back, and that's a problem too.

So I land with David Attenborough. Let's make people love these birds, and then work to turn that into care and protection.

So how do I judge our success? People. Membership is part of it, but it's not the beginning and end of the equation. There's also visitors to the Centre, to the hide, to our Facebook page, to Keith Woodley's talks.

Beyond that, there are all the things that our members are involved in: open days in China, visits to the Watercare roosts at Ambury, wader census-taking around the country, taking banding to the DPRK, reaching children through The Flock, hosting conferences and international experts, talking about the birds to the people who visit the hides, protecting shorebird habitat, lobbying politicians . . .

So we're doing OK. But we can always do better. 

Two early members who never forgot Miranda

Two early members of the Naturalists' Trust, who hadn't had much involvement in recent years, died recently, both in their 90s, and by the manner in which they wanted their lives celebrated demonstrated how much their association with the Shorebird Centre meant to them. **Jim Hague**, who died in Thames aged 95, and his wife Natalie were the first managers of the fledgling Shorebird Centre and it was there his funeral was held. **Graham Weston**, who was aged 91, was an early member and regular visitor to the Centre, and though he died in Oxford, England, where he had lived since 1996, he asked that donations in lieu of flowers be sent to the Trust.

James Edward Hague



A gathering of friends, relatives and Pukorokoro Miranda associates gathered at the Shorebird Centre on 25 June to re-

member Jim Hague.

Jim and Natalie Hague were early members of the trust having discovered the Miranda coast in 1989 when they toured the country in a caravan which, incidentally, had been built by Jim.

While at Matata they met Trust members Stella and John Rowe during bird-watching at the lagoons. Jim had a passion for bird photography, as did Stella, and all were interested in the abundant waterfowl of the area. So a bond was sealed and the Hagues were encouraged to visit Miranda.

Soon after this meeting they arrived at the centre, at a time when Stuart and Alison Chambers were running it in the days before a permanent manager had been appointed.

They parked their caravan near the new main building and Jim was soon busy building up a large collection of photos of wading birds to add to his waterfowl and land bird folios. These were the days when bird photographers were few and far between and so this collection was a valuable asset which was soon offered to the Trust for use in post cards and newsletters. Many of the issues up to number 22 had Jim Hague pictures in them.

The Hagues soon became very comfortable at the centre and it wasn't long before they agreed to stay and look after the place after the Chambers left. This was a huge bonus as prior to their arrival the centre could only be opened after getting a door key from the shop in Kaiaua, a thing no one liked doing.

Natalie soon organised a tiny shop and had the newly opened centre tidy and spotless. She was welcoming to visitors and soon had some staying for a night or two, these funds adding to the meagre Trust accounts. Many old members can remember having cups of tea with the Hagues along with scones freshly baked by Natalie.

Unfortunately they could not stay on forever so the trip to the Kaiaua shop again became the norm, but over the next few years they were regular visitors and also centre managers over shorter periods of time. A longer stay in 1998 saw Natalie and Jim again helping to run the centre while others helped with the refurbishment of the newly purchased manager's house.

Following this period Jim and Natalie followed the Chambers to the Bay of Islands and over a lengthy period they helped the establishment of the Aroha Island Ecological Centre. Natalie did much of the catering for the opening ceremony in November 1996.

The memorial service was a happy occasion held as a thank you to both Jim and Natalie for their contributions. It was held in the Sibson Room and presided over by Robert Hague, their son, who had flown over from Melbourne.

There were addresses from Keith Woodley, Shelly, their daughter, and other members of the extended family. These eulogies were followed by a few words from Natalie before departing to spread Jim's ashes near the Pukorokoro River.

Altogether it was a fitting end to Jim's long life and an occasion that proved educational as well as a reminder of his part in the Trust's history and, especially, his and Natalie's role as the first centre managers at a time when funds were short.

Stuart Chambers

Graham Chalmers Weston

News of Graham Weston's death and final gesture of support was sent to PMNT by his widow, Mary.


Graham was an expert in forestry having been sent to Oxford University by the New Zealand Government in 1948 to read for an MA in Forestry and he repaid their faith in him by obtaining First Class Honours.

On his return he worked at the Forestry Research Institute in Rotorua for many years, then transferred to Plant Diseases Division at DSIR Mt Albert in 1974.

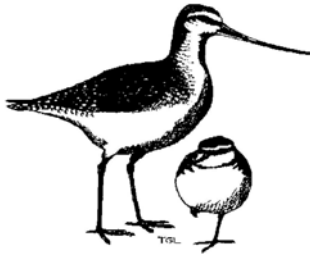
In addition he was a great lover of birds and, Mary wrote to Keith Woodley, 'greatly admired the work you do at The Shorebird Centre. 'We had a bach at Tairua, and often called in at Miranda on our way to or from the Peninsula. Then in 1996 we moved to England permanently as our daughter had come here to further her career.'

Graham remained fit and well until the last year of his life and also retained his love of birds, continuing to take part in the RSPB's Garden Bird Surveys conducted by the RSPB and enjoying documentaries about birds on TV. 'He was very keen on the work of the Trust at Miranda and remained so with the regular arrival of your excellent magazine which he enjoyed reading very much.'

Details of his death, together with the request to make donations to the Trust, were published in the *NZ Herald* and since then a total of \$275 has been sent directly to the Centre.

In addition, Mary says she has received some donations in sympathy cards 'and will be adding these up and sending a cheque to be put towards the work of the Trust in due course. With his love of books and writing, Graham would probably have liked you to put the money towards something for the Library at Miranda' 

PUKOROKORO MIRANDA NATURALISTS' TRUST



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Ann and Ray Buckmaster, Jim
Eagles.

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. You can join at the Centre or by going to our webpage (www.miranda-shorebird.org.nz) and pay a subscription via Paypal, by direct credit or by posting a cheque.

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 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 18 and November 12. 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

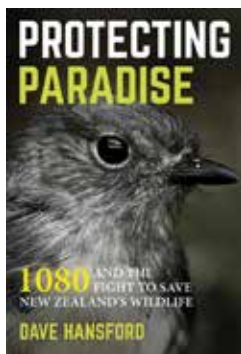
We can always use extra hands in the Miranda Garden, be it a half hours weeding or more ambitious projects. If you do have some spare time please ask at the centre for ideas, adopt a patch or feel free to take up any garden maintenance you can see needs doing.

Books to put sunshine back into your life



A passionate and informative celebration of birds, including how they came to fly, why they sing, what they tell us about the seasons and what their presence says us about the places they inhabit. **\$64.90**

Australian birds are a bit like their humans: they may not be as smart as their NZ equivalents but they are more colourful, louder, often have unusual habits, there are a lot more of them . . . and you don't have to travel very far to enjoy them. The definitive guide. **\$84.90**



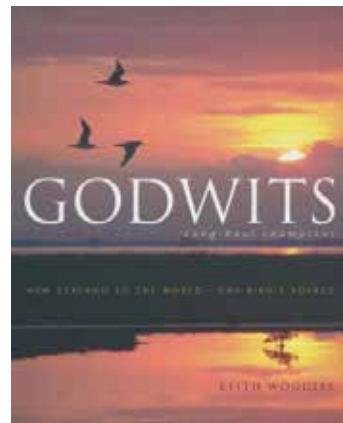
1080 poison is the crucial tool in the fight to save NZ's embattled wildlife. But there are those who argue it does more harm than good. Dave Hansford assembles the latest research about by-kill, 1080 leaching into rivers and whether traps could do the job better. An important and timely book. **\$34.90**

Everything you ever wanted to know about one of the lords of our forests: their evolution, biology and awe-inspiring beauty, how they were utilised by Maori, their role in European settlement, and how they stand today. **\$74.90**

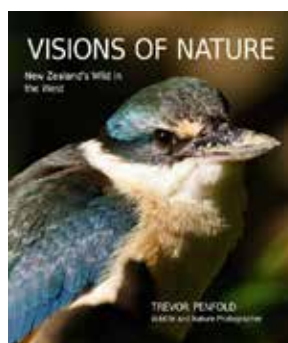


The first edition of Keith Woodley's classic shorebird book, *Godwits: long-haul champions*, quickly sold out. Now PMNT has managed to get it republished.

Don't miss the chance to own this very special book about a very special bird.



On sale at the Shorebird Centre shop for just \$49.90
If you ask very nicely Keith might just sign a copy for you.



Two stunning books about our wildlife featuring the work of one of NZ's finest nature photographers. Usually \$59.95 but we have negotiated a special price of **\$34.90** each.

The Shorebird Centre is always worth a visit to see the birds, enjoy the displays and chat with Keith or Caitlin. But if you can't find the time to call in just go to our online shop at <https://shop.miranda-shorebird.org.nz/> or ring 09 232 2781 and ask.