Pūkorokoro Miranda News

Journal of the Pūkorokoro Miranda Naturalists' Trust

May 2021 Issue 120

Our stroppy shorebird police officer

Caspian Terns may be deadly to passing mullet but can be good friends to endangered shorebirds

Oystercatcher family survives against the odds

Annual reports show a good year for PMNT

Singing the praises of the Bar-tailed Godwit

GODWITS FLY: The Auckland Welsh Choir in full flight in the Shorebird Centre.

Shorebird Snippets

Singing the praises of the amazing Kuaka

Hearing the Auckland Welsh Choir sing the world premier of a song of praise to the Bar-tailed Godwit/Kuaka, a fascinating address by a multi-talented speaker and a book sale in aid of our Manager's Roost Appeal made this year's Migration Day an occasion to remember.

The song, *Journey of the Kuaka*, was written by the choir's musical director, Diana Williams Rhodes, and inspired by the godwit stories told by choir member and PMNT chair Will Perry. Diana said she felt the godwits' achievements should be better known and she hopes her song will help to interest more people in the challenges the birds have to overcome to visit us each year.

The world premier was performed in a packed Centre, with the audience overflowing on to the decks outside, and earned a huge round of applause. The words, written with the assistance of te reo speaker Robert Wiremu, are:

Journey of the Kuaka

Godwits fly over the ocean far from home.
Take a little time for we are waiting here for you.
As you wing away in the clear sky, Kuaka, Kuaka, you know this is the cycle of your life:
Tena koutou, Kuaka!
(Greetings to you Bar-tailed Godwits)
Ko te pataka kai o Tika pa moana e tatari ana
(at the Hauraki Gulf abundant food awaits)
Rere whaka muri manu iti, rere whaka manu
(Fly back safely on the breeze little bird).
Godwits fly over the ocean far from home.
Haere pau atu, for we are waiting here for you.
(Go safely)
In the North, in the South, you know where you belong.
And you know where you must go and find your way again.
Rere whaka muri. Fly on little bird.
Fly the old ancestral journey back to Aotearoa . . .

Of birds and bees

Guest speaker Dr Oksana Borowik, gave a fascinating talk on her remarkable life which has indeed run from birds to bees.

Oksana's PhD research in Canada was on Calidrine sandpipers, a genus which embraces familiar birds such as the Red Knot, Sharp-tailed and Pectoral Sandpiper, as well as the very rare Spoon-billed Sandpiper, which she singled out as the bird she would most like to see.

Then she spent many years making wildlife documentaries for the Discovery Channel, notably in Africa, which judging from the excerpts she showed covered some amazing experiences.

Today she is a manuka honey beekeeper and bee researcher based on the Coromandel allowing her to give some remarkable insights into the challenges facing bees and the honey industry.

Manager's Roost

The new Manager's Roost has been built and paid for and will be erected on the Shorebird Centre site, adjacent to the old cottage, in the next few weeks.

It would have been on site already but unfortunately it has taken longer than expected to get Resource and Building Consents from Hauraki District Council. As a result the house is being stored for now in the yard at Keith Hay Homes.

Donations have continued to trickle in for the roost appeal – including $1,475 from the book sale held on Migration Day – so the total is about $282,000.

Because PMNT can get GST refunded the actual cost of the building will be $213,000 leaving around $70,000 towards other expenses such as council fees, extra high piles, water and drainage, building a deck and carport – at least some of which will be done by a working bee – and demolition of the old cottage.

Godwits nesting in Auckland?

Keen birders who read the *NZ Herald* were startled to read recently that Bar-tailed godwits now nest in Shoal Bay.

This remarkable news appeared in a story explaining why conservationists are concerned about a $350 million high-density 543-apartment development on the shores of Shoal Bay. According to the Herald this is because, 'Bar-tailed Godwits arrive in the spring

COVER: Photo of a Caspian Tern, or Taranui, by Steve Attwood.

TRIUMPH: (from left) Musical director Diana Williams Rhodes acknowledges the applause; speaker Oksana Borowik with her favourite bird, the Spoonbilled Sandpiper. Photos / Jim Eagles

to nest on the shell banks near the church in Shoal Bay, then return to the northern hemisphere early in the year.'

Philip Moll, who who has put a huge effort into preserving Shoal Bay as an important habitat for waders, contacted the paper and got the online version of the story corrected. But those who only read the printed version may be out next spring looking for godwit nests.

Calendar photos wanted

After taking a Covid break this year, PMNT has decided to published a Shorebird Calendar for 2022. The plan is to start organising photos now with a view to having it designed, printed and in the shop well before we welcome the migratory birds back in September. If you've got photos you'd like to see used in the calendar please send smallish versions to jimeagles45@gmail.com.

Reserve planting

Over 11,000 plants were put on the Robert Findlay Wildlife Reserve in last year's volunteer planting effort. The main planting weekend this year is scheduled for 26-27 June and project organizer Ray Buckmaster hopes to plant a few thousand more.

Happily this summer's drought was not as severe as in 2019-2020 so the survival rate from last year has been encouraging. Indeed, Ray, who has been making regular checks, says four species are already producing seed and the recent rain has seen many plants breaking into fresh growth. However, in some higher and more exposed areas, and other lower and probably more saline spots, the survival rate has not been so good. Another survey is being held this month and the planting plan for this June will be revised in the light of the findings.

Ray and his helpers have been spot spraying Fennel in the planted area on a fortnightly basis, so there is now overburden of dead Fennel and *Carex divisa* to be removed, but thanks to a grant from the Valder Trust the team now has a Stihl brush-cutter that is doing the job.

During the planting weekend work will be done in morning sessions only and lunch will be provided on both days. Advance planting will be going on for a couple of weeks beforehand and anyone who would like to join in can contact Ray at annandrayb@gmail.com. There will be a Friends of the Findlay Reserve Newsletter closer to the planting time. Please contact the Centre or Ray, if you would like to be added to the list.

Fernbird survey

Initial analysis of 21 automatic call recorders installed along the Shorebird Coast has added to hopes that Fernbird/ Mātātā may be slowly spreading westward from the mouth of the Waihou River in the general direction of Pūkorokoro.

The recorders were installed by Ken Brown from DOC and Jim Eagles from PMNT after finding surprisingly high numbers of Fernbirds in the coastal strip west of the Waihou River mouth, with lesser numbers near the Piako River. There were no further signs of Fernbirds but plenty of good habitat all the way along the rest of the coast to Taramaire.

What's on at the Shorebird Centre

Sunday 16 May: AGM of Pūkorokoro Miranda Naturalists' Trust
11am AGM. Speaker: Lynn Miller from Bird Rescue, Green Bay, who recently returned to New Zealand after several years in the US and Canada. She has formidable qualifications and experience as a bird vet and is proving a huge asset to local bird rescue work.

4-7 June: Birds NZ Conference in Thames

Sunday 20 June: Firth of Thames June Wader census

26-27 June: Findlay Reserve Planting Day

Saturday 14 August: Mid-Winter Pot Luck Dinner
Working Bee, birdwatching, Pot Luck Dinner followed by Team Quiz.

SETTLEMENT: Ngāti Paoa representatives with Treaty Settlements Minister Andrew Little after signing the deed of settlement at Wharekawa Marae. Photo / Labour Māori Caucus

Ngāti Paoa signs Treaty settlement with the Crown

The traditional name of the area where the Shorebird Centre is based, Pūkorokoro, which was brought back into public use in 2014 when our Trust changed its name to Pūkorokoro Miranda Naturalists' Trust, is about to be attached to three coastal reserves as well.

As part of Ngāti Paoa's Deed of Settlement with the Crown, which was formally signed at Wharekawa Marae on 27 March, the Miranda Taramaire Wildlife Management Area, Miranda Scenic Reserve and Miranda Scientific Reserve will also carry the name Pūkorokoro in future. To further underline the significance of the area, the Pūkorokoro Miranda Taramaire Wildlife Reserve was vested in Ngāti Paoa which then gifted it to the people of New Zealand seven days later.

Under the settlement Ngāti Paoa has received a formal apology from the Crown for failing to exercise its obligations under the Treaty of Waitangi to safeguard the iwi's lands or preserve use of Te Reo Māori.

In addition, the Deed confirms the payment of $23.5 million in financial redress – most of which has already been paid – notably $15.625 million in respect of Pouarua Farm near Ngatea.

The iwi will receive $1 million specifically earmarked for assisting with cultural revitalisation and to allow Ngāti Paoa to purchase a property of cultural significance.

The settlement will vest 12 areas of cultural significance in Ngāti Paoa including the 2ha site of Kaiaua School which will be leased back to the Ministry of Education.

The deed also acknowledges that in 2015, 14 properties held in the Treaty settlements landbank were transferred to Ngāti Paoa.

After the signing Ngāti Paoa Iwi Trust chairman Glen Tuphi said, 'This has been a long and arduous journey for Ngāti Paoa that we are not yet at the end of. However, this signing draws a line in the sand with the Crown and enables us to start rebuilding our estate and our cultural and economic legacy. This is a defining moment in our history.'

Among those present for the signing were Trust chair Will Perry (who has written about the experience in his Annual Report from the Chair), manager Keith Woodley and Council members Gillian Vaughan and Trudy Lane.

The hope is that as the population continues to grow, assisted by DOC's predator trapline along the coast, the birds will keep spreading westward, and maybe eventually reach a revived Findlay Reserve. Annual surveys will continue to be held to follow the birds' progress.

Rising membership

Membership of the Trust, which has been languishing at about 650 in recent years, has now reached 745.

Membership coordinator Wendy Hare says that since the update she gave in the November magazine PMNT has signed up 60 new memberships. 'Twelve have come since the highly successful Migration Day and may well be from among the many folk attracted by the exciting Facebook updates on the adventures of our juvenile godwits as they set forth northwards,' she says.

'You might wonder why with this steady sign up of new folk the total membership isn't growing faster. Sadly, as fast as we sign up new members we have a regular drop out of people not renewing after joining us when they visit. So I hope anyone that gets a final renewal reminder with this magazine (around 25% of the NZ membership) will renew today.

'In addition, almost fifty percent of our overseas members have yet to renew for this year, so the news might not be so good by the next magazine. To those overseas folks who have kept the faith and remained members despite no possibility of a visit to our fair shores: we thank you and we look forward to welcoming you back.'

Our recent new members include: Barbara & Denis Baird, Treffery Barnett, Elizabeth Bowden & Stewart Taylor, Martin & Kathy Breastrum, Megan Callaghan, Colin Campbell, Helen Clayson, Daniel Cradwick, Peter Cropper, Catherine Delahunty & Gordon Jackman, Sylvia Dean, Nick Duval-Smith, Liam Dwyer, Stan Foster, Takla Gardey, Joan Garth, Helen & Richard Gray, Mary Hancock, Annemarie Hogenbirk, Barbara Insull, Karen Kerr Marshall, Jennifer Kim, Vivienne King, Jo Knight, Maritza Kocsis, Lynn Lander, Wendi Lane, Christine Lowe, Jana Lyn-Holly, Sid Marsh, Edward Mee, Robin Mills, Jenny Mitchell, Irene Neal, Virginia Nicol, Nina Patel, Danielle Pearson, Denise Poyner,

Bob Rigter, Terri Shaw, Susan Sheehan, Ian Smith, Penelope Stevenson, Cindy Sullivan, Christine Sumner, Sarah Tahir Wilding, John Tarrant, Julie Vause, Susan Ward, Bronwynne Watkins, Shirley Willey, Mei Williams, Helen Wing, Jenny Woodley, John Woods, Rainelia Wylde and Catherine Young.

Garden support group

In recent times the gardens at the Shorebird Centre have been cared for almost single-handed by Sue Frostick and she is keen to organize a wider support group. Anyone interested in joining should leave their details with the Centre. Volunteers will then be contacted by Sue who is happy to be the co-ordinator. Because Sue is involved with both the Birds NZ conference and the reserve planting in June the new group will meet on the first Wednesday of each month from 7 July.

Confusing predators

Research by Landcare Research and the University of Sydney has found a new way of protecting the endangered birds which nest on the South Island's braided rivers from marauding predators.

Because cats, ferrets and hedgehogs rely largely on their sense of smell to find their prey, the scientists used tricks to persuade them that following up the odour of a tasty Banded Dotterel might be a waste of time. To do this they created a bird-smelling paste from bird carcasses and feathers, and spread it at more than 300 camera-monitored nesting sites along braided rivers in Canterbury's Mackenzie Basin before the birds arrived to lay their eggs.

Lead researcher, Landcare Research's Grant Norbury, said ferrets and cats, in particular, quickly lost interest when there were no prey associated with the scent. So when the birds arrived to nest, the predators had already altered their behaviour by ignoring bird odour, including that of the real birds.

The effects on nest survival were striking: compared with non-treated sites, odour treatments resulted in a 1.7-fold increase in chick production over 25–35 days and greatly increased the odds of successful hatching. For Banded Dotterel, the researchers estimate that this intervention could result in a 127% increase in the population size in 25 years of annual odour treatment.

Fixing the ponds

PMNT is continuing to work through Waikato Regional Council's requirements for permits to allow it to restore the flow of water through the Stilt Pond.

The old drainage system, dating back about 50 years, has been silting up and by last year had virtually ceased operating, so water levels became too high for most waders to roost there. In addition there were fears that the dry summer weather might produce a toxic algal bloom.

PMNT had hoped to simply clear the old drains to the Pūkorokoro Stream, but the regional council decided that in view of the ecological sensitivity of the area several expert reports and numerous permits would be required, resulting in a lenghty and expensive process.

In the event, at the height of summer the pond dried up, reducing the risk of an algal bloom, and now the rains have resumed water has returned.

Meanwhile the Trust is taking up an offer of assistance from the regional council. Council member David Lawrie,

Paying your subscription without cheques

The decision of most banks to phase out cheques is creating huge problems for organisations like PMNT and its members, many of whom pay bills like their subscriptions by cheque.

To try to assist members through the change PMNT has contacted local banks to see what alternatives are available for making payments once cheques have gone.

The most important thing is to first contact your bank, whether by phone or, if you are lucky enough to still have a branch nearby, in person. They can provide advice on the options and training on what to do.

You have the following options:

1. Telephone banking. This simple 24 hour service allows you to check balances, transfer funds and make payments over the phone without needing recourse to a computer. This is probably the best option if you have been relying solely on cheques and have no internet service. You should discuss it with your bank.

2. Payment by direct debit. You can arrange with your bank to automatically pay your subscription when it falls due. For that you'll need to know the number of PMNT's bank account: 02-0290-0056853-00. You should also ensure your payment carries the information that you are paying your subscription and/or making a donation and your full name. A direct debit can be reviewed or cancelled at any time.

3. Internet banking. If you have an internet connection you can make the payment yourself using your computer to transfer the money from your account to PMNT's. You'll need the same information as for a direct debit. If you need help ask someone computer-savvy or your bank.

3. Payment through ATMs. Some banks such as the BNZ allow bills to be paid via an ATM as required. Again, see your bank.

4. Credit card. If you have a credit card you can phone the Shorebird Centre shop during opening hours and give your credit card details for a one-off payment. Alternatively arrangements can be set up for a recurring payment to be made automatically from a credit or debit card whenever your subscription is due. The Centre can advise you on this.

5. In person. You can always pay by credit card or cash if you visit the Centre.

We hope this is helpful. If you find you need further advice on paying your subscription please contact the Centre and we will try to assist.

a surveyor and planner, and Gerry Kessels, a retired environmentral consultant, are making progress on the necessary reports. David has also made a submission on the Trust's behalf to the regional council's review of its regional plan pointing out that 'habitat deterioration is ongoing. A simpler, more expeditious consent process in situations where biodiversity is significantly threatened, would be much welcomed.'

Pacific Golden Plover

A remarkable combination of events – including a bureaucratic log jam, high winds, drought, Covid lockdowns, tsunami warnings and tricky birds – meant no Pacific Golden Plovers were caught in the 2020-2021 season.

In both previous seasons the team managed to track at least one bird all the way up to Alaska via Japan, and then island-hopping down the Pacific towards New Zealand. But this time none of our five new satellite tags were deployed.

However project organiser Jim Eagles has already filed an application for a permit for next summer in the hope of getting it approved before the birds start returning in September so catching can start on schedule. 'Hopefully, too, next year the borders will be open so our wonderful American supporters can return.'

ONGOING STRUGGLE: Co-chairs Nicola MacDonald and Pippa Coom sit at the head of the table for a Hauraki Gulf Forum meeting in the Shorebird Centre. Photo / Keith Woodley

Glimmers of hope for the beleaguered Hauraki Gulf

One of the pointers on the cover of *PM News* of May 2018 was 'Hauraki Gulf Forum pleads for help'. Inside, under the heading 'The sad state of the Hauraki Gulf', was a story on the publication – a year late – of the fifth in the series of reports by the Forum entitled *State of Our Gulf*.

As those headlines indicated, the latest report painted a picture of an environmental crisis in need of urgent remedial action by Government. Unfortunately, in the three years since then, despite several reminders by the Forum and those who share its concerns, there has still been no response from Wellington either to the *State of the Gulf* report or to the even earlier *Sea Change Tai Timu Tai Pari Marine Spatial Plan for the Hauraki Gulf.*

So it was hugely encouraging that the *NZ Herald* recently carried an article by Forum co-chairs Nicola MacDonald and Pippa Coom reporting that 'Central government has recently announced in Parliament that it is very close to releasing its long-awaited Response Strategy . . . This is good news. Now is the time to make it happen.'

The two chairs also issued a timely reminder of what the Forum is looking for. 'The good news is that we understand the problems, and we know what the solutions are,' they wrote.

'One of the most important solutions for improving the health of the gulf is more marine protection. Here in the Hauraki Gulf, we protect just 0.3 per cent in marine reserves, with some additional protection coming from rāhui and fishery closures. Just one tiny marine reserve has been created in the past 20 years.

'Contrast that the . . . one third of Aotearoa's land area in the conservation estate as national parks. We treasure those parks as places where nature can thrive. But we don't seem to treasure the Hauraki Gulf Marine Park quite as much. The Hauraki Gulf Forum is clear that we need at least 30 per cent marine protection in the Gulf.

'We can also protect specific parts of the marine environment through changes to fishing regulations: for example, the Hauraki Gulf Forum has called for the complete removal from the marine park of all fishing methods that damage the sea floor.'

The two co-chairs said all this was primarily the responsibility of central government. 'If central government had its policy settings right, mana whenua would not be having to lay down rāhui to protect what little kaimoana we have left, and passionate sailors Peter Burling and Blair Tuke would not be having to take out full pages in newspapers to call attention to the gulf's collapse.

'At the Hauraki Gulf Forum, we have found broad support in the community and among our mana whenua, local and central government members for our 30 per cent protection goal. It also aligns with international best practice.'

STAR ATTRACTIONS: (at left) The Lesser Sand Plover which has hung around on the Shorebird Coast this summer looks even more spectacular in its breeding plumage in this digiscope shot; (at right) visitors to the hides have been enjoying great views of a Curlew Sandpiper . Photos / Tony Habraken, Phil Battley

Autumn brings spectacular changes to the birding scene

It is great to host shorebirds at the Shorebird Centre. All too often the building and grounds could be aptly renamed the Sparrow Centre. Apart from those ubiquitous sparrows, the usual fare around the grounds and Widgery Lake are Mynas, Starlings, Mallards and the resident Pukeko clan. Herons and Welcome Swallows, Goldfinches, and Fantails regularly drop by. In recent weeks, a Banded Rail has made regular appearances at the lake.

Of course, there are often shorebirds passing overhead – oystercatchers and now and again godwits – but not on the property itself. So the stilt family that set up camp recently were most welcome. Through March and April, they frequented the ephemeral puddles that used to be the lake. Often, they would roost, or even sit, on the driveway.

Stilts are so common on the aptly named Stilt Ponds, around the hides and on the tidal flats, that they often go unnoticed. Well, I am always aware of them. It is hard not to be, with their striking black and white livery and improbable pink appendages, let alone their constant yapping. But I tend to pay them little attention. They are often background to other birds of interest. Having them in close view outside the kitchen window is not only novel, but most appealing. Against a green-brown film of water, and with sunshine bouncing off their colour scheme, they are quite spectacular.

The croaking honk of the local flock of Canadas continued as a daily feature through to mid-April. Their loud and penetrating sound carries over a considerable distance. There is no question as to the problems this introduced species pose in this country. Where they occur in excessive numbers, over-grazing, and defecating in pasture and waterways, there is a need for population control. Nevertheless, they are impressive birds, especially in large formation overhead. A question arises about their behaviour in recent months. At times they seemed to be flying aimlessly, in staggered V-formations, back and forth or in wide circles, calling constantly. In their natural range they are, or in some cases were, highly migratory. Is there some otherwise dormant gene that induces a degree of restlessness at this time of year?

By early April, the godwit flock had thinned substantially. Many people were fortunate through March to witness departures. It is always an enthralling experience no matter how often one is privileged to witness it. This time interest was increased knowing that some of the departing birds were going to feature in regular social media updates. If, for us, godwits and their extraordinary migrations are a gift that keeps on giving, the tracking programme has added considerable value to it, drawing numerous visitors to the Centre over summer.

Among the diminishing flocks in early April one or two particular individuals stood out. The Lesser Sand Plover that remained over summer was still here at Easter but it was transformed: its advance into breeding plumage, a broad rufous chest band beneath a thin black necklace, was dazzling.

More nondescript but nonetheless interesting was the Curlew Sandpiper frequenting the area in front of the Godwit Hide. It showed no trace of colour at all – being plain brown above with all white underparts – but given how rarely this species has been seen at Pūkorokoro since the turn of the century, it was a welcome presence. **Keith Woodley**

Recent sightings at Pūkorokoro

Arctic Migrants

640 Bar-tailed Godwit
58 Red Knot
1 Turnstone
1 Lesser Sand Plover
1 Curlew Sandpiper

NZ Species

3,100 SI Pied Oystercatcher
1,950 Wrybill
Pied Stilt
80 Royal Spoonbill
15 White-fronted Tern
60 Banded Dotterel
Black-billed Gull
Variable Oystercatcher
White-faced Heron
NZ Dotterel
84Caspian Tern
Banded Rail

The amazing godwit story continues to unfold

The ongoing programme to track Bar-tailed Godwits continues to provide fascinating information, most recently demonstrating that, contrary to what was previously though, a lot of two-year-old birds don't hang around New Zealand until they're three or four, they head back north, writes **Adrian Riegen.**

JUST TESTING: (above) The juvenile Bar-tailed Godwit 4RBYW went on a 9,000km flight only to end up right back where she started at Foxton Beach eight days later; (below) two more aborted flights by young birds still finding their way around. Photo / Paul Gibson, Map / Adrian Riegen

One of the wonderful things about studying nature is that there is always so much more to learn. When we think we understand the ecology of a species that species has a habit of jumping up and biting us in the nether regions as it shows us we haven't grasped their full story. And that is surely what the juvenile Bar-tailed Godwits have been doing to us this year.

For years Keith Woodley, myself and others, when giving talks, have been saying juvenile godwits arrive from Alaska when just a few months old (that still seems to be correct) and most remain in the Southern Hemisphere until they are three to four years before heading back to Alaska to breed for the first time (perhaps not quite so correct).

The occasional second-year bird has been known to migrate at least as far as East Asia in the past, although none of the 236 juvenile godwits fitted with engraved flags in New Zealand over the years have been detected in Asia in their second year.

But now we know different. In our latest exercise, of the 40 satellite tags deployed on juveniles in November 2019, 18 were still working on 1 April this year. All these birds are now in their second year of life and were generally expected to stay in New Zealand for at least another year. However, 12 of them had not read our script and set off on northward migration with adults in March 2021.

One, 4RYRB, left Tasman Bay on 25 March but soon turned back to Tasman Bay via the South Island West Coast after picking very unhelpful winds to start her journey.

Seven have made it to the Yellow Sea following the usual great circle route that the adults use, although this is the first time they have ever made this trip. Two more birds stopped transmitting when close to their Asian destination, so hopefully it is the transmitters that have failed and not the birds.

4RYRY left the Manawatu mid-December 2019 and flew south to Lake Ellesmere and on to Blueskin Bay just north of Dunedin. She stayed there until departing on 6 March 2021, flying north just off Cape Egmont and Cape Reinga, then off the east coast of New Caledonia. About 700km north of New Guinea she abruptly turned south even though the

wind conditions were pretty benign at the time and landed on the north coast of Papua New Guinea near Wewak. She has moved back and forth along the coast but was still there at the time of writing.

Perhaps the most fascinating bird is 4RBYW who took off from Foxton Beach on 31 March, headed north and was 4,000 km into the 9,000-plus km flight when she also did an abrupt about turn and started heading south. At the point she turned the wind was also benign and land was nowhere to be seen.

As she flew south she would have seen no land until perhaps glimpsing Farewell Spit as she circled to the east. She eventually landed at Ohau Estuary, 20km south of her departure point. This practice flight had covered around 9,000km – enough to have got her to Japan – and lasted around 8 days 17 hours at an average speed of about 43kph.

After a brief rest at Ohau Estuary 4RBYW flew the last 20km back to the familiar Manawatu Estuary at Foxton Beach arriving before dawn on 9 April. Paul Gibson was there and got a photo of her sleeping the next day. Without the satellite tag any regular observer at Foxton could understandably have thought she had been there all the time.

Will she make a proper go of it in March 2022? I really hope some of these transmitters last long enough to give us a greater insight into the early years of a godwit's migratory life.

Meanwhile, we shouldn't forget the other young birds that did make it to the Yellow Sea and spread out over several staging sites. Two of them, 4RBWW and 4BBBR, flew straight to the Yalu Jiang-Sindo region in the northeast Yellow Sea. 4RRBR joined them after a brief stop a few hundred kilometres south on the Dalian Peninsula. This is a rather heavily industrialised part of the coast, so it wasn't surprising that she moved on.

4BBBW landed on the islands in southwest Korea where there are still quite extensive tidalflats and hung around.

Most of our flagged godwits in the past have been seen on the west coast of South Korea, DPRK and up to Yalu Jiang, but three of the young birds have picked the western side of the Yellow Sea. Will they move on to the eastern shores this year or in subsequent years? There is still so much to learn about how they use these vital staging sites in Asia to fuel their journeys to Alaska.

And then there are the adults with transmitters. Six were still working at departure time and all flew directly to the Yellow Sea. We will have more about these birds in the next *PM News*. We are interested to know if they are using the same staging sites in Asia each year and these six have suggested they do.

HEADING FOR HOME: Solar-powered satellite transmitters make it possible to track the movement of 10 juvenile godwits who spent this summer in New Zealand. Map / Adrian Riegen

4BWRB departed Pūkorokoro Miranda (PM) on 24 March 2020 and staged at Mokpo in South Korea until leaving for Alaska on 19 May. This year he left PM on 25 March and flew straight to Mokpo.

Last year 4BYWW departed PM on 28 March and stopped in southwest South Korea for a few days, moved north to refuel at Jangsong-ku in DPRK, then departed for Alaska. This year she left PM probably on 31 March, arriving on the Shandong Peninsula on 8 April, before moving on three days later directly to Jangsong-ku again.

4BYWB departed PM on 10 March last year, got caught in the cyclone near New Caledonia a few days later and returned to PM, then left again on 3 April and after a few days on the coast of South Korea moved to Yalu Jiang. This year he left PM on 17 March and flew straight to Yalu Jiang and Sindo.

4BBRW and 4BWWB both staged at the Geum Estuary in 2020 and are doing the same in 2021 so it does appear they are being site faithful in the Yellow Sea at least for two years in a row.

This is a story that just keeps giving and gives us an increasingly valuable insight to their lives and needs. This will help drive better conservation decisions and ensure the future is a bright one for Bar-tailed Godwits on the East Asian-Australasian Flyway.

The Variable fortunes of an Oystercatcher family

Janie Vaughan reports on the latest chapter in the longrunning saga of the challenges facing shorebirds using the grassy coastal strip at the southern end of Kaiaua . . . this time with a happy ending.

Just north along the coast from Pūkorokoro Miranda is the village of Kaiaua, known to many as a place with a famous fish and chip shop, but also a good coastal site to sit and picnic while enjoying the presence of land, sea and shorebirds. And home to our much-loved family bach.

We've watched over the years as human disturbance has slowly increased, on the coastal reserve causing bird numbers to fall, until the storm surge of January 2018 eroded 4m of the reserve and trashed the rest. Hauraki District Council thought it was acceptable to leave the site as the flood had transformed it, weed seeds and all, so you no longer see the flocks of hundreds of Bar-tailed Godwits or South Island Pied Oystercatchers (SIPO) that once astounded folks driving past in late summer and gave us great pleasure.

But Kaiaua still hosts reasonable numbers of shorebirds. The SIPOs and Pied Stilts are not hard to see. Ruddy Turnstones and Banded Dotterel can be a little more difficult as they feed quietly. New Zealand Dotterel try to breed here each year: two years ago there was a delightful family of three chicks who lasted about a month. Three species of gull are common. There can also be terns, herons, various cormorants, a curlew one year and a Reef Heron occasionally.

Thus it was with mixed feelings we accepted the Variable Oystercatcher (VOC) pair scolding and distracting us as we walked the coastline over the New Year. For two years they have been a couple, one all black, and one black and white, and prior to that there was an all black pair. But certainly it was made clear each year that people were no longer welcome in that area. Each year we have supported them by putting up signs and tape and each year they have nested with no success. But this year we still put up our warnings and waited.

One chick, then two, well done Variables! Then, a third chick, grey but fluffy, like an out of focus Kaiaua stone. As the tide retreated the adults were very busy to ensure no other bird should be in their extended area. The chicks constantly demanded food, and brooding or else wandered off and had to be called back. Then there would be a shoving match to sort out which chick would be beside the parent's probing beak. Sometimes the other adult had time out but was still on guard.

AT RISK: Variable Oystercatch family on the coastal strip. Photo / Janie Vaughan

They weren't visible during high tide in the early days until the adults decided the reserve, with its newly built bike path, was a good hangout for the chicks which could find haven in weeds in times of alarm. One chick thought it was so good that it came back by itself almost to the road before we shepherded it back to the shoreline. The three became easily distinguished as one was all black, one was black and white and the last was not growing as quickly as the others. And then there were two.

Other species are now permitted back into the feeding territory but there are still battles with other VOC. But that is expected! That's what Variables do. When they were about two months old (a record here!) they could fly but seemed a little reluctant about it. By now the chicks were even fonder of the reserve as rain had softened it up. That was cause for concern as they kept feeding undisturbed as all sorts of traffic passed on the road and noisy bikes, people and quad bikes used the bike path.

At one stage we saw the black chick limping badly and its tail descending! The parents were caring, but it couldn't keep up. The next day we didn't see it so feared the worst. But then, there it was again, feeding beside the bike path. With us watching, someone walking two big dogs and a cyclist coming from another direction….it flew! If they are to recover I guess they have to do it quickly.

So it is still with mixed feelings we watch them. They visit neighbours' lawns to the north, they ignore a parent scolding them, such as when they feed towards a photographer. As they gain their adult plumage and wander further, maybe just along the coast to join the main flock of VOC, we will not be able to identify them. But they have survived their most precarious stage of life.

We can only guess why these birds have succeeded in raising a family this year. Experience, less human traffic because of covid, lack of interest from the district council, the freedom campers being moved further away, or all those people mainly staying on the bike path? But it's been exhausting. Well done parent VOC!


LOOK OUT BELOW: A Caspian Tern in action. Photos / Philip Moll

Caspians Terns are big and stroppy . . . with good reason

Caspian Terns are formidable defenders of their nests – and those of other species – but their roosts are highly vulnerable to changing currents and human intrusions so they're often on the move, writes **Jim Eagles**

I've always felt Caspian Terns have an air of danger and excitement about them. They remind me of the World War II German Stukas, sleek but deadly dive bombers that appear out of nowhere leaving havoc in their wake. They hunt by cruising along about 15m above the surface of the water, then dive sharply into the water to grab an unsuspecting piper or mullet in that powerful beak, often swallowing it whole.

Even sitting quietly on the shellbank at Pūkorokoro they look tough and aggressive. They're surprisingly big birds, the largest terns in the world, with wingspans of over a metre and four times the weight of their cousins the White-fronted Terns.

Like the Stuka, their name has a German origin. They were named by Peter Simon Pallas, a pioneer Prussian botanist and zoologist, who was invited by Catherine the Great to be a professor at her St Petersburg Academy of Sciences. Thereafter Pallas spent many years leading expeditions across her vast empire to collect and identify new species. During one in 1770 he saw large terns on the Caspian Sea and called them *Hydroprogne* (a mix of the Greek word for water and the Latin name for swallow) and *caspia* (for the Caspian Sea).

Maori gave them the much simpler – but still taxonomically accurate – name of Taranui or big tern (Tara being the name for the White-fronted Tern and Taraiti for both Fairy and Little Terns).

Unlike Terek Sandpipers, which apparently never visit the Terek River, Caspian Terns do frequent their eponymous sea. But they also breed on the ocean and lake coasts of a wide swathe of the planet, including parts of North America, Europe, Africa, Australia and New Zealand, in fact all continents except South America and Antarctica

The New Zealand, Australian and African birds are essentially resident but those breeding elsewhere make quite long migratory journeys during the non-breeding season.

The global population is estimated at 50,000 breeding pairs and is generally regarded as stable apart from in the Baltic Sea where it is declining.

New Zealand's Caspian Terns are, similarly, spread out along our coasts and lake shores, with a few large colonies and lots of isolated breeding pairs. They are widely seen but nevertheless regarded as Uncommon and their conservation status is Nationally Vulnerable.

They are also classified as Native birds but they may not have been in this country as long as you might think.

In a fascinating article (published in *Notornis* No 39 in 1992) Dick Sibson noted a surprising lack of references to Caspian Terns in early accounts of New Zealand bird life. In fact, he wrote, Caspian Terns 'were apparently so scarce that for 90 years they escaped the notice of the early European ornithologists.'

Furthermore, he said, archaeologists had assured him that 'very few bone fragments [of Caspian Tern] have been identified from middens, whereas midden deposits yield widespread evidence that White-fronted Terns and our three native gulls [Southern Black-backed Gull, Red-billed Gull and Black-billed Gull] frequently formed part of the Polynesian diet'.

There were, Dick suggested, two possible explanations for this: It could be that 'like some other waterfowl - eg Pukeko, White-faced Heron, Royal Spoonbill – [the Caspian Tern] is a comparative newcomer to New Zealand and has enjoyed a boom period in the middle of the 20th century'.

Alternatively, he said, the explanation could be that Caspian Terns 'laid large palatable eggs in places that were usually accessible [and] had become scarce after 800 years of hungry human (Polynesian) predation. When in the spring of 1939 I

FEROCIOUS GUARDIAN: A Caspian Tern keeps a close eye on its vulnerable chick. Photo / Steve Attwood

was taken to see the extensive breeding site in the Mangawhai sandhills, there was ample evidence of Polynesian occupation in the form of cracked cooking stones and fragments of stone artifacts.'

Indeed, he acknowledged, 'Polynesians were not the only nest-robbers; for as GA Buddle (1951) wrote, "In earlier days it was the local custom to raid the colony when laying commenced in early November, to obtain a supply of eggs for baking the Christmas cakes."'

Whatever the explanation, there still aren't all that many of them. In 1971-75 and 1991-95 Mike and Brian Bell carried out surveys of the Caspian Tern population (reported in *Notornis* No 55 in 2008) both of which came up with figures of around 1,200 breeding pairs.

Within that seemingly stable population there was, however, considerable movement. Of the 16 breeding colonies the Bells identified in the 1970s, six had disappeared by the 90s and two had a greatly reduced number of pairs. To balance that, one colony had expanded considerably and eight new colonies had been identified.

The second survey also revealed significant geographical movement over the intervening decade with the population declining in the Far North and new colonies forming in the south. In particular, the number of breeding pairs in the Far North declined by 53% and in South Auckland by 35%, but nearly doubled in Northland, Bay of Plenty and Southland.

The Bells suggested that similar surveys of Caspian Tern colonies should be done every 10 years or so but this seems not to have happened. So, some 25 years on, I have endeavoured to update their work using their map of colonies in the 1990s as a baseline.

Like them I contacted birders – mostly Birds NZ regional representatives – around the country to see if the colonies the Bells recorded were still there, whether any had been abandoned and whether any new ones had been created. Where colonies were identified I endeavoured to track down the most recent count and, if this was quite old, sought eyewitness confirmation that the colony was still viable during the 2020-21 breeding season.

This information confirmed that the Caspian Tern scene is extremely fluid. Colonies perpetually rise and fall and sometimes sites are abandoned altogether; when this happens the breeding pairs may scatter far and wide or most may go to a new colony not far away.

Many Caspian Terns do not nest in colonies and they seem to be similarly changeable, sometimes nesting alone or with 2-3 other pairs; often using the same site for years, but just as often moving on after a season.

Furthermore, because they frequently nest in inaccessible places it seems more than likely that there are colonies that even diligent surveyors don't know about.

As well as the six colonies the Bells identified as having disappeared between the 70s and the 90s, I was told of colonies having been abandoned at the South Head of the Kaipara Harbour, Port Waikato/Waiuku Forest, the Waihou River mouth, Whangateau Harbour and Onoke Spit. Meanwhile new (or previously unreported) colonies have been identified at Rat Island in the Kaipara, Clarks Beach on the Manukau and Rototai in Golden Bay.

This pattern is well illustrated by the history of the one at Port Waikato. In an article written for *PM News* No 94, David Lawrie recalled that, 'In the 1980s an island formed in the centre of the [Waikato] river mouth which provided a safe breeding ground for a large colony of Caspian Terns and also Black-backed Gulls, Variable Oystercatchers and NZ Dotterels. But in the 2000s the island was slowly eroded away as the river moved further north and by 2004 the tern colony was abandoned. The birds were eventually found nesting in a pine forest near where sand was being mined for the iron.'

Tony Habraken, who regularly monitored the new site, says NZ Steel 'always accommodated the birds and managed the mining work around the birds' activities. We are hugely grateful at the way they took it upon themselves to care for the colony and leave it undisturbed during breeding seasons.' That effort obviously paid off because at its peak in 2011 there were 75 pairs breeding in the forest.

However, for some reason in the years after that the colony split with many of the birds gradually moving 25km further north to a sandbank at Clark's Beach, on the Manukau Harbour, where there had always been one or two pairs of Caspian Terns.

By 2016 there were only 30 birds at the mine site while a count at Clarks Beach found 31 nests. Before long there were none breeding in the forest while on census day 2020 Clark's Beach had 82 birds. 'It is unclear where the missing birds went,' Tony says. 'What I can tell you is that they appear to have moved to the Manukau Harbour where breeding numbers have increased at several sites since the decline of breeding at Port Waikato.'

In 2014 a group led by Karen Opie tried to attract Caspian Terns to nest on the sandspit on the southern side of the Waikato River mouth where a large area was fenced off to try to restrict human activity. They carved and painted several polystyrene decoys to be placed within the fenced area and arranged for Caspian Tern colony calls to be played through a speaker system. 'When the decoys were placed on the spit with the sound equip-

ment there was an immediate result,' David reported. 'Within half an hour there were birds roosting in the vicinity and groups of Caspian Terns were regularly being seen in the area. But unfortunately none of them nested.'

Changes in tides and currents do appear to be the biggest threat to Caspian Tern colonies but human behaviour is also a significant problem. Certainly that may well have been the major factor behind the demise of the colony on Papakanui Spit, on the South Head of the Kaipara Harbour, which 50 years ago was one of the biggest in the country with 200-plus pairs.

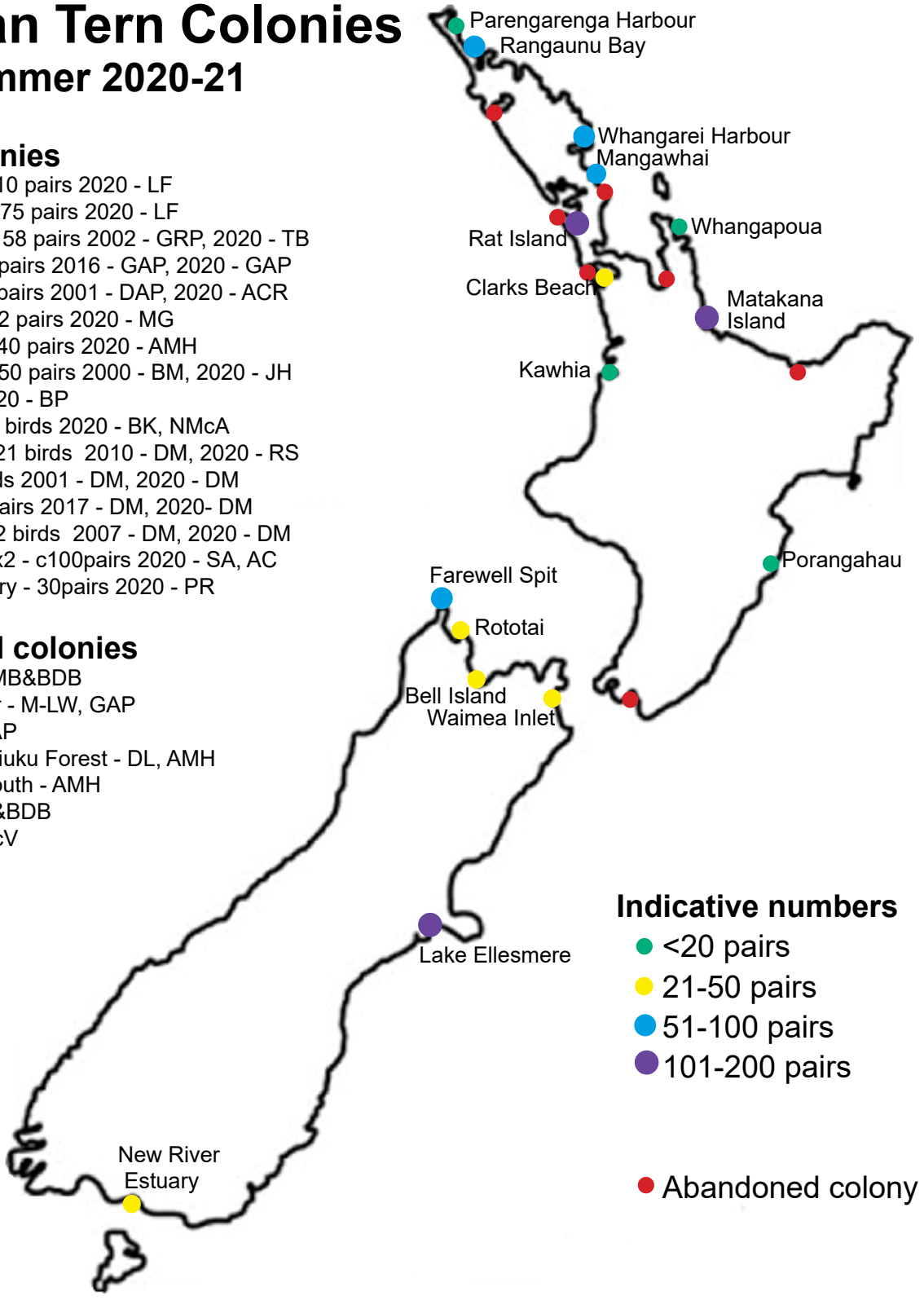
These days the end of the spit is an island, but Gwenda Pulham recalls that when she started birding there it was one long, continuous sandspit and 'the fishing vehicles could drive up Muriwai Beach and along the top of the ridge to avoid wet sand and get to the very tip of the spit where I guess the fish were most prolific.

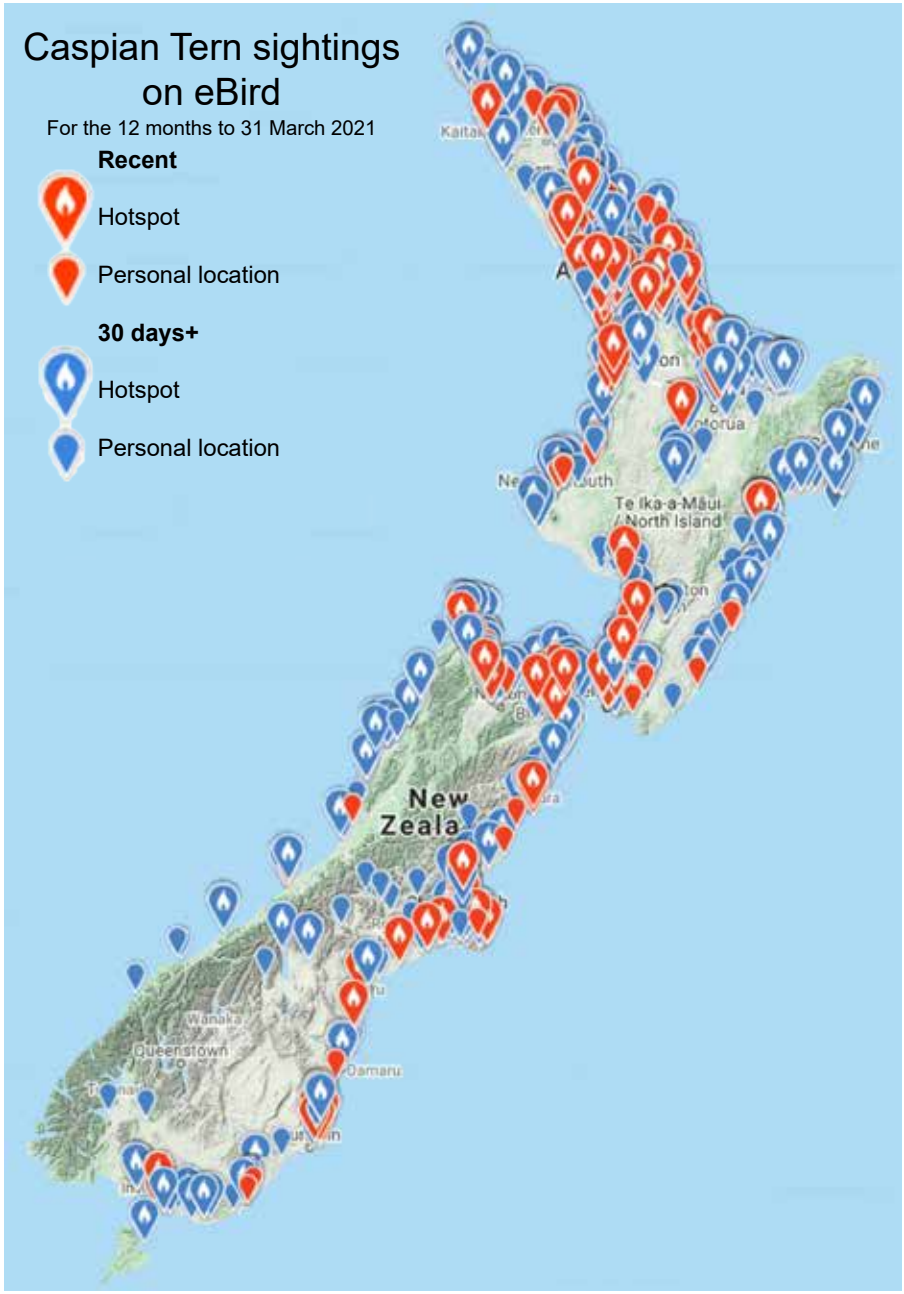
'Unfortunately the birds were clever enough to also want to put their nests on the highest point of the sandspit to protect them from the waves so the colony, with eggs and chicks and nesting birds, would regularly get driven over. I remember going there once with the late Sylvia Reed and it was carnage. The colony was criss-crossed with tyre tracks and dead birds. I'm not the only person to strongly suspect that this regular dis-

Caspian Tern Colonies
as at summer 2020-21

Active colonies
Parengarenga - 10 pairs 2020 - LF
Rangaunu Bay - 75 pairs 2020 - LF
Whangarei Hbr - 58 pairs 2002 - GRP, 2020 - TB
Mangawhai - 60 pairs 2016 - GAP, 2020 - GAP
Rat Island - 161 pairs 2001 - DAP, 2020 - ACR
Whangapoua - 12 pairs 2020 - MG
Clarks Beach - c40 pairs 2020 - AMH
Matakana Is - c150 pairs 2000 - BM, 2020 - JH
Kawhia - 18 - 2020 - BP
Porangahau - 44 birds 2020 - BK, NMcA
Farewell Spit - 121 birds 2010 - DM, 2020 - RS
Rototai - 147 birds 2001 - DM, 2020 - DM
Bell Island - 35 pairs 2017 - DM, 2020- DM
Waimea Inlet - 72 birds 2007 - DM, 2020 - DM
Lake Ellesmere x2 - c100pairs 2020 - SA, AC
New River Estuary - 30pairs 2020 - PR

Abandoned colonies
Hokianga Hbr - MB&BDB
Whangateau Hbr - M-LW, GAP
South Head - GAP
Port Waikato/Waiuku Forest - DL, AMH
Waihou River mouth - AMH
Ohiwa Hbr - MB&BDB
Onoke Spit - JMcV





turbance was enough to cause them to go and find somewhere else.'

A perusal of the Classified Summarised Notes published in *Notornis* suggests that happened very quickly. In 1982-83 Michael Taylor reported 160 nests there. And in 1983-84 D Riddell reported 'colony didn't form'.

Gwenda recalls, 'We didn't know where they'd gone, there was just no colony, and then Brigid and Kane Glass went sailing and found a colony east of Shelly Beach on Rat Island/Tuhimata.' A count in 2001 recorded 161 nests with 104 chicks, indicating that that most of the colony had moved to the new site.

A more positive example of the challenges facing Caspian Tern colonies comes from a chenier island in Whangapoua Harbour, on the Coromandel Peninsula, where ecologists Meg Graeme and Hamish Kendall have been working to overcome problems of rats, introduced weeds and erosion.

Meg says that their general observations indicate that the colony has fluctuated in size over time but the work they have done – aided by the island itself becoming more stable and supporting a variety of estuarine vegetation communities – does seem to have helped.

'Prior to this season's nesting we cleared an expanse of spinifex that was covering much of the available beach area above high tide the Caspian Terns seem to favour,' she says. 'This, as well as the trapping of three large Norway Rats and baiting, has probably helped the colony have a relatively successful breeding season.

'We have found it very hard to monitor the colony but . . . based on drone photos and a couple of site visits we estimate the colony is about 35 adult birds and that between 20-27 chicks are likely to have fledged. For the next breeding season we intend to clear a larger open high tide beach area and will hopefully have a better drone zoom camera for improved monitoring.'

Looking closer to home, despite their tendency to move around, Caspian Terns are almost always present on the shellbank at Pūkorokoro – often as many as 40 or 50 – and although they aren't among our signature birds they do provide additional colour and excitement, an important part of what makes the Findlay Reserve such a fascinating place to visit.

However, it's clear that they rarely breed there. Indeed, the Bell's maps from the 70s and the 90s record no colonies in the Hauraki Gulf at all.

In the 2000s a good-sized colony did spring up on a new shellbank at the mouth of the Waihou River near Thames but it only lasted about 10 years.

Tony Habraken recalls that when that shellbank developed in 1996 he and Dick Veitch went along to have a look but found no birds then or in the next couple of years. But by 1999 there was at least one pair breeding there and by 2005 he counted 98 birds plus nests and chicks. 'This typifies how opportunistic the species can be in honing in on suitable real estate/habitat.'

Unfortunately in 2008 high tides washed out the nesting area, leaving eggs on the beach, and the following year there were no Caspian Terns. Some terns were seen there in 2010 though it's not known if they were breeding but, Tony says, 'at this point the shellbank had joined the mangrove belt so their security was probably compromised and there are no more records after that'.

It's unclear where those birds went but a couple may have briefly tried breeding on the Pūkorokoro shellbank. David Lawrie recalls that a few years ago there were often one or two pairs nesting on the shellbank. And Tony's records show that in 2012 he saw a couple of birds 'tending to a scrape and displaying the aggressive behaviour typical of nesting'. However, nesting has not been seen there in recent years.

So if we don't have any breeding colonies nearby where do the birds regularly seen at Pūkorokoro Miranda come from? As the map of eBird records from the past 12 months (at left) shows, when they are not breeding Caspian Terns spread out around the country, not just on the coasts

but also lakes and rivers.

As a result, most summers there are at least 40-50 on the shellbank and in March this year 140 were counted. Very likely many of them are pairs that nest in ones or twos around the Hauraki Gulf and get together when breeding is finished. Others probably come from colonies further afield.

Dick Sibson, in the article referred to earlier, noted that there are generally three times as many Caspian Terns seen on the Firth during winter as in summer, and twice as many on the Manukau, which rather confirms that they come here when they've finished breeding.

Early banding work, he wrote, 'has shown that some Caspian Terns from the Northland colonies wander south to winter in [the Firth or the Manukau] or in the inner Waitemata'. Populations of many species of colonial terns were known to fluctuate and 'a successful nesting season in Northland is likely to be followed by a strong influx into the Firth of Thames or Manukau Harbour, as happened, for example, in the years 1957-60 and 1966-71.'

Dick noted that the early colour-banding work by Maida Barlow at Invercargill had shown that Caspian Terns dispersed northwards after nesting but 'it remains to be seen how many southern birds reach the vicinity of Auckland.'

The pattern of Caspian Tern movements after nesting is still not entirely clear. I have not been able to get data about them from the Banding Office. However, reports from individual birders suggest that they spread far and wide.

For instance, between 1994 and now Tony Habraken has recorded 33 banded Caspian Terns – comprising at least 12 individuals – in the Firth of Thames. These all originated from Mangawhai and South Kaipara Head (banded by Sylvia Reed and her team) and Bell's Island near Nelson (by Willie Cook and his team).

Although he hasn't seen any from Invercargill in the Firth, Tony says he has sighted birds from there, plus a bird from the Ashburton River banded by Ray Pierce, on the Manukau Harbour, 'so it would not have been beyond them finding the FOT'.

Indeed, the use of engraved leg bands on Caspians from Nelson since 2010 has revealed that some birds from the South Island regularly head north to warmer climes. One such, A29, was spotted by Tony on the Manukau in 2013, and at Kaiaua the following year. Since then it has been recorded at sites from Whakatiwai, north of Kaiaua, to Tararu, north of Thames, in 2014, 2018, 2019 and 2021 which, as Tony says, 'suggests it has made the FOT its regular wintering ground'. That's good news for those who like seeing this formidable bird dive bombing for food or chasing away predators like harriers around the Firth of Thames.

NEIGHBOURHOOD WATCH: A Caspian Tern vigorously defends the roosting area at Pakiri from a Black-backed Gull. Photo/Philip Moll

Meet the self-appointed shorebird police

Caspian Terns may look scary but they can be the best possible neighbours for endangered shorebirds like New Zealand Fairy Terns or New Zealand Dotterels.

Gwenda Pulham realised this when she was helping monitor the shorebirds at Pakiri a few years ago and a pair of Caspian Terns decided to nest on the sandspit in among all the dotterels and oystercatchers and a solo pair of Fairy Terns. 'When we were on duty we'd see one of the Caspian Terns incubating their nest and the other on guard. Often and quite suddenly the on-guard adult flew skywards squawking and screeching. A quick look with the naked eye revealed nothing. But by using binoculars or telescope we would pick up an approaching Harrier up to a kilometre away. So I got to calling them "the self-appointed local friendly police" or "the self-appointed quality controller of avian visitors". 'They are big birds, and as solo nesters they are particularly territorial, so the Black-backed Gulls and Harriers didn't get near the site.'

The Fairy Terns fledged their chick and the Caspians were also successful so the monitoring team at Pakiri now live in the hope that they will come back. 'To the best of my knowledge,' says Gwenda, 'they haven't returned since which is a pity because, while they were there, oh they were a wonderful built-in security service.'

The value of Caspian Terns in protecting other species was further demonstrated this summer when Ambury Park had its best-ever season for New Zealand Dotterel chicks and produced a Caspian Tern chick as well.

Auckland Council parks ranger Maddie White said when Gwenda talked to her about the Caspian Tern's role at Pakiri it struck a chord. 'This is the first time I can remember us fledging dotterel chicks out on the island and we do think it's because the pair of Caspian Terns were nesting there as well.

'The Caspians fledged one chick and because they were so aggressive in keeping the hawks away two dotterel chicks also fledged on the island, and three more nearby, and we think there might have been another chick fledged but nobody saw it. If we could get the Caspian Terns to use the island every year that would be great. Gwenda's spot-on with calling them a self-appointed police force. They're a great asset.'

COLOURFUL: Meadows of Glasswort at the Findlay Reserve. Photo / Olga Bochner

There's more to Glasswort than meets the eye

Olga Bochner explores the fascinating history of Glasswort, or Sarcocornia, the pretty little succulent which lines many of the paths leading to the bird hides.

I'm sure you've often wondered why that rather cute, little, multi-coloured, succulent plant that decorates the edges of the Findlay Reserve was given the name 'Glasswort'.

Well, okay, maybe you haven't wondered that. I have to admit I've mostly ignored the hundreds of Glasswort plants lining the paths from the carpark as I scurried to the hides to see the waders. But now I have started thinking about the name and even finding out where it came from. So this is your chance to do the same.

Glasswort has been in my focus since June last year when I was face to face, down at eye level, with it while planting Oioi around the Stilt Ponds in the reserve. And then towards the end of the year, as I was sorting out the cannon net after not catching any Pacific Golden Plover, there was Glasswort again: strands of it in the nets!

It is a bizarre, almost upright, seaweed-looking plant, with small, segmented, short, jointed, fleshy stems, sausage-like really, in lots of colours, mostly green, reds, purples and some even sort of browns. Intriguing when you look at it closely as I was forced to do.

So thought I'd better find out more about the plant and where the 'glass' business came from. Dad told us as children that glass was made from sand. For years I thought he made that up as he was always playing jokes on us. And when I read that this plant received the name 'glasswort' as it was used in glass making, I thought 'there's more to glasswort than meets the eye!'

Glass has a fascinating history dating back nearly 7,000 years. But the glasswort connection seems to have arisen 1,000 years ago when European glassmakers discovered they could improve the quality of the product by adding the ashes of burned vegetation which turned out to contain potassium carbonate or potash. Then glassmakers in Venice discovered that if they used salty coastal plants, which contained sodium carbonate, they got even clearer glass.

Again, as a child, Mum had told me about Murano, an island near Venice, where the glassmakers were sent to reduce the risk of glassmaking starting huge fires and burning up the city (Murano is still famous for fancy glass today). Mum was sure they were also there so they could not easily give their glass secrets away and that sounds very logical.

Anyway, it seems glassmaking pretty much disappeared from England after the Romans left until it was revived in the 16th century by the arrival of glassmakers from Europe including Murano. According to Wikipedia, 'The Venetian glassmakers brought with them the technology of cristallo, the immaculately clear glass that used soda ash as a flux. These glassmakers would have recognized *Salicornia europaea* [our Glasswort's European cousin] growing in England as a source for soda ash. Prior to their arrival, it was said that the plant "hath no name in English". So they called it Glasswort.'

Over the centuries glassmaking evolved and newer and simpler ways of making glass which didn't involve burning plants. Certainly, although Pūkorokoro had a limeworks which made lime by burning shells, there is no history of glasswort burning ash production. But by then the name had stuck.

So that's the history, but what about the botanical side? I'm no biologist … so to the books. Glasswort belongs to the plant kingdom, family *Amaranthaceae*, genus *Salicornia* (remember the name *Salicornia europaea* mentioned earlier). And species? There are numerous species worldwide and New Zealand has one: *Sarcocornia quinqueflora*, apparently also called Beaded Glasswort, and in the olden days it was once better known as Marsh Samphire.

The sharp-eyed among you will about now be saying, 'Aha, you said it was *Salicornia* and now you're saying *Sarcocornia*. You've got it wrong!'

Well, hold on there, pedants. The *Manual of the New Zealand Flora* by TF Cheeseman, published in 1925, says that Salicornia is an annual or perennial herb. Cheeseman explains that our New Zealand species belongs to the subgenus *Arthrocuemum moquin* 'separated from the

NATURAL JEWELS: Glasswort beads shining in the sun. Photo / Olga Bochner

EXQUISITE: Murano glass beads. Photo / Alexander-Lee

DELICATE: Glasswort female flowers (at left) and male flowers (at right). Photos / Kevin Thiele

MIGHTY MITES: Glasswort Gall Mites and the pockets they create. Photos / Landcare Research

Salicornia proper mainly by somewhat obscure embryological characters'.

If Cheeseman calls it obscure, then it must be. But the annual/perennial bit is noteworthy as it led to Glasswort having had a name change from *Salicornia*, as it was originally named in 1866, to *Sarcocornia* in 1977. And that was because it was decreed that *Salicornias* would henceforth be annual, whereas *Sarcocornias* would be perennial.

Our Glasswort – often also called Sarcocornia these days – is a flowering plant. *A Guide to the New Zealand Seashore* states it 'bears small green and yellow flowers in the summer'. After learning this I looked for the flowers earlier this year, during another exercise to not capture Pacific Golden Plover, and there they were. I even managed to photograph them.

Glasswort is characterised as gynodioecious. Yes, I had to look that up, and it means they contain female and hermaphrodite plants, although it seems that in most areas Glasswort is totally hermaphrodite.

It is also a dicotyledon, meaning it has two seed leaves, and the name *quinqueflora* refers to the leaves having a network of veins and vascular bundles. And remember those segments? They are the leaf bases. They also help it conserve water.

In *Life in the Estuary* (for sale in the Centre shop) it is described as a salt tolerant coastal plant, found in intertidal areas and estuaries, sandy-muddy shores and even on rocks areas, where it can form a dense type mat.

Glasswort is a succulent, but not like the ones we have in the garden at home, as Glasswort spends half its life in a salt water environment. In other words: halophytic. What an adaptation!

It can even grow on bare mud. But because it has shallow roots, Glasswort will not grow where there are strong water currents. It is also found in inland Otago. No saltwater there, but erosion means the soils become salty if there's no rain.

Glasswort even has its own mite: *Aceria rubifaciens*, the Glasswort Gall Mite, which only feeds on glasswort. My reading suggests that not much more is known about these mites but it is thought they are only found on plants in the North Island. After being down south in winter, I guess it is because they like the warmer climates, and who can blame them.

According to some books, Glasswort is also edible. Its European cousin, *Salicornia europaea*, is eaten cooked or raw but you have to get them before the stems become woody. Wikipedia has a recipe for a popular Turkish salad made with lemon juice, olive oil and garlic in case you'd like to try.

I am not sure if I will tuck in myself but I do now pay more attention to Glasswort. I've already found that in some lights, such as the setting sun down by the hides, the Glasswort stems with all their variety of colours, look like precious Murano glass beads. Stunning. Like glass it is clear (spot the pun) that Glasswort deserves a closer look.

2020 was a difficult but productive year

A list of some of the highlights for Pūkorokoro Miranda Naturalists' Trust in 2020:

•Supported Massey University and several international partners in a project to track Bar-tailed Godwits/Kuaka using new solar-powered satellite tags. This attracted considerable local and international media attention.

•Assisted Massey University in a trial of new tags for Red Knots/Huahou.

•Continued with our challenging work to track Kuriri/Pacific Golden Plover. During the 2020-2021 season we did track a second Kuriri, Ra, north via Japan to Alaska, and south via Hawaii and the Solomon Islands as far as Vanuatu before the battery ran out. But in the summer just gone, difficult conditions and tricky birds meant we didn't catch any more.

•Commenced a joint project with the Department of Conservation to survey the Fernbird/Mātātā population in the coastal strip which found more birds than expected.

•Volunteers planted over 11,000 native plants to launch a project to rehabilitate the Findlay Reserve. This winter it is hoped to plant even more.

• Installed new fencing along the northern boundary of Findlay Reserve and in the vicinity of the bird hides to regulate visitor activity.

•Continued work on a report on five years work surveying migratory birds in North Korea. Covid restrictions prevented any further surveying.

• Samples from taxidermy bird specimens in the Centre collection were taken by Waikato Regional Council science staff to fill gaps in their DNA data of bird species in the region.

•Participated in a hui convened by Waikato Regional Council to prepare contingency planning for future drought/avian botulism events.

•Hosted a meeting of the Hauraki Gulf Forum in the Centre.

•Made submissions to the Waikato Regional Council in connection with the purchase of the Piako Roost which will see it developed as a key shorebird roost as well as for flood protection.

•Participated in the work to create a wetland on the Tiaki Repo ki Pūkorokoro Reserve.

•Thanks to the amazing generosity of members we raised more than $280,000 to put up a new cottage for the Centre Manager.

•Ran our acclaimed Miranda Field Course, two Wader ID Courses, gave 15 talks at the Centre or off-site and hosted six school visits.

•In spite of Covid the Centre recorded 6,901 visitors and 655 bed nights while shop sales stayed remarkably healthy.

•Started producing a digital version of our quarterly *PM News* magazine – which led to considerable cost savings as well as being more sustainable – as well as continuing to mail out print copies to those wanting them.

Agenda

for the 46th Annual General Meeting of the Pūkorokoro Miranda Naturalists' Trust to be held at the Shorebird Centre at 11am on Sunday 16 May 2021

Apologies for Absence
Minutes of the AGM held on Sunday 28 June 2020
Matters arising from the minutes
Chairperson's Report
Treasurer's Report
Subscriptions for the year ending 31 December 2022
Election of Officers (Treasurer, Secretary, Auditor, 10 Council Members)
General Business

•Sent out regular editions of our eNews letter which now has over 1200 subscribers. Followers on Facebook passed the 7,000 mark and those on Twitter topped 1,300.

•Assisted in the production of a special shorebird edition of the Birds NZ journal *Notornis*.

•Used Zoom technology to facilitate Council and EAAFP meetings in spite of Covid.

•Brought our finances back into the black by careful management of costs, suspending the Educator position and reducing the hours of the usual Summer Shore Guide, with a roster of volunteers to largely fill the gap.

•Received $17,905 from the Government Covid-relief subsidy.

•Facilitated work on the Thames to Kaiaua Cycle Trail, including advising on the route and suitable signage, allowing a toilet to be sited in the Findlay Reserve car park and having the entrance to the Centre widened to allow easier access. The trail is already proving popular and is adding a new range of visitors to the Centre and the viewing hides.

•Arranged for students from Auckland School of Architecture to make a field visit to the Centre which provided interesting concepts for future development.

• Used donations from family and friends of Judy Piesse, the inaugural secretary of PMNT, to buy a projecting microscope for use in our classes and courses.

•Recorded thousands of hours of volunteer work.

•Membership figures increased for the first time in many years.

•Enjoyed the first maternity leave in the Trust's history when centre assistant Chelsea Ralls and partner Ken Brown welcomed baby Riley. Chelsea's role has been ably filled in the interim by Anne Gummer.

Annual Report from the Chair

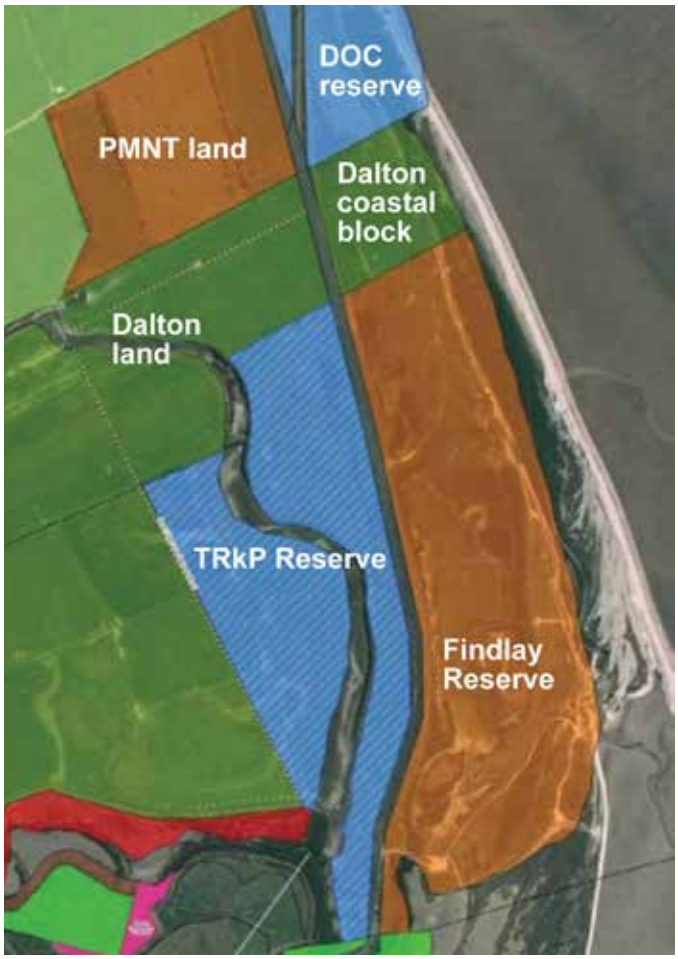
A year of positive outcomes for finances, land and Ngāti Paoa

Chair **William Perry** reports on a dramatic year which has seen our finances back in the black, a decision not to dispose of the block of land we own adjacent to the Tiaki Repo ki Pūkorokoro Reserve and the Crown reaching a settlement with our partners Ngāti Paoa.

There have been several positive outcomes within Pūkorokoro Miranda Naturalists' Trust in the last year and one of these has been our return to financial solvency. From a reported deficit of $84,274 at the end of 2019 we are now reporting a surplus of $42,851. Kevin Vaughan will report on the detail of this at the AGM and he will probably not accept responsibility for it. Kevin remained calm through the time that we were in the red and pointed out that we simply needed more income. But it is his careful stewardship of our funds and efficient presentation of the figures that make it so easy to see that our income has exceeded our expenditure.

In the November issue of *PM News,* I reported on a possible land swap with our farmer neighbours as part of the establishment of the new Tiaki Repo ki Pūkorokoro (TRkP) Reserve. We debated this opportunity with some vigour within the PMNT Council and eventually decided not to proceed. We felt that the parcel of land that we were proposing to swap, namely the 11-hectare Nature Heritage block, would also be suitable for habitat restoration and that we should therefore hold onto it with the intention of developing it in that way at some time in the future. This decision does not mean that we are any less committed to the TRkP, particularly given that it will create a new wetland restoration and I continue to represent PMNT at meetings of the TRkP Trust held in the Wrybill Room at the Shorebird Centre.

As Jim Eagles has reported elsewhere in this issue, the Crown and Ngāti Paoa have reached a settlement through the Treaty of Waitangi negotiations. This is particularly important to us at the Shorebird Centre because Ngāti Paoa is the iwi with whom we interact more and more as close neighbours with shared interests. We received an invitation to the event at Wharekawa Marae, just north of Kaiaua, and four of us (Keith Woodley, Gillian Vaughan, Trudy Lane and William Perry) attended on Saturday 20 March. We joined the party of visitors which included the Minister of Treaty Negotiations, Andrew Little and Foreign Affairs Minister Nanaia Mahuta. The powhiri was followed by about one hour of speeches in Te Reo Maori alternating between orators from the host party and orators from the visiting party. It was a long hour in fierce sunshine with no subtitles. One of the hosts noticed some of us sitting in the sun and offered us umbrellas for protection. Once the kōrero in Maori was complete, the ceremony continued in English, much to the relief of those of us who have still not learned either of this country's other official languages.



LAND HOLDINGS: The map at left shows the block of land owned by the Trust, which we were asked to exchange for two pieces of Dalton land contiguous with the TRkP Reserve. However, it is to be retained by the Trust and restored as habitat for our native fauna and flora.

An important part of the ceremony at Wharekawa Marae was the set of apologies associated with the Deed of Settlement. Andrew Little read out this list of apologies, including, "The Crown acknowledges that the cumulative effect of the Crown's actions and omissions, including confiscation, the operation and impact of the native land laws and continued Crown purchasing has left Ngāti Paoa virtually landless and undermined the iwi's economic, social and cultural development. I lost count of the number of times Andrew Little said, "The Crown acknowledges …" but it was a long list.

Once the kōrero was done, we were fed. The dignitaries disappeared into the whare and the rest of us enjoyed the kai in the shade outside. There was no alcohol of course, but there was a party atmosphere at the marae that day. It was a celebration of the conclusion of a long process that has taken 180 years or more and it was an honour for us to be invited and included in that celebration.

See you at our AGM on 16 May.

William Perry

Minutes of the Annual General Meeting of Pūkorokoro Miranda Naturalists' Trust, held at the Shorebird Centre from 2pm on Sunday 28 June 2020 (re-scheduled from 24 May)

PRESENT: Adrian Riegen (in the chair, standing in for Will Perry), Treasurer (Kevin Vaughan) Secretary, (Trish Wells) and about 41 members.

APOLOGIES: Will Perry, Chelsea Ralls, Cathy Catto and Ian Higgins, Roger and Alison Bray, Sharon Kast. Olga Brochner and Kevin Barker, Betty Seddon, Krishna Buckman, Morag and Simon Fordham. Apologies accepted.

Adrian Riegen acknowledged previous chairs present: Stuart Chambers, David Lawrie and Gillian Vaughan. He offered a welcome on Will's behalf, acknowledging that it had been a challenging year, thanking the Council in general, and specifically Ray and Ann Buckmaster for working in all weathers to make possible all the planting done, and Jim Eagles and Adrian for their continued contribution

MINUTES of the 2019 AGM were published in *Pūkorokoro Miranda News*.

MATTERS ARISING: None

CHAIRPERSON'S REPORT: Published in *PM News*.

TREASURERS REPORT: Published in *PM News*.
Kevin Vaughan presented the annual accounts explaining that it was in the format which is set by the Charities Commission. It is a public document and a full set of accounts are on PMNT's website. Printed copies were also available at the meeting.

Giving a few financial highlights, Kevin said that during the year shop sales increased; donations were down as the previous year we had a big fundraising effort for a food drop for Great Knots at Yalu Jiang in China; as a result income was slightly lower. Kevin said the Trust's biggest costs were related to employment costs and there had also been significant expenditure renovating the bathrooms in the units. Overall the Trust had an $84,274 deficit, a worsening of the $34,809 deficit the previous year.

Kevin explained that the appeal for the new Manager's Roost, which has so far raised $74,000, did not appear in the accounts as it was not yet income and might have to be returned if the project did not go ahead.

Auditors Baker Tilly Staples Rodway were happy to be re-appointed and this was approved (Chris Eagles/Wendy Hare).

Thanks were expressed to the Trust's many donors including Ron & Edna Greenwood Environmental Trust, Mazda Foundation, EAAF Partnership, Len Reynolds Trust, Dept of Conservation, Trust Waikato, Chisholm Whitney Charitable Trust, Lush NZ, Tauranga City Council, Piesse Memorial Fund, OSNZ, and all Members and Supporters.

Kevin noted that the deficits recorded in the past three years raised the question: do we have a spending problem or an income problem?

Alison Chambers asked: What are the Council views, have they discussed these issues? Adrian responded that the Trust was seeking to reduce costs but did not want to stop performing its core roles. For instance, bird surveys in North Korea were costly but vital, aimed at having the staging areas declared World Heritage sites, and funds were usually sourced from elsewhere. Similarly, the magazine was considered a core activity, but the Council was seeking to deliver it in a more economical way.

Joe de Jong asked about the new Kopu to Kaiaua Cycle Trail and the chances of getting the cyclists in the door of the Centre. Keith Woodley responded the trail was a new gateway to the area and the Centre was very much a part of it. There would be signage pointing to the Centre and there were plans to erect bike racks. The Trust was expecting a spike in visitors which would provide an opportunity to tell our stories to more people.

Amanda Hunt asked for projections of impact of the Covid-19 wage subsidy. Kevin responded that the Trust had benefitted from the first subsidy round but didn't qualify for the second wave as it hadn't dropped 40% of income.

In conclusion Kevin thanked Keith, Chelsea Ralls and Ann Buckmaster for their help which had made his job as Treasurer much easier

ELECTION OF OFFICERS
Treasurer – Kevin Vaughan elected unopposed.
Secretary - Trish Wells elected unopposed
10 Council Members: Adrian Riegen, Gillian Vaughan, David Lawrie, Ann Buckmaster, Ray Buckmaster, Jim Eagles, Bruce Postill, Trudy Lane, Wendy Hare and Will Perry all elected unopposed. (NB The chair will be elected by Council at its meeting on 26 July). (Chris Thompson/John Stewart)

GENERAL BUSINESS.

SUBSCRIPTIONS: Membership Subscription fees will be left as they are for the next 12 months.

VISITOR NUMBERS: Keith reported that since the lockdown was lifted there had been a lot of New Zealanders visiting the area which should help cushion the loss of overseas tourists. Gillian Vaughan gave an analysis of visitors to the Centre which showed that numbers were slowly increasing The peaks are in January, February, March and, but for the impact of Covid, March this year would have been the biggest month yet. Domestic visitors always outweigh numbers of overseas tourists but it was still surprising that numbers were not down more. But on the positive side New Zealanders had been urged to travel at home and the cycle trail was finally happening after being expected since 2015.

PLANTING: Ray Buckmaster reported on the restoration of the Findlay Reserve, pointing out that for many years the area had been used for industry and agriculture so there weren't really any plants indigenous to the land remaining. For the planting programme it had been necessary to make informed guesses guided by what was there. Planting also had to take account of the differing environmental conditions such as altitude, salt levels, dryness, etc. The project had so far planted 13 species and 11,000 plants. Altogether 70 people volunteered for 10-12 days and had created an estimated $60-70,000 value improvement for the reserve, Ray thanked all those involved, especially Warwick Buckman for moving thousands of plants, plus all those who had helped organize the planters. The plan was to do the same next year.

MANAGER'S COTTAGE: Ann Buckmaster spoke about The Manager's Roost Project. This had originated during last August's working bee when a visiting builder evaluated the Manager's Cottage and pointed out that it required a huge amount of work to make it

building and rental code and compliant. A decision was made to re-build. The estimated cost of a suitable cottage was $350,000, $127,000 had already been raised, so the Trust was half-way there. The question was raised whether the Manager needed to be housed in a separate building or if it would be joined onto the Centre. Ann said it was considered essential that the Centre's Managers have their own private space.

MAGAZINE: Jim Eagles discussed ways forward for the magazine and the option of a digital version. Many members, he acknowledged, preferred a print edition. But some were asking for a digital version, partly because that didn't require cutting down trees and was a more sustainable option. The world was moving digitally and it was how the younger generation expected to get their information. There were also savings in printing and postage from going digital. Members were asked to indicate specifically whether their preferred option was printed or electronic. Jim also mentioned that Council was wrestling with whether the magazine should be seen as a benefit to members only or also used for wider publicity?

MEMBERSHIP: Wendy Hare, who is taking on the role of Membership Secretary on a temporary basis while she is confined to New Zealand by Covid, asked if anyone had ideas to boost membership numbers to please send them to her.

THE MEETING CLOSED AT 3.30 PM.

Annual Accounts for Pukorokoro Miranda Naturalists' Trust for the year ended 31 December 2020

I said last year was tough, but I'm not sure how to describe 2020, the year of Covid-19. We lost our overseas visitors and at least a month's sales from the shop while it was shut. Shop revenue was down by $8,000 and education course revenue was down just under $5,000.

On the upside government Covid-19 subsidy support was worth almost $18,000. Covid-19 deferred our North Korea work which last year cost $29,000.

We had big year for spending on the Restoration Project $36,000 all covered by grants. With the Educator role not filled in 2020 and changes to how our shore guide was provided in the latter part of the year salaries were down by $16,000.

We need to acknowledge grants received from Department of Conservation, Valder Trust, Judy Piesse Memorial Fund, Trust Waikato and Foundation North. In addition our members and supporters contributed mightily to our general funds, and the Manager's Roost Appeal, which reached $264,000 by year end. Funds for the Roost appear as a liability (potentially to be refunded if the project did not proceed) and they will be taken into income in 2021 as the project goes ahead.

Kevin Vaughan, Treasurer

Income and Expense Account

Income	
Grants	85,750
Shop Sales	81,503
Bequests	37,682
Subs NZ	24,274
Accomodation	23,963
Donations General	18,106
Field Courses	13,844
Land Lease	4,800
Interest	4,330
Tours, Talks, Lectures	2,894
Subs NZ Life Members	2,739
Interest Roost	1,770
Donations Tap Point	1,365
Subs Overseas	1,085
Facilities/Gear Rent	904
Other Income	822
Total Income	**305,832**
Less Operating Expenses	
Employment Cost	104,099
Shop Purchases	45,977
Restoration Project	36,347
Depreciation	12,179
Magazine Publication	10,743
Field Course Expenses	8,001
Audit Exps	5,225
Insurance	4,986
Magazine Distribution	4,698
Credit Card, Paypal Fees	4,524
Cleaning	4,325
Maintenance Buildings	3,749
Power Electricity	3,297
Research / Monitoring	3,270
Maintenance Grounds	2,033
Other Expenses	9,526
Total Expenses	**262,980**
Excess of Income over Spending	**42,853**

Balance Sheet

Current Assets	
Bank	523,628
Cash	1,624
Inventory	26,283
Total Current Assets	**551,535**
Fixed Assets	
Buildings	283,710
Furniture & Fixtures	22,318
Land	693,909
Land & Building Revaluation	932,591
Plant & Equipment	73,633
Depreciation	-228,408
Total Fixed Assets	**1,777,752**
Total Assets	**2,329,287**
Liabilities	
Accounts Payable	15,104
Accruals & Provisions	19,456
Grants Unspent	41,319
GST	1,785
Unspent Roost Fund	264,686
EFpos /Credit Cards	1,061
Paypal	-100
Total Liabilities	**343,311**
Net Assets	**1,985,976**
Equity	
Sibson Reserve	40,000
Life Members Reserve	68,000
Retained Earnings	902,534
Revaluation Reserves	932,591
Current Year Earnings	42,852
Total Equity	**1,985,976**

GODWIT TIMES

with Emma Salmon

Tēnā koutou

Welcome back to the Godwit Times!

I hope you have all enjoyed seeing my brother and sisters being tracked around the world.

Now that the majority of our migrant birds are starting to have chicks in Alaska and Siberia, it is time to look at birds that stay in NZ over winter.

So, may I present to you in this edition of the Godwit Times, the Kōtuku!

Kōtuku are beautiful, rare white herons. Did you know that there are only 100-120 Kōtuku in NZ. These birds are also common in India, Japan, China and Australia where they are known as the Great Egret.

Te Kōtuku rerenga tahi
The white heron of a single flight

Māori gave these words to distinguished guests who seldom visited, which is very true of the Kōtuku.

Their only breeding area in NZ is on the banks of the Waitangiroto River, near Whataroa, on the West Coast of the South Island. They can grow to 92 centimetres in length, and weigh 900 grams!

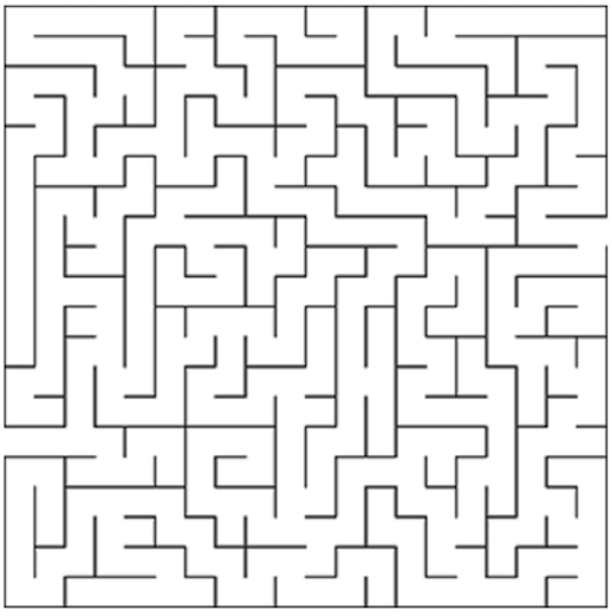
Did you know that a Kōtuku does visit Pūkorokoro Miranda quite regularly! So keep your eye out next time you visit the Shorebird Centre!

Also, if you went on any cool birding adventures over the last few months I would love you to send me a wee poem, story or a picture to godfreygodwit@shorebirds.org.nz.

Your adventure could be featured in the next Godwit Times!

Ngā mihi,
Godfrey

Can you help the Kōtuku get back to its nest



Pūkorokoro Miranda Naturalists' Trust

The Shorebird Centre

283 East Coast Road
RD 3 Pokeno 2473
phone (09) 232 2781
admin@shorebirds.org.nz
www.shorebirds.org.nz
www.facebook.com/
MirandaShorebirdCentre

Manager: Keith Woodley
Centre Assistant: Anne Gummer
Educator: In abeyance
Shoreguide: In abeyance

Pūkorokoro Miranda Naturalists' Trust Council

Chair: William Perry
home 09 525 2771
wncperry@outlook.com
Deputy Chair and Banding Convenor: Adrian Riegen
riegen@xtra.co.nz
09 814 9741
Secretary: Trish Wells
Trishwells1@gmail.com
0272 688 057
Treasurer: KevinVaughan
kandjvaughan@gmail.com
09 817 9262
Council members: Gillian Vaughan (Immediate Past Chair), David Lawrie, Wendy Hare, Bruce Postill, Trudy Lane, Ann and Ray Buckmaster, Jim Eagles.

Magazine

Pūkorokoro Miranda Naturalists' Trust publishes *Pūkorokoro Miranda News* four times a year, in print and digital editions, 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.

Editor: Jim Eagles
jimeagles45@gmail.com
(09) 445 2444 or 021 0231 6033

See the birds

Situated on the Firth of Thames between Kaiaua and the Miranda Hot Pools, the Pūkorokoro 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.

Budget accommodation

The Shorebird Centre has bunkrooms for hire and two self-contained units: Bunks cost $20 per night for members and $35 for non-members.
Self-contained units are $90 for members and $135 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 $75 for those living overseas. Life memberships are $2500 for those under 65 and $1000 for those 65 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.shorebirds.org.nz) and paying a subscription via Paypal, by direct credit or by posting a cheque. Contact admin@shorebirds.org.nz for further information.

Bequests

Remember the Pūkorokoro Miranda Naturalists' Trust in your will and assist its vital work for migratory shorebirds. For further information contact the Shorebird Centre.

Become a Volunteer

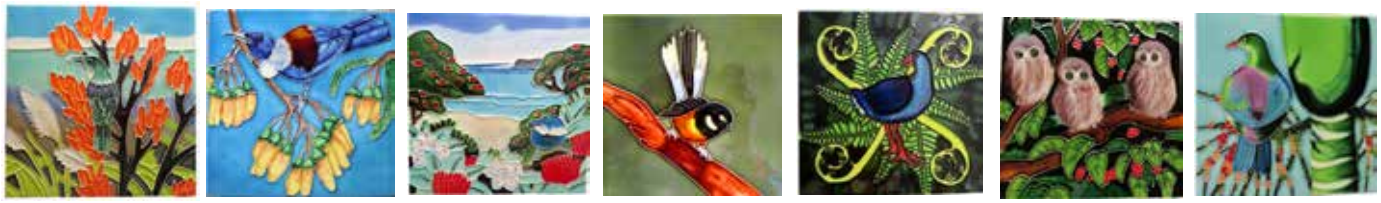
There's always a need for volunteers to do a variety of jobs including helping with the shop, guiding school groups, meeting visitors at the hide, working in the Centre garden, joining in the restoration project at the Findlay Reserve, helping with the Shorebird Census and lots more. If you're interested have a chat with Keith or Anne at the Centre to see what will best suit you.

PMNT's work is made possible by the generous support of our sponsors

Foundation North – Te Kaitiaki Pūtea ō Tāmaki ō Tai Tokerau
Waikato Regional Council – Te Kaunihera ā Rohe o Waikato
Trust Waikato – Te Puna o Waikato
Department of Conservation – Te Papa Atawhai
Chisholm Whitney Charitable Trust
Valder Conservation Grant – Forest & Bird – Te Reo o te Taiao – Giving Nature a Voice
Len Reynolds Trust
Charity Pot – Lush
Mazda Foundation
Birds New Zealand – Te Kāhui Mātai Manu o Aotearoa
Ron & Edna Greenwood Environmental Trust
Living Water
Fonterra – Dairy for life
Department of Conservation – Te Papa Atawhai

Brighten your home with the colour and beauty of nature

Gorgeous tea towels featuring a range of birds for only $15



Stunning art tiles with classic New Zealand scenes for $19.90

Magnificent silk scarves featuring rock daisies and tuis on flax by Sue Wickison $140

The Shorebird Centre shop is open for business every day except Christmas Day. If you can't get down to Pūkorokoro Miranda you can buy through the online shop at shop.shorebirds.org.nz, email to shop@shorebirds.org.nz or ring 09 232 2781.

Published by Pūkorokoro Miranda Naturalists' Trust, 283 East Coast Rd, RD3, Pokeno, New Zealand 2473