Miranda News
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A tale of two godwits

The story of E0, the trailblazer, and E7, the superstar living in retirement at Maketu

Play the E7 round-the-world board game

Miranda Snippets

Dragonflies, pukeko chicks, inspiring kuaka ..

This year's summer volunteers were Quentin and Agata Liautaud, from Belgium, who had only recently married and gave up some of their honeymoon to help visitors to the Shorebird Centre and the hides.

Quentin, originally from France, and Agata, from Poland, sent an email offering to work as volunteers because, as Quentin explained, "Passionate about nature, we were looking for a place where we could be useful, where we could do whatever is needed in order to protect the environment and where we could appreciate a wonderful work environment."

The couple acknowledge that "at the beginning we had no idea about shorebirds and we were unable to recognise the majority of them. So every day we are going to the field to practice, watching, study books and having some extra explanation from our experienced colleagues. We also had the opportunity to participate in a Wader ID course which perfectly completed our learning on shorebirds.

"Now we have the birdwatchers' virus for sure and we will continue to do it when we are back in Europe."

They're already saving up to return to Miranda.

Marie Buchler, of Thames, took this photo of a female dragon fly (Procordulia smithii), also known as the ranger dragonfly, at Miranda. According to Richard Rowe, author of *The Dragonflies of NZ*, it is it is the first record of that species north of the Volcanic Plateau since 1960.

As the coastline becomes less hospitable for our shorebirds some are apparently finding unusual alternatives. Jane Vaughan of Mangawai was showing some English visitors round Hell's Gate in Rotorua when to her amazement she heard a familiar sound. "I could not believe my ears when I suddenly heard a dotterel calling! After I was out and dressed (after bathing in the geothermal mud) I grabbed my binoculars from the car and sat nearby. Through the steam, there was an adult northern New Zealand Dotterel and nearby two large chicks poking about for insects. I watched for quite awhile as they skirted round the hot bubbling springs and pools, obviously quite at home in their unusual habitat."

Kristelle Wi was heading for a spot of duty at the hides when she saw the shellbank seem to come to life "moving like a giant snake. Once I had the scope set up and in focus I realised the shellbank was covered in a feather blanket of 3000 White Terns, all of which were very busy, copulating, presenting their courtship fish, claiming territory and so on. Like the Black-billed Gulls that nest on the Miranda shellbank most seasons, the White-fronted Terns live in a colony where nests are built closer together than Auckland's new houses and they synchronise their life-cycle so all chicks hatch around the same time. This means they can collectively fend off predators."

The Sony Commercial filmed at Taramaire last year – earning MNT a $1100 donation for use of our facilities – is now appearing on television and cinema screens around the land. If you've missed it then you might like to have a look at three clips on Youtube:
Behind the Scenes - www.youtube.com/watch?v=6XBDOnxydfk
The Cinema Commercial - www.youtube.com/watch?v=lGXbotFeIqM
TV Commercial - www.youtube.com/watch?v=RhcvCZtNW9s

Oystercatchers can be seen roosting in strange places – such as the roof of Pak 'n' Save in Thames - but how about oystercatchers nesting 4m up a tree?

Birding guide Adrian Boyle photographed a Variable Oystercatcher nesting high in a tree on a small island in Doubtful Sound and asked assorted

What's on at the Shorebird Centre

9 March, Autumn Migration Day
11am, Adrian Riegen on Waders in the Gulf of Carpentaria. Birdwatching afterwards (2.30pm high tide).

25 May, Annual General Meeting
11am Have your say on the future of the Miranda Naturalists' Trust. Guest speaker Dr Rochelle Constantine talking on Whales in the Hauraki Gulf. Birding from 2pm (high tide at 4.30pm).

22 June, OSNZ Firth of Thames Wader Census
Contact Tony Habraken (09 238 5284) for details

23 August, Winter Pot Luck Dinner
6pm Guest speakers John Stewart and Kay Milton on 'Black bags, plastic magpies and quail eggs - the ups and downs of life for terns on the Copeland Islands in Northern Ireland.

2-4 September, NZ Dotterel Management Course
Contact Keith Woodley at the Shorebird Centre for details.

Front cover: E7 enjoying retirement at Maketu — Photo / Paul Gibson
Back cover: Godwit and black-billed gull — Photos / Jim Eagles

. . and mud-horses

YOUNG STARS: The pukeko couple who decided to raise their family of chicks around the shores of Widgery Lake provided a hugely popular attraction for visitors to the Shorebird Centre this summer. Photo / Ann Buckmaster

birding experts, "Have you heard of oycs breeding in trees?"

No one had, though John Dowding said, "I've seen one VOC nest about a metre off the ground on a horizontal pohutukawa trunk and heard about another. Nothing 4m up that I've heard of in a tree. I have seen a VOC nest on a very small ledge about 5m up a cliff. Don't know the outcome of that one but I have to suspect it didn't end happily. And on Matakana Island during Rena I found a VOC nest on a small raised concrete platform about 2m above the beach. No way down for chicks there either."

English member David Reid has come up with a possible solution to the difficulty of removing mangrove seedlings from the area in front of the hide. "Here am I in the UK hoping to be of help in controlling the spread of mangroves at Miranda in New Zealand," he wrote. "I read the article on grockleslopping in the latest Miranda News with interest and wondered if the details on mud-horses as used here in Somerset, UK would solve your access problems and perhaps lead to a grockleslopping race day."

A photo of one of the last remaining mud-horses is below and David kindly provided a link to a report on this ancient method of zipping across the mud: www.english-heritage.org.uk/publications/severn-estuary-rc-zas-nmp/Severn_Estuary_RCZAS_NMP_web.pdf

The kuaka, or Bar-tailed Godwit, has become the face of a Ministry of Social Development programme to combat Maori family violence. Spokeswoman Ann Dysart said the aim was to encourage families to copy the kuaka. "When the kuaka arrive in New Zealand, they appear to be a huge flock - but within that flock are smaller family units. A leading bird, the kahukura, cleaves the air to make the way easier for those following it. When that bird grows tired, another pulls forward to take its place, providing the lift for others." Ngai Tahu chair Sir Mark Solomon added, "There is a bit of kaha in that species. It needs to be looked up to. Within the group, everyone has a role to play, just like on the marae. At times, people lead from the front, on the paepae (speaker's area); other times, they are out the back. It is rotational leadership, just like the kuaka."

Guest speakers at the Welcome to the Birds, Rick and Elis Simpson, have returned to England after a year-long global odyssey aimed at highlighting the plight of waders. In his blog Rick said they had "no doubt in our minds that visiting the Miranda Shorebird Centre was one of the highlights. . . For wader lovers, or any birder for that matter, any trip to New Zealand has to include this phenomenal place."

Arctic Migrants

Bar-tailed Godwit	c3500
Black-tailed Godwit	1
Red Knot	c900
Ruddy Turnstone	28
Sharp-tailed Sandpiper	6
Marsh Sandpiper	1
Pectoral Sandpiper	
Red-necked Stint	2
Pacific Golden Plover	27
Curlew Sandpiper	9
Curlew	

New Zealand Species

Wrybill	130
NZ Dotterel	
Banded Dotterel	64
SI Pied Oystercatcher	c3500
Variable Oystercatcher	
White-fronted Tern	c3000
Caspian Tern	
Black-billed Gull	
Pied Stilt	
Royal Spoonbill	15
White Heron	1

The godwit who hit the headlines . .

HEROINES: Paul Gibson's picture of a one-legged E7 at Maketu (top) and E0 (bottom) photographed by Ian Southey at Kidd's Beach on the Manukau Harbour, still with her transmitter aerial,

. . and the one who showed the way

Tony Habraken tells the contrasting stories of E0, who showed that a Bar-tailed Godwit can fly with an implanted satellite transmitter, and E7, who carried one from Alaska to New Zealand to set a new avian long-distance flying record

Even in retirement the famous Bar-tailed Godwit, known affectionately to scientists and birders alike as E7, continues to break records.

The remarkable bird's original claim to fame began in February 2007 at Miranda where she was one of a chosen few to be assigned duties for science. E7 was one of eight female birds (four in the North Island and four in the South Island) given the task of carrying a satellite tag implant (PTT) with the aim of revealing her migration route and schedule.

In particular, we wanted her to tell us how she would get to the species' main staging site on the Yellow Sea and then on to her likely breeding ground in Alaska. As we know, she performed this duty with precision, selecting the Yalu Jiang Nature Reserve in China to stage at and the Yukon Delta breeding grounds in Alaska.

But then, almost six months after being caught, tagged and banded in New Zealand, E7 startled the world with yet another epic journey which catapulted her into avian fame. That 8-day non-stop flight from Alaska to NewZealand was not unexpected by some within the scientific fraternity but was nevertheless a remarkable achievement in more ways than one.

For a start, of course, there was the fact that her direct flight of over 11,000km set a new world record for birds. But, in addition, the batteries in the implanted satellite tag were only supposed to last about six months so her remarkable achievement should not have been recorded.

However, this particular battery must have been one of the Duracell variety that – according to the advertisements - continued to make a bunny toy play when other batteries would have run out of juice. Certainly it lasted more than eight months - continuing to pump out data well beyond its official shelf life – unexpectedly allowing her flight to be tracked for the entire migration.

Therefore the scientists were able to follow E7s vast circumnavigation of the Pacific, from New Zealand via China to Alaska, and then all the way back to New Zealand.

AERIAL: E7 with newly-fitted transmitter. Photo / Keith Woodley

As birders around the world watched this progress with fingers crossed the battery did not expire until after she arrived back at the Piako River.

It may not be widely known but we have continued to track her whereabouts since that epic journey. The once very shy and elusive bird, who never ventured far from the hidden depths of the almost inaccessible Piako River mouth, has since had health issues, moved to a new site, taken on a retirement plan and, more recently, escaped the threat of New Zealand's biggest oil spill. In late January 2008, during one of her rare visits to Miranda, she was seen to have a slight limp which subsequently appears to have been the early stage of losing a limb. By mid-January 2009 (her last Miranda appearance) she had lost most of her right tarsus. This left her not so nimble footed as she once was and hampered her ability to efficiently take on enough food to put on sufficient weight to continue further migrations.

This meant an early retirement. Three months later, on 4 April, she was seen at Maketu, in the Bay of Plenty, where she has remained for much of the time since. Sadly she has failed to migrate since and is sighted regularly among the overwintering birds. We can only assume that the substrate in the Bay of Plenty is friendlier than the deep soft mud the Firth of Thames offers, thus the likely reason for shifting location offers and so an easy place to live in retirement.

It may be a coincidence that E7 chose a region where many other species choose to retire, but at least she has chosen an area readily accessible for viewing, allowing us to keep an eye on her in the years since.

The roosts at Maketu Estuary and Pukehina Spit, two sites she is known to frequent, were both seriously threatened from oil leaking out of the cargo ship *MV Rena* when it ran aground on Astrolabe Reef in October 2011. With oil reaching the mouth of the Maketu estuary it must have been a close call for E7 and many other shorebirds along that coast line but she did survive.

From time to time she does not appear at either of those Bay of Plenty sites and we can only speculate where she might go. Perhaps she occasionally takes time out to rekindle fond memories by taking short flights back to the Piako River estuary for some of that prime nourishment the Firth of Thames provided for most of her life. Or perhaps she simply moves around the general Bay of Plenty locality trying to keep the low profile she is renowned for.

But, where ever she disappears to, E7 certainly keeps up regular appearances at her main roosts, displaying the site faithfulness godwits are generally well known for.

These sightings have confirmed her latest record. When Tim Barnard saw E7 on 4 August 2013 at Maketu. it was six years and six months since she received her PTT implant. That makes her the longest surviving Bar-tailed Godwit to have carried a PTT implant.

The previous record was held by another significant flag bearer for the species. E0 was one of the first godwit recipients of PTT implant technology, some 20 months earlier than E7, and sent out to record the route taken on her southern migration from Alaska (see accompanying story). She survived six years and five months after receiving the implant and, when last seen on 4 November 2011 at Waiuku, Manukau Harbour, the aerial was visible so she must have still been carrying the PTT implant.

Unlike E0, E7 has lost her tell-tale aerial, though how this happened, is unknown. She has also lost her flag. When I last sighted her in January 2012 her flag was showing signs of excessive wear and I considered it may not last many more years. A year to the day later, on 13 January 2013, Tim Barnard reported it as missing.

It will now be a little harder to keep track of E7 though her metal band should still be on her right tibia. The best indicator could be when she phantom-scratches, a common occurrence with birds that have lost part of a leg. Of course she will always be recognised by her grand stature and can be easily picked up in a flock of roosting godwits.

So, if you are visiting either Maketu or Pukehina Spit, take the time to look among the roosting godwit. Who knows, you may well see a large bird resting on her left leg, one who has the occasional phantom scratch. If so, you can be fairly certain that this is the grand old lady from Piako.

STOP PRESS: Tim Barnard has reported two recent sightings of E7 at Maketu estuary, the most recent on 7 February, one day after the seventh anniversary of her banding on 6 February 2007. As Tim puts it, she knows when he has visitors and "turns up like a star." Though she has no easily visible jewellery, Tim has no doubts it is E7. "Her neck is now crooked and neck feathers are in poor condition so it gives a rather scruffy appearance." That's not unexpected since she is unable to preen and scratch effectively on her one leg. So it looks as though she has every intention of continuing to extend her own records. Well done E7.

A godwit with attitude . . . and luck

Though the Bar-tailed Godwit flagged as E0 never achieved great fame she did blaze the trail that took E7 to avian glory.

In truth, it is really American wildlife biologist Bob Gill and his colleagues who should be given most of the credit for tracking the amazing story of these extraordinary birds, but there's no doubt that E0 and E7 also played their part.

Not many people know about E0 but (as mentioned in the preceding article on E7) she was one of the first Bar-tailed Godwits selected to be part of the Satellite Transmitter work carried out over four years, with the aim of tracking the route godwits' were flying from Alaska to their southern hemisphere destinations in Australia and New Zealand.

The earliest use of satellite transmitter technology with waders started in Australia in the late 1990s, on the largest species, the Far-eastern Curlew. In this instance external transmitters were attached with a harness.

In the early 2000s investigators were interested in tracking Bar-tailed Godwits but were worried about the effects of an external package on such potentially long-distance migrants. In 2004 they experimented with an internal implant in a surrogate species, the Bristle-thighed Curlew, also a long-distance trans-Pacific migrant.

Finding that curlews could accommodate an implantable model, Bob and his team set out in 2005 to capture godwits on their Alaska nesting grounds and implant 26-gram satellite transmitters in large females. EO was among the females captured and selected for the task of letting biologists follow her flight into the south Pacific.

On 6 June 2005 her day started out as any other day at the office for a breeding godwit at Old Chevak on the Yukon-Kuskokwim Delta. But little did she know that she was being observed by a few keen scientists about to make a move on her.

It is a relatively easy operation to capture a Bar-tailed Godwit but this particular bird proved a lot trickier than the experienced Gill had planned. It not only took two days to locate her nest but then she miraculously escaped a nest predation.

Gill wrote afterwards, "She gave us no end of fits trying to capture her. Her nest was literally right next to that of a Long-tailed Duck. Indeed, Dan Ruthrauff found the duck nest two days prior but did not notice the godwit nest in the adjacent bedroom. Nor, it would seem did the predator, for the duck nest was lost but not that of the godwit. So, for the duck nest to have been depredated but not the godwit nest left us scratching our heads. Because we had spent so much time trying to pin down the nest, I had way too much time on my hands to reflect about godwit-nesting ecology as I walked back and forth over the tundra. So, taking the operative word 'ecology' and seeing the flag marked 'EO', I said why not name her after the esteemed ecologist E. O. Wilson. So to me this bird has always been EO and not E zero.'

E.O. Wilson is a "Harvard biologist and animal behaviorist who has contributed so much to these disciplines."

Clearly Gill had some admiration for this bird to have singled out the flag with the initials of a respected American conservationist for her to carry. She would soon be winging her way south with that precious payload on board. Little did he know at the time what would unfold.

Unfortunately all didn't go to plan that year due to technical failures of the equipment. The upshot was there were no output signals which meant that no-one knew where these birds were once they departed the Kuskokwim Shoals of Alaska or if they would make it safely to an estuary down under.

To the great delight of Gill and his team, none other than E0 turned

BIRDMEN: Bob Gill with EO shortly after she was fitted wth her transmitter; EO, still with the transmitter, at Kidd's Beach. Photos / Jesse Conklin, Ian Southey

up four months later in New Zealand where she was seen by David Lawrie on 9 October in the Manukau Harbour. This showed that the species were capable of completing the flight with a PPT and so history was made. Of the few birds to carry a PTT that year, E0 was the first to be sighted down under, so from humble if not humiliating beginnings she was now the species' all important flag bearer.

Over the next six years E0 continued to migrate, except in 2009 and 2010, when she was recorded overwintering in the Manukau, but it wasn't all straight-forward.

In January 2009 the presence of a bird carrying a PTT without an engraved leg flag was a puzzle. From body profile and the position of the aerial it was suspected to be E0, but confirmation was needed. Initial attempts to read the all-important band produced only the front digits, which was not enough. It wasn't until five months later at Karaka that the all-important last two digits were read confirming our suspicions.

There were two other occasions I was able to read her metal band, the last - by chance - being the last ever sighting of her at Waiuku on 4 November 2011.

Thus the new bench mark for a surviving PTT-carrying Bar-tailed Godwit had been set at six years and five months after Bob banded E0 in Alaska. In the process she had travelled to and from Alaska on probably at least four occasions with her transmitter, a feat E7 was unable to accomplish.

During those six years E0 was regularly seen on the south Manukau, preferring the Karaka shellbanks roost site where we would often find her in the same position in the flock, a true creature of habit. Other sites she was seen at were Conifer Grove, Clarks Bay, Pollok Spit and Waiuku, so she was not averse to visiting other roosts in the south Manukau.

Other sightings of note came from Alaska and South Korea. Although she was not seen at Old Chevak in 2006 (for perhaps understandable reasons) she did show up near Cape Avinof in mid-August after the breeding season that year. The following year she was seen on during northward migration at the Geum River in South Korea on 23 March. This site is adjacent to the area of huge tidal mudflat destruction at Saemangeum where the sea wall was completed and closed in April 2006.

Was she a victim of that displacement? We will never know. But it could have been a close call for her, perhaps the biggest threat to her survival, and possibly another unrecognised achievement.

Though E7 has surpassed E0's record of longevity in carrying a transmitter it's appropriate that the story of this unsung heroine should be made public. She certainly added to the pool of knowledge being gathered during the study. While E0 has in all likelihood passed on (now coming up two years without a sighting) E7 hopefully has further engagements in her illustrious career. Many thanks E0 and long may you live E7.

A footnote regarding Wilson and species bearing the name including Wilson's Storm Petrel, Wilson's Plover, Wilson's Phalarope, Wilson's Bird of Paradise. Ornithological history appears steeped with the name Edward Wilson there being at least three: Edward Wilson (1808 – 1888) an Englishman after whom Wilson's Bird of Paradise was named, Edward Adrian Wilson (1872 – 1912) and Edward Osbourne Wilson (1929) whose initials Gill chose for the trailblazing bird Fittingly, Edward Osborne is still living.

Groundbreaking analysis confirms flyway bird numbers are collapsing

Late last year **Richard Fuller** of the University of Queensland visited Miranda to report on the first overall analysis of bird surveys along the East Asian-Australasian Flyway. The findings, as he explains , show that migratory birds face disaster.

Why are migratory shorebirds declining so rapidly and what should we do about it?

Dedicated members of ornithological societies across Australia and New Zealand have been counting migratory shorebirds for decades, and excellent analyses of these data have been published for individual sites on both sides of the Tasman. Many published analayses of local trends reveal declines but so far there is no clear picture as to whether these trends are widespread and what this means for the future of our migratory shorebirds. Financial support from the Queensland Wader Study Group, the Australian federal and state governments and the Port of Brisbane, has enabled our project team at the University of Queensland to bring together shorebird count data generously contributed by dozens of organisations and thousands of counters to answer this big question.

The results, I am sad to report, are truly shocking. Analyses of migratory shorebird population data from Australia and New Zealand by Colin Studds and Rob Clemens reveal declines of staggering severity and rapidity, with some migratory shorebird populations crashing by up to 80% in 20 years. Curlew sandpiper is one of the most heavily impacted species, showing a steep decline across much of its distribution. Fortunately it remains less impacted in other flyways around the world. For some species, such as the red knot, the decline is quite consistent in various parts of its non-breeding range, while for others such as the bar-tailed godwit, the decline is much more pronounced in some regions than others. In the case of the godwit, the eastern baueri population is declining at about 1% per year in eastern Australia and New Zealand. This is fast, but nowhere near as dramatic as the western menzbieri population, which is declining at something like 6% per year in western Australia. Menzbieri godwits pass through the Yellow Sea each year on both their northward and southward migrations, while the New Zealand birds fly straight over the Pacific on their return journey from the Arctic and are thus less dependent on stopover sites. Could this be the reason for the difference in decline? We don't know, but we are trying to establish whether dependence on the Yellow Sea explains how quickly different shorebird populations have declined.

VICTIMS: Curlew sandpipers are among the worst hit.
Photo / Wikimedia

Using satellite data we have documented rapid losses of tidal flats in eastern Asia, a region known to be of critical importance as stopover habitat for many migratory shorebirds. PhD student Nick Murray developed a remote sensing method to assess change over 4,000km of the Yellow Sea coastline and discovered extensive losses of tidal flats, driven primarily by urban, industrial and agricultural land

TALE OF WOE: Richard Fuller (at left) tells an audience at the Shorebird Centre that developments like reclamation at Yalu Jiang on the Yellow Sea (right) have had a disastrous impact on migratory birds. Photos / David Lawrie, Liu Xiaoyang

reclamations. Nick's analysis revealed that 28% of tidal flats existing in the 1980s had disappeared by the late-2000s. Moreover, reference to historical maps suggests that up to 65% of Yellow Sea tidal flats were lost since the 1950s. As well as land reclamation, large declines in sediment flows carried by the region's major rivers could be having a big impact, with some tidal flats simply disappearing over the past few decades. With the Yellow Sea region forecast to be a global hotspot of urban expansion, coastal development must urgently pursue a course that minimizes ecosystem loss and protects remaining coastal ecosystems.

Modelling work carried out by PhD students Takuya Iwamura and Kiran Dhanjal-Adams is suggesting that habitat loss in the Yellow Sea region could have profound implications for shorebird populations at a flyway level. For example, sea-level rise represents an additional emerging threat, in which coastal wetlands are placed under further pressure across the flyway. For migratory species, the impact of habitat loss will depend not only on its extent, but also on where it occurs. We developed a novel mathematical approach to measure how vulnerable migratory species are to habitat loss through sea-level rise. We discovered that sea-level rise will inundate 23–40% of intertidal habitat area along our shorebirds' migration routes, but cause a reduction in population size of up to 72% because of the loss of important migration bottlenecks.

We believe that an effective conservation strategy must manage the complex economic, social and economic tradeoffs that drive coastal development. This means conserving natural ecosystems alongside appropriate coastal development to protect and enhance coastal settlements. We urge decision-making that simultaneously plans for coastal development and coastal conservation along the world's most rapidly developing shores. For example, places subject to near-intractable threats, such as sediment depletion and coastal subsidence, could be prioritised for development in regions where such development must occur. If carefully planned, this could ease pressure on coastal protected areas and avert catastrophic extinctions of coastal biodiversity.

Migratory shorebirds fly across international borders, and there is an urgent need for countries to work together to solve this problem before it is too late. We are enormously excited by the actions already underway around the flyway and our research group is trying to engage with decision-makers to help build momentum for change. We have attended meetings of government and non-government members of the East Asian-Australasian Flyway Partnership in Cambodia, Sumatra and Alaska over the past four years to discuss the conservation actions required to keep one of the world's largest and most threatened migratory bird flyways functioning. The Partnership is a dynamic collaboration among 14 governments across the region, together with three intergovernmental agencies, nine international NGOs and an international corporation (Rio Tinto). Prospective PhD student Eduardo Gallo-Cajiao will soon commence an internship with the Flyway Partnership to better understand the policy environment across the routes that our migratory shorebirds take to establish how best to achieve positive change.

Ultimately, without data from you, the foot soldiers of field ornithology, we would be unable to understand what is happening to our shorebirds, and unable to present compelling data to decision makers that something needs to be done. For your hard work in counting shorebirds, keep it up, and THANK YOU!

To keep up to date with our work, or download any of our papers, visit our website at www.fullerlab.org or follow us at www.facebook.com/fullerlab

START

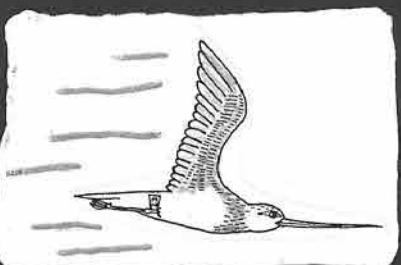
You get caught in a mist net by scientists trying to find out more about godwits. Go back to the START.

THE GOD

Follow the amazing migratory journey of my fam
again by playing this game. You will need a dice a
the board.

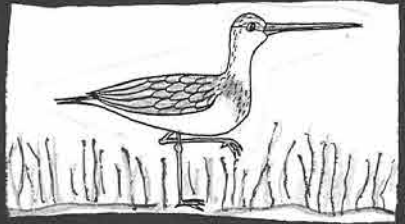
FINISH

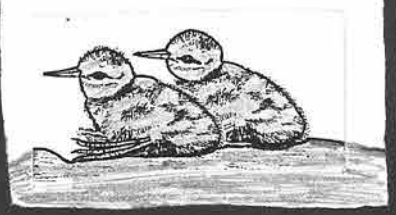
You return to NZ and make history by being the first transmitted bar-tailed godwit to fly 11,700km direct from Alaska to Miranda in 8 days.



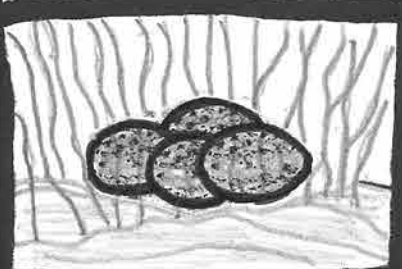
There is a strong tail wind. You reach speeds of 80km/h. Soar forward 3 spaces.

An Arctic fox tries to eat your chicks. Throw a 4 to save them and continue.



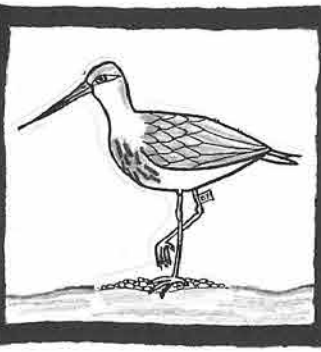


You meet your mate and lay 4 eggs. Walk forward 1 space.

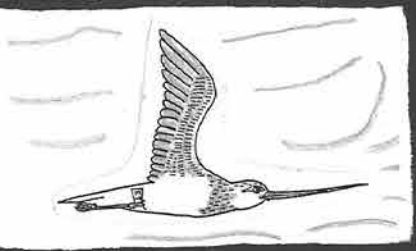


You have made the 17,000km trip from NZ to Alaska. Land on the Tundra 1 space on.

After an operation to insert a transmitter and put the E7 tag on your leg you are released. Fly 3 spaces on.



You and 64 other godwits leave Miranda and begin your journey to Alaska. Flap forward 1 space.



WIT GAME

ous grandma - E7 - across the world and back
and some counters or small toys to move around
Enjoy! *Godfrey Godwit*

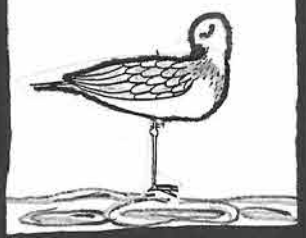
There is a strong head wind over the Tasman Sea. Go back 3 spaces.

It is time to carry on your journey. Throw a 3 to continue on to Alaska.

After flying for 7 days you see the Yellow Sea. Glide forward 2 spaces.

You eat a very nutritious crab which gives you more energy. Move on 2 spaces.

You spend 6 weeks eating and resting at Yalu Jiang Reserve between China and Korea. Throw a 6 to go.



You are so tired from travelling over 10,000km that you can hardly stand. Miss a turn and sleep.

From the chair

Long term volunteering at the centre can be hugely satisfying

A string of long term volunteers, some highly successful courses and a visit from the new head of the Department of Conservation have helped the trust enjoy a great summer, reports **Gillian Vaughan**

Welcome to a new year

At the Centre

We've been lucky enough to have a number of long term volunteers with us this summer.

The season started with Quentin and Agata joining us for five weeks in October and November. Jung- Kyu from South Korea is here for five weeks as I write this, while later in the season we are expecting a long term stay from a member from Dunedin.

These long-term long-distance volunteers not only add to the centre by assisting in the shop and on the shoreline, but they take away from Miranda an understanding of issues facing migratory shorebirds around the world, information that can be used and shared wherever they end up.

I'd encourage members and others to consider volunteering at the centre, either on a regular basis or as a one off but for three weeks or more. We have had occasion recently where people have requested one off short term volunteer opportunities, and unfortunately we simply do not have projects that people can effectively contribute to if they are only available for a few days.

In negative news we have had a spate of car break-ins at the Limeworks carpark and I would encourage members to walk the trail to the bird hide – and while doing so take some time to read the new signs. Keith has been in discussion with the local police about approaches to minimise the risk of break-ins, however there are no developments as yet.

Courses

2013 ended with the Wader ID course which is always an intense weekend where as much information as possible is packed into two days and when much ID work as possible has to occur in just two or three field sessions. This is not a course we necessarily run every year and, as one of the tutors, I was

WELCOME: New Director General of Conservation Lou Sanson visited the Shorebird Centre recently.

delighted to help with it – I really enjoy introducing people into the details of bird identification and watching as the details come together to make a clear picture. It was a great course with attendees from both the North and South Island and was a real pleasure to be part of.

The 2014 field course will have finished by the time you read this. The course was fully subscribed by October and it is great to see support for this flagship event continuing. With a stronger than ever focus on the interconnectedness of the birds with their environment this looks to be another successful course. A number of the participants are from outside of our immediate region, and have come to the course due to hearing Keith speak at various events around the country.

In 2015 the course will be run again, but long term volunteer caterer Audrie McKenzie will be standing down. Audrie has been an important part of the course, providing not only the catering, but also bringing her years of experience as an educator to bear in course content and structure. After seven years in the job she will be missed, and I thank her for all of her contributions over the years.

Last but not least thanks go to Brigid Glass and her family, pulling together the field course is quite the exercise and her efforts truly are appreciated.

Wider NZ

As have many others, we have watched from the sidelines as those within the Department of Conservation have undergone a difficult restructuring process.

It was therefore very positive for us as a conservation-NGO, to host DOC

WHAT'S THAT? Participants in this year's Wader ID course focus on the shellbank. Photo / Adrian Riegen

HOMELESS: Migratory birds have been displaced from much of Yalu Jiang. Photo / Phil Battley

staff and the new Director General of Conservation, Lou Sanson, when he was in the area in early December. We had an opportunity to discuss with him some of the issues that shorebirds are facing, both locally and internationally, and it has been great to see that the message has been taken on board, with our work being acknowledged in recent DOC publications. We are currently working with DOC to facilitate talks with government officials in China.

In addition Keith has recently been working on a report identifying for the Department of Conservation, the main sites in New Zealand that are important for the arctic migrants.

In many cases these are sites that are also very important for our local shorebirds. Putting together a document that looks at why specific sites are important is a significant exercise, and it is good to have the opportunity to complete that in partnership with DOC.

The Flyway

The report on ten years survey work at Yalu Jiang is now complete, and we are aiming for a launch in China in April.

This has been some time coming, and I commend Adrian Riegen for his patient shepherding of this 100+ page document through all of the hurdles that have come its way. This has been a true team effort, with work from both the MNT and YJNNR sides, as well as a number of reviewers and translators. A huge thank you to all involved.

It is four years since MNT was last present at Yalu Jiang, so in addition to launching the report we are hoping our team will be able to make another full shorebird survey of the reserve.

With the increasing reclamations occurring around the shores of the Yellow Sea funnelling birds into smaller and smaller areas, the Yalu Jiang site seems to be growing ever more important, making a new survey particularly timely.

Commemorating the history of Pukorokoro and Miranda

The names Pukorokoro and Miranda will be under discussion at MNT's annual meeting on May 25 when a change of title will be considered. Late last year two ceremonies were held to mark the origins of those two names.

Members of MNT Council were were invited to attend an event commemorating the 150th anniversary of the initial attack on the villages of Pukorokoro in November 1863. Chair Gillian Vaughan attended as did Will Perry and Trudy Lane.

The event started at 8am with some 40 people, largely from Ngati Paoa, gathered in a circle, at the mouth of the Pukorokoro stream, just near the parking for the birding area. Morehu Wilson led off with a brief outline of the events of November 3rd 1863 when the HMS Miranda launched pinnaces which attacked the village of Pukorokoro. A short service was then held in Maori. Seven matuku moana, white-faced herons, flew past during the service, as if they were joining in the commemoration.

The morning was clear and calm, allowing attendees time to catch up, read through the information provided, and work through where the village must have been. At the end of the service we adjourned to the Wharekawa Marae for a cup of tea.

The other side of that equation was commemorated on November 17 when the Mangatangi Historical Group marked the huge naval operation, probably the largest in New Zealand history, which saw nearly 1000 men transported to the Firth of Thames to establish the Miranda, Esk and Surrey redoubts. Talks were given by military and Maori historians and the Hunua Volunteer Rifles paraded in period uniforms.

From the manager

Action plan aims to protect four key shorebird areas on the Yellow Sea

Keith Woodley reports on his involvement in two important meetings in Asia, beginning with a WWF workshop in Hong Kong tasked with developing a shorebird action plan for the East Asian-Australasian Flyway

Given the colossal scale and pace with which habitat is being lost along the Yellow Sea coast, time is running out for some bird populations. Between 1990-2008 an average of 285 sq km of tidal flats were reclaimed annually, and from 2009 to 2020 it is predicted to rise to more than 500 sq km annually. From 1994 to 2010 two projects in the northern Bohai Sea alone claimed 450 sq km of offshore area, of which 218 sq km were tidal flats.

According to a spokesperson for the China State Oceanic Administration: 'More than 80 percent of the coastline in Bohai Bay has been crowded by factories and buildings.' A shorebird action plan is therefore not only timely its implementation needs to be even more so.

Although establishment of the East Asian Australasian Flyway Partnership was a great step forward, the Partnership has thus far been limited in what it could achieve. One major obstacle is that representatives of the governments of China and South Korea have little or no influence over policy decision-making. The Partnership has not been able to obtain a national government mandate to develop a work plan. This emerged as a key challenge at the Hong Kong workshop. However, it was noted that there is evidence of growing environmental concerns at top government level in China.

The Chinese Communist Party Third Plenary in November declared that 'to establish an ecological civilization, we must establish systematic and integral ecological civilization institutions and systems, and use institutions to protect ecology and the environment. We must complete natural resource property rights systems and use-management systems, draw red lines for ecological protection, implement paid-for resource use systems and ecological compensation systems, and reform ecological and environmental protection and management systems.'

ON THE LIST: Ruddy Turnstone (top) and Red Knot. Photos/Wikimedia, Ian Southey

A report prepared in advance of the workshop identified 20 bird populations that were most at risk and therefore high priority: Bar-tailed Godwit (*baueri*), Bar-tailed Godwit (*menzbieri*), Great Knot, Red Knot *(piersmai*), Red Knot (*rogersi*), Curlew Sandpiper, Far Eastern Curlew, Grey Plover, Whimbrel, Lesser Sand Plover (*mongolus*), Lesser Sand Plover (stegmanni), Asian Dowitcher, Black-tailed Godwit (*melanuroides*), Dunlin (*actites)*, Spoon-billed Sandpiper, Spotted Greenshank, Ruddy Turnstone, Grey-tailed Tattler, and Greater Sand Plover. As a result of new information presented at the meeting the Far Eastern Oystercatcher was added to the list.

The three most numerous species occurring in New Zealand – Bar-tailed Godwit, Red Knot and Ruddy Turnstone – are all on the list.

It was recognized at Hong Kong that trying to initiate actions on a flyway-wide scale risked dilution of effort. Efforts should be concentrated on a few super-sites that would most effectively conserve as much as possible of the target populations during migration. Four sites were identified as meeting this objective.

The one Korean site is the Geum Estuary and Yubu Island, but also incorporating Saemangeum immediately to the south. The latter was included because, although colossal damage to the ecology of the Donjgjin and Mangyeung estuaries has already occurred, it was recognized that potential for habitat restoration still exists within parts of the development area.

The three Chinese sites identified are Yalu Jiang, the Luannan Coast of the Bohai Sea (incorporating the most important staging sites for Red Knot) and the Jiangsu Coast. The latter is the biggest of all the sites as it includes nearly 700 km of coastline. The rationale behind this decision is that that the area includes various sites that collectively support, at some time during migration, significant numbers of many target populations, and all face broadly similar threats, especially invasion by exotic Spartina.

A draft action plan incorporating recommendations of the workshop is being prepared. The next step is to seek its formal adoption by the governments of China and South Korea. Once that is achieved the plan will be presented, with a formal mandate for action, to the EAAFP Meeting of Partners in Hokkaido early in 2015.

Unless anything dramatically changes in the meantime, this optimistic timeline means at least another year of habitat loss around the Yellow Sea. The workshop therefore noted that it is incumbent on those already active at any of the five sites to continue their efforts. This underlines the critical importance of MNT's continuing engagement with Yalu Jiang National Nature Reserve.

•Keith Woodley's attendance was sponsored by WWF Hong Kong.

SPECTACULAR: The spectacular tower at Seosan Birdland Park looks like a control tower for the huge flock of 100,000 geese. Photos / Keith Woodley

Spreading the word about wetlands

A workshop in South Korea aims to produce a manual for operating wetland centres anywhere in the world and the Ramsar secretariat sponsored **Keith Woodley** to attend.

It is, like so many such structures in South Korea, a spectacular complex. The large box-like building with its elaborate and stylish facades is perched on an escarpment surrounded by rice paddies, all of them on former tidal flats. Inside the 2030 sq m building are state of the art displays and dioramas. At one end of the building sits a giant pyramid of coloured glass, like a multi-coloured Louvre, inside of which is an art display area and a 3-D animated diorama. On the other side, dominating the entire site stands an observation tower that looks exactly like an air traffic control facility. (Given the estimated flock of 100,000 geese we saw in the area, there may well be a need for traffic control!)

This is the Birdland Park at Seosan, several hours south of Seoul, and the venue for a four-day workshop on 'Best Practice for the Design and Operation of Wetland Education centres'.

An initiative by the Environmental Ecosystem Research Foundation (ERF) in association with the University of Seoul, the workshop drew participants from far and wide: Chile, Canada, UK, United Arab Emirates, Jordan, Oman, Singapore, Sabah, Hong Kong, China, Taiwan, Korea, Japan, Australia and New Zealand. Wildfowl and Wetlands Trust (WWT), the East Asian Australasian Flyway Partnership (EAAFP) and the Ramsar Secretariat in Geneva were also represented. It was a substantial and productive workshop out of which should emerge by February this year a significant document: a revised manual for developing, building and operating wetland centres, free and accessible online to all and applicable anywhere on the planet. (It is intended to have the manual completed and online before March 2014.)

The building of such big-budget mega-centres as Seosan is often at the expense of active conservation, a situation acknowledged by Professor Han Bong-Ho of Seoul University, one of the coordinators of the workshop. It rather undermines, he says, "their roles as the centre for 'conservation and wise use of wetlands.'"

However, during the workshop itself, there was presented ample evidence of how a well-managed wetland centre can be a most effective conservation tool.

One prime example of a big-budget, well-resourced centre is the Hong Kong Wetland Park and its 64 ha of wetlands (see article overleaf). Opened in 2007, the USD67 million complex was developed as a mitigation measure for the loss of wetlands following the building of Tin Shui Wai new town.

The number of staff is an indication of the scale of this operation: over 100 of them, around 70 of which are employed directly, while other roles, such as cleaning, security, and ticket selling are contracted out. There are 24 people in its education and community services team alone.

Another example is Guandu National Park in Taipei, which is also the venue for the annual Taipei Bird Fair. I recall attending the opening of this facility in October 2000, and since then MNT has maintained a connection through visits by Alister Harlow and Kristelle Wi. The centre has 27 full time staff and a very strong volunteer base: 400 long term formal volunteers who qualify after nine months training, and 3000 short-term casual volunteers. There appears to be no shortage of willing people, which means Guandu can afford to be selective. This led to one workshop participant observing wistfully: 'Taiwan has such a good volunteer culture that they can afford to reject volunteers!'

Closer to home Hunter Wetlands in Newcastle Australia has 18 staff, three of whom – an administrator and two teachers – are permanent and the others part time or casuals. They too rely heavily on a pool of volunteers for their activities, which include outreach programmes to shopping malls, preschools, and retirement villages.

A particularly interesting example of a wetland centre is Brockholes, near Preston in Lancashire. In 2007 the Lancashire Wildlife Trust bought the

former sand and gravel quarry site and launched an architectural competition for the design of a centre. Conditions for the brief were quite specific: there would be zero carbon in use and construction; it was to be 'secure by design' to avoid vandalism, and, as the site is on a flood plain, it must be able to withstand flooding. Construction of the design by architect Adam Khan began in 2009 and the centre opened in 2011. The concept was a floating village among reed beds designed to minimise energy needs. And the security aspect? It is reached by a drawbridge which is raised at night!

Another significant presence at the workshop was WWT Consultancy. Founded in 1946 by Sir Peter Scott, WWT is a significant contributor to wetland conservation in the UK, operating nine specialist visitor centres and managing 7,000 acres of wetlands. It also operates a global network of wetland centres. In 1989 a commercial consultancy wing of WWT was established to help deliver its conservation and public engagement objectives while also generating income to support research and conservation. WWT Consultancy has now worked on over 60 visitor centre planning projects in the UK, Ireland, Portugal, Norway, Oman, UAE, India, China, South Korea, Seychelles, and USA. It provides advice on sensitive planning for the benefit of people and wildlife, including species surveys, habitat creation, restoration and management, visitor centre design and interpretation, wetland treatment systems and sustainable drainage.

Odd juxtapositions of information presented during the workshop indicate the diversity of wetlands. For for example, at Ras al Khor in Dubai, where there are plans to build a wetland centre. there are viewing hides on top of which are tall structures that act as cooling towers in the searing heat of the Gulf; by contrast, at Oak Hammock Marsh wetland centre in Manitoba, the parking lot is equipped with electrical units which keep parked vehicles from freezing.

•Keith Woodley's attendance was funded by the Ramsar Secretariat, Geneva, in association with Star Alliance.

TRANQUIL: Hong Kong Wetland Park. Photo / Keith Woodley.

New park gives an insight into the importance of wetlands

Shortly after attending the Wetland Education Centre workshop in South Korea I had the opportunity to visit the Hong Kong Wetland Park in the New Territories adjacent to Mai Po.

From the ticket office at the front entrance to the complex the visitor is directed along a broad promenade, down the centre of which is a line of plant and water features and sculptures, leading to the main doors of the centre itself. The bank of turnstiles immediately inside the doors could be in a modern metro train station anywhere in the world.

The key objective of the centre is to raise awareness of the importance of wetlands and their wildlife. Inside the cavernous building are 10,000 sq m of multi-floor exhibition galleries doing just that. There is a comprehensive account of the functional importance of wetlands and their biodiversity, as well as the extraordinary number of ways in which human activities since the dawn of history have impacted them. A dazzling range of human cultural associations with wetlands are featured: from a view of Venice by Canaletto, to Bogart and Hepburn dragging the boat through reed beds in The African Queen to TS Eliot's Dry Salvages and Hokusai's superb image Great Wave of Kanagawa. A series of 'Global Report' displays highlight negative effects on wetlands around the world. The ones on mining and coasts, however, are notably silent about China. 'Good to Die For' is a collection of human artifacts – clothing, crocodile skin boots, and a diverse range of other items – turtle shells, corals, stuffed birds - sourced from wetlands. A six metre high wall is lined with headlines: Campaigners injured in battle to save marsh; Coral killer thrives because of global warming; Demand for barbecue charcoal threatens mangroves; Beach rave threatens turtle nests; Fire in peat swamp forest rages out of control; Dolphins catch more disease because of pollution.

Beyond the building is a 64ha network of wetlands and viewing hides, accessed by walkways and boardwalks. Once out of sight of the centre, the visitor can become so immersed in the tranquil surroundings, that it would be easy forget the metropolis of Hong Kong is close by, were it not for the backdrop to one edge of the park: a wall of 40-storey apartment buildings, while to the west are the high rises of Shenzen, in mainland China. Of course its proximity to densely settled urban areas helps explain the viability of such a complex, and the more than 4 million people who have visited since it opened.

Keith Woodley

Images of Miranda

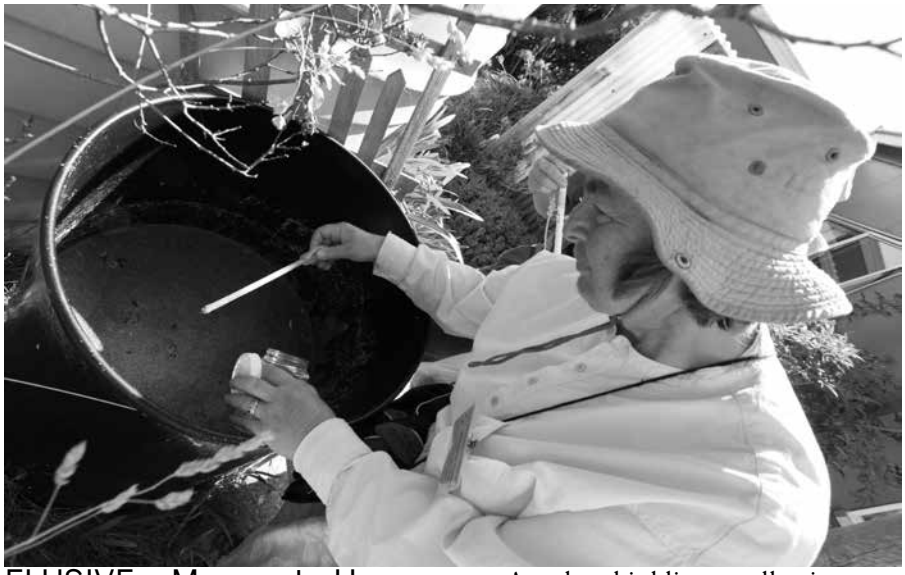
The course on Bird Photography held at the Shorebird Centre late last year, tutored by Bruce Shanks, saw an eager band of photographers in action. A couple of the participants sent in images for use in *Miranda News*.

Bartech Wypych

Bob Atkinson

Microscopic algae act as 'the grass of the sea'

One of the most fascinating revelations of the Miranda Bioblitz was the discovery of 150 diatoms. **Margaret Harper**, of Victoria University, explains what she found.



ELUSIVE: Margaret Harper collecting samples at the bioblitz; Epithemia adnata is found in fresh water.

You may have seen me hiding behind the biggest microscope during the Bioblitz. I was looking for diatoms, microscopic algae (a few hundredths of a millimetre in size) that are cousins of brown seaweeds and like higher plants need sunlight.

Earlier John (my husband) and I went out collecting surface mud and sand with a bent spoon on the end of a stick. We also scraped material off the surfaces of mangrove roots, shells and driftwood with a knife, and scooped up some of the water. Our collections included weed and mud from the nearly dried-up pond near the Shorebird Centre and the water butt at the cottage. We collected from all these places because different kinds of diatom live in fresh, brackish and seawater. Most of the material was cleaned in my laboratory, mounted on microscope slides, photographed and measured before identification.

I found some diatoms which grow floating in the water: Chaetoceros with its spines that link cells in chains, had come in with the tide from the outer Hauraki Gulf; another planktonic diatom is one of the notorious Pseudo-nitzschia species, which can cause amnesic shellfish poisoning; the Auckland Regional Health Service issues warnings when there are toxic blooms.

Benthic (bottom dwelling) diatoms are commoner than planktonic ones near Miranda. There are two main groups: those that attach themselves to surfaces and those that move among mud or sand grains. The most numerous diatoms encountered were two small freshwater diatoms attached to pond weeds: Staurosira construens and Encyonema neogracile. The first is a tiny diatom joined into threads by interlocking teeth and was found in both the water butt and the pond at the Shorebird Centre, the second was collected from pond weed. The brackish water diatom Achnanthes brevipes had been attached to glasswort runners and some cockle shells.

The most varied population came from the sand near low tide level, it included some large diatoms such Pleurosigma and some very small ones that live in the depressions and cracks on sand grains. I have not done these small diatoms justice in my identifications because they are harder to photograph and have not been fully covered by the major diatom floras.

During Bioblitz I put some coverslips (thin glass discs) on mud in bottle tops and left them overnight. In the morning I put them on microscope slides and saw large salt-water diatoms of at least three Gyrosigma species gliding around. Diatoms move by secreting mucilage blobs that stick to surfaces and then climbing up them, cutting off the bottom ones with an internal structure like a seam un-picker as they finish with them. Mud dwelling diatoms like Gyrosigma produce generous trails that stick tunnels of mud particles together. This group of diatoms is very important in the Firth of Thames as their trails form a mucilaginous skin on the surface of mud which traps newly arrived clay particles and also stops much of the mud from being churned up by the incoming tide.

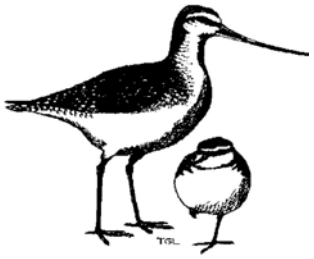
Another bioblitzer collecting seaweed found a small tuft which when examined proved to be a large colony of tube-dwelling Berkeleya; this diatom builds tubes to live in. They look like little seaweeds to the naked eye but under the microscope appear like congested highways full of car-like diatom cells with some moving slowly through and around traffic jams.

Albert Mann of the Carnegie Institute referred to diatoms as "grass of the sea" because they are the photosynthetic organisms at the bottom of lots of marine food chains. Most birds depend on mud- crabs, various molluscs including the common cockle, marine worms and fish to eat diatoms and concentrate their nutritional value. However observers have seen Wrybills scooping up the surface millimetre of soupy mud – so they may skip the "middlemen" in the food chain.

While at the Bioblitz I only identified about 30 kinds of living diatoms and only six of these to definite species. Later at Victoria University I photographed and identified about 150 species from permanent mounts. These formed a significant part of the Bioblitz achieving its 1000 species challenge. I have arranged that the permanent slides, information on species identified and their photographs will be deposited in the Auckland Museum.

John and I would like to thank the Miranda Naturalists' Trust for inviting us to join in the Bioblitz and for hospitality on the day; and the School of Geography, Environment and Earth Sciences, Victoria University of Wellington for providing laboratory and microscope facilities.

MIRANDA NATURALISTS' TRUST



The Shorebird Centre

283 East Coast Road
RD 3 Pokeno 2473
phone/fax (09) 232 2781
www.miranda-shorebird.org.nz

Shorebird Centre Manager:
Keith Woodley
shorebird@farmside.co.nz
Assistant Manager
Maria Stables-Page
topcats@ihug.co.nz

Miranda Naturalists' Trust Council

Chair: Gillian Vaughan
gillianv@actrix.co.nz
09 298 2500
Deputy Chair and Banding Convenor: Adrian Riegen
riegen@xtra.co.nz
09 814 9741
Secretary: Will Perry
home 09 525-2771
emlynp@actrix.co.nz
Treasurer: Charles Gao
charlesgao69@gmail.com
021 2674 919
Council members: David Lawrie (Immediate Past Chair), Estella Lee, Wendy Hare, Eila Lawton, Emma Pearson, Phil Hammond, Trudy Lane, Ann and Ray Buckmaster

Miranda News

Miranda Naturalists' Trust publishes *Miranda News* four times a year to keep members in touch and provide news of events at the Shorebird Centre, the Hauraki Gulf and the East Asian-Australasian Flyway.

Editor: Jim Eagles
eagles@clear.net.nz
(09) 445 2444
021 0231 6033

See the birds

Situated on the Firth of Thames between Kaiaua and the Miranda Hot Pools, the 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. The Miranda high tide is 30 minutes before the Auckland (Waitemata) tide. Drop in to investigate, or come and stay a night or two.

Low cost accommodation

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

Become a member

Membership of the trust costs $45 a year for individuals, $55 for families and $60 for those living overseas. Life memberships are $1300 for those under 50 and $750 for those 50 and over.
As well as supporting the work of the trust, members get four issues of MNT News a year, discounts on accommodation, invitations to events and the opportunity to join in decisionmaking through the annual meeting.

Bequests

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

Want to be involved?

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

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

Firth of Thames Census
Run by OSNZ and held twice a year, the census days are a good chance to get involved with ongoing field work and research. This year's is on November 4. Ask at the centre for details.

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

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

Emergency evacuation?

I was watching birds feeding in front of the new hide towards the end of last summer and - ridiculously - started to become upset at the way the Black-billed Gulls were attacking the godwits. I couldn't help thinking that since they're both endangered they should respect each other a bit more. But of course that's not how survival of the fittest works.

There was a particular flurry when one godwit pulled a large worm out of the mud. Two gulls immediately pounced but the godwit flew off with its meal.

I was quite pleased with the photos but a bit puzzled by the shadow under the godwit on one shot. Was it the worm? When I got the photo on screen I was able to see that the worm was still in its beak.

The shadow was an enormous cloud of faeces. Keith Woodley has told me that birds often relieve themselves as they take off. But this looks more like jet propulsion.

Jim Eagles

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