

# Pūkoro Miranda NEWS

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# Editorial

**T**he annual winter wader census in June recorded 1,100 overwintering godwits, a substantial increase on the 6-700 seen in recent years. There were also 2,500 Wrybill counted, another notable increase on previous counts. But June also brought a remarkable change to people traffic at Pūkoro.

Since January 2024 every month set a record for visitor numbers for that month. Overseas visitor numbers steadily increased through the period and are now well back to pre-pandemic levels. Following lengthy periods of closures, the Hauraki Rail Trail has remained fully open between here and Kopu, which brought a steady stream of cyclists every day. And general visitors just seemed to keep increasing. Then in June the number of visitors declined sharply. This was partly due to extended periods of bad weather, but I suspect it also reflected wider events. Fuel prices had risen steadily since February, and my suspicion is this finally impacted our numbers. By the middle of July however, visitor numbers seemed to be tracking up again, helped by school holidays and a very busy Matariki weekend.

In this issue we feature shellfish restoration to the Hauraki Gulf. Dr Jenny Hillman gave a very well received talk on these projects at the AGM in May. There are some intriguing shorebird stories: cheese-eating oystercatchers, the significance of a Hudsonian Godwit sighting in Japan, and a good year for Pukunui Southern New Zealand Dotterels. There is also an update from Saemangeum, South Korea, 20 years on.

Keith Woodley

COVER: Southern New Zealand Dotterel adult male on Mt Allen DANIEL COCKER

## EVENTS CALENDAR

Saturday 8 August: Working Bee and Potluck Dinner. Speaker: Nigel Milius "Penguins - a Personal Journey"

11-13 September:  
Printmaking Course with Sandra Morris

Sunday 4 October: Welcome to the birds  
Speaker: Hazel Needham, Senior Lecturer at University of Waikato, will talk about the condition of our tidal flats

6-8 November Wader ID course

6-12 January 2027 Field course

## Recent sightings at Pūkoro

|      |                        |
|------|------------------------|
| 1108 | Bar-tailed Godwit      |
| 191  | Red Knot               |
| 3    | Turnstone              |
| 2400 | Pied Oystercatcher     |
| 55   | Variable Oystercatcher |
| 16   | NZ Dotterel            |
| 47   | Banded Dotterel        |
| 2500 | Wrybill                |
| 1527 | Pied Stil              |
| 1    | Black-fronted Dotterel |
| 40   | Caspian Tern           |
| 1    | Australian Tern        |

## SNIPPETS

### Planet signage

What do the sun, planets and stars have to do with the shorebirds at Pūkoro? They use the sun and stars for navigation, and the sun and moon generate the tidal cycle, which allows birds to forage on exposed tidal flats. A Planet walk has been installed along the trail, with each planet appearing at the equivalent scaled distance from the Sun, which appropriately enough is positioned at the Shorebird Centre. Neptune is placed at the Kuaka Godwit Hide. Conceived and designed by Adrian Riegen with technical help from Olga and Kevin. The new panels provide an astronomically good reason for walking to the bird hides.

### Sun

Te Ra  
330,000 times Earth's Mass  
1.39 million km Diameter  
1 day = 25.67 Earth days at equator

The Sun is the star at the centre of our Solar System. The sun converts hydrogen to helium. The internal temperature is approximately 15 million °C. Sunlight takes 8 minutes to reach the Earth.

What do the sun, planets and stars have to do with the waders at Pūkoro? Waders use the sun and stars for navigation and the sun and moon generate the tides exposing tidalflats so waders can feed, thus linking mudflats to stars. On your walk to the hides, travel through our solar system. Panels like this for each planet are spaced to scale from here and the Godwit-Kuaka Hide.

Earth to Scale



Adrian Riegen and Olga Brochner installing a new sign  
KEVIN BARKER



Kevin Barker and Adrian Riegen OLGA BROCHNER

< Centre of the Universe KEITH WOODLEY

# New Trust Council members

Here we introduce the three new council members elected at the AGM in May.

## Debbie Anderson

Debbie was born and raised in New Plymouth and received a BSc (Hons) in Zoology from the University of Otago. Shortly after graduation she moved to Honolulu, Hawai'i where she completed an MBA at the University of Hawai'i while working in the Entomology Department at the Bishop Museum. The switch in career focus provided an opportunity to learn and engage with the hospitality business in Hawai'i, and ultimately led to her creating a new business, Destination Marketing Hawai'i (1998-2019). Debbie developed an expertise in marketing Hawai'i to the world on behalf of the Hawai'i Visitors Bureau, multiple airline and hotel companies, and local businesses.

In 2020 Debbie joined the all-volunteer Board of the Friends of Hakalau Forest National Wildlife Refuge (FOHF), initially charged with developing the non-profit's website and then moving into fundraising for the Hakalau Endowment that had been started in 2015 by a dozen stakeholders. Debbie brought her marketing skills to the Board and has helped grow the Endowment almost to its goal of US\$3.5 million, with donations from over 1,000 people. She was also instrumental in raising US\$200,000 over a couple of weeks after the new US Administration fired probationary workers at the Refuge. At the time, Debbie was President of the FOHF (2024 -2025). She now lives in Auckland.

## Graham Don

I have been involved with ecological assessments and pollution investigations for 50 years as a Partner and Managing Director of Bioresarches (now part of Babbage Consultants) that was the first specialist ecological consultancy in New Zealand. We initially operated under the Water and Soil Conservation Act 1967 which was hard going compared with the greater emphasis on things ecological under today's RMA. We also had to develop our own analytical lab (TELARC registered) because of the dearth of testing agencies handling water and sediment samples. I have a double major BSc degree in both botany and zoology and an MSc Hons degree in zoology with a marine ecology thesis from the University of Auckland.

In the 1980's I was involved with marine ecological assessments including about 15 marina projects that required the consideration of water quality, sediment quality and ecological effects. I was also involved with terrestrial bird surveys using multiple five-minute counts, annual blue duck surveys in the Whakapapa River, and ten years of monthly waterfowl counts at Rosedale Wastewater Treatment Ponds. For the past c. 25 years my focus has been on coastal bird assessments for a variety of projects, especially using hourly counts of numbers, species and habitat use over entire tidal cycles to provide quantitative, objective information.

These days I undertake only occasional field work and manage one of the local traplines for the Eastern Bays Songbird Project. I look forward to being involved with PMNT and its progressive approach.



New council members Graham Don, Margaret Ker Barnaby and Debbie Anderson TRUDY LANE

## Margaret Ker Barnaby

I was born in Waiuku and spent my childhood on the family farm in Harrisville. I had, for the most part, easy access to the lives of a diverse community and its land and waters and activities. I wandered across and through it with curiosity. Often on one of my horses and perhaps with my dog. My parents were at the forefront of initiatives both local and global, that worked for the wellbeing of individuals and their communities.

The first two summers of my life were spent at the Sandspit camping ground on the Manukau. The memory is of water, water that went out a long way and wading in gumboots through mud and creatures, light and a flat glistening sheath of water. This began my love of harbours.

Over the next few years, we spent our summer holiday at Kaiaua. We stayed in the camping ground with a common cooking area and a stream meandered behind the grounds. It had overhanging trees and pools to cool in. As children, my siblings and I, spent hours there when the sun was too hot to allow us out at the beach, or the tide was out. My memory is of idyllic days, and the smell and taste of fish.

Since then, sometimes years have passed between visits but at other times I have returned more frequently. Work, studies and travel have enabled me to live and visit many places both within NZ Aotearoa, and elsewhere across different continents. My major focus in work has been in teaching and education, management and development of mental health services and Treaty issues.

I live in Auckland and am currently completing a Masters in Conflict and Terrorism Studies (MCTS) at the University of Auckland.

It is a privilege to be part of the work of the Trust.



# Where do the Wrybills go?

Nick Ledgard and Grant Davey report on a Wrybill mystery from the Ashley-Rakahuri River.



**O**n the Ashley-Rakahuri River, Ngutupare Wrybill numbers have risen significantly over recent years. So too have the number of nests found. This contrasts with the situation for the more endangered Tarapirohe Black-fronted Terns. Annual surveys show tern numbers to be holding up on our river, but their fledging success has been very poor – about 15 per cent per nest last season, compared to 80 per cent for Wrybills. Our experience is that the terns are much more susceptible to predation than Wrybills.

However, it is a bit of a mystery as to how Wrybill breeding success ties in with the banding records kept by the Ashley-Rakahuri Rivercare Group (ARRG). Since 2001, we have banded 44 individual birds on the river. The best known by far is BW-BW who was first banded as an adult male in 2010, when he would have been at least two years old. He has been observed every year thereafter, nesting at the same site since 2013. Over that time, he has fathered at least 15 chicks through to the fledging stage. He was last seen this season, when he must have been at least 18 years old. But whether he returns next season is uncertain, as he and his mate had a run-in with a Little German Owl, which took both their small chick and about-to-hatch egg, and we have not seen BW-BW since.

One could imagine that the story of BW-BW's success to date is demonstrative of why there has been an increase in Wrybill numbers and breeding outcomes. However, that is misleading, as BW-BW's record is very much the exception, not the rule.

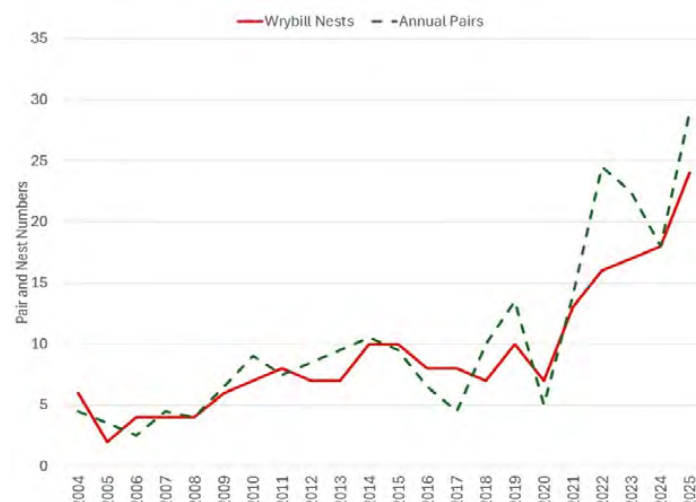
On average, we only resight banded birds for 3.2 years before they disappear and are never seen again. And we do not think we fail to see returnees: during the season the river is visited many times weekly, and there are only two birds (out of 44) which have not been sighted (for one year only) in the period between banding and when they disappeared. Wrybill are also well known to have good nesting site fidelity, returning annually to the same breeding locations. We see this frequently on the Ashley-Rakahuri River. There is only one record of a banded bird on our river which was not banded there, and that individual only stayed for a couple of weeks. And similarly, our banded birds are rarely seen on other rivers.

So, how does one explain the rising Wrybill numbers on the Ashley-Rakahuri River, when banded adults are not lasting more than a few years? Due to their natal site fidelity, it is unlikely that there is frequent recruitment from other rivers. Our records do show that productivity (annual number of fledglings raised per pair) is around 0.8, which is said to be high enough to sustain a Wrybill population. But is it sufficiently high to increase that number? Maybe young birds return to breed successfully for a few years before they disappear? In the past nearly all banded birds have been adults, so next year we will try to band fledglings before they depart the river. This will tell us how many survive long enough to return and start breeding.

In the meantime, while it may be a mystery as to why Wrybills have prospered on the Ashley-Rakahuri River, the increase in their overall population is indeed gratifying.

*\*Pairs = annual survey numbers divided by 2.*

**Wrybill nests and pairs 2004 to 2025**



A photo of BW-BW taken by Grant Davey in 2021, when he had lost 3 bands and had just the single blue one left - which by 2022 was also missing. Fortunately, a single metal band remains on his upper left thigh.

# Who Speaks for Sura?

An unexpected visit to Pūkorokoro opens a window on the people defending the last living part of Saemangeum. Trudy Lane reports.

**T**he small group from South Korea that appeared at the front door knew all about the Centre. While looking at our display boards we began a conversation during which there surfaced that strange intimacy of meeting people from another world - who share a relationship with our migratory birds and their ecosystems. Over the next few days we talked, visited the reserve, hosted artist friends, and they sang for us a song for the Sura tidal flats - a surviving remnant of the once immense Saemangeum estuary - that they are working to protect.

One of our displays highlights key staging sites around the Yellow Sea. Many people associated with the Trust already know of the tragedy of Saemangeum. Once the most important shorebird staging site in the flyway, the Mangyeong and Dongjin estuaries formed an immense 40,900-hectare system of mudflats, sandflats, shallows, saltmarsh and channels that fattened up more than 300,000 birds on their migration north, and again for many of them on their way home.

As a 33km sea wall completed in 2006 fully enclosed it, it starved the area of tidal flow which in turn starved the shorebirds that had depended on it. For Great Knot alone, Saemangeum held around 30 per cent of the world

population during migration, and monitoring documented a 93 per cent decline from 2006-2011. Approximately 104,000 were lost from 2006-2013, or one quarter of the world population of this species.

All this to make land: first for agricultural purposes and later recast within an evolving portfolio of “eco”, industrial and urban development.

This tragedy was experienced first-hand by Keith Woodley, Adrian Riegen and others, but it had remained at a distance for me. Yet that afternoon that area on the display map started to change. As I met the group and continued to learn more about their work, from their beautiful gifts of creative materials, the area also started to become a place inhabited by people who had spent years counting birds, working for wetlands, bringing court cases, making films, making banners and posters, and refusing to accept that a living estuary is merely “land” waiting for its next use.

The visitors were part of the loose, creative network gathered around Our Sura (oursura.org), a campaign supporting Sura tidal flat on the northern end of the Saemangeum area. Their arrival opened a small window into a struggle whose scale, endurance and imagination deserve to be better known here. And they are not alone - generations of protestors have fought for this site. For them, Saemangeum was never empty ground. It was a rich



Green Korea poster

and diverse living system supporting shellfish, crabs, fish, saltworks, fishing villages as well as hundreds of thousands of migratory shorebirds.

Proposed in the 1970s, construction on the seawall began in 1991. As the project advanced, opposition gathered around it: fishers worried about livelihoods; environmental organizations including the Korea Federation for Environmental Movement, Green Korea United and Birds Korea; scientists; residents; lawyers; and faith communities. Saemangeum became one of South Korea's defining environmental conflicts because people understood that the argument concerned much more than one construction project. It concerned what counts as a living place, and whose knowledge is allowed to matter.

In 2003, that understanding took a form both spiritual and political. Four religious leaders — Catholic priest Father Mun Gyu-hyun, Buddhist monk Venerable Su-kyong, Won-Buddhist teacher Kim Gyeong-il and Protestant minister Lee Hee-un — set out from Saemangeum for Seoul.

They travelled about 300 kilometres by a practice called *samboilbae*: three steps, then one full bow to the ground, repeated over and over.

It was not a stunt. It was an enacted humility, grief and responsibility before a living place. The pilgrims bowed not only for birds, but for the estuary's many lives and for the coastal communities tied to it. Their journey placed bodies on the road, slowing down a project driven by the speed and authority of the state.



Saemangeum before and after enclosure: satellite images reveal the transformation of a vast tidal system into reclamation land. Images: ESA Earth Online.





Three steps, one bow: participants in the 2003 Samboilbae pilgrimage to save Saemangeum. Over 65 days, the procession travelled more than 320 kilometres from the Haechang tidal flat to Seoul, joining spiritual practice with a public call to halt reclamation.

There is a stark contrast between *samboilbae* and a court process. A court asks who has standing: who has a legally recognisable interest, whose evidence is admissible, which harm counts? The pilgrimage asked a different question: how should people stand before the lives they are about to destroy?

As the wall was completed in April 2006 it enclosed the estuary, restricted tides, and began the slow unmaking of a place shaped by sediment, tide and migration over millennia.

That year, Birds Korea and the Australasian Wader Studies Group began the Saemangeum Shorebird Monitoring Programme (SSMP). Volunteers from Korea, other Flyway countries and the UK systematically surveyed Saemangeum and neighbouring wetlands, including Geum Estuary and Gomso Bay. They counted birds, recorded species, scanned colour-marked birds and tested a central claim of the reclamation project: that displaced shorebirds would simply move elsewhere.

Adrian Riegen, Keith Woodley and other PMNT members, joined to assist in these field efforts. Keith's account from the first season remains hard to read. On the Dongjin flats, Great Knots were feeding on bivalves lying exposed on the surface: a strange

temporary abundance created by an ecosystem already collapsing. Around them, crab traps, fishing boats and shellfish harvesters marked a coastal economy being dismantled alongside the mudflat. The immense flock of Great Knot rising in front of him, he described as "a requiem for Saemangeum".

The counts made the loss visible. At one site, around 70,000 Great Knots were seen in April 2006; at the same location a year later, barely 600 remained. Just as importantly, the surveys showed that nearby wetlands did not make up the difference. Some birds shifted, but nowhere near enough. Contrary to the claims of development proponents, the birds had not simply gone somewhere else.

After the wall closed, the development story did not stop. The official future for Saemangeum now combines port and industrial development with an airport, a "Smart Green" industrial complex, renewable-energy schemes, green hydrogen, a waterfront city and eco-friendly tourism. In 2023 the international scout jamboree was held on former mudflats at Saemangeum.

Renewable energy and decarbonisation are necessary. The question is what "green" is permitted to mean. A development cannot call itself ecological merely because its electricity is renewable while it continues to erase the intertidal systems that sustain the life of birds, fisheries, coastal culture and climate resilience.

Within this changed landscape, Sura survives. It is not an intact substitute for the original estuary. It is a battered, complicated remnant: mudflat, saltmarsh, drainage channels, freshwater and seawater influences, birds, crabs, fish and plants persisting among reclamation works.

The Saemangeum Citizens' Ecological Investigation Team has been observing and recording this life since 2003. Oh Dong-pil, one of its long-standing leaders, has returned to the flats for more than two decades. Through this repeated attention, a relationship has formed: not an abstract attachment to "nature", but knowledge of species, tides, places and changes.

That record is now central to the struggle against the proposed Saemangeum New Airport. The airport would place aviation infrastructure beside Sura, one of the last substantial

functioning wetland remnants within the reclamation area. The campaign is led by the Citizens' Ecological Investigation Team, Green Jeonbuk, the Saemangeum New Airport Cancellation Joint Action, lawyers, residents, scientists and supporters across Korea. Their concerns include ecological loss, weak economic justification and bird-strike risk.

The Muan airplane crash of December 2024, in which 179 people died, has sharpened national concern about aviation safety. While bird strikes were likely only one of the safety failures involved, it has made it more difficult to propose a new airport where large numbers of migratory birds are trying to survive.

In September 2025, the Seoul Administrative Court cancelled the airport's basic plan, finding serious shortcomings in its treatment of bird-strike risk and environmental effects. It was a significant victory. The Ministry appealed, and the case continues.

Of the 1,297 citizens who joined the original case, only three nearby residents were recognised as having legal standing. Again, the old question: who is permitted to speak for a tidal flat? Who is permitted to stand with it?

The response to Sura has never been confined to a courtroom. Director Hwang Yun's documentary *Sura: A Love Song* follows the citizen survey team and their practice of recording as resistance. Campaigners have created books, graphics, posters, hats and garments; organised vigils, walks, public performances and bird welcomes; and built relationships with scientists, artists and communities elsewhere on the flyway.

Their materials are lively, beautiful and sometimes humorous, but they do not soften the stakes. They make the place harder to erase.

Our Sura group's visit to Aotearoa was part of this work. They came to Pūkoro, then travelled to Whanganui, seeking not a legal recipe but conversation. Te Awa Tupua, with its recognition of the Whanganui River as an indivisible and living whole, offers no off-the-shelf answer for Korea. It arises from particular Māori relationships, histories and Treaty settlement. But it opens a question shared by rights-of-nature movements from Ecuador to Spain's Mar Menor lagoon: can law learn to



A welcoming ceremony was held under the warm sunlight at Sura Tidal Flat, adorned with a large Bar-tailed Godwit banner handcrafted stitch by stitch. April 4, 2026. KIM JI-YOUNG

recognise a river, lagoon or tidal flat as more than property, infrastructure or a site of mitigable damage? For the Sura visitors, the deeper question was simpler and harder: what is Korea's relationship with Sura?

After returning home, they joined a welcome for Bar-tailed Godwits

arriving at Sura from the southern hemisphere. The birds were not welcomed merely as symbols of a campaign, but as travellers whose journey binds Korea and Aotearoa together. Relationships are not a soft alternative to politics. It is what makes sustained politics possible: the decision to keep showing up; to

learn names; to count; to grieve; to celebrate; to make art; to take a case to court; and to return the next season.

At the Centre, a small group walked through the front door and turned a familiar point on a display board into the home of determined, creative and caring people working against profound imbalances of money and power, who have chosen to stand with the birds and the ecosystems that support them. We can understand that Saemangeum is mourned, and Sura defended, by people to whom these birds and ecosystems connect us.

Our task is to listen, keep informed, share their work accurately, respond when they ask for international solidarity, and place Sura within the flyway story we tell here.

At Saemangeum, the tide was stopped. At Sura, people are still making room for it to be heard.

## ‘Un-brie-lievable: a cheese-eating oystercatcher’

**T**he Faroe Islands are a small archipelago between Iceland and Norway in the North Atlantic Ocean. Eurasian Oystercatchers in the capital city of Tórshavn regularly visit a residential doorstep to request cheese. The homeowner first noticed a pair with at least one chick in 2022 and, having heard local stories that the birds liked cheese, offered them a piece which was eaten immediately. Since then, one to two adults (often accompanied by fledglings) have returned for more cheese between March and August every year. The birds typically visit one to three times a day and may peck at the door to attract attention if they are not promptly served.

They seem to like mozzarella the best. They will not eat cheddar and rejected

mixed nuts or bird seed. On 27 July 2025 an adult and juvenile arrived and landed on a neighbouring rooftop at around 16:30 hrs. The adult began calling, flew down to the front step and waited while the homeowner retrieved mozzarella cheese from the refrigerator. The adult ate several small pieces of cheese and brought several pieces to the juvenile on the rooftop over a period of about 20 minutes.

Observations over four consecutive years, show that while Eurasian Oystercatchers are typically specialist predators of marine invertebrates, they are capable of behavioural flexibility under novel circumstances. This is notable because shorebirds are typically associated with open coasts, wetlands, and estuarine environments and are not known for frequent or voluntary interactions with humans. The act of a Eurasian Oystercatcher approaching a house, routinely soliciting food, feeding its offspring



Oystercatcher *Haematopus ostralegus* enjoying some mozzarella. (photo: Trevor MacLaurin)

cheese, and even rejecting certain cheeses, stands in stark contrast to the general wariness of most shorebird species.

Cheese is energy-dense and likely offers a high caloric reward relative to effort, but it does not resemble Oystercatchers' typical diet of molluscs and polychaetes. Little is known about the potential long-term health effects or the digestive consequences of sustained, multi-year visits to the 'human cheese dispensary.'

**Deborah M. Buehler.** 2026. *Cheese-eating Oystercatchers*. *Wader Study* 133(1): 4–5. doi:10.18194/ws.00402





# A change in fortunes for Pukunui Southern New Zealand Dotterels

Adult on Deceit Peaks DANIEL COCKER

**T**he use of 1080 to control invasive pests has long been controversial. But over time an overwhelming accumulation of evidence has shown its use not only justified, but highly beneficial to species protection. The most recent evidence is the dramatic change of fortunes for Pukunui Southern New Zealand Dotterel on Rakiura/Stewart Island.

Once widespread through the South Island, they disappeared early from the mainland with the arrival of mammalian predators. Breeding now occurs only on Rakiura, where unlike their coastal northern counterparts, they nest on the tops, above the bush line. A survey in 1992 estimated there were only 62 birds left in the southern population. Pest control measures helped bring the population up to 290 birds in 2009, but there has been a steep decline since.

Birds that should live 20-25 years were not surviving beyond five, which is barely breeding age. Because males incubate at night, they were more susceptible to cat predation, leading to a marked gender imbalance. At the beginning of the 2025 breeding season there were fewer than 30 males left, and it was suspected most were immature or still learning how to breed.

The DOC dotterel team caught 11 cats in 2022-23, and 64 two years later, but given the wide distribution of breeding dotterels, trapping alone was not enough. Action was urgently needed and a massive 1080 operation was launched. Nontoxic pre-feeds were used to get predators used to cereal baits. In August a helicopter sowed 2 kg of green 1080-laced pellets per hectare across the Rakiura tops. The operation covered more than half of the known Pukunui breeding areas on Rakiura mountain tops as well as surrounding forest. Feral cats were reduced to very low levels: before the drop dozens of cats were in the area, but now trail cameras were picking up none. It was the same with possums and rats.

This provided adult birds with protection for the entire breeding season while they nested and raised their chicks. The result? Counts in April 2026 at flocking sites on the island and at Awarua Bay on the mainland recorded an estimated 160 birds, up from the 105 counted in April 2025. This is the biggest annual population increase for Pukunui since recovery efforts began over 32 years ago.

The counts revealed 56 newly banded juveniles, 91 banded adult birds, one newly banded adult, and five unbanded birds, bringing the total to 153. The DOC team added 5 per cent to account for other birds that weren't present during the count. 91 out of 97 known adult birds survived this season whereas in recent years up to 40-50 birds were lost. At Awarua Bay there was 100 per cent survival of adults from the previous year. Most significantly, more males survived the season.

Of course, to sustain this outcome, and further increase the population, management needs to continue. By April feral cats were starting to show up on the edges of the operational boundary in small numbers. They remain present elsewhere on the island, including at other breeding sites. DOC's camera network will stay active to monitor the reinvasion and see how long it takes for feral cats to reach Pukunui breeding grounds on the Tin Range.



Nest with 3 eggs on the Paps DANIEL COCKER





Chick on Rocky Mt DANIEL COCKER.

Although another aerial predator control operation is not planned on Rakiura this year, ground-based predator control networks will be expanded at breeding sites across the island. This includes installing and servicing more traps and bait stations. This will help to protect more habitat so there's space for the new birds to pair up and nest once they reach breeding age.



Adult male in snow on Northern Tin Range DANIEL COCKER



Adult male on Table Hill DANIEL COCKER.



Tokoeka on Table Hill DANIEL COCKER

Underlining the differences in breeding habitats occupied by northern and southern dotterels, this Tokoeka is one of the neighbours for the Rakiura birds.

Left and below: Many of us are familiar with Northern New Zealand Dotterels and the coastal places where they breed. The places and conditions where southern birds breed, are utterly different.



Pre breeding flock in snow on Northern Tin Range in late August (nearly one quarter of the then known population) DANIEL COCKER.



# What happens to a vagrant Hudsonian Godwit?



Hudsonian Godwit BRENDAN TURKER

**O**n March 20 Tim Barnard reported a Hudsonian Godwit in breeding plumage at Maketu. It was subsequently seen at Little Waihi and Pukehina. Breeding in northern Canada and Alaska, Hudsonian Godwits migrate to southern South America for the nonbreeding season. Yet some birds regularly seem to get it all wrong, and most years one or two are reported from around New Zealand. In 2005 when Bob Gill was compiling evidence for a memorable paper suggesting that Bar-tailed Godwits were flying from Alaska to New Zealand nonstop, the presence of Hudsonians here was one piece of evidence, the assumption being

they were flying with a flock of Bar-tails.

There is always, however, an interesting question: what happens to such vagrants? Do these individuals ever get back to where they should be and resume their regular annual cycle? Crossing the Pacific in the first place would be completely foreign to these birds, but it is easy to imagine an individual bird getting caught up in the wrong flock occasionally. But to get back to their normal migration pattern they would need to return to the Arctic, presumably again in the company of Bar-tails, but going via East Asia, a direction even more foreign to them. Yet no matter where these birds are in the world they seem to know where home is and so can make their way to that location.

In April shorebird observer and photographer Nobuhiro Hashimoto photographed a Hudsonian Godwit, which was only the second record of this species in Japan. Phil Battley takes up the story. 'I suggested that he might want to check his photos against the ones of the Maketu bird, and after he got closeup photos, he was able to do so and confirm it is the same bird. The tertials and lower scapulars match exactly. It makes sense that any Hudsonians leaving New Zealand would migrate with Bar-tails and end up in East Asia, but it is brilliant to confirm it. We have had satellite-tagged Bar-tails go to Japan this year, and had a colour-band report from Hokkaido, so it's possible that conditions favoured landing there at some times this season.'



ebird ©Brendan Turker  
Western Bay of Plenty District,  
Bay of Plenty, New Zealand

Nobuhiro Hashimoto  
Higasiyoka-higata (Daijyugarami)  
Japan 15<sup>th</sup> April 2026

Hudsonian Godwit Maketu and Japan comparison



Hudsonian Godwit with Bar-tails BRENDAN TURKER

Hudsonian Godwit in flight showing the black axillaries or 'armpit' that is diagnostic for identifying this species.



# Spring migration with a difference

Tansy Bliss reports on shorebird migration as seen in Ireland.

**I**m in Ireland, staying with my mother who lives in a beautifully located, remote northwest finger of land that juts out into the North Atlantic. Fanad Peninsula, in NW Donegal it is famous for its restored lighthouse. It is also one of the first and last places migrating shorebirds going to and from Arctic breeding grounds in Canada, Greenland, Iceland and Northern Scandinavia can stop to rest and feed.

From mid-April to mid-June, when not involved in family matters, I took the opportunity to follow the ebb and flow of spring migration in my local patch. My first walk on a nearby beach immediately sets the scene. The tide is out and Rathmullan Beach tucked well down into Lough Swilly, has tripled in size, exposing extensive silt and sandy flats. A band of soft broken seaweed and other debris carpets the beach and here I stumble upon a fast-moving feeding flock of Sanderling. They are feeding at such a rapid pace it is hard to get a good view, but as they weave back and forth, always at speed, I catch their rhythm and can look at plumage and check for bands. Gone is the clean white and grey look I am familiar with and instead are well patterned, black speckled upperparts, a distinctive dark speckled breast band, and a hint of rufous showing in some of the scapulars; all beautiful fresh plumage ready for breeding.

There is one Dunlin amongst them, a deep rich brown on the back and a notable dark patch hanging low over the belly. I see a Sanderling sporting a flag and colour bands so dedicate the rest of my time to noting down the combination, checking and double checking. I note the left tarsus has three colour bands, yellow-green-yellow, the right tibia has the flag, green with a thin white horizontal band through the middle and the right tarsus just has a blue colour band. I look at my sketch and am happy I have all the details. At this point an enthusiastic Springer Spaniel is unleashed for a run and the entire flock disappears. However, armed with the information in my notebook I anticipate learning where my flagged and banded bird has come from. I contact the International Wader Study Group and am put in touch with Jeroen Reneerkens, leader of the Sanderling Project. Unfortunately, my sighting does not fit within his project, and he offers to check the wider wader register for me. Still nothing fits, so I begin to doubt my identification and band reading skills.

At the weekend I catch up with Wilton and Louise Farrelly, who visited Pūkoro in February 2025 and who have a small holiday cottage on the edge of the rocky shoreline in Fanad. Wilton has birded here for over 30 years and our conversation swings between noting what overwintering birds are still to leave; who is here 'on passage' and who has stopped to breed. It is a busy time on this northern migration route. The East Atlantic flyway stretches some 15,000km between the Arctic and South Africa, and is comparable to the distance our Bar-tailed Godwits fly on our East Asian-Australasian Flyway, though with different challenges. We check the coastal waters in front of Wilton's cottage.

Small rafts of Long-tailed Ducks rise and fall in the northerly swell, the male's long tail clearly visible each time the bird comes into view. In the next week or so they will depart for the Arctic and Wilton comments on their relatively calm behaviour, possibly a pre-migration trait. In a more sheltered sandy, kelp coated bay close by, flocks of Sanderling, Ringed Plover and Dunlin sweep through the mounded seaweed, feeding quickly on any small flying insects and sandhoppers. The Sanderling and Dunlin also follow the breaking waves in and out, seeming to know exactly when to turn and run back up the beach. Each bird is beautifully marked and so beautifully camouflaged, it is a surprise when a flock of seventy strong suddenly rise and fly to a new location. Wilton tells me these birds are all on passage and to note the slightly darker plumage of the migrating Ringed Plover in contrast to the resident birds, settling to breed along the coast. The *Collins Bird Guide of Britain and Europe* states that the migrating Ringed Plover are 'on average slightly slimmer... and a tinge darker above'. I doubt I will be able to see the difference and hope that territorial behaviour will help me distinguish between the two.

Wilton reminds me to look out for breeding terns. I had noted the larger Sandwich Terns feeding over the loughs and bays, their harsh cry and dramatic plunges from height drawing them to my attention. I glimpsed Arctic Terns recently arrived from their Southern Ocean wintering grounds, but Wilton is doubtful there is an active breeding colony in Fanad anymore. Feral Mink that swam to their nesting islets put an end to that. Common Terns, however having migrated north from Western and Southern Africa were attempting to breed on a couple of isolated islets, hunkered down amongst the sea campion and coastal turf, sharing the space with Black-headed Gulls.

I ask Wilton what else I can expect to see 'on passage' in the coming weeks. He tells me to look out for Purple Sandpipers on the rocks, Ruddy Turnstone amongst the seaweed, and flocks of Whimbrel on the grassy headlands and rock platforms. We spot a Bar-tailed Godwit feeding quietly along the water's edge and then a Whimbrel that flies off to join another dozen feeding up on the coastal turf. Wilton tells me Curlew used to breed in Donegal, but now records are few and any potential breeding sites are managed by Birdlife Ireland under their Breeding Waders European Innovation Partnership (EIP) Agri-project.

Of the waders having arrived to breed, the Common Sandpiper is the first on my list. It frequently migrates at night, either by itself or in small flocks dispersing after touch down on rocky shores. I saw one disappear into the dark granite boulders at the edge of a small lough with a quick flick of pulsating wingbeats. Knowing it was there, I managed to re-sight the slight bobbing figure as it picked its way along the shoreline.

Armed with all this helpful information, I am on migration watch wherever I go, binoculars at the ready. Quiet observation and patience serve me well, filling my head with new images and questions ready to be further explored..



# The journey to restore Aotearoa New Zealand's lost shellfish

Mussel beds All photos JENNY HILLMAN

**A** mosaic of shellfish beds extending from Mahurangi Island to the Coromandel, mussel reefs that could cover 80,000 rugby fields. Billions of mussels filtering the entire volume of water in the Firth of Thames in a single day. Such was the Hauraki Gulf just 100 years ago.

By the mid-1960s, those sprawling Kūtai Green-lipped Mussel reefs – more than 600 square kilometres of them – had been decimated by dredging for food and fertiliser. The commercial fishery collapsed and the beds have never recovered. Not by themselves anyway.

In losing those Kūtai reefs, the Gulf lost one of its most powerful natural filters: each mussel can clear several litres of seawater an hour, cycling nutrients and binding the seafloor together. The living, three-dimensional seafloor that existed before is now largely sand and mud, its clarity clouded by sediment resuspension and its biodiversity thinned.

But in recent years a massive attempt to reverse those losses has been under way. A consortium of iwi, scientists and community groups have joined forces to tackle the problem. Since 2021, more than 25 million Kūtai have been reintroduced through the Revive Our Gulf programme, making it one of the world's largest shellfish restoration efforts.

*Dr Jenny Hillman, Senior Lecturer, University of Auckland's Institute of Marine Science, spoke about the project at the Trust AGM in May. This is based on her talk.*

*There was a beautiful karanga that called for the Kūtai to bind to the chest of Tangaroa again, so that they might thrive. The knowledge and the history of our people and harvesting and trading our kaimoana throughout the centuries, is fundamental to who we are, and if we don't take charge of that part of our Treaty then we are neglecting a very important part of who we are. So, this is my passion, our passion as Ngai Tai to bring back that part of our identity, to understand the transitions in our moana space, to adapt with them and to understand how we can continue to feed our manuhiri and ourselves from this pātaka kai. We can't do it unless we work with our partners and the University of Auckland to stand alongside our Mātaraanga Māori. So, we are looking to our Kūtai to join up again, to establish reefs, so that we can monitor through recruitment and the wellbeing of whānau of Kūtai.*

Laurie Beamish, Ngai Tai

We are seeing fisheries collapsing all over the place, largely due to over extraction. There is not a single open scallop fishery in the whole of New Zealand right now. Many species – crayfish, scallops, mussels are what we call functionally extinct across the Gulf which means there is not enough of them to do the work they need to do. A key stressor is sedimentation, which is increasingly impacting habitats. Pollution, pest species, habitat destruction and climate change are all getting worse, something science has been telling us for a very long time.

This will be an overview of this big umbrella project, involving multiple places and multiple species – thinking about the seascape, the landscape and how it all fits together. How do these systems work – and if they are not working well, how can we make them work better?

Kūtai Green-lipped Mussels are the major focus of this talk, but first I want to canvas the range of projects we are working on. We have got partner projects across New Zealand, and Antarctica where we are looking at how climate change is affecting animals that live below the ice on the seafloor. We are working across the Hauraki Gulf – and across the top of the South Island. I have students working in Nelson/Marlborough - Golden Bay, Delaware Bay, and Pelorus Sound. By working in both places, we can learn more. For example, Pelorus Sound is quite different habitat than the open coast of the Gulf.

I also run projects looking at coastal functioning – how nitrogen and carbon for example is processed across the coastal shelf – because no one has ever done that in New Zealand. It has been done in Europe and North America, but not in the Southern Hemisphere. This is a very big gap because it connects to the global pattern – understanding how those systems function, and how it affects the animals. If the animals are gone, how can we bring them back? There are also projects looking at how commercial and recreational anchoring is damaging our seafloor. A project working across Coromandel is looking at ecotourism and how that can be partnered with restoration to bring hope.

Because they are functionally extinct in the Gulf, we cannot get enough Kūtai in the wild and move them, because that would decimate what populations remain. So, we have partnered with the mussel farming industry where we can source animals for our project. For nearly 15 years we have worked with them and with Revive Our Gulf Trust. That may sound like a long time but in terms of restoration it is a drop in the ocean. Restoration on land has been going on for centuries and there is still a lot to learn, so we are really at the very forefront of this mussel work.



And it is not just our mussels. While Green-lipped Mussel is unique to New Zealand, mussels overseas need help as well and we partner with people around the world. In the Netherlands and Denmark, they have issues with Blue Mussels and the way they have lost those ecosystems make them very interested in our work – so this is global issue with some unique and special concerns relating to New Zealand and the ways in which we approach it. Iwi leadership has been really huge in this space.

These mussels can live on sand or mud, which again makes them very special, because not everything can. Some mussels can only live on rock. Some oysters can only live on rock. They can also get a lot bigger than other mussel species in the world: 27 cm is the biggest one that has been found. They also live a lot longer.

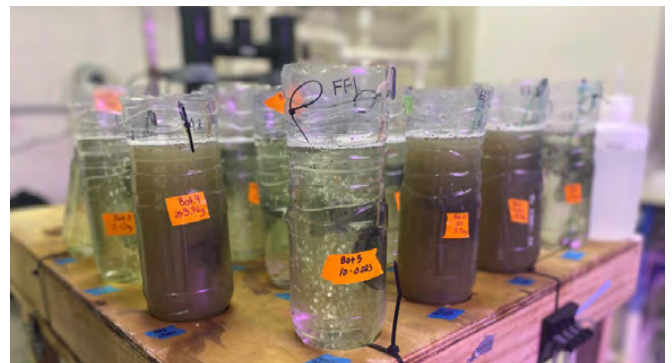
I want to take you through our process. There is a lot more work involved than just throwing mussels off a barge -that's the exciting bit, there's always cameras there, the media want to come, but that is just one day – a snapshot of what happens.

Farming shellfish really is the most sustainable way of producing protein in our oceans. That has been proven, it is not even questioned any more. But the impact of fish farms – both in the feed required and subsequent water quality- is awful. Mussels are non-invasive and sustainable because you do not have to feed them, you chose a good spot and just put them in.

But to find that good spot you first need to understand the seafloor. We use historical, archaeological and scientific data, and local ecological knowledge. One of my students went around and had cups of tea with anyone who had lived in Kenepuru Sound for more than 50 years. He learned a lot of stories, had lots of cake and cups of tea. We learn from historical reports and old newspapers, and from indigenous knowledge, some of which has been lost over generations, but it is amazing what you can learn. Then we look at what it is like now with current ecological surveys. What is going to change? We draw from the past while looking forward in deciding what we can do.

We look at what is there now – what do those mussel beds that remain look like? One of my students has looked at everything that is there, to understand what we can from what they look like now though none of them look as they should: a few scattered adults that don't have the same density or connection to each other that they should or used to have.

What do mussels need at every single life-stage? What do tiny baby mussels need? As they get older, they need different things to live on. This is critical, because you just can't feed them what adults eat, you need to think about whole life cycles. As they get bigger, they need different things, bare rock, shell, types of algae, and if we lose algae there is a huge gap, the entire lifecycle disrupted. Another PhD student is working on understanding that disruption, and the stressors causing it, such as the role of sediment.



Measuring sediment

She used a series of tanks containing samples of young mussels at different stages. Tiny mesh gave them something to hold on to, and then where they ended up choosing to settle as well. Air bubbles kept oxygen in there and every few days she would give them algae to feed on. Then different sediment scenarios were introduced to the tanks. She looked at the effects of suspended sediments in the water and of burying them, as could happen following a storm, or even just if it rains and sediments are in the water, burying the mussels on the seafloor. She looked at what a storm would do and elevated that.



Remnant natural populations





Natural habitat

The suspended sediments in the water column, even at the highest levels did not affect the mussels. She found at the higher levels they still grew, which is unexpected. We think it is to do with the food quality. But the burying was quite dramatic, and mortality levels were quite high. This is what we expected, but it is useful to have the exact numbers and useful to know those levels. Just a couple of millimetres of sediment really settling down can smother these guys and they just can't function anymore. And that is a big issue when you have got so much sediment entering the water in New Zealand. You have short sharp hillsides, and an increasing number of storms.

If you are going to restore you don't want to be continually doing it - that is not cost effective and is not restoration. In trying to get self-sustaining beds back, we are thinking of things like connectivity - doing some modelling across the whole of the gulf to see where these larvae go and looking at networks of beds that all connect. Mussels spit their larvae out into the water column - where they remain for up to 40 days, which is quite a long time for shellfish, and they can move 100s of kilometres in that time. It is not as if they sit above the beds and then settle again, they cover a huge distance and then settle.

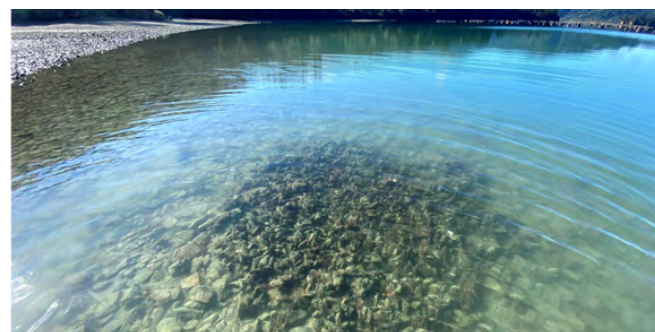
Young mussels need algae to survive, but is there something about the algae - its morphology or shape, that helps them survive? Comparing three algae we found one of them was very much preferred compared to the other two, but only at the surface. And that is where that sediment work comes in - as you get further down in the water column it gets much muddier, and the mussels are just not able to survive. Whereas at the surface there were loads of them settling. All of this helps us think about what we need to provide apart from just mussels.

A lot of work goes into site selection. We need to understand what these mussels need, to understand the places where we want to put them back in, and we are talking about the entire Gulf. As well as diving, we use underwater remote-controlled vehicle (ROV) equipped with cameras to cover large areas. We need to understand timing. Does season matter? Does where the mussels are grown matter?

Then comes the time for deployment. We have done the biggest deployments in the world; we have done smaller patches that are about 2 x 2 m square. We have done intertidal down to sub tidal as well. We always start with small scale pilot experiments, across lots of places - substituting time for space, to try and understand what is going on. We have tried aerial exposure where mussels used to be found further up on the shore, but they do not survive now because it is too warm, even though historically that is where they were found. That is why I say you must look forward; you can't look back to where mussels used to be because that is just not viable anymore.



Deployment barge



Mussel deployment Marlborough Sounds

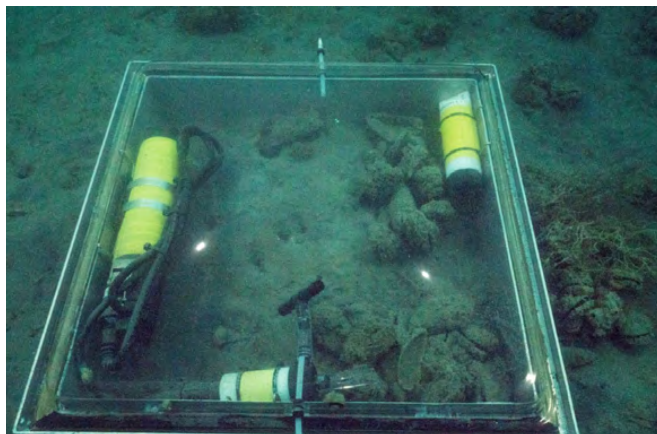
There are different ways of deployment: off the big barges, by divers, by hand, or shovelling it off a smaller barge. We have looked at tiny mussels all the way up to adults. We are also looking at using some sort of hard substrate in places where they need it. We are also working with engineers and concrete experts to make concrete out of waste shell from the industry, which contains no toxins or chemicals. Which is where looking at whether shape and texture come into it.



Following the deployment comes the crucial bit. Now they are in the water, what are they doing and how are they doing it? You just can't walk away and leave them to it. We do a lot of monitoring using scuba divers and ROV. We are developing remote sensing to increase our eyes under water. I am developing things like little gape sensors where you put magnets on mussels – that tells you on your phone how open or closed they are. This can tell you about water quality and whether the animals are happy or not. Sometimes they just go open indicating they have died.

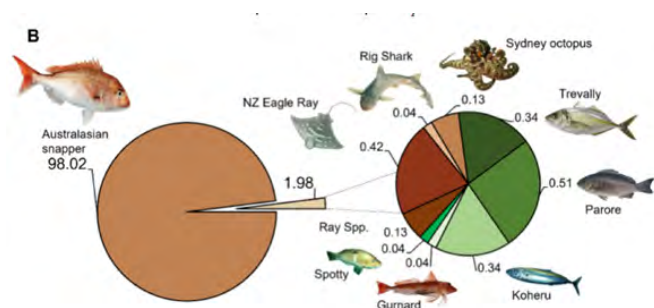


Monitoring



Monitoring equipment

Does place matter in terms of predation? We put some small patches of mussels down across a whole range of sites to try and understand what was going on in terms of predation. Cameras were put in for three or four days to see what was visiting and eating the mussels. In places such as Ohiwa Harbour it is carpets of starfish. At the top of the South Island, we had one location carpeted in starfish while in other places Blue Cod was the primary predator.



Snapper dominance as predator

But in the Hauraki Gulf 98.2 per cent of mussels were taken by Snapper. How do we manage that? Predation is normal, the problem is when you get an over explosion of predation pressure. Every mussel bed I have put down I always get a couple of octopus sitting in there. But they just take a few mussels and that is normal. But when what you put down is all taken by Snapper at once – it becomes pointless. So, we need to get predation levels normal to allow mussels to survive the first few vulnerable months.

Having an industry is helpful in another way. For marketing, half the mussel shell is removed leaving the flesh in the other half, and that is how it is exported. Or the flesh is taken out completely. This generates a lot of waste shell which we have been using to experiment with putting shell back where it came from.



Shell deployment tube



Industry shell deployed



We put down huge piles of clean shell from the industry and put some mussels on top. These patches are several metres high, and tens of metres wide. We are trying to understand if the shell helps the mussels or helps other animals. Using chicken wire or plastic mesh we make tubes that are about the height of a person. These are suspended in the water to provide habitat for larval fish, and we can track whether larval fish are using that habitat or not. We put down piles of shell at different heights, beside adjacent sediment where there is no shell. We found where you had shell you had increased numbers of fish than in the control areas with no shell. But this was only after two years. In the first year you got more off the shell than on the shell, but it takes time. We also saw predation levels change; everything was fine for a year and a half and then starfish moved in and took everything.

What does success look like? For some people success means having mussels to eat, but that is human generations away – let alone mussel generations, because they have been so decimated. I talked earlier about coastal functioning. Can we bring that functioning back? it is a very science word,

but it is how things work: it is what underpins ecosystem services and biodiversity. We have shown that putting a mussel bed down on the seafloor and mussel lines as well, increases biodiversity. We get lots of baby Snapper and Blue Cod that use it as nurseries. The cameras record sharks coming through all the time. We get sea horses in Okahu Bay in central Auckland. There is a huge amount of biodiversity associated with these reefs that you don't get on the adjacent sediment without the reefs. There is this 3D construction of this whole world with all these other animals.

While it is the big stuff you can see, it goes down to what is living in the sediment - worms and microbes that make a huge difference such as nitrogen processing. We are the worst country in the world for the increasing levels of nitrogen going from land into the sea. We are not doing well there. But we found that mussel reefs can help with this. It is not the mussels doing it themselves – they are enhancing it by feeding and their deposits are used by microbes in the sediment, which all enhances the denitrification cycle.

## Q and A

### **Q We hear snapper have been overfished yet they are eating all your mussels.**

Yes, that is the difference between functionally extinct and extinct. They are still there just not at the same levels, so once again it comes back to that question of balance. There are not enough predators in terms of Kina – so there is snapper, just not as many as there should be. There is not as many of anything that there should be. They are present in high enough numbers in some places to wipe out a mussel bed. There are two populations of snapper. Some stay around an area and don't move – that is home. Other types of Snapper move around – usually seasonally in relation to water temperature etc. Most of the ones that stay around live near mussel farms. If they are all in one place they can do a huge amount of damage.

### **Q You were tipping out individual mussels whereas don't mussels grow in clumps and/or on reefs? And how do the individual mussels survive.**

Great question. We have done both. in some places because of Biosecurity NZ and MPI we must put them out as individuals because they are worried about spreading invasives around. Which we are not. But anyway, they will clump up like this within a day. They will move to each other within one to two days. And they will do it differently at different sites based on environmental conditions. The mussels are cleverer than we give them credit for. At other places we have been able to put them down as clumps and that is better for them, less stressful, so we try to do that whenever we can. Where they are pre-clumped from the lines, for example. Sometimes we put them in tanks for a few days to let them clump before we put them out. It hasn't made a huge difference – I think other stresses are too big. We can put them in late afternoon, and someone diving there early next morning sees they are already moving in.

### **Q Measuring how much mussels and other filter feeders improve water quality, are you finding a correlation between the presence of mussels and water quality?**

Councils would love an answer to that, but the short answer is it is very hard to measure. Everything is so big, it is a huge ocean, and everything is really diluted. It is tough to measure. The council would love me to put numbers on that, but I must push back – because it is not simple. It is something we are working towards being able to do, with those sensors I talked about etc, but we are not yet at a place where I can say yep, those mussels are improving the water quality by x per cent. It is too complicated, the modelling of how waves move is crazy. It is not like putting them in a pond or swimming pool. But we are working towards that. Mussels will definitely be making a difference, and we have had anecdotal data come to us that it is clearing water quality and bringing back other species that were lost, but measuring it is not simple.

### **Q Micro plastics – speaking of filtering, are your mussels getting any of those?**

There has been a little bit of work to show that they do ingest them overseas. Everyone was worried about this because they like to eat them. Mussels are incredible because they take in food from the water, they then filter it over their gills, using these tiny hairs, and they take what they want out of it, then they spit it out again. So, it doesn't stay in their tissues because what they are eating is the really good quality organic matter and then the rest gets spat out. It is packaged up in these parcels and deposited on the sea floor, so it is not still floating around, which is how they help with that water quality and clarity. But the trouble is in the really degraded places where there isn't the high quality food for them to eat, that is when they can't be as fussy and they will die. So, it is about the quality of the food and obviously microplastic degrades the quality of the food, so we are starting to think of that food quality/water quality and modelling that across places like the Gulf where the mussels will be happy and will get food.



# Enviroschools Conservation Week event at the Shorebird Centre

**I**n April schools from Hauraki, Coromandel, and North Waikato came together at the Shorebird Centre for an excellent hands-on Conservation Week event, hosted in collaboration with the Department of Conservation and Waikato Regional Council Enviroschools. 90 students from nine schools joined, presenters, and guests with a shared focus on deepening knowledge of shorebirds, their habitats, and the pressures they face.

The day encouraged learning, exploration, and connection with the natural environment, as students rotated through interactive workshops that helped foster kaitiakitanga. Participants were welcomed to the whenua by kaumātua Arnold Gurau (Ngāti Pāoa hapū).

A highlight of the day was active participation—beginning with observation. Students had many opportunities to observe using binoculars, scopes, examining details with magnifying glasses, and sometimes simply sitting quietly and watching. From observation to exploration, students took part in a workshop designed to investigate the “in-between” zones where land meets sea. There was also time for creativity, with students making traps and creating clay worms.

Students participated enthusiastically in a trial of the WRC Catchment Model. A sloping fiberglass model of a catchment showed how runoff works, how it impacts the landscape, and the importance of wetlands in preventing erosion and pollution. Some of the kids got carried away simulating a thunderstorm, but by creating rain over the catchment they saw how things like sediment, fertilizer and forestry slash were moved downstream to the sea. “We learnt that wetlands catch debris and excess water.”



Enviroschools event KEITH WOODLEY



Learning binoculars CHELSEA RALLS



Catchment model CHELSEA RALLS



Rain over the catchment CHELSEA RALLS





Ken Brown directing young planters CHELSEA RALLS



CHELSEA RALLS



Trudy directing worm making CHELSEA RALLS



Worm model CHELSEA RALLS

Another standout was learning to use a compass at the Matuku / Australasian bittern workshop. Students reflected, "Learning to read a compass was a cool new skill practised at the event." Rachel Langman, DOC Biodiversity Ranger, encouraged teachers and students to continue using this new skill during the annual Matuku population survey. Students also learned how early Polynesian voyagers navigated.

The planting workshop was an opportunity for students to actively participate in conservation. Students learnt how to carefully plant, mulch, and label their plantings.

The ultimate activity of the day was learning – supporting a deeper understanding of shorebirds, the unique environments they depend on, and practical ways to care for our local ecosystems. As one teacher noted, the highlight of the event was seeing children out in nature learning through experience, quietly sketching and being deeply focused.

The feedback from one teacher sums up why the event was such a success: the interactions students had with calm, knowledgeable workshop presenters, who were consistently described as enthusiastic, encouraging, and "just awesome."

A big thank you to EnviroSchools facilitators Jo and Rachel along with PMNT's Chelsea and Trudy for their remarkable organisation, and all the presenters and collaborators for creating such a memorable experience for both teachers and students. Schools, teachers, and students are inspired to continue learning and practicing kaitiakitanga. Celebrating Conservation Week at the Pūkoro Shorebird Centre was a positive outcome for the environment and strengthened relationships with each other and with nature.



# Pūkoro-koro Miranda Naturalists' Trust



## The Shorebird Centre

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Trudy Lane, David Lawrie, Bob Rigter,  
Olga Brochner, Emma Salmon,  
Debbie Anderson, Graham Don and  
Margaret Ker Barnaby

## Magazine

Pūkoro-koro Miranda Naturalists' Trust publishes Pūkoro-koro 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.

Acting Editor: Keith Woodley  
keith@shorebirds.org.nz, 09 232 2781  
Layout and production: Bernie Cornford

## See the birds

Situated on the Firth of Thames south of Kaiaua, the Pūkoro-koro 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 Pūkoro-koro high tide is 30 minutes before the Auckland (Waitematā) 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.

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 decision making through the annual meeting.

You can join at the Centre, pay via our webpage (www.shorebirds.org.nz), by direct credit to bank account 02-0290-0056853-00 or call the Centre with your credit card details. Contact admin@shorebirds.org.nz for further information.

## Bequests

Remember the Pūkoro-koro 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 in 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 chat with the team at the Centre to see what will best suit you.

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



Sean and Annie Wilson's  
**Miranda Farm**  
Shop • Cafe • Gallery

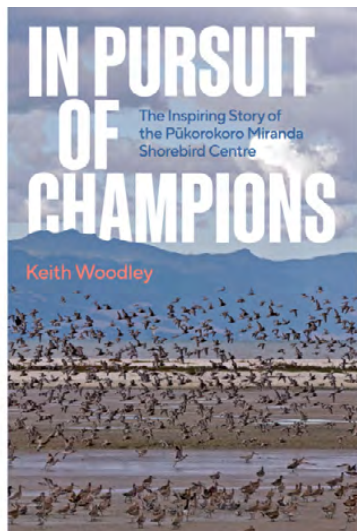


Ron & Edna  
Greenwood  
Environmental  
Trust





# Gifts from the Shop

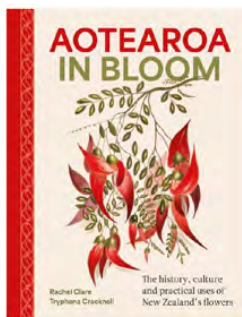


**In Pursuit of Champions**  
Keith Woodley – \$30

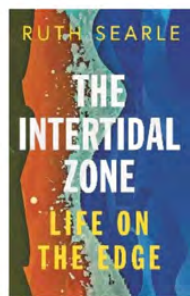


**Wrybill T-Shirts**  
Men's & Women's T-shirts

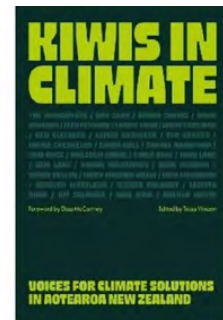
# Newest Books from the Shorebird Centre Shop



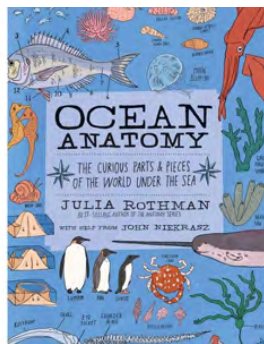
**Aotearoa in Bloom**  
Rachel Clare & Tryphena Cracknell  
\$60



**The Intertidal Zone, Life on the Edge**  
Ruth Searle  
\$35



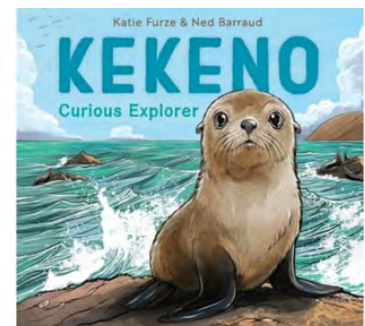
**Kiwis in Climate**  
Tessa Vincent, Eliza McCartney  
\$45



**Ocean Anatomy**  
Julia Rothman  
\$40



**Kupe and the Great Octopus of Muturangi**  
Mat Tait  
\$30



**Kekeno, Curious Explorer**  
Katie Furze  
\$22

If you can't make it to the Shorebird Centre shop, visit our amazing online shop at [www.shop.shorebirds.org.nz/](http://www.shop.shorebirds.org.nz/)  
Send an email to [shop@shorebirds.org.nz](mailto:shop@shorebirds.org.nz). Ring 09 232 2781 and chat to the friendly team. We'll be happy to help

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