DUCKS UNLIMITED NEW ZEALAND INC. For Wetlands and Waterfowl

flight

ISSUE 180 FEBRUARY/MARCH 2021

A pond for pāteke
Ramsar wetlands
Bands for birds

FROM THE PRESIDENT

Hi everyone, and a Happy New Year to you all.

I am sure we would all like to think that the Covid-19 disruption to our lives might improve this year.

Because of a contact that our editor, Alison, has made with the Te Henga wetland in Auckland, DUNZ has been able to create a new wetland specifically with pāteke in mind at Te Henga.

This really has gone a full circle – a lot of the pāteke originally bred by our members under our captive breeding programme were released years ago in the region in the hope they would bolster numbers in what was a stronghold area for the species.

This appears to have worked and we are now able to supply habitat for them as well.

A great project from the DU perspective as it is open to the public, run by a trust, and managed by the enthusiastic members of Forest and Bird up there.

It ticks all our boxes for sustainable projects, similar to Wairio.

It is just a pity we have only a few members in the Auckland region available to visit the site.

Regarding this year's conference in Wellington, we have yet to finalise the facilities, but Zealandia is our bus trip destination, and they have suggested that, if any of our members would like to turn up there on the Friday night, they would organise a Kiwi experience walk for them as well.

This would need to be booked, so something for all of you intending to come to think about.

Cheers

Ross Cottle

New Year's honour for conservation

DUNZ member Mike Bourke has received the Queen's Service Medal (QSM) in the latest New Year's honours for his services to wildlife conservation.

The citation for his award says Mike has developed large sections of his family's farm in Rangiwahia into a wildlife reserve and habitat of more than 30 acres.

He began transforming his farm in the 1970s, fencing off waterways and, with a friend and nurseryman, planted more than 10,000 trees, shrubs and fruit orchards around the farm and surrounding wetlands.

He established Bourke's Dam (now Mangahuia Wetlands) in 1997 in collaboration with Fish and Game New Zealand, and went on the create two more wetlands.

Mangahuia Wetlands is open to the public through a gate off Main South Road in Rangiwahia, northern Manawatū, but visitors are asked to call Mike on 06 328 2840 first. If he is unavailable, leave a message.

Mike Bourke

After releasing trout into the wetlands several years ago, he has become involved with Fish and Game's Take a Kid Fishing Day, helping children learn to fish and providing rods and lures.

He has built several netting houses with the aim of breeding and protecting Carolina wood ducks, pheasants and Californian quail. He has carried out extensive predator control and successfully bred mute white swans, acquiring his first pair in 1973.

He has previously been recognised for his conservation of rare waterfowl and wetland habitat, winning the 2006 PGG Wrightson Habitat Environmental Award.

Congratulations, Mike.

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BOARD OF DIRECTORS

Cover: A male New Zealand scaup or pāpango. Photo Bernard Spragg

Back: A baby whio at Pukaha National Wildlife Centre, Mt Bruce, Wairarapa. Photo Tara Swan supplied by Whio Forever. Whio Awareness Month is celebrated during March, when young whio reared in captivity are released into the wild.

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Editorial:

Contributions, including photographs and letters to the editor, are welcomed. Please send these to the editor before the next deadline, May 21, 2021 in time for the June/July issue.

The editor reserves the right to edit articles for content, length, grammar, style, and readability.

Ducks Unlimited NZ contributed funds towards Matuku Link in December to pay for the excavation of a new pond. It is a fitting project for DU's support as some of the pāteke released in the region in 2015 were bred by DU members. A sign acknowledging DU's contribution should be in place in time for an open day on February 13.

Matuku Link connects eco-projects

By John Sumich
Matuku Reserve Trust Board

Te Henga wetland, which covers 160 hectares and is the biggest in Auckland, has the potential to be the ideal wildlife habitat with acres of reeds, raupō, sedges, open water ponds and the Waitākere River coursing through it.

Forest & Bird's project Habitat te Henga was born from a desire to protect the wetland. It started in 2014 with intensive stoat control, using 100 DOC 200 traps, several A24s and some cat traps.

Two trap lines totalling 30 kilometres were regularly checked and reset by a dedicated trapper. Scores of DOC 200s and A24s have been added since.

Effective predator control was required before translocation of pāteke could be considered and the first contingent of 20 pāteke was released in 2015, with a survival rate of 80 per cent, leading to another release of 80 birds in 2016. This has been covered previously in *Flight* magazine.

This success brought us closer to that ideal habitat and aroused interest and support from the local community and a range of other organisations.

Matuku Reserve Trust Board was established when the last block of bush and wetland came up for sale. The trust was able to buy it in November 2016.

The property, at the head of the Te Henga wetland in West Auckland, has raupō and sedge beds, and open water ponds along the meanders of the former course of the river. There are remnant pukatea and kahikatea at the foot of mixed kauri-podocarp-broadleaf forest from which small streams and seeps enter the flats.

With several other conservation projects including the Ark in the Park, Habitat te Henga, and Forest & Bird's Matuku Reserve alongside it, the 37-hectare property has been named Matuku Link. Here, a nursery has been established providing most of the plants that are converting the kikuyu-covered flood plain into a range of wetland habitats.

An old barn has been transformed and provides not only a volunteer base but already does duty as a site for wetland education to the many school, service, business, and community groups that help with planting and bird releases. An aim is to have an on-site educator to work with schools.

The barn at Matuku Link, before and after its restoration.

Dozens of local residents have become involved as part of a buffer zone, collecting their traps or bait from the barn and local interest is really heightened when, as has happened in the past two years, pāteke have bred in their ponds or streams.

Also exciting for our neighbouring conservation group to the north was their discovery last year of a pāteke pair that had dispersed several kilometres into the forest-clad stream that disgorges into the te Henga wetland.

New ponds have been constructed at Matuku Link, with one of them sporting a family of seven pāteke ducklings. A more established pair on an existing pond are so placid and accommodating that almost all visitors get to see them plus or minus their ducklings.

A further new pond was part of a survey for a PhD study on ponds and sampling from its inception over the year showed that it only took five to six months until the Macroinvertebrate Community Index (MCI) matched that of established ponds. The MCI measures water quality.

Measuring outcomes for wildlife with predator control in place has involved biennial audio recordings for matuku and pūweto. Pūweto are also surveyed annually. Goodnature A24 traps were deployed 18 months ago between an existing DOC 200 array to see if a benefit to wildlife could be shown using pūweto as an indicator species.

The DOC 200 traps have been in place for six years and with the recording of fortnightly trap catch data and sightings or detections of matuku [bittern], pūweto [crake] or pāteke, we have a basis to see if change is detectable.

Continued next page

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Rodent monitoring is undertaken three times a year by Auckland Zoo staff as part of its Conservation Fund outreach.

Native freshwater fish present include both long finned and short finned tuna, and one stream surveyed also had Cran's bully, common bully, banded kōkopu and an unidentified galaxiid. These surveys have been done by Whitebait Connection which has also tested water quality parameters. Testing showed high health of the river and streams.

A second forest-covered stream surveyed showed only eels and kōura but the presence of a large overhanging culvert is the likely cause of the difference. With Whitebait Connection's help, a fish ladder has been constructed and followed by repeat surveying.

At other sites, galaxiids have wasted no time in colonising upstream once impediments are removed and we also trapped a banded kōkopu upstream of the culvert within a fortnight.

As well as continuing to use G-minnow traps, we will be taking water samples to test for eDNA (environmental DNA). Multi-species testing of DNA in the water will show what fish we have but it is also possible our streams have Hochstetter's frog and Latia, the native limpet [the world's only mollusc with bioluminescence].

The rest of the wetland is privately owned, but access to see wetland habitats is now possible at Matuku Link. River flats make for easy walking but accessibility for wheelchairs and buggies is being enhanced with good surfaces and our first boardwalk has its official opening at our World Wetlands Day event in February 2021.

Building this boardwalk and other infrastructure was made possible by the post-Covid Jobs for Nature scheme. Our World Wetlands Day event is one of two open days we usually hold each year but now the barn is finally renovated, we expect to open more frequently.

The annual kayak trip down the river offers visitors an intimate view of a large healthy wetland as well as being a great fundraising event. This year the event will be on Saturday, April 27.

Our newest pond, made possible by Ducks Unlimited NZ, is slowly filling and once the plantings are established, we look forward to seeing pāteke and other wetland birds using it.

For more information, visit www.matukulink.org.nz and www.facebook.com/matukulink.

The VIP Kayaking Day held in October last year will be held again this year on April 27 to raise funds for Matuku Link. The navigable part of Waitākere River, which flows through Matuku Link and into Te Henga wetland, is accessible only from private land and on this one day, access is allowed. Limited tickets will be available for $60 each, with all gear (kayaks, paddles, life vests etc) and training provided.

The seven pāteke ducklings in one of the newer ponds. Photos Stefan Marks

ROOM WITH A VIEW: Bill Taylor, a retired technology teacher from Makoura College, Masterton, with help from apprentice hammer hand Ross Cottle and Tui the dog, has built a viewing hide for Wairio wetland. The hide will be moved on to its final site in March. Ross says, of his ordeal, "It nearly killed me. I was a wreck at the end of the week." A donation from Wairarapa residents Patrick and Janet Velvin in 2019 has contributed to its costs.

Gone fishin' and trapping

The number of whio in the Tongariro catchment is growing, thanks to a recovery plan run by the Department of Conservation from 2009 to 2019 and groups of volunteers who monitor hundreds of traps in the region.

Two Taupō Fishing Club members and dedicated trappers Chris Pritt – the sister of DU Patron Di Pritt – and Lesley Hosking are been doing their bit on the upper reaches of the Hinemaiaia River.

Lesley says, "We have trapped mostly rats and other predators on the upper Hinemaiaia River for more than two years, starting in August 2018 with only eight trap stations. We now check 42 traps every week – these are 36 box traps with DOC 200 trap mechanisms and 8 Goodnature A12 or A24 gas operated traps.

"We took over this part of the river to assist and free up David Cade (aka Didymo Dave) who started the trapping with the aim of getting the native birdlife to flourish again. He now traps further upstream on a regular basis while we patrol the well-worn fishing tracks and three car parks."

Didymo Dave has been trapping on the Hinemaiaia for 10 years and in 2019 caught his 1000th rat.

"To date we have trapped 328 predators which include hundreds of rats and mice, four weasels, two stoats, and one possum, which was in the DOC 200 trap," Lesley says.

Pic's Peanut Butter is their bait of choice and they use about 5kg every six weeks. The peanut butter is waste from the Pic's factory which sells it at a reduced price on the Predator Free website. It is not edible as it has a greenish additive.

"By trapping so rigorously, we now have the reward of seeing North Island robin, tomtits, kereru, fantails, tui, bellbirds, whiteheads, and two whio have moved in near Car Park 3; we hope they will mate and there will be more whio. The pair seem overly friendly and we think perhaps they have originated from the Tūrangi whio raising enclosure," Lesley says.

Lesley and Chris are unsure if the whio nested this season but say they have taken up residence on the far side of the river where there are no fishing tracks.

The Taupō Fishing Club originally became involved in vermin trapping because its members were sick of rats chewing newly caught trout laid out on the riverbank while they continued fishing.

The two women fish two or three days a week on Flaxy Lakes, the Tongariro River and river delta, Waimarino River mouth, and in summer, they boat fish on Lake Taupō.

In January, their volunteer work was nationally recognised by the New Zealand Sports Fishing Council which awarded Lesley and Chris its 2020 Volunteers of the Year award.

As well as their trapping work, the pair worked together to save the Taupō Fishing Club when it was facing physical, financial and administrative collapse.

Club president Shirley Fraser says, “Our clubrooms were in desperate need of maintenance after having been neglected for years. Extensive rat damage had resulted in major water damage."

The building was collapsing and needed repainting, the roof needed repairing and guttering, wiring, and plumbing needed replacing.

“Not only did they do much of the prep work, painting, cleaning and so on, they organised quotes, oversaw the tradesmen and brought the project in under budget. Now the rooms are a pleasure to call ours.”

Lesley and Chris also took on the job of implementing a new administration system and overhauling the club finances and reporting systems.

From top: Chris Pritt, left, and Lesley Hosking checking traps on the Hinemaiaia River. The two whio near Car Park 3. Lesley on trapping duty.
Below: David Cade (aka Didymo Dave) with some of his traps.

Takitakitoa Wetland, a project funded by the Game Bird Habitat Trust. Photos Steve Dixon
Left: Neil Candy, DU representative on the trust.

Takitakitoa impresses trustees

"The best bang for your buck" is how New Zealand Game Bird Habitat Trust Chair Andy Tannock described Takitakitoa Wetland in Otago on September 19.

Trustees visited the wetland near the Taieri River during the annual meeting of the trust which was held in Dunedin.

It was the first meeting of the new board appointed by the Minister of Conservation in July. It consists of Andy Tannock, DU Board member Neil Candy, former DU president John Cheyne, Jan Riddell, Mark Sutton and Chantal Whitby.

The trust met to review 14 applications made to the trust for wetland projects across the country for 2020 – they subsequently approved 11 of the applications.

The award-winning Takitakitoa project has previously received funding from the trust.

Takitakitoa has been one of the largest wetland enhancement projects undertaken without extra funding help from non-Fish & Game sources. Otago Fish & Game was gifted the lower portion of the wetland in 1994, around 40 hectares, and later obtained the upper portion of the 70ha wetland, through a land swap deal.

The project was launched with a $50,000 grant from the Game Bird Habitat Trust which was largely spent on constructing a 350-metre bund so the valley floor, which was drained in the 1960s, could be reflooded. This took about two years to complete. Otago Fish & Game Council also put funds into the project.

"It was basically taking 32 hectares of drained, failed farmland and turning it back into wetland," says Otago Fish & Game chief executive Ian Hadland.

"Takitakitoa is a shining example of hunter funding being used for greater conservation benefit. This is an ecological restoration project which has benefits for not just duck hunters, but anyone interested in enhancing or conserving natural habitat for the future."

As soon as water refilled the wetland, all sorts of wildlife turned up, species that had not been previously observed there while it was in its degraded state, he says.

"There's clearly conservation benefits there that even I didn't expect. Some creatures turned up that I didn't even know were in the neighbourhood … like the pied stilts. There are probably 30 to 50 that have moved in to live and raise their chicks."

Wildlife included species well outside of Fish & Game's area of interest such as inanga (whitebait), fernbirds, grey teal and royal spoonbills.

However, Ian points out that mallard ducks and some other game birds have also colonised the area, and allowed for the wetland to be used for novice hunting in particular.

"Getting the next generation of hunters out there to appreciate wetlands and learn their value is important. Those young hunters will undoubtedly fund similar conservation efforts in the future."

Takitakitoa is a project that Fish & Game can hold up as "a great example of a duck hunter-funded conservation project", he says.

For more about the wetland and how to apply for Game Bird Habitat Trust funding, go to: youtube.com/watch?v=JtpRBbp6t1w.

In December the Game Bird Habitat Trust was granted $360,000 over three years through the Government's One Billion Trees project.

The money will be used to establish plantings on projects that the trust supports around New Zealand.

Trust chair Andy Tannock says this is a significant boost for wetland habitat projects and complements the trust's goals.

Andy says the trust will be working on setting up a process to support the planting of natives such as flaxes and woody species at sites that have received the trust's funding support. Many of the projects are on private land.

Andy acknowledges the work of Dr Matt Kavermann, the senior fish and game officer for Wellington Fish and Game Council who worked with the Ministry for Primary Industries to establish the grant.

What the Game Bird Habitat Trust does

The Game Bird Habitat Trust was established by the Wildlife Act 1953 and must comply with the Crown Entities Act 2004 as per the 4th Schedule of the Public Finance Act 1989.

There are a range of functions set out in section 44D of the Wildlife Act, but primarily it is to improve New Zealand's game bird habitat and its secondary function is to improve the habitat of other wildlife.

This is achieved by identifying, evaluating and funding areas of New Zealand worthy of protection, restoration, or creation of suitable habitat. The trust is also charged with recommending the production, fees and species to be depicted on the following year's Game Bird Habitat Stamp to the Fish and Game Council.

The bulk of its funding is provided through the Game Bird Habitat Stamp programme. The Habitat Trust has charitable trust status but is yet to receive any significant donations. Additional funding via corporate partnerships is being explored.

The trust is the sole public body or charitable trust dedicated to providing financial backing for game bird conservation in New Zealand. It has been influential in supporting many projects over the years by recognising that often all that is needed to enable a project to go ahead is a modest grant.

The trustees recognise habitat protection as one of the most significant drivers of positive change for New Zealand's wildlife.

Farmland ponds across New Zealand are important habitat for wildlife in the agricultural landscape. Healthy networks of these ponds, at different stages of their lives, help wildlife species to move around farmland habitats.

As habitat fragmentation continues to increase, they are more important than ever. Without them, many species would struggle to survive. The trust is working to increase the number of ponds on rural land by helping landowners restore existing overgrown ponds and create new ones.

The Para Wetland in Marlborough is one of the most significant projects funded by the trust and has become its "flagship" project over recent years. The trust has been able to assist the Nelson/Marlborough Fish and Game Council develop and implement a detailed management and development plan, promote public interest and mobilise support from other funders.

Other major projects supported by the trust include the Takitakitoa Wetland and the Underwood Wetland near Dargaville. The trustees are looking at other potential significant projects including the JK Donald Block on the north-eastern edge of Lake Wairarapa.

The trust prides itself on punching above its weight in terms of its contributions to habitat protection over the past 25 years. Back in the early years, it was one of a small number of agencies allocating funds to landowners for habitat protection. Local regional government and other funding agencies are now allocating much larger sums. Today, the trust helps fund about 20 projects a year. These modest amounts are often enough to trigger additional investment and ensure protection goes ahead.

Applications for grants from the trust close on 30 June each year and are open to anyone with support from the landowner and a recognised habitat referee.

The trust celebrates the fact that hunting is not only part of a unique tradition that links present day New Zealanders to our ancestors and the rural community, but is also responsible for funding habitat initiatives that might otherwise never be completed.

Without habitat, there is no wildlife. It is that simple, Andy Tannock says.

Putting their stamp on it

Each year on February 2, World Wetlands Day, the New Zealand Game Bird Habitat stamp is issued.

Funds from a $4 levy on the sale of the game bird hunting licences are allocated by the trust to projects that protect and enhance game bird and other wildlife habitats. In the 2019/20 hunting season, the Game Bird Habitat Trust received $97,933 from licences. Since its inception, the trust has provided $1.7 million in grants to more than 200 projects, with about 680 hectares being created, enhanced or reinstated.

The habitat stamp is sold through NZ Post at a value of $10. Such stamps are called Cinderella stamps – in philately, a Cinderella stamp is "virtually anything resembling a postage stamp, but not issued for postal purposes". NZ Post also prepares and sells limited edition art prints derived from the habitat stamp artwork and first day covers. In the 2019-20 year, the trust received $16,616 from NZ Post sales.

Each year the NZ Fish and Game Council (which administers the Habitat Stamp programme) collects the stamp revenue, pays the costs of the artist, NZ Post, etc and transfers the balance to the trust.

NEW ZEALAND GAME BIRD HABITAT TRUST

Predator control in Aorangi Forest

An ambitious predator control programme in and around the Aorangi Forest in the southern Wairarapa is delivering some impressive results.

The Aorangi Restoration Trust is working in partnership with TBfree NZ, which has carried out three aerial applications of 1080 aimed at controlling possums and rats, covering 33,000 hectares. The first 1080 drop was in 2014, with subsequent drops in 2017 and 2020.

The trust, which was established in 2011, is encircling the drop zones with predator control measures to help reduce re-infestation and the flow of predators from the forest into surrounding land, including the coastal penguin zone.

Trap lines cover more than 140 kilometres, with traps placed every 100 to 200 metres up most of the major streams in the forest.

"Much of the land is in private ownership and we are very fortunate to have the support of local landowners. They and many other volunteers, both local and regional, help check and service the traps," the trust says.

Recently trustee Joe Hansen, with Sandra Burles and Nigel Boniface, walked the true left of the Opouawe River from the sea to the Kaiwaka bridge to mark out trap sites at an average of 150 metres between sites.

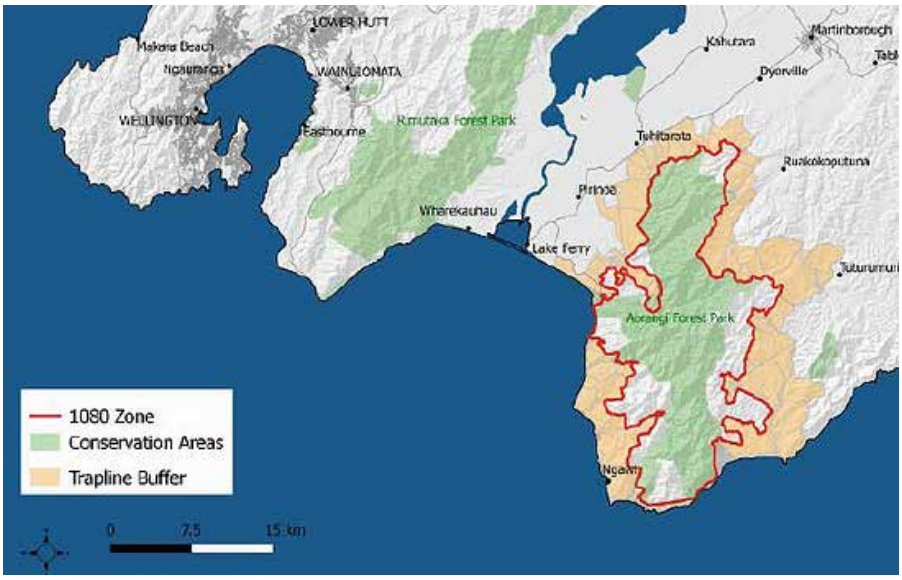
"We marked 37 trap sites on the true left and also saw four dotterels en route," Joe said.

As well as predator control, the trust and its partners carry out monitoring, penguin recovery and education activities.

Victoria University has been tasked with monitoring the impacts of 1080 in the Aorangi Forest and part of this work is assessing birdsong before and after the 1080 drops. Research so far has shown that 1080 has not reduced the numbers of native birds.

It involves monitoring six sites in the Aorangi Forest Park and two in the Rimutaka Range ,which are used as reference sites. Chew cards, tracking tunnels and wax tags are used to monitor pest abundance.

Bird recorders and observations are used to monitor native birds, while



Sandra Burles above the Opouawe River on a recent trip to mark trap sites and a map of the Aorangi Forest Park. Photo Joe Hansen

pitfall traps and weta hotels are used to monitor invertebrates.

Monitoring in 2016 also found an unclassified species of forest gecko.

The main areas of research, including that carried out by summer research students are:

- Changes in abundance and recovery of pest species
- The impacts of 1080 on native bird species.
- Does the forest go silent after a 1080 drop?
- The impacts of 1080 on invertebrates, with special emphasis on weta populations.

Bob Burgess, project manager for the trust, is a retired scientist. He trained in plant ecology and recently worked at Victoria University. He continues to work closely with the university's scientists.

He says they are already getting some interesting results. A frequent claim of aerial 1080 opponents is that "the forest goes silent after a 1080 drop".

"The birdsong actually got louder immediately after the first drop – across all native species," Bob says.

That finding was from 3000 hours of acoustic recordings, made at various times of day and night, by 24 automated sound recording devices which were on location for several months before and after the 1080 drop.

Other Victoria University research projects have looked at the relationships between the forest, seed masting and the effectiveness of 1080 in reducing

A banded dotterel, and right, a pair of black-fronted dotterels. Photos Joe Hansen

rat numbers. "Rat numbers went down immediately," says Bob, "but the rats were back to pre-1080 levels within six months. Possums too recovered, but at a much slower rate. It took about two years for possum numbers to get back to pre-1080 levels."

The scientific research has practical implications for pest control in the park. "Pest control needs to be responsive, triggered by the results of monitoring pest and bird numbers.

And timing of 1080 drops," says Bob, "needs to be in early spring, so there will be low rat levels when the birds are breeding."

Birds will then have a rat-reduced 'window of opportunity' in the critical period when eggs, nestlings and incubating adults are vulnerable to predation.

Ducks Unlimited Director Jim Law is one of the trustees of the Aorangi Restoration Trust, along with Clive Paton (chair), Anne Firmin, Chris Lester, John Bissell, Mark St Clair, Tony Didsbury, and Joe Hansen.

Restored wetlands bring diversity

DU's inaugural scholarship recipient Shannon Bentley is in the final stages of analysing data for her thesis on wetland restoration.

She says she is exploring how restoring wetlands from pasture changes plants, microbes and soil.

"Restored wetlands are home to more diverse native plant communities and soil microbial communities than pastures, preliminary results show.

"This diversity produces a wide variety of benefits for people. For example, restored wetland soils have an increased capacity to store carbon, attenuate floods, and remove excess nutrients.

"However, restoration creates a wide variety of responses, with every restored wetland being different."

More to come from this space, she says.

DOING IT TOUGH: DU Director Will Abel took this photo from outside his house on the shores of Lake Huritini near Levin during lockdown last year.

BOOK REVIEW

The Forest for the Trees, by Wayne Bennett

I found this book easy to follow in a well laid out and simple format that seems suited for those at all levels of native restoration – with mine at the beginners' end.

Although based on a plot in the Waikato, essentially the methodology can be set for any area. Mine is a coastal site, lower-west North Island, so I have used some of the strategies in the book but adapted them to meet local conditions.

The systematic approach to establishing native plant communities is well explained. Setting a plan of attack around site assessments, the weed battle and site management will ensure that the end result will mirror that of a natural area.

The photos taken by the author suit the book well, and is a valuable source of identification. The book is a must-have – from a beginner's perspective – for someone intending to embark on native restorative planting.

I note my thanks as the recipient of the book from DU's lucky draw. – **Review by Ian Jensen**

Our magnificent seven

The view from the Miranda Shorebird Centre's hide on the western coast of the Firth of Thames. Photo Dick Bos.

To celebrate World Wetlands Day on February 2, which marks the signing of the Ramsar Convention in 1971, Department of Conservation staff provide a rundown of Ramsar sites in New Zealand.

More than 10,450 hectares of Wairarapa Moana became a Ramsar site in August – including the Wairio wetland that Ducks Unlimited has been instrumental in restoring.

The designation highlights the importance of the large and varied wetland which is home to more than 50 threatened species such as tarapirohe (black-fronted tern), tuna (longfin eel) and panoko (torrentfish).

Though Wairarapa Moana has been getting most of the attention recently, there are six other Ramsar sites spread across Aotearoa – some of which have been recognised since 1976.

Some are accessible to the public and, with overseas travel curtailed because of Covid-19, it may be a good time to explore these special places.

Firth of Thames, Waikato

The Firth of Thames is one of two internationally significant Ramsar Convention wetlands in DOC's Hauraki District. The tidal estuarine environment is a biodiversity hotspot for a range of bird species: in peak season more than 20,000 birds can be found on the tidal flats and mangroves between Thames and Pukorokoro-Miranda.

Among the species found across the 8200 hectare estuary are godwits, knots, skua, oystercatchers and tern, plus dozens of others.

The Firth is a key location in the East Asia-Australasian flyway, the lengthy and internationally significant pathway for many migratory bird species in the wider Asian-America-Pacific region.

In fact, it's the birds that are particularly vital to giving the Firth its Ramsar status, such is the site's importance to the ongoing protection of the assortment of species.

DOC has a long relationship with the Miranda Shorebird Centre, on the western coast of the Firth of Thames, where visitors can learn about the various species before venturing to the shore to observe the birds for themselves.

DOC's usual advice applies for visitors – enjoy the birds from a distance, do not get too close, take only photographs (or video) and leave only footprints. The Firth is suitable for more experienced and competent kayakers and canoeists, but those venturing into the area should go properly prepared – wear lifejackets, take communication methods, and advise someone of your plans for the day. Conditions in the Firth can change quickly and visitors should check tides.

Whangamarino, Waikato

About a 45-minute drive north of Hamilton lies the internationally recognised wetlands of Whangamarino. The 7000-hectare mosaic of swamps, fens and peat bogs has been a Ramsar site since 1989. Unfortunately, it's difficult for the public to get up close and personal to the raised peat bog as they are both treacherous and delicate – people traipsing through can damage sensitive plants, disrupt cryptic bird species and may introduce noxious weeds into a habitat where they are extremely hard to control.

Those wanting to catch a glimpse of the wetland can visit the Whangamarino Redoubt and Te Teoteo pa or the Meremere redoubt. While in some areas, there is a boundary of introduced willow, just inside this fringe are expansive native wetlands where you can see the endemic wire rush *(Empodisma robustum)* and tamingi *(Epacris pauciflora)*, key species in the raised peat bog of Whangamarino. Hiding beneath these are some very rare orchids such as the critically endangered swamp helmet orchid.

There are three rivers, the Whangamarino, Reao and Maramarua, on which kayaking and boating is permitted. If you move slowly and quietly, you may just glance the critically endangered matuku (Australasian bittern).

Whangamarino is home to a wide range of threatened flora and fauna including the swamp helmet orchid, tētē (grey teal), pūweto (spotless crake), black mudfish, North Island fernbird and weweia (dabchick).

Whangamarino is one of two Ramsar

sites being enhanced through DOC's wetland restoration programme, Arawai Kākāriki.

Awarua-Waituna Wetland, Southland

Just a short drive from Invercargill is the 20,000-hectare coastal lagoon, wetlands and estuary system of Awarua-Waituna, one of the largest remaining wetland systems in Aotearoa. The dynamic lagoon periodically opens to the sea, changing its waters from freshwater to estuarine.

The area is home to a wide variety of rare and threatened birds, fish, lizards, invertebrates and plants, including matuku (Australasian bittern), tūturiwhatu (NZ dotterel), koitareke (marsh crake), giant kōkopu, tuna (longfin eels), and several threatened species of moth.

Several walking options ranging from 10 minutes to two hours are on offer. These start at the lagoon and head through the wetlands on a mixture of boardwalks and gravelled tracks and offer good opportunities for spotting wildlife. Kayaks and small boats can also be used on Waituna Lagoon during high tide or when the outlet is closed.

Awarua-Waituna is one of two Ramsar sites being enhanced through DOC's wetland restoration programme, Arawai Kākāriki.

Farewell Spit, Golden Bay

Found at the north-west corner of the South Island, Farewell Spit is the longest sand spit in Aotearoa at 25 kilometres long.

An area covering over 11,000 hectares was listed as a Ramsar site in 1976. Both estuarine and freshwater wetlands occur and it supports an array of rare habitats in the dune system.

The area is an internationally renowned bird sanctuary with more than 100 species recorded in the area. In spring, it attracts thousands of migratory wading birds from the Northern Hemisphere. During summer, the immense tidal flats can support more than 30,000 shorebirds, a magnificent sight.

Visitors can walk a short distance out from the base of the spit (but should stay on the beaches and marked tracks to avoid possible quicksand), but those wanting to travel the full length to the lighthouse at the tip will need to join a trip from one of the licensed tour operators.

Top: Whangamarino wetlands. Photo Department of Conservation. Above: A satellite image of Farewell Spit. Photo NASA.

Manawatu River Estuary, Manawatu

About five minutes' drive from Foxton is the Manawatu River Estuary, which was designated a Ramsar site in 2005. The 200-hectare estuary is an important feeding ground for international migratory birds and offers diverse birdwatching opportunities, including several threatened species such as, ngutu pare (wrybill), matuku (Australasian bittern) and taranui (Caspian tern).

Much of the wetland is saltmarsh which is difficult to access but there is walking access from off Holben Parade near the picnic shelter to the sand and mud flats There are two bird viewing platforms in the area.

Kopuatai peat dome, Waikato

About 25km inland from the Firth of Thames, on the Hauraki Plains, lies the Kopuatai Peat Dome. The 10,000-hectare site is the largest raised peat bog in New Zealand, and is unique globally.

Kopuatai is a highly sensitive ecological environment, and as a result, DOC asks wetland enthusiasts to respect requests not to visit the sensitive wetland areas.

Access to Kopuatai is not straightforward: the site is surrounded on all sides by privately owned land, and so visits are by arrangement only and require planning.

DOC's Hauraki District staff can work with researchers and scientists to arrange visits to Kopuatai, but this takes time so early contact and detailed planning are required.

■ For more information on NZ's Ramsar wetlands, please visit www.doc.govt.nz/about-us/international-agreements/ramsar-convention-on-wetlands/nz-wetlands-of-international-importance.

What bird bands tells us

By JOHN DYER
Auckland-Waikato Fish & Game wildlife manager

The first group to use modern bird bands in New Zealand was the Southland Acclimatisation Society in 1911. It ordered 100 aluminium bands from the United States marked "S" and 1 to 100.

These were fitted to mallard ducks reared at its Mataura Hatchery that were then taken 60 kilometres away by rail to be released on Mr Foster's lagoons at Thornbury.

Though they had never seen the outside of their rearing pens, within a few weeks, a pair had found their way back to the hatchery.

Banding not only reveals the uncanny ability of ducks to find their way around the globe, but also provides vital information to waterfowl managers about the health and survivorship of waterfowl populations.

Southland's experiment was soon dwarfed by the NZ Wildlife Service and other acclimatisation societies working together from about 1947 onwards to band thousands of mallard and grey ducks.

The early banders used peas as bait and made traps out of willow hoops covered in wire mesh next to lakes like Waihola near Dunedin and also in the Wairarapa.

Back then, bands were made from aluminium, but more recently are made from stainless steel supplied by a Swedish firm. These come pre-numbered with a DOC return address – the department collectively administers all the non-game bird banding scheme records as well.

At present, anyone reporting a duck band is eligible for some great prizes, so leaving bands in the maimai is a sort of lose-lose for everyone involved, not least the ducks themselves. If you find a game bird band, the 24/7 freephone to report it is 0800 BIRD BAND.

Why not do it on your mobile as soon as you get your band before it gets mixed up with other bands or lost. One unique mallard band from Australia, shot in Gordonton, Waikato, was lost for 20 years until it was found under a carpet.

Auckland-Waikato and Eastern Fish & Game are now the main duck banders, with thousands of birds being banded each year. Some individual catches in the Hauraki Plains have well exceeded 1000 in one hit.

Duck banding volunteers in Wellsford.

Anyone reporting a duck band is eligible for some great prizes, so leaving bands in the maimai is a sort of lose-lose for everyone.

Maize is placed where ducks frequent, and they tell all their mates. Slowly, the ducks are accustomed to having cages nearby until they take them for granted.

Volunteers play a key role in feeding out and also on the day of the catch, helping process birds and some even help Fish & Game staff to band the ducks under close supervision. It's a great family affair as kids are a useful height in the low cages.

Birds are recorded as adult or juvenile, male or female and mallard or grey. Grey hybrids are also noted but beware that mallard males undergo what is known as an eclipse plumage in which they lose their distinctive green head and chestnut breast.

They instead assume a temporary summer plumage much more like the female mallard.

A mallard band.

As this is a progressive moult, they are found in various stages and I suspect a lot of speculation about hybridisation is simply about eclipse drakes that would look exactly the same even if they were the only species present. The same bird in winter might be a classic greenhead.

In the hand, a true grey has just one solid white bar on their lower wing speculum whereas the mallard has two distinct larger bars above and below. Birds that have 1½ tend to be hybrids. However, DNA tests have revealed that almost all greys now have mallard blood in them and vice versa.

It is worth noting, however, that when modern duck banding traps are located next to the few remaining large wetlands – the natural historic habitat of the native grey duck – we still get good numbers of them.

However, the problem is that most of

these freshwater wetlands have long since been drained for agricultural production – 99 per cent in Rodney area, for instance.

The grey duck collapse in the Waikato actually preceded the mallard establishing even rudimentary bridgeheads by at least 10-years and was instead closely tied in with huge-scale wetland drainage projects of thousands of acres.

Without the adaptable mallard today, which is far more at home in much-modified environments, it is doubtful we would still have duck seasons as we know them.

Banding has shown some impressive results. Most mallards are sedentary types that rarely venture 20 kilometres from their banding site, but some turn up in all sorts of places around New Zealand.

A few mallards banded in New Zealand have found their way overseas to such places as New Caledonia and French Tahiti.

If you think about how difficult it would be to navigate a plane to find a small island 2000km away, even the smallest error would mean the ducks' certain demise in the vast Pacific Ocean.

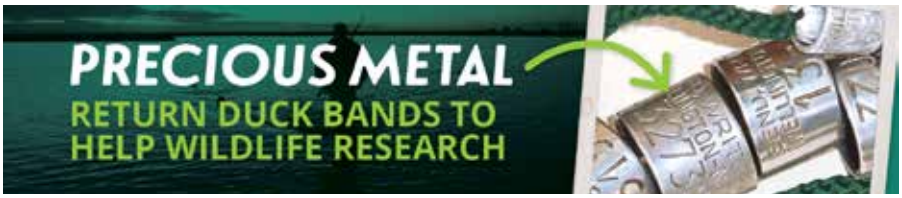
This is an even more incredible accomplishment than the annual migration of mallards in North America and Europe, their natural homes, as there is no historic template for these Pacific travels.

In droughts, it was thought ducks vacate their region for wetter ones, but banding has shown they instead simply move from dry wetlands and ponds to nearby larger rivers and coastal areas, returning when heavy rains again hydrate inland waterways.

The primary purpose of banding is for us to obtain population estimates, survival rates and harvest rates from which to judge the appropriate length of the game season, limit size and so on.

In particular, we notice that juvenile female mallards, which are vulnerable not only in nesting time but also while brood rearing, suffer high hunting mortality rates.

The drakes on the other hand are free to 'swan off' once incubation begins and their increased survivorship reflects this. This is why we recommend 'Go for Green' to hunters, meaning aim to harvest those surplus drakes.



Top, a haul of 1247 birds for banding on the Hauraki Plains; left, John Dyer bands a grey teal with Oskar, on a leash, paying close attention; a mallard banded in New Zealand is picked up in New Caledonia.

Banding game birds has also been used to study black swans, Canada geese, paradise shelduck, released pheasants and partridge as well as wild quail.

Though shoveler ducks are extremely hard to catch, dedicated researchers managed to band enough broods to gain some appreciation for their life history and large-scale movements the length of New Zealand. Likewise, with grey teal, which can be caught in nest boxes.

Because of banding we know that grey teal often come back to nest in the same nest box every year, sometimes rearing two broods in a single year. This makes them very productive.

If any DU members would like to participate in duck banding, Fish & Game is always looking for helpers particularly in the Auckland-Waikato and Eastern regions.

Why not come along and find out where all that duck bling is coming from. Contact the author and register your interest to be notified closer to banding time.

Pukaha farewells leading lady

Pukaha Wildlife Centre's summer was overshadowed by the death of their treasured white kiwi, Manukura, who was farewelled in a special service on January 9.

However, Pukaha's captive breeding ranger Tara Swan says there have been "lots of positive, happy things happening in the bush since our dear Manukura left us", including the hatching of her 'niece or nephew', a chick from Manukura's brother, Mapuna.

"The little white patch you can see on the tip of the chick's head is almost like a little throwback to the white feather gene of Manukura (someone called it 'Manukura's kiss')," she said.

"We have had so many yellow crowned kakariki hatch, with 16 fledglings and five still in the nest across two pairs, and all our kaka have been successful this year, with five kaka fledged across the aviaries," Tara said.

These birds will be released at Cape Sanctuary in Hawke's Bay later on in the year.

Manukura, Pukaha's main attraction for almost 10 years and Mapuna's offspring with 'Manukura's kiss'. Photos Tara Swan

Tracking wetland changes through eDNA

A study has shown that environmental DNA, known as eDNA, may be valuable in measuring biological changes in wetlands. The eDNA is extracted from soils, air, water, and other substrates.

Researchers from Manaaki Whenua – Landcare Research sequenced microbial DNA from soil cores taken down to 4 metres below the surface in seven New Zealand wetlands in one of the few studies globally to have studied wetland microbes at such depths.

"The results showed distinct changes in microbial communities as we went deeper," says study co-author Dr Olivia Burge.

Biodiversity monitoring in wetlands tends to focus on large organisms such as birds and plants, which can be relatively slow to respond to environmental change.

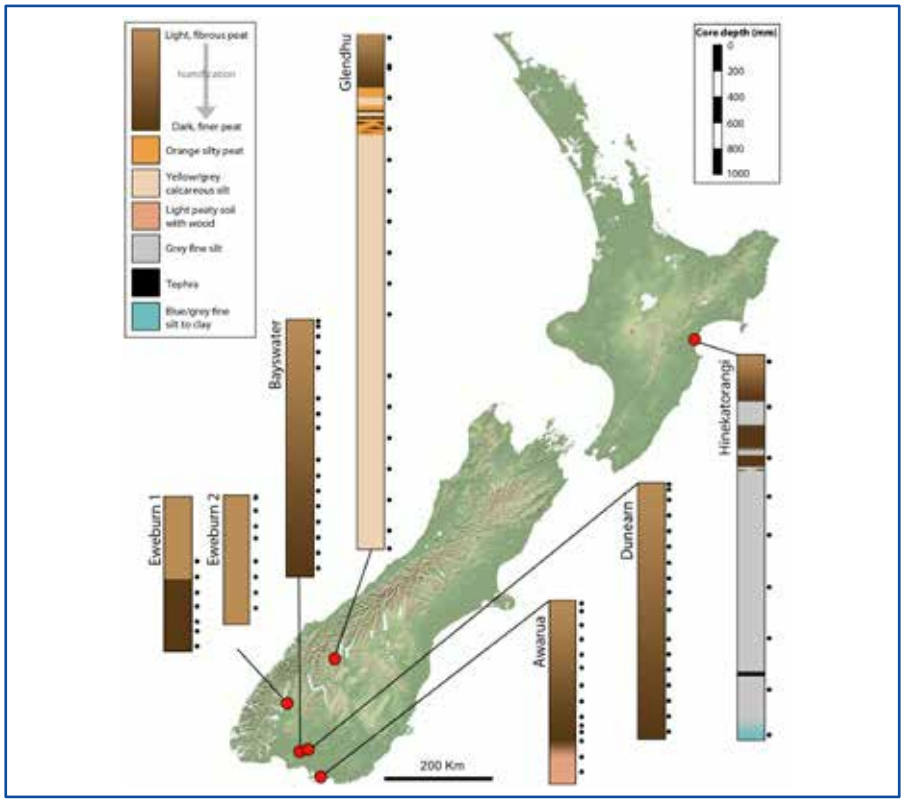
Lead author Jamie Wood says the strength of eDNA is that it allows researchers to study microbial groups (bacteria and archaea), which may respond faster to environmental change.

As a wetland is drained for agriculture, increased oxidation of the peat leads to more carbon dioxide emission. This is a process driven by microbes, and the researchers saw an increase in the types of microbes responsible in the upper layers of the more modified wetlands.

"An unexpected finding was that the effects of drainage also appeared at greater depths, below the water table, where the relative proportion of microbes responsible for carbon fixation and methane generation decreased," he says.

As part of the study, the researchers compared three similar wetlands with different degrees of human modification. When a wetland is drained for agriculture, increased oxidation of the peat leads to more carbon dioxide emission.

"Ultimately eDNA may provide a useful tool for monitoring real-time wetland condition and identifying when critical thresholds are being approached," says study co-author Beverley Clarkson.



The location and stratigraphic details of wetland soil cores used in the study.

wetland care NEWZEALAND

Wetland Care Scholarship

DUCKS UNLIMITED

Interested in studying wetland birds or wetland restoration?
A Wetland Care Scholarship could be for you!

BACKGROUND/PURPOSE

Wetland Care Research Scholarships are Ducks Unlimited-sponsored scholarships applicable to any student currently enrolled or affiliated with a New Zealand university.

Funds are aimed at encouraging and supporting students who wish to push the boundaries of what is known about wetland restoration and conservation.

Up to $20, 000 is available annually to cover up to four separate scholarships of $5000 each.

Funds can be used to support student living costs or cover the costs of equipment purchase, logistics and consumables.

CRITERIA

Applications will be accepted from students/researchers affiliated with universities interested in making a difference through wetland conservation.

Funding is aimed at student projects designed to facilitate better management of New Zealand wetlands or their environment. The student project must be based in New Zealand or be of direct benefit to New Zealand based on current wetland conservation issues.

Preference will be given to applications that demonstrate some of the following criteria:

- projects of direct benefit to New Zealand based on current wetland conservation issues
- innovative thinking that pushes the boundaries of what is known about New Zealand wetland conservation
- research on native threatened wetland bird species
- research with clear objectives and measurable outcomes
- research with a strong wetland management and conservation applications.

VALUE

Wetland Care will award up to four scholarships annually in two funding rounds.

Funds will be paid in one lump sum to successful candidates upon completion of the milestones agreed at the time the scholarship is accepted.

INTERESTED? WANT TO KNOW MORE?

Please email swampbird.research@gmail.com with your questions or to request an application pack.

Terms and conditions are also available on the Ducks Unlimited NZ website, www.ducks.org.nz.

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We deliver and advocate for effective wetland restoration, development, research and education; and support the preservation of threatened waterfowl and the ethical and sustainable use of wetlands.