

Autumn 2024

Bulletin

NATIVE BIRDS THRIVING IN OUR PLANTATION FORESTS P10



IN THIS ISSUE

P3

Working in members' interests



P6

New evidence!
Forests help replenish groundwater



P12

Paving a road with shredded wood





Let's science the sh*t out of this

I'm totally ripping off my title from 'The Martian' - but the film makes a point that came up in an agribusiness roundtable that I participated in recently.

When our back is up against the wall, we often do our best thinking. And with the dip in log price and the general global uncertainty, we need to do something creative. Luckily, forestry has no shortage of innovative and scientific thinkers.

In the Bulletin this month we have some examples of where foresters are working outside the box, whether it is the use of slash or applying boron. Innovation can take many forms, and sometimes small changes can lead to big rewards.

Companies, both our members and agribusiness, are also talking about financial innovation a.k.a. fintech, in the form of biodiversity credits or rewards. These sorts of financial instruments are less certain than carbon units, due to the complexity in measuring biodiversity, but

it is an area that could show a lot of promise for foresters.

We are constantly getting cool pictures and videos from our members of the biodiversity in our forests, and finding a way to value that contribution would be a game changer.

Forestry has been an early adopter of financial innovation with the Emissions Trading Scheme, although I know some now feel that its future is uncertain. We are still pushing to get certainty and fairness in the carbon market, because we recognize that recognition for what rural landowners contribute to the public good through environmental goods, supports more innovative and integrated business models of rural land use.

We have challenging landscapes in New Zealand, with some regions having some of the highest rates of erosion in the world.



Elizabeth Heeg, Chief Executive, FOA

Working to get a more enabling environment for forestry

By FOA president Matt Wakelin

It's an honour and privilege to be writing to Forest Owners Association members and the wider forestry community as President of the Forest Owners Association following my appointment at the AGM in March. It's an exciting time to be working with the FOA team and to be leading the Executive Council on behalf of the wider membership.

To best represent our diverse membership, the team, led by CEO Elizabeth Heeg and supported by the Executive Council, will be working hard to hear directly from our members. This includes the recently introduced quarterly online town hall meetings which give the opportunity for all members to connect and share their views.

We are really keen to get people engaged and hear what you would like from your

FOA membership. Elizabeth has already invested many hours touring the regions since her appointment in August 2023, getting direct feedback from FOA members across New Zealand.

There is a lot going on in the forest industry in 2024 and the FOA is here to support you, working in the best interests of the FOA, our communities, and the forests of New Zealand.

There is a lot to do connecting with the new government and ensuring that we get action to back up the promises made for a more enabling environment for forestry. To date the team has been engaged in getting a fair deal on the Emissions Trading Scheme fees through the regulations review committee and judicial review, putting forward our best advice on resource management reform and ensuring

Ministers understand all that forestry has to offer.

The past few months has seen some settling after a time of upheaval, but there is a lot of work to be done to ensure we get the most out of this government.

We have also seen increasing volatility in the supply chain and a downturn in the export markets. We held a joint FOA and Wood Processors and Manufacturers Association board meeting in March to discuss a range of issues, including how we get additional on-shore processing. Working with our wood processors and manufacturers, as well as our innovators in Scion and the wider research sector, is critically important so we are less reliant on volatile export log markets.

Finally, and of utmost importance for our industry this year, is to note the referendum

"WORKING TOGETHER,
I'M CONFIDENT THAT
WE CAN FACE THE
CHALLENGERS AHEAD"

The article in this month's issue on Tairāwhiti talks about the challenges there. We are continuing to support a conversation on integrated land use and hopefully can bring some innovation from the science community to deal with a really wicked problem.

The other way to revitalise our business models is through innovating products – as Matt mentions in his op-ed – we've been discussing with the Wood Processors and Manufacturers Association how to increase on shore processing and manufacturing.

Innovating through the value chain will help us adapt to new challenges. When you are under pressure it can feel like the worst time to innovate. But data from the Global Financial Crisis in 2008 showed that firms that focused on diversification through the crisis were better placed to survive it.

Working together, I'm confident that we can face the challenges ahead.



New FOA president Matt Wakelin

on the Harvested Wood Products Levy towards the end of 2024. It is a vital time for the sector to come together in partnership with our fellow associations, particularly New Zealand Farm Forestry Association.

We need to work together to get the most value possible out of the levy for a sustainable future for New Zealand's forests large and small.

In my new role I am looking forward to connecting more with the other associations and make sure it delivers on its huge potential for New Zealand. Looking forward to catching up with you all in my new capacity soon.

FOREST GROWERS LEVY VOTE 2024



Come to a meeting in your region

A national round of forest grower meetings to discuss the proposal for a renewal of the Forest Levy starts this month. This proposal will be the subject of a levy-payer vote later this year. Come along to your local meeting to hear what's proposed and to have your views heard. See <https://fglt.org.nz/> for more details.

Nelson/Marlborough/North Canterbury

Tue 23 April	Nelson	10.30 am	Putangitangi Greenmeadows, cnr Main Rd and Songer St, Stoke
Tue 23 April	Blenheim	3.30 pm	Emergency Management Rooms, 4 Wither Rd
Wed 24 April	Hanmer	11:00 am	Hanmer Springs Retreat, 35 Hanmer Springs Rd

East Coast

Tue 30 April	Gisborne	11:00 am	Midway Surf Club, 40 Centennial Marine Pde
Tue 30 April	Wairoa	5:00 pm	Wairoa Community Centre, 33 Marine Pde
Wed 1 May	Napier	10.00 am	Quality Inn, 311 Marine Pde
Thur 2 May	Masterton	10.30 am	Masterton Club, Boddington Room, 98 Chapel St
Thur 2 May	Wellington	5.30 pm	Wellington Club, 88 The Terrace

Southern

Tue 7 May	Dunedin	5.30 pm	Edgar Center, 116 Portsmouth Dr
Wed 8 May	Balclutha	10.30 am	Rosebank, 265 Clyde St
Wed 8 May	Invercargill	3.30 pm	Ascot Park, cnr Tay St & Racecourse Rd

BoP/Waikato

Tue 14 May	Te Awamutu	10.00 am	Te Awamutu Club, 542 Alexandra St
Tue 14 May	Taupo	5.30 pm	Dixie Browns, 38 Roberts St
Wed 15 May	Whakatane	10.30 am	Whakatane Sportfishing Club, Muriwai Dr
Wed 15 May	Rotorua	5.30 pm	Regnans Room, Scion, Titokorangi Drive (formerly Longmile Rd), Whakarewarewa

Auckland/Northland

Tue 21 May	Auckland	5.30 pm	Arotahi, L17, 15 Customs St West
Wed 22 May	Whangarei	10.30 am	Distinction Hotel, 9 Riverside Dr
Wed 22 May	Kaitiaia	5.30 pm	Te Ahu, cnr SH 1 and Matthews Ave

Canterbury

Tue 28 May	Ashburton	10.30 am	Hotel Ashburton, Racecourse Rd
Tue 28 May	Christchurch	5.30 pm	F3 lecture room, School of Forestry, Forestry Rd, University of Canterbury, Ilam





Emotion-driven policies threaten East Coast futures

Gisborne District Council’s proposed rules for forest management are doomed to failure, because they fail to address the cause of so much flood devastation – that Tairāwhiti-East Coast is one of the most erosion-prone places in the world.

Eastland Wood Council chair Warren Rance says the Council’s planners are focusing on rules for forest harvest, when only a small proportion – between 2 and 8 percent – of the forest debris that came down the rivers in Cyclone Gabrielle, came from harvesting operations.

Most of it came from whole trees that had been swept away in landslides.

“Very few of the Council’s 129 draft standard consent conditions relate to the unique challenges of land-use in a region where whole hillsides collapse into rivers. Instead, there is a significant focus on harvesting operations, the source of only a very small part of what is called the “slash” problem.”



Eastland Wood Council chair Warren Rance

“What we need to do is work together – Government, Council, iwi, foresters and farmers – on how we continue to reduce

the rate of erosion, how we deal with the downstream consequences and how we implement lessons learned from previous forest rotations.”

The community has been living with, and the government has been dealing with, the consequences of land use decisions made over the years. The big ones have been the original clearing of the land for pastoral farming, followed by the establishment of exotic forests to halt the resulting erosion and flooding. Rance says it’s now time for careful, considered evaluation of the facts. Science should be employed to develop the most sustainable way forward.

Public horror at the scale of some of landslides on farmland was the driver for the planting of pine forests from the



A chopper view of the devastation when plantations – often planted to stop erosion – are swept away when whole hillsides collapse



LAND STABILITY

1940s. Fast growing pines were a quick and effective fix. But little thought was given to the fate of these forests once they reached maturity or whether or how they might one day be harvested.

Cutting those trees began in earnest some 30 years ago and Rance acknowledges that harvest practices were not always up to today's standards. Many improvements have been implemented as lessons have been learned.

This came to public notice during the 2018 Queens Birthday storm, when huge quantities of debris came down the Uawa River – upwards of 25 percent of it from harvesting operations – covering farmland, blocking bridges and littering beaches with logs and slash. Public criticism and prosecutions followed, stinging the industry into action.

Forestry companies have since made big improvements in the way they operate. This was reflected in the outcome of the 2023 Cyclone Gabrielle floods when a much lower proportion (2-8%) of the debris on beaches has been analysed as coming from harvesting operations.

Nevertheless, public anger about Gabrielle flood damage led to a 12,000-signature petition calling for action. Its focus was largely on the forest industry and the Gisborne District Council for its failures as a forest regulator.

As a result, the Council is on a fast track for developing forest management rules



Whole tree stems dragged out of the Waimata River during the post-Gabrielle clean up

without input from the forest industry or iwi. The main issue remains unresolved - the incredible instability of the land.

The Council's failure to consult has come in for public criticism. Iwi have bemoaned the Council's withdrawal from a local iwi leaders forum. Foresters have told government officials they continue to try to develop meaningful collaboration with the Council's planning and technical staff.

“The Council is on a fast track for developing forest management rules with little input from the forest industry or iwi. The main issue remains unresolved - the incredible instability of the land.”

Even the government's own resource management advisor for Tairāwhiti, Michael Campbell, says he has “significant concerns about the evidence base, analysis, engagement and recent hasty pace of this work, which creates risk of ineffective regulations ... Iwi and the forestry sector have raised concerns about a lack of engagement to date.”

The Eastland Wood Council says the Gisborne District Council needs to consult with iwi, the forest industry and other land users, and focus on the real issue – the best ways to manage some of the most erosion-prone land in the world. All of us need certainty.

“Plantation forests are a part of the problem ... they are the source of many of the logs in the rivers. The forest industry therefore needs to be a big part of the solution,” says Rance.

The good news, he says, is that the volumes of sediment from farms and forests, as well as logs from growing trees, can be reduced. “But there will always be some logs coming from a forested landscape, just as there will be more sediment and erosion coming from an unforested landscape. A balance needs to be found between the two. That requires pragmatism, dialogue, a level of compromise and good integrated planning by stakeholders”.

Many of the forests in Tairāwhiti are in their first harvest cycle. When they are harvested, some of the steeper slopes are already being retired from forestry at the initiative of the forest owners, but largescale retirement and planting in



Before Gabrielle, this hillside was covered in mid-rotation radiata forest. Landslides have removed the topsoil, trees and all, down to bedrock in many places



LAND STABILITY

natives has major cost implications. Not the least of these are the penalties under the Emissions Trading Scheme for not replanting.

“Plantation forests are a part of the problem ... they are the source of many of the logs in the rivers. The forest industry therefore needs to be a big part of the solution”

Where these costs fall needs discussion with government and the wider community.

More good news is that second and subsequent rotations of forests will be replanted with a greater range of age classes so they are more like natural forests. Better science on the susceptibility of some land to erosion can inform where forest infrastructure is located, how the plantations are managed and guide where exotic forests might be better transitioned to native.

Riparian margins, in some cases, can be transitioned to native, as some foresters are already doing. Engineered and planted barriers (slash catchers) can be created to catch debris at its source and at places lower in the catchments where the water velocity reduces. Other mitigation measures should be developed between stakeholders.

Many people on the East Coast are unhappy with forestry, but it is one of the main drivers of the local economy. Well-managed forests also do a good job of holding hillsides together.

“It is really unfortunate, that trees are being seen as a failure, when forestry globally is accepted to be the best response to soil erosion and land instability. We urge the Gisborne District Council and government to value and appreciate well managed forests as part of the solution for the region’s challenges – environmental, economic and social.

“I can’t foresee a future in Tairāwhiti without plantation forestry. Let’s work together to make it work for everyone.”



HYDROLOGY

Study shows trees are not stealing groundwater runoff

A five-year study has shown that up to 57 per cent of the rain falling on radiata pine forests is channelled into the groundwater, rather than surface runoff. When published, the study should prove to be a valuable tool to resist councils who want to restrict forest planting.

This holds true in environments as dry as Canterbury’s Ashley Forest (rainfall 800 mm a year) or as wet as the West Coast of the South Island (3000 mm a year). It is also in line with findings from international studies, as well as some earlier work in native forests.

Scion’s Dean Meason, leader of what is known as the Forest Flows programme, says rainwater infiltrates forest soils very quickly, with little surface runoff, even during extreme rainfall events. This upends the widely held belief that that a lot of the water from rainfall is used by the trees; a little infiltrates forest soils; and the rest is slowly released from the forest floor litter as surface run-off.

“Forests are very good, relative to grasslands, at reducing peak run-off during storms. As a result of our research, we now know that’s primarily because of the forest’s role in aiding the infiltration of rainfall into the groundwater,” he says.

Once the rain enters the groundwater, it gradually moves downstream where it sustains the ecosystem and becomes available for human use.

Meason says regional councils regulate forest plantings in low yield catchments based on the belief that forests use more rainfall than adjacent catchments in pasture or tussock. This was based on the findings of paired-catchment studies carried out from the 1960s-1980s, that showed that total annual run-off was reduced under a forest cover.

“Clearly, storm run-off is reduced by forestry because of its ability to store the majority of the rainfall and release it to ground and surface water at later date. Now we can track how much water is used by the tree, how much enters the groundwater and how much is run-off,” he says.

“Based on our findings we will be able to



Dean Meason

provide councils with information and tools for calculating the precise impact that the planting of forest will have on downstream waterway and ground water flows.”

The five-year research study has been funded by MBIE at a cost of \$13.7 million. Wireless IOT sensor networks were installed in five forested catchments to directly measure tree water use, catchment water storage and release. These sites are remote, spread from Te Oneroa-a-Tōhe in the far north of Northland, to Māwhera on the South Island’s West Coast.

The network of 1717 sensors in those catchments captures data every five minutes. This huge amount of data has enabled scientists to gain novel insights into forest hydrology.

The study period included the major cyclonic storms of 2023. Detailed data about forests water movements in a major storms hadn’t been collected before, or on the scale of the study – one of the largest of its kind globally.

Data from Mahurangi Forest showed that despite the huge volume of water (229 mm) that fell during the Auckland Anniversary Weekend storm and Cyclone Gabrielle, the soil near the surface did not saturate.



Members of the Scion Flowlab team installing a sensor at a Forest Flows monitoring site. Inset: The Flowlab wireless data logger



Scion's Priscilla Corbett-Lad checking the Flowlab wireless data logger

New research is showing how effective forests are at mitigating the effects of extreme rainfall during severe weather events. Extreme weather events are becoming more commonplace. Knowing where the water is, where it is going, and who gets to use it are the three main questions Forest Flows researchers have aimed to answer.

The MBIE Endeavour-funded Forest Flows research programme is investigating how we can create and maintain water-resilient landscapes to provide beneficial outcomes to all New Zealanders.

By the end of 2024, Scion will have assessed the environmental, socioeconomic and cultural impacts of upstream planted forests on downstream water users. This will enable:

1. Regional councils to develop land-use regulations that promote the positive impacts and mitigate the negative impacts of planted forests on downstream water availability

2. Government to design efficient policy incentives to encourage land owners to adopt forestry regimes where water-use is optimised.

Analysis of the data gathered in the study is continuing, but it is already improving our understanding about how forests respond to extreme weather.

In time, this new knowledge will boost our understanding of the site conditions that lead to catastrophic landslides and flooding in forest catchments so authorities and the forestry sector can mitigate any negative downstream effects. It will also reveal how resilient New Zealand's planted forests are likely to be when faced with floods and drought associated with climate change.

Scion is supported in this research by NIWA, University of Auckland, University of Waikato, Starboard, inFact, Candleford and 11 international partners.



A new Levy Order will open the door to forestry's future

Forestry and wood processing is set to be Aotearoa New Zealand's largest primary industry by 2050. But this is at risk unless the industry invests to make sure of this future.

Research into breeding, growing and managing trees is absolutely vital, so forest owners can improve their businesses and keep them profitable. Equally, we need good science to protect the industry's right to operate – to ensure that rules and regulations are based on evidence rather than emotion.

The capacity of the muscle tree of our industry – Radiata pine – has increased gradually over the past 100 years. But we must accelerate and fund more targeted selections for Radiata pine, as well as invest in much more in research into other species, such as redwoods and native timber trees.

The government proposes to legislate for fewer restrictions on the release of genetically modified organisms. We need to be ready to tap the incredible potential this technology has to offer, including the introduction of tree genes that confer drought and disease resistance.

The appetite for biofuels is already huge, but we do not know enough about growing forests for biofuel production or how to efficiently process slash for fuel.

World demand for construction timber materials is increasing, but unless our processing industry is modernised and

strengthened, our foresters will be even more reliant on sending logs to China, a low unit value trade that is vulnerable to commodity market fluctuations.

It is also essential to invest in initiatives that guard our ability of operate, including ways to further reduce negative environmental impacts of our forest operations.

We are constantly beset by restrictive proposals and plans to prevent us either growing and harvesting our trees, or making our operations more expensive. Many of these demands are irrational. But to respond we need good scientific information, make more effort to get the public onside and educate decision-makers to take notice of the evidence we give them.

We can hardly expect politicians to support what we need, if they cannot see that we are actively promoting ourselves to the people who vote them in or out of office.

There is no doubt that forestry is the only environment-positive primary industry there is in Aotearoa New Zealand. But, so far, even the Climate Change Commission, will not acknowledge this.

We need, as well, to adapt to climate change. Our ability to fight more fires, and reduce the chance of them happening, needs a major boost. There is too much at state to assume

FENZ can do all the job for us.

The risk of a new pest or pathogen emerging in our plantation forests is always present. We need to step up our surveillance to reduce the chance of a catastrophe. And we need good science to give us the means to eradicate or control harmful organisms if they turn up.

We've put in a huge effort over the past few years to reduce the number of deaths and injuries in our forests – and the work has paid off. But again, we need to increase our efforts to keep our workforce safe and healthy to the level we want, and the public expects. The public, however, is always expecting better and we must be resourced to meet those expectations.

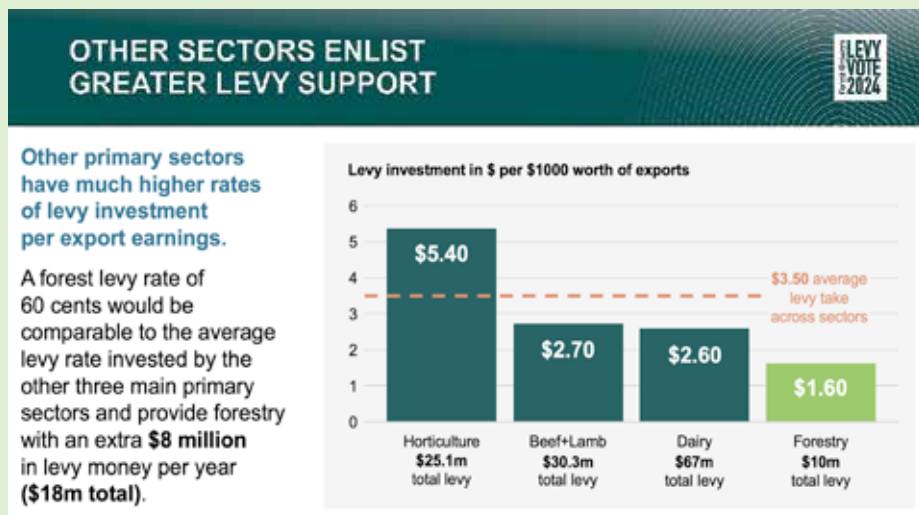
Investing in developing next generation machinery for NZ forest conditions and the supply chain is crucial. This is where government support is most likely, where the biggest and quickest returns are most evident and where huge progress has already been made.

Integrating information technology and robots has the most exciting potential. Automated seedling production, planting and management comes as a package with keeping records of individual trees right through to when the logs go through the mill decades later.

Drones have transformed forest management. Yet their capacity to record all sorts of information from the air, is nowhere near to being fully realised.

Robot tree fellers, sorters, loading and transport can all work together much more efficiently than the current manual methods. Costs are reduced and the data recording much more accurate, reliable and useful.

Voting to invest in these initiatives, through a new Forest Growers Levy, takes place in October. If approved, it will be the third six-year Levy Order for the industry and will take us through to 2031.



Boron - vital for trees and useful as a timber treatment

Mineral treatments of timber, or their use as plant fertilisers, often get a bad rap. In fact, they can be essential for the health of our forests and for the integrity of our homes, schools and workplaces.

One such mineral is boron. Without it, plants would not grow or set seed. Animals would likely be crippled with arthritis, have impaired brains and be unable to reproduce. Untreated pine used in construction would be at risk of mould, decay and insect attack.

In New Zealand, many soils are deficient, or marginally deficient, in boron and a number of other trace elements.

To raise boron levels, especially when the soil is depleted by a previous rotation, young radiata pine are increasingly being topped up with hydroboracite, a slow-release boron fertiliser, made from crushed minerals quarried overseas.

During autumn, foliage samples are collected from young trees for testing. Where a laboratory report says the sample is short of an essential trace element, this can usually be corrected by topdressing the land with a fertiliser that is rich in the missing element. This is common in forestry, horticulture and farming. McCord Forest Service's Joana Wood-McCord says a marginal boron



Pink is for boron – ensuring the integrity of our homes, schools and workplaces

deficiency can become true boron deficiency in second rotation radiata forests, with deficiencies aggravated by drought.

“Boron deficiency often shows up as leader

dieback, resulting in a multi-leader tree which lacks apical dominance in the butt log. It can also make trees more susceptible to fungal attack,” she says.

“The application of boron promotes strong growth in the main leader – the trunk of the tree – and less in the branches. This results in higher timber yields, more clear wood and less pruning.

“Boron application has also been shown to increase the root biomass, increasing the scavenging range of the tree and enabling increased overall nutrient uptake.”



Joanna Wood-McCord and friend

At the other end of the tree's life cycle, following harvest, boron is again called upon – this time to protect timber used for building construction from attack by wood boring insects and fungi.

Boron treatment of timber

Because boron salts are of only low toxicity to mammals, birds, honeybees, freshwater fish and other aquatic life, they're a safe choice for treating the wood we use to build our homes, gymnasiums, schools and other public buildings. To be an effective treatment, boron salts need to penetrate throughout the timber, without overly wetting it. This is



Boron helps ensure apical dominance (left), which means a strong trunk and less branching. A deficit of boron results in a loss of apical dominance (right), a dumpy multi-leader tree with heavy branching





Red Stag's Jason Cordes

a major technical challenge that has been overcome by wood processing companies using patented processes. Kiwi builders and handymen recognise H1.2 boron-treated framing timber by the pink dye used to stain it, or by the H1.2 branding along its length.

H3.1 exterior timber, is normally pre-primed in grey and branded along its reverse face.

Boron is also used to treat the wood in manufactured products such as LVL and CLT, without any identifying dye.

Red Stag Investments Managing Director, Jason Cordes, says there is a widespread misconception that boron-treated timber is a health risk or bad for the environment.

Partly that is because of a consumer preference for supposedly natural products and a perception hang-over from poor timber treatment practices in the past.

“It’s a real misconception. Red Stag boron-treated timber has been used in buildings that have been successful in the Living Building Challenge, arguably the most rigorous global competition for eco-building design.”

Indeed, a study reported in the Journal of Cleaner Production, concluded that the cradle-to-grave life cycle impacts of the boron-treated lumber framing used in a standard dwelling were much less than a galvanized steel framing alternative.

That is; 4x less for fossil fuel use, 1.8 x less for GHGs, 83 x less for water use, 3.5 x less for acidification, 2.5 x less for ecological impact, 2.8 x less for smog formation and 3.3 x less for eutrophication.

Environmental credentials do not come much better than that!

Why do native birds love our plantations?

Twenty years ago, a young scientist working in Kaingaroa marvelled at the number of toutouwai (NI robins) and other native insect-eating birds that were living in the forest. The birds were absent from native forest in many parts of the North Island, but they appeared to be thriving in the middle of the country’s largest radiata pine forest.

Why?

The young scientist, Steve Pawson, is now an Associate Professor in Te Kura Ngāhere School of Forestry at the University of Canterbury and he may soon get an answer to that question.

Pawson and Sarah Wyse, Senior Lecturer in the School of Forestry, are co-leaders of a research project designed to get a handle on what mammalian predators

are living in two major North Island forests, Matahina near Kawerau, and Kaingaroa.

On-the-ground work will be done by local iwi businesses with experience in predator control and wildlife conservation, including Ian Tarei, leader of the Omataroa Kiwi Project and Kaimai Kaponga who have a jobs for nature project in the southern Mamaku that includes parts of Kinleith.



Toutouwai (native robins) and miromiro (tomtits) thrive in many pine forests, even where they may be absent from nearby native forests. A new research programme hopes to uncover why this is the case



The iconic kiwi. Inset: A juvenile karearea (falcon) in Kinleith forest, Aotearoa's fastest flying bird. Both birds make their homes in our forests

Pawson says the canopy species in a plantation forest are obviously different from a native forest, but the broadleaf understory can be highly diverse.

“We know that many native bird species – particularly those that feed on insects, including robins and kiwi – thrive in the plantation environment. Why don't predators target them? There's something else going on. What is it?”

Sally Strang, chair of the FOA environment committee, says the research is designed to better understand differences in predator populations between native and exotic forests. The commonly held view is that exotic forests harbour more exotic pests than native forest, but this may not be the case. This study will provide factual evidence. This is important because plantations make up about 25 percent of New Zealand's total forest cover.

Strang says the research findings may also help foresters refine their predator control operations, to target specific species.

Most of our large plantation forests are certified by the Forest Stewardship Council which requires the owners to protect remnant native vegetation and

manage populations of threatened native species within their forests. Many working forests in NZ support populations of native species such as pekapeka (bats), karearea (falcon) and kiwi. Experience has shown that predator control is a key to allowing these species to thrive.

The plan for stage 1 of the project has been completed, including the location and design of the proposed tracking lines. These will be placed in clear-fell and plantations in several age classes, as well as nearby native forest.

Tracking lines will be deep within the forests, well away from 'edge effects' and areas where any recent predator control work has been carried out. Rodents, possums, mustelids and other mammalian predators will be monitored every three months, using predator tracking tunnels, chew cards and thermal imaging cameras.

This will reveal what species are present, their relative abundance and how these are influenced by the seasons and the type of forest. Actual population numbers won't be monitored. That would be a much more complex and costly exercise.

The project is expected to get underway shortly – once the contracts for the predator



monitoring work have been signed. Funding and in-kind contributions are coming from the forest growers levy, the university, Timberlands and Manulife Investments.

Once field costs have been finalised, a decision will be made whether to incorporate limited kill trap sampling on the tracking lines, to assess the diets and reproductive status of the various species.

Pawson says another School of Forestry research project, comparing insect populations in plantation forests on the east and west coasts of the South Island with nearby native forests, is also underway. Data from this exercise will further inform our understanding of the insect populations and ecology in plantation forests, relative to native, and how these communities develop over the course of a rotation.



Harvest residues used to build forest roads

Shredded wood, taken from unmerchantable logs, slash and other forest harvest waste, has been successfully used to pave a road in a Hawke’s Bay forest.

Damon Wise, Operations Manager for Pan Pac Forest Products, says temporary harvest roads made with shredded wood will cost much less and have a smaller environmental impact than roads made the usual way – using river gravel.

Importantly, the technique makes good use of harvest residues. With less residue left in the cut-over, the risk of it moving downstream in a flood is greatly reduced.



Pan Pac’s Damon Wise

a firm footing for log-moving machinery operating on wet silt.

That success gave Pan Pac confidence to use shredded wood for the pavement of a trial road with a 14% adverse (loaded) grade. The shredded wood was dumped from a truck and spread using a bulldozer.

“Once we compacted it, we found that we could move and shape the shredded wood like aggregate, using a grader. This was a real surprise – it worked really well,” Wise says.

A lot of work has gone into developing the specification for the shredded material. While it is largely based on shredded logs – stems thicker than 15 cm – some shredded



Shredded wood paving of temporary forest roads is expected to save money, be good for the environment and be welcomed by the wider community.

branches and smaller material are needed in the mix to bind the material together.

Unlike wood chips, which are chipped using a spinning disk, shredded wood is produced by grinding the logs using rollers and fixed teeth.

Wise says Pan Pac and its contractors are still refining the specs but, at this stage, the technique looks extremely promising. “When we are confident that we have the best specification, we will share it with the industry.”

He sees shredded wood mainly being used on short stub roads to skids, on haul tracks, landings, carparks and anywhere too wet to hold traditional materials.

Reducing the amount of aggregate used on forest roads is an economic and environmental priority. In many regions getting access to river gravel is becoming problematic, along with the carbon footprint associated with the cartage. Meanwhile, the landed cost of crushed aggregate continues to climb. Shredded wood, made from material that would otherwise be left on the site,

comes at a fraction of the cost.

Pan Pac has a large pulp mill based 20 km north of Napier, but it is uneconomic to transport binwood, offcuts and boiler fuel back to the mill from forests 100 km or more away. This includes the company’s forests located near Wairoa in northern Hawke’s Bay. Shredding on-site and using the product for roading material makes a lot of sense.

Downsides? Wise can’t think of any. Just the upsides. Shredded wood is more permeable than aggregate, it slows water down, spreading it across an area, which ultimately reduces scouring. It works really well with corduroy, “It gets into the nooks and crannies between the stems and binds well — like the two materials were made for each other.”

“The ultimate goal is to remove all the forest residues from the cutover that create negative downstream impacts. Shredded pavement could well be the answer to some of those environmental and economic challenges we face.”



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