



The Missing Link

The Department of Conservation is trying to stem an invasion into the last few possumless places.

South Westland is lucky country. While the rest of New Zealand's forests suffer relentless pressure from possums, some of these beech and broadleaf tracts are still free of the pest.

Which is why the Department of Conservation's West Coast Conservancy is putting nearly 70 per cent of its possum control efforts into the region.

Although possums were released around Greymouth and Hokitika around the turn of last century, the region's many rivers have slowed their spread. But construction of the Paringa-Haast road helped; workers used to remark on the numbers of possums and stoats they saw using the newly completed bridges.

Nowadays, says technical support manager Terry Farrell, areas like the Cascade Valley are the last possumless places. But they won't hold out forever. The hordes are advancing from almost every quarter. "We discovered they were coming up from Southland, across from Otago, they were even crossing the high passes over the Matukituki."

And there were those dropped in by fur hunters in the late 80s when possum prices were still high.

Farrell says all the 1080 in the world won't stop the

possums' advance. "Not in our wildest dreams could we draw a line and stop them, but we'll keep them at low densities."

Farrell says young possums leave the family group every autumn, dispersing into valleys along tracks and roads, across farmland, perhaps up to two kilometres. "Those migrating possums create little cells."

"We think it takes about 25 years or so from possums arriving to a point where the population really takes off. As numbers increase, so does the rate of breeding until you get this irruptive phase."

"At that point things start to go downhill in a forest."

Farrell says the result of doing nothing is the near-total loss of the possums' preferred food species; mistletoe, fuchsia, wineberry, pate.

Then, as those food sources collapse, so do the possum numbers. Usually the following winter.

"You get a crash. But over the next 10 years or so, they'll gradually rise – not as much as before because all those palatable species have already gone – then another crash."



And so it goes on. Farrell says what he and his team are trying to do is artificially engineer that crash.

At least it gives forest researchers like Fiona Bockett a unique opportunity – a clean slate – to study the impacts of possums almost from day one, as they arrive. Work out what's required. There are many valuable comparisons to be made with the ravaged world outside.

She's been monitoring the survival of one of the possums' favourite food sources – fuchsia – in an effort to determine just how much protection they're going to need.

Fuchsia is the fuse in the system, she says. It's top of the menu, so if controls can protect that, they'll also protect other, less preferred species in the forest.

So far, she says, a trap catch rate of 15 per cent seems to be the right density to signal more control.

But mistletoe is another story. Bockett says trap catches as low as two per cent might be necessary to save this vital forest component. "Our current intensity of treatment doesn't appear to be adequate to protect mistletoe. We are maintaining them, but there's still an ongoing decline, which isn't as rapid as outside."

And that bothers botanist Phil Knightbridge, because, he says, mistletoe is a vital link in the forest food chain.

Knightbridge says mistletoe provides food for nectar feeding birds like tui and bellbird. It's such a vital energy source that kaka will spend as much as 60 per cent of its feeding time in mistletoe when it's flowering.

"While its biggest role is as a nectar source, it's also valuable when it's fruiting."

And as the birds forage, they act as pollinators, fertilising the mistletoe as they go, and spreading its seed about.

He says the relationship is a great example of what ecologists call mutualism, a kind of co-dependency where each partner needs the other for survival.

But when possums get to the mistletoe first, they simply keep eating it until it's gone. "The circle is broken," says Knightbridge.

It's thought that broadleaf forest, which typically has a rich diversity of plants, can support nearly three times the density of possums as beech forest.

"So it may just be that possum numbers never get so high in beech as to wipe out the mistletoe," says Knightbridge, "whereas in South Westland you're talking about a much more mixed forest where you've got fewer mistletoe spread over a wider area."

"And once those are gone that's it".

Research has shown that the birds go into decline soon after, particularly species like kaka, bellbird and tui that rely on mistletoe as a seasonal food source.

"Mistletoe don't flower well every year," says Knightbridge, "so they're not something the birds can rely on. But when they have a good flowering year, the birds are more likely to have a good breeding year."

The problem isn't confined to the West Coast. Five species of mistletoe in the *Loranthaceae* family remain in New Zealand – one is already extinct. Knightbridge says they've taken an awful battering from possums, to the point

where field staff are placing slippery steel bands around the last few surviving individuals at some sites.

"In the North Island, you have very small remnant populations left in a few areas. It's now more about restoration, than protection".

DOC has a Recovery Plan for the remaining species which addresses the reality of trying to protect mistletoe in key sites. "The South Island is definitely better off than the North," says Knightbridge, "Places like Waitutu in Southland and the Cascade in South Westland are now a stronghold."

In the end it comes down to money and urgency. "It's about how we can keep possums down to low enough numbers at key sites and how many of those sites we can afford to treat," he says.



DOC
South Island Robin



DOC
South Island Kaka