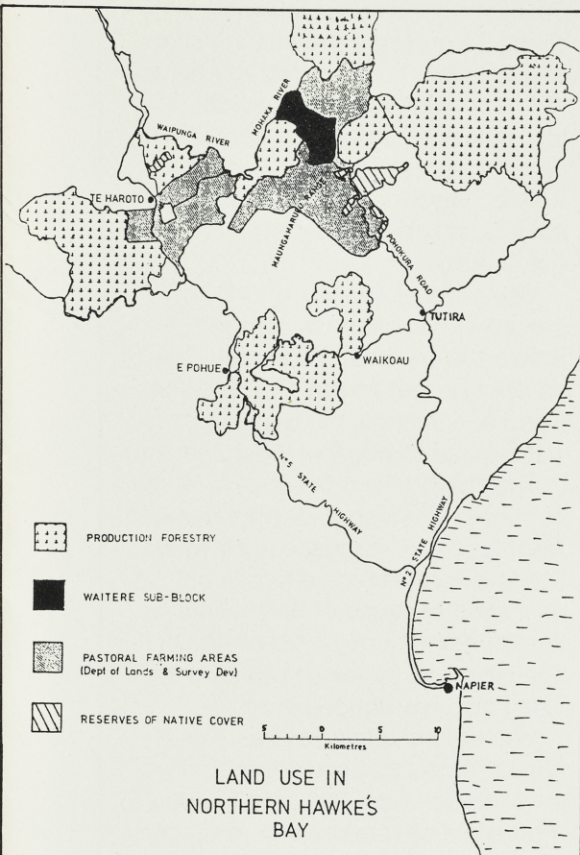


managed agricultural and horticultural land of Hawke's Bay. Yet the amount of scrub has been reduced by over half since the region was mapped 13 years ago.

Work by another member of the research team, Bruce MacMillan, involved a year of monthly five-minute bird counts at 21 sites across Hawke's Bay. He has shown that scrub is a valuable habitat for native birds, sometimes with a richer birdlife than native forest. Some birds largely live in the scrub, such as bellbirds which proved to be much more common in scrub than bush.



Map of Waitere.

Of particular value are the uncleared river valleys, which may serve as corridors by which birds migrate between the back country and the coastal plain. The research has also shown that, as well as being a possibly unique regional kiwi habitat, Waitere scrub is valuable for a large number of other birds, especially North Island robins and fernbirds.

Kiwis and land clearance

The study focussed on the kiwi because it is probably the most important species in Hawke's Bay to be affected by land clearance. The region lies at the southern end of the kiwis' range, and every other bird in Hawke's Bay that might be affected by land clearance is relatively well represented elsewhere.

Lands and Survey's plan to start clearing the Waitere block from 1983 gave a unique situation for determining the effect of land clearance on kiwis.

While conservationists have argued that clearance destroys kiwi populations, developers have maintained that displaced birds simply move into a habitat nearby.

That stance is based on three untested assumptions: that there is in fact habitat close enough for the kiwis to disperse into; that they move out of cut scrub in the six to eighteen month period when it is down drying before being fired; and that kiwis' territorial behaviour does not limit their density — that they can continue to pour into habitats already occupied by other kiwis.

The study was begun in August 1982 to test those three assumptions by radio-tagging birds and following them during the period of land clearance. The plan included uplifting half the kiwis in the central valley, taking them to a reserve elsewhere in Hawke's Bay, and comparing their survival rate with that of the birds left behind. To date no one has done a follow-up study to find out whether rescuing kiwis from an area about to be cleared is in fact a successful stratagem.

The trials of tracking kiwis

In practice the study did not go according to plan. First, the difficulty of catching the required number of birds was greatly underestimated. Traditionally, kiwis are caught by playing back a taped call, so that the bird whose territory the fieldworker is in comes up to investigate the intruder. Thus fieldworkers had to go out to different parts of the block each night and plot the positions of kiwis' responses.

On some nights the birds do not call, and it requires up to 20 visits to an area before one can be sure not to have missed a resident kiwi. Birds which are too young to start calling (under 14–20 months) are also missed. In addition, for reasons that are not clear, the Waitere birds do not come in to a call, so a trained dog had to be used to track the birds in order to make the initial capture. In 18 months, only six birds were caught and radio-tagged.

The second problem was radio failure. Eighteen radios were put on the six birds in eighteen months. A maximum of three birds had radios at any one time, and for periods there were no transmitters working. Although an enormous amount of time was spent recapturing birds after transmitters failed, radio-tracking still remains the only possible research technique. Little is yet known about the habits of brown kiwis simply because the technology required to study them has only recently become available. The two requirements are radios to keep in touch with the kiwis, and night viewing equipment to observe their behaviour.



Dense scrub covers the central valley of the Waitere block, looking towards the Mohaka River. Lands and Survey's management plan proposals put this area under a three-year moratorium clearance but threaten this valley with a major road.

Photo: G. Harrison

Finding out how many birds live at Waitere has been a long and laborious process, requiring bushcraft and physical fitness as well as scientific knowledge. The work has involved two days and nights per week in the field, trying to locate each radio-tagged kiwi during the day to describe their shelters, and at night following them through thick scrub with a direction-finding aerial.

A total of 24 birds have been found, but the true population is somewhere between 30 and 50. That represents a possibly unique concentration of kiwis in the region. Another researcher, Mark Robinson, has surveyed kiwis in existing reserves throughout Hawke's Bay, and has found them in only four reserves, and then only in low numbers.

Shelters, activity and ranges

There is now good information on four birds — their roosting sites during the day, their activity at night, and in particular the size of their ranges. Locations of 86 daytime shelters were found, and these proved to fall into three distinct types. The simplest makes use of existing cover, where the birds just camp for the day under a clump of bracken. Secondly, they actually excavate their own burrows — females as well as males, although previously it was thought only the males excavated. The third type of shelter is where they take advantage of the natural networks of tunnels which water has scoured out just below the surface of this pumice country.

They shelter in a large number of different sites, and normally use different burrows on successive days. However, when they are back in that part of their range again, they will often sleep in a burrow they have used several days previously.

Birds whose ranges include a lot of bracken roost mainly under bracken. That fact has important implications for