

FIELD TRIP TO AISLABIE'S BLOCK (KAHAROA FOREST CONSERVATION AREA)

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Background

On 6 September 1998 a small group from the Rotorua Botanical Society visited the Aislabie's Block (part of the Kaharoa Forest Conservation Area) to do a bit of general botanising. As part of this trip Dale Williams gave the visitors a run down on the block's history.

- The block contains a good population of North Island kokako (*Callaeas cineria wilsoni*) and to help protect the kokako the Crown after some vigorous lobbying by Forest & Bird, purchased the block from the Aislabie family (who had spent several years logging most of the merchantable timber from it).
- Between 1990 and 1996 the block was used as part of a research experiment to test the hypothesis that “*maximum practicable introduced mammal browser and predator control will (in the short term) increase kokako chick output and (in the longer term) population density.*”
- Since 1997 a community group (the Kaharoa Kokako Trust) have organised volunteers to carry out pest control aimed at providing ongoing protection for the kokako in this area.

At the conclusion of this visit, Dale Williams put a proposal to the Botanical Society that they could assist the Kaharoa Kokako Trust by monitoring the impacts of possums on the vegetation within the pest control area.

The proposal was accepted and a subsequent field trip was organised for the second weekend in May 1999.

Location

The Kaharoa Forest Conservation Area is about 12 km directly north of Lake Rotorua. Access is gained off the end of Kapukapu Road via Kaharoa Road. The total area of the

reserve is 976 ha. This includes the 316 ha Onaia Ecological Area and the Aislabie's block which lies at the northern end of the reserve (bordered on two sides by the Mangorewa and Onaia gorges).

Vegetation

The vegetation in the Aislabie's block (described in Shaw 1991) has been heavily modified by fire (in Polynesian and more recent times) and logging. Most of the merchantable rimu and many large tawa have been removed from the block and logging tracks and roads are present on many of the ridges. Due to the history of fire and logging a large proportion of the forest is 'secondary' rewarewa/kamahi. The most recently disturbed sites are covered in makomako scrub.

Notwithstanding the modification the forest contains a good variety of indigenous species including; tawa, kohekohe, pukatea, mangeao, hinau, tanekaha, rimu, Hall's totara, tawari, raukawa, titoki, putaputaweta, nikau, mahoe, fuchsia, lancewood, kawakawa, hangehange, rangiora, pate, koromiko, pigeonwood, kiekie and treeferns.

The deeply incised gullies within the reserve provide sanctuary for a good population of para (*Marattia salicina*). Para (or kingfern) is classed as a threatened species (Cameron *et al.* 1995) and is highly susceptible to damage by browsing mammals.

During the September 1998 trip several new additions were made to the species list by Chris Ecroyd (see Appendix 1).

Kokako

During the September trip Dale Williams played taped recorded kokako song in an attempt to solicit a response from some of the local kokako. Unfortunately it was not until the second trip in May that the BotSocers were entertained by what is arguably our most beautiful "songster". To hear their beautiful "organ-like" notes is an experience you do not forget.

Kokako belong to an ancient family of birds which includes the tieke (saddleback) and the extinct huia. They were once common in lowland forests throughout New Zealand, but there are now fewer than 1400 surviving in the North Island. There is a remote chance that a few individuals of the South Island sub-species still survive.

Since European colonisation, kokako numbers have decreased dramatically and their continuing decline is mainly due to the effects of introduced predators such as possums and rats (preying on their eggs and nestlings and indirectly by competing with them for food).

Does pest control help the kokako ?

Between 1990 and 1993 three aerial poisoning operations were used to control possums and rats in the Aislabe's block. During that time kokako breeding success increased to 85%¹ and the number of kokako pairs increased from 7 to 18.

Between 1994 and 1997 pest control stopped at Kaharoa. In 1994 27% of kokako pairs successfully fledged chicks. In 1995 this dropped to 13%. During the following two years, no kokako successfully fledged any chicks.

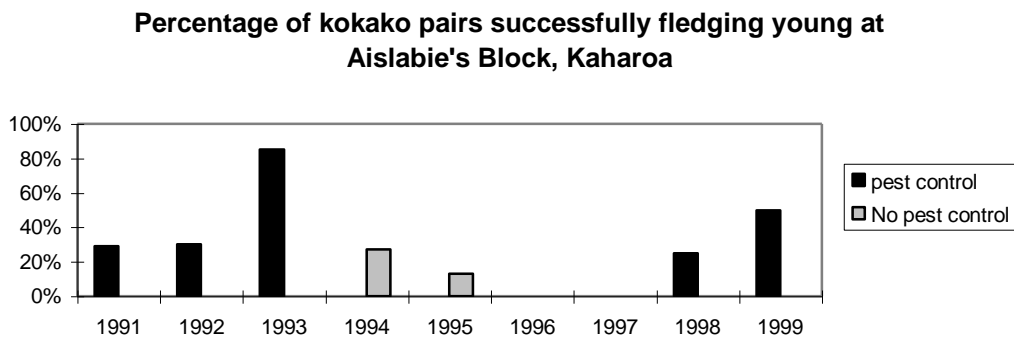
The results of the kokako "Research by Management" experiment are given in Innes *et.al.* 1999, and a study into the impacts of the three aerial poisoning operations on the insect communities of the Onaia Ecological Area was carried out by Hutcheson, (1996).

In the spring of 1997, volunteers led by members of the Kaharoa Kokako Trust recommenced pest control in Aislabe's block. They established a network of 160 bait stations along the tracks throughout the block.

¹ This is taken as the percentage of kokako pairs that successfully raise at least one chick to fledging. Kokako often raise two and sometimes three chicks.

In 1997 the bait stations were filled three times with non-toxic cereal pellets² then the stations were filled with bait containing 1080 poison. This was extremely effective in controlling both possums and rats. The 1998 and 1999 pest control operation involved the use of Talon[®] possum bait (containing brodifacoum). Talon[®] is more expensive than 1080 but it is particularly effective on rats. Talon's main advantage is that because it is slow acting, pests are less likely to develop "bait shyness" and no "prefeeding" is required. Each baiting session involves up to 25 volunteers (including children) and is completed in less than 3 hours.

The 1998 kokako survey (which monitored the success of the pest control carried out in the spring of 1997) showed that 25 % of pairs had fledged young. Of twelve pairs, one raised two chicks and the other two pairs raised one each, therefore a total of 4 juvenile kokako were added to the population. 25 % breeding success may not sound very good but given that no kokako bred successfully in this area over the previous two years, this was an excellent result.



The results in 1999 were even better with 50% of the ten pairs surveyed, successfully raising young. Seven juveniles were added to the population. As the kokako born in 1998 will now be old enough to breed (as will possibly some of last year's young), the Trust hopes this summer's results will be better still.

Why monitor forest condition?

² The 'prefeeding' process is designed to get the possums and rats used to feeding from the bait stations.

During the May 1999 field trip the Rotorua Botanical Society established three permanent vegetation transects to monitor the impact of possums on the forest. Though the primary aim of the pest control at Kaharoa is to protect the kokako, it is also likely to have “spin-off” benefits for a whole host of plants and wildlife within the forest. Monitoring forest condition will provide useful information (in addition to the kokako adult census and juvenile survey) about the success of the possum control, and once control stops it will help to determine when control needs to be re-activated.

Foliar Browse Index (FBI)

The assessment technique used is called Foliar Browse Index (FBI) (Payton *et al.* 1999). It is a standard method of scoring foliage cover, crown dieback, possum browse and trunk use on key ‘indicator’ species. These are plant species which are known to be preferentially browsed by possums and therefore are useful for assessing the impact that possums are having on a forest ecosystem.

A range of species were selected as key indicator species for this monitoring. The main species used (with the total number of trees scored in brackets) were kohekohe (13), mangeao (11), mahoe (21) and kamahi (12) as these were possum preferred species and known to be abundant in the block. Other less frequently encountered species also used were hinau (8), lancewood (4), putaputaweta (1), wineberry (3) and pate (1). In total 74 trees were scored.

The mean scores for foliage cover, crown dieback, possum browse and trunk use for each of the transects is shown in Table 1.

Table1: Mean and Standard Error scores for foliage cover (0-100%), crown dieback (0-4), possum browse (0-4), and stem use (0-3) in each transect at Kaharoa Conservation Area.

| Transect | Foliage cover | Dieback top | Dieback whole | Browse top | Browse whole | Stem use |
|-----------------|----------------------|--------------------|----------------------|-------------------|---------------------|-----------------|
| 1 | 68±2 | 1.0 ± 0.1 | 1.12±0.07 | 0.12±0.07 | 0.12±0.07 | 0.13±0.07 |
| 2 | 49±3 | 1.16±0.15 | 1.2±0.12 | 0.04±0.04 | 0.04±0.04 | 0.04±0.04 |
| 3 | 61±4 | 0.74±0.13 | 1.08±0.12 | 0.08±0.06 | 0.17±0.08 | 0.13±0.07 |

As Table 1 shows levels of possum damage was understandably very low because the transects were established after two years of possum control. It was also very reassuring to see kohekohe (which is a favourite food source for both possums and kokako) looking very healthy and producing an abundance of flowers and fruit. Overall these results indicate that possums are not having a major impact on the forest health of Kaharoa. This reinforces the benefits of the possum control undertaken by the Trust.

Where to from here?

At the moment the pest control operation covers between 300 and 400 hectares which is about one third of the total reserve.

The graph above shows that within a year or so of stopping pest control, kokako breeding success will drop to very low levels. However to maintain a population of kokako at Kaharoa it is not actually necessary to have good breeding success every year.

Introduced predators (including rats, possums, feral cats, ferrets and stoats) may kill some adult kokako but generally once kokako are old enough to leave their parents and establish their own territory they are not overly vulnerable to predation. Once through the critical fledging period, kokako can live for up to twenty years.

Provided the number of young kokako raised is equal to, or better than the number of adults dying, it is possible to maintain the population by “pulsing” the pest management (say 3-4 years on, 4-6 years off). By doing this the Trust can make better use of resources (people’s time and money), and reduce the amount of toxin being used in any given area.

Possum numbers are likely to be relatively slow to recover (compared to predators such as rats), therefore possum impacts on forest health are also likely to be slow to increase following the cessation of pest control.

Following this principle, the Trust intends to carry out pest control in Aislabie’s Block for one more year (i.e. the work taking place at the moment) before shifting their efforts into the adjacent Onaia Ecological Area.

Possum damage to vegetation is likely to be very high in this area, therefore the Rotorua Botanical Society is planning to establish FBI plots in the Onaia EA this winter to monitor forest recovery in conjunction with the initiation of pest control.

Through this “pulsed management” approach, the Trust hopes to eventually have sustained pest control over the entire Kaharoa Forest Conservation Area. The Trust also intends to encourage and assist neighbouring land owners to protect native forest on their properties, and to remain active in promoting public awareness about the preservation of kokako and forest biodiversity.

Further information about the Kaharoa Kokako Trust

If you would like more information about the Trust feel free to contact Dale Williams at (07) 3322 550 or Peter Davey (Trust Chairman) at (07) 3322 299 or (025) 743 198

REFERENCES

- Cameron, E.K.; de Lange, P.J.; Given, D.R.; Johnson, P.N. Ogle, C.C. 1995. Threatened and local plant lists (1995 revision). *New Zealand Botanical Society Newsletter* 39:15-28.
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- Shaw, W.B. 1991. The vegetation and flora of the Kaharoa Conservation Area. *Rotorua Botanical Society Newsletter* 24:21-37.

**ADDITIONS TO THE CHECKLIST OF VASCULAR PLANTS OF
KAHAROA CONSERVATION AREA (Shaw 1991)**

Chris Ecroyd

Lygodium articulatum

Macropiper excelsum

Corybas trilobus

WANTED

EMAIL ADDRESSES

THE COMMITTEE WOULD LIKE TO KEEP THE MEMBERSHIP LISTS UPDATED. WE WOULD LIKE TO KNOW WHO HAS NOW GOT AN EMAIL ADDRESS SO THAT THIS CAN BE ADDED TO THE DETAILS ON THE MEMBERSHIP LISTS.

IF THIS APPLIES TO YOU CAN YOU PLEASE SEND YOUR EMAIL ADDRESS TO THE SECRETARY AT THE ADDRESS LISTED IN THE FRONT OF THIS NEWSLETTER OR EMAIL THE ADDRESS TO THE EDITOR AT CHRIS.ECROYD@FORESTRESEARCH.CO.NZ

BLUE LAKE AND LAKE OKAREKA THREATENED PLANTS

Paul Cashmore