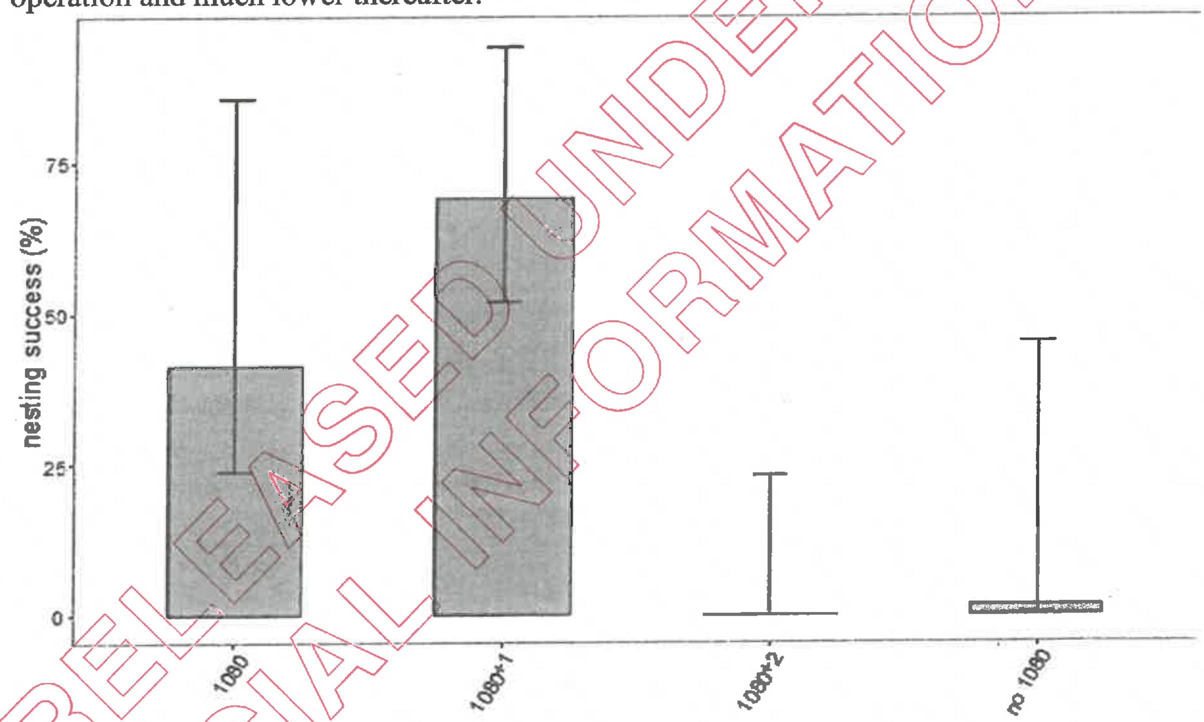
Kaka nesting success and 1080 operations Graeme Elliott

We've monitored kaka nesting success in South Westland since 2010 and during that time kaka have bred on 4 occasions (2010, 2012, 2013, 2015). Kaka don't breed every year, they only breed when the rimu or beech trees produce seed. The area we've been working includes 2 1080 blocks that have been treated with 1080 at different times, and a non treatment area that has never received a 1080 treatment. We've thus monitored some nests in breeding seasons immediately after 1080 was applied, some a year after 1080 was applied, some 2 years after 1080 and some in the area where no 1080 has ever been applied and we've calculated the nesting success for each.

Kaka nesting success is clearly higher when it occurs within less than 2 years of a 1080 operation and much lower thereafter.



The reason for this improvement in kaka nesting success post 1080 is clear. Of the 62 nests monitored 24 of them failed, and 15 of the failures were caused by stoats and 2 by possums. 1080 is known to dramatically reduce the abundance of stoats and possums, and it follows that it would also dramatically increase kaka nesting success.

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COSTS AND BENEFITS OF AERIAL 1080 FOR FOREST BIRDS IN SOUTH WESTLAND

Graeme Elliott
September 2009

Introduction

Until recently aerially applied 1080 poison was mostly used to control possums for forest canopy protection and bovine Tb management. In the past few years aerial 1080 has been increasingly used to control possums, rats and stoats to protect a wide range of native forest animals. At the same time as aerial 1080 is being increasingly used as a multi-pest control tool, public disquiet about it's use has also increased.

There is good evidence that aerial 1080 kills possums (Eason *et al.* 2000), rats (Innes *et al.* 1995) and stoats (Murphy *et al.* 1999), and the reduction in the incidence of bovine Tb (Coleman & Livingston 2000) and the benefits to vegetation through reduced possum browse (Norton 2000) have been well demonstrated. Although the levels of bykill of some forest birds have been assessed, levels of bykill of many other species have not been assessed and the benefits of aerial 1080 use to forest birds have been assessed for very few species (Spurr & Powlesland 1997).

There is a widely held but unsubstantiated view that use of aerial 1080 leads to dramatic reductions in the abundance of native forest birds. The best available evidence suggests that use of aerial 1080 has little impact on most forest birds and has significant benefits to some species, but there has been no comprehensive assessment the costs and benefits of aerial 1080 use to native forest animals. Furthermore recent changes in the way aerial 1080 is used in order to improve kill rates of rats and stoats and well as possums, means that some earlier work assessing costs and benefits to native wildlife may no longer be relevant.

This study aims to measure the costs and benefits to a range of native forest animals of the repeated use of aerial 1080 to control possums, rats and stoats at three or more sites.

Study Areas

Two sites have so far been chosen, the Tararuas in the Southern North Island, and near Lake Moeraki in South Westland.

The Tararua study area and methods are described in detail in DOCDM-438321.

The South Westland study site comprises 3 bocks of between 12,000 and 18,500 ha (Figure 1). The 12,000ha Ohinemaka block will be a control block in which no pest control will be undertaken. The other two blocks (Abbey Rocks and Whakapohai) will be treated with aerially applied 1080. In one of the treatment blocks (multi-pest control block) aerial 1080 will be applied as often as is needed to suppress, rats, stoats and possums, probably about once every three years. In the other (possum control block) aerial 1080 will be used only as often as is necessary to control possums. 1080 has previously been sown over the Whakapohai and Abbey Rocks blocks to control possums, whereas in the Ohinemaka block no systematic possum control has been attempted.

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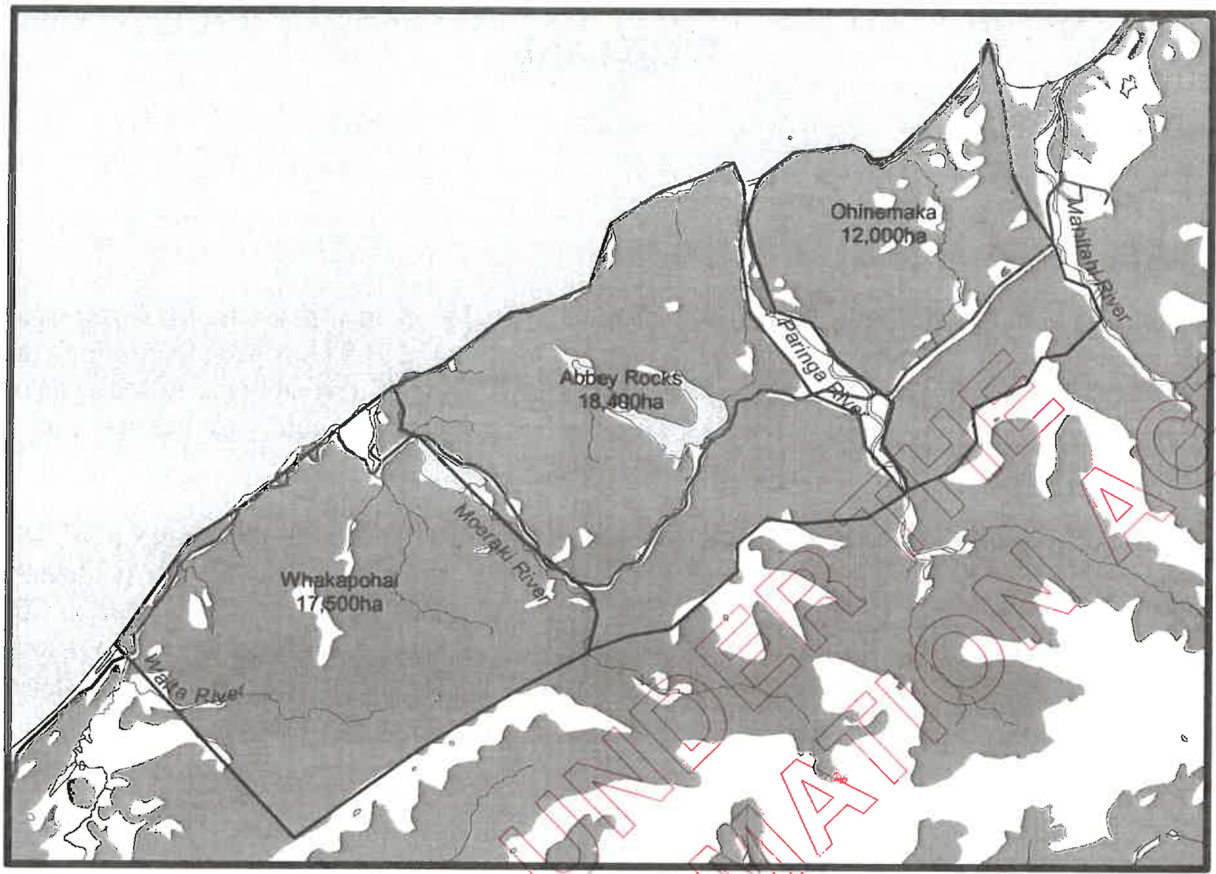

Figure 1. Study sites in South Westland.

Methods

In each of the blocks the abundance of rodents, mustelids and possums and a suite of forest birds will be regularly monitored. In addition the seedfall of rimu and silver beech will be monitored using seedfall funnels and one species of bird will be studied intensively.

Duration of the study

The study will last 6 years commencing October 2009.

Timing of 1080 application

No 1080 applications are planned for the Whakapohai or Abbey Rocks blocks for the 2009-2010 financial year. But thereafter the application of 1080 will be triggered by beech or podocarp seedfalls, or high rat, stoat and possum abundances. Thresholds for the triggering of 1080 application will be worked out during the first year of study through a collaborative exercise between Research and Development and Conservancy staff. I anticipate that the Whakapohai block will receive aerial 1080 for possum control approximately once every 6 years (probably in winter 2011), the Abbey Rocks will receive aerial 1080 for rodent, mustelid and possum control approximately once every 3 years, and the Ohinemaka block will receive no systematic pest control.

Rodent and mustelid monitoring.

Rodents and mustelids will be monitored using DOC standard tracking tunnel techniques (Gillies & Williams 2002).

20 tracking tunnels lines of 10 tunnels will be set up in each block. They will be run four times a year, in November, February, May and August.

Tracking tunnels will be placed in each block using a generalised random tessellation stratified design (GRTS) (Stevens & Olsen, 2004). GRTS is a compromise between random and grid sampling that ensures spatially balanced samples and enables increases or decreases in the number of sample points without compromising spatial balance.

Possum monitoring

Possum monitoring will be undertaken annually with wax tags using the standard protocol (NPCA, 2008). This will be in addition to the regular possum trap catch monitoring that is undertaken every two years in the Abbey Rocks and Whakapohai blocks.

40 wax tag lines comprising 20 wax tags at 10m intervals will run in each block annually in November.

Wax tag lines will be placed using GRTS (Stevens & Olsen 2004) and would need to be placed at new locations each year to avoid possums becoming tag-happy or tag-shy.

Bird monitoring

Bird monitoring will be undertaken using automatic acoustic monitoring (Rempel *et al.* 2005). Recording devices will be placed in the forest and recorded samples of bird calls later analysed to provide indices of bird abundance.

Automatic recording will be used in preference to ordinary bird counting because:

1. A larger number of samples can be collected.
2. Variability in bird counts can be reduced by taking samples for only a restricted part of the day.
3. A programme of picking up and moving recording devices on fine days, and analysing recordings on rainy days will enable more efficient use of time in a rainy environment.
4. Bird calls can be identified more reliably and a regime of checking identification can be implemented.
5. Automatic recording devices facilitate blind random sampling. Sampling sites can be placed at random and the workers analysing the bird calls need not know where the samples come from.
6. Recordings can be stored and if necessary re-analysed.

Bird recording will be undertaken from sites chosen using GRTS (Stevens & Olsen 2004). The number of sites used for bird counting will be decided after a preliminary series of bird counts undertaken in November 2009. I anticipate that approximately 100 bird counting stations will be established in each of the three blocks.

Once the preliminary analysis is undertaken automatic bird counts will be undertaken during January and February each year as this is the best time of year to monitor kaka and kakariki. Kaka

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and kakariki are much less abundant than most of the other species we want to monitor, so that any programme that has enough power to detect changes in kaka or kakariki abundance will also almost certainly be good enough to detect changes in the other species.

Should the preliminary analysis of the automatic bird counts show that the automatic bird counting is not reliable then our back-up plan will be to monitor birds using five-minute bird counts. This will require a re-think of the sampling regime.

Seedfall monitoring

Rimu and silver beech seedfall monitoring will be undertaken by seedfall collection and by counting developing rimu seeds in trees.

20 rimu trees at a range of altitudes and topographies will be sampled in April each year to anticipate the likely seedfall in the following April using methods perfected by the Kakapo team (Harper *et al.* 2006).

20 seedfall collection devices will be placed randomly in rimu forest and 20 in silver beech forest to estimate annual seedfall production. Seedfall collection devices will be activated in February at the beginning of the beech and rimu seedfall, and collected in June once all the seed has fallen.

Intensive bird study

Riflemen in study areas in each of the three blocks will be intensively monitored during each breeding season to measure survivorship and productivity. Birds caught in mist nets, colour banded and their nests searched for and monitored.

Logistics

Personal

5 staff will be in the field continuously from November to March each summer. One of the five will be a supervisor, and the project will be managed by Graeme Elliott from Nelson, who will spend about a month in the field each season.

Accommodation

Staff will be accommodated in a rented house in Haast. Analysis of bird counts and entering of data will be undertaken in this house, or at the Haast Visitor Centre – if they've space and are willing to have us.

Transport

The five staff will have a 4WD double cab ute.

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