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Manawahe Kokako Survey Report

November 2013

Photo by Bruce Bancroft

Prepared for Bay of Plenty Regional Council and the Manawahe Kokako Trust

By Bruce Bancroft and Nicole Bancroft

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Table of Contents

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Introduction

The Manawahe Kokako Trust area and surrounds were resurveyed between September and November 2013 to establish the current status of the Manawahe kokako population. The previous census was conducted between October and November 2012.

Methods

Kokako are territorial birds, therefore calls and song are important if kokako are to retain their territories. Territory mapping is an essential tool in ascertaining population size.

Pre-recorded local kokako dialect was used during the survey to attract territorial kokako and was played through a portable speaker via MP3 digital player.

Two observers were used in tandem during the survey. To accurately determine kokako territorial boundaries, one observer would stay with observed kokako and follow them while the other would walk ahead playing kokako audio. Invariably kokako would follow the audio to the edge of their territory where they would remain and this is often when neighbouring kokako would turn up nearby, hence the need for two observers.

Both observers would communicate with hand held radios to compare sightings, this ensured that no double counting or under counting occurred.

GPS tracking data and the proximity of kokako to bait station sites were used to construct territory maps on GIS mapping software.

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Results

The 2012 survey established the presence of 16 pair and 8 single kokako, giving a total population of 40 kokako.

This year's survey established the presence of 15 pair and 7 single kokako, a total population of 37 kokako.

The single present in the Cell-phone tower block to the north is still single.

Table 1. Kokako Population Comparisons 2012/2013

2012/2013 Kokako Population Comparisons				
	Pairs	Singles	Juveniles	Totals
2012	16	8	0	**40**
2013	15	7	0	**37**
Difference	-1	-1	0	**-3**

Other Birds

Tui and bellbird are still in very good numbers as are kereru. Robins and pied tit were present but detected in low numbers. Robins seem to be confined to the Karaponga Stream sides.

Still of concern are the large number of magpies seen and heard throughout all of the area surveyed. Harrier hawks were also noticeable throughout the survey.

Pest Control

During 2013, prior to the bait station toxin operation, gaps identified in the overall bait station layout were filled in with additional bait stations. This along with the predator control implemented from 2009 means the 2013-2014 breeding season will have the most effective pest control coverage in the operational area since the start of this project.

The Manawahe Kokako Trust carried out their annual bait station filling operation with 500g Pindone and 2 Feratox on 7th September 2013. This achieved a 0% rat tracking index on the five 10 tunnel tracking tunnel lines in the main kokako block as measured on 15th November 2013. This is 0% at 9 weeks after bait was laid and is a typical result that we regularly measure at 6 weeks at other sites. It is also the first time since 2008 this target has been met prior to the kokako breeding season.

The 2014 pre-breeding census may show an increase in kokako numbers if pest control has been the main detrimental effect in this area. Having said that, it is known that kokako do not breed well every year, even in areas with good pest and predator control. Breeding is dependent on fruit availability during the breeding season which fluctuates each year because of differing weather patterns and conditions.

Discussion

The overall population has fallen by three birds since the last survey; the number of pairs is down one and singles down one. Some territories were surveyed two or three times on separate days to minimise the chance of over or undercounting. This included some single bird territories to ascertain whether they were in fact single or a pair (female may have been sitting on an early nest). Care was taken to ensure all kokako in the survey area were accounted for in this survey but there always remains the possibility of birds, especially lone birds, not responding to the audio.

Degradation of the understory was noticeable in some areas within the survey boundary, probably due to deer and wallaby browsing. This may also be impacting on food availability. Pig sign was minimal compared to previous survey years.

The following is taken from the Manawahe Kokako Survey Report 2010. It has been repeated in each report since to remind readers of the main issues associated with managing a small remnant kokako population.

> *"A healthy kokako population with good pest control should increase by 50% each year.*
>
> *Possible reasons for the slow growth rate, plateau and decline of this population are outlined below:*

- ***Disproportionate sex ratio**. In low populations of any species under threat more males are found to be present than females. Although pairs are observed, many turn out to be male/male pairs. The cause of fewer females in the population is mainly attributed to the next point.*
- ***Predation**. Possums, rats, stoats, hedgehogs, harrier hawks, NZ falcon and cats are known predators of kokako, destroying eggs, chicks or adult females on the nest. Possum and rat populations are being controlled during the kokako breeding season. Stoat control was initiated in 2009 and may take 2-3 breeding seasons to show any impact on breeding success.*
- ***Competition**. Possums, rodents and hedgehogs compete for food such as young leaves, fruit and insect life. Possums and rats are being controlled during the breeding season but little is known about the impact of hedgehogs on the Manawahe kokako population. Magpies may also be competing for territories and impacting on kokako nesting attempts.*

- ***Inadequate pest control****. Pest numbers (predators and competitors) need to be at their lowest throughout the breeding season. Pests not under control at the start of the breeding season can delay or even halt nesting attempts for some kokako breeding pairs.*

- ***Genetic bottleneck****. A population's genetic variation can be greatly reduced by a bottleneck, and even beneficial adaptations may be permanently eliminated. The loss of variation leaves the surviving population vulnerable to any new selection pressures such as disease, climate change or shift in the available food source. This is because adapting in response to environmental changes requires sufficient genetic variation in the population for natural selection to take place."*

It has been suggested that birds may be dispersing to areas away from the main operational area. In previous surveys some of these outlying areas were surveyed with no kokako encountered. My experience with other kokako populations in Te Urewera suggests that kokako do not travel far from other kokako.

"Young birds may travel substantial (considering their limited flight ability) distances but generally settle near other kokako (Innes et al, unpubl. data). This behaviour is not surprising. Research on several species suggests the presence of conspecifics often attracts dispersing juveniles; the presence of adults may indicate that the area contains potential mates, food, nesting sites, or other important resources (Ahlering & Faaborg 2006). Because kokako are much more conspicuous vocally than they are visually, it is likely that their patterns of dispersal are influenced by the song of conspecifics." (Calcott *et al*., 2008)

Also to consider: - "*In essence, at very low population levels, widely dispersed individuals have difficulty in finding mates and hence their reproduction should be lower than those living in higher numbers* (Dennis, 1989; Courchamp *et al*., 1999; Stephens and Sutherland, 1999)."

Table 1 and Graphs 1 and 2 show the population growth and decline in graphic form over the period of active management from the first census in 1997 through to the latest pre breeding census in October 2013.

Table 2. Manawahe Kokako Survey Results Over Time

Manawahe Kokako Survey Results				
	Pairs	Singles	Juveniles	Totals
May 1997				**14**
May 2001	**8**	4	4	**24**
Apr 2002	**10**	2	10	**32**
May 2003	**14**	3	3	**34**
May 2004	**19**	2	4	**44**
May 2005	**21**	2	7	**51**
Oct 2007	**24**	5	0	**53**
May 2009	**16**	6	4	**42**
Oct 2010	**17**	4	0	**38**
Oct 2011	**17**	6	0	**40**
Oct 2012	**16**	8	0	**40**
Oct 2013	**15**	7	0	**37**

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Table 3. Manawahe Kokako Pairs change over time.

	Pairs	Difference	% Change
May-2001	8		
Apr-2002	10	2	25%
May-2003	14	4	40%
May-2004	19	5	36%
May-2005	21	2	11%
Jun-2006	23	2	10%
Oct-2007	24	1	4%
Jun-2008	20	**-4**	**-17%**
May-2009	16	**-4**	**-20%**
Oct-2010	17	1	6%
Oct-2011	17	0	0%
Oct-2012	16	-1	-6%
Oct-2013	15	-1	-6%

Years shaded were not surveyed. The numbers were averaged from previous and following surveys.

The table above shows the percentage increase/decrease of pairs at Manawahe from the start of regular census operations. The years 2006 and 2008 were not surveyed and the numbers (shaded) have been averaged from the previous and following census surveys. As can be seen, the highest annual increase was 40% from 2002 to 2003; the overall annual average increase has been 7%. Unfortunately since the peak number in 2007 of 24 pair there has been an average drop of 5% per year.

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Recommendations

The following recommendations have been stated in the last three census reports. The first recommendation is the only one that has not been acted upon.

1. I recommend that if there is no significant increase in kokako numbers after the next census, intensive monitoring using video surveillance or programmed nest inspections be carried out over the nesting period. These are the most effective ways to find out what is happening during the *vulnerable* breeding season.
2. That independent specialist advice is sought from Department of Conservation and independent specialists.
3. The next territory mapping is carried out from mid-September 2014.

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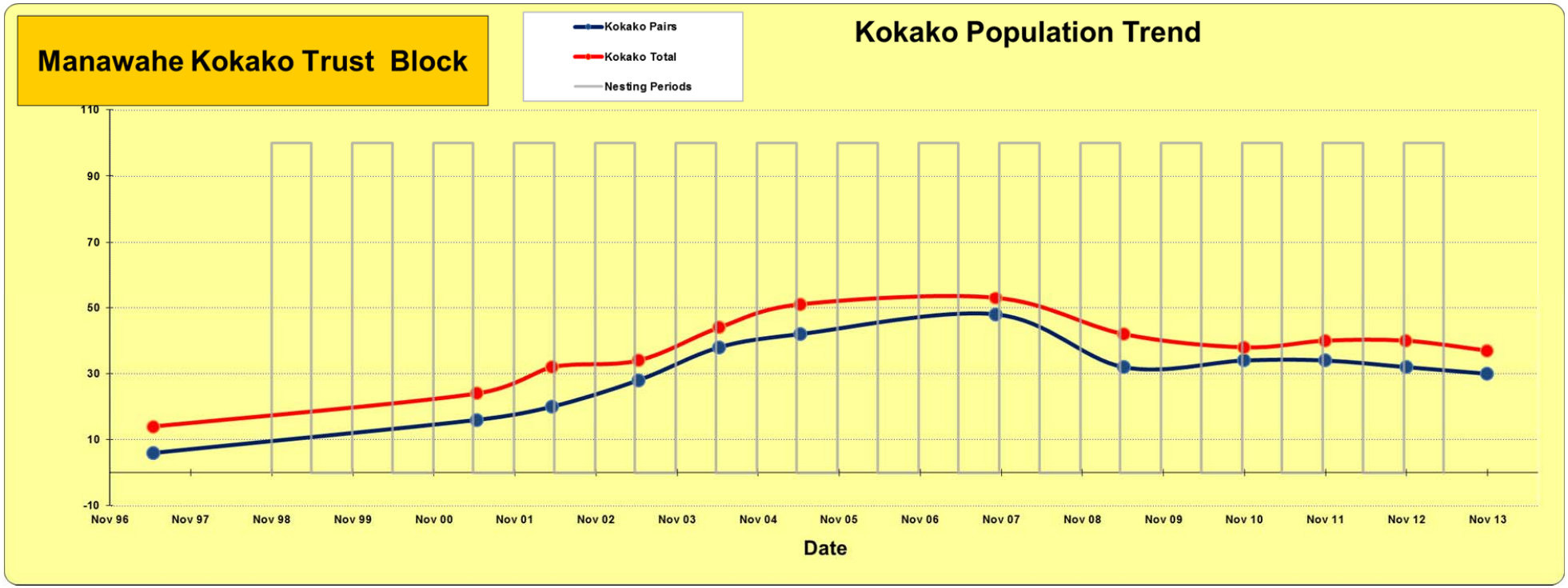
Graph 1. **Manawahe Kokako Pair Total/Pair Trend Comparison 2013**



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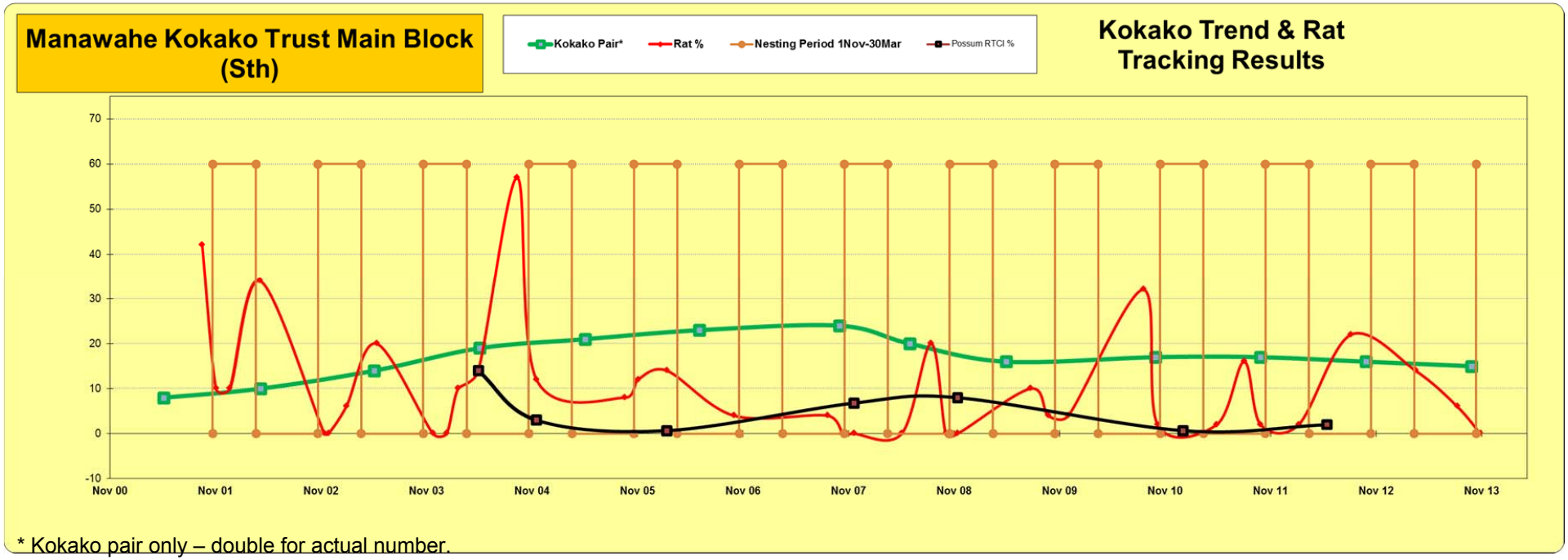
Graph 2. **Manawahe Kokako Pairs, Rat Tracking Data & Possum RTC Over Time**



* Kokako pair only – double for actual number.

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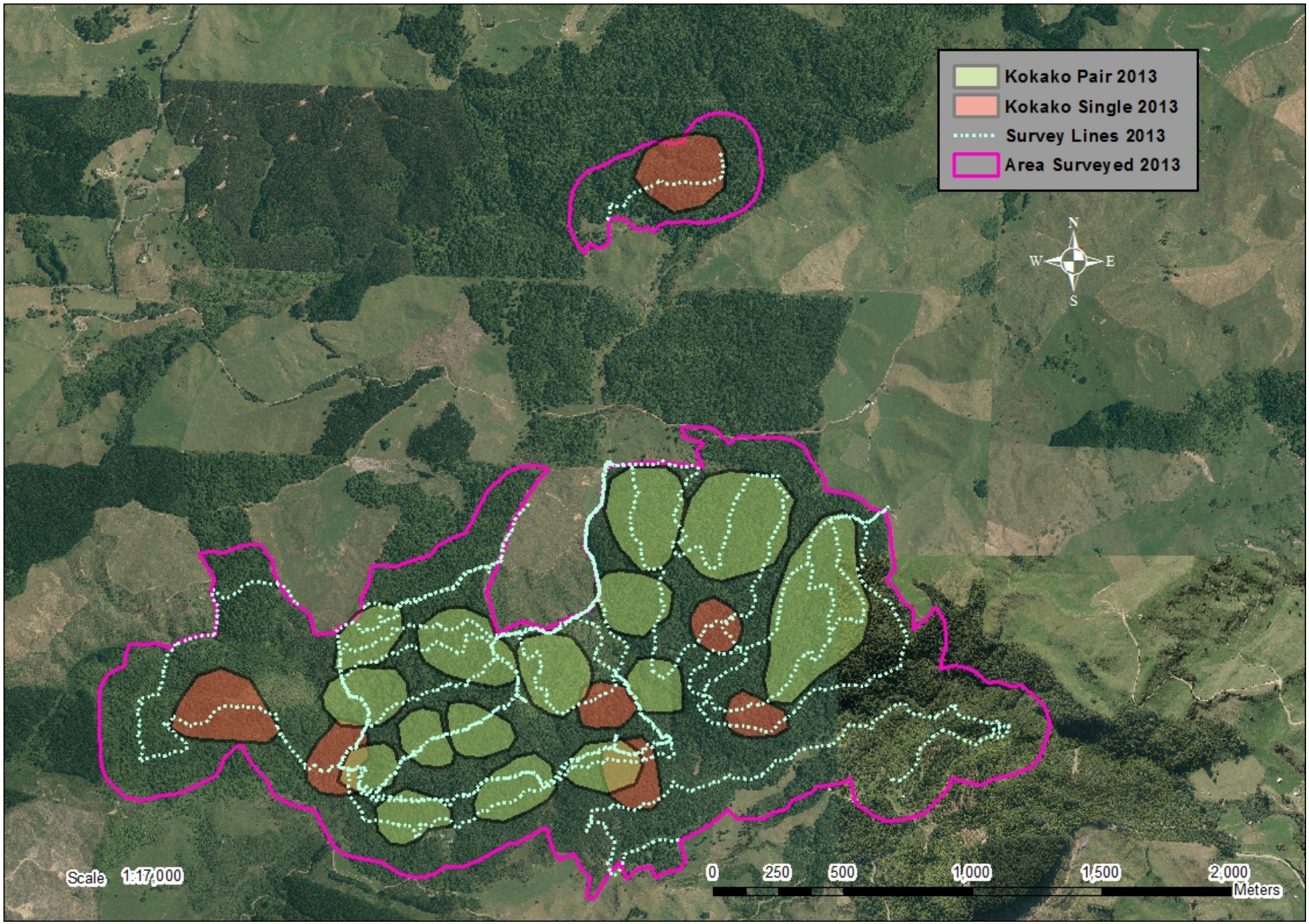
Map 1. Manawahe Kokako Area Surveyed 2013



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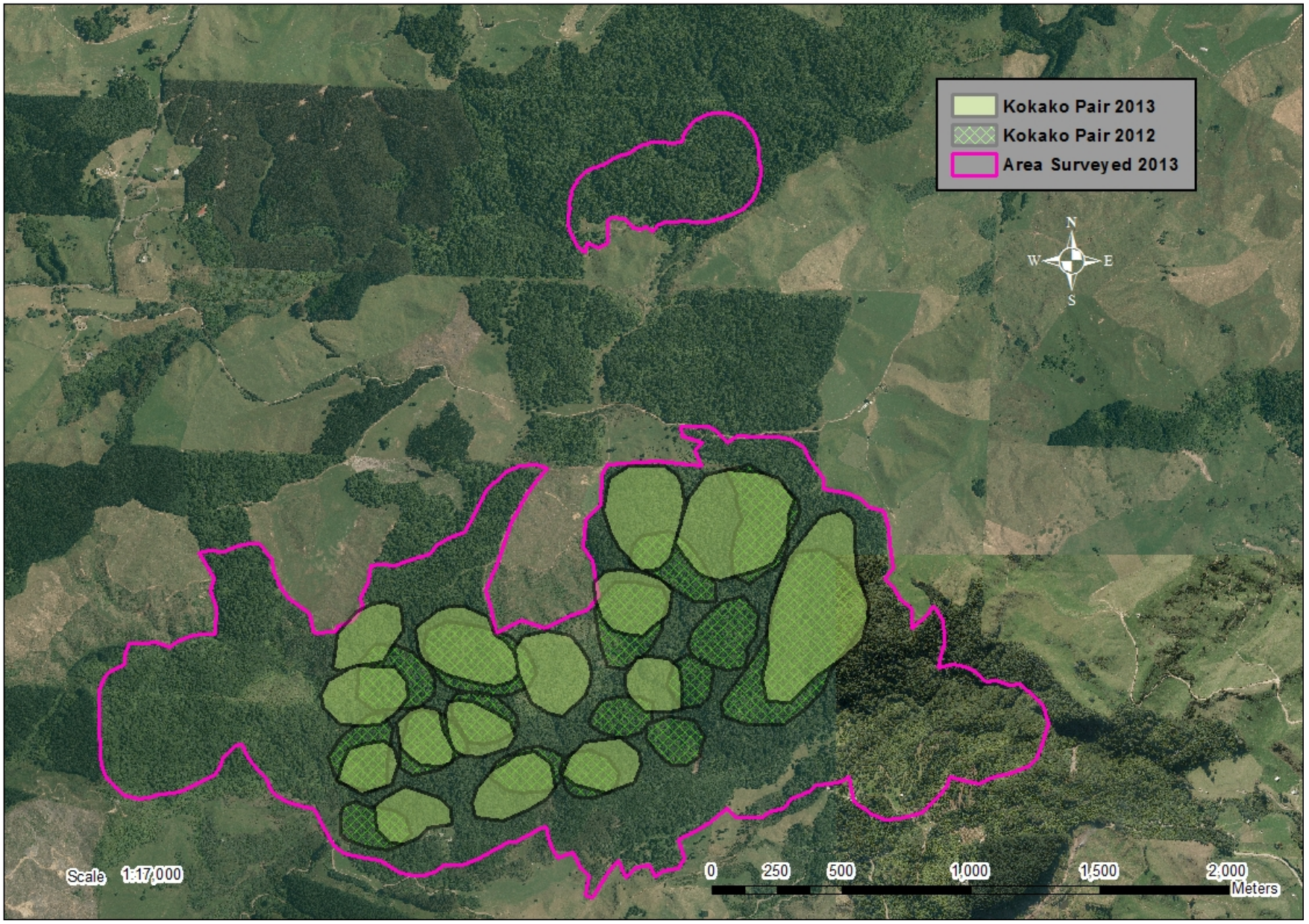
Map 2. Kokako Pair Territory Comparison 2012-2013



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Map 3. Kokako habitat around survey area