

Ark in the Park

2020 Kōkako Census Report



Unbanded Kōkako - Photo courtesy of Casey Will, Auckland Zoo

Erin Grierson and Casey Will

Auckland Zoo
Motions Road, Western Springs
Auckland



Contents

1. Summary	3
2. Methods.....	4
3. Census results.....	5
4. Discussion and recommendations.....	12
5. Acknowledgements.....	13
6. References.....	13

1. Summary

Auckland Zoo (AZ) conducted the 2020 census of North Island kōkako *Callaeas wilsoni*, at the Ark in the Park (AiP), Waitākere Ranges Regional Park, from early August to mid-October 2020. The census was carried out largely in accordance with the Department of Conservation (DOC) Standard Operating Procedures (Flux and Innes, 2001). Following consultation with the Kōkako Specialist Group (KSG) a combination of walk-through surveys and automated Acoustic Recording Devices (ARDs) were used to identify areas with territorial birds. Once birds were located, zoo staff and trained volunteers followed the birds to determine whether they were territorial or not, paired or single birds, adults or sub-adults and if each individual was colour-banded or unbanded. Due to operational constraints imposed by the COVID-19 pandemic response, a reduced census was conducted which restricted the walk-through survey to six forest blocks with known higher densities of kōkako and during the census period, the walk-through survey was put on hold for a period of three weeks when Auckland went into level three lockdown conditions. The delay may have resulted in the census overlapping with nesting behaviours, resulting in decreased responsiveness of kōkako to playback and inability to confirm territorial pairs. Forty-eight kōkako were identified in total, this result is lower than 63 in the 2019 census. The composition was as follows:

Confirmed founders	5
Potential founders	4
Unbanded adults	24
Banded AiP-bred	9
Unidentified *	6
Sub adults	0
Total individuals:	48
Total territorial pairs:	16

*(unidentified birds were those who were found but unable to be called-in to have their status as banded or unbanded confirmed).

Among the birds identified, 16 pairs (which included seven translocated birds: four founders and three potential founders, and eight banded AiP bred birds) and ten single adults (including one founder, one potential founder and one banded AiP bred bird) were confirmed as territorial while the other birds were either ‘floating’ or insufficient information was gathered to determine territoriality.

2. Methods

Census

The 2020 census of AiP, which commenced early August and carried through to mid-October, was conducted using a combination of the following three methods: walk-through survey, automated acoustic recording devices (ARDs) and targeting known territories. The walk-through survey protocol, as stipulated by DOC Standard Operating Procedures, involved surveyors walking along bait lines, in parallel with other surveyors when possible, and stopping at 200m intervals to listen for birds or trigger a response from birds using a standard playback sequence (see *Playback*) played with a handheld Foxpro NX4 speaker system.

An agreement was made between Ark in the Park and Auckland Zoo to carry out a reduced census for 2020 due to budget and staffing constraints after the onset of the COVID-19 pandemic. The reduced census included only foot-surveying areas known from previous census to contain a higher density of kōkako. These areas consisted of N, IW, AWS, AWN and D blocks, and the eastern halves of KOK and G blocks.

One hundred and seventy-eight sites within the established management area and twenty-three sites outside of the management area were sampled in this manner. Another forty-four sites were sampled using ARDs to detect kōkako calls in R, F, T, K, CGN and CGS blocks.

For birds to be included in the territorial count, they had to meet the following criteria (from Flux and Innes, 2001):

- 1) For banded kōkako which are previously known to be territorial in the same place as the 2019 census, surveyors had to confirm ID of bands within the known territory and complete at least a 15 minute ‘follow’.
- 2) For newly banded individuals such as recently translocated individuals; pairs with an unbanded member; banded or unbanded birds in a new location, surveyors had to complete two 10 minute ‘follows’ each at the same location that cross each other; or one follow of at least 30 minutes in which one bird of the pair sings full song.

As approved by the KSG, the most northern blocks of AiP (L, B, U, AN and P) were not surveyed (by either foot or ARDs) as part of the 2020 census as no kōkako have been detected in these areas in previous census years (though kōkako were detected in those blocks while being radio-tracked after release). In total, 744 AZ staff hours, 136 training hours and 104 AiP volunteer hours were spent in the field conducting the census.

Playback

The standard playback used at each interval of the walk-through survey for the 2020 census (as part of the set protocol for the walk-through survey) is as follows, after an initial 5-minute listening period:

- 1) 3x AiP dialect mew calls, followed by a 5-minute listening period
- 2) An additional set of 3x AiP dialect mew calls, followed by a 5-minute listening period
- 3) 30 seconds of AiP dialect song, followed by a 5-minute listening period

Acoustic Recording Devices

Automatic ARDs were used only in R, F, T, K, CGN and CGS blocks. The ARDs used are either designed and built by AiP volunteer Eric Wilson or sourced from DOC. A total of fourteen ARDs (divided into two groups of seven) were rotated in the field on a weekly basis by AiP volunteer Kevin Ferguson. For the deployed week, each ARD began recording about 30 minutes before sunrise for two hours per day. The recordings were then downloaded and analysed using the audio editing program, Audacity. Through specific settings, Audacity generates a spectrogram, which provides a visual representation of the unique sound spectrum for each type of bird call.

3. Census results

The 2020 census of kōkako in AiP commenced 3rd August and finished on the 18th October. However, due to the global COVID-19 pandemic and Auckland moving into level three lockdown restrictions, the census was put on hold for a period of nearly three weeks from the 11th August until the 30th August. Five founders and four potential founders (see Tables 1&2), 24 unbanded birds, nine banded AiP bred birds (see Table 3) and six unidentified birds were confirmed. No sub-adults were confirmed this census. Of the 48 birds counted, 16 pairs and ten single adults were confirmed as territorial. The remaining birds were either unidentified, identified as floating, or surveyors could not gather enough information to determine if they were holding a territory.

The 16 territorial pairs consisted of:

- One founder pair (Gordon/Kiwitea).
- One founder paired with a potential founder (Manuka/Ranginui respectively).
- Six unbanded pairs (pair#1: Gleeson access line, pair#2: IW7, pair#3: IW10, pair#4: N17-19, pair#5: KOK19, pair#6: N13).
- One founder and two potential founders paired with banded AiP-bred birds (Pierre/Indigo, Ataahua/Kapua, Aumangea/Grant¹).
- Three banded AiP-bred birds paired with unbanded birds (Pūtahi, Cloud and Kohu).
- One pair consisting of banded AiP-bred birds (Gahnia/Kevin²).
- One unidentified pair (IW7/25).

The ten territorial single adults consisted of:

- One founder male (Francis³).
- One potential founder male (Tahi Kaha).
- One banded AiP bred bird (Nino).
- Seven unbanded birds.

¹ Previously referred to as YY/GM in the 2019 kōkako census report.

² Previously referred to as LR/GM in the 2019 kōkako census report.

³ Previously spelt Frances in the 2019 kōkako census report.

Territorial pairs

Aumangea and Grant were observed to be a territorial pair in the 2020 census. Aumangea was sighted in the 2019 census on separate occasions either alone or with Grant, but insufficient data was collected to determine if they were a pair. They were, however, observed to be paired during the 2019/2020 breeding season and reconfirmed as a pair this census.

Two of the four birds banded in the 2018/2019 breeding season were identified in the 2020 census. Of these two birds, Grant was observed to be paired with a potential founder, Aumangea. Kevin was again paired with Gahnia, the only bird to be sighted in a census post fledging from the 2017/2018 breeding season.

Six of the seven birds that fledged from the 2016/2017 breeding season were identified in the 2020 census. Five of these birds were identified in the 2019 census with the addition of Kohu this year. Kohu, who hadn't been sighted since the 2017 census, was observed on two occasions this year with an unbanded partner at the southern end IW block. Of the birds identified during the 2020 census from the 2016/2017 breeding season, all were paired with either founders, potential founders or unbanded birds, except for Nino who was observed as a single territorial bird. Nino, Cloud and Cloud's unbanded partner have been observed holding territories outside of the AiP management area.

Territorial single adults

Tahi Kaha was observed with an unbanded bird on two separate occasions during the 2020 census and appeared to be paired. On subsequent follow-ups he was observed as a single bird but still appeared to be holding a territory. During the 2019 census similar behaviour from Tahi Kaha was observed, where he was sighted as paired and single during the census period.

Francis was observed as a single bird for the second consecutive year, holding the same territory on Scenic Drive residential properties and possibly heading into K block within the management area.

Nino was sighted in the 2019 census on two separate occasions as a floating single bird in IW block and northern end of Ian Wells track. This year Nino was sighted down the southern end of the Ian Wells track as a territorial single bird holding a similar territory as in the 2018 census.

Known kōkako not sighted in 2020

Two founders, two potential founders and one banded AiP-bred bird sighted during the 2019 census were not observed in the 2020 census despite multiple visits to their previously known territories. Maurice and Karen were translocated to the Ark in 2009, Duncan in 2010 and Rereahu in 2015. Eric⁴ is an AiP-bred kōkako from the 2018/19 breeding season.

Maurice, who was paired with an unbanded bird during the 2019 census was noted to be a single bird during the 2019/20 nest finding season. Maurice has been sighted consistently every

⁴ Previously referred to as RY/GM in the 2019 kōkako census report

year since the first census in 2011. However, despite multiple return visits to his previously known territory and surrounding areas, Maurice could not be located this census. Karen appeared to be paired with an unbanded bird during the 2019 census, then later in the 2019 breeding season appeared to be paired with Tahī Kaha. Karen was not sighted this census. Duncan and Rereahu were also not observed in the 2020 census. In 2019 Duncan appeared to be floating and was sighted briefly with an unbanded bird while Rereahu was sighted as a territorial single bird outside of the Ark. Eric was found in the 2019 census as a single bird floating between IW, KOK and N blocks but was not sighted this year.

Unbanded kōkako

Six unbanded pairs and seven unbanded singles were identified in the 2020 census compared with nine unbanded pairs and three unbanded singles in the 2019 census. The number of single unbanded birds has more than doubled during the 2020 census compared to the 2019 census. The majority of the unbanded birds were found in the southern blocks of the management area, IW, KOK and N blocks. Six unidentified birds, consisting of one pair and four single birds were also observed in the southern half of the management area. Despite multiple visits to the initial and surrounding areas the birds could either not be called-in or identified.

Unmanaged areas outside of AiP

Several areas outside of AiP were also investigated. This included Upper Huia dam track and a parallel Auckland Council bait line coming off Piha Road, Spragg's Bush, and several Scenic Drive residential properties included in the 'buffer zone'. Francis was observed along several Scenic Drive properties. Aumangea and Grant were observed travelling out of the AiP management area and across to Spragg's Bush track entrance. Cloud and unbanded partner, and Nino were all observed holding territories at the southern end of the Ian Wells track.

As in previous years, the southern half of the AiP management area continues to be the more heavily populated area for kōkako, which may account for several birds found in contiguous areas outside of the management zone.

ARD recorder blocks

Owing to aforementioned challenges, the edges of F and R blocks in the north-west, T and K blocks in the north-east, and CGN and CGS blocks in the south-western areas of the census area were surveyed by ARD recorders (see Figure 1). Analysis of the files indicated that there are kōkako within K, CGN and CGS blocks however, as individual birds cannot be discerned and actual numbers of kōkako obtained, these birds are not included in the census total. This is a clear indication that there are more birds within the AiP management area than were picked up during the census, an important point to be considered when comparing total counts from 2020 with those from previous years.

Table 1. Summary of the founder kōkako population at end of 2020 census.

Note that for tables 1 to 3 all highlighted rows indicate birds that were seen in the 2020 census.

Name	Sex	Band Combo	Status	Source
Frances	M	YM-GR	Pair seen 2020 census	Mapara
Pierre	M	M-YR	Paired with Indigo 2020 census	Tunawae-pair
Kiwitea	F	YM-GB	Pair seen 2020 census	Mangatutu
Gordon	M	YM-YB	Pair seen 2020 Census	Mangatutu
Manuka	F	M-YB	Paired with Ranginui 2020 census	Waipapa
Maurice	M	M-RG	Paired with unbanded bird 2019 census	Waipapa site 7
Karen	F	M-RW	Paired with unbanded bird 2019 census	Waipapa site 4
Zelah	F	YM-RY	Pair seen 2018 census	Mapara
Kowhai	F	M-RLg	Paired with Maurice 2017 census	Waipapa site 6
Sylvain	M	M-WR	Paired with Karen 2017 census	Tunawae-middle pair
Sophie	F	M-GY	Paired with Pierre 2017 census	Tunawae-pair
Marty	M	M-YG	Paired with unbanded bird 2017 census	Waipapa

Table 2. Summary of the potential founder kōkako population at end of 2020 census.

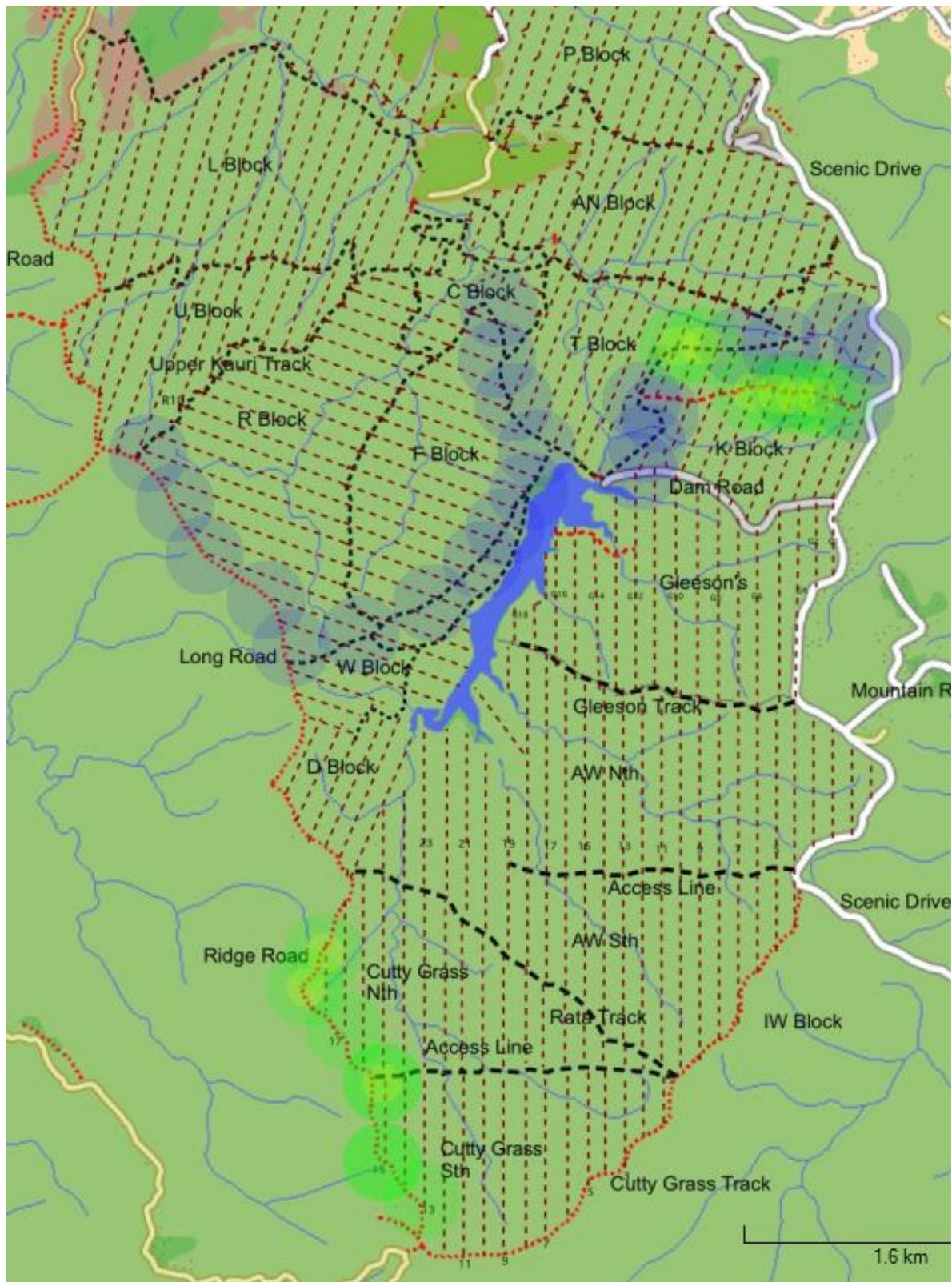
Name	Sex	Band Combo	Status	Source
Aumangea	M	YM-YG	Paired with Grant in 2020 census	Mapara
Ataahua	F	YM-OG	Paired with Kapua 2020 census	Mapara
Tahi Kaha	M	/-M	Seen 2020 census	Mapara
Ranginui	M	YM/LO	Paired with Manuka bird 2020 census	Mangatutu
Duncan	M	M-RY	Seen with unbanded bird 2019 census	Tunawae-Nth Ea access
Rereahu	M	YM-LR	Seen with unbanded bird 2019 census	Mangatutu
Thurley	F	YM-YR	Pair seen 2018 census	Mapara
Totara	M	M-WG	Paired with unbanded bird 2018 census	Waipapa site 5
Puke	F	M-WY	Paired with unbanded bird 2018 census	Waipapa site 7
Papari	M?	YM-GO	Seen 2018 Census	Mapara
Tahi	M	YM-LY	Seen 2018 Census	Mangatutu
Nuage	M	YM-RO	Seen 2017 Census	Mapara
Aroha	Y	YM-OW	Paired with Tahi Kaha 2017 census	Mapara
Te Ariki	M	YM-YO	Paired with Rata 2017 census	Mapara-Rain1 (South)
Rata	F?	M-BR	Paired with Te Ariki 2017 census	Mapara-Rain1 (South)
Dylan	M	M-YW	Paired with unbanded bird 2016 census	Tunawae
Grace	F	M-GW	Seen with unbanded bird 2016 census	Tunawae-Rain
Bryda	F	YM-RG	Seen 2016 Census	Mapara
To be confirmed	M	YM-RL	Released May 2016	Mapara
To be confirmed	M	YM-RB	Released May 2016	Mapara
Kiekie	?	M-YL	Paired with Grace 2015 census	Tunawae-middle pair
Pōtae	M	YM-YW	Released Aug 2015	Mangatutu
Tiriwa	F	YM-LB	Released Aug 2015	Mangatutu
Rua	F	YM-LG	Released Aug 2015	Mangatutu
Moby	M	OM-Y	Last seen winter 2013	Tiritiri Matangi Island
Nikau	M	M-WL	Last seen Feb 2013	Mapara- (South)
Kauri	F	M-LW	Last seen Feb 2013	Waipapa
Rhonda	F	M-GR	Last seen 2012/2013	Tunawae-Nth Ea access
Pareira	F	GL-M	Seen with Grace 2012-2013 season	Tunawae
Rimu	M	M-GB	Last seen 2012	Waipapa
Punga	F	YM-R	Last seen 2011	Tiritiri Matangi Island
Maire	F	M-BW	Last seen 2011	Mapara-Rain2 (South)
Lucy	M	M-LY	Last seen 2011	Tunawae-Owawenga
George	M	M-LR	Last seen 2011	Tunawae-Owawenga
Wahine	F	M-RB	Not seen since release	Waipapa site 7

Table 3. Summary of banded AiP-bred kōkako population at the end of the 2020 census.

Name	Sex	Band Combo	Status	Dam/Sire
Indigo	F	LG-RM	Paired with Pierre 2020 census	Karen/Sylvain
Kapua	M	RY-RM	Paired with Ataahua 2020 census	Unbanded/Marty
Pūtahi	?	YR-RM	Paired with unbanded bird 2020 census	Karen/Sylvain
Cloud	?	RW-RM	Paired with unbanded bird 2020 census	Unbanded/Marty
Nino	?	YW-RM	Seen 2020 census	Kowhai/Maurice
Gahnia	?	WM-GY	Paired with Kevin 2020 census	Kiwitea/Unbanded
Kevin	?	LR-GM	Paired with Gahnia 2020 census	Kiwitea/Gordon
Grant	F	YY-GM	Paired with Aumangea 2020 census	Maurice/Unbanded
Kohu	?	LY-RM	Paired with unbanded 2020 census	IW10 pair (#1)
Eric	?	RY-GM	Seen 2019 census	Maurice/Unbanded
	?	OY-GM	Seen April 2019	Zelah/Frances
	?	GR-WM	Fledged 2017/18 breeding season	Kiwitwa/Unbanded
	?	LR-RM	Fledged 2017	IW10 pair (#1)
Misty	?	WY-OM	Fledged Jan 2016	Manuka/Marty
Mapere	?	WG-OM	Fledged Jan 2016	Manuka/Marty
Hinau	?	WR-M	Seen 2015 census	Kowhai/Maurice
Andy	?	BB-M	Seen 2015 census	Kowhai/Maurice
Poroporo	?	LW-M	Fledged 2013 / 2014	Kowhai/Maurice
Miro	M	R-GM	Last seen 2011	Kowhai/Maurice
Matai	M	WB-M	Last seen 2011	Kowhai/Maurice

Figure 1: Results from ARD's placed in blocks not surveyed by foot (Eric Wilson)

- Blue circles = no calls heard
- Green circles = faint call heard
- Yellow circles = medium calls heard



4. Discussion and recommendations

Forty-eight kōkako were identified during the 2020 census. This number is lower than the 2019 census (63) however, this difference is likely at least partially explained by the reduced census effort, whereby only six out of twelve blocks were surveyed on foot due to restrictions associated with the COVID-19 pandemic. Calls were picked up using ARD's in blocks not surveyed by foot, indicating that there are more birds within the AiP management area than have been identified by the 2020 census. Founder and potential founder numbers have been slowly declining since the 2017 census and there have been no additional translocations of kōkako into the AiP management area since 2016. One fewer founder/potential founder was identified this census but the same number of banded AiP bred birds were confirmed. A greater number of single territorial birds were observed, most of which were unbanded. Despite the lower number of individuals observed, surveyors identified only one fewer territorial pair than the 2019 census and there appeared to be no pairing changes observed within the population compared with multiple changes in the previous two years. 2019 was a mega-mast season resulting in higher rat numbers within the management area which likely resulted in increased predation on kōkako nests. No banded kōkako chicks were observed to survive until fledging and may explain why no sub-adults were found during the 2020 census.

A different set of challenges hindered the completion of a full 2020 kōkako census compared with the 2019 census when poor weather and the early onset of nesting behaviours were the major contributing factors. Following the onset of the COVID-19 pandemic the decision was made to conduct a reduced census, only surveying blocks known to contain a higher density of kōkako. A second wave of COVID-19 in Auckland led to level three lockdown conditions which resulted in a loss of nearly three weeks of the census during August. Upon returning to the census at the end of August, the kōkako were far less responsive to playback and as a result surveyors required an increased number of 'follow-ups' in attempt to sight unidentified birds and locate pairs in their known territories. This delay likely caused the census to overlap with the beginning of nesting. A high number of single birds were observed, however, due to the overlap with nesting season, it cannot be determined whether all these birds were in fact single or part of a pair while their unobserved partner was on the nest.

With 16 pairs confirmed, five founders and four potential founders identified during the 2020 census, AiP must continue to work towards a population of at least 25 pairs derived from at least 40 founders as per KSG requirements for all kōkako reintroductions.

Due to challenges encountered in the 2020 census, Auckland Zoo recommends the following:

- 1) The ARD survey should again begin approximately a month before the walk-through survey, provided the birds have begun calling adequately, to allow for recorders to be deployed, collected and analysed within an acceptable time frame for surveyors to investigate areas where birds are detected.

- 2) The walk-through census period concludes by the beginning of October due to the decreased responsiveness of the birds attributed to the early onset of nesting behaviour, unless poor weather or other factors dictate otherwise.
- 3) A larger team of surveyors is recommended to carry out the walk-through survey allowing for an earlier conclusion to the census; six weeks is the recommended time frame (Flux and Innes, 2001). Additionally, this provides the ability to avoid running into difficulties such as the beginning of nesting season.
- 4) If poor weather or other unexpected factors put constraints on the completion of the walk-through survey, the blocks not able to be covered should be surveyed using ARD's to detect any birds present in the areas and, if the KSG again concurs, the walk-through survey should be halted, and the focus shifted to finding birds in their previously known territories.

5. Acknowledgments

Auckland Zoo would like to thank Grant Capill, Mark Darin, Gillian Wadams, Ginny Woodyard and Annalily van den Broeke for their assistance with the walk through survey; Kevin Ferguson and Eric Wilson for deploying and analysing recorders; and Gillian Wadams, Sam Lincoln and Harriet Jones at Forest & Bird for the on-going partnership in the AiP ecological restoration project.

6. References

Flux, I. and Innes, J. (2001). *Kōkako management folder: Threatened species occasional publication 19*. Wellington, New Zealand: Biodiversity Recovery Unit, Department of Conservation.