

Ark in the Park

2017 Kōkako Census Report



Photo courtesy of Deja Rivera

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1. Summary

Auckland Zoo (AZ) conducted a 2017 census of North Island kōkako (*Callaeas wilsoni*) in Ark in the Park (AiP) from late August to end of October. The census was completed largely in accordance with the Department of Conservation Standard Operating Procedures (Flux and Innes, 2001). A combination of walk-through surveys and automated sound recorders were used to identify areas with birds. Once identified, zoo staff and trained volunteers followed the birds to determine whether they were paired or single birds, adults or sub-adults and if each individual was colour banded or unbanded. By the end of the census period, 24 founders, 15 unbanded birds and 6 banded AiP birds (fledglings from previous seasons) were identified. Among the birds identified, 15 pairs (including 17 founders) and one unbanded single were confirmed as territorial while the other birds were either floating or insufficient information was gathered to confirm territoriality.

2. Methods

Census

The 2017 census of AiP, which commenced in late August and was completed by the middle of October, was conducted using a combination of the following two methods: walk-through survey and automated sound recorders. 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. Three-hundred and nine sites within the established management area, thirty-seven sites in the new N block and twenty-five sites outside of the management area were sampled in this manner. Another seventy sites were sampled using automatic Acoustic Recording Devices (ARDs) to detect kōkako calls in R, F, T and AN blocks.

For birds to be included in the territorial count, they had to meet the following Flux and Innes field criteria:

- 1) For banded kōkako which are previously known to be territorial in same place as the 2016 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 Kōkako Specialist Group (KSG), the most northern blocks of AiP (L, B, U and P) were not surveyed (by either foot or automated recorders) as part of the 2017 census as no kōkako have been detected in these areas in previous census years (though kōkako were detected in those blocks while translocated after release) In total, 600 AZ staff hours and over 200 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 2017 census (as part of the set protocol for the walk-through survey) was as follows:

- 1) 3 AiP dialect mew calls, followed by a 5 minute listening period
- 2) 3 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 and AN blocks for the 2017 census. The ARDs used are either designed and built by AiP volunteer Eric Wilson or designed and sourced from DOC. A total of fourteen recorders (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 2017 census of kōkako in AiP commenced late August with follow up tasks completed by end of October at which point 24 founders (see Table 1 and figures 1 and 2), 15 unbanded birds and six banded AiP birds (see Table 2) were identified. Fifty percent of the founders identified were sighted more than 200m from the AiP boundary into the management area (see Table 3) with the other fifty percent sighted within 200m of the AiP boundary and/or outside of AiP (see Table 4). Of the 45 birds identified in total, 15 pairs and one single bird were confirmed as territorial (see figure 3). All other birds were either floating or not enough information could be gathered to determine if they were holding a territory.

The 15 territorial pairs consisted of five previously confirmed founder pairs (Maurice/Kowhai, Pierre/Sophie, Karen/Sylvain, Aumangea/Thurley and Tahī Kaha/Aroha), one new founder pair (Te Ariki/Rata), four unbanded pairs (pair#1: IW10, pair#2: Fairy Falls, pair#3: N5/S.IW junction, and pair#4: IW6 S. end) and five founders paired with unbanded birds (Marty, Ataahua¹, Totara, Puke, and Kiwitea). Te Ariki was last sighted in November 2015 and Rata was a territorial single since 2014. Totara and Puke were a founder pair in the 2016 census, but both birds were found holding separate territories with unbanded partners this census. The single territorial bird was unbanded.

In addition to the confirmed territorial birds, another seven founders (Gordon, Ranginui, Manuka, Papari, Nuage, Frances and Zelah) were identified as either floating or appeared to be paired up, but surveyors could not positively determine if they were holding a territory. Gordon and Ranginui, a potential male/male pair, were only sighted once in the south eastern corner of the new N block despite a follow up and the adjacent lines areas being surveyed. Papari was observed gradually moving south outside of the AiP management area during the

¹ Previously named Graeme in 2016 census

census period. At first, Papari was sighted alone in the middle of KOK block, but was later re-sighted in N block with Manuka who was last sighted in 2015 census. Despite immediate follow ups, neither bird could be positively identified again in the area though birds were calling in the vicinity. Thereafter, upon an of an investigation of Upper Huia track, Papari was sighted 600-700m down the track with Nuage who had not been sighted since release in May 2016. Frances was initially paired with an unbanded bird at a residential property across Scenic Drive and Zelah was detected by ARDs early in the census and appeared to be a territorial single bird in T block. However, Zelah was not responsive to playback in follow up visits, but a single bird singing Mapara dialect was again detected on ARDs deployed later on in T block. By the end of the census, Zelah was eventually re-sighted with Frances on the same ridge as her first sighting. The two founders appeared to be a potential new pair, but neither bird could be recalled in subsequent follow ups. The unbanded bird previously paired with Frances was also not re-sighted at the Scenic Drive residence.

Six of the seven birds banded in the 2015/2016 breeding season were identified in the 2017 census. Of the six birds, Nina and Kapua were only sighted once; whereas Indigo, Pūtahi, Cloud and Kohu were sighted multiple times in various locations. Apart from Indigo, who was first sighted in CGN block before moving further south, the banded AiP birds were all sighted in the most southern blocks of the management area. Indigo and Pūtahi's natal territory was in D block with founder parents Karen and Sylvain. No other banded birds from previous breeding seasons were identified.

Several founders seen during the 2016 census were not observed this season. Grace and Dylan could not be located in their previous known territories despite multiple visits, nor were they sighted in any of the other areas surveyed. Bryda and Rereahu, who were only sighted once last census, were not observed either. Due to the new southern extension of the AiP management area, N block, more founder birds were identified in the 2017 census. Manuka, Gordon and Ranginui were only sighted in N block. In addition, Kiwitea/UB, Papari, Cloud, Putahi and unbanded pair #1 and #3 were also seen to crossover from KOK and IW blocks into N block.

As in previous years, the majority of identified birds were sighted in the southern half of AiP, mainly in AWS, KOK, IW and N blocks with the exception of Karen/Sylvain still holding the same territory in D block, though their territory was confirmed to extend further north and south than ever before. This census more pairs were found holding territories in AWN block than in previous years as well as a new pair and territorial single in G block, indicating the birds are starting to spread further north in the AiP management area.

Table 1. Summary of the founder kōkako population at end of 2017 census

Name	Sex	Band Combo	Status	
Maurice	M	M-RG	Pair seen 2016 census	Waipapa site 7
Kowhai	F	M-RLg	Pair seen 2016 census	Waipapa site 6
Sylvain	M	M-WR	Pair seen 2017 census	Tunawae-middle pair
Karen	F	M-RW	Pair seen 2017 census	Waipapa site 4
Tahi Kaha	M	/-YM	Pair seen 2017 census	Mapara
Aroha	Y	YM-OW	Pair seen 2017 census	Mapara
Aumangea	M	YM-YG	Pair seen 2017 census	Mapara
Thurley	F	YM-YR	Pair seen 2017 census	Mapara
Pierre	M	M-YR	Pair seen 2017 census	Tunawae - pair
Sophie	F	M-GY	Pair seen 2017 census	Tunawae - pair
Te Ariki	M	YM/YO	Pair seen 2017 census	Mapara-Rain 1 (South)
Rata	F?	M-BR	Pair seen 2017 census	Mapara-Rain 1 (South)
Marty	M	M-YG	Paired with unbanded bird 2017 census	Waipapa
Kiwitea	F	YM-GB	Paired with unbanded bird 2017 census	Mangatutu
Ataahua	F	YM-OG	Paired with unbanded bird 2017 census	Mapara
Totara	M	M-WG	Paired with unbanded bird 2017 census	Waipapa site 5
Puke	F	M-WY	Paired with unbanded bird 2017 census	Waipapa site 7
Frances	M	YM-GR	Seen 2017 Census	Mapara
Gordon	M	YM-YB	Seen 2017 Census	Mangatutu
Ranginui	M	YM/LO	Seen 2017 Census	Mangatutu
Zelah	F	YM-RY	Seen 2017 Census	Mapara
Papari	?	YM-GO	Seen 2017 Census	Mapara
Manuka	F	M/YB	Seen 2017 Census	Waipapa
Nuage	M	YM-RO	Seen 2017 Census	Mapara
Dylan	M	M-YW	Paired with unbanded bird 2016 census	Tunawae
Grace	F	M-GW	Seen with unbanded bird 2016 census	Tunawae-Rain
Rereahu	M	YM-LR	Seen with unbanded bird 2016 census	Mangatutu
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
Tahi	M	YM/LY	Released Aug 2015	Mangatutu
Duncan	M	M/RY	Last seen May 2013	Tunawae-Nth Ea access
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 2. Summary of banded AiP kōkako population at end of 2017 census

Name	Sex	Band Combo	Status	Dam/Sire
Indigo	?	LG-RM	Seen 2017 census	Karen/Sylvain
Pūtahi	?	YR-RM	Seen 2017 census	Karen/Sylvain
Nina	?	YW-RM	Seen 2017 census	Kowhai/Maurice
Cloud	?	RW-RM	Seen 2017 census	Unbanded/Marty
Kapua	?	RY-RM	Seen 2017 census	Unbanded/Marty
Kohu	?	LY-RM	Seen 2017 census	IW10 pair (#1)
	?	LR-RM	Fledged 2017	IW10 pair (#1)
	?	RG-RM	Depredated Nov 2016	IW10 pair (#1)
	?	YG-RM	Depredated Nov 2016	IW10 pair (#1)
Misty	?	WY-OM	Fledged Jan 2016	Manuka/Marty
Mapere	?	WG-OM	Fledged Jan 2016	Manuka/Marty
		WR-OM	Thought to be depredated Jan 2016	Kowhai/Maurice
		YG-OM	Thought to be depredated Jan 2016	Kowhai/Maurice
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
Brittany	F	L-YM	Deceased Sept 2014	Punga/Moby

Table 3. Founder sightings inside AiP management area.

Name	Sex	Band Combo	2017 Sighting Information
Maurice	M	M-RG	Pair holding same territory along Cutty Grass Track as 2016 census
Kowhai	F	M-RLg	Pair holding same territory along Cutty Grass Track as 2016 census
Pierre	M	M-YR	Pair holding same territory in KOK block as in 2016 census
Sophie	F	M-GY	Pair holding same territory in KOK block as in 2016 census
Tahi Kaha	M	/-YM	Pair holding same territory in AWS block as in 2016 census
Aroha	F	YM-OW	Pair holding same territory in AWS block as in 2016 census
Marty	M	M-YG	Paired with unbanded bird and holding same territory as 2016 census
Puke	F	M-WY	Paired with Totara in 2016 census. Now paired with unbanded bird in IW block
Gordon	M	YM-YB	Sighted once with Ranginui in new N block
Ranginui	M	YM-LO	Sighted once with Gordon in new N block
Manuka	F	M-YB	Not sighted during 2016 census. Sighted once with Papari in new N block
Zelah	F	YM-RY	First sighted as a single in T block. Later sighted in same area with Frances

Table 4. Founder sightings within 200m of AiP boundary and/or outside of AiP.

Name	Sex	Band Combo	2017 Sighting Information
Karen	F	M-RW	Pair holding same territory in D-block as 2016 census
Sylvain	M	M-WR	Pair holding same territory in D-block as 2016 census
Thurley	F	YM-YR	Pair holding a similar territory as 2016 census in middle NE part of AWN block
Aumangea	M	YM-YG	Pair holding a similar territory as 2016 census in middle NE part of AWN block
Te Ariki	M	YM-YO	Pair holding new territory along Gleeson access line and into G block
Rata	F?	M-BR	Pair holding new territory along Gleeson access line and into G block
Kiwitea	F	YM-GB	Paired with unbanded bird, holding same territory as 2016 census, which extends into new N block
Ataahua	F	YM-OG	Paired with unbanded bird, holding a territory within AWN and IW blocks
Totara	M	M-WG	Paired with Puke in 2016 census. Now paired with unbanded bird in old territory
Frances	M	YM-GR	First sighted with unbanded bird on Scenic Drive. Later sighted with Zelah in T block
Papari	M?	YM-GO	Not sighted in 2016 census. Sighted three times gradually moving south out of AiP
Nuage	M	YM-RO	Not sighted in 2016 census. Sighted once with Papari along Upper Huia track

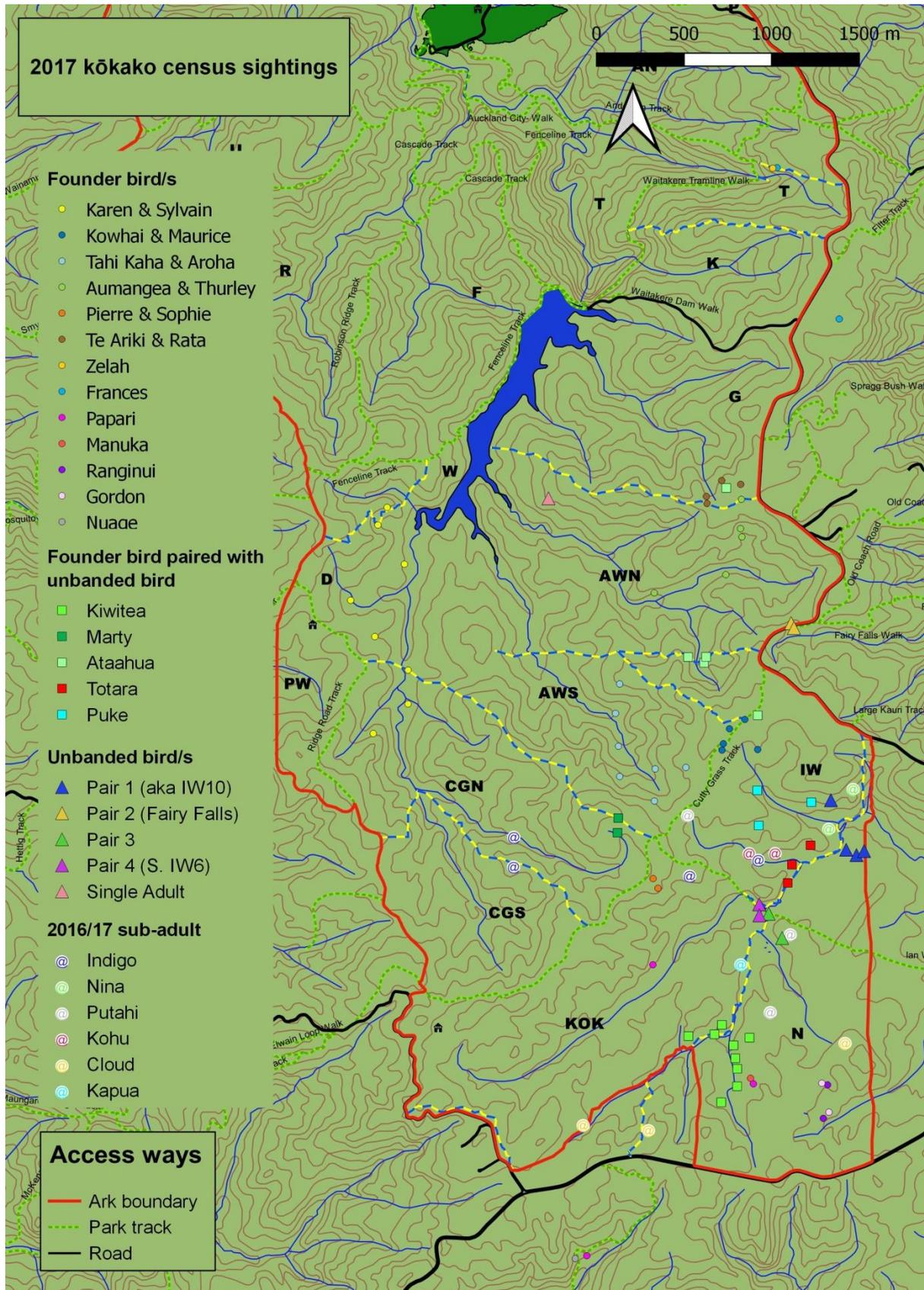


Figure 2: Census results by individual bird

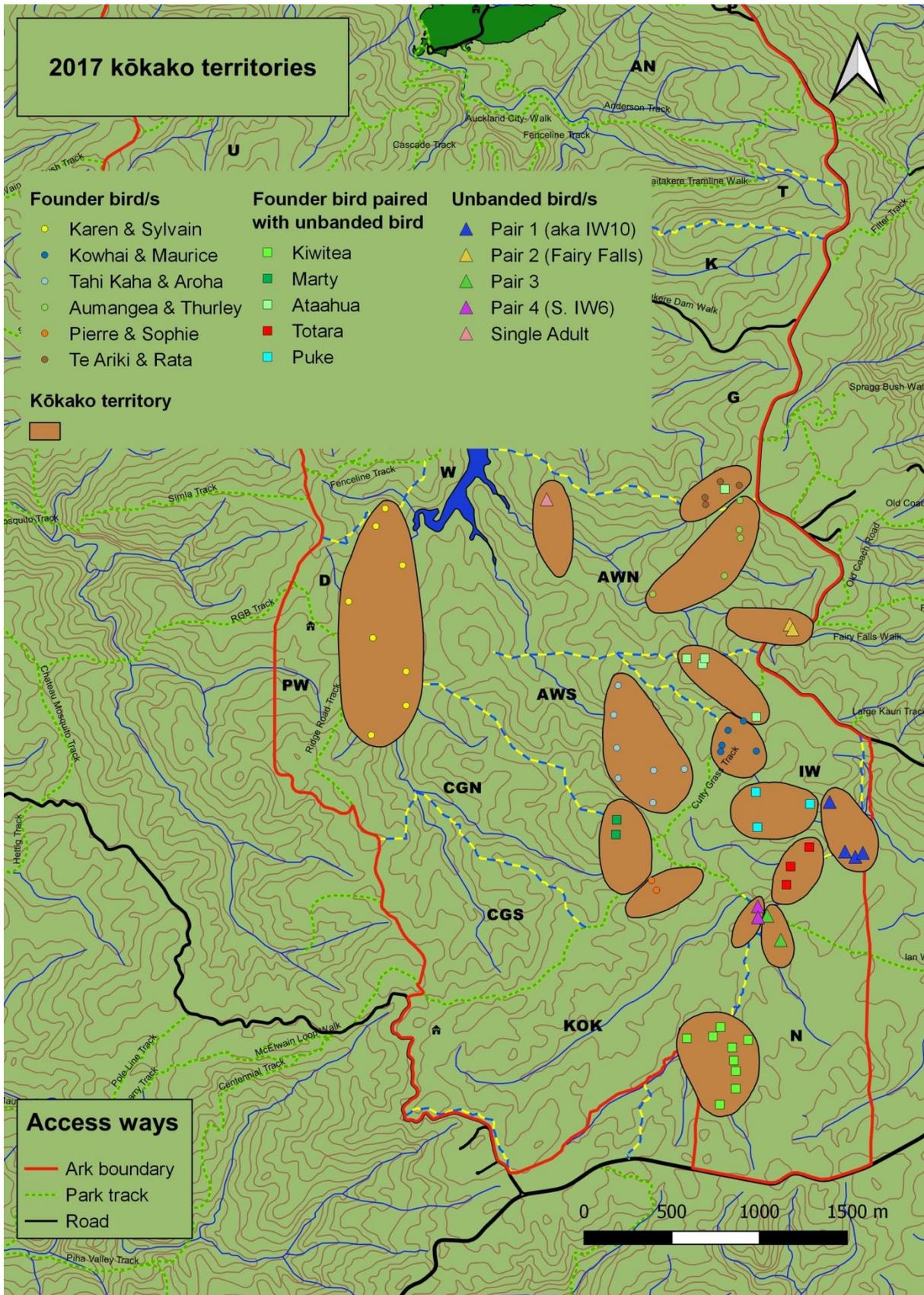


Figure 3: Territories held at the time of the 2017 census

4. Discussion and Recommendations

During the 2017 census, surveyors continued to identify more birds than in previous census years. The successful identification of more birds can largely be attributed to surveyors having a more thorough understanding of the distribution of AiP's kokako population as well as being more proficient at navigating the difficult terrain in and around the management area. Moreover, each surveyor being equipped with a Foxpro and quality recordings of AiP, Mapara and Mangatutu dialect continues to be very effective for eliciting a response and investigation by the birds. In particular, a new mew of AiP dialect was used in this census' standard playback sequence and triggered a stronger initial response than previously observed. These improved techniques enabled surveyors to better determine territory size and boundaries for the majority of confirmed pairs by providing the opportunity for longer 'follows'. The territory mapping of AiP's growing kokako population is continually improving with each consecutive census.

Several changes within the kokako population were observed during the 2017 census. With more birds establishing territories in the central/eastern part of the management area, the growing population appears to be moving both north and south. Additionally, through the anchoring effect offered by the presence of con-specifics, the increase in population density may have contributed to the high proportion of birds banded last breeding season that were re-sighted this season. Future censuses will determine if these are continuing trends. Further changes included a long-established founder pair splitting and pairing up with unbanded birds and previously single founders pairing up to form new founder pairs, which is a positive development for genetic diversity of the population.

With 15 pairs confirmed and 24 founders identified during the 2017 census, AiP is progressing steadily towards a genetically viable population of 25 breeding pairs and 40 established founders as per KSG requirements for all kōkako reintroductions.

For the 2018 census, Auckland Zoo recommends the following:

- 1) The blocks directly north of the dam (R, F, western T and AN) are surveyed using sound recorders and if the KSG again concurs, the most northern blocks (B, P, L, U and C) are not surveyed as no territorial birds were detected in the blocks surveyed by ARDs or near the blocks not surveyed.
- 2) The ARD survey should begin at least 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 while balancing follow up investigations of territorial birds for territory mapping in the walk-through survey blocks.
- 3) The walk-through census period concludes before mid-October due to the birds becoming less responsive prior to the onset of nesting behaviour and does not exceed six weeks, unless poor weather dictates otherwise.
- 4) Sufficient time is allocated to investigating the new N block, south of IW access line along Scenic Drive and south of Piha Road for more territorial pairs as at least one

unidentified territorial pair and numerous founders were sighted in these areas and could significantly add to the total number of AiP territorial pairs by the next census period.

5. Acknowledgments

Auckland Zoo would like to thank the AiP kōkako volunteers, Mark Darin, Kevin Ferguson and Grant Capill, for assisting with the walk-through surveys; Kevin Ferguson and Eric Wilson for the many hours spent deploying and analysing recorders; Dave Bryden for his advice and expertise in kōkako management; and Gillian Wadams and Laurence Bechet 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.