

Ark in the Park

2018 Kōkako Census Report



Photo courtesy of Mark Darin

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1. Summary

Auckland Zoo (AZ) conducted a 2018 census of North Island kōkako (*Callaeas wilsoni*) in Ark in the Park (AiP) from late July to mid-October 2018. The census was completed 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. By the end of the census period, seven founders, 10 potential founders, 17 unbanded birds and six banded AiP birds (hatched in the two previous breeding seasons) were identified. Among the birds identified, 16 pairs (which included 12 translocated birds: five founders and seven potential founders) and two single birds (including one potential founder) were confirmed as territorial while the other birds were either ‘floating’ or insufficient information was gathered to determine territoriality.

2. Methods (as specified in Ark in the Park 2017 Kōkako Census Report)

Census

The 2018 census of AiP, which commenced late July and was completed by early October, was conducted using a combination of the following two methods: walk-through survey and automated ARDs. 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 forty seven sites within the established management area and twenty-three sites outside of the management area were sampled in this manner. Another fifty three sites were sampled using 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 criteria (from Flux and Innes, 2001):

- 1) For banded kōkako which are previously known to be territorial in the same place as the 2017 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 and P) were not surveyed (by either foot or ARDs) as part of the 2018 census as no kōkako have been detected in these areas in previous census years (though kōkako were detected in those blocks while being

radiotracked after release). In total, 630 AZ staff hours and over 140 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 2018 census (as part of the set protocol for the walk-through survey) is as follows:

- 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 and AN blocks. The ARDs used are either designed and built by AiP volunteer Eric Wilson or designed and 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 2018 census of kōkako in AiP commenced 30 July with follow up tasks completed by 16 October at which point seven founders and 10 potential founders (see Tables 1 & 2 and Figures 1 & 2), 17 unbanded birds and six banded AiP bred birds (see Table 3) were identified. Of the 40 birds identified in total, 16 pairs and two single birds were confirmed as territorial (see Figure 3). The remaining were identified as either floating or surveyors could not gather enough information to determine if they were holding a territory.

The 16 territorial pairs consisted of:

- One previously confirmed potential founder pair (Aumangea/Thurley)
- One new founder pair (Frances/Zelah)
- Four unbanded pairs (pair#1: G block, pair#2: D block, pair#3: IW10, and pair#4: KOK19)
- One founder and one potential founder paired with banded AiP birds (Pierre/Indigo and Ataahua/Kapua)
- Two founders (Maurice and Kiwitea) and three potential founders (Tahi Kaha, Totara and Puke) paired with unbanded birds
- Two banded AiP birds paired with unbanded birds (Pūtahi and Cloud)
- One potential founder (Ranginui) paired with an unidentified bird

Frances/Zelah, who were observed together once at the end of the 2017 census and were unable to be recalled to determine if they were a new pair holding a territory, were observed over the 2017/2018 breeding season to successfully nest and fledge a chick. In the 2017 census, Maurice was paired with Kowhai, Tahi Kaha with Aroha and Pierre with Sophie however both Maurice and Tahi Kaha were found this census in their previously known

territories paired with unbanded birds and Pierre with a banded AiP bird. Their original partners were not found. Indigo, Kapua, Pūtahi and Cloud have all paired up for the first time. Ranginui was observed holding a territory with a second bird however despite many follow-ups surveyors could not identify his partner. Gordon and an unbanded bird were both sighted as territorial single birds.

In addition to the confirmed territorial birds, two founders (Karen and Manuka) and two potential founders (Papari and Tahī) were identified as either floating or it could not be determined if they were holding a territory. Karen was only sighted once alone on the western edge of CGN block despite multiple follow-ups. Her partner in the 2017 and previous censuses, Sylvain, was not sighted. Manuka and Papari were sighted only once in the south western area of N block, with two other birds. Despite multiple visits to the area and adjacent lines they were not re-sighted and it could not be determined if they were a pair (or pairs) or were holding a territory. Tahī, who was last sighted at release into the AiP management area in 2015, was sighted once in N block. Due to the birds in KOK and N blocks showing early onset of nesting behaviours, they quickly became less responsive to playback and it could not be determined if there were more birds in these areas.

Five of the seven birds banded in the 2016/2017 breeding season were identified in the 2018 census (see Table 3). Of these five birds, Kapua had paired up with a potential founder, Indigo with a founder and Cloud and Pūtahi had paired up with unbanded birds. Three of these birds (Kapua, Indigo and Pūtahi) were found holding territories in the southern half of the AiP management area. Cloud was observed holding a territory outside of the management area between N block and the southern end of Ian Wells track. Nina was only sighted once as a single bird and appeared to be floating. Kohu, observed multiple times in the 2017 census, was not sighted during this census. Gahnia, one of the two birds banded in the 2017/2018 breeding season, was identified and sighted multiple times in its natal territory, western N block, and on one occasion across Piha Road, outside of the management area. No other banded birds from previous breeding seasons were identified.

Four founders and four potential founders sighted during the 2017 census were not observed this census. Kowhai, Marty, Sylvain, Sophie, Aroha, Te Ariki, Rata and Nuage could not be located despite multiple visits to their previously known territories. Kowhai, Sophie and Aroha's partners from the 2017 census (Maurice, Pierre and Tahī Kaha respectively) were all sighted in their previously known territories with new partners, either unbanded or banded AiP birds. Sylvain's partner, Karen, from previous censuses was observed alone on the western edge of CGN block, close to their previously known territory. An unbanded pair (pair #2) occupied nearly the entirety of Sylvain/Karen's former territory. Marty could not be located in his previously known territory in AWS and CGN blocks however this area made up parts of territories occupied by two new pairs, Pūtahi/Unbanded and Pierre/Indigo. Neither Rata nor Te Ariki, a new pairing in the 2017 census, were sighted this census but Rata was observed by Dave Bryden and Amanda Rogers during the 2017/2018 breeding season with head injuries and significant feather loss indicating a potential encounter with a large predator (*Bryden & Rogers, 2018*). Nuage, who was only sighted once outside of the management area in the 2017 census, was not observed either. As in previous years, the majority of identified

birds were sighted in the southern half of the AiP management area, mainly in CGN, AWS, IW, KOK, and N blocks. More birds were found holding territories in N block with one pair outside of the management area. During this census, pairs have also been found holding territories further north than previous censuses. A new pair was found holding a territory in G block and a founder pair in K block spanning east across Scenic Drive to residential properties indicating that although the majority of the population is found in the southern half of the AiP management area, it appears to be slowly spanning further north.

Table 1. Summary of the founder kōkako population at end of 2018 census. Note that for tables 1 to 3 all non-highlighted rows indicate birds not sighted during the 2018 census. See page 12 for birds seen after the census (post census notes).

Name	Sex	Band Combo	Status	Source
Frances	M	YM-GR	Pair seen 2018 census	Mapara
Zelah	F	YM-RY	Pair seen 2018 census	Mapara
Pierre	M	M-YR	Paired with Indigo 2018 census	Tunawae-pair
Maurice	M	M-RG	Paired with unbanded bird 2018 census	Waipapa site 7
Kiwitea	F	YM-GB	Paired with unbanded bird 2018 census	Mangatutu
Karen	F	M-RW	Seen 2018 census	Waipapa site 4
Manuka	F	M/YB	Seen 2018 Census	Waipapa
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 2018 census.

Name	Sex	Band Combo	Status	Source
Aumangea	M	YM-YG	Pair seen 2018 census	Mapara
Thurley	F	YM-YR	Pair seen 2018 census	Mapara
Ataahua	F	YM-OG	Paired with Kapua 2018 census	Mapara
Tahi Kaha	M	/-YM	Paired with unbanded bird 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
Ranginui	M	YM/LO	Paired with unidentified bird 2018 census	Mangatutu
Gordon	M	YM-YB	Seen 2018 Census	Mangatutu
Papari	M?	YM-GO	Seen 2018 Census	Mapara
Tahi	M	YM/LY	Seen 2018 census. First sighting since release in 2015	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. Possibly predated	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
Rereahu	M	YM-LR	Seen with unbanded bird 2016 census	Mangatutu
Bryda	F	YM-RG	Seen 2016 Census	Mapara

Table 3. Summary of banded AiP bred kōkako population at the end of the 2018 census.

Name	Sex	Band Combo	Status	Dam/Sire
Indigo	F?	LG-RM	Paired with Pierre 2018 census	Karen/Sylvain
Kapua	M	RY-RM	Paired with Ataahua 2018 census	Unbanded/Marty
Pūtahi	?	YR-RM	Paired with unbanded bird 2018 census	Karen/Sylvain
Cloud	?	RW-RM	Paired with unbanded bird 2018 census	Unbanded/Marty
Nina	?	YW-RM	Seen 2018 census	Kowhai/Maurice
Gahnia	?	WM-GY	Seen 2018 census	Kiwitea/Unbanded
	?	GR-WM	Fledged 2017/18 breeding season	Kiwitwa/Unbanded
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 2017	Kowhai/Maurice
		YG-OM	Thought to be depredated Jan 2017	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

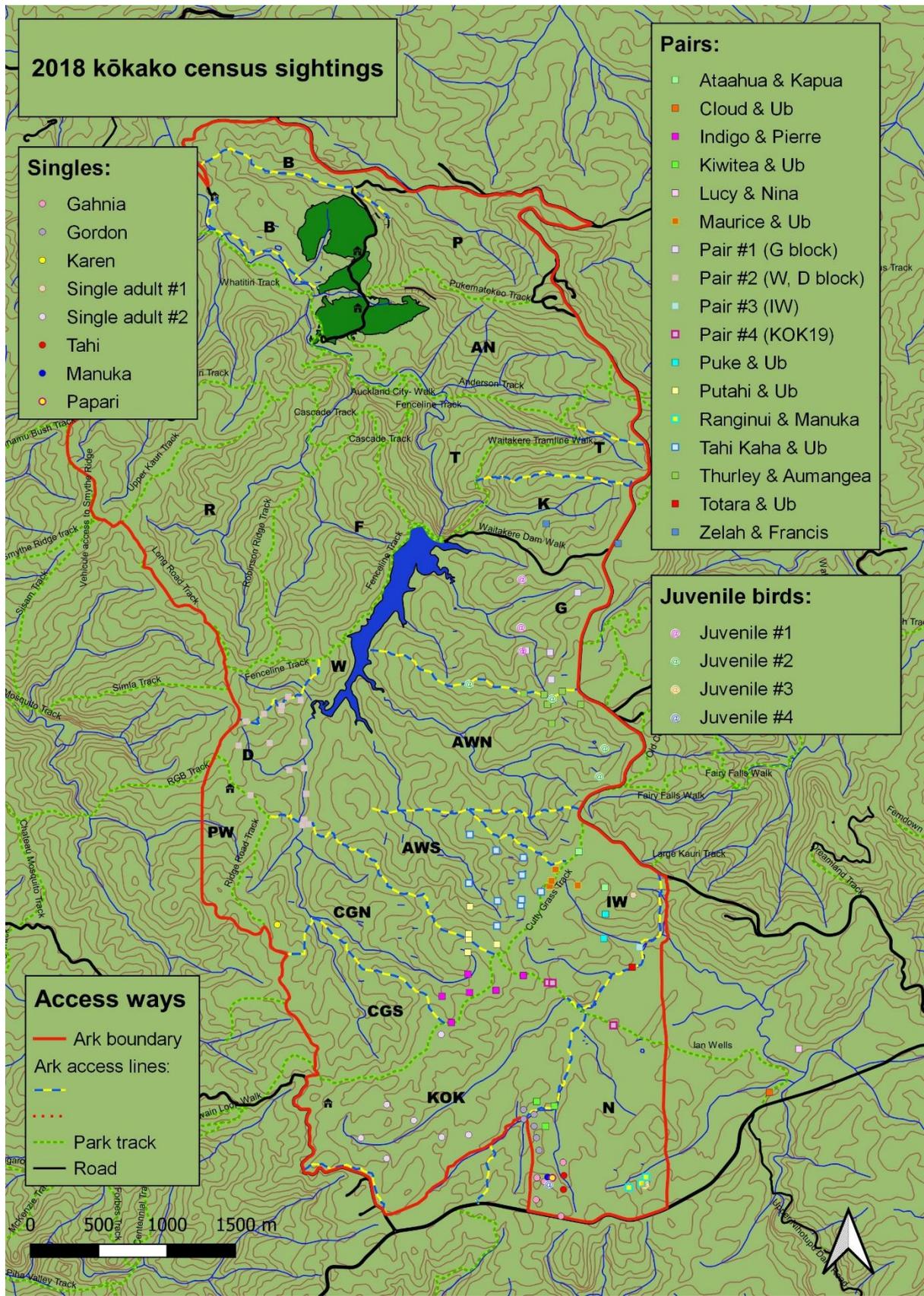


Figure 2: 2018 census results by individual bird

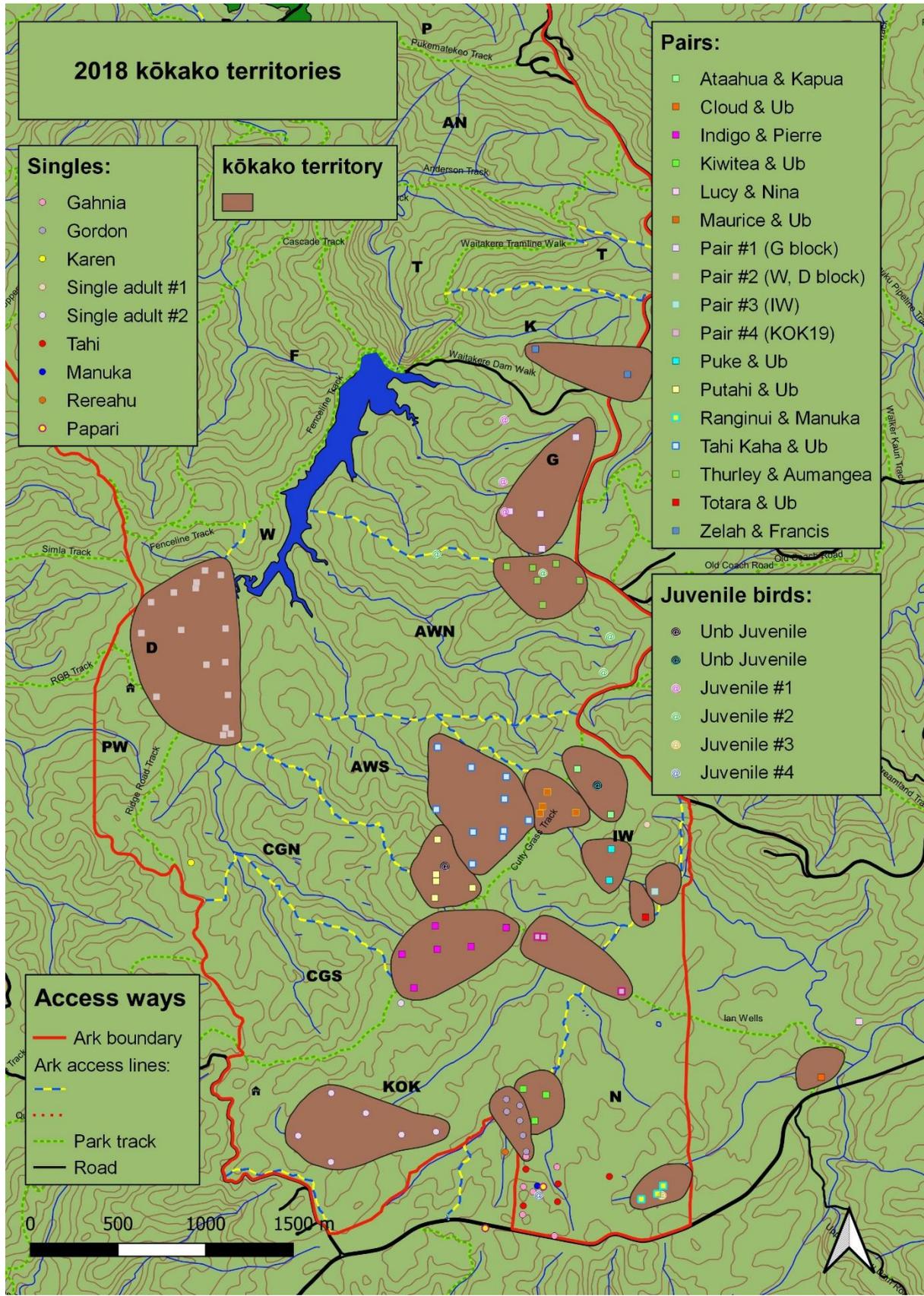


Figure 3: Territories held at the time of the 2018 census

4. Discussion and Recommendations

During the 2018 census, surveyors identified more pairs and unbanded birds than the previous census however fewer birds in total and fewer founders/potential founders were identified. The new mew used in the 2017 census' standard playback sequence continued to elicit a stronger initial response from the birds and recordings of the different dialects and a wider range of calls from multiple birds allowed for longer 'follows' providing the opportunity for surveyors to get a better understanding of pairing and to better determine territory boundaries. The early onset of nesting behaviours prior to the completion of the walk-through survey is a likely contributor to the fewer birds found and several pairing and territory changes likely led to fewer founders identified.

A number of changes were observed within the kōkako population during the 2018 census. Multiple pairs were observed to have split and paired up with unbanded and banded AiP birds, including two long-standing founder pairs and one potential founder pair. Territory changes were observed where AiP birds, both banded and unbanded, were found to occupy the long-standing territories of two founder pairs. Further changes also included a single potential founder holding a territory, previously single potential founders pairing up and banded AiP birds forming new pairings and holding territories with potential founders and unbanded birds. Unrepresented and under-represented birds that are able to raise chicks successfully this season will improve the genetic diversity of the population.

With 16 pairs confirmed, six founders and 11 potential founders identified during the 2018 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.

For the 2019 census, Auckland Zoo recommends the following:

- 1) Blocks R, F, Western T and AN are again surveyed using sound recorders and if the KSG again concurs, blocks B, P, L, U and C, the most northern blocks of the management area, are not surveyed as no territorial birds were detected in the blocks surveyed by ARDs or nearby.
- 2) The ARD survey should again 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.
- 3) 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 and does not exceed six weeks, unless poor weather dictates otherwise.
- 4) The walk-through survey is carried out from south to north (opposite to the direction of surveys to date) to ensure early completion of the blocks occupied by the majority of kōkako in the event of the early onset of nesting behaviours.

5. Post-census notes

Two potential founders were observed post-census. Lucy (M-LY) was sighted for the first time since 2011, paired with Nina and holding a territory outside of the management area. Rereahu was observed west of N block as a single bird and Manuka was discovered to be the unidentified bird paired with Ranginui. These new sightings increase the number of pairs observed during the 2018 kōkako census to 17 and the number of individual birds sighted to 42.

6. Acknowledgments

Auckland Zoo would like to thank Grant Capill, Mark Darin, Simon Lemmens and Mike Herbert for their assistance with the walk through survey; Kevin Ferguson and Eric Wilson for deploying and analysing recorders; and Gillian Wadams and Laurence Bechet at Forest & Bird for the on-going partnership in the AiP ecological restoration project.

7. References

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