

Hihi Breeding on Tiritiri Matangi Island

2017 – 2018 Breeding Season

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Note: There is a data embargo in place so please contact John Ewen prior to using data reported.

1. Summary

1.1 Key results for the current year

This season has seen the numbers of hihi on Tiritiri Matangi remain stable with the pre-breeding census results similar to last season. Productivity was also similar to the previous season; 57 females were observed to be breeding. Hatching success has remained high and the fledging success to was 52%. It was a short season With the majority of breeding attempts beginning late October and finishing early January.

150 and 173 individuals were recorded in the September 2017 and February 2018 censuses respectively. The first egg was laid on 22nd September and the last chick fledged on 7th February.

Table 1 Number of females breeding in the population on Tiritiri Matangi

	First year females	Older females
Seen in September survey	13	43
Breeding this season	16	41
Fledglings produced	16	137

2. Introduction

2.1 Background

The hihi, or stitchbird (*Notiomystis cincta*), is an endemic forest-dwelling passerine that was once found throughout the north island. The species declined rapidly in the late 1800s due to a loss of habitat, introduced predators, and possibly disease. The only remaining naturally occurring population is on little barrier island. In addition, there are five translocated populations maintained on Tiritiri Matangi Island, Kapiti Island, Zealandia (Karori) in Wellington, Maungatautari near Hamilton, and Bushy Park near Whanganui.

Hihi are sexually dimorphic, territorial cavity nesters with a mating system characterized by extra-pair and forced copulations. They breed between September and March, averaging two clutches of 4-5 eggs each. Hihi forage for nectar, fruit and insects and translocated populations rely heavily on provisioned sugar water in times of scarcity.

2.2 Site description

Tiritiri Matangi is a 220 hectare island roughly 3 kilometres long and one kilometre wide. It is located in the Hauraki Gulf, 28 kilometres north of downtown Auckland. Extensively farmed in the 1900's, Tiri has been replanted with over 280,000 trees since 1984 in an attempt to recreate the original northern broadleaf coastal forest.

The remnant mature forest on Tiritiri Matangi is dominated by kohekohe, taraire and pohutakawa. Other species on the island include: taupata, karamu, hangehange, mahoe, mapou, whau, ngaio, puriri, totara, rewarewa, hoheria, hinau, pigeonwood, kowhai, karo, akeake, manuka, kanuka, kawakawa, five finger, houpara, wharangi, rangiora, cottonwood, mingimingi, taurepo, native broom, koromiko, kumarahou, astelia, flax, muehlenbeckia, native jasmine, supplejack, and tree ferns.

Tiritiri Matangi is free from introduced predators, although there are many pairs of morepork (*Ninox novaeseelandiae*) and they are known to eat hihi. Two species of honeyeater, tui (*Prosthemadera novaeseelandiae*) and bellbird (*Anthornis melanura*), occur naturally on Tiri and compete with the hihi for food. Aggressive bellbirds regularly displace hihi at the sugar feeders. Tui, however, are excluded from the feeder cages by virtue of their larger size.

2.3 Personnel

The 2017-18 breeding season on Tiritiri Island was managed and monitored by Mhairi McCready.

Volunteers this season were: Sophie Journee, Kate Lee, Anne Boergers, Christine Friis & Joseph Satelle. Volunteer help is always useful and appreciated, all volunteers were competent in the tasks set for them. Mhairi organised the volunteers with help from Robynne Vis (DOC community ranger).

Two PhD students have been collecting data on the island during this season; Caitlin Andrews has been here for the majority of the season and is looking at individual foraging preferences of the hihi on Tiritiri. Alex Knight has sampled individual hihi and the area around feeder cages for parasites throughout the year. Alexis Rutschmann who is undertaking a post-doc on hihi has spent some time collecting data on Tiritiri this season, Helen Taylor also returned to sample male hihi for sperm in October.

3. Methods

3.1 Surveys

A pre-breeding survey and a post-breeding survey were conducted at the end of September 2017 and February 2018. Each of these involved approximately 40 person-hours spent recording band combinations of birds found throughout bush patches and at sugar feeders.

3.2 Distribution and placement of nest boxes

All major bush patches on the island contain hihi nesting boxes. Four nest boxes were removed this season after having not been used for seven consecutive seasons. There are 188 boxes currently spread across the island, which is adequate for the population size as it stands.

3.3 Nest site monitoring

Completed nests were checked almost daily until eggs were laid. When eggs were found to be warm or the female observed sitting for more than 10 minutes on 2 consecutive days incubation was confirmed. These nests were not checked again until day 13 of incubation, after which they were checked every day to check for hatching and until the chicks were 10 days old. After day 10 the nests were checked every-other day until day 21 when the chicks were banded. After banding the nests were not checked again until day 29 and everyday thereafter to determine fledging dates.

3.4 Nest box maintenance

Fourteen nest boxes were replaced with new as they had been out in the bush and used for breeding attempts for five years. All other nest boxes were cleaned at the beginning of the season. During the season all boxes that had been used for a breeding attempt were brought back to base and scrubbed with water, sprayed with trigene and left to dry in the sun for 24 hours before being returned. The backboards were scrubbed and sprayed with trigene at the time of box removal so they could dry before the box was returned.

3.5 Supplementary feeding regime

Sugar water was provided *ad libitum* in chicken-feeder-style plastic feeders placed in feeding stations at 6 locations on the island. Feeders were cleaned in hot soapy water, rinsed, and then sprayed with trigene, allowing a minimum of 10 minutes contact time. These were then rinsed and left to dry. Feeding stations were cleaned and disinfected with trigene on Mondays, Wednesdays and Fridays.

3.6 Banding and measurements

Nestlings were banded, weighed, measured and had blood drawn at 21 days old, on a few occasions the chicks were not large enough to band or sample but were still measured for consistency and banded & sampled at a later date. Tarsus measurements were "to the notch" and "full length"; "head- to-bill" was measured from back of the head to the tip of the beak. Each nestling was given a c-size metal band and a

combination of 3 plastic colour bands. All plastic bands were sealed using the new welding method. For a list of band combinations and measurements please contact John Ewen (john.ewen@ioz.ac.uk).

3.7 Health

Mite control was carried out this year. Nestlings with mites were treated with frontline; no nests were infested to the point of needing a replacement. Two male hihi were found dead this season, one was very old and dried out, the second was sent for necropsy, he was in poor body condition but no cause for this could be found.

4. Results

Visitor numbers to Tiritiri Matangi have been estimated using the number of passengers travelling on the ferry, this was 31,545 for 2017. All of these visitors will have had the opportunity to see a hihi on the island.

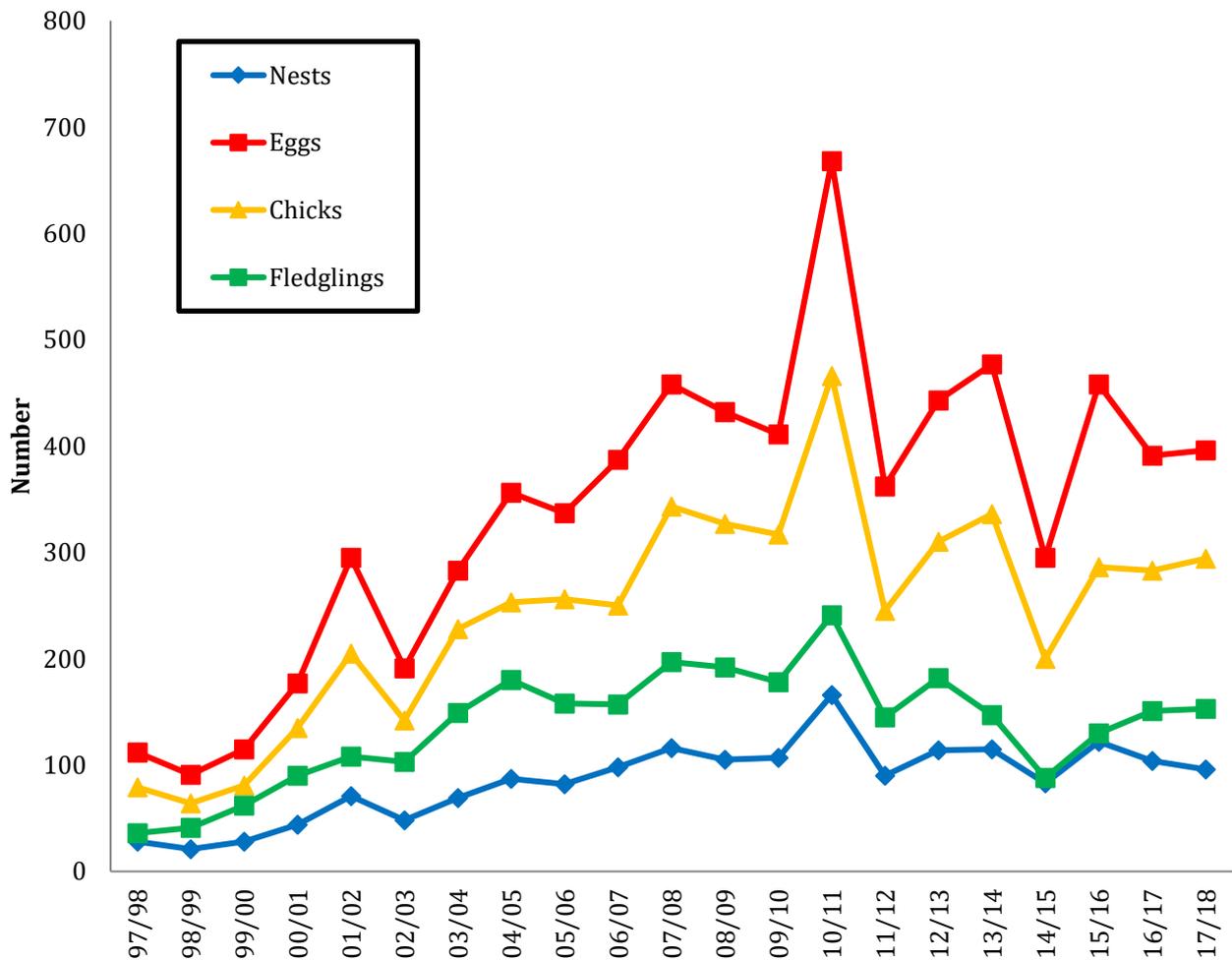


Figure 1 Number of nests, eggs, chicks and fledglings produced on Tiritiri Matangi from 1997 to 2017

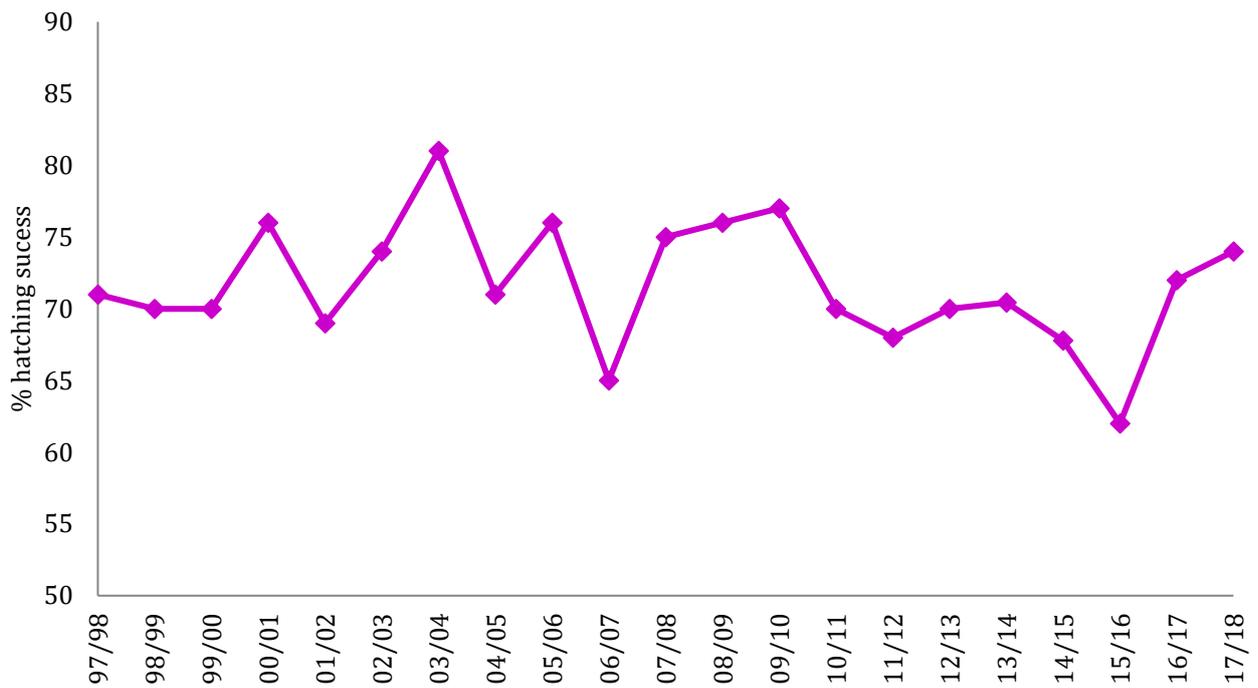


Figure 2 Hatching success on Tiritiri Matangi from 1997 to 2017

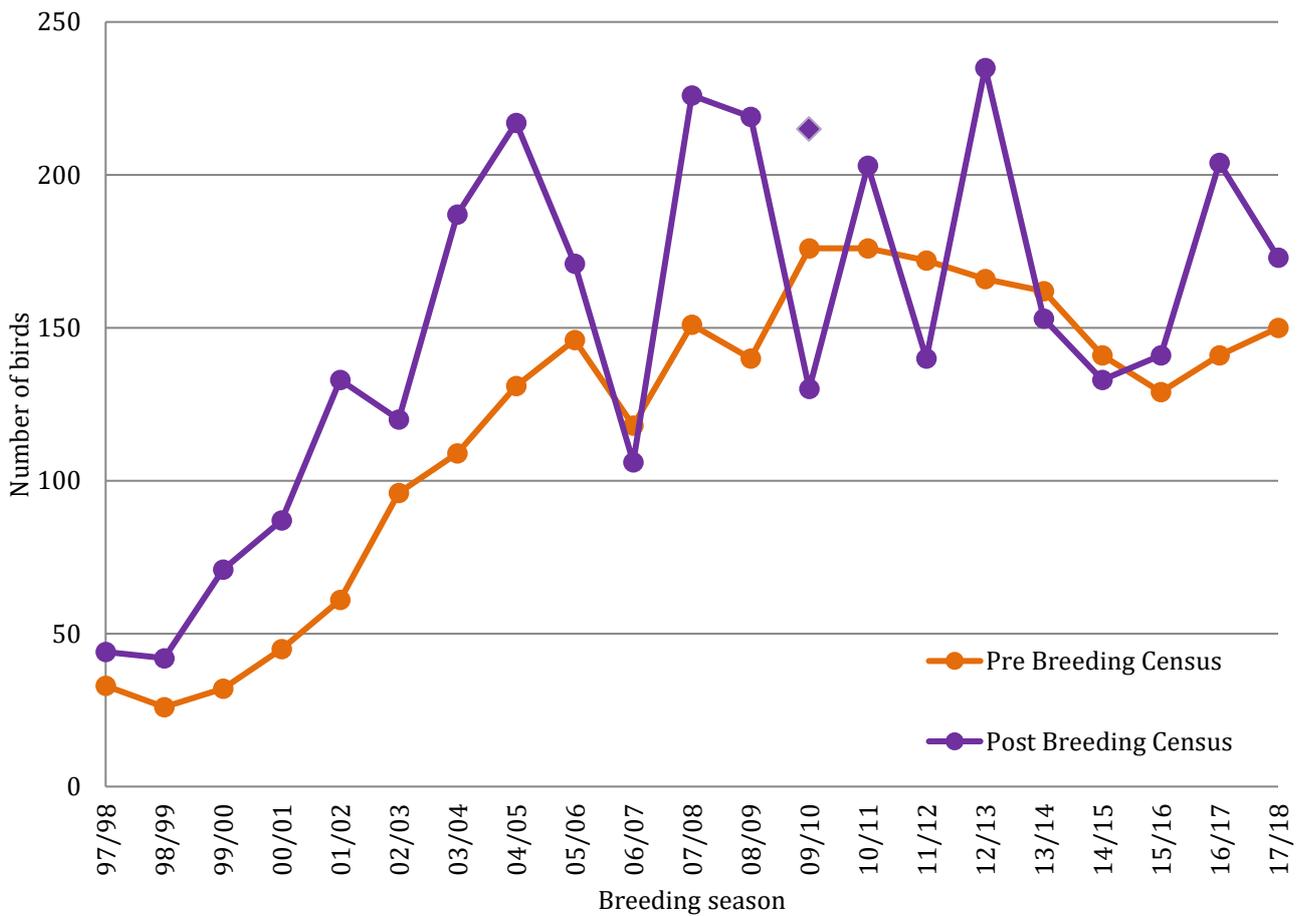


Figure 3 Number of birds recorded each year on Tiritiri Matangi during the two annual surveys from 1997 to 2018. Note that the survey of 09/10 took place immediately after juveniles were translocated; the single diamond shows the survey result including those removed.

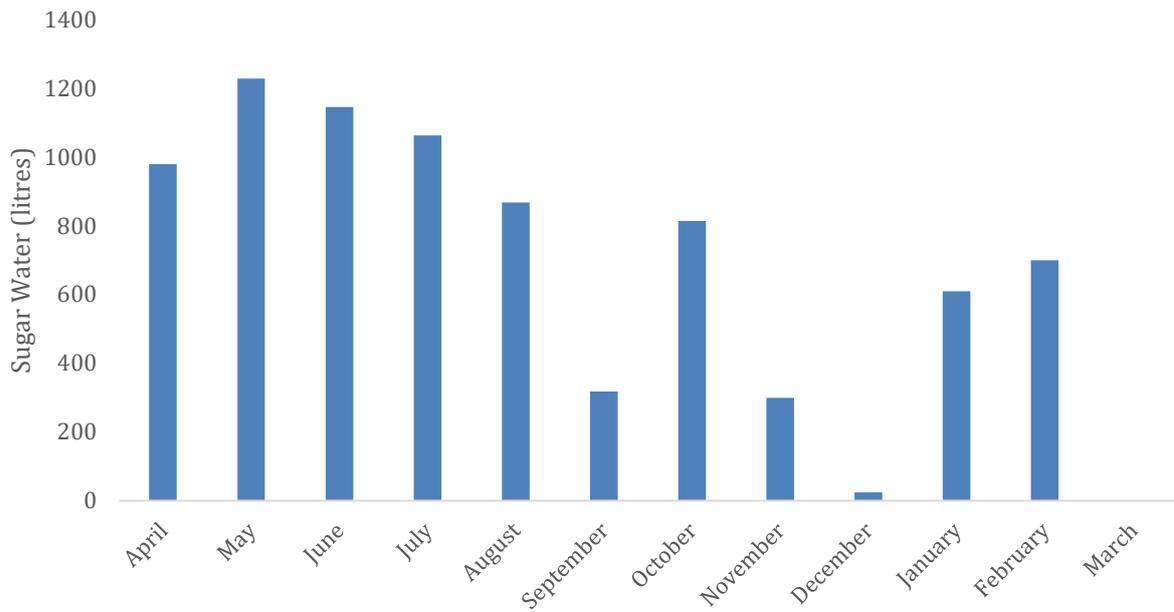


Figure 4 Sugar water consumption on Tiritiri Matangi for the 2017/2018 season.

5. Acknowledgments

The Department of Conservation and the Supporters of Tiritiri Matangi (SoTM) are critical components of this project. Many thanks to Kata & Vonny the supportive Tiri rangers. So many SoTM members were helpful, enthusiastic and interested as always and we appreciate their commitment to the hihi and this island project. Hihi conservation also benefits hugely from the hihi sponsors, Wesfarmers Industrial and NZ Safety Ltd.