

NGĀ MANU

o te ngahere me te moana



A. Mavrotheris, S. Peznola, E. Reimert, A. Thammana

Wellington Bird Life Awareness

An Interactive Qualifying Project submitted to the
faculty
of the WORCESTER POLYTECHNIC INSTITUTE
In partial fulfillment of the requirements of the
degree of Bachelor of Science in cooperation with
Zealandia Eco-Sanctuary at the New Zealand Project
Center on March 3, 2020

Submitted to:

Anastasia Turnbull,
Manager Learning and Engagement
Danielle Shanahan, *Director*
Leslie Dodson, *Project advisor*
Gary Pollice, *Project advisor*

Project Center Directors:

Professor Ingrid Shockey
Professor Michael Elmes

Submitted by:

Antoinette Mavrotheris
Samantha Peznola
Erik Reimert
Abhijay Thammana



Introduction

Zealandia is a Karori Sanctuary Trust managed eco-sanctuary with a mission to restore the land to its pre-human state, by developing a community of well-informed conservation advocates. The sanctuary design includes nine kilometers of predator exclusive fencing that allows for the successful regeneration of many vulnerable species, most notably birds. More than 40 different endemic bird species, that are exclusive to New Zealand, have been recorded in the park, which previously were almost nonexistent without the sanctuary.

Since the early 2000s, the eco-sanctuary has generated an increase in rate of the “spillover effect.” This effect occurs when bird populations fostered within Zealandia’s protection venture outside of the sanctuary fence into the surrounding urban sphere; the local population then has an opportunity to more frequently interact with a diverse array of bird life. This increase in interactions between humans and bird life in the public domain has created a need to promote healthy coexistence, along with the need to better understand Wellingtonian’s knowledge of bird life.



Project Goal

“

The identification and analysis of trends in Wellington bird life awareness.

”



Objectives

1. Assess previous studies and surveys
2. Identify missing information
3. Develop and execute a comprehensive survey





Takahē





Kākā

Assess Previous Studies

Our first objective involved understanding existing relevant data such as the 2013 and 2017 Interactive Qualifying Projects. We reviewed these previous surveys and created a list of repeatable questions. We also reviewed the responses from the 2017 project. We reorganized and reformatted the data to make analysis easier. We then wrote a program in Python to quantify each respondent's bird life knowledge into a singular score. For each correct answer, a person gained points towards their score.

We then conducted semi-structured interviews. Professor Ingrid Shockey, Associate Interdisciplinary Teaching Professor, was our first interviewee. Through this we gained an understanding of the analysis the previous team had performed. Danielle Shanahan and Anastasia Turnbull, our sponsors, were our next interviewees. In these interviews we acquired the contact lists used, the response data sheets and sponsor feedback on the surveys.

Lastly, we performed archival research in order to assess relevant case studies. During this research, we compiled a list of bird life knowledge topics which were consistent throughout all studies.





Pūtakitaki
(paradise duck)

Identify Missing Information

As a part of our second objective, we conducted a site assessment at Zealandia. We completed both participant and non-participant observations to gain a better understanding of the types of people who come to the eco-sanctuary and the types of people who volunteer. Furthermore, we conducted observations off-site on the shuttle rides and at local hubs around the city (i.e., cafes, food courts, popular streets). In these locations we found high populations of the demographic groups that were outlined in our preliminary research. We then conducted interviews with Zealandia staff such as our sponsors, Anastasia Turnbull and Danielle Shanahan, the Lead Community Educator, Steve Moorhouse, and a member of the marketing team, Pippa Drakeford-Croad to learn who is being consistently reached through marketing.

We also identified information that would be valuable for various stakeholders of our project. We used the same semi-structured interviews as mentioned previously to determine this information. From the interview with Danielle Shanahan, we gathered information primarily about the previous surveys. We asked which survey topics were still of interest to Zealandia and what new knowledge would be useful to survey. In the interview with Steve Moorhouse, we inquired about what information would be valuable to the education department from our survey.





Pied shag

Develop a Comprehensive Survey

In order to collect data from Wellingtonians, we designed a survey using Qualtrics. We used logic pathways and visual aides to help keep respondents engaged. We pretested the survey on advisors and fellow students to ensure that it was of an appropriate length and easy to read. We adjusted the survey based on their recommendations.

As for distributing the survey, we first held a semi-structured interview with Anastasia Turnbull to understand of the ways the two previous surveys were distributed. An interview with a member of Zealandia's marketing team also provided ideas for different distribution channels. Following the interviews, we expanded our ideas for locations for samples of convenience through participant observation. Our main distribution channel was social media, especially through *Facebook* advertising. Another effective method was mass emailing to contact lists we received from Zealandia, the Wellington City Council, and ones we composed, as they all led into snowball sampling. The last way we distributed the survey was flyers with a link to the survey. We posted the flyers at various locations throughout the central business district for passersby to see. All the distribution methods were supported by the incentive to be entered into a raffle for a year-long Zealandia membership.





Kererū
(Wood pigeon)



Kārearea

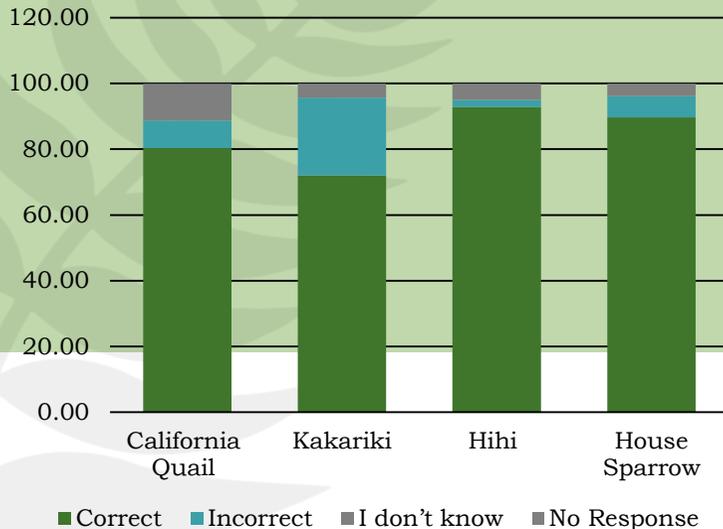


Tūi

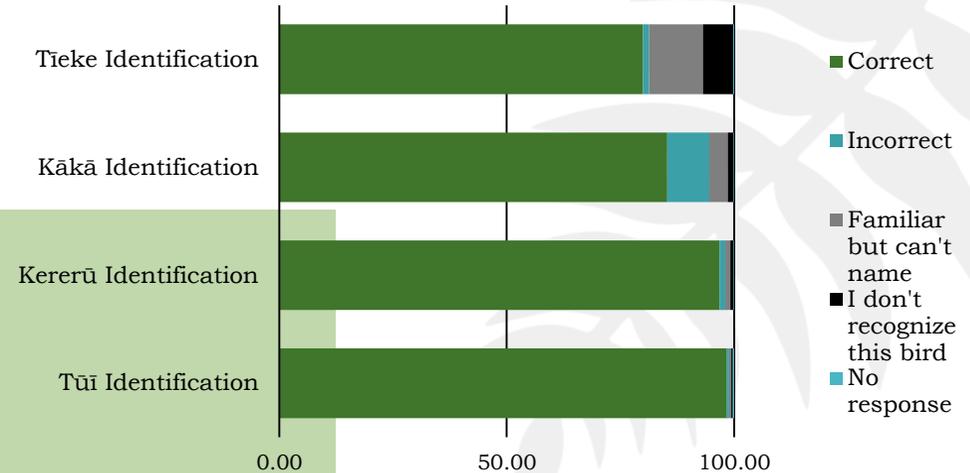
Bird Species Recognition

Respondents' bird life knowledge was tested on their ability to recognize and name four bird species; tūi, tīeke, kereru, and kākā. We further asked them to identify whether or not the house sparrow, kākārīki, hihi, and California quail were native to New Zealand.

Native and Non-Native Identification



Bird Species Identification



We found the highest accuracy in identifying the tūi, with 98% of respondents correctly identifying and naming the tūi and the lowest with identifying the tīeke (80%). Most respondents correctly identified the hihi as native (93%). The kākārīki posed the most difficulty with only 72% of respondents identifying it as native.





Pāteke
(Brown teal)



Pied shag

Bird Score

In order to understand the overall bird life knowledge of Wellingtonians, we analyzed the responses to species identification and native or non-native questions. To quantify this knowledge into a single value, we also generated a “bird score” for every respondent. The bird score was computed based on the correctness of survey responses with a range from 0 to 100, zero being no correct answers and 100 being all correct answers. The amount of points awarded for naming each species depended on how easily the surveyed Wellingtonians identified the species and how common the bird is throughout Wellington. In total, 98.42% of respondents were able to correctly name the tūi while people struggled the most to identify the tīeke. For this reason, a respondent who correctly identified the tūi received 13 points while a respondent who correctly identified a tīeke gained 17 points. Identification of the kākā parrot and the kereru were both worth 16 points.

Following the computation of a bird score for each respondent we were able to analyze correlations between different variables and bird life knowledge. These findings allowed us to formulate conclusions and gain a better understanding of variations in bird life knowledge.

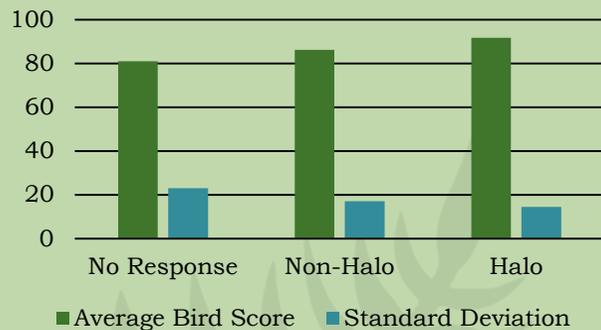




Kākā

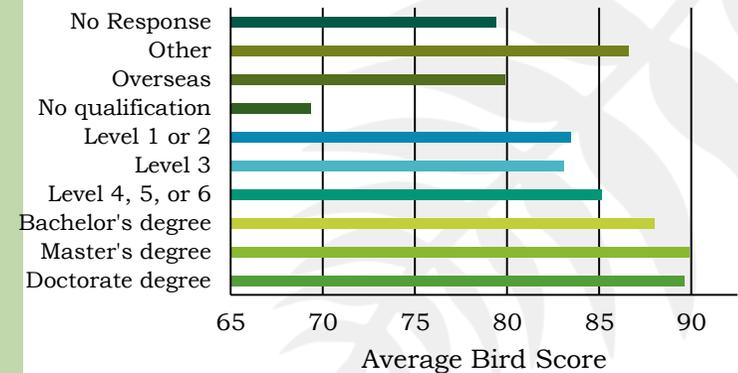
Analyses

Average Bird Score: Halo and non-Halo Region



By computing a two-sample, unpaired t-test, we concluded with 95% confidence that the average bird score for those in the Halo Region is significantly greater than those who live farther away.

Highest Achieved Level of Education



We performed another two-sample, unpaired t-test to compare the average bird scores for respondents with a Master's degree and respondents with a completion of year 11 or 12, and those with a Bachelor's degree and those who achieved a Level 4, 5, or 6 diploma. After computing a p-value of less than 0.05 for both t-tests, we concluded with 95% confidence that the average bird score of those with the higher level of education was significantly greater.



When comparing the average bird scores of respondents aged 18-29 with those aged 70-79, we found the average bird score for those 70-79 to be significantly greater with 95% confidence.

Age of Respondents



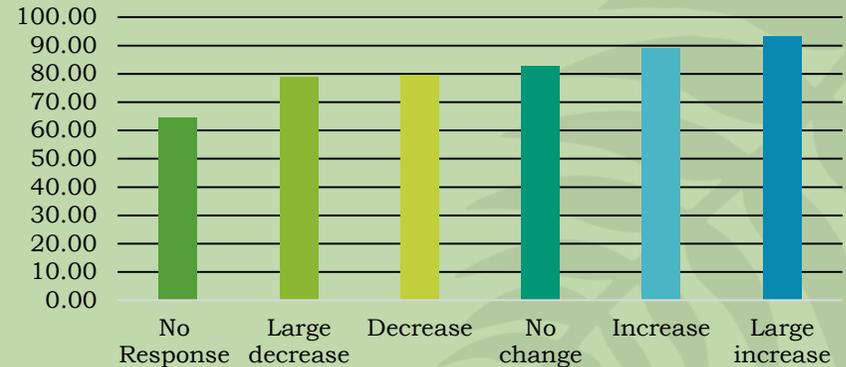


Tūi

Analyses

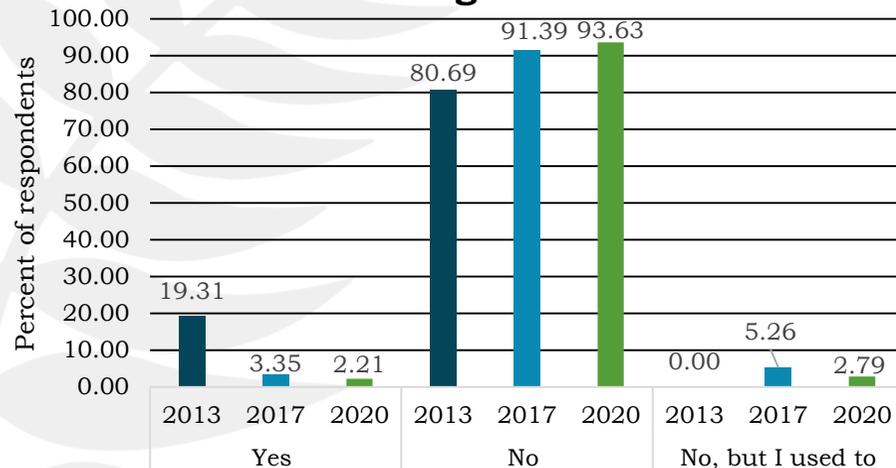
With another two-sample, unpaired t-test, to conclude with 95% confidence that the average bird score was significantly greater for those who saw a large increase in bird life near their home compared to those who saw a decrease. A similar test and conclusion was found when comparing the average bird score of those who saw and increase with those who saw no change.

Changes in Bird Life near Home

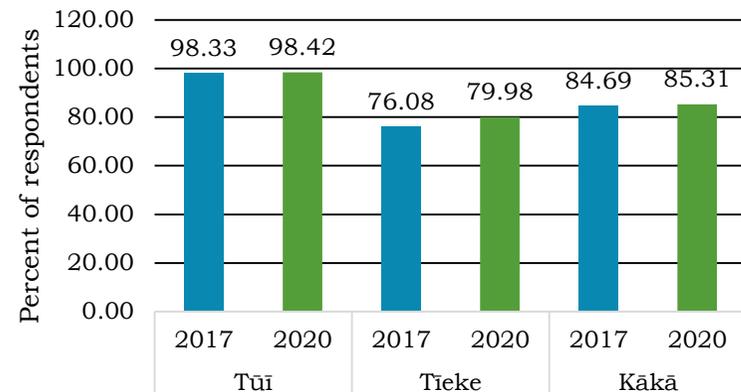


Finally, we analyzed the changes in data between the respondents in 2013, 2017 and 2020. From 2013 to 2020, the amount of people who responded “yes” to feeding the kākā progressively decreased. For each of the bird species, (tūi, tieke and kākā) the percent of respondents who could correctly name them increased from 2017 to 2020.

Kākā Feeding Over Time



Bird Identification: Correct Identification 2017 vs 2020



Thank You

We would like to give special thanks to Anastasi Turnbull for dedicating so much to ensuring a successful completion of our project and for welcoming us with such kindness.

We would also like to thank Zealandia and all the staff for giving us the opportunity to share in the passion for bird life. We have learned so much and gained an experience to last us a lifetime.

Aku mihi. Noho ora mai.



