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1. Kereru MSc proposal – Rachael Cousins, Massey University, Palmerston North

Title: Factors affecting kereru window strike and associated injuries

Kereru are frequent casualties from collisions with vehicles or windows in buildings, but the factors affecting the frequency of collisions (e.g. why some houses have repeated kereru strikes), and the nature of injuries sustained have not been well documented. This study aims to examine carcasses of kereru to determine the nature of injuries sustained, ages and sexes of birds involved in fatal collisions, body condition, and diet immediately before death. It also aims to determine whether there are features in the local landscape around buildings that promote and explain why frequent kereru strikes occur. This research proposes to:

1) Assess injuries (internal and external) to kereru that are sustained through collisions with windows or vehicles,
2) Determine diet prior to collisions (from gut and crop contents),
3) Determine sex and age through morphological features (plumage, bare parts - beak and legs - and internal organs),
4) Investigate kereru moult stages and pattern, and
5) Predict why kereru collisions occur.

This knowledge will be useful as an aide for wildlife rehabilitators, so that appropriate actions can be carried out immediately to try and save or rehabilitate the birds. Basic biological measurements (mass, age, sex, reproductive status, diet, condition) will be measured to characterise the demographic and health status of birds killed, and will provide valuable data with which to compare kereru biology in the southern North Island with that published by Brian Gill from Auckland Museum from birds from the northern North Island. Also, long term, hopefully ways of reducing the incidence of kereru colliding with windows and vehicles can be found. Many resources are being put into promoting the urban habitat for kereru (planting of food plants, and predator control) at a time when many kereru are dying from impact injuries.

With increased knowledge better management decisions (future resource management, design of kereru management plans) can be made to arrest the decline of these spectacular native birds - which are the only remaining wildlife in New Zealand that are capable of ingesting and dispersing many of our native flora species (e.g. tawa, pigeonwood, karaka, puriri and taraire). Loss of these birds from our environment would lead to systematic changes in the structure of our native forests. It is not only the perpetual survival of the kereru that will benefit from the extra knowledge gained from this research, but also our native forests.

Rachael has prepared a questionnaire that she would appreciate being filled out and sent to her (either emailed or posted) when an injured or dead kereru is found that has probably been involved in collision with a window. The questionnaire is provided as an attachment; DOC staff can also access it via the DOC system – docdm-325661. If you know of people that have had a kereru fly into a window on their property in future, please pass on a copy of the form and encourage them to complete it and send it in.

2. Kereru literature

Daglish, L. 2008. City pigeons – kereru (Hemiphaga novaeseelandiae) in the urban Dunedin environment: abundance, habitat selection and rehabilitation outcomes. M.Sc. thesis, University of Otago, Dunedin.

Some of the abstract

Kereru density in six habitat types within Dunedin was investigated using Distance sampling. Density estimates were then used to estimate abundance of kereru within Duendin city. Density was highest in the bush/forest habitat (0.24 birds per hectare) which consists of a mosaic of forested areas. The next highest density (0.16 birds/ha) was found in residential 1 habitat, which is characterised by mature gardens with a mixed vegetation structure. Residential 2 habitat is characterised by open-vegetated space dominated by lawns and low kereru density (0.06 birds/ha). No kereru were sighted in the commercial, industrial or residential 3 habitats, defined as having less than one third open space and few mature gardens. These density estimates provided an abundance estimate of 334 kereru in the urban Dunedin environment.

To investigate habitat selection, count data collected during Distance sampling were used to construct resource selection functions by comparing used and available resources. Resource selection by kereru was significantly non-random over a year-long period ($p=0.001$), with residential 1 habitat the most preferred habitat type. The density and habitat selection data indicate two habitats are highly favoured by the current population of kereru in Dunedin. Bush/forest and residential 1 habitat need to be maintained and enhanced if we wish to promote kereru within the city. Other habitats which are currently not utilised can be managed to increase similarities with the favoured habitats and thereby increase the habitat available for kereru.

Logistic regression on the rehabilitation data-set tested whether cause of admission, month of admission and age of bird could predict the outcome of rehabilitation (survival or death). Testing the interaction between age of bird and cause of admission allowed 74.5% of outcomes to be predicted correctly. The primary cause of rehabilitation was impact-related injury (37% of admissions), and the majority of admissions were related to human factors (67%). Small sample size ($n=6$) of radio-tracked individuals resulted in little ability to draw conclusions about the fate of rehabilitated kereru, although survival rates appeared very low.

Measurements of wing length, head length, bill length, bill width and bill height were taken from a museum sample of 59 kereru and their sex was recorded. A discriminant function analysis tested if these measurements could accurately predict sex. Predictive power was low with 66.1% of cases being classified correctly, suggesting morphometric sexing is not a viable option for sexing kereru.