KERERU NEWS 79 (12 July 2011)

Sorry it has been rather hectic the last six months – so I got a bit behind. This has resulted in a rather long Kereru News. Hope you find things of interest

Astrid van Meeuwen-Dijkgraaf

Kereru observation

Buff and white kereru

16 February 2011
I have a really interesting little kereru here at present ... see photos. He has a colour mutation of some description but am just waiting to get a feather sample from him to send to Massey and this will hopefully give us some more information.

He still had some down on him when he came in but it was white and not yellow ... he still has fluff around his legs and he still squeaks like a baby.

Would love to hear what you think!

Nik
Project Kereru
Dunedin

HI Nik
When I was doing the annual kereru counts along the Parapara highway near Wanganui we often saw one or two buff coloured birds - it was one initially. Talking to Dawne at the Wanganui bird rescue centre the other day she mentioned that she had reports of a nearly completely white kereru.

So it looks as though our favourite birds do occasionally come in different colours, and that there could possibly be a genetic basis to this also (given that they appeared to increase during the Wanganui survey)

Astrid

News stories

Study finds plant life affected by declining bird numbers

http://nz.news.yahoo.com/a/-/top-stories/8773664/study-finds-plant-life-affected-by-declining-bird-numbers/

Low bird numbers are causing a decline in plant life, prompting researchers to call for stronger action to protect and increase native bird populations.

The shrub *Rhabdothamnus solandri*, or New Zealand gloxinia, was slowly declining as the endemic birds that used to pollinate it have largely disappeared, Canterbury and Auckland university researchers said in their latest study.

New Zealand gloxinia is a bird-pollinated shrub that grows in native forests throughout the upper half of the North Island. It has orange flowers that are visited by three endemic native birds -- tui, bellbirds and stitchbirds - and, more recently, by native silver eyes.

Bird species were declining worldwide, raising concerns that the ecological services they provided, such as pollination and seed dispersal, might fail, Canterbury University ecologist Professor Dave Kelly said today.

"This could have a cascading impact on biodiversity. But the possible failure of these ecological services is of particular concern in Oceania where bird species have suffered extensive extinctions from human impact."

New Zealand had lost 49 percent of its land bird species, which raised concerns about whether bird pollination and dispersal were adequate, Dr Kelly said.

The studies found plants on the main islands, where only silver eyes and some tui were present, were poorly pollinated compared with the plants on the island locations where all three endemic species of birds remained abundant.

"This poor pollination reduced seed production on the mainland by 84 percent and there were 55 percent fewer juvenile plants per adult plant on the mainland."

The researchers had uncovered a gradual cascading effect of the decline of birds on the plant community, Dr Kelly said.

"Such cascading effects have been of concern worldwide, but are rarely properly documented and often hard to prove.

"Our example is a very clear case, which serves as a warning."

It might be that similar slow plant declines as a result of the decrease in birds had begun elsewhere, but the relevant studies had not been done to detect them.

"We think it would be important to do these studies because early conservation action is much more effective while species are still widespread."

Also, proof that bird losses had a negative impact on ecological services like pollination would help support stronger action to protect and enhance bird population, Dr Kelly said.

Co-researcher Sandra Anderson, of Auckland University, said the replacement of lost endemic species by introduced species did not necessarily provide the same function, with the recently self-introduced silver eyes usually robbing nectar from the flowers without pollinating.

Ms Anderson said this loss was largely "invisible" until it was irreversible.

Auckland University research associate John Craig said New Zealand had known losses of native birds and other animals but few people seemed to anticipate the associated and inevitable outcome -- the forests and ecosystems that we see today will be different for future generations.

"What the authors have demonstrated for one small shrub is likely just part of a trend of cascading effects that will become increasingly apparent."

Landcare Research's Robert Allen said the problem of "cascading biodiversity effects" had been recognised, often for large and obvious organisms and processes.

"However this study markedly increases the profile of the issue through a mixture of careful observations and experiments...with important consequences that might be quite general."

The findings were published in Science Express this week.

Chatham Islands: Rare birds common enough to eat

Driving round the main Chatham island you see weka everywhere - in fact, they're a pest, writes Jim Eagles.

The rare Chatham Islands parea or local wood pigeon. Photo / Jim Eagles

How many places in the world can you see five rare and endangered birds in the wild in a couple of days? And actually eat one for dinner?

Okay, I'm twisting the facts a little in claiming to have eaten a rare bird for dinner, but only a little. What I had as an entrée at Hotel Chatham - the main accommodation house on the Chatham Islands - was a roast leg of buff weka on a bed of salad.

The buff weka became extinct in its native habitat of Otago and Canterbury many years ago.

But on the Chathams, where they were introduced in 1905, the weka population has exploded over the years to the point where it's now a pest. Driving around the main Chatham island you see weka everywhere, foraging along road edges, pecking away at paddocks, scuttling around gardens even sidling up to picnic groups in the hope of a snack.

So, on the one hand, the Department of Conservation last year released some weka from the Chathams near Lake Wanaka in the hope of reintroducing the species to the South Island.

But, on the other, people on the Chathams are allowed to hunt the birds ... and, to judge from the drumstick I enjoyed at Hotel Chatham, they're well worth eating.

Some of the other rare birds on the Chathams would probably also make great eating. The local woodpigeon, or parea, for instance, is considerably bigger than the kereru once highly prized by Maori, so would obviously provide a good feed. But like many of the birds native to the island they really are rare.

The Chathams - 860km east of Christchurch - has suffered like the rest of New Zealand from the wholesale clearance of forest and the introduction of rats, mice, pigs, possums, hedgehogs, cats and dogs. As a result, several species of birds have become extinct and many more are under threat.

The parea got down to just 40 birds in the late 1980s, and even though numbers are now up to about 500, they're still considered endangered.

But you'd hardly have known that if you'd come with us to the Awatotara Valley - an island of bush reserve on an island which has largely been cleared for farming - where our island guide Val Croon Jnr took us in hope of seeing the equally rare Chatham Islands tui.

As we drove up the hill in our mini-bus we suddenly saw three large, greyish birds flying across the road and down into the bush. "Parea," shouted Val, and we leaped out to take a look.

Sure enough, not far below the road three fine, fat pigeons were feeding enthusiastically on some berries, kindly posing while I lined up my big lens and took some photos.

A bit further up the road, we spotted an even bigger parea sitting in a macrocarpa tree. It sat unconcerned while I sneaked up and snapped some nice portraits, then turned around so I could also photograph its wing plumage. And I'd no sooner finished than yet another parea landed on the branch above. This rare bird seemed altogether too common.

As we drove up out of the valley, we saw three or four parea more sitting on the pasture just through the fence. Then there were half-a-dozen more sitting on the road, so confident they let me walk up to within a few metres before taking off, providing the opportunity for further photos. There were so many, I half expected to see parea on the menu when I got back to the hotel.

The tui, which we'd gone there to see, weren't quite so accommodating though I did spy a couple of birds with that distinctive flight pattern flying from one treetop to another, and I'm confident they were tui.
The local tui, like the pigeon, is much bigger than the New Zealand variety and it, too, has been hard hit by bush clearance. In fact, it became extinct on Chatham island itself, surviving only on smallish Rangatira island.
Last year - and again earlier this year - groups of tui from Rangatira were released in the Awatotara Valley and according to Val, "they've gone very well because there've been reports of tuis from all round the island".
Val also took us to see a colony of the Chatham islands shag hunched in a howling gale on a rocky point above one of the island's spectacular blowholes. The nest site was so inaccessible that you'd think they'd be invulnerable to predators, but their numbers are thought to have fallen to only 500.
And walking round the spectacular coast near Wharekauri we came across a dozen torea, the Chatham Islands oystercatcher, perched on the rocks and feeding on the beach. Like the pigeons they seemed in good shape, but a decade ago numbers had dropped to a mere 200 though they have almost doubled since.
Of all the rare birds on the Chathams, however, the most famous would have to be the black robin and the taiko.
The Chatham Islands black robin must surely be the poster bird for recovery programmes. In 1980 there was only one breeding pair left but today there are about 200 birds on their Mangere Island sanctuary and numbers are thought to have stabilised. But equally remarkable is the story of the taiko, the Chatham Islands petrel, which was thought to be extinct until it was rediscovered in 1978 by the marvellously named Whangarei ornithologist David Crockett.
There are 16 known breeding pairs and a population of less than 150 making them, according to DoC, "among New Zealand's most endangered species, considered to be on the brink of extinction".
Still, at least there is hope. Local landowners Liz and Bruce Tuanui have put a protective covenant on the 2.5ha of their land at Sweetwater where taiko burrows have been found. The Taiko Trust, set up by Crocket, has built a predator-proof fence around the area. DoC and trust volunteers have an intensive recovery programme under way.
We didn't get to see taiko but we were able to look across the Awatotara Valley to see a cluster of huts, which Val described as "taiko city", the camp used by the conservation workers.
And, who knows, given what's happened with the parea population, maybe one day visitors will be able to see flocks of taiko feeding on the road ... or even find them on the menu.
Jim Eagles was taken to the Chatham Islands by Pukekohe Travel.

Kereru being deliberately hurt in Otago

http://www.stuff.co.nz/environment/4800607/Kereru-being-deliberately-hurt-in-Otago
23/03/2011

Some kereru are being deliberately hurt in Otago and face unnecessary pain and shock as well as months of rehabilitation to learn to fly again, the Department of Conservation (DOC) says.
The wood pigeon are a protected native species and DOC's Project Kereru helps care for about 60 injured birds each year. Some have been hurt deliberately.
"Most kereru come to me with impact injuries from flying into something but when they are deliberately injured, it makes it all the more heartbreaking and totally frustrating," spokeswoman Nik Hurring said.
One bird was brought in recently with a large neck wound after being shot with an air rifle.
"The bird had to have a general anaesthetic and have a large wound on its neck stitched up, then followed four weeks of dealing with a very shocked, traumatised bird, trying to encourage it to eat, supplementary feeding, introducing it into the aviary, and helping it to fly again," Hurring said.
She said the bird was a lucky one but many kereru that are shot die a slow painful death.
In the last two years, Project Kereru has received more than 120 birds with injuries including broken bones from hitting windows, power lines, fences, and clotheslines or being hit by a vehicle.

Editorial: We have no choice on using 1080

http://www.stuff.co.nz/dominion-post/comment/5118312/Editorial-We-have-no-choice-on-using-1080

OPINION: Enough pandering to the self-interested ignorant. The science is clear.

The country's unique forests, insect and bird species need more aerial drops of 1080 poison, not fewer. A comprehensive report by Parliamentary Commissioner for the Environment Jan Wright on the use of the poison leaves no room for argument.

It is irresponsible for critics such as UnitedFuture leader Peter Dunne to suggest predator populations can be controlled through trapping and shooting or that the Conservation Department is overlooking the possibility of a scientific solution. Millions of dollars have been spent trying to find a biocontrol for possums, but funding was stopped last year because progress was deemed too slow.

On the bulk of the conservation estate 1080 is the only way to stop possums and rats chewing up the forests and the only way to stop possums, rats and stoats denuding them of birds. Without its use, the delight of hearing a kereru wooshing overhead or being followed along a forest track by a pair of fantails feeding on disturbed insects will become rarer and rarer till it can be experienced only on offshore islands or within fenced sanctuaries.

There are other poisons and shooting and trapping are useful tools. However, none of the other methods of predator control are as effective, none can be used over such large areas and none can deal with the sudden explosion of rat and stoat populations every four to six years when some trees flower abundantly and produce much greater numbers of fruit and seeds. What should be boom years for native birds become instead times of population collapse.

The pitfalls of 1080 have been well publicised. Bait dropped aerially gets into waterways, poisoned carrots are attractive to native and imported birds, pigs and deer as well as rats and possums. Poisoned carcasses present a hazard to dogs.

However, the commissioner has found the dangers have been overstated. The poison breaks down quickly in water and equally effectively, although more slowly, on land. There are no records of any deaths associated with drinking water or eating wild food after a 1080 operation. At its highest-recorded concentration in a water sample an adult would need to drink thousands of litres of water at one sitting to risk death.

Bait refinements and improvements in the way it is deployed have reduced the danger to native birds. Dog deaths, while deeply distressing, are relatively few. Since 2007 just eight are reported to have died as a result of 1080 poisoning – far fewer than die on the roads.

Few embrace the idea of aerial poison drops. As Dr Wright says, "scattering poison from the skies just feels like a really bad thing to do". But faced with a choice between the destruction of New Zealand's unique plant and animal life and the limited collateral damage of a well-managed poisoning programme, the Conservation Department has no choice. It must act to preserve what is left of a unique environment developed during 65 million years of isolation from the rest of the world.

- The Dominion Post

DNA turns up clues on origins of kiwi-feather cloaks

http://www.hawkesbaytoday.co.nz/have-your-say/news/dna-turns-up-clues-on-origins-of-kiwi-feather-cloa/3953434/

27th May 2011

(Not strictly about kereru, but of interest none-the-less)

DNA from the kiwi feathers of cloaks made by Maori -- some of them hundreds of years old -- has turned up clues not only to the origin and creation of the cloaks, but a possible trade in feathers before European settlement.

Evolutionary geneticist David Lambert, of Australia's Griffith University, led a team of researchers which sampled the DNA of 849 kiwi feathers in 109 cloaks housed in museums in New Zealand

and Britain, and mapped the results against the present distribution of the nation's five species of kiwi.
Nearly 99 percent of the feathers came from the North Island brown kiwi, but 15 percent of the cloaks were woven partially from kiwi feathers that originated from other birds.
Dr Lambert said a feather ``trade'' may have emerged after the musket wars during the 1800s changed tribal boundaries and caused Maori hunters and traders to look further afield for kiwi feathers.
Maori had already been trading greenstone from the South Island to the North Island for centuries.
The ancient DNA analysis also hints at a potential origin for the tradition of kiwi-feather cloaks, known as ``kahu kiwi'', Dr Lambert told the Nature science journal.
More than a third of the cloaks contained feathers from birds living on the North Island's East Coast, and Dr Lambert said this region could have been start of cloak-making traditions during the 1800s.
One cloak had North Island brown kiwi feathers dotted with feathers from South Island kakapo.
Another kahu kiwi from Te Papa had a chequered border of kaka and kereru feathers which originated from the Hawke's Bay and Bay of Plenty regions.

Caring for birds

http://www.stuff.co.nz/manawatu-standard/news/central-district-times/4960614/Caring-for-birds

For 25 years Dawn Morton has dedicated her life to rescuing and restoring injured birds for release back into the wild.
She starts feeding her charges at 5am each day but can't let the birds see her.
The birds cannot have human contact. They will not release successfully if they do.
"It is an amazing job and I love it. It is not a sacrifice, it is all worth it," says Mrs Morton.
A variety of both native and exotic birds are brought in.
Over summer she had 130 birds to care for including two kiwis and a wide wingspan stormy petrel.
Last moth she had 30 injured hawks.
The birds are brought in from a large area, Opotiki, Pongaroa and all over our region.
Mrs Morton can administer anti-inflammatory and antibiotic medicine, but relies on the wildlife vets at Massey University to set wings, legs and bills. Shell Oil Co fund this work.

She also works with groups of vet nurse students who are learning special care for birds, which have hollow bones and different needs to other animals.
By law the native birds must be released into the wild.
If this is a problem then they are released to wild life sanctuaries such as Nga Manu Waikanae rather than be destroyed.

Recently Mrs Morton had 58 injured native pigeons or kereru. These birds have a 25-year life span and mate for life, so it is important that birds are released close to where they were found.
The centre has a rehabilitation flight aviary to allow birds to build up strength.
Many hawks are brought in from the wild but Mrs Morton feels many people do not understand that hawks nest and feed on the ground.
"We know hawks can fly up to 1000 kilometres.
"Our banded birds have been found from Twizel to the Hokianga.
"They also have amazing sight and can see a mouse's tail from 1km."
Feeding must be thought about carefully as the birds must know how to forage in the wild. They need a varied diet so insects are bred and native seed trees are grown in the aviaries.
"We cannot let exotic berries get into our reserves and of course birds spread seed. $10,000 is needed annually for food."
The rescue centre receives a grant of $9000 plus $500 from DOC.
An opportunity shop in Whanganui covers the food.

Research

Satellite tracking of kereru (Hemiphaga novaeseelandiae) in Southland, New Zealand: impacts, movements and home range

Ralph G. Powlesland, Les R. Moran, and Debra M. Wotton
New Zealand Journal of Ecology (2011) 35(3): 229-235

Abstract: Satellite transmitters (PTTs) were attached to four kereru (New Zealand pigeon, *Hemiphaga novaeseelandiae*) in Invercargill, Southland, New Zealand, during 2005–06. The transmitters were used to monitor the birds' locations, movements and home ranges. Attachment of the transmitters affected the behaviour and body condition of one of the kereru; no other negative effects, such as skin abrasion, were noticed. Fifty-four percent of locations recorded were of Argos location classes 1, 2 or 3 (accuracy of ≤1 km), and were used to determine the birds' movements and home range areas. Three of the kereru made flights across Foveaux Strait (a minimum distance of 33 km) to Stewart Island; the other remained around Invercargill. The maximum distance between their locations ranged from 11.4 to 101.9 km. Home ranges, as determined by cluster analysis, ranged from 619 ha to 31,732 ha, 100–1000 times greater than kereru home range areas estimated in previous studies. Given the long-distance movements kereru make, often to locations distant from roads and tracks, satellite telemetry is probably the most reliable and cost-effective method of determining their locations.

Systematics and biogeography of Indo-Pacific ground-doves

Knud A. Jønsson (kajonsson@snm.ku.dk), Martin Irestedt, Rauri C.K. Bowie, Les Christidis and Jon Fjeldså
Journal of Molecular phylogenetics and Evolution. **59(2)**:538-543
http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6WNH-520M1W5-1&_user=10&_coverDate=01%2F21%2F2011&_rdoc=1&_fmt=high&_orig=search&_origin=search&_sort=d&_docanchor=&view=c&_acct=C000050221&_version=1&_urlVersion=0&_userid=10&md5=d40115aa0f830800d852c26c4545293f&searchtype=a

Abstract

Ground-doves represent an insular bird radiation distributed across the Indo-Pacific. The radiation comprises sixteen extant species, two species believed to be extinct and six species known to be extinct. In the present study, we present a molecular phylogeny for all sixteen extant species, based on two mitochondrial markers. We demonstrate that the *Gallicolumba* as currently circumscribed is not monophyletic and recommend reinstalling the name *Alopecoenas* for a monophyletic radiation comprising ten extant species, distributed in New Guinea, the Lesser Sundas and Oceania. *Gallicolumba* remains the name for six species confined to New Guinea the Philippines and Sulawesi. Although our phylogenetic analyses fail to support a single origin for the remaining *Gallicolumba* species, we suspect that the addition of nuclear sequence data may alter this result.

Because a number of ground-dove taxa have gone extinct, it is difficult to assess biogeographical patterns. However, the *Alopecoenas* clade has clearly colonized many remote oceanic islands rather recently, with several significant water crossings. The *Gallicolumba* radiation(s), on the other hand, is significantly older and it is possible that diversification within that group may in part have been shaped by plate tectonics and corresponding re-arrangements of land masses within the Philippine and Sulawesi region.

[Note For outgroup comparison we used sequence data on *Zenaida macroura* and *Hemiphaga novaeseelandiae* obtained from GenBank.]

Kiwi pigeon key to tree survival

Wednesday, 30 March 2011 Anna Salleh
ABC

http://www.abc.net.au/science/articles/2011/03/30/3177621.htm

The New Zealand pigeon swallowing fruit from the large-seeded taraire tree *(Source: Nga Manu Images)*

Precious poop Large-seeded trees rely on native birds for their survival, New Zealand biologists have confirmed.

The researchers say this is the first quantitive study of its kind and highlights the impact losing just one species can have on an ecosystem.

Dr Debra Wotton of Landcare Research carried out the research for her PhD, under the supervision of Dr Dave Kelly of the University of Canterbury.

In this week's *Proceedings of the Royal Society B*, Wotton describes an experiment that shows the effect of reducing the number of fruit-eating birds on two large-seeded New Zealand trees.

As in other parts of the world, the wide-spread extinction of fruit-eating birds, a type of frugivore, in New Zealand is thought to threaten the survival of these trees.

"The only remaining large bird that eats fruit is a native New Zealand pigeon," says Wotton.

This bird, *Hemiphaga novaeseelandiae*, lives in New Zealand rainforests alongside taraire and karaka, and three other native tree speices that have large fleshy fruits with a single large seed in them.

"But no one had actually gone out there and got the data to show just how important this bird is for these trees," says Wotton.

Field experiment

Wotton set up an experiment to investigate this question using a couple of research sites in northern New Zealand.

She collected fruit and seeds from taraire and karaka trees, and set up a number of plots in the forest to simulate various scenarios of tree seed dispersal.

In one plot, there was a high density of whole karaka fruits just below the parent tree. This was designed to simulate the situation where fruits just fall from the tree and are not dispersed by birds.

Other plots had a low density of seeds far from the parent tree, designed to simulate the situation when seeds had been dispersed by birds.

Birds generally strip and then eat the flesh from the fruit, and then defecate the seed at some distance from the parent tree.

Wotton also investigated the role of introduced mammals, such as possums, on dispersal of the seeds by using cages in some sites to exclude the animals.

Dispersal matters

The research found that over a period of two years, dispersal led to better growth and survival of seedlings and also protected them from predatory mammals.

"If the seeds just drop beneath the tree, the percentage that germinate is much lower and the survival of any seedlings that do result is also much lower," says Wotton.
She says there is evidence that if the pulp is not removed by birds it inhibits germination.
And when the seeds are all in one place under the parent tree and not dispersed, they provide a large target for possums and other mammals that eat and kill the seeds.
"It's a big lunch box for them and they can just have their fill without having to move anywhere," says Wotton.
She calculated that when the effects of mammals are taken into account, if there is no dispersal at all, 92 to 94 per cent of seedlings die out in two years.
Given current bird numbers, 57 to 84 per cent of seedlings are dying out after two years, says Wotton.
"This research demonstrates the importance of seed dispersal for local plant population persistence and validates concerns about the consequences of frugivore declines," she says.

Wildlife Clinical Service Casebook

http://www.massey.ac.nz/massey/research/centres-research/nz-wildlife-health-centre/clinical-service/casebook/hebe-the-kereru.cfm

I thought some might be interested to learn that Massey Veterinary School keeps an online casebook. Here is a sample about Hebe the kereru.

"Hebe" The Kereru from Taranaki.

"Hebe" is an adult kereru who was found in New Plymouth on 13.9.07 unable to fly, with a wound on her neck. She was taken to New Plymouth Veterinary Group where she was X-rayed and cared for 5 days before being brought to the Wildlife Ward.

"Hebe" fractured her coracoid, a bone in the chest which is crucial for flight. Fractures of the coracoid bone are a common injury seen in Kereru, this injury usually occurs when the bird collides with glass. Due to the injury "Hebe" was very thin and quiet and had a slightly dropped wing on the side of the break.

Upon arrival at the Wildlife ward more x-rays were taken, these confirmed the break. "We would have liked to surgically repair the fracture. Part of the coracoid bone had been displaced from its normal position; unfortunately due to the age of the injury this would have required the bone to be re-broken to achieve this." Dr Brett Gartrell. Surgery was not performed and "Hebe" has been given cage rest. The X-rays also showed some cloudiness of the air sacs. There was a risk of infection or "air sacculitis" and endoscopy was performed. Endoscopy showed the air sacs were clear.

Endoscopy

Blood tests were run to look for any subtle abnormalities that may be missed on physical examination or X-rays, this is a routine procedure performed on all wildlife. The bloods which were taken after the accident had shown high levels of two enzymes which indicate muscle damage. This is not surprising due to the bruising and muscle damage that is caused by the trauma of the injury. The later test showed that these enzymes had decreased as would be expected. Pain relief was given for 14 days.

On 25.9 "Hebe"s faeces were examined under the microscope and yeast were seen. "When yeast are reproducing (as they were seen to be in this sample) it is evidence that there is deep tissue infection" Dr Brett Gartrell. Fungal infections are common in birds kept in hospital, she was started on a course of antifungal medication. The medication will be continued for 10 days and after treatment has been stopped for 3 days another sample will be taken to ensure the infection was cleared.

Throughout her stay “Hebe”s weight loss has been a concern. Staff are working hard to encourage her to eat and she is beginning to put weight on again. Once the fungal infection is cleared she will go to a wildlife rehabilitation facility where it is hoped she will make a full recovery.

Kereru (Hemiphaga novaeseelandiae) : impact injuries, morphometrics, moult and plumage

A thesis presented in partial fulfilment of the requirements for the degree of Master of Science in Conservation Biology at Massey University, Palmerston North, New Zealand
Cousins, Rachael Anne
URI: http://hdl.handle.net/10179/2126
Date: 2010

Abstract:
The New Zealand Woodpigeon or Kereru (*Hemiphaga novaeseelandiae*) is a monomorphic pigeon that is often seen in urban and rural areas, feeding on native or introduced plants throughout the year. The Department of Conservation (DOC) offices around New Zealand, in particular the lower North Island, receive many Kereru each year due to predation and fatalities caused by impacts with windows and vehicles. Little scientific work has been conducted on such a valuable resource to date, so in this study I accessed and used 50 of these Kereru, as well as 76 reports from the Massey Wildlife Clinic (the wildlife surgery and rehabilitation wing of the Institute of Animal, Veterinary and Biomedical Sciences (IVABS)), 20 specimens from Massey□s necropsy database and 119 moult records from other workers, to study four aspects of impact injuries and Kereru biology as outlined below.

(1) The type and extent of injuries that were sustained through collision events and how this affected rehabilitation. We used radiographs and necropsies to determine the skeletal and soft tissue injuries in 70 Kereru that died in such collisions, and radiographs of 61 birds that were assessed or treated having survived initial impacts. Vehicle collisions tended to result in damage to the extremities (wing and femur), whereas collisions with windows resulted in trauma to the head, fractures/dislocations of the coracoids and clavicles, and ruptured internal organs. Fractured coracoids frequently damaged flight muscles and ruptured the heart. Extensive bruising of pectoral muscles and haemorrhaging of the lungs was due to the force of impact. Rehabilitation time was not related to the number of skeletal injuries sustained, nor was the time until death for those that did not survive. Flight speed and force calculations suggest that a 570g Kereru would collide with 3-70 times the force that smaller birds (5-180g) would; this may explain the discrepancies between the injuries characterised here and those reported for North American passerines. The differences in injuries sustained from collisions with windows and cars can be used to inform rehabilitators about the possible nature of injuries if the source of impact is known.

(2) Morphometry, gastrointestinal organ masses and crop contents. Of 50 Kereru that died due to impact collisions, little physical variation was found between sexes; males had longer head/bill lengths. Overall, different structural measures were positively related (mass and tarsus, wing and tail, mass and head-bill and head-bill and tarsus) but variation was generally high between individuals. Fat scores of Kereru were closely related to environmental seasonal variation and 80% of birds were in good body condition. Kereru lack caeca and there were no sexual differences in reference to dry organ mass (liver, intestine, gizzard and crop). Organ masses reflected body mass and size to varying degrees: liver mass was best explained by body mass, gizzard mass by tarsus length as much as body mass, and intestine mass only by body mass. Kereru intestines were proportionately shorter than those of herbivorous grouse, despite grouse having long caeca to help with digestion of plant matter. Kereru seem to rely on long retention times instead, and up to 68g of plant matter were found in the crop, gizzard and intestines. There were no sexual differences in mass of consumed materials found within the gastrointestinal tract, consisting of introduced and native material (foliage/flowers/buds/fruits). Digesta accounted for 0.12 – 13.4% of total Kereru body mass.

(3) Kereru flight feather moult, wing area and wing loading. One hundred and sixty nine Kereru moult records showed that Kereru moult over a nine month period (July – March/April), with a restricted moult of tail feathers during the breeding season. Kereru moult is symmetrical in relation to the number of primary feathers moulted, but not in respect to the position on the wing. Kereru often have multiple moult loci and do not follow a conventional moult sequence. This moult strategy reduces the effect that feather gaps have on wing area and thus wing loading. The moult strategy of Kereru is a solution that works to minimise the change in wing area, but at the cost of having a prolonged moult. (4) Plumage colouration assessed using reflectance measurements from light spectrometry. This study is the first to assess UV signals in Kereru and UV signals were found in all eight regions investigated, five plumage (Breast, Crown, Mantle, Wing and Rump) and three bare parts (Bill base, Bill tip and Foot). The greatest intensity of maximum UV signal (uvmax) was in the bare parts with a covariance of the bill tip and foot. No sexual differences or condition dependent signals were found, but age-related UV signals were found in the crown and foot. In the visual spectrum, females had a greater intensity of maximum colour signal (rmax) in the wing. Age-related colouration was seen predominately in the bare parts, in particular the foot which has a higher intensity of colour in juveniles. Even with single-angle light spectrometry Kereru are a highly cryptic species.

The feeding ecology and habitat use of kereru and bellbird in a modified forest remnant, South Canterbury, New Zealand

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Abstract
The use of exotic and native plant species for feeding and habitat use by kereru (*Hemiphaga movaeseelandiae*) and bellbird (*Anthornis melanura*) were investigated from February to June 1998 at Waihi Bush, a modified forest remnant in South Canterbury. Kereru and bellbird feeding patterns varied seasonally and closely reflected changes in plant phenology. For both species, a decline in the amount of fruit taken from autumn to winter paralleled a decline in fruit availability. Although exotic plants comprised only 4.3% of the basal area at Waihi Bush, they were used in 18.4% and 12.6% of total observations for kereru and bellbird respectively. Exotic plants were used most extensively by kereru in February and bell bird in March, coinciding with a high availability of fruit on exotic compared with native plant species at that time. Selection analyses revealed that kereru and bellbird were positively selecting some plant species while avoiding others. This allowed the identification of important plant resources, including pate (*Schefflera digitata*) for kereru and red matipo (*Myrsine australis*) for bellbird. Ash (*Fraxinus excelsior*) was the only exotic plant highly selected by kereru and bellbird. Overall, there was a high variation in plant selection, consistent with the idea that kereru and bellbird are habitat generalists, both using more than 75% of the plant species present. This generalist attribute suggests exotic plant removal is unlikely to limit the foods or habitat available to kereru or bellbird during autumn and winter. The implications of this research for the management of exotic trees in forest remnants are discussed.

Websites

Project Kereru

http://www.projectkereru.org.nz/
Dedicated to the Rehabilitation and Release of the New Zealand Native Pigeon"

Project Kereru is a voluntary community based Conservation Project that is changing the fate of sick and injured Kereru in Dunedin and surrounding areas. As far as we are aware, Project Kereru

is the only one of its kind in the country. Many other facilities care for sick and injured birds in New Zealand also, but we are the only ones dedicated to the kereru alone.

We are supported by Dunedin Forest and Bird, The Dr Marjorie Barclay Trust, Department of Conservation and Watties.

WHY KERERU?

The Kereru is one of New Zealand's iconic species and much reduced in abundance due to habitat loss, and predation by introduced species. Under Department of Conservation's threat classification scheme, Kereru were considered chronically threatened with a classification of Gradual Decline - this means that they were at risk of extinction but were buffered slightly by either a large population total or a slow rate of decline. However, since 2008 the DOC threat or conservation status of the kereru has been ‘not threatened’.

Each and every year we care for many sick and injured Kereru. Some have been injured through impact injuries others have lost their parent and cannot fend for themselves.

We are committed to helping Kereru. Our continued hope, through the work that we do is that the iconic sound of our native pigeon flying through the trees does not fade to become yet another memory and that there will always be Kereru for future generations to enjoy.