



Worksheet: Ecological Succession and the Importance of Animals as Seed Dispersers in New Zealand Forests - Tiritiri Matangi Island AS91158 Bio 2.6

1. Factors affecting the growth and distribution of common native plants on Tiritiri

Biotic factors

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Abiotic factors

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-
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2. Background on New Zealand Forest Seed Dispersal

- Over (a) _____ of plants in our woody forest in New Zealand have fleshy fruit
- Native plants are dependent on birds for successful (b) _____ and regeneration
- As a seed is passed through the digestive tract of a bird the seed coat is (c) _____ and made ready for germination
- The seed may often be dropped far away from the host tree's location, enabling the tree to potentially (d) _____ a new area

3. Definition:

Frugivore _____

Example _____

4. 12 species of birds in New Zealand forests have been responsible for the majority of tree seed dispersal, four are extinct:

- **Extinct** – **piopio** (native thrush) (*Turnagra capensis*), **2 species of moa** found with small gizzard stones (*Euryapteryx spp.*), **huia** (*Heteralocha acutirostris*).
- **Confined** to pest predator-proof mainland sites or offshore islands eg Tiritiri – **hihi - stitchbird** (*Notiomystis cincta*), **saddleback - tieke** (*Philesturnus carunculatus*), **kōkako** (*Callaeas cinerea*), **whitehead - pōpokatea** (*Mohoua albigilla*).
- **Present on the mainland** – **tūi** (*Prosthemadera novaeseelandiae*), **korimako - bellbird** (*Anthornis melanura*), NZ pigeon - **kererū/ kūkupa** (*Hemiphaga novaeseelandiae*), **weka** (*Gallirallus australis*).



5. Tiritiri Forest - Day Time Native/Endemic Biodiversity

Research Tiritiri website for summary of the diversity of flora -plants and fauna-animals found on the island <http://www.tiritirimatangi.org.nz/learn>



Student Notes:

Present in diagram:-

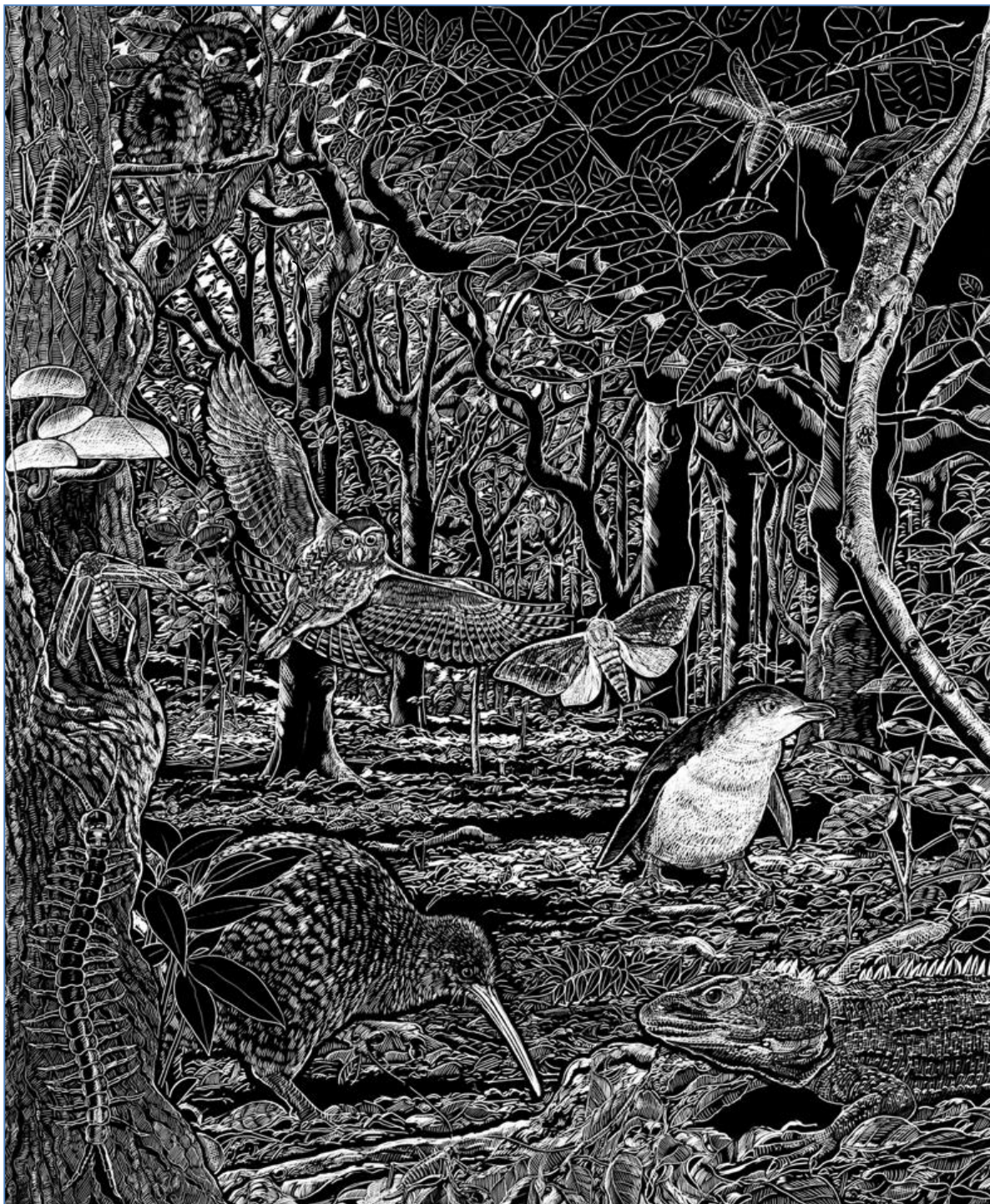
tūī,
 kererū- NZ pigeon
 kōkako
 hihi – stitchbird
 tīeke – saddleback
 toutouwai - Nth. Is. robin
 kohekohe flowers
 kawakawa leaves



Give the European names of birds missing in the diagram?

korimako - _____
 pīwakawaka - _____
 riroriro - _____
 tauhou - _____
 pōpokatea - _____
 tītītipounamu- _____

6. Tiritiri Forest - Night Time Native/Endemic Biodiversity



Student Notes:

Present in diagram:-

ruru – morepork
 pūriri moth
 kiwi pukupuku
 kororā – little penguin
 tuatara
 Duvaucel's gecko
 tree wētā
 huhu beetle
 giant centipede

Missing in diagram: _____

Tuatara information:-



7. Most species of New Zealand forest birds are known to include some fruit in their diet:-(a) Three examples:-

(b) Who are the seed predators/destroyers?

8. Large birds with large bills

Kererū - New Zealand pigeon (in Northland known as kūkū or kūkupa) are large birds, can measure up to 51 cm from tail to beak and weigh about 650g.

Since the extinction of the moa, the **kererū and parea** (Chatham Islands pigeon) are now the only seed dispersers with a _____, such as those of **karaka, miro, tawa, tawapou, taraire**; plus feed on fruit of **kohekohe, pigeonwood, nikau, coprosma, puriri, kahikatea**. **Cabbage tree and supplejack fruit** are less preferred.

Kererū on Tiritiri

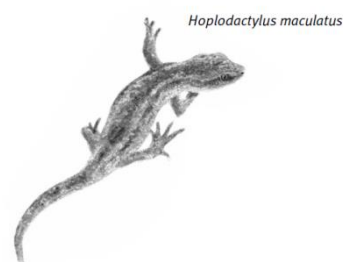
- *In 1983 kererū were observed to visit the Island occasionally particularly when taraire was fruiting (Myers and Court)*
- *Kererū sightings on the island had increased (Rimmer 2004) and they now appear to be resident.*
- *2016 kererū numbers are higher than previous years; they can be seen in groups of three and are resident as nests have been found (pers com B Hughes)*

Kōkako feed on fruit of at least 35 species (J.R. Hay unpubl) and may have once been _____ for seed dispersal as kererū. However, they are not long distant seed dispersers like kererū being weak fliers and inhabiting permanent territories of less than 11 ha.

9. Seed dispersers summary

Main seed dispersers are:

- kererū – resident birds on the island = ____
- korimako – bellbird – high numbers = 100s
- tūi – high numbers = 100s
- kōkako – numbers higher this year = 60 plus
- tīeke - saddleback – high numbers = 100s



Many of the other forest birds along with wētā/wētā punga and gecko have fruit in their diet and disperse seeds in their poop!

Take away messages to set-up a ‘Tiritiri sanctuary’ in your own backyard:



- Change our behaviour – no plastics/rubbish in our seas
- Volunteer to look after native areas near your homes
- Invader Free NZ – eliminate pests, weeds and any invaders.

Bibliography:

Clout M.N. Hay J.R. *The Importance of Birds as Browsers, Pollinators and Seed Dispersers in NZ Forests*, NZ Journal of Ecology 12, 1989
 Dawson J, Lucas, R. *Field Guide to NZ Trees*, Craig Potton, 2012
 Heather B. Robertson H. *Field Guide of The Birds of NZ*, Viking 1996
 Rimmer A. *Tiritiri Matangi A Model of Conservation*, Tandem Press 2004
Special Issue NZ Journal of Ecology Vol 37 No3, 2013
 Treweek S. Morgan-Richards M. *NZ wildlife*, Penguin Books 2014
 Tiritiri and DOC Websites



Tiritiri Education