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*The evolution of citizen science: an
Aotearoa New Zealand case study*

The evolution of citizen science: an Aotearoa New Zealand case study

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AUCKLAND

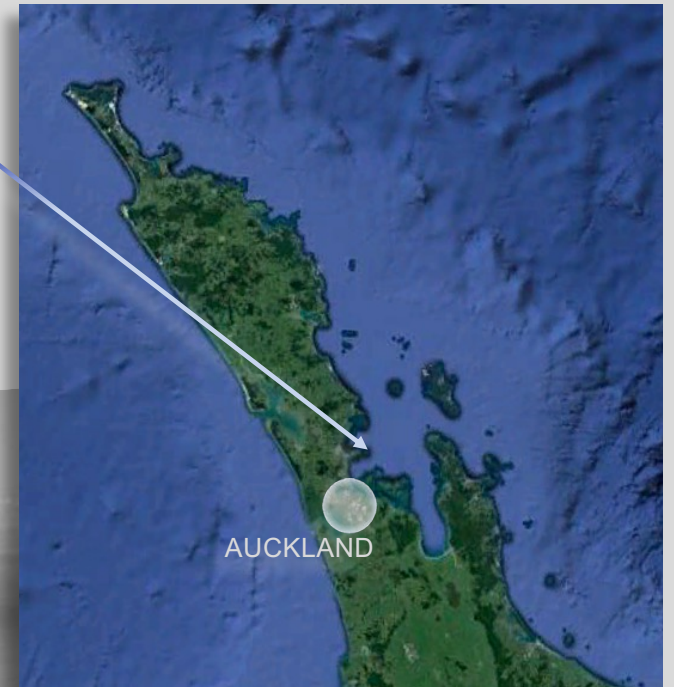
² Supporters of Tiritiri Matangi,
AUCKLAND



Tiritiri Matangi Island

- 224ha
- 28km from Auckland
- restoration started in 1984

Tiritiri Matangi





J Craig



1982

Restoration: native habitat



The volunteers:

- revegetation

Restoration: eradication of invasive species



kiore / Pacific rat *Rattus exulans*



Japanese honeysuckle *Lonicera japonica*



Argentine ant *Linepithema humile*

Restoration:
species translocations



1973

1984

1989

1990

1991

Tiritiri Matangi translocations



1992

1993

1995

1997

2001



2004

2003

2006

2009

2011

2020



- restoration started in 1984
- 280,000 trees planted 1984-1994
- 17 animal species translocated
- community group since 1988

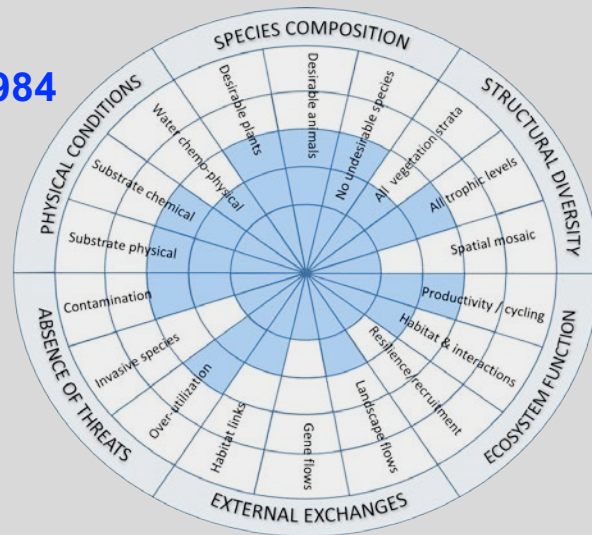




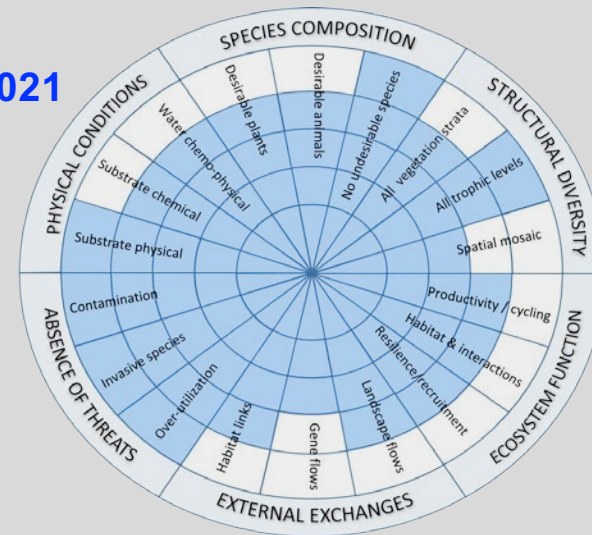
The volunteers:

- revegetation
- infrastructure
- education (schools, public)

1984



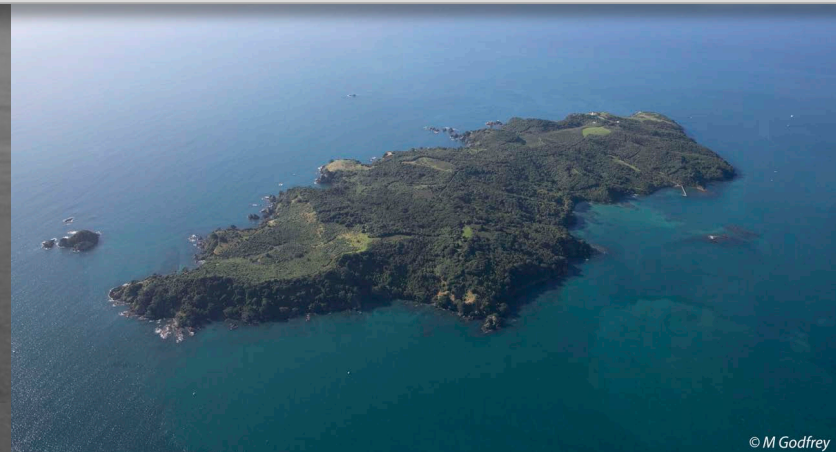
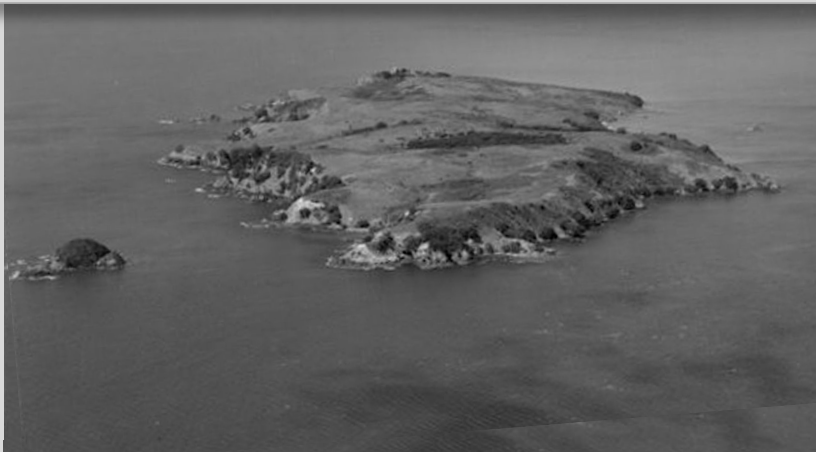
2021



University of Auckland field research station from mid-1970s:

“ The whole restoration project was borne out of scientific research.”

(Galbraith et al. 2013)



© M Godfrey



The volunteers:

- revegetation
- infrastructure
- education (schools, public)
- biodiversity
 - ecological science
 - citizen scientists



Types of citizen science (Shirk et al. 2012):

<i>Type</i>	<i>Description</i>
Contributory	generally designed by scientists and for which members of the public primarily contribute data
Collaborative	generally designed by scientists and for which members of the public contribute data but also help to refine project design, analyze data, and/or disseminate findings
Co-Created	designed by scientists and members of the public working together and for which at least some of the public participants are actively involved in most or all aspects of the research process
Collegial	non-credentialed individuals conduct research independently with varying degrees of expected recognition by institutionalized science and/or professionals
[Contractual]	communities ask professional researchers to conduct a specific scientific investigation and report on the results

Contributory

- species monitoring

tuatara *Sphenodon punctatus*

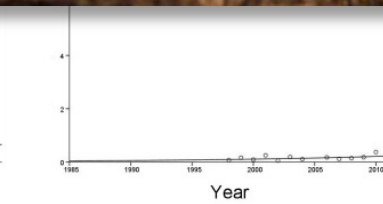
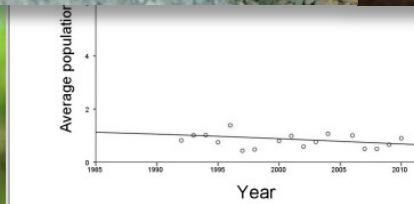


KeresH

little spotted kiwi *Apteryx owenii*



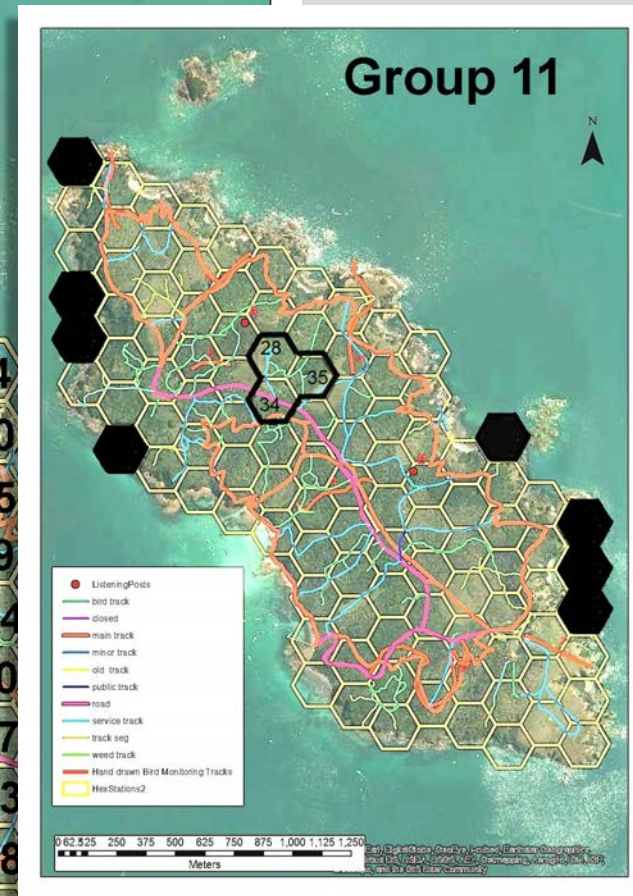
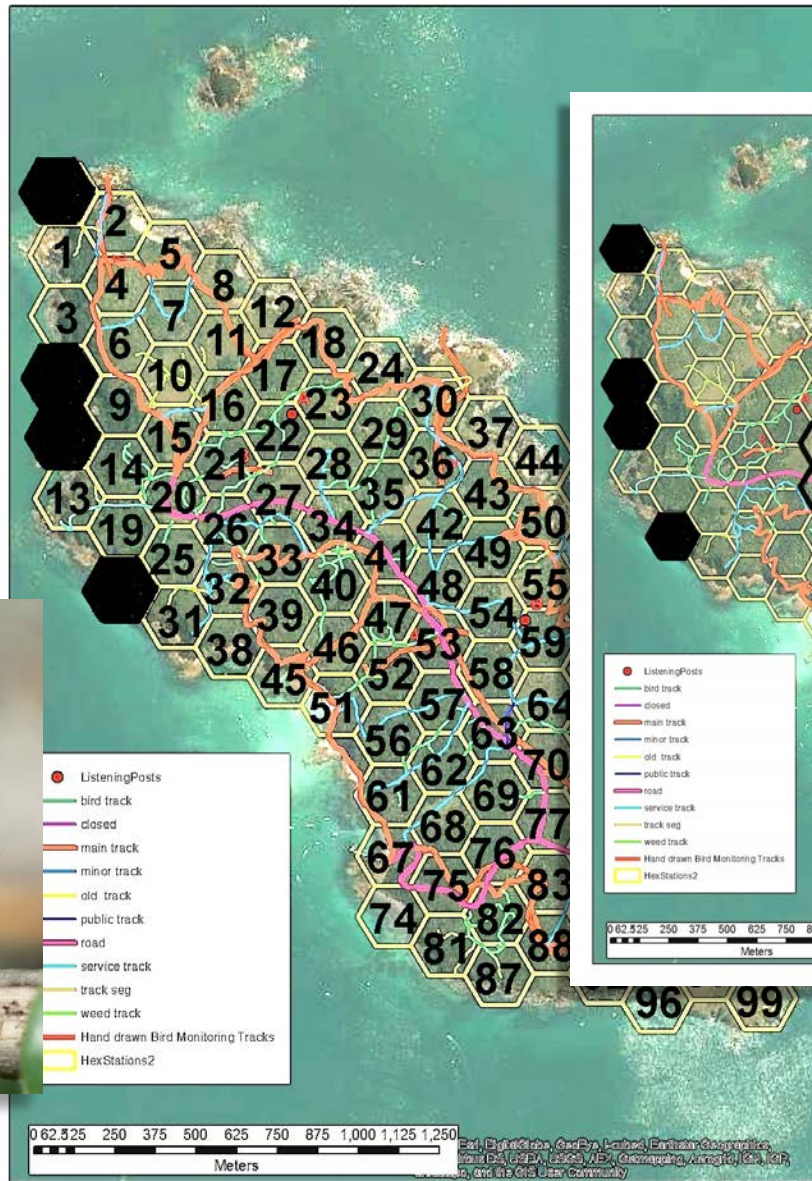
A Digby



(Graham et al. 2013)

Collaborative

fantail *Rhipidura fuliginosa*

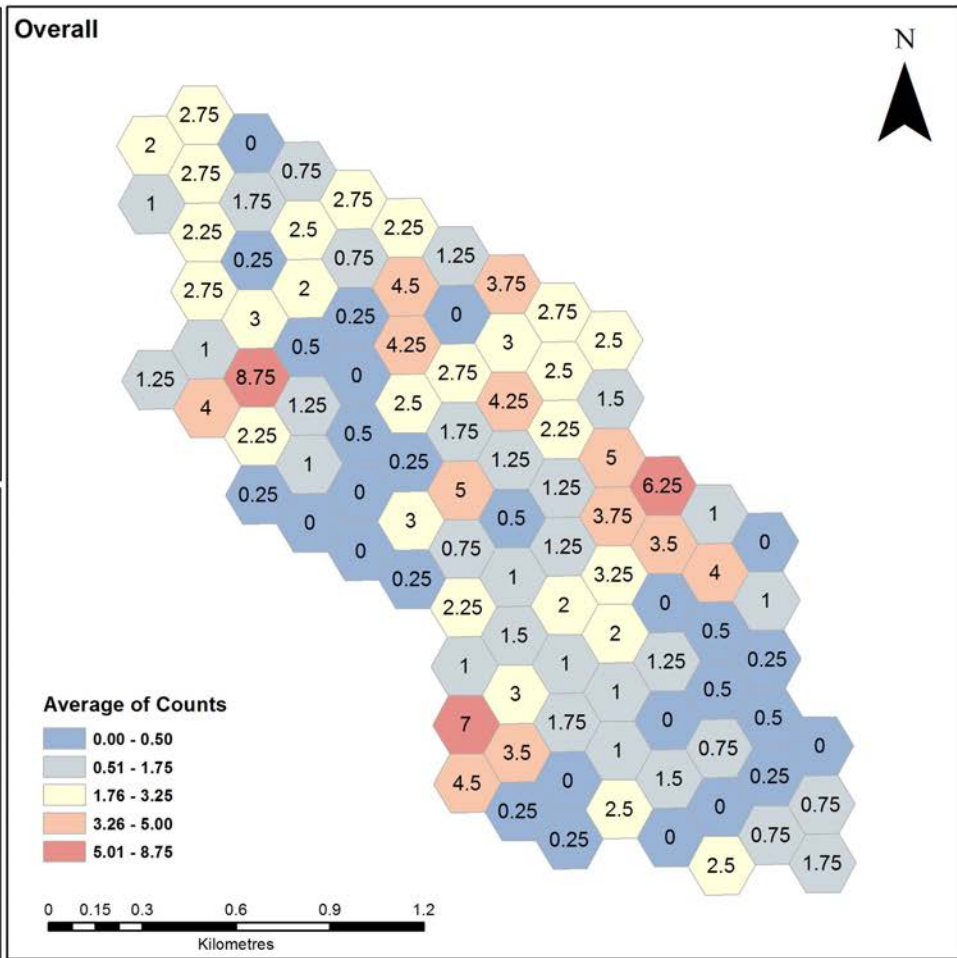
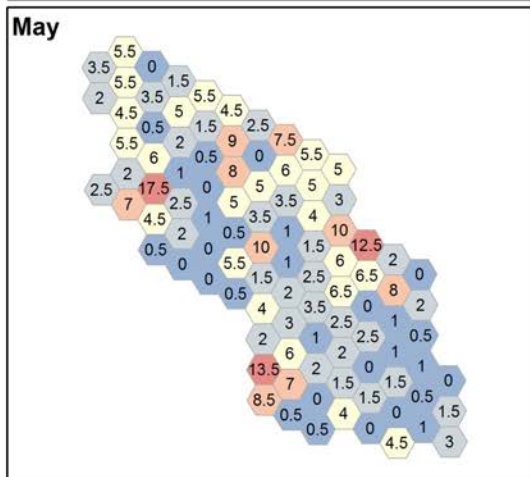
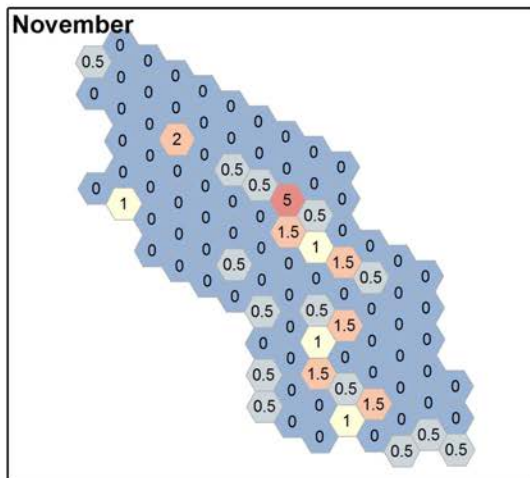


East, Bygone, Geopys, Leabro, Eartian, Gokunika, ...
 and the GIS User Community

Collaborative

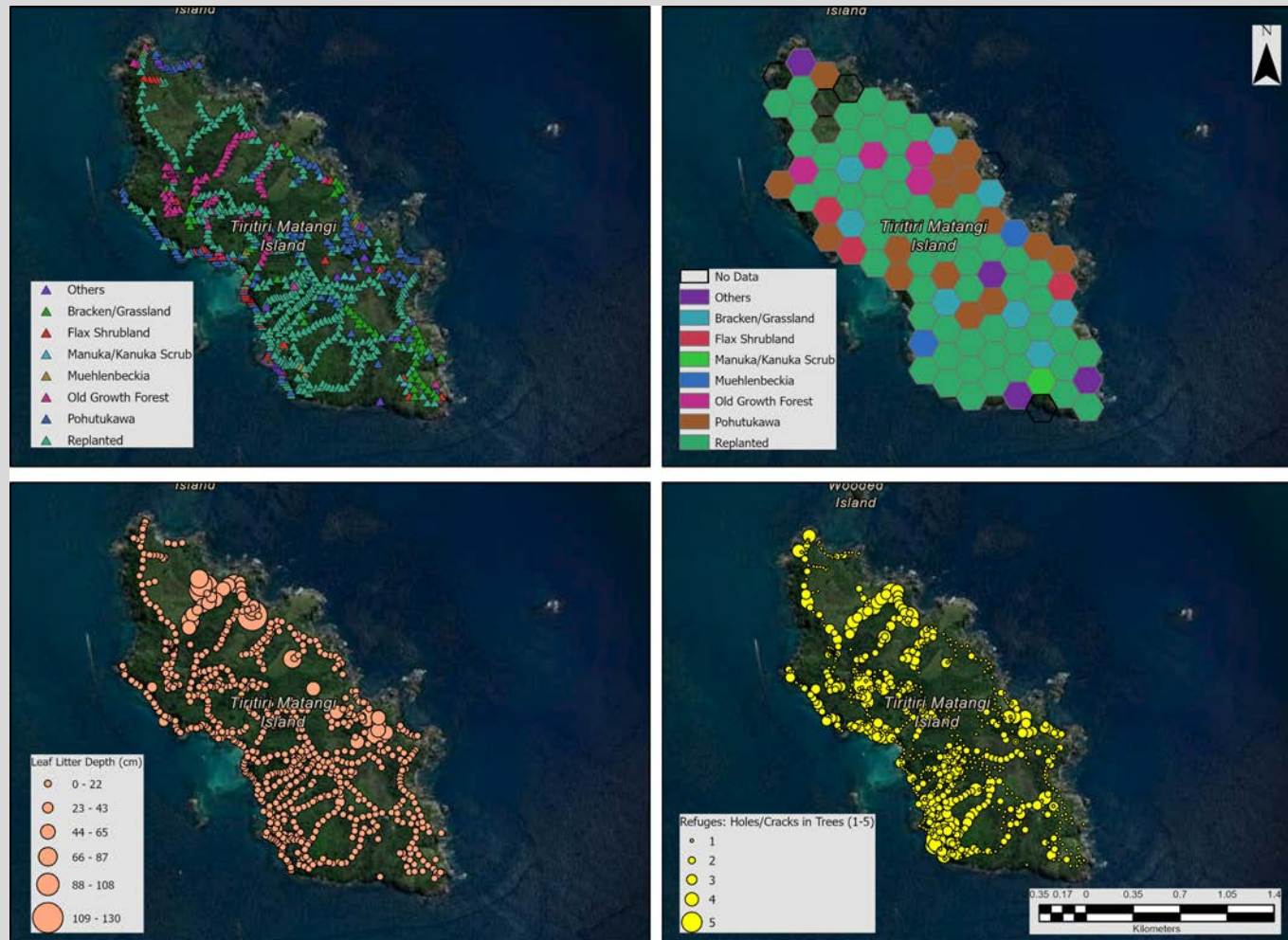
averaged counts,
2014 – 2016

* significant difference



Co-Created

- mapping of abiotic and biotic features (ARC GIS Collector)



G. Aguilar

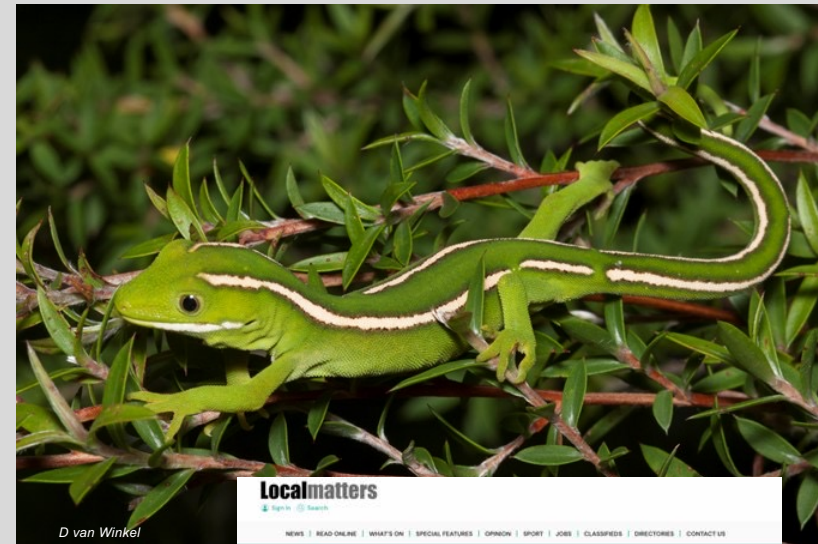
Collegial

- translocation of rifleman *Acanthisitta chloris*



Collegial

- translocation of elegant gecko *Naultinus elegans*



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Home / News / New geckos add to island population

New geckos add to island population

July 14, 2016 12:34pm

Local Matters

We're not just humans who are enjoying additional freedom right now. A total of 26 adult and 19 juvenile Auckland green geckos were recently released from their breeding enclosure on Tiritiri Matangi Island.

The 'at risk' geckos (also known as elegant geckos or *Naultinus elegans*) were salvaged from a quarry in the Auckland region and have been cared for in a captive breeding facility on Tiritiri Matangi, a Supporters of Tiritiri Matangi (SOTM) project with support from Department of Conservation, members of the NZ Herpetological Society, and other expert advisors. During lockdown, the geckos were cared for by the two resident DOC rangers, Emma Dunning and Tala Hitchcock.

The successful release was carried out by two SOTM and gecko care team members and the DOC rangers.

In the first two days of monitoring, the rangers sighted and recorded seven different individuals, mostly basking in the sun. Apart from ongoing monitoring visits the latest fauna translocation into the Tiritiri will be left to breed in peace.

Contractual

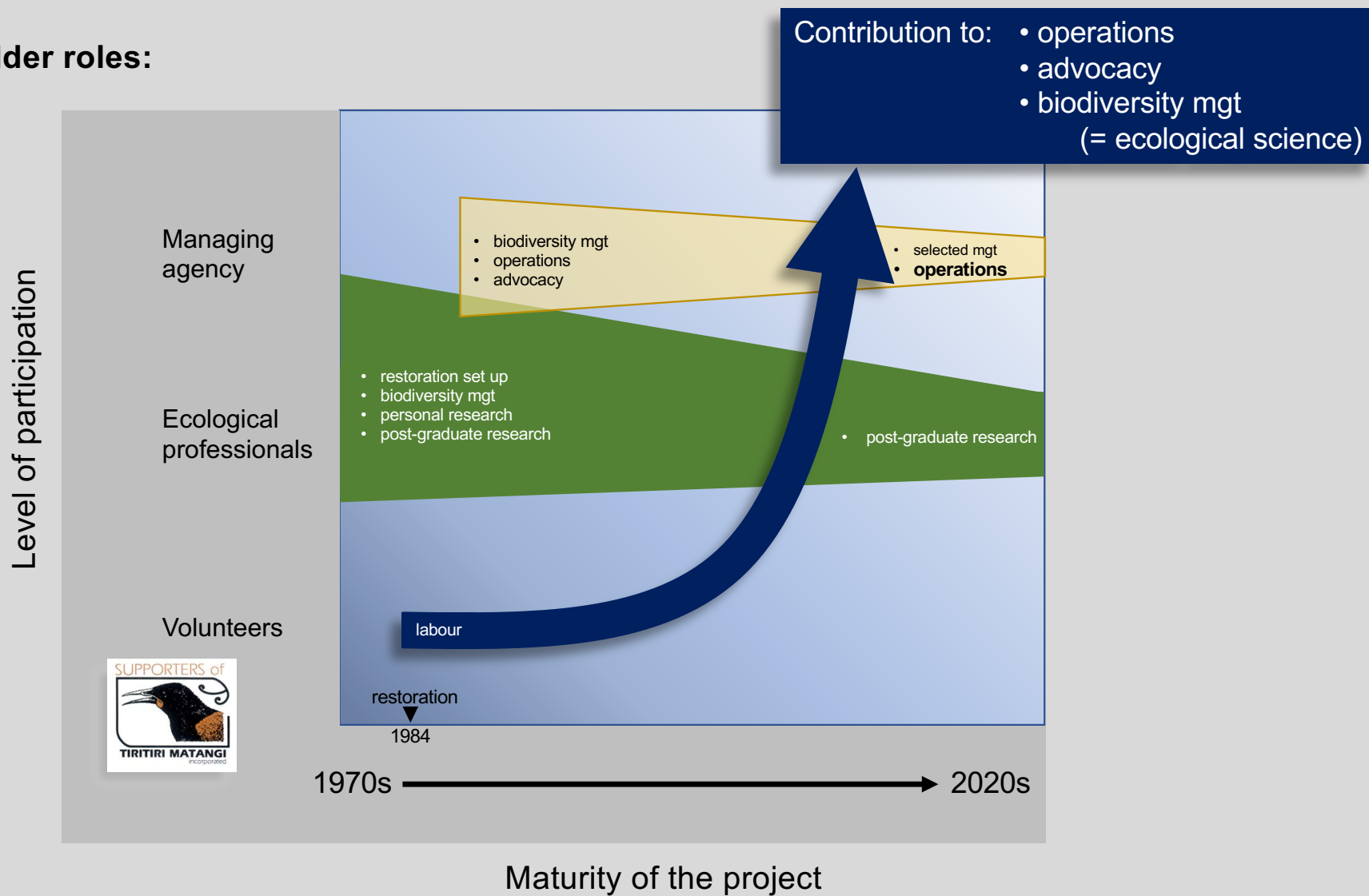
- surveys at ecosystem level



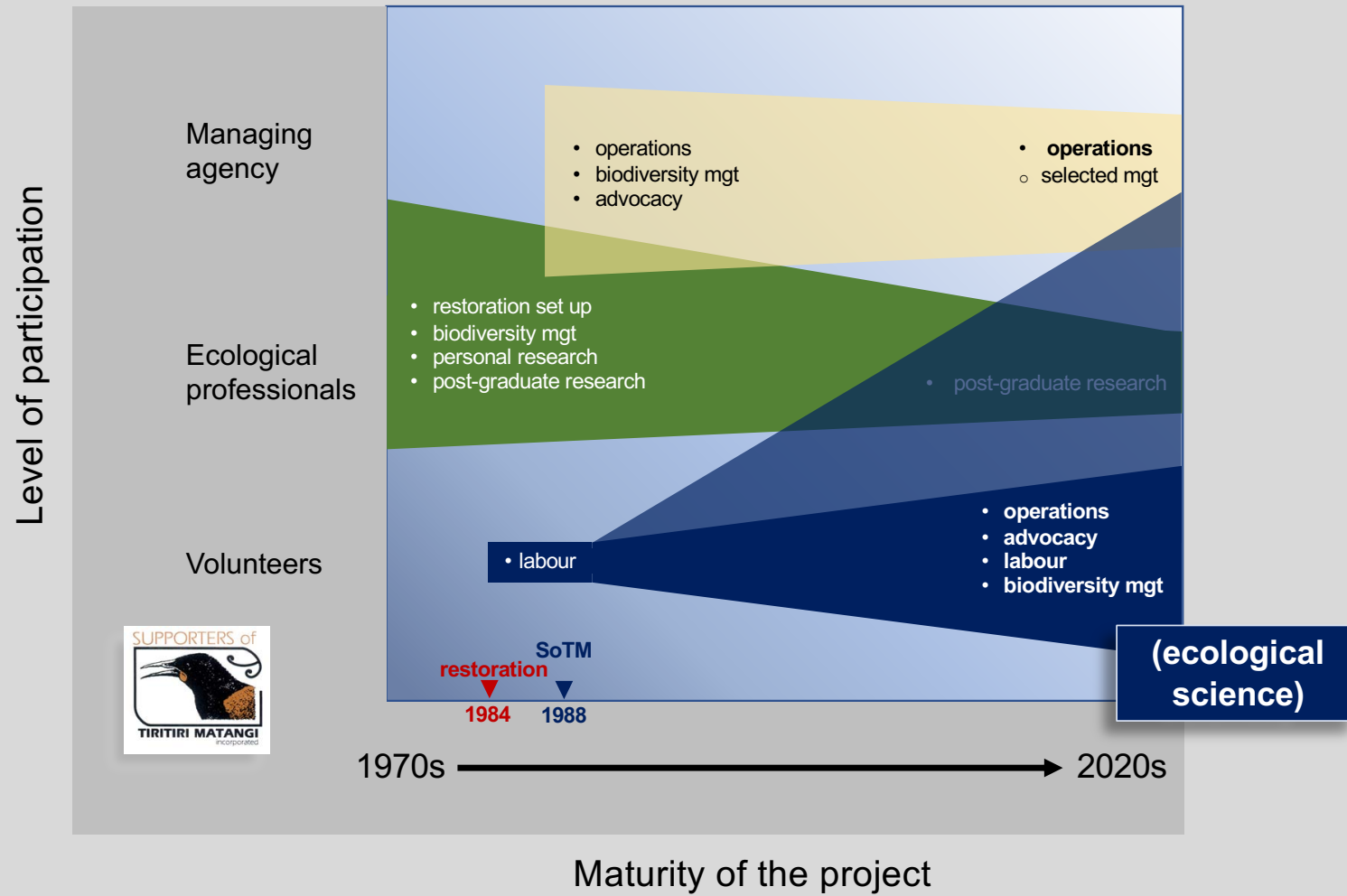
Examples of citizen science activities on Tiritiri Matangi:

Types <small>(Shirk et al. 2012)</small>	Examples of activities
Contributory	<ul style="list-style-type: none"> species monitoring – tuatara, little spotted kiwi, kokako, myrtle rust
Collaborative	<ul style="list-style-type: none"> fantail – seasonal distribution survey pohutukawa dominance survey
Co-Created	<ul style="list-style-type: none"> mapping of abiotic and biotic features (ARC GIS Collector) catchment restoration for native fish
Collegial	<ul style="list-style-type: none"> rifleman translocation and subsequent monitoring elegant gecko – translocation, captive breeding, monitoring reptile distribution monitoring
[Contractual]	<ul style="list-style-type: none"> freshwater surveys

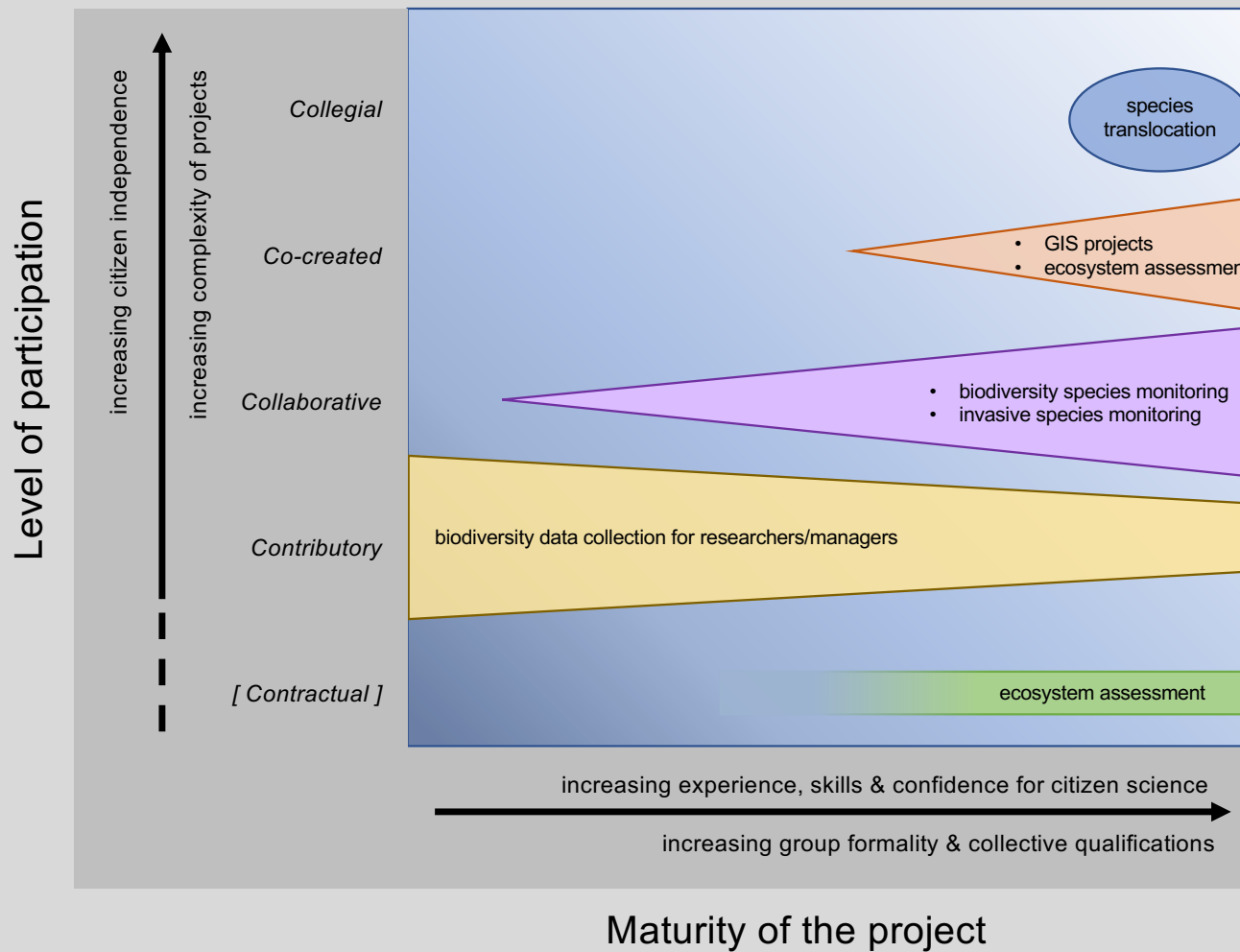
Stakeholder roles:



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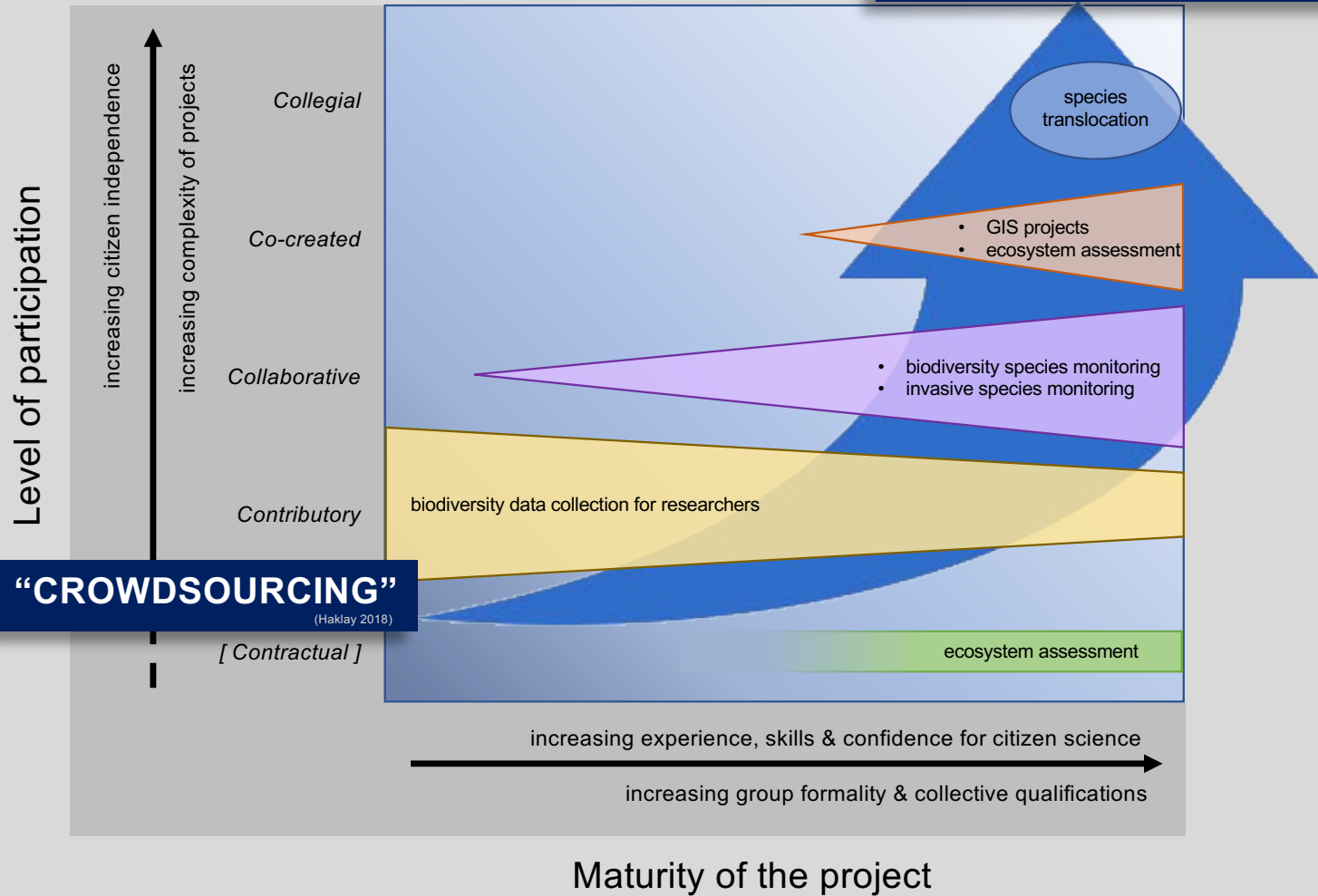


Citizen science participation:



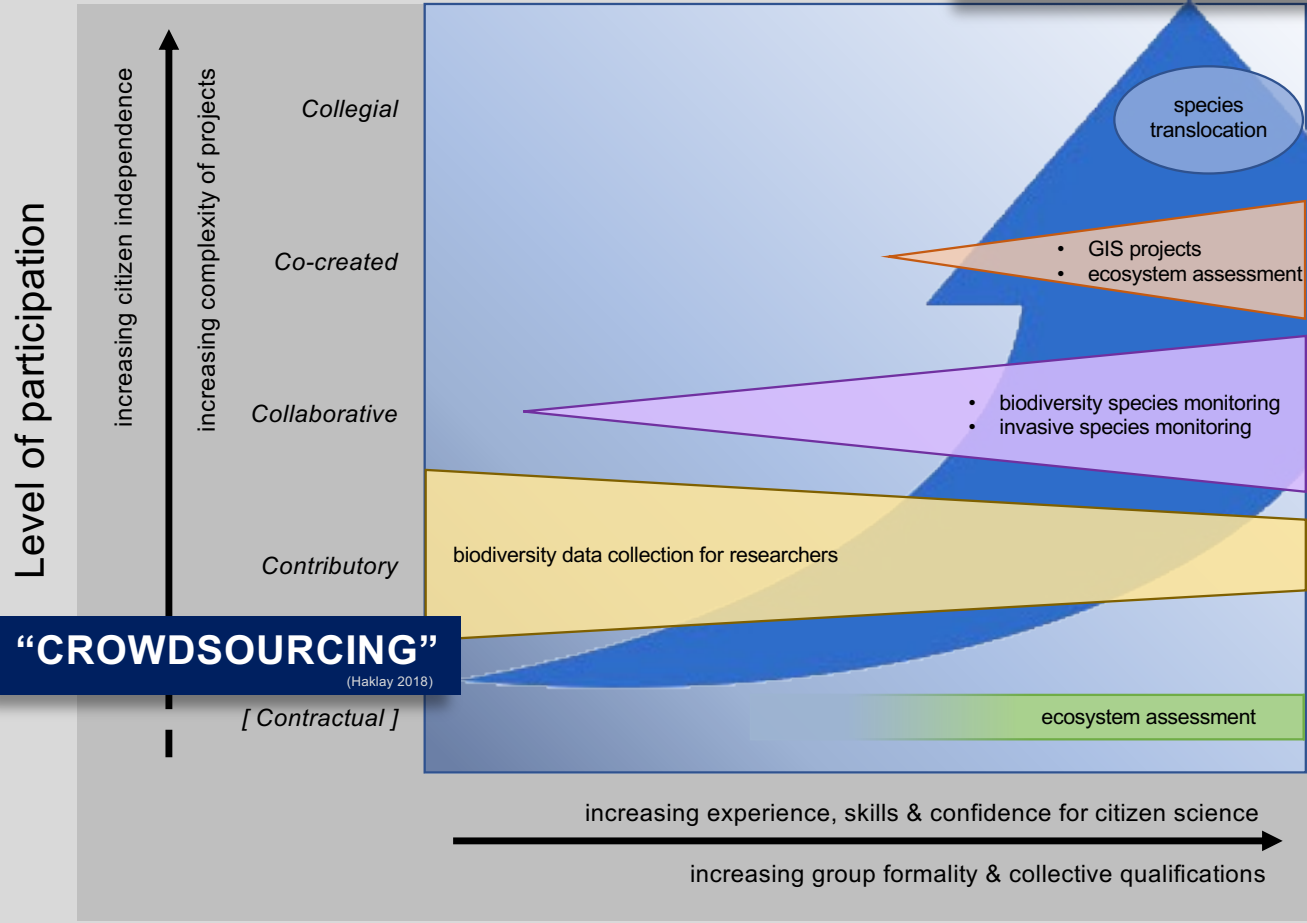
Citizen science participation:

“EXTREME CITIZEN SCIENCE”
(Haklay 2018)



Citizen science participation:

“EXTREME CITIZEN SCIENCE” (Haklay 2018)



“CROWDSOURCING” (Haklay 2018)

- skills
 - confidence
 - credibility
- = independence;
complex &
sophisticated
methodologies

Maturity of the project

Summary: as the project has “matured”:

- *formal volunteer collective*
 - included specialists with academic interest and qualifications (as well as their volunteer skills);
 - funding for research.
- *volunteer knowledge, skills and confidence increased*
 - shift towards independent engagement in ecological science.
- *managing agencies tended to limit input to governance and operational matters*
 - ecological science vacuum filled increasingly by volunteers.
- **volunteers have gained credibility as citizen scientists.**



North Island kōkako *Callaeas wilsoni*

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References:

- Galbraith, M., Craig, J., Mitchell, N., & Cooper, H. (2013). Introduction to the special issue on Tiritiri Matangi Island. *New Zealand Journal of Ecology*, 37(3), 257.
- Haklay, M. (2018). Participatory citizen science. In S. Hecker, M. Haklay, A. Bowser, Z. Makuch, J. Vogel, & A. Bonn (Eds.), *Citizen Science: innovation in open science, society and policy*. (pp. 52-62). London: UCL Press.
- Shirk, JL, Ballard, HL, Wilderman, CC, Phillips, T, Wiggins, A, Jordan, R, ... Bonney, R. (2012). Public participation in scientific research: a framework for deliberate design. *Ecology and Society*, 17(2).

