EXPLORING THE EFFECTS OF HABITAT CHANGE ON LIZARD POPULATIONS IN WELLINGTON

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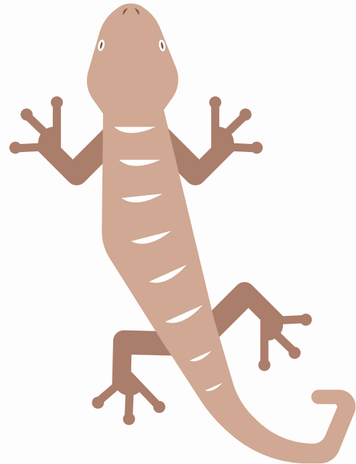

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TODAY...

'ZOOMING IN' ON URBAN DEVELOPMENTS AND LIZARDS

- Urbanisation & lizards
- Methods and preliminary findings
- What this means for sanctuaries

Image: Canva

ZOOM OUT...

Global population > 9 billion by 2050

Two thirds of global population will be urban

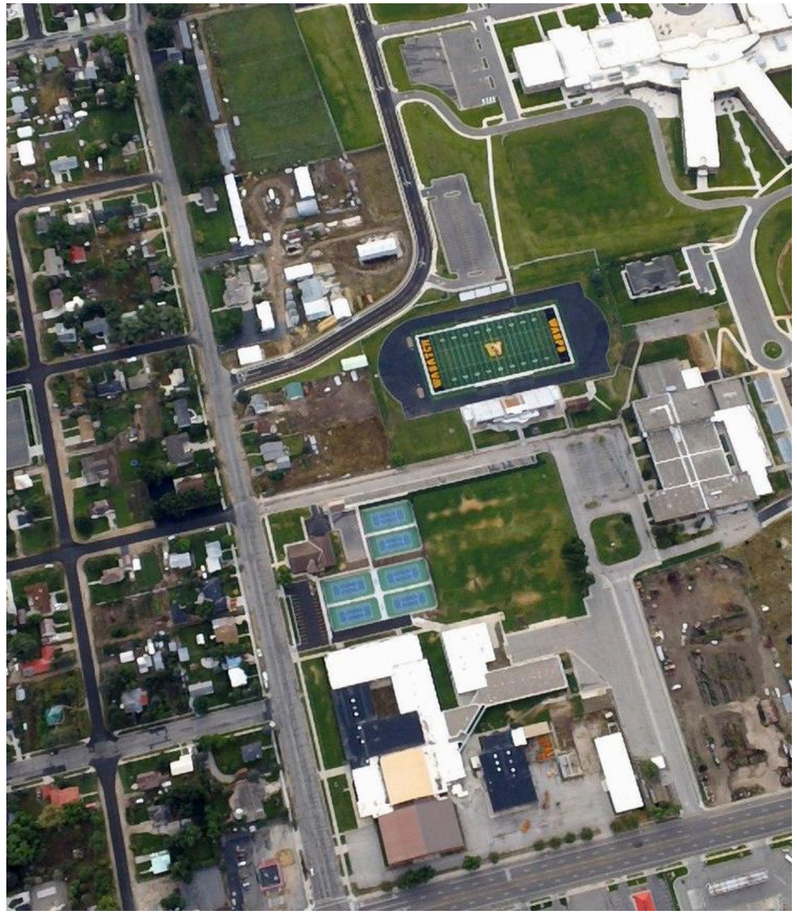
- Urbanisation - biggest threat to reptiles and amphibians

Images: Joel Knight, Tim Harker

- New Zealand's population: 5.5 - 6.5 million by 2048 (Stats NZ, 2022)
- Fragmentation of existing native lizard populations due to increased housing

Images clockwise from left: Dylan van Winkel, Carey Knox, Tony Jewell, Carey Knox

What are the effects of urban development on lizards in the Wellington region?



Canva, Wellington City Heritage

- GIS mapping
- Associate environmental variables with lizard records
- Overlay data with greenspace maps and impervious surface maps

- Associate environmental change with lizard records
- Presence-only data
- Generate summary statistics about species' relationship with greenspace
- Compare records across private and public greenspace

Overlay corresponding presence records for each species

Oligosoma polychroma - Northern grass skink

Woodworthia maculata - Raukawa gecko

Oligosoma aeneum - Copper skink

Images from left: Nick Harker, Mike Lusk, Nick Harker

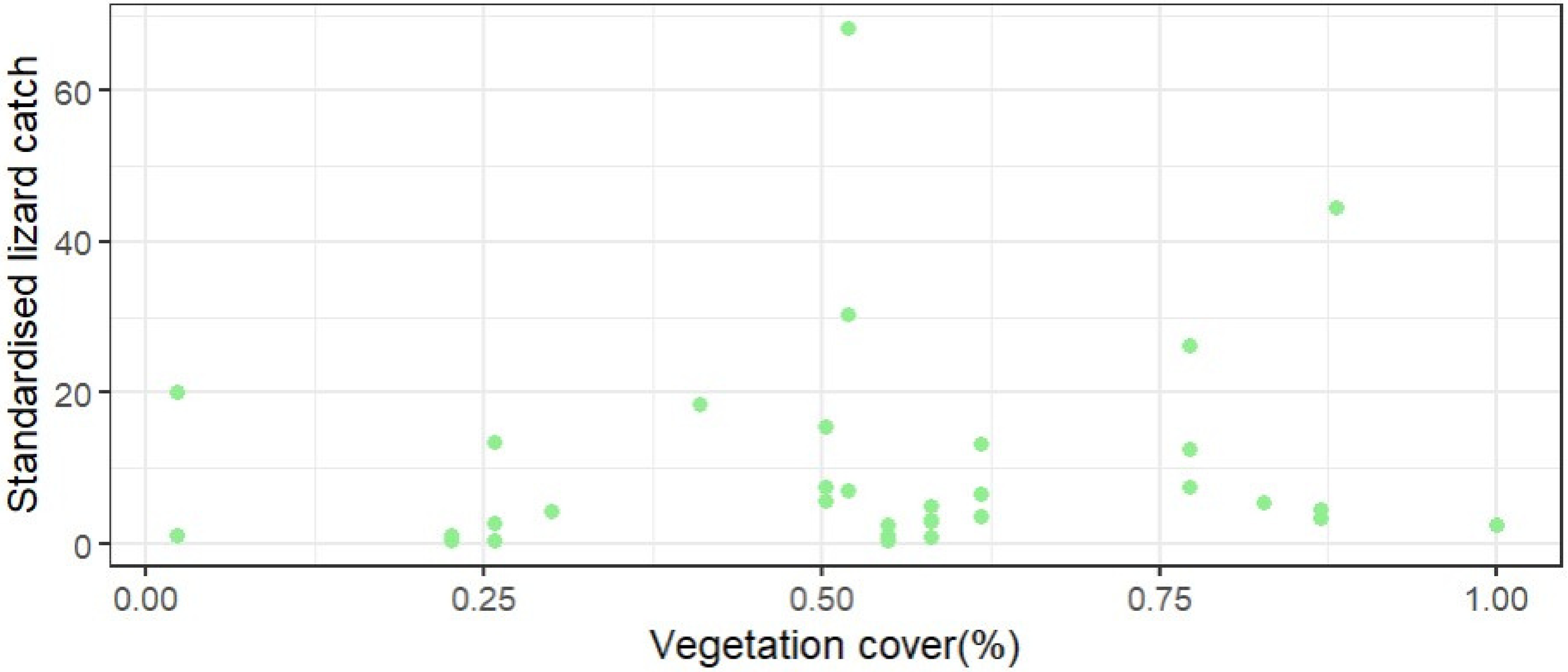
THAT'S URBAN GREENSPACE AROUND WELLINGTON

LET'S ZOOM IN TO URBAN DEVELOPMENTS

Images: Canva, The BBC

Assess standardised lizard catches across Wellington against habitat type

PRELIMINARY DATA – WHAT THE MODEL INPUT MIGHT LOOK LIKE



LINZ Wellington 0.3m Rural Aerial Photos (2012-2013)

LINZ Wellington 0.3m Rural Aerial Photos (2021)

Project standardised catch into case study scenarios

Approx. scrub:
84,000 sq. metres

Approx. pasture grass:
51,000 sq. metres

PRACTICAL FIELDWORK TO CONTRIBUTE TO MODELLING COMPONENT

LIZARDS IN NEW ZEALAND

Version as at 28 September 2022

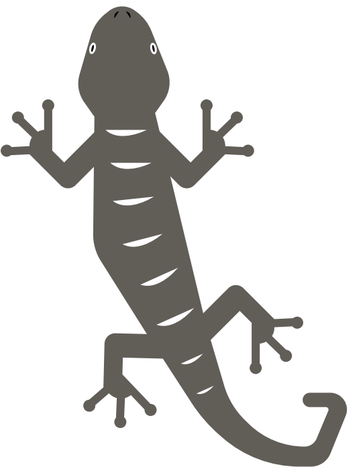
Resource Management Act 1991

Public Act 1991 No 69
Date of assent 22 July 1991
Commencement see section 1(2)

Version as at 6 May 2022

Wildlife Act 1953

Public Act 1953 No 31
Date of assent 31 October 1953
Commencement see section 1(2)



IMPACTS ON ENVIRONMENT (INCLUDING LIZARDS)
AVOIDED, REMEDIATED OR MITIGATED

MITIGATION STRATEGIES FOR LIZARDS

Translocation

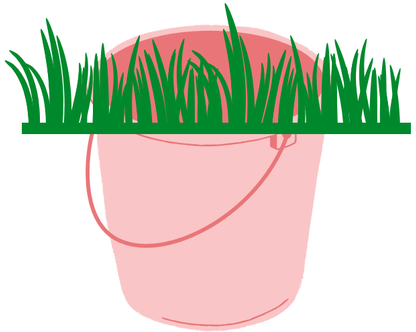
- Removal of organisms from their habitat due to land use change
- Release organisms into un-impacted site

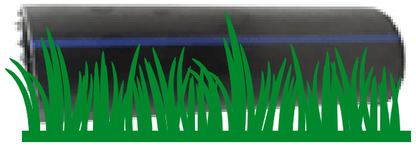
Oligosoma polychroma -
Northern grass skink

Woodworthia maculata -
Raukawa gecko

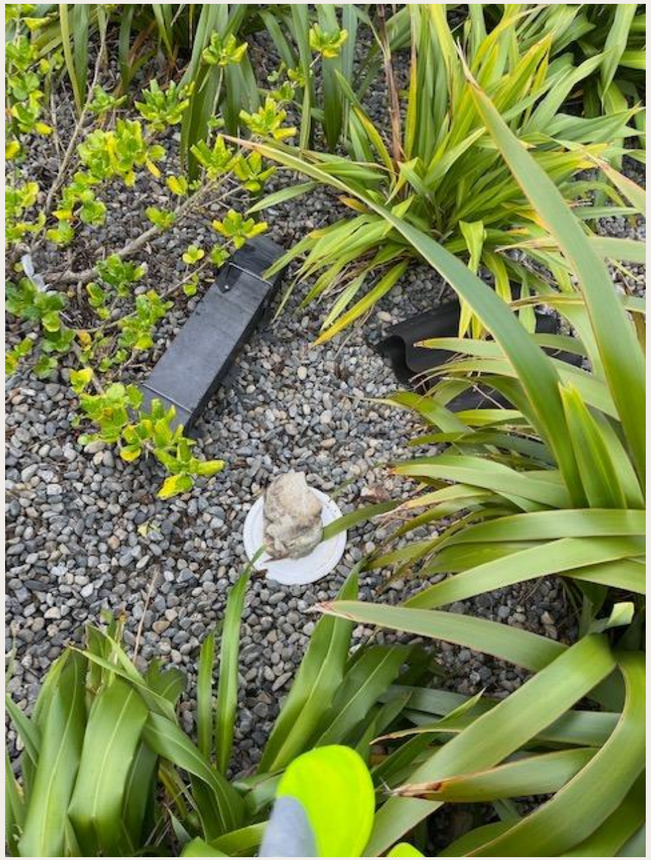
Images from left: Nick Harker, Mike Lusk

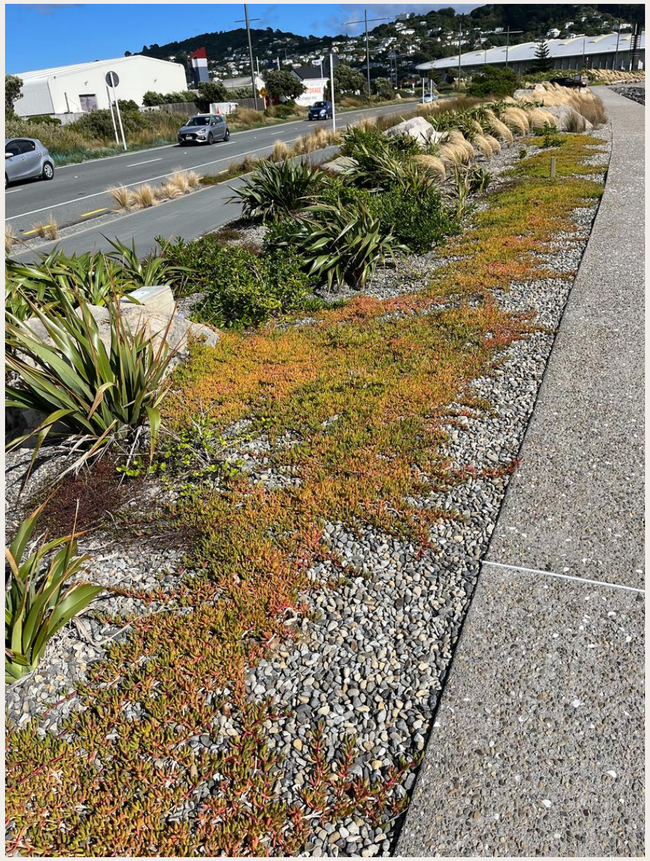
Determine and monitor lizard populations before, during and after mitigation translocations, testing monitoring techniques





Cobham Drive: testing monitoring techniques and assessing lizard catch post mitigation translocation





TESTING DESIGN FOR DEVELOPMENTS: DO LIZARDS USE GABION BASKETS?

Image: gardening knowhow.com

DO LIZARDS USE GABION BASKETS?

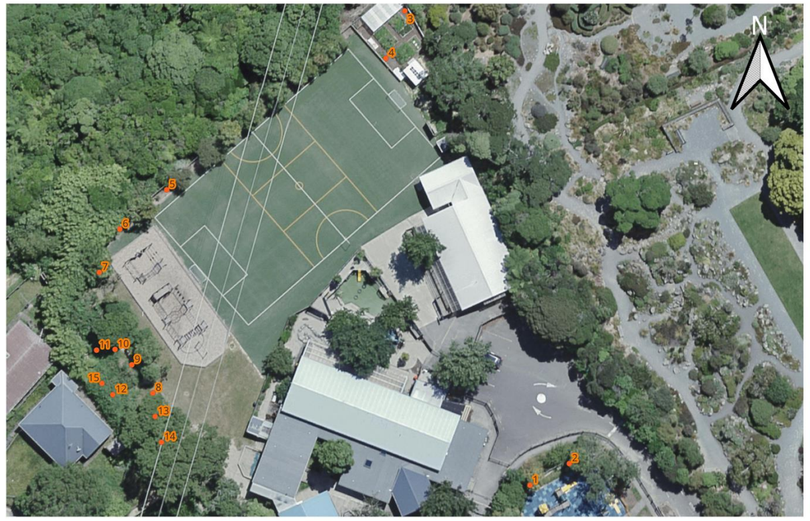
Image: gabion1.co.nz

- Testing 'enhancements' to build into new urban development designs
- Sites: Pāuatahanui School, Otari School - Te Kura o Otari and Koraunui School
- Passive monitoring via citizen science to assist with data collection

DO LIZARDS USE GABION BASKETS?

1

Monitor site for suitability & determine where to place



DO LIZARDS USE GABION BASKETS?

1

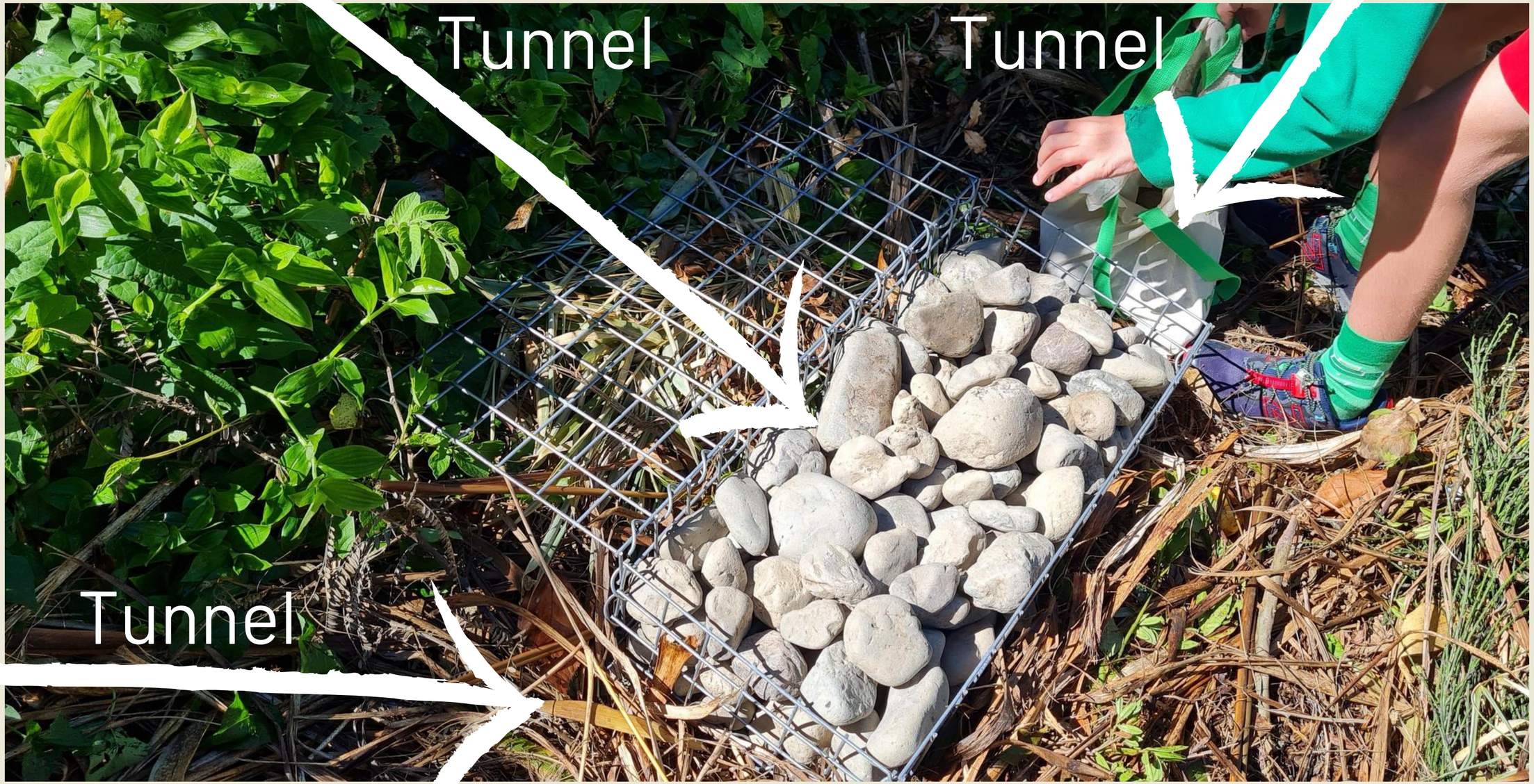
Monitor site for suitability & determine where to place

2

Build gabion baskets and embed with tracking tunnels

- Small rocks between 20-40mm, may provide refuge for lizards from mice
- Larger rocks 50-150mm (representative of a standard gabion basket)

Add tracking tunnels around edges


Tunnel
Tunnel
Tunnel

DO LIZARDS USE GABION BASKETS?

1

Monitor site for suitability

2

Build gabion baskets and embed with tracking tunnels

Add tracking tunnels around edges

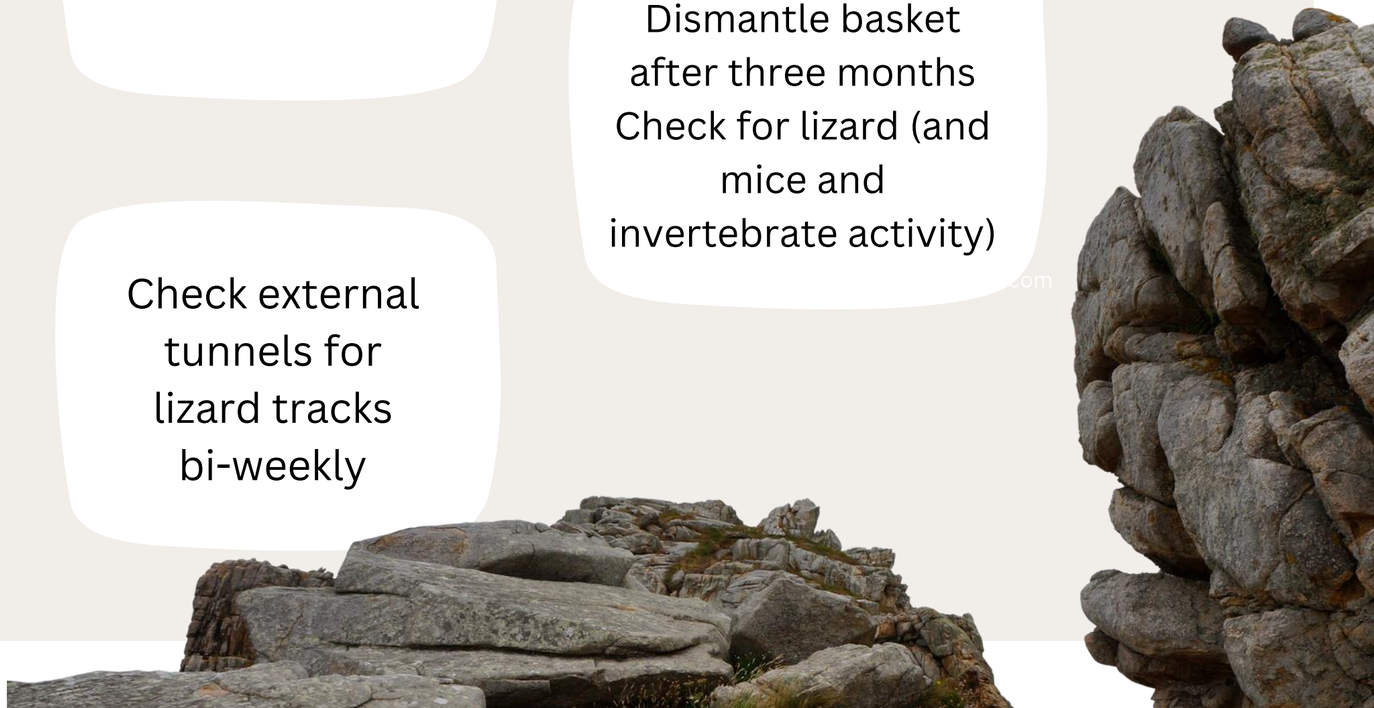
3

Perform visual observations for basking lizards

Check external tunnels for lizard tracks bi-weekly

4

Dismantle basket after three months Check for lizard (and mice and invertebrate activity)



DO LIZARDS USE GABION BASKETS?

Large rocks

Mouse footprints

Invertebrate footprints

Skink footprints (at one of the two schools)

Small rocks

Blank/Invertebrate footprints

Lizards on either side of the baskets

LIZARDS IN SANCTUARIES?

Image: gabion1.co.nz

- Importance of variability in habitats when thinking about lizards
- Consideration of urban landscapes next to sanctuaries
- Consider design elements to add habitat variability in sanctuaries
- Engaging citizen scientists/schools has been fun and rewarding for all

ZOOM OUT...THANK YOU!

MBIE/ Restoring Urban Nature

Nicky Nelson

FixIt lab

Victoria University Wellington

Mare Leenders

Will Gibson

Rosie Ngatai

Waka Kotahi NZ

Ngāti Toa

Porirua City Council

RMA Ecology

Morphum Environmental

Koraunui School

Otari School

Pauatahanui School

Parliamentary Commissioner for the Environment

Cartoons: Canva