Landcare Research
Manaaki Whenua

The overlooked predator

An assessment of the potential impacts on native species posed by European hedgehogs in New Zealand

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A familiar story ….

- 1000 years of ecological harm from introduced species
- At least 32 species of mammals now present
- 40+% of land bird species extinct since human occupation
- Over 600 taxa now classified as under some level of threat of extinction – most exist only on offshore islands or as mainland relics.

Introductions in the opposite direction have been equally successful!

Predators

The usual suspects

European hedgehog (*Erinaceus europaeus*)

- Introduced from Europe:1870 onwards
- By Acclimatisation Societies and for garden pest control
- Now found in most habitat types in N.Z.

- Mean body mass: approx. 700g
- Little sexual dimorphism
- Dorsal spines
- Hibernate during winter months?
- Not territorial
- Primarily insectivorous

- Lower parasite burden in N.Z. populations than European ?

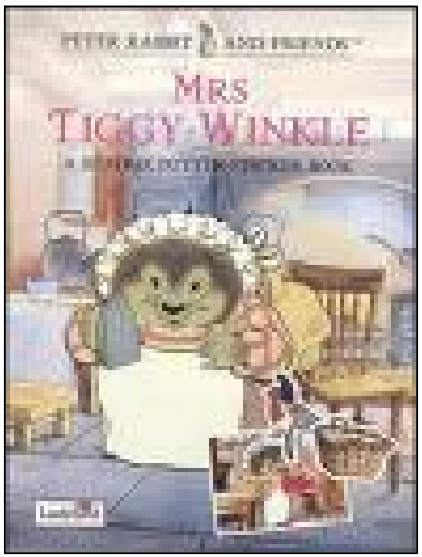
- Annual breeders
- Produce 3 young/litter
- Season limited by climate

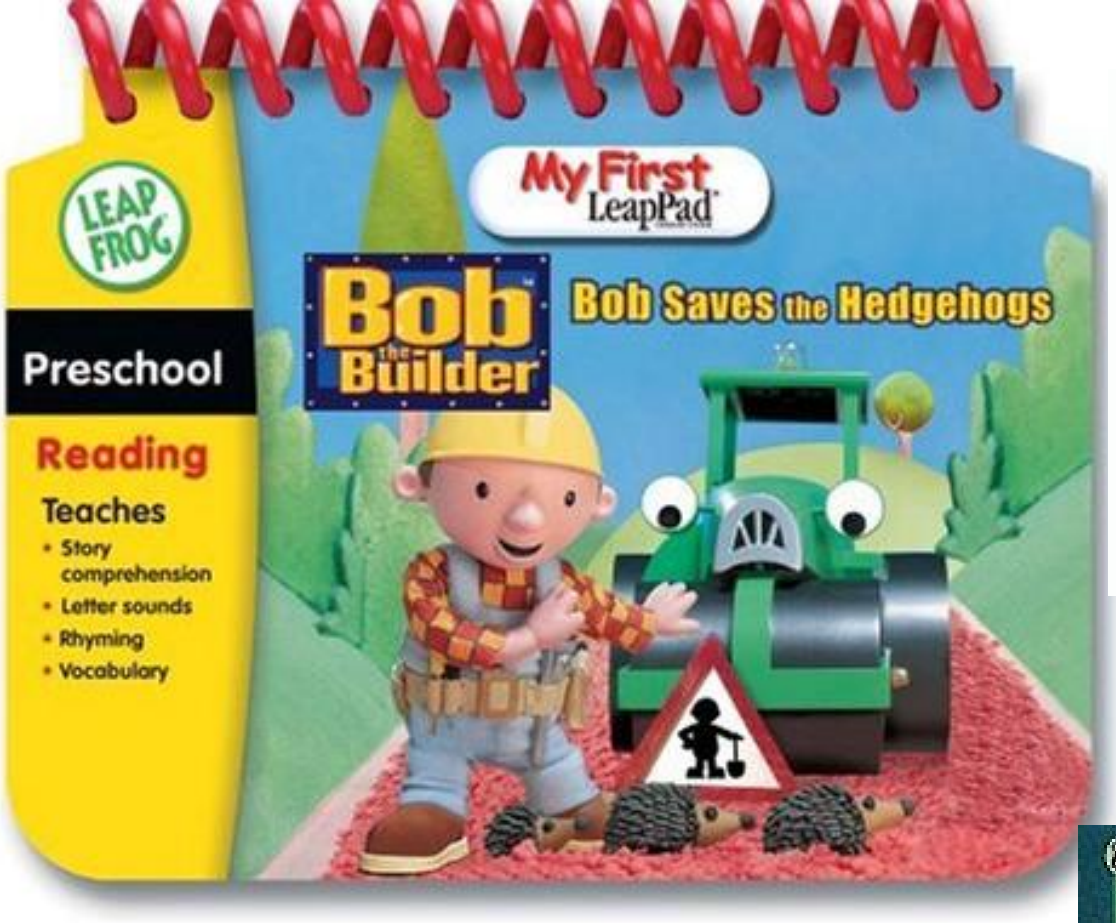
  (pregnant females in August in Kaitaia)
- May produce <1 litter/yr in warmer regions

- Climate change ….?

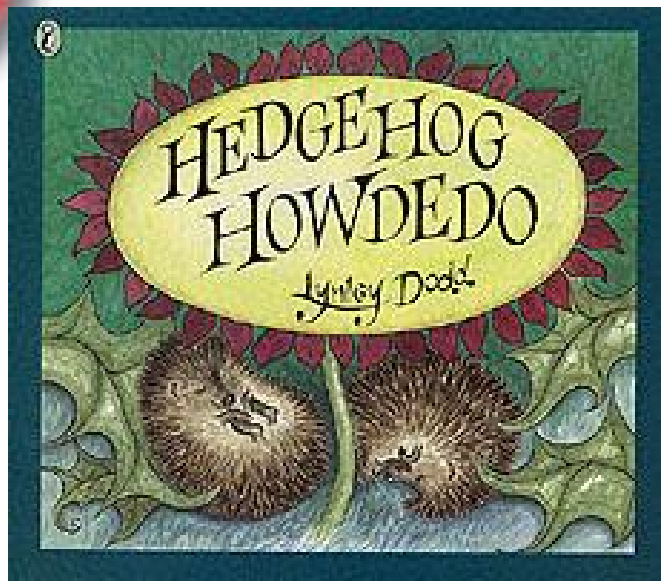
- Historically considered benign, even beneficial

e.g. little effect on *game* bird populations (Brockie 1990)




LEAP FROG
Preschool
Reading
Teaches
• Story comprehension
• Letter sounds
• Rhyming
• Vocabulary
My First LeapPad
Bob the Builder
Bob Saves the Hedgehogs


XBOX 360
SONIC


HEDGEHOG HOWDEDO

But …..

This is the face of a killer!

Recent N.Z. studies have shown:

- Risk to native inverts – often rare & have restricted ranges
- Consume large numbers in one foraging bout
- Native lizards = significant supplementary food
- Females at least 3 x threat to lizards of males
- Risk to eggs of ground-nesting birds

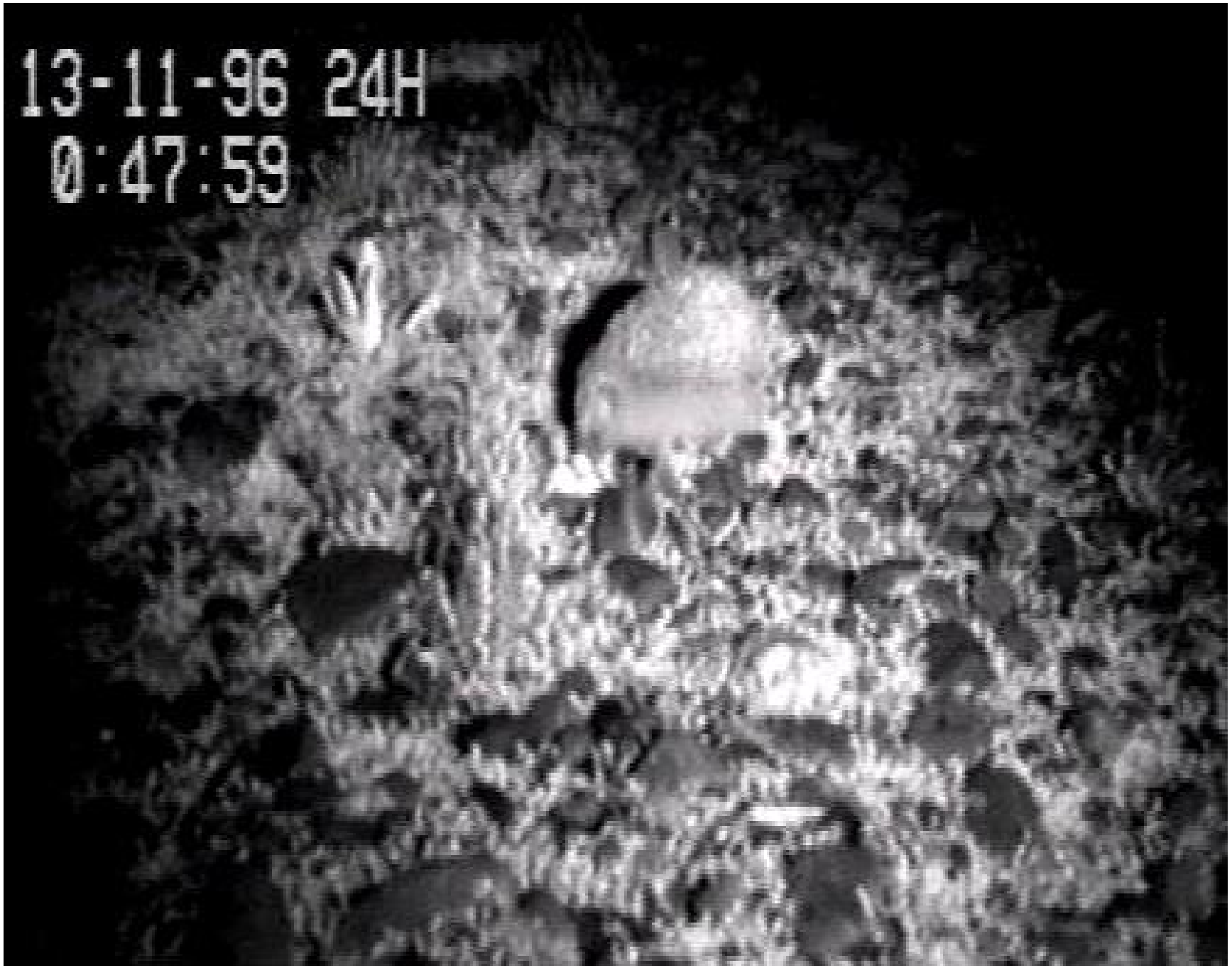
Evidence of hedgehog predation on birds' nests: Europe

- Predation on black-headed gull eggs and chicks in Cumbria, U.K. (Kruuk 1964)
- Up to 60% of clutches of native wader spp. lost to hedgehog predation on South Uist, Scotland (Jackson and Green 2000)

Photo: Digger Jackson SNH

DOC video study: risk to nests on river braids in Mackenzie basin

- 1994-99: hedgehogs were responsible for 19% of all video-recorded lethal events at banded dotterel and black-fronted tern nests. (Sanders and Maloney 2002)
- In the 2000-01 season this rose to 78% (Sanders and Brown 2001).
- Eggs at 87% of artificial skylark nests lost to hedgehogs (Andresen 2000).
- 2 of every 3 N.Z. lost dotterel nests due to hedgehogs at Tawharanui (Dowding 1998)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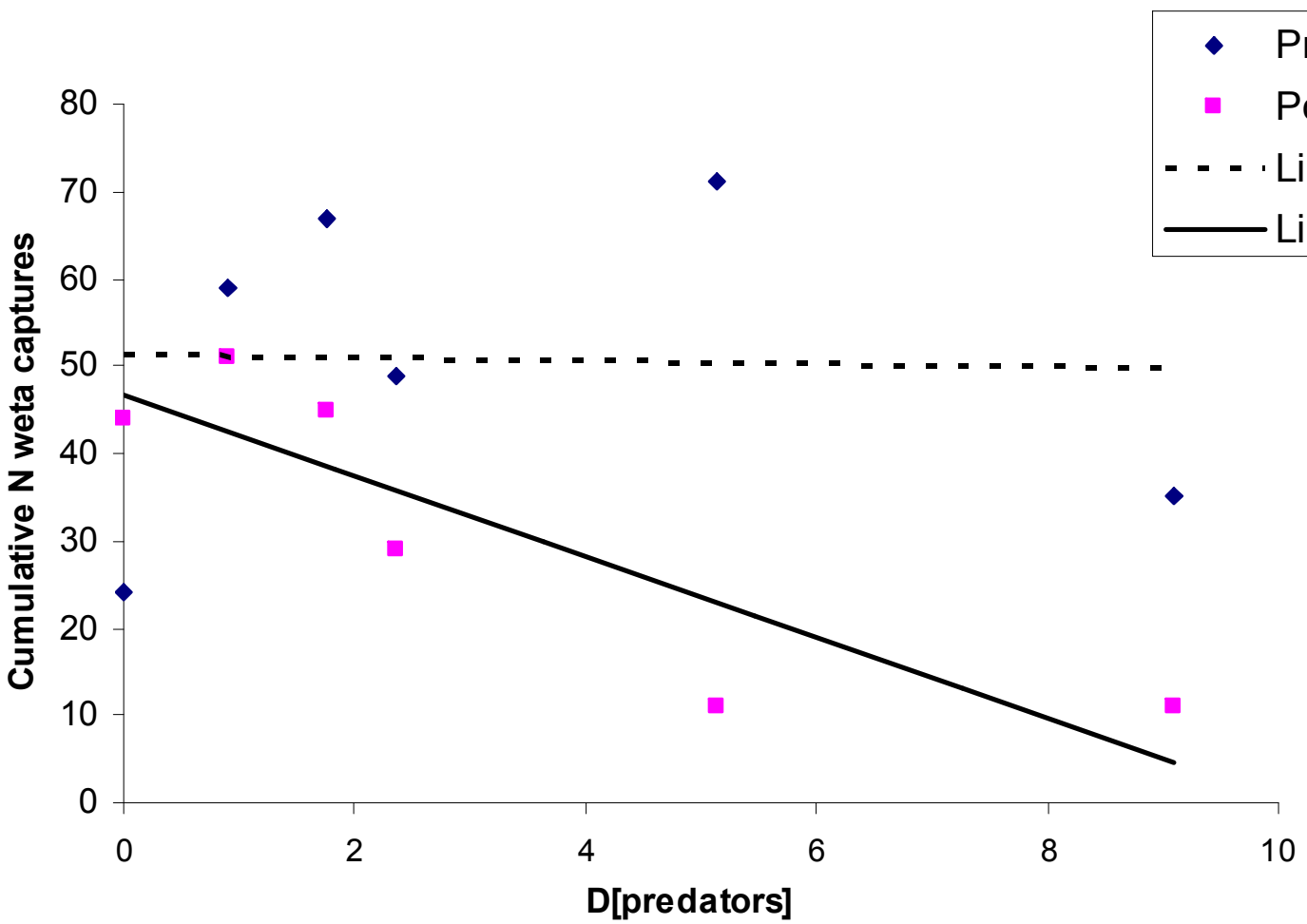
Impacts on native invertebrates

- Native invertebrates – frequently rare & have restricted ranges
- Hedgehogs con consume large numbers in one foraging bout (e.g., 283 *Hemiandrus* weta legs in one gut sample)
- Presence of locally-restricted beetles (*Metaglymma aberrans*; likely risk to *Prodontia matagouriae*?) in guts from Mackenzie Basin
- Rare endemic Scarabaeid beetles *Prodontia bicolorata* and *Pericoptus frontalis* common in droppings from Central Otago
- Weta in 22% of guts from Mackenzie Basin (mostly ground weta)



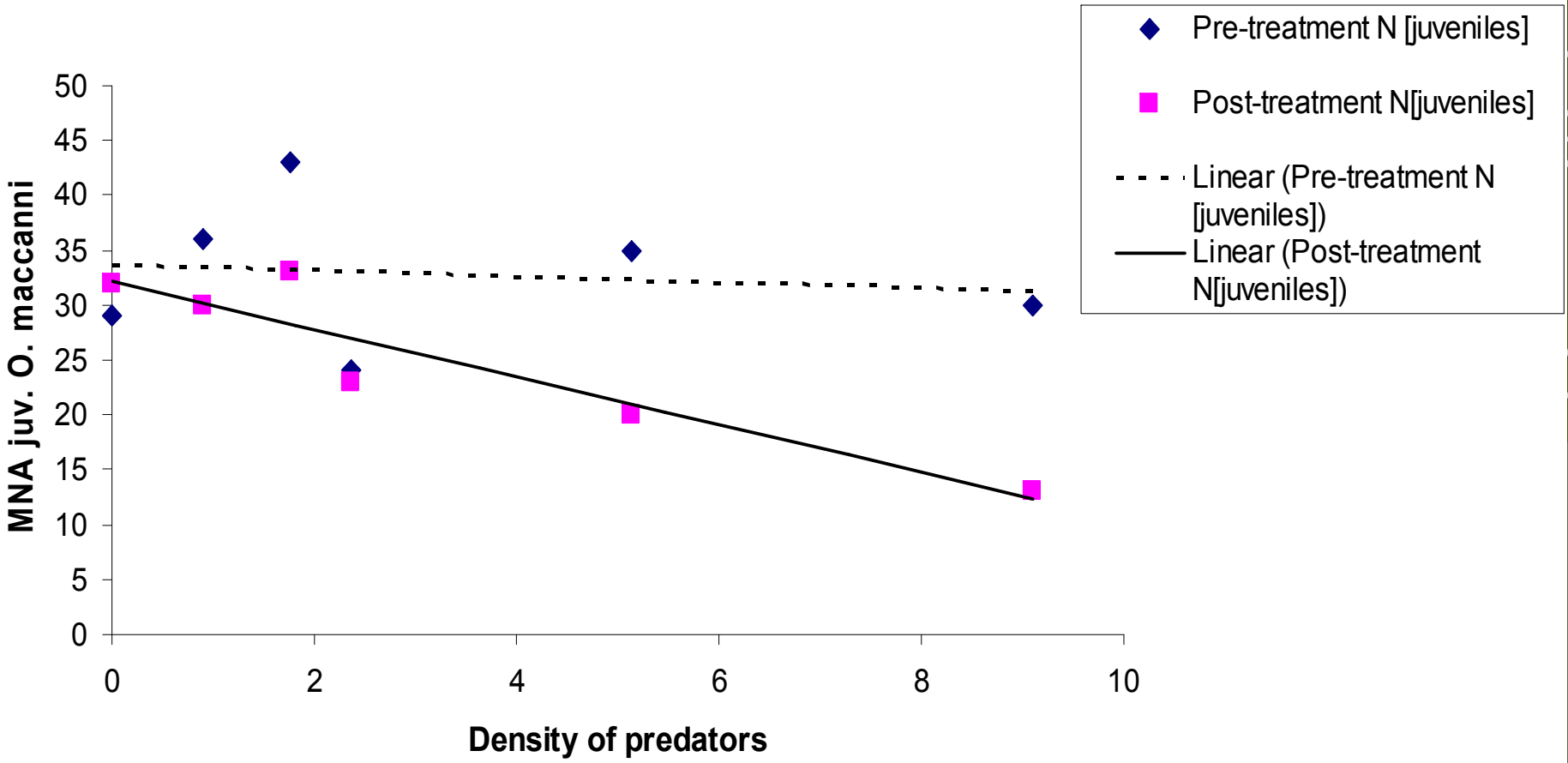
Linear regression :

D[hedgehogs] vs. post-treatment raw captures of ground wēta; $R^2 = 0.78$, $p = 0.02$

Native lizards are a significant supplementary food

Female hedgehogs are 3-5 x threat to lizards c/f males

(2 separate studies)



Regression tests:

(i) D[hedgehogs] vs. absolute change in juvenile *O. maccanni*; p = 0.042

(ii) D[hedgehogs vs. proportional change in juvenile *O. maccanni*; p = 0.063

Note: no effect on juvenile *O. polychroma* detected

Hedgehogs are very abundant

Predators trapped by DOC at Macraes Flat, Otago: April '99-June '04

Cat	963
Ferret	774
Harrier	418
Hedgehog	1944
Possum	381
Rat	191
Stoat	57
Weasel	18

But, we have few reliable estimates of density

Not everyone wants to control hedgehogs

- But, especially in site-led programmes, their control should be considered along with the ‘usual suspects’
- Care where:

[i] ground-nesting birds;

[ii] small or fragmented populations of lizards or threatened inverts;

[ii] managed sites border un-trapped grassy areas.

Thank you