Landcare Research
Manaaki Whenua

Closed Cell Foam Covers for Forest Lizards

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Forest Lizard Monitoring

- Currently one of the most difficult tasks in conservation management and research
  - This is due to the complex three dimensional system of forests
  - Natural or unnatural low abundance of many lizards in forests
  - The reduced diversity of lizard species on the mainland
  - The crypticness of lizards
- At present, there is no universal or reliable methods for monitoring lizards in forests
- High priority for chevron and striped skinks (DOC), and many geckos (biodiversity sanctuaries)

Why Monitor Lizards?

- Lizards are critical for ecosystem processes and function
  - ecological roles such as pollination, frugivory and associated seed dispersal, or honeydew feeding
  - lizards also are medium to high-level trophic predators
  - have various generalist and specialist roles in ecosystems
  - can be exceptionally abundant when released from mammalian predation pressure
  - lizards an ideal indicator species for forest ecosystem health

And also…

- Translocations are now becoming an option for many species
- Are now in the minds of many sanctuary projects
  - Duvaucel's gecko (tr. Mana)
  - Naultinus geckos (tr. Mana, Matiu, Motuara)
  - Forest gecko (tr. Matiu)
  - Otago skinks (planned tr. Mokomoko)
  - Cyclodina skinks (tr. Korapuki)
- Post-translocation monitoring for successful translocations therefore a requirement


Duvaucel’s gecko
Forest gecko
Green gecko


Common gecko


Pacific gecko


Chevron skink

Previous Methods

- Lizard houses/boxes
- Traps – pitfall traps, G-minnow traps
- Tracking tunnels
- Onduline Artifical Cover Objects
- Direct Searching

- Largely ineffective or uneconomical

Closed Cell Foam Covers

- Rubber
- Waterproof, providing dry refugia
- Insulative, effective against elements
- Economical
- Extremely light
- Can fit contour of trees, regardless of tree size
- Creates gaps of 3-4cm
- Light on tools – a hammer, nails and a knife

Bark and Hollow Mimic

- Lizards have been recorded utilising bark and hollows on trees as refugia
- CCF mimics this natural choice of refugia
- Length and width of CCF spreads across trunks
  - improved lizard encounter rates?


D11


D2
D3


D8

Trials for Acceptability

- Research Theory
  - Lizards will accept and utilize closed cell foam covers as refugia
  - This will be reflected in high occupancy rates in areas of high lizard abundance (a ratio of 3 occupied per 10 covers).
  - This will also be reflected in some occupancy in areas of low to medium lizard abundance (a ratio of 1 occupied per 10 covers)
  - These covers are acceptable to more than one species of lizard (at least two species will be found occupying covers)

Current Trials

- 200 CCF covers on five transects running along rodent tracking tunnels on Windy Hill (Great Barrier Island)
- 198 CCF on one transect and two grids in Karori Wildlife Sanctuary
- 120 CCF covers will be going out on Fanal Island (Mokohinau Islands in late Oct)

Species

- Karori (biodiversity sanctuary)
  - Forest gecko, common gecko, Wellington green gecko
- Windy Hill (another biodiversity sanctuary; more species)
  - forest gecko, common gecko, Pacific gecko, chevron skink, Auckland green gecko
- Fanal Island
  - Mokohinau gecko, Duvaucel's gecko
  - An area representive of "high lizard abundance"

Sizes of covers

- Sizes and layout of covers are deliberately different in different areas

- Tree size, and trialling different designs were the main considerations
  - 1m x 40cm on Windy Hill, either horizontal or vertical (200 covers); all transects, old growth forest
  - 70cm x 20cm, horizontal – Karori (130 covers) as one large grid in mature kanuka forest
  - 50cm x 40cm, horzontal – Karori (68 covers); one medium grid, one transect in older forest

Checking the CCF for occupancy

- The CCF covers will be checked in March/April 2008 for occupancy
- Covers placed since April 2007
- Lizards identified, measured, photographed and released

Success?

- Success will be determined if:
  - At least 10% of covers have lizards (in biodiversity sanctuaries)
  - At least 30% of CCF covers have lizards (in areas of high lizard abundance)
  - At least two species are represented (acceptability to a wide number of species)
  - A chevron skink – the Holy Grail!

If successful?

- Outcome of work will be published in a journal and presented at a conference
- Would need to seek further funding to develop statistically-robust experimental design for monitoring to gain useful data on:
  - population status
  - demographics
  - population trends
  - potential biases/flaws

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