

# Gardens are not just for wall skinks



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# Talk Overview

- **Introduction** – the project and the Three-toed snake-tooth skink (*Saiphos reticulatus*)
- **Finding** skinks in suburban gardens of Grafton
- **Management** measures
- **Outcomes** and **learnings**

# Three-toed snake-tooth skink (*Saiphos reticulatus*) (TTSTS)

Juvenile

Adult



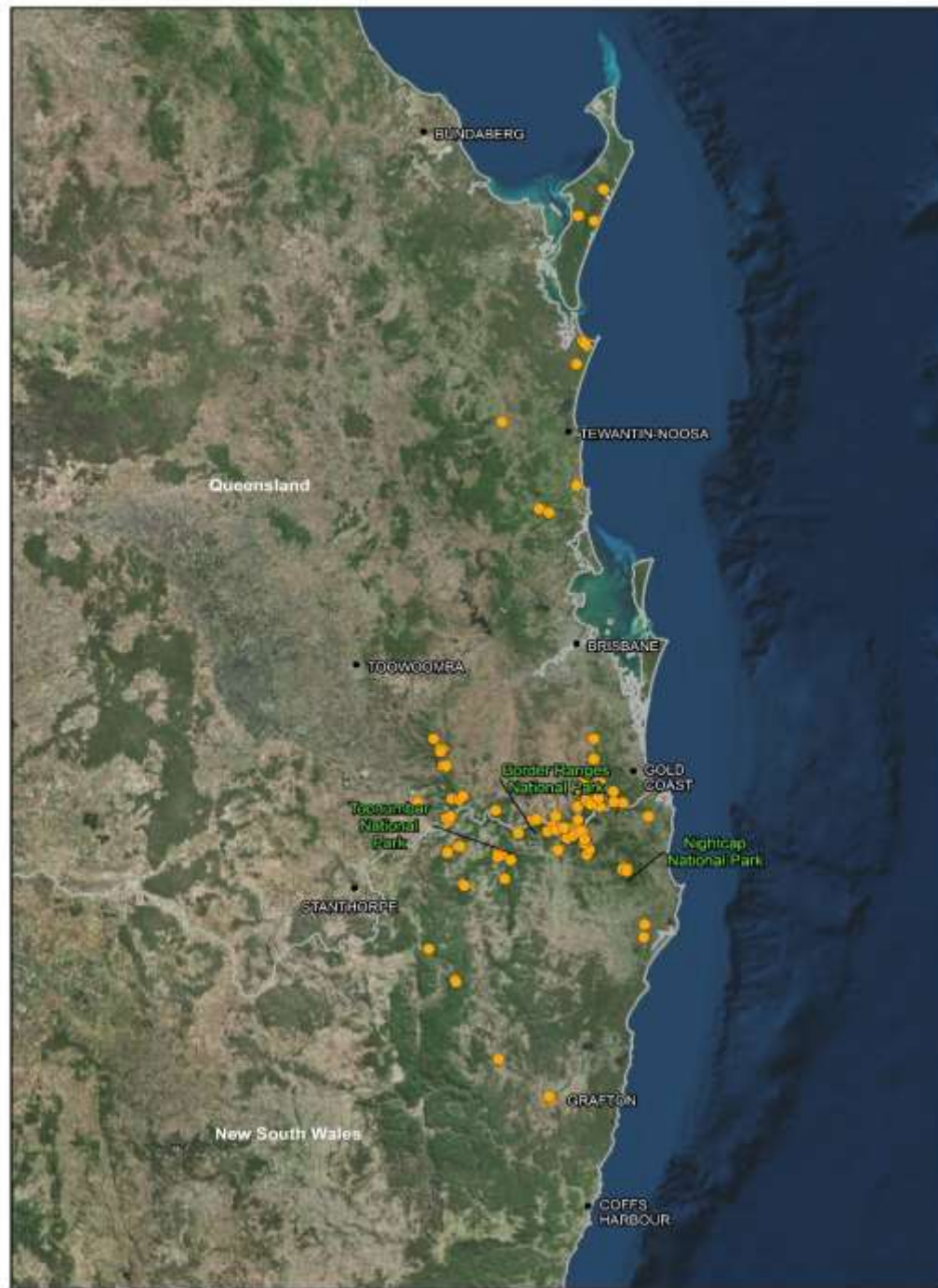
# Three-toed snake-tooth skink.....

- Listed as vulnerable under state and Commonwealth legislation
- Sub-terranean specialist rarely seen on the surface
- Eats earthworms, beetle larva, insect remains and mud, possibly congeneric yellow-bellied three-toed skink (*Saiphos equalis*)



Yellow-bellied three-toed skink





# Previously known from areas that look like this...



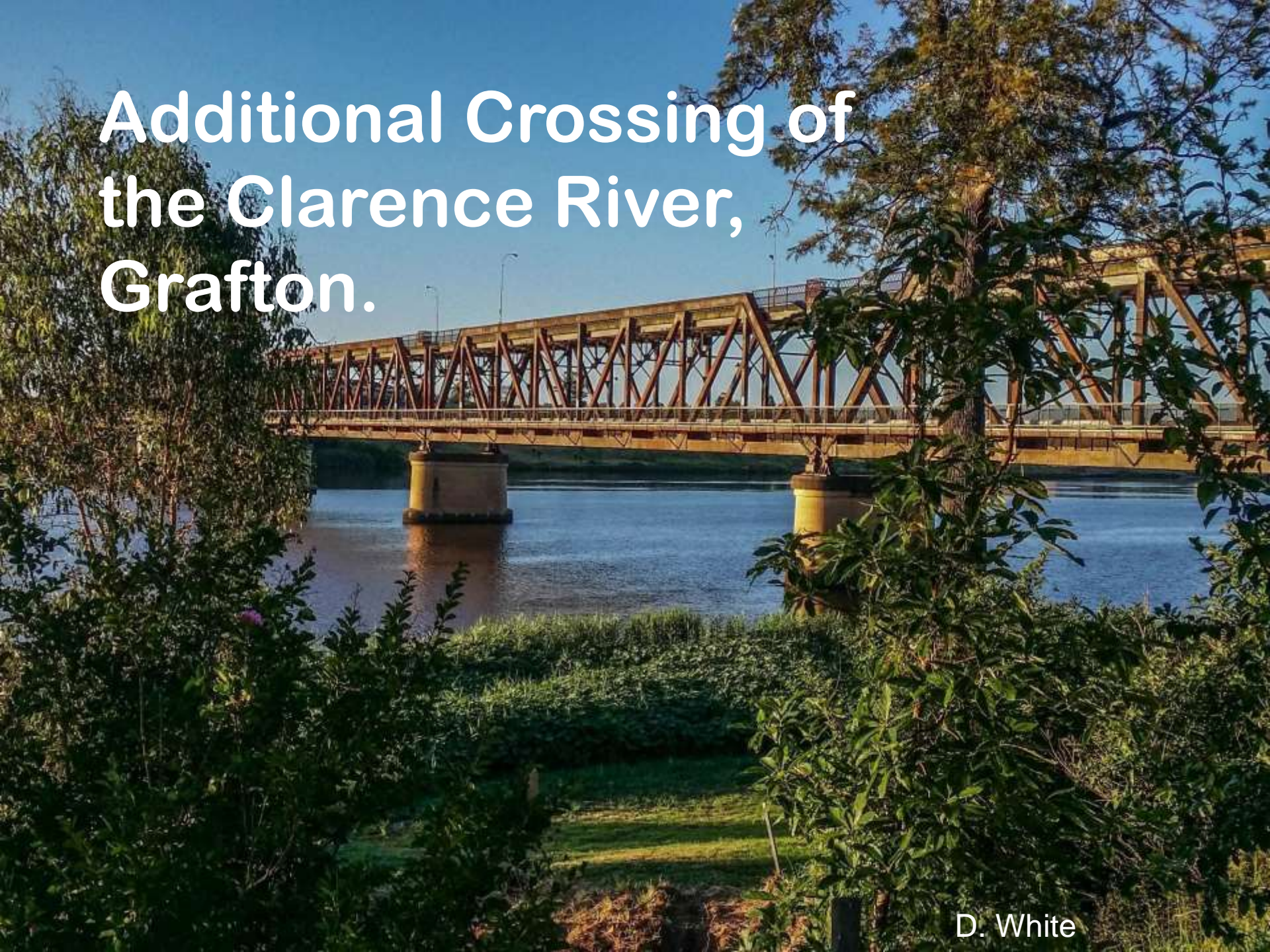


**Not this....**





# Additional Crossing of the Clarence River, Grafton.





# Overview of project

- Fully funded by NSW Government (\$240M)
- Completion planned for late 2019





In 2016 Fulton Hogan was contracted by NSW Roads and Maritime Services to build this bridge and the associated road and levee upgrades on either side of the Clarence River.

The approved project required demolition of around 21 houses around the northern entrance to the bridge to facilitate entry and exit.





# Additional surveys for EIS and discovery of TTSTS

February 2016- Two TTSTS were found within the proposed project area and five in the area of the northern levees, 17 in total in urban Grafton.

Management plan developed (Lewis 2016).



Above: Skinks were found under a large avocado tree, next to the river

Below: Skinks observed in domestic garden in mulch around rose bushes



# Project ecology

- **pre-clearance management**
- demolition supervision
- **relocation or temporary captivity**





# Pre-clearance management



Pitfall trapping (additional to requirements in management plan)



Active searches  
(additional survey effort)

# Skink relocation areas “ skink sanctuaries”





# Temporary captivity

Where required, temperature-controlled room, leaf litter substrate from where found, offered meal worms, regularly misted with water, no longer than four weeks

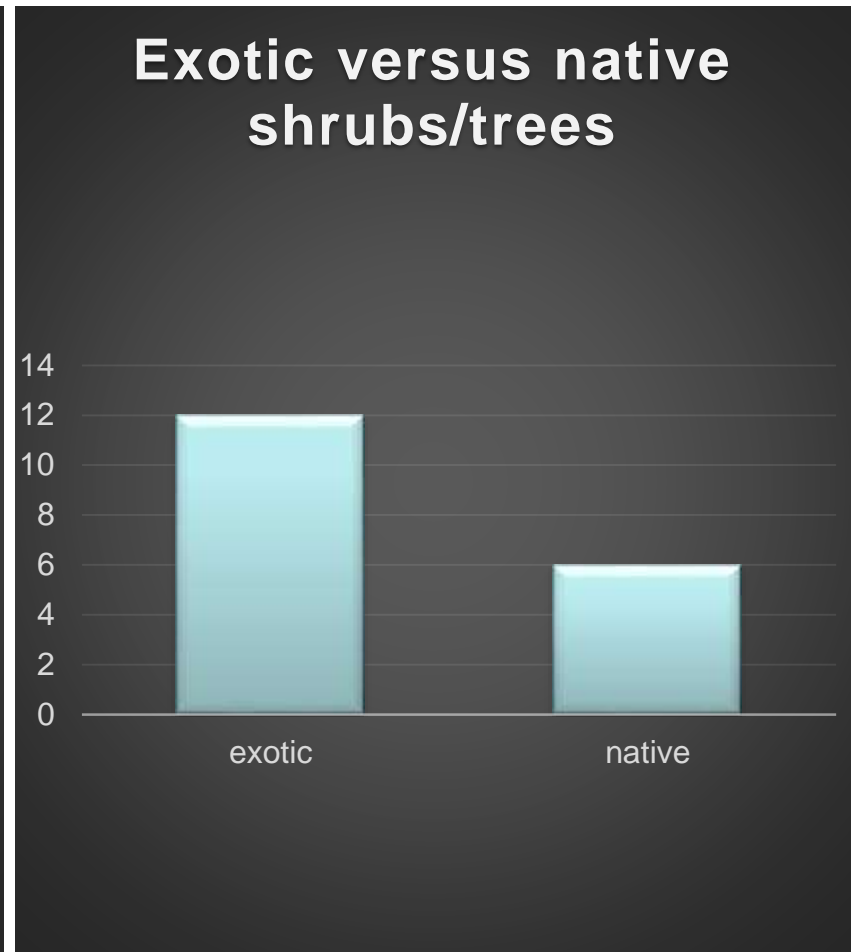
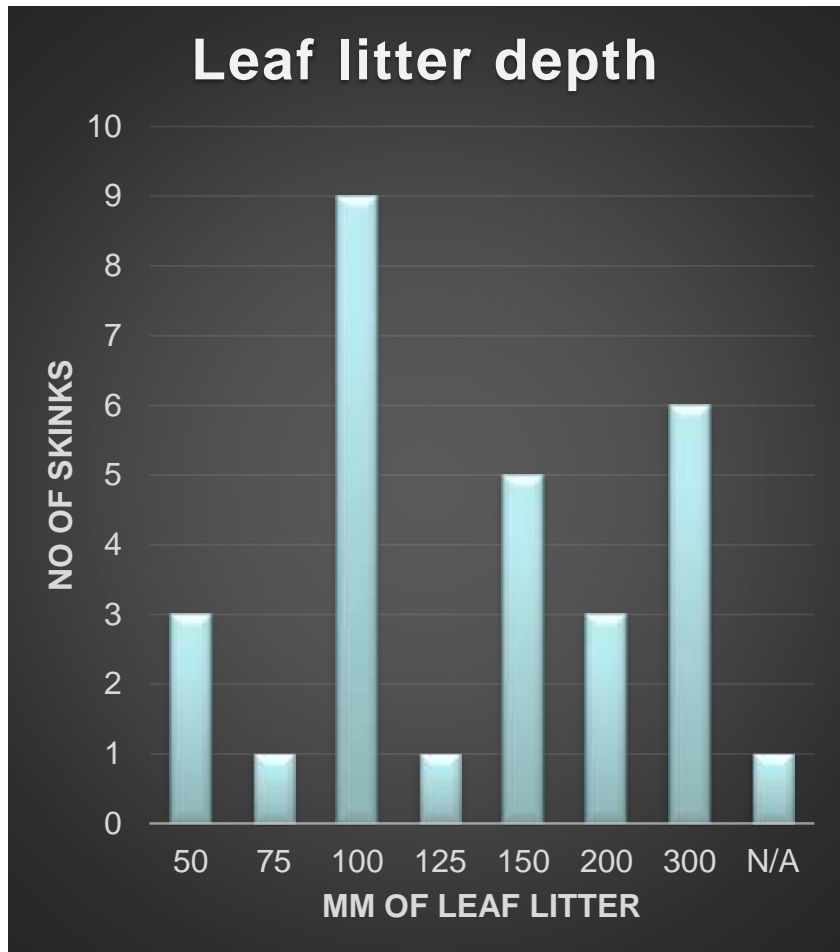


# Habitat preferences





# TTSTS habitat preference



# Outcomes

- Found under a number of different species of trees, including exotics such as mock orange, camellias and mango trees
- Depth of leaf litter and microclimate likely to be the most important, but not been fully tested
- Skinks rarely on the surface, even when in captivity and efforts to observe their behaviour in captivity were unsuccessful



# Outcomes....

- 50 skinks found during construction pre clearing surveys and demolition supervision, 47 relocated to “skink sanctuaries”, one deceased due to clearing works, one found dead, possibly due to heavy rain in the midst of construction and one died in captivity
- With only one death during demolition/clearing management and supervision during demolition was effective at minimising harm

# Outcomes...



- A recent survey of one of the skink sanctuaries revealed a hatchling! Adults were also found



- DNA library (Australian museum) for this species almost tripled with lodgement of dead animals and dropped tails





Brown-snouted Blind Snake  
*Anilius wiedii*



Dwarf crown snake  
(*Cacophis krefftii*)

**Examples of other herpetofauna species found during surveys and construction supervision (photo credit: D. White and N. Power)**



Scute-snouted Calyptotis  
(*Calyptotis scutirostrum*)



Red-bellied Black Snake  
(*Pseudechis porphyriacus*)

# Summary

- Good TTSTS population in urban area in Grafton, other possible locations in similar areas?
- Rich alluvial soil provides excellent habitat for a diverse range of herpetofauna, even in urban areas, established gardens, no widespread flooding since 1967
- Six samples of DNA - almost tripled DNA collection at Australian Museum for TTSTS.
- Management measures adopted and supervision has worked well (additional effort paid off).



# Learnings

- Interesting things can be found in unlikely habitats
- Ecology doesn't stop at the surface of the soil
- Managing a species for which little is initially known can be challenging at the beginning of a project
- Even on management projects, you can learn more basic information on the subject species, especially something that is normally so difficult to find and observe

# Acknowledgments

- Road and Maritime Services and Fulton Hogan and in particular - John O'Donnell (previously from Roads and Maritime Services) for advice and guidance throughout the project and Bob Higgins, Scott Lawrence and Greg Nash from Roads and Maritime Services for their interest in the project and approval to present this work
- Approval from Ecosure Pty Ltd to present work carried out while Elvira Lanham and Damian White were employed by them
- Care of captive skinks by Dr Mark Fitzgerald
- Incredible skink searching from Jason Searle, Russell Jago and Dave Rohweder (Sandpiper Ecological)
- Ongoing interest from Environment Review Group members
- Ben Lewis (Lewis Ecological) for discussions on TTSTS surveys for the EIS for this project



# Questions?



- The aim of this conference is to provide people with a toolbox of ideas to take away and apply to their own projects and situations. With that in mind, please address at least three of the following questions in your abstract and presentation/poster:
  - What was the problem / situation?
  - What worked?
  - What didn't work?





# Further pre-approval surveys

- two records in project area, a further 15 across Grafton's urban footprint
- management plan for the skink was developed (Lewis 2016)





# Other herpetofauna found (16 sp.)

- yellow-bellied three-toed skink (*Saiphos equalis*)
- scute-snouted calyptotis (*Calyptotis scutirostrum*)
- red-tailed calyptotis (*Calyptotis ruficauda*)
- marsh snake (*Hemiaspis signata*)
- wall skink (*Cryptoblepharus pulcher*)
- robust ctenotus (*Ctenotus robustus*)
- delicate skink (*Lampropholis delicata*)
- Asian house gecko\* (*Hemidactylus frenatus*)
- copper-tailed skink (*Ctenotus taeniolatus*)
- Eastern water skink (*Eulamprus quoyii*)
- Eastern water dragon (*Intelligama lesueurii*)
- blue tongue (*Tiliqua scincoides*)
- dwarf crown snake (*Cacophis krefftii*)
- brown-snouted blind snake (*Anilius wiedii*)
- red-bellied black snake (*Pseudechis porphyriacus*)
- green tree frog (*Litoria caerulea*)

\* introduced

Formerly known  
as  
*Coeranoscincus  
reticulatus*

- Listed as vulnerable under both the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and State *Biodiversity Conservation Act 2016*

- Large skink reaching up to 23cm long, with four very short legs, each with three clawed toes, it has long, curved teeth

