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Dumped rubbish! Is a lack of oviposition sites a potential population limiting factor for southern Australian skinks?

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ABSTRACT

Fieldwork in eastern and southern central Victoria in January 2022 yielded oviposition sites in the skink *A. jackyhoserae* Hoser, 2012 (*sensu* Hoser, 2022) underneath human building materials waste and the like in areas with few other potential egg-laying sites.

The number of eggs in these communal laying sites was significantly higher than observed in congeners from mid to north New South Wales, implying a shortage of potential laying sites where these Victorian eggs were found.

This paper details three such sites and suggests that increases in numbers of this species in many areas, including on the urban/bush interface is directly correlated to the greater number of potential oviposition sites.

Keywords: Herpetology; skink; lizard; *Lampropholis*; *Allengreerus*; *delicata*; *jackyhoserae*; Victoria; oviposition; egg-laying.

INTRODUCTION

While conducting opportunistic fieldwork across Victoria in January 2020 (in between other work-related commitments, being wildlife displays or snake handling training education), I located a number of communal oviposition sites for the skink species *Allengreerus jackyhoserae* Hoser, 2012 (*sensu* Hoser 2022), previously treated as a form within the *Mocoa delicata* De Vis, 1888 species complex, being better known as *Lampropholis delicata.* All were under man-made rubbish in areas lacking other potential egg-laying sites.

This paper gives a summary of these sites and makes comments on them.

MATERIALS AND METHODS

As already mentioned, the field work was opportunistic and done at various locations across central and eastern Victoria. This was typically either before or after doing reptile displays or snake handling training courses at various locations across the eastern half of Victoria and usually in areas near main roads which were investigated on the way to or from my home address in Melbourne, Victoria.

Reptiles and frogs observed were recorded and a summary of the three of the oviposition sites is given herein.

RESULTS – THE OVIPOSITION SITES

Site 1: The first site found at about 4 PM on 20 Jan 2022 was just south of the bridge of the Princes Highway crossing of the Toorloo Arm of Stony Creek, about 6 km north of Lakes Entrance on the Princes Highway, Gippsland, Victoria.

A roadside verge used as a parking space on the south-west side of the bridge had a pile of four pieces of dumped peg board in long grass at the edge of the car parking area (just gravel and dirt), being west of the road.

This peg board had been there for at least several months as evidenced by the fact that grass had grown through the edges and tended to hold it down to the ground when lifted.

This was lifted and underneath was at least 172 eggs from a small skink lizard.

Ten of these had been broken in the process of lifting the material and inside each were young specimens of *Allengreerus jackyhoserae* Hoser, 2012.

After taking photos of the site and eggs, the human building waste material was replaced as best as possible to ensure the survival of the remaining skink eggs.

The site had no canopy facing east, which was the direction of the roadside and verge, including the area where my car had been parked. The tree canopy on the west side of the site was dense. This meant that the site had good exposure to sun in the first half of the day, but none in the hotter second part of the day.

The positioning of the eggs under the lowest of the four pieces of wood and against dirt, gave the eggs a higher humidity and avoided the extreme heat that the outer boards would get. The lizards had in effect chosen the most thermally inert place in the pile, which otherwise was a heat sink due to the nature of the wood material.

The forest area nearby was dense, but there were few if any

fallen logs and no rocks. There were no other obvious oviposition sites. Noting that this species lays 4-8 eggs at a time as a rule, it is self-evident that a large number of lizards had utilized this site to lay eggs.

Site 2: The second site was 4 km east of Stratford, Gippsland, Victoria and found at 6 PM on 20 Jan 2022 (still well and truly daylight hours). This site was between the Princes Highway and the railway line immediately to the north side.

I had pulled over to lift some rubbish amongst the roadside vegetation. Under old carpet, carpet underlay or similar material I found a group of no less than 52 unhatched and 8 recently hatched eggs. Under this same material was also found 3 newly hatched *A. jackyhoserae* implying most or all the eggs were from that species.

This material was very decayed and much was embedded into the ground implying it had been there for some years.

The egg-laying site had a tree canopy to the south-side and faced a clearing and railway line immediately north, meaning it was directly exposed to the sun for most of the day, including the hottest part of the day.

In contrast to the previous oviposition site, the material covering the eggs was very thick and dense and heavy and again the eggs were laid between it and the dirt. Due to the mass of the carpet-type of material, its thermal inertia would have been significant and by way of comparison, far greater than the peg board the other lizard eggs were laid under.

Again, besides the thermal inertia of the egg-laying site, the nature of it was also that it was exposed to heat and yet avoided the impact of the worst heat on a hot day. That is the thick cloth-like material would tend to dissipate the heat.

The section where the eggs were found was otherwise well embedded and below the level of the surrounding ground.

Site 3: The third site was under a thick sheet of chipboard at an address in Donvale (outer east of Melbourne, Victoria) on 22 January 2022, when I attended to locate and catch a Tiger Snake as my work as the Melbourne Snake Catcher. It yielded 220 eggs unhatched. The only species of skink observed on the property was *A. jackyhoserae* (I saw about 10) implying most or all the eggs were from that species, but other small skinks do occur in the same suburb.

The sheet of chipboard being about 1 metre square was embedded on all sides by thick Wandering Jew *Tradescantia zebrina* hort. ex Bosse, with only the centre exposed to the sun or elements.

On three sides it was surrounded by dense vegetation and only clear on the easterly aspect which faced a lawn area and then the house, some distance away.

As for the first site above, the oviposition site here only got exposed to the sun in the first half of the day and avoided direct sunlight beyond about 12 noon.

DISCUSSION

The three examples given are some of many similar such cases seen over decades of searching for reptiles and frogs across Victoria, both when “relaxing” or when working to find venomous snakes as part of my snake catcher work.

While there are many potential reasons for the large number of females choosing to deposit eggs in a single site, the overall impression I get is that the main driver of this is simply a shortage of good sites. That is places eggs can be laid, where they are protected by being under hard cover and the thermal and humidity requirements needed for successful incubation are met.

In areas such as the first two sites in particular, the ground was generally devoid of anything under which to lay any eggs, save for the man-made rubbish deposited in the areas.

Therefore it comes as no surprise that the lizards chose to deposit their eggs at these exact locations.

This raises the issue of what happens if and when there is no human rubbish in these areas.

The obvious conclusion must be that in cases of oviposition site shortages, the few suitable sites, must be exploited by all or most lizards in the area, meaning greater numbers of eggs likely to be found in each.

This seems to reflect in as much as congeners from Sydney, where rocks on the ground are abundant, while laying eggs in communal sites, rarely seem to lay in the quantities seen in the two areas above (sites 1 and 2) where natural oviposition sites are either rare of absent.

Numbers of *A. jackyhoserae* and congeners are known to increase in areas of human habitation, including for example *A. ronhoseri* Hoser, 2009 which is extremely common on the edges of rural towns like Shepparton in northern Victoria, but less common in the surrounding agricultural areas that simply lack all forms of ground cover.

This may well be in part due to the greater number of potential oviposition sites.

With lack of oviposition sites potentially being a limiting factor on skink numbers in some areas, including perhaps the two localities in East Gippsland referred to above, it seems to be a certainty that man made rubbish, even if dumped against the laws of the State of Victoria, may in fact be aiding in the recruitment of young and the continuation of at least this skink species.

While *A. jackyhoserae* and most other members of the genus *Allengreerus* Hoser, 2009 are regarded as invasive species and not of conservation concern (Baker 1980, Chapple *et al*. 2016a, 2016b, Harris *et al.* 2020, Miller *et al*. 2017, Naimo *et al*. 2021), it is likely a shortage of oviposition sites also limits populations of other species of Australian lizard.

Therefore the illegal act of dumping rubbish in Australian bush and agricultural lands may be of benefit to the long-term survival of some of these species including those that may be threatened or endangered (Hoser, 1996).

Hoser (2005) suggested the creation of fake rocks to save the endangered Broad-headed Snake (*Hoplocephalus bungaroides*), which was later successfully adopted by the New South Wales government as a way to increase habitat for the species.
This may not be not dumped rubbish, but it is pretty much the same in as much as it is man-made habitat for potentially threatened species.

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CONFLICT OF INTEREST

None.

Top images: Site one and eggs exposed after removal of boards.
Bottom Images: Site two eggs and where they were found.
All eggs appeared to be from *Allengreerus jackyhoserae* Hoser, 2012.
Photos: Raymond Hoser