

## Opportunistic field observations of frogs and reptiles near Bendigo, Victoria, Australia in mid winter 2023.

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### ABSTRACT

Documented is a case of three morphologically divergent species of frogs utilising the same shelter site in bushland; habitat partitioning between two sympatric morphologically similar frogs; winter aggregations of lizards and related aspects of herpetofaunal activity, all on the edge of Bendigo, Victoria, Australia.

**Keywords:** Australia; frog; lizard; Bendigo; Victoria; *Pseudophryne*; *Limnodynastes*; *Platyplectron*; *Crinia*; *Christinus*; *Underwoodisaurus*; *Silvascincus*; *Nodorha*; *Lerista*; *Ctenotus*; *Morethia*; *martinekae*; *bibroni*; *dumerilii*; *tasmaniensis*; *signifera*; *fiacummingae*; *marmoratus*; *mensforthi*; *martinekae*; *striolata*; *bougainvillii*; *robustus*; *boulengeri*.

### INTRODUCTION

Reported is shelter and breeding activity of frogs, as well as aggregations of lizards in optimal resting spots in the middle of winter in the Bendigo area of Victoria on 24 June 2023.

### MATERIALS AND METHODS

On 24 June 2023 after doing a live reptile display at an address in Mandurang, near Bendigo, I spent the second half of the day searching for reptiles and frogs in two locations to photograph *in situ*.

The weather on the day was cold and with significant rain in the middle of the day, between about 12 noon and 2 PM.

The air temperature was well below 10 Deg Celsius all day. Except after 3 PM, it was generally overcast all day.

### RESULTS

#### LOCATION 1

Between 12.15 and 2.15, I searched by lifting cover in an area bound by Apelline Track, Robie Road and Munroe Road in the Bendigo Regional Park, to the south-east of the main township.

The habitat is elevated and stony ground, including mining tailings, vegetated by mainly rough-barked gum trees.

It is criss-crossed with small ephemeral watercourses and scattered man-made "dams" holding water. These are of the kind seen in paddocks across rural landscapes across Australia.

Calling from the small dams were limited numbers of *Crinia parainsignifera* Main, 1957. I searched logs entering the water and found three specimens under logs in three such situations.

Of relevance is that about 12 km south-east of this location when driving to Mandurang at about 9 AM that morning, I had pulled up at a site at Sutton Grange, which was hilly and with numerous exposed Granite outcrops and searched for about 20 minutes during which time I heard *Crinia fiacummingae* Hoser, 2023 (previously treated as a southern form of *Crinia signifera* (Girard, 1853) (see Hoser 2023a) calling from elevated soaks high on the granite-based hills. Under saturated rocks, I also found two specimens, being a male and a female (found at different locations and not in proximity).

What took me by surprise at Sutton Grange was that the frogs were calling at relative high elevations in the hilly landscape and well away from obvious watercourses.

Also found at the Sutton Grange site were 3 putative *Ctenotus robustus* Storr, 1970 and 5 Marbled Geckos *Christinus marmoratus* (Gray, 1845), with three *C. marmoratus* (1 adult and 2 juveniles) being under a single north-west facing slab of rock, angled towards the sun at the outer edge of a rock outcrop, adjacent to other crevices and rocks on the same particular outcrop (none of which had any lizards).

In each situation as outlined so far, only one or other of *C. parainsignifera* or *C. fiacummingae* were present, indicating that in this area at least, *C. parainsignifera* was more likely to be found breeding near dams and the like, while *C. fiacummingae* had a preference for soaks on hills in the wetter part of winter (as in what appeared to be the most temporary of water situations).

The separation of two morphologically almost identical species sympatric across much of Victoria by way of preferred breeding sites hasn't to my knowledge been reported before.

At the Bendigo Regional Park in the vicinity of a home and two farm dams, I lifted a well-embedded sheet of tin that was situated on an otherwise elevated stony rise. It was about 30 metres up the slope, between two dams, each about 30 metres apart in the gully, which otherwise consisted of boggy ground, but no well-defined creek as such.

I was surprised to find five adult *Limnodynastes tasmaniensis* Günther, 1858, One adult *Platyplectron dumerilii* (Peters 1863) and an adult female *Pseudophryne martinekae* Hoser, 2020 (previously treated as a divergent outlier population of *P. bibroni* (Günther, 1858). All were sitting adjacent to one another in a single section of ground under the tin. The *P. martinekae* was sited under the other frogs and stayed put as the other frogs attempted to hop away.

The *P. martinekae* was not engorged with eggs, was clearly not breeding and the general condition of the frog put the breeding season for the species in the area into early autumn.

In the two hours of walking and lifting available cover (mainly rocks and some logs), in the same area, I found another 11 adult *P. Martinekae* (and all were males). None were located within 2 metres of surface water in the nearby gullies and most were found an average of 5-10 meters from the ephemeral watercourses.

While they were found under different kinds of cover, including some rocks, which in the area constituted the overwhelming majority of

potential shelter sites, the majority of the frogs (9) were found under logs with moist, but not saturated, decaying wood type of material underneath, indicating this is a preferred situation for the species. No other frogs were found in the searching. Also found were three Striped Skink Skinks (putative *Ctenotus robustus* Storr, 1970), all resting due to the cold.

#### LOCATION 2

This was a walk between 3.15 and 5.15 PM direct through bushland between "Back Road" and McLeod's Lookout, near Inglewood, Victoria, about a half hour's drive north-west of Bendigo in Victoria. In essence the car was parked on the east side of the lookout and I walked more-or-less directly up the hill, up a steep rock covered hill, lifting exfoliating rocks and other material on the way up the hill to the lookout. The return trip taken about 150 metres to the north of the lookout down a slight gully to the road and then back to the parked car, was through a relatively rock free zone but with fallen logs on the ground as cover for reptiles.

The area on the way to the lookout was a steep mainly north-east facing slope with massive amounts of granite, including flat areas, overlying smaller exfoliations and loose rocks and boulders.

Rocks lifted yielded a large number of lizards seeking shelter and heat at the same time.

Most common were Marbled Geckos *Christinus marmoratus* (Gray, 1845) (50 seen), but also seen were some Thick-tailed Gecko's *Underwoodisaurus menziesi martinekae* Hoser, 2016 (4 seen), Three Tree Skinks *Silvascincus striolata* (Peters, 1870), one putative *Nodorha bougainvillii* (Gray, 1839) (commonly placed within *Lerista* Bell, 1833, see Hoser 2023b) found under a slab of rock and 4 putative *Ctenotus robustus* were found under slabs of rock (all with dirt underneath the rock, where they had created and occupied burrows).

On the hike down the hill, I found 3 *Morethia boulengeri* (Ogilby, 1890), all under logs away from the rocks, but half-way up the hill.

Not all rock slabs apparently suitable for reptiles harboured lizards, but some harboured aggregations and one rock on a granite substrate at the base of the hill had 15 lizards.

That particular rock had 12 Marbled Geckos, 1 Thick-tailed Gecko, 2 tree skinks and 1 scorpion all resting more-or-less together at the centre under the rock. This rock and all others that had more than two lizards underneath were all pointing to the north and I noted were even angled at about 20-30 degrees on the underlying rock to be even more in line with the direct sunlight.

The relevant granite rocks were also about 5 cm thick on average in the centre, about 30 cm in length or longer, always rock on rock situations and situated near crevices and other escape routes.

In terms of the aggregation noted above, that rock was one of five overlying an embedded section of surface granite. All five were of similar size and shape and at first look, there was nothing to suggest that four rocks would yield no reptile (or scorpion) and that rock 5 would hold the massive aggregation.

The only obvious difference I noted is that four were angled directly up from a flat base and the fifth rock was slightly to the side and therefore better angled towards the sun.

Notable also was that in the 50 metres to the north of McLeod's Lookout, the foot track passes over an area that consisted of mainly bare granite on the ground, forming a sort of sea of rock. *C. fiacummingae* were heard calling from soaks and two were found under small rocks adjacent to these.

No other frogs of any species were seen in the same exact area, although when walking down a wooded gully back to my car I found an adult male *P. martinekae* under a rock and another adult male of the same species had been found under a slab of rock (on dirt) half way up the hill, near to a soak on granite substrate.

No other species of frog was heard calling however except for *C. fiacummingae*. Noting the situation of being near the summit of a large granite hill and without any watercourses as such nearby, I was surprised that any frogs would be occupying the area.

Again however it points to a species (*C. fiacummingae*) actively seeking this kind of situation to occupy and breed in as similarly seen at Sutton Grange about an hour's drive to the south-east.

#### DISCUSSION

To date herpetologists in Australia have not taken a strong interest in habitat partitioning by morphologically similar sympatric and extremely common species of frogs.

While this partitioning may occur by way of location to occupy and breed, the partitioning obviously may also occur with respect to occupation of a given single location at given times of year, as would

be expected with respect of breeding seasons.

In terms of the lizards observed, while habitat partitioning was observed in site 2, as for example in the *M. boulengeri* occupying a different kind of habitat to the other lizards, it seemed that in the cold of mid-winter in this area, most lizards were more concerned with staying warm than competing for food or anything else and so were happy to cohabit a given site.

While it may seem trivial to a human, in terms of the extra heat a lizard may get by occupying a rock slightly better angled towards the sun, for "cold blooded" animals like lizards, the relative importance of temperature and getting warm in winter may be far greater.

In terms of Australian reptiles and frogs, merely catching and identifying them has now been largely done sufficiently to establish broad-scale distributions of most species.

Herpetologists, citizen scientists and others with an interest in Australian reptiles and frogs would do well to make further inquiries into habitat partitioning by morphologically similar sympatric species and to document this, because what may seem obvious to someone who observes this daily in the field, may not have yet been formally recorded, or even known by others in the herpetological community. Likewise for the details as to how reptiles and frogs act in different weather conditions and seasons, where they rest, where they are active and how they deal with issues of thermoregulation and even each other.

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#### CONFLICT OF INTEREST

None.