

Incubation and hatching of juvenile Marbled Gecko *Christinus marmoratus* (Gray, 1845).

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RAYMOND T. HOSER

LSIDurn:lsid:zoobank.org:author:F9D74EB5-CFB5-49A0-8C7C-9F993B8504AE

488 Park Road, Park Orchards, Victoria, 3134, Australia.

Phone: +61 3 9812 3322 Fax: 9812 3355 E-mail: snakeman (at) snakeman.com.au

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ABSTRACT

This paper reports on the incubation and successful hatching of eggs from the common but little-known Australian gecko species *Christinus marmoratus* (Gray, 1845).

Keywords: Gekkota; *Christinus*; *marmoratus*; gecko; lizard, Victoria, Australia; incubation; eggs, hatch.

INTRODUCTION

The potentially composite species of gecko originally described as *Diplodactylus marmoratus* Gray, 1845, most recently transferred to the newly erected genus *Christinus* Wells and Wellington, 1985, is known to occur across drier non-arid parts of southern Australia, from New South Wales across to Western Australia, including Victoria and South Australia, but not Tasmania.

The original distribution of the species around Melbourne, Victoria is not well-known, but in the 200 years since European settlement, the species has become established in most suburbs of Melbourne, including inner ones and including south to include Geelong in the west and the Mornington Peninsula in the south-east. Around Melbourne, the species is most common in bush on the basalt plains of North-west Melbourne and western Melbourne and outside this zone is most common in urbanised areas. In these areas, they are usually found around rubbish in gardens in the form of hard ground cover, such as wood piles and the like. They commonly enter homes, in particular older ones in inner suburbs and wooden homes elsewhere.

This paper reports a case of a successful opportunistic incubation and hatching of a juvenile of this species.

A single gravid female was removed from a home in Box Hill North, Victoria, following a call from a distressed woman to have the "reptile" taken away.

The lizard was captured pursuant to a government issued "Wildlife Controller's License".

On 20 December 2018, the lizard was caught and placed in a plastic tub, after which it was transported to the Snakebusters facility at the address of 488 Park Road, Park Orchards, Victoria, 3134, Australia, pending "relocation" in a suitable place elsewhere.

Before release at a council reserve in East Kew, Victoria, and on the same date, the lizard laid two apparently good fertile eggs. These were immediately placed in an incubator to be hatched prior to release of the young in accordance with the controller's permit.

MATERIALS AND METHODS

Including the preceding, the eggs were incubated as follows. They were placed in a plastic "Sistema" tub about 32 cm in length, X 19 cm wide, X 11 cm high with no air holes or ventilation. Moist vermiculite was inside the container, which was about 2-3 cm deep. On this and half buried were the two eggs, placed separate from one another. Thermometers (both max/min, and single temperature reading ones) were placed inside the container in order to monitor and check incubation temperature. The humidity in the vermiculite and container was such that inside the incubator, there was slight fogging of parts of the top of the container only, with most of the sides being dry to touch. The vermiculite was damp, but if squeezed, did not yield water.

The container was opened about once a week for a few seconds to allow air change.

The incubator, itself a modified fridge, was powered by a heat mat at the base, two thermostats controlling the heat-mat and fan operation and temperature, being set to about 29.5 degrees C.

This had been tested and calibrated to the incubation container prior to the eggs being placed in there as this is the same set up used for snake eggs most years.

The 3 computer fans in the incubator are used to blow air through the incubator to maintain a steady temperature throughout.

From testing it was confirmed that the eggs in the container were kept within a tight range of 29-30 degrees Celsius although elsewhere within the fridge / incubator, the temperatures recorded and oscillations between on / off cycles for the heat mat and fans were more wide ranging.

The plan had been to leave eggs in the incubator as described above until either they hatched or went off, being whatever came first.

This is the same incubation method (including incubation temperatures) used by myself to successfully incubate more than ten clutches of Eastern Brown Snake *Pseudonaja textilis* (Duméril, Bibron and Duméril, 1854) eggs (all captive mated) in

the period 2014 to 2021 and python eggs on various occasions.

See brown snake with eggs at:

<https://www.flickr.com/photos/thesnakeman/6671138279/>

See brown snake eggs incubating in image at:

<https://www.flickr.com/photos/thesnakeman/6671138309/>

And hatching in image at:

<https://www.flickr.com/photos/thesnakeman/6671069779/>

This was including the world's first Queensland Black-headed Python (male) *Aspidites melanocephalus* Krefft, 1864, X Queensland Carpet Python (female) *Morelia macdowelli* Wells and Wellington, 1983 cross breeding (by accident). Those eggs were laid on 21 November 2017 (no mating date known or observed).

Based on the young, the father was identified as the Queensland Black-headed Python (originally bred by Neil Sonnemann of Murrumbidgee, Victoria) and the two snakes had occupied a box together when transported to and from reptile shows in the previous 2 years on numerous undocumented occasions. These eggs hatched and young emerged on 30 Jan 2018.

12 of 13 eggs hatched, all this lot being incubated as a single egg mass, as laid, and all young hatched in good health.

The non hatching egg was at the centre of the base of the mass and is believed to have died in incubation due to its position in the mass, but the exact reason for non-hatching is not known.

That egg was a shrunken and hard mass with no evidence of development when inspected at time of the other eggs hatching. 9 of the 12 snakes ended up surviving to adulthood. Two died suddenly in their first year at several months of age.

A third snake was stolen at a reptile display on 9 December 2018. It was recovered by the Victoria police in a planned armed raid on the thief, Matthew Christopher Gatt of 12 Domain Drive, Hillside, Victoria, complete with parasitic snake mites 3 weeks later on 31 December 2018.

The snake died of mite-borne viral disease shortly thereafter. Matthew Gatt was charged and convicted and fined 8 thousand dollars on 21 March of 2019.

As of 13 February 2021, nine of that litter remained alive and well.

Some of those snakes at various ages are depicted online at:

<https://www.flickr.com/photos/thereptileman/48781145103/>
and

<https://www.flickr.com/photos/thereptileman/48781160003/>
and

<https://www.flickr.com/photos/thereptileman/48736752052/>
and

<https://www.flickr.com/photos/thereptileman/48781549921/>
and

<https://www.flickr.com/photos/thereptileman/48781479611/>

By colouration, they most closely resemble their mother, but by head scalation, the large posterior head shields are not unlike those of the Queensland Male Black-headed Python, complete with single large parietal on either side. The snakes have distinctively narrower heads than normal Queensland Carpet Pythons and the lower labial pits are present, but reduced in size, depth and number.

RESULTS

A single *Christinus marmoratus* egg hatched on 11 Feb 2019, one apparently good egg of slightly yellowish colour (as opposed to white) did not hatch, but there was no evidence of it going off in any way as of 11 Feb 2019.

The hatchling appeared normal in all ways for the species and measured 2.4 cm in snout-vent and 5.3 cm tail length at time of hatching. It was released in the same location as the parent female.

Incubation time at 29.5 C (average temp) was 53 days.

There is no evidence available to suggest the incubation method or temperature precluded the other egg from hatching and the reason for the non-hatching of that egg is not known.

DISCUSSION

It is reasonable to expect that eggs laid by wild *Christinus marmoratus* in and around Melbourne would most of the time, not hatch as fast as the egg incubated at our facility on the basis that likely incubation temperatures would invariably be both lower and/or subject to wider fluctuations.

However the incubation technique and success indicated in this paper can be relied upon as part of the scientific record and as a template for any captive breeding of this and other similar species of Australian gecko.

CONCLUSION

Successful incubation and hatching off eggs is an essential part of captive breeding in geckos and other potentially threatened species. Documentation of methods that actually work are an important part of this wildlife conservation effort. The use of thermally inert incubators such as old fridges, may enhance success in hatching reptile eggs, especially when otherwise regulation of incubation temperatures may be difficult.

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