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## Breeding the Jaliscoan milk snake

*Lampropeltis triangulum arcifera* [Plate 25]

### at Atlanta Zoo

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Reproduction in the polytypic species *Lampropeltis triangulum*, especially in the Mexican races, is not well documented. Tryon (1976) reported successful breeding in *L. t. nelsoni* over three consecutive years at the Fort Worth Zoo, and Laszlo (1978) has provided information on the breeding of *L. t. nelsoni*, *L. t. polyzona* and *L. t. sinaloae* at San Antonio (see also Karden, pp. 94–96). At the time of writing his monograph on the species, Williams (1970) apparently found that for the subspecies *L. t. arcifera* reproductive data was altogether lacking. Since then, however, the form has been bred successfully at Dallas Zoo (J. Joy, pers. comm.) and, as is described in this report, at the Atlanta Zoo.

An adult pair of *Lampropeltis triangulum arcifera*, collected under rocks on an open plateau at an elevation of 2255 m on the northern slopes of Nevada de Colima, west of Atenquique, Jalisco, was purchased by the Atlanta Zoo on 23 July 1975. The ♂, which was missing the tip of his tail, measured 1220 mm and the ♀, 914 mm. They were initially kept together in a fibreglass display

cage, 92 × 92 × 112 cm high, decorated with rocks and living plants in simulation of the natural habitat and illuminated by natural daylight through skylights situated above the cage, thus giving a photoperiod corresponding to that outdoors. Fresh drinking water was provided daily and each animal was fed on one small (c. 7–8 g), pre-killed laboratory mouse weekly. Ambient temperature within the cage varied between 23–30°C, with 150 W spotlights providing a 'hot spot' for basking.

The snakes adapted readily to captivity and accepted periodic handling for health inspections. In December 1976 they were separated and taken off display, being housed in individual wooden cages measuring 61 × 30.5 × 30.5 cm high and furnished with retreat boxes. The substrate consisted of a double layer of newsprint. With the aim of inducing hibernation, the ambient room temperature was gradually reduced to 12–14°C and, although the animals still remained somewhat active, no food was offered them. After about 60 days, the temperature was

gradually increased again to 25°C and feeding was resumed a week later.

#### REPRODUCTION

Introduction of the two snakes took place at 1000 hours on 5 March 1977, two weeks after they had been restored to normal temperature and feeding regimes. About 20 minutes after the ♀ had been placed with the ♂, he began to jerk his head and body; apart from these signs, however, no further courtship was observed. At the next observation of breeding activity, at 0930 on 15 March, he was seen rubbing his chin over the ♀'s head and neck, at the same time flicking his tongue rapidly. His tail was hooked under hers, with the cloacas in close proximity, but on this occasion no intromission was seen. Mating was already in progress when observed at 0910 on 22 March. The ♂ had twisted his tail under that of the ♀ and was holding her down with six loops of his body; semen flowed from their adjoining cloacas. Some 23 minutes later he was seen to retract his hemipenis and release the pressure.

The pair were separated on 10 April when the ♀ was already noticeably gravid; her girth had increased rapidly and several bulges had appeared along the posterior third of her body. Her behaviour also changed dramatically: from previous docility she became highly irritable and refused all food offered until after deposition of eggs.

The six, slightly yellowed, eggs were discovered at 0900 hours on 19 May, with the ♀ coiled around them. They were soft and irregularly shaped; two adhered together. Shortly after, they were measured with a vernier caliper and weighed on a triple beam balance. The range of measurements and weights was as follows: length 30–54 mm (mean 46.3); diameter 17–25 mm (mean 20.9); weight 8.2–14.0 g (mean 12.8).

The single eggs were incubated in individual 3.8 litre jars on a medium composed of 170 g vermiculite and an equal amount (in volume) of water (Tryon, 1975). The adhering eggs were incubated together in the same jar. The jars were tightly sealed and the temperature inside maintained at 26–30°C. After ten days a fungal growth was noticed on four of the eggs, including

one of the adhering pair. Because of discolouration and foul odour, one of these was opened on 15 June and found to contain a 103 mm dead embryo; another, opened on 28 June, also contained an embryo, 115 mm long. The remaining eggs, still showing a slight trace of fungus, were periodically wiped clean with a paper towel dampened with methylene blue.

Hatching, in two of the eggs, began on 11 July, with the other two hatchlings emerging the next day (53–54 days incubation). Once free of their shells, all four young snakes behaved extremely defensively and struck vigorously at any moving object near them. Juvenile colouration was similar to that of the adults, only much brighter. The squeeze-box technique (Quinn & Jones, 1974) was employed to record their length, which ranged between 205–279 mm (mean 234.5). Ecdysis occurred on 19 July, whereupon the young snakes were offered their first feed of live newborn mice which they readily accepted. Each hatchling was given one newborn mouse weekly and grew rapidly. When measured again on 12 March 1978, they were found to be between 324.5–415.0 mm (mean 358.7) in length, a mean difference of 124.2 mm since hatching.

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#### REFERENCES

- LASZLO, J. (1978): *Lampropeltis*—king of the North American snakes. *News from the zoo (San Antonio Zool. Soc.)* 4(1): 1–2.
- QUINN, H. & JONES, J. P. (1974): The squeeze box technique for measuring snakes. *Herpet. Rev.* 5(2): 35.
- TRYON, B. W. (1975): How to incubate reptile eggs: a proven technique. *Herp* 11(3,4): 33–39.
- TRYON, B. W. (1976): Notes on reproduction in captive *Lampropeltis triangulum nelsoni* (Serpentes: Colubridae). *Herpet. Rev.* 7(4): 160–162.
- WILLIAMS, K. L. (1970): *Systematics of the colubrid snake Lampropeltis triangulum Lacépède*. PhD dissertation, Louisiana State University, Baton Rouge.