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NOTES ON THE CARE AND CAPTIVE BREEDING OF THE SINALOAN MILK SNAKE *(LAMPROPELTIS TRIANGULUM SINALOAE)*

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INTRODUCTION

Lampropeltis triangulum with its twenty-three subspecies has one of the most extensive geographical ranges of any species of snake. In fact a distance of 3,600 miles, from Canada down throughout most of the United States and Central America to Colombia, Venezuela and Ecuador in South America. The subspecies range in size from the pretty and diminutive Scarlet King Snake *(L. t. elapsoides)* with a maximum recorded length of 686 mm (Conant 1975) to the relatively gargantuan *L. t. micropholis* which can reach a length of nearly 2 metres. The Sinaloan Milk *(L. t. sinaloae)* is one of the Mexican geographical races.

Description

The Sinaloan Milk reaches a maximum length of about 1220 mm with an average adult size of between 600 mm and 1000 mm long. With its classic red, black and white bands it is one of the tricoloured King snakes. The pattern consists of between 10 and 16 dark red to orange broad body rings which are separated by black rings which in turn are split by fine white rings.

The head, which is indistinct from the neck, is black with variable amounts of white flecking on the snout. The subspecies most likely to be confused with the Sinaloan Milk is Nelson's King *(L. t. nelsoni)* with a range adjacent to the Sinaloan Milk. The chief difference being on the Sinaloan Milk, the first black ring which crosses the throat midventrally is usually unbroken forming a V, whereby in the Nelson's King it is usually broken or narrowly connected in a straight line.

Range

Williams (1978) gives the range as: the southwestern corner of Sonora, southeastward through the broad coastal plain and foothills of Sinaloa to near the southern border of Nayarit and up the Rio Fuerte into southwestern Chihuahua.

HUSBANDRY

Housing

The main bank of cages I keep my *Lampropeltis* spp in consists of twelve units in four rows of three, each one measuring 610 mm x 380 mm x 380 mm, with access by sliding glass fronts. They are made of contiplas and all the seams inside the cages are silicon sealed, which makes for easy cage cleaning and good hygiene. Substrate is white newsprint and each cage is furnished with a water bowl, a length of terracotta half piping (which I use instead of hide boxes) and odd pieces of driftwood and green plastic plants for aesthetic reasons.

Heating and lighting is by means of a 15 watt pygmy light bulb in each cage, which in my room is more than sufficient to bring temperatures up to the required levels. The light bulbs are connected to a timeswitch and a dimmer switch, which gives me control, not only of how long the bulbs are on, but the amount of heat and light given off by them.

The lights are on for 16 hours a day during summer and reduced to 8 hours during winter, with a simultaneous dimming of the bulbs to reduce temperatures. In fact the lights are turned off completely for about six weeks during the midwinter, though temperatures in the cages never drop below 15°C. As most of my *Lampropeltis* spp stop feeding during the winter period the lowering of temperatures helps to reduce loss of body weight. Temperatures in summer vary between 22-30°C, and in winter 16-24°C.

For incubating eggs and to keep hatchling snakes feeding through the winter period, I use an environmental chamber. This is a purpose built cupboard made of contiplas with a glass panelled door and shelves inside to take the various sizes of plastic boxes I use. It is 2000 mm tall

and 610 mm square. Heating is by means of two 50 watt heater pads attached to a thermostat to give an average temperature of 28°C; it is lit by a five foot "True-Light" flourescent tube which is on a time-switch to give a 16 hour day light period all the year through. During summer this tube often has to be turned off because of excessive heat build-up. The Chamber is ventilated by means of one 13 cm^2 vent in the top, and four smaller vents, one in each side, at the base.

Feeding

Bogert and Oliver (1945) mention two wild specimens, one containing two unidentified reptile eggs and the other an unidentifiable juvenile mammal. I think I can safely add lizards, small snakes and fledgling birds, with probably lizards and rodents forming the bulk of the diet in the wild.

In captivity they will feed on "pink" and DEAD adult mice. I emphasise the word dead as they are not true constrictors in the normal sense, but kill prey (too large to be swallowed live) by getting a firm grip with their jaws and bracing themselves and applying pressure, with the prey being sandwiched between the snake's body and the ground or some solid object. Now, with an adult mouse in the close confines of a rodent burrow, where they probably spend a lot of their nocturnal prowling, this is obviously a very efficient method. But given the comparatively open spaces and unnatural smooth surfaces of the usual captive conditions, this can become a hair-raising experience for all concerned, with the snake in danger of being badly bitten!

CARE AND CAPTIVE BREEDING

In the autumn of 1979 I purchased four wild caught adult Sinaloan Milk Snakes from a dealer. They consisted of two males and two females, their lengths varying between 620 mm and 850 mm, one pair being slightly larger than the other.

They were rather thin and so I decided to house them in a different room from the rest of my collection for a quarantine period which I do with all new stock of questionable health.

My suspicions were founded, as having fed avidly on "pink" mice they subsequently regurgitated.

Flagellated protozoa were suspected as the cause (Wagner 1979); they were all given Flagyl via a stomach tube, at the single dose rate of 250 mg per kg of body weight, after which there were no more regurgitation problems.

After about six weeks it was felt safe to introduce them into the room in which I keep the rest of my collection. Though gaining weight steadily, they were not up to full bodyweight, and as the main bank of cages were now on a decreasing light period and the occupants rapidly going off feed, it was decided to forgo any breeding attempts with the Sinaloans the following spring and concentrate on getting them into good condition. I separated them into four large plastic freezer boxes, which I put in my environmental chamber to encourage optimum feeding through the coming winter.

The following late spring the light cycle was back to 16 hours in my main bank of cages and the Sinaloans were then introduced into what was to be their permanent homes. The two females were put into one cage together and each of the two males given a cage of its own.

They were now in beautiful condition and feeding on an average of one freshly killed adult mouse a week each, having been weaned off the "pinks" which they were consuming at an alarming rate.

They continued to do well during the summer, and in late autumn were cooled down with the rest of the snakes. As a point of interest, though the other *Lampropeltis* spp in my collection stop feeding during the winter period, the Sinaloans continued to feed right through, though infrequently.

About the end of February the light cycle was increased weekly in hourly stages back to the summer levels by the end of April. With my *Lampropeltis* spp the sexes are usually housed separately and the females introduced to the males at four or five day intervals until mating activity is observed.

With the other species of *Lampropeltis* mating activity was at its highest levels during April, but there was still no sign of anything happening with the Sinaloans despite alternating the females between the males. Then on the 18th May during late evening time the large female was put in with the large male for the umpteenth time, when this time his response was immediate; with short jerky movements he started to follow the newly sloughed female around the cage trying to pin her down. In fact for the first half hour he couldn't seem to work out which end was which and was trying to mate her in a head to tail position. Eventually after about one and a half hours of some frantic chasing round the cage, copulation was seen to be successful.

Mating activity was seen on various occasions over the following three or four weeks, with both males having successfully mated both females. As a point of interest, any sort of disturbance to the Sinaloans would trigger off mating activity (e.g. cage cleaning, feeding, etc.), in fact just removing them from their cages and putting them straight back in again was sometimes enough to get them started.

The larger of the two females was the first to show signs of being gravid with the typical pear shaped cross-section appearance, and the ventral surface, being normally flat, had a convex shape around the rear third of the body. On the 29th June she completed her pre-laying slough (Wagner, 1979) and a couple of days later a plastic box half filled with damp spagnum moss and with an entry hole in the lid, was put in the cage in readiness for egg laying.

Over the next few days she was encouraged to use the box and on the night of the 5th July she was discoverd in the box in the act of egg laying. Having laid three already and in the middle of laying a fourth she was left alone for an hour. On returning she had five eggs and was examined to ensure there were no more left inside her. Though the eggs were adhering together, they were still moist enough for me to very gently separate them. The measurements of the eggs were as follows: 58 mm x 23 mm, 60 mm x 20 mm, 60 mm x 23 mm, 63 mm x 24 mm, 70 mm x 20 mm.

My preferred incubation medium being vermiculite, I mixed 8 oz of this with 8 fluid oz of water, which had been previously boiled and allowed to cool down. This only slightly damp mixture was put in the four litre size ice-cream containers, which are rather tall plastic boxes measuring 200 mm x 150 mm and 155 mm high.

With the amount of vermiculite only occupying 25% of the box this left 75% for airspace. The eggs were half buried in the vermiculite and the tight fitting lid was put on (no air holes were made).

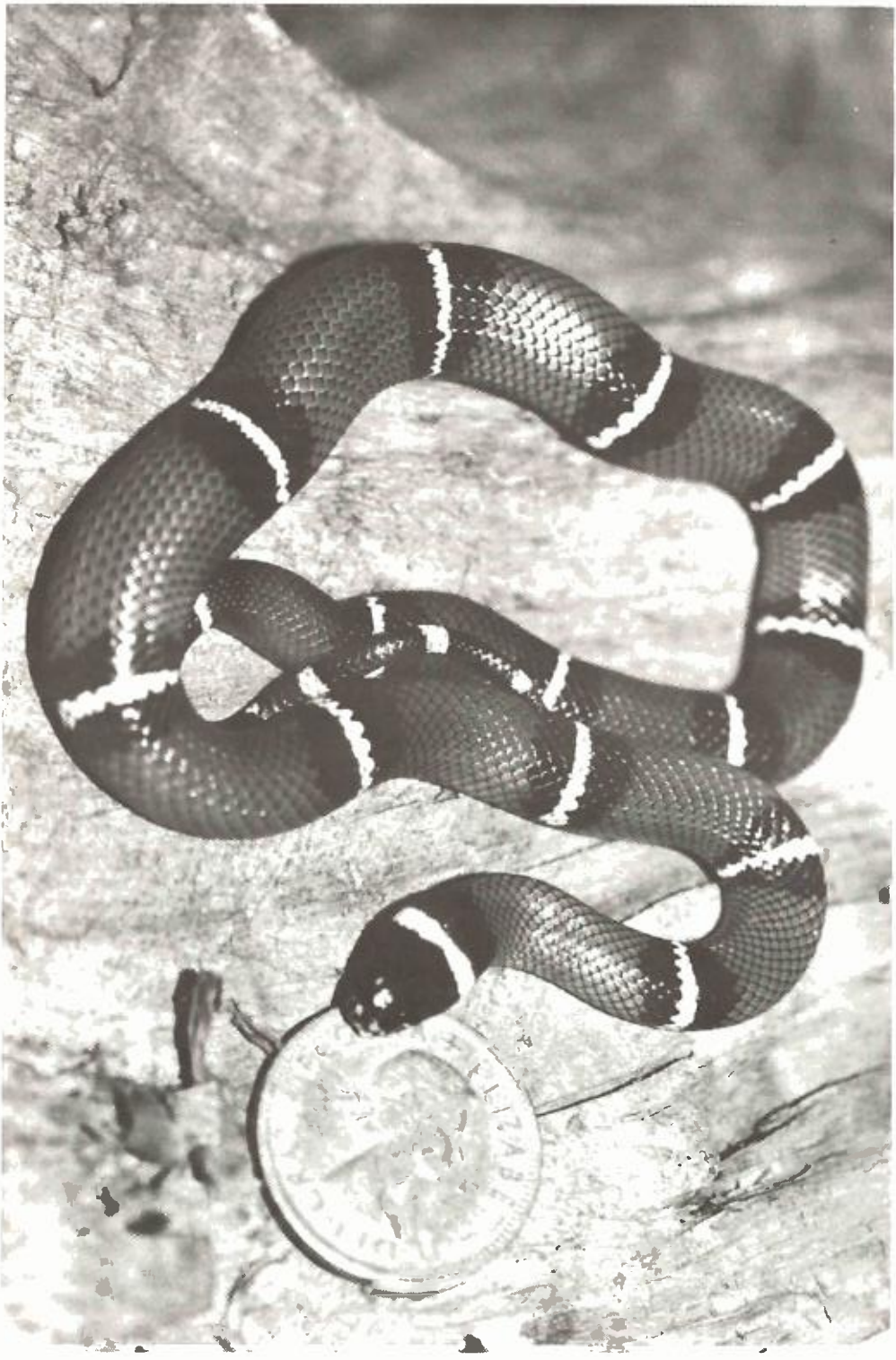
The box was put in my environmental chamber and twice weekly the lid removed to check the eggs and, in the process of doing so, they were gently fanned with the lid to exchange the air in the box. With this method, no extra water needed to be added and no fungal growth problems occurred throughout the incubation period.

The first sign of hatching was observed on the 7th September (64 days) when one of the eggs had split with a baby peering out, and by the 9th, all five youngsters had emerged from the eggs.

They were absolutely beautiful replicas of the adults, the only difference being the colour of the bands, which were bright yellow instead of the normal white of adults. Their lengths were as follows: 300 mm, 310 mm, 311 mm, 320 mm, 322 mm.

They were separated into two litre capacity plastic boxes of the type the eggs had been incubated in, which had the same dimensions but were only half as tall. (The keeping of hatchling snakes in relatively small containers may be important to encourage optimum feeding levels). The boxes were vented, lined with newsprint and furnished with a small water bowl and a piece of cork bark for them to hide under. The hatchlings sloughed on the 16th September and within hours of doing so they all accepted their first meal of newborn pink mice.

The second female laid eight slightly smaller eggs on the 26th July. By the time they were discovered they were stuck firmly together in a cluster and could not be safely separated. They were buried in the vermiculite, with those at the bottom of the cluster completely buried and some at the top not touching the vermiculite at all.



Hatchling *L. t. sinaloae* at 62 days old.

Incubation procedure was exactly the same as for the first clutch, and they hatched on the 28th September (64 days) with another 100% hatch rate. The hatchlings were slightly smaller than the first.

After they had settled down to feeding regularly all the hatchlings were probed to determine the sexes. The first clutch comprised one male and four females, and the second clutch six males and two females, so overall the sexes were evenly matched and to date all are doing well.

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