

Micrurus lemniscatus (Large Coral Snake)

Family: Elapidae (Cobras and Coral Snakes)

Order: Squamata (Lizards and Snakes)

Class: Reptilia (Reptiles)



Fig. 1. Large coral snake, *Micrurus lemniscatus*.

[<http://www.flickr.com/photos/lvulgaris/6856842857/>, downloaded 4 December 2012]

TRAITS. The large snake coral has a triad-type pattern, i.e. the black coloration is in clusters of three. The centre band of the triad is wider than the outer ones and is separated by wide white or yellow rings (Schmidt 1957). The red band is undisturbed and bold and separates the black triads. The snout is black with a white crossband (Fig. 1). The triad number may vary from 9-13 on the body and the tail may have 1-2. The physical shape and the structure of the body of the large coral snake show a resemblance to the colubrids. It is the dentition and the formation of the maxillary bone that distinguishes the two, including the hollow fangs. The largest *Micrurus lemniscatus* ever recorded was 106.7 cm; adults usually measure from 40-50 cm (Schmidt 1957). The neck is not highly distinguishable from the rest of the body as there is modest narrowing of that area behind the neck giving the snake an almost cylindrical, elongated look. **Dangerously venomous.**

ECOLOGY. The large coral snake is mostly found in South America, east of the Andes, southern Columbia, Ecuador, Peru, and Bolivia, the Guianas and Brazil, it is uncommon in Trinidad. It is dominant in the Amazon as it is well adapted to the rainforest where high temperatures and humidity exist. Due to it being present in the rainforest with fairly constant climatic conditions the reproductive cycle of this species is fairly constant. Although the large coral snake is found in Trinidad, there is none recorded in Tobago. It is found predominantly in Venezuela except in the Orinoco delta (Roze 1966.) Low land rainforest facilitates the success of this species in the Amazon basin (Duellman 1978). There is a trend however that as you move away from the equator to the temperate regions their distribution decreases. *Micrurus lemniscatus* shows special preference to open vegetation. Swampy areas are highly favoured as well. Reports of human victims that have been subjected to the venom of *M. lemniscatus* show the location of these snakes especially in Trinidad. In 1974 the Express printed the death of Soobradia Sooklal after she was bitten by a *M. lemniscatus* on her toe while collecting 'dasheen bush'. These locations favour the growth of the food source of these animals.

SOCIAL ORGANIZATION. *M. lemniscatus* do not exhibit social communication with its kin as cannibalism is a noted behaviour of this species; they are solitary organisms. Maternal instincts are omitted as young are left once the egg is laid.

ACTIVITY. Large coral snakes are noted to be active and aggressive (Roosevelt 1995; Beebe 1946) and are decidedly so when uncovered at night beneath a termite's nest (Welch 1978). Its large size allows its cannibalistic nature or the feeding of other coral snakes to be dominant especially on a much smaller species of coral snake *M. circinalis*. *Micrurus lemniscatus* of Trinidad was noted to eat fresh water eel, *Synbranchus marmoratus* (Schmidt 1957) which is of the same size as the snake, but its common food comprises of snake-like lizards and even gymnotiform fishes. The large coral snake applies a procedure called 'jaw walking', a technique for the swallowing of prey. The *M. lemniscatus* identifies reptile prey head first, by the overlapping scales, and moves toward the head. Very rarely tails are swallowed first. The head is swallowed by the alternating of the jaws and pauses are made in swallowing until the entire organism is ingested. To hasten the process of swallowing they may rub their heads in hard surfaces e.g. the ground to assist in the pushing down of the food. When the food is swallowed the head is raised off the ground. After consumption of food a "feeding excitement" occurs in captivity. Increased alertness is achieved due to increased hormonal levels, response and reaction time to a stimulus is heightened, tongue flicking is increased as well as the lateral head movements. It is this food frenzy that may be a factor that promotes cannibalism in this species.

FORAGING BEHAVIOUR. Coral snakes are known for cannibalistic behaviour and this allows the *Micrurus lemniscatus* to have an upper hand because of its size. When foraging the animal rapidly moves its head in quick lateral movements; this is done to examine its environments. Surrounding animals are picked up with the snake's sense of taste, sight and smell. Since this animal is a burrowing species and is of a large size, when it searches for food it would beat its tail in a probing action and this was thought to flush out prey that may be hiding in the ground litter. Tongue flicking (also used in communication) assists in the foraging activity. When the large coral is confronted by another animal of interest, tongue flicking increases rapidly. This action of 'tasting the air' serves as a precursor giving the animal chemical cues to respond appropriately. This is relied on heavily as the large coral snake has a poor sense of sight

and constrained sense of hearing. They are able to detect their prey based on chemical cues or 'odour footprints.' When the tongue is flicked out and brought back into the mouth of the snake it allows a specialised tasting organ the "Jacobson's organ" to analyse the chemical molecules that was in the air. Flicking the tongue can be done easily without opening the mouth, through an indentation in the upper lip. Once the *M. lemniscatus* has conquered its prey it goes through with a series of behaviours to prepare for the swallowing and digestion of the prey.

COMMUNICATION. These animals are solitary. They do not depend on each other for survival. Communication however is needed between male and female during copulation (see below).

SEXUAL BEHAVIOUR. Mating occurs in the dry season (January to May) and laying of the eggs in the rainy season (July to September). This can be stated as reproductive cycles do vary with geographical distribution (Roze 1966). All coral snakes lay eggs and geographical location determines the incubation period. Females of *M. lemniscatus* were found to carry oviductal eggs only in June and July (Duellman, 1978). They are surface dwellers therefore eggs are laid in debris, concealed tunnels and sometimes even termite nests. If favourable sites are not obtained to lay the eggs she may choose to delay the egg laying. The large female *M. lemniscatus* may lay from 5-6 eggs. Sexual maturity is attained between 1 to 2 years in males and 2 years in females where they remain sexually active throughout their life. When maturation occur, the male produces sperm which are conducted via the ductuli efferentes to the epididymis. These ducts during copulation allows for the transport of the sperm to the cloaca (the female vent). Courting and mating is very complicated to achieve in this species. These snakes are solitary animals and they may need to travel long distances to obtain a mate. Mating is therefore dependent on the internal state of the organism. Cannibalistic tendency is well-known in this species therefore mistaken identity of a mate for food may occur. When a male, after foraging, finds a female, the first behaviour noted is increased flicking of tongue; the male flicks his tongue on the part of the female body that he may have first made contact with. He raises his head to the female and angles its head downwards. The behaviour that is needed to arouse the female- the male takes his snout and he rubs his nose on the dorsum of the female with a specific direction from the tail towards the head. This rubbing is essential as it allows the alignment of male and female vent together. If the female is aroused and accepts the male as a mate, she lifts her tail so that the male may expel the hemipenis into the cloaca. The male has two hemipenes but only one is used in copulation, no preference is shown. If the female rejects the male she may bite him to fend him off.

JUVENILE BEHAVIOUR. *Micrurus lemniscatus* is an egg-laying species and abandons the young after birth. Behaviour patterns that the young exhibit is therefore more hereditary than of learned or maternal influence. The mother may sometimes consume its young (Wehekind 1955). In all coral snakes mothers show no relation to the eggs once they are laid.

ANTIPREDATOR BEHAVIOUR. The most common form of predation occurs from birds example the laughing falcon (Skutch 1960) as they are not threatened by the coloration of the snakes. *M. lemniscatus* uses defensive behaviour such as bright coloration, evasive techniques and also mimicry. The brightly coloured bands work as a warning indicator signifying venomous. If caught, the *M. lemniscatus* behaves erratically beating its tail and moving its head

vigorously, it follows up by a defensive displaying of the tail. This is achieved by curling the tail several times to form a body loop to make it appear fatter, the tail is raised vertically and the head is hidden. The bird would pick at the tail allowing the snake to unleash a venomous bite to be released. Although the venom is highly neurotoxic it is normally a last resort for a defensive mechanism. It is used when all other mechanisms have failed.

REFERENCES

- Beebe, W (1946). Field notes on the snakes of Kartabo, British Guiana and Caripito, Venezuela. *Zoologica* 31 (4): II-52.
- Duellman, W.E. (1978). The biology of an equatorial herpetofauna in Amazonian Ecuador. Univ. Kansas Mus. Nat. Hist. Misc. Publ., 65: 1-352
- Roosevelt, T (1995). The serpent. *Sunshine* magazine. *Sunday Guardian Supp.*, June II, 7.
- Roze, J.A. (1966). On the synonymy and type specimens of the coral shakes, *Micrurus corallinus*, and *Micrurus ibiboboca*
- Schmidt, K.P. (1957). The venomous snakes of Trinidad. *Ibid.*, 39(8): 337-359
- Skutch, A. F. (1960). The laughing reptile hunter of tropical America. *Animal Kingdom*, 63: 115-119.
- Wehekind, L. (1955). List from F.W. Urich's notes, corrected by H.W. Parker, British Museum, and rechecked by Dr. Wehekind with Dr Oliver's list, January 1953. Copy of unpublished notes of L. Wehekind, Royal Victoria Institute, Port of Spain. 9 pp.
- Welch, K.R.G. (1978). On a collection of reptiles from Trinidad. *Southwestern Herpetological Soc. Bulletin* 3:1 -6

Author: Josan Alicia Abidh

Posted online: 2012



Fig. 2. The large coral snake pictured here was captured in the Guanapo Valley, Trinidad. This species of coral snake is uncommon in Trinidad.

[<http://www.flickr.com/photos/nclarkii/3904362072/> downloaded 12 November 2012]

For educational use only - copyright of images remains with original source