Boa constrictor (Boa Constrictor or Macajuel)

Family: Boidae (Boas and Pythons)
Order: Squamata (Lizards and Snakes)
Class: Reptilia (Reptiles)

Fig. 1. Macajuel, *Boa constrictor.*

[http://www.trinidad-tobagoherps.org/Boaconstrictor.htm, downloaded 18 September 2011]

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TRAITS. *Boa constrictor* is a very huge, weighty –bodied snake. The *Boa constrictor* can grow up to 14 feet and weigh more than 150 pound (National Geographic Society, 1996). The boa is a very colourful, vivid looking snake, due to its unique patterns and markings, which allows them to be easily camouflaged into their environment. Their bodies can be of different colours such as green, red, or yellow and display mysterious patterns of serrated lines, circle, diamonds and ovals (National Geographic Society, 1996). Boas have small curved teeth, which they used to help in catching prey, but boas bite are non-poisonous, so like their name suggest they use their large bodies to constrict prey, squeezing until it suffocates. Boas also have 2 little bones called vestigial limbs. There is very evident sexual dimorphism within the Boid species, where the females are larger than the males in size and it also seen that the males have lengthier tails that comprises of the hemipenis, which is used during copulation and also contains longer spurs, which functions to clutch and arouse females. Macajuel just like any other snake does not possess any movable eyelids nor has an outer ear but do have an inner ear and stapes, also another quite fascinating characteristic is there Y-shaped tongue (Grandison, 1977).

ECOLOGY. *Boa constrictors* originate mainly from South and Central America and some Caribbean islands for example Trinidad, for which it is known as the macajuel. Boas mainly inhabit hollow logs and abandoned mammal burrows (Lindermann, 2011). They have very diverse environmental conditions they live in, from tropical rain forest to semi-desert area, but prefer the rainforest due to optimal temperature and humidity as well as it provides immense coverage to hide from view of animals that are of threat and immense amount of prospective preys (Stafford, 1986).

ACTIVITY: Most boas are solitary animals, unless when mating. They are also nocturnal animals, but will be seen basking in the sun during day if temperatures reached too low at nights. Since boas are semi-arboreal animals. When younger will scale trees in search of prey, but as the boas grow and become larger and heavier they become more terrestrial (Lindermann, 2011).

When disturbed, the boas will strike and bite, even though their bites are non poisonous, it is very painful coming from such a large animal. When boas feel threatened will hiss and strike repeatedly at object. Boas like most snakes has a shed cycle and when in this phase they become very random. This is so due to the chemical substances formed when the old skin is still partially there and new skin begins to form, it causes the eye to become "milky" or clouded thus preventing snake from seeing properly, which causes it to be more defensive (Carnivora, 2010). Boa's lifespan is very long, they can live up to 20 years and captured boas tend to have an increase lifespan compared to wild boas. This can be due to less predation and available food source wild in capture compared to in the wild.

SENSES AND COMMUNICATION. Snakes rely mainly on visual and chemosensory cues to communicate and to survive. Nocturnal snakes like the *Boa constrictor* posses vertical pupils (seen in Fig. 1) which give boas their great sense of sight. Besides visual senses the macajuel uses chemical sense more often since, chemicals remain even after animal has left. Main chemical sensory organs are the olfactory and vomeronasal systems. The nasal cavity has ciliated epithelia that are very sensitive to volatile odours which enable the animal to pick up scents very readily. Another organ that helps increase boas senses is the Jacobson's organ, which consists of a pit lined with sensory epithelia located on the roof of the snake's mouth seen in Fig. 2 (Tynes, 2010).

There are other organs that help in receiving stimulus, one such organ is the tongue (Fig. 3), it helps by gathering chemicals and guiding it to the ducts inside the mouth of the snake. Tongue flick patterns change in different situations. Chemical communication is very important in boa constrictors. They produce pheromone which can create a change in behaviour of other boas or other species. The site of production is the epidermal lipid gland. Other glands also release pheromones such as the cloaca, which emits chemical during courtship and shedding periods (Grandison, 1977).

FORAGING BEHAVIOUR. Has a wide variety of prey. A *Boa constrictor* will eat almost anything available, such as rodents, monkeys, birds, wild pig and many more. Younger boas will hunt mice, lizards, small birds, bats and amphibians. As the young get larger and older size of prey will increase (Carnivora, 2010). When prey is captured the method of constriction is employed. They would grasp and hold their struggling victims by throwing one or two coils of their body around them as seen in Fig. 4. This grip is maintained until deglutition is well advanced (Grandison, 1977). The process of engulfing a captured prey depends on the mobility

of the boa's upper and lower jaw and the elasticity of the ligament connecting the two. The top and bottom jaws are attached to each other with stretchy ligaments, which allow the snakes to swallow animals larger than itself. Snakes do not chew but digest wholly and very strong acids in the snake stomach slowly digest it. The swallowing process can take up to an hour or more depending on the size of meal. When the boa is swallowing there is a possibility of suffocation. This danger is prevented by the movements of the glottis (the opening of the windpipe). This occurs when the meal is being devoured, the glottis is pressed forward above the tongue so thus it is repositioned beyond the mouth and breathing process is unhampered. When *Boa constrictor* eats they do not need to forage for other prey until a couple of weeks due to slow metabolism (Grandison, 1977).

DEFENCE BEHAVIOUR. The *Boa constrictor* has defence against predators which is similar to the behaviour used in obtaining food. Almost instantly the first reaction to a predator is to escape either by hiding under covers or remaining motionless. If that action fails the next step is by emitting visual or auditory warnings and last resort is by attacking. Concealment is one form of hiding due to the boa's unique patterns and colour allows them to be easily camouflaged into different backgrounds. A next form of defence is sound warnings; no snakes have any true voice but a boa constrictor hiss can be heard from about 100 ft (Burton, 2002). When both concealment and sound warnings fail they begin to release obnoxious scents and secretion. Small boas would roll up into a ball and begin to produce an offensive - smelling anal secretion (Grandison, 1977). This foul-smelling release acts as a barrier as other animals won't come near. The last line of defence is counter attacking the threat. This defensive behaviour is mostly seen in juvenile boas since they are smaller in size and are more prey to different animals as compared to an adult *Boa constrictor* which has a very few predators one including man.

COURTSHIP BEHAVIOUR. During breeding the females will emit a scent from their cloaca to alert male when ready to mate. When males are in breeding they stick their tongues out and crawl over to the female to show interest. Females usually try to escape and males will chase until females is stuck in an enclosed area and cannot escape. When the female is finally stationary the male will continue flickering his tongue and begins to move up until he reaches the nape of the female's neck (Grandison, 1977). He then continues by wrapping his tail right around the female's body (shown in Fig. 5) and begins rubbing and scratching his spurs against her body to stimulate the opening of her cloaca to allow his hemipenis to enter (Tynes, 2010). The hemipenis is described as Y- shaped and only one of the two ends or the hemipenis is introduced into the cloaca during copulation and next one remains in the hemipenial pocket. Boas copulation can last up to hours.

REPRODUCTIVE BEHAVIOUR. Males can copulate with more than one female. After copulation, females can immediately be fertilized or can carry the male's gamete inside of her for almost up to two or three months. During ovulation, swelling can be seen in mid section of the snakes like if she had just eaten a prey. Female boas shed their skin two – three weeks after ovulation and this process is called post-ovulation shed. This shed last longer than a normal shed. This leads to a gestation period which last about 100-120 days and then mother gives birth to live young. And average of 25 young is born per mother (Carnivora, 2010). These young are self-sufficient and grow very quickly, as shown in Fig. 6. They have an average length of 22 inches at birth.

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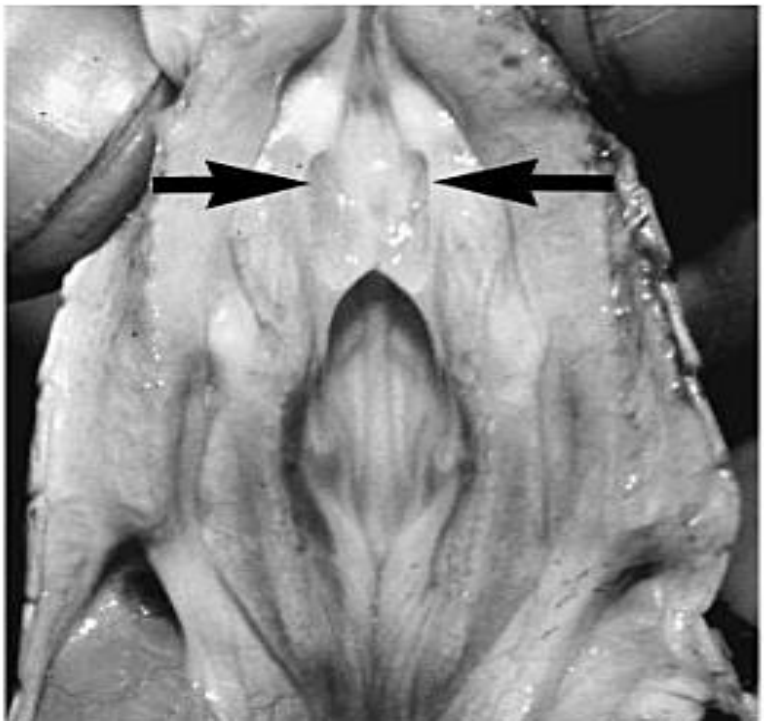

Fig. 2. Roof of *Boa constrictor* mouth showing the vomeronasal ducts.

[Tynes, 2002, downloaded 12 November 2011]

Fig. 3. Boa constrictor using tongue to pick up chemical cues.

[http://animals.nationalgeographic.com/animals/reptiles/boa-constrictor/, downloaded 10 November 2011]

Fig. 4. Constriction of prey by boa.

[http://carnivoraforum.com/index.cgi?board=reptiles&action=display&thread=7357, downloaded 18 September 2011]

Fig. 5. Copulation between male and female boa.

[http://www.boa-constrictors.com, downloaded 27 September 2011]

Fig. 6. Shows new born boa constrictors.

[http://www.rfadventures.com/babies!.htm, downloaded 10 November 2011]