Epicrates maurus (Rainbow Boa or Velvet Mapepire)

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

Fig. 1. Rainbow boa, *Epicrates maurus*.

[http://squamates.blogspot.com/2010/10/declines-in-snake-and-lizard.html, Downloaded 10 November, 2011]

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TRAITS. The rainbow boa, also known as the velvet mapepire, is a snake that grows to a maximum length of 4 feet in males and 4.5 to 5 feet in females. The life span of this species of snake is an average of 20 years if held in captivity and 10 years in the wild. Their name, rainbow boa, originated from their appearance because of an iridescent shine emanating from microscopic ridges on their scales that refract light to produce all the colours of the rainbow. These boas are generally brownish red in colour associated with dark marking during their juvenile life, however this coloration becomes subdued as they get older (Underwood 2009). These snakes are mainly nocturnal and also terrestrial, they have a small head with a narrow neck and a thick body (Boos 2001). Boas are considered primitive snakes and this is supported by the presence of two vestigal, hind limbs which appers as spurs on either side of the cloaca (Conrad 2009).

ECOLOGY. Rainbow boas occupy a variety of habitats in Trinidad and Tobago, they can be found in dry tropical forest, rainforest clearings or even close to human settlements such as agricultural communities. Like all boas, they are excellent swimmers, however they restrain from being in contact with water as much as possible. These snakes spend most of their time on the ground and are mostly active after dusk and at night searching for prey. They are nocturnal, so

during the day when non-active, they would find themselves benefiting from various hiding spots such as dry holes or under debris away from potential predators (SnakeEstate 2011). In addition to these habitats, rainbow boas are known to be arboreal in their juvenile phase, however they become semi-arboreal in their adult phase. Arboreal would refer to their preference to climb high places such as trees. A reason for juveniles to be more arboreal at this phase may be to avoid bigger predators because at this stage they would lack the experience to defend themselves and being semi- arboreal at an adult stage would be to capture small birds and mice not found on the ground (Boos 2001). This species of snakes are not only found in Trinidad and Tobago but can also be found and distributed in other regions such as Columbia and the northern regions of South America (Underwood 2009).

SOCIAL ORGANIZATION. These snakes are highly solitary, meaning that they carry out their actives on their own such as hunting, foraging or looking for a new place to settle down. They do not interact with other snakes of the same species, only during the mating season which is during the months of October and January (Boos 2001). Encounters with these snakes are rare, according to John C. Murphy a researcher who carried out a study on snakes in 2010 had made encounters with rainbow boas every 3.5 days when he had intentionally looked for them (Murphy 2010). Female rainbow boas are known to give birth to 12 to 15 juveniles at a time, and do not show any form of parental care for their offsprings after birth. Instead the juveniles immediately wander off to find shelter where they would begin feeding on baby mice or other small food source. The only feature of this snake that can be considered a form of parental care is that the offsprings are allowed to grow and mature inside the mother until birth as a form of protection, unlike other types of snake that produce eggs (Ehrlich 1988).

ACTIVITY. Rainbow boas are highly active during the first period after birth, striking on anything in sight (Reptile City 2010). This behaviour is eventually lost with age. Boas are nocturnal, therefore they would be most active at night and eventually retreat to hiding during the day as can been seen from (Fig. 2). At the juvenile stage boas eat once a week therefore at this time they would be most active and adults would eat once every two weeks. Rainbow boa like other snakes shed their skin as they grow older because skin on snakes do not grow together with its body therefore it has to produce new skin to accommodate its growing body (Colling 2010).

FORAGING BEHAVIOUR. Rainbow boas have poor vision therefore they rely on other abilities to forage in their surroundings. These include the ability to sense heat and the ability to detect odour in the air. These snakes possess heat sensing labial pits located on their head which can put together a picture of an animal's size from the heat it emanates to determine if it is prey. The other ability the snake depends on when foraging is tongue flicker. This action allows the snake to smell with its tongue. By constantly extending and retracting its tongue, it can pick up different scents from air to determine if a prey is close by (Bartlett 2004). As stated before, adults boas are semi-arboreal, therefore they would forage mostly on the ground rather than being on trees or high places. Upon detection of a potential prey the boa would stop and lay motionless and wait for the prey to come within striking range were it would strike at high speed with its mouth allowing the multiple teeth to latch on to the prey because of the backward orientation. This is immediately followed by multiple coiling of the prey with its body, constricting and suffocating the prey. Every time the prey exhales the boa would bind tighter allowing the animal to suffocate (Bartlett 2010). Figure 3 shows a white mouse being suffocated by a young rainbow boa.

COMMUNICATION. These snakes are highly solitary reptiles therefore little communication can be expected. Like all snakes rainbow boas do not possess any ears therefore they rely on other senses to communicate such as smell, sight and touch. Tongue flickering is constantly repeated so that the snake can detect different scents and odour, bringing these odour molecules to chemosensory organs located at the top of their mouth so that it can differentiate between prey and predator (Bartlett 2004). In addition, these snakes can detect vibration. Although rainbow boas lack external ear openings they still possess a columella bone that has the ability to conduct sound located in the jaw. When the snake's head is flat on the ground, earthborn vibration from the surface can be detected, however this method does not allow them to detect airborne sounds (Gray 2009). Another form of communication is by striking which is carried out when angry, annoyed or as an act of defence. This is done to warn a potential threat to stay back (Boos 2001).

SEXUAL BEHAVIOUR. As stated before rainbow boas are solitary, however they become interactive during mating season. Males would not dedicate himself to one female therefore one male would copulate with multiple females. Males and females would find each other through foraging. Rainbow boas breed annually and may give birth to an approximate 12 to 15 juveniles at a time. Female rainbow boas are ready to breed at age of three to four years of age. The time at which these behaviours are seen is around the months of October to January (Colling 2010). Signs given by males indication that they are ready to mate are altering their feeding pattern and shedding of the epidermal layers over their hemipenes, male reproductive organ. For females signs include swelling as a result of developing follicles in her ovaries and moving to a much cooler site. Once a male meets a female he would chase her down for a long period of time during which he flicker his tongue at her continuously. This is followed by him moving along her body where he would align his tail with her cloaca, entrance to reproductive organ. The female may pull away where he would repeat this procedure until he successfully copulates with her. When the female becomes gravid which means pregnant, she would go off feeding and relocate to a warm area where she would remain in one spot for around 4 months (Lockwood 2011)

JUVENILE BEHAVIOUR. Females are ovoviviparous, therefore they give birth to live young rather than producing eggs. Once the offspring's are born they immediately become independent and move away from their birth site and start striking at anything in sight. This is done to chase away anything that can be of potential harm or to recognize a potential meal.

ANTI PREDATORY BEHAVIOUR. Rainbow boas rely firstly on a chemical defence in which strong odorous material is released from the anal gland to ward of predators. This is followed by biting, the snake would initiate a sequence of biting to keep the predator at a particular distance. If the snake realizes that it has been over powered, it would curl up in a defensive ball (Lourdais 2004) as can be seen from Fig. 4.

REFERENCES

Bartlett, R. D. 2004. "Rainbow Boas and Neotropical Tree Boas." 14-16. Barron's educations series.

Bartlett, R.D. 2010 *What Do Rainbow Boas Eat?* http://www.ehow.com/info_8574379_do-rainbow-boas-eat.html (accessed 11 10, 2011).

Boos, H.E.A. 2001. *The snakes of Trinidad and Tobago,* 64- 67. Texas A&M University Press,.

Colling, D. 2010. *Rainbows-r-us-reptiles.* http://rainbows-r-us-reptiles.com/Care_Sheet_Brazilian_Rainbow_Boa.htm (accessed 11 10, 2011).

Conrad, J. 2009. *snake adaptation.* http://www.backyardnature.net/snakadap.htm (accessed 11 10, 2011).
Ehrlich, P. R. 1988. *Parental Care.* http://www.stanford.edu/group/stanfordbirds/text/essays/Parental_Care.html (accessed 11 10, 2011).
Gray, A. 2009. *Boas.* (accessed 11 10, 2011).
Lockwood, M. 2011. *Reptile channel.* http://www.reptilechannel.com/snakes/snake-care/brazilian-rainbow-boa.aspx (accessed 11 10, 2011).
Lourdais, O. 2004. "performance and behaviour in Rainbow boas." *CEBC.* http://www.cebc.cnrs.fr/publipdf/2006/LJZ269.pdf (accessed 11 10, 2011).
Murphy, J. C. 2010. *Serpent research.* http://squamates.blogspot.com/2010/10/declines-in-snake-and-lizard.html (accessed 11 10, 2011).
Reptile City . 2010. http://www.reptilecity.com/Merchant2/merchant.mvc?Screen=PROD&Store_Code=reptiles&Product_Code=BRB&Category_Code=FS (accessed 11 10, 2011).
SnakeEstate. 2011. http://www.snakeestate.com/boa-constrictors/columbian-rainbow-boa.html (accessed 11 10, 2011).
Underwood, E. 2009. *Rainbow Boa Care Sheet.* http://www.unicornunchained.com/snakepit/rainbow_care.html (accessed 11 10, 2011).

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Fig. 2. Rainbow boa inactive and hiding during the day.

[http://www.flickr.com/photos/gabrielhorta/3935690351/sizes/m/in/photostream/, downloaded 10 November, 2011

Fig. 3. Young rainbow boa constricting a white mouse.

[http://www.therainbowboa.co.uk/forum/topic.asp?TOPIC_ID=558, Downloaded 10 November, 2011]

Fig. 4. Rainbow boa in a defensive ball.

[http://ball-pythons.net/forums/showthread.php?75158-rainbow-boa, Downloaded 10 November, 2011]