

## *Bothrops atrox* (Mapepire Balsain or Fer-de-Lance)

Family: Viperidae (Vipers and Pit Vipers)

Order: Squamata (Lizards and Snakes)

Class: Reptilia (Reptiles)



**Fig. 1.** Fer-de-lance, *Bothrops atrox*.

[<http://www.uniprot.org/taxonomy/8725>, downloaded 19 October 2014]

**TRAITS.** A venomous pit viper species (Fig. 1). Adults grow to 2m in length (Phelps, 1981), although generally between 1.3-1.8m, and have been found to weigh up to 6kg (moderately heavy-bodied). Female fer-de-lance have been found measuring up to 2.5m. Terrestrial species. Has camouflaged yet vivid colours such as shades of grey, green, olive or brown; and has broad, dark, faded, adjoined triangles which meet on the dorsal line as seen in Fig. 5. Has a dirty yellow tail-tip and rough keeled scales which are both characteristic to this species (Boos, 2014). Due to its distinguishing broad, flattened, lance-shaped appearance (triangular and pointed) the head is set apart from its body (Mattison, 1986). On average, they can live up to 8.5 years in captivity (Mattison, 1986). Species is said to be very sexually dimorphic, with females growing at a much faster rate by 7- 12 months after birth. *Bothrops atrox* is also known as barba amarilla, yellowjaw, and yellow chin (Consejo Belize, 2013); but should not be confused with *Bothrops asper* that is indigenous to Martinique (also referred to as yellowjaw and sometimes fer-de lance). Dangerously poisonous venom.

**ECOLOGY.** One of the most widespread snakes, found in Trinidad and also the tropical regions throughout South and Central America (Boos, 2014). Found in habitats such as tropical coniferous and tropical dry forests, tropical evergreen forests and rainforests - although it can be found invading plantations or agricultural areas (proximity to prey) (Phelps, 1981). Banana plantations are particularly liked by this species because of their rats. Lives close to stream edges and in ditches. Can basically thrive in all habitats. Would be found sleeping, camouflaged under leaves during the day, but they hunt actively at night. Fer-de-lance has been found in some Caribbean countries, as well as Central and South American countries. These include north-western Mexico, Ecuador, Colombia, Honduras, Belize, Guatemala, Costa Rica, Nicaragua, Trinidad and Panama. Some have also been found in Venezuela although its presence there is questionable. Vary greatly in size, a few of the bulkier specimen have been observed near Manzanillo, Costa Rica (Sierra, 2003). Considered a lowland species that can occur from sea level to 1300 m in altitude in Central America. In Venezuela though it has been found at considerably higher elevations – up to 2500 m – and even at least 2640 m in Colombia.

**SOCIAL ORGANIZATION.** Solitary, nocturnal, territorial. Little information has been published on its social organization. Its home range averages between 3.7 and 5.9 hectares, which is considered small in relation to other pit-vipers.

**ACTIVITY.** Mainly nocturnal, hides for the majority of the day. At night, it will feed primarily on agricultural pests. Spends its days among leaf litter or roots concealed (or in a location similar). In captivity, fer-de-lance has a reputation for being unpredictable and psychotic; as such that it is recommended that only experienced keepers maintain this species. Most of the time they sit motionless but once physical contact occurs it explodes into action (Sierra, 2003). No documented cases of male-male combat, unlike many other vipers.

**FORAGING BEHAVIOUR.** Carnivorous predator and hunter, relies on camouflage to attack prey. Deduces the position of its prey by using its pit organs (relays thermal information of the prey's position to the snake) located between the eye and nostril. Very intrusive, conflicts with humans occur due to fer-de-lance's habit of invading plantations in search of prey and laying in walking traits (Mattison, 1986). Diet for adults consists of small mammals such as rodents and opossums, but they take birds occasionally depending on the snakes' size. Also have been found to eat lizards and smaller snakes. Juveniles prey on frogs, lizards, small vertebrates and arthropods (Carnley, 1996). When about to strike, Fer-de-lance gears up forming an 'S' shape with its head and upper body – and is capable of striking so quickly that it is almost impossible to see it move from this position. When striking, it instantaneously injects a lethal dose of poison after which it retreats and waits for it to work. When the prey is dead, *B. atrox* locates it by pursuing its scent trail, and then leisurely eats its prey. A tactic commonly used by *B. atrox* is when striking it passes its head past the victim and doubles back while spiralling its neck quickly, so catching its prey from behind. Dean Ripa says "By my estimation, the world's most dangerous viper to catch." Venom is very poisonous - on average 105mg of venom is injected into one bite, but up to 310mg have been recorded when milking fer-de-lance. For humans, the fatal dose is 50mg.

**COMMUNICATION.** Communication and perception is not well studied in fer-de-lance. They have heat-sensing pits (use at night to detect prey) which are seen as two indentations located behind and above the nostrils through which they use to “identify a rise or drop in temperature of just 0.001 degrees Celsius” (Phelps, 1981). This mechanism grants it to recognize warm-blooded mammals. Coupled with this is its chemical communication, through which they use their tongues to ‘taste’ the air; as seen in Fig. 4. They perceive their environment through visual, infrared, tactile and chemical stimuli.

**SEXUAL BEHAVIOUR.** Viviparous (giving birth to live young), iteroparous (breeding repeatedly). Females build up fat stores which leads to a release in hormones that stimulate ovulation. Mating begins with the male making a series of movements, after which he gradually follows the female who then stops moving, allows him to approach while she assumes position. Male tends to bob his head at her side. Fer-de-lance reaches sexual maturity at around 1.5 years. They are live-bearing and breed annually. Breeds usually during the rainy season as food is more readily available. Cycle varies and is related to location and rainfall patterns. Fertilization is internal. Positive correlation exists between the body size of the female and the number of offspring she produces. Gestation lasts usually 6-8 months. Female moves in and out of the sun during their gestation period which allows them to keep their embryos at a constant temperature. Some evidence of long term sperm storage by the female to delay fertilization exists. No parental care. Females will mate with more than one male during the mating season.

**JUVENILE BEHAVIOUR.** Species gives birth to live young, up to 80 at one time, each about 30cm long (Carnley, 1996). This number can vary from 5-85 viviparous young that weigh around 6.1 – 20.2 grams each. They are brighter coloured than their parents, with either beige or yellow tails as seen in Fig. 3. Semi arboreal; actively climb trees, but tend to lose this habit when they become adults. The young are considered dangerous as they born with venom glands (Carnley, 1996). Juveniles may exhibit caudal luring (shaking the tail) to attract prey.

**ANTIPREDATOR BEHAVIOUR.** Thoroughly irascible, irritable snake (Boos, 2014). Quick to strike and very deadly; readily feared for its strong and fast-acting hemotoxic venom. According to Boos (2014) this is “a unique snake that has the ability to literally blend invisibly into their background”. *Bothrops* is known to “ambush their pursuers: they initially flee but then make a 180 degree lightning quick turn” to wait until they get within striking range. Herpetologists Harry Greene and Dean Ripa have noted this. When all other defence mechanisms fail, the mapepire gives off a distinctive defensive musk from its cloaca (Boos, 2014). Species is said to be nervous, unpredictable and usually shy and tries to escape unless it feels as though it is being cornered. Vibrates its tail as well as enlarges its body to seem bigger. Has the ability to strike repeatedly, requiring no fixed coil. Can strike at heat and movement, often giving a ‘dry’ bite to partly envenomate the threat.

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**Fig. 2.** *Bothrops* showing size of mouth and fangs.

[<http://www.fieldherpforum.com/forum/viewtopic.php?f=2&t=1622>, downloaded 17 October 2014]



**Fig. 3.** Juvenile *Bothrops*, showing yellow tail.

[<https://www.flickr.com/photos/stationalpinejosephfourier/6325743808/in/photostream/>, downloaded 19 October 2014]





**Fig. 4.** *Bothrops* showing its long tongue with which it ‘tastes’ the air.

[<http://www.tropicalherping.com/publications/articles/north/main.html>, downloaded 5 November 2014]



**Fig. 5.** Fer-de-lance in sunlight showing body details.

[<http://reptile-database.reptarium.cz/species?genus=Bothrops&species=atrox>, downloaded 29 September 2014]

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