

• Gambote's House Snake •

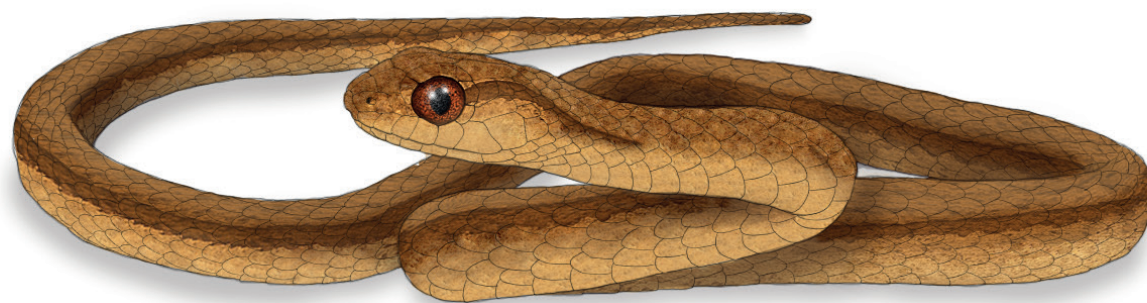
(*Dryophylax gambotensis*)

Bites, venoms, and venomous snakes of Colombia

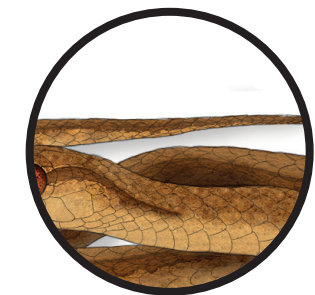
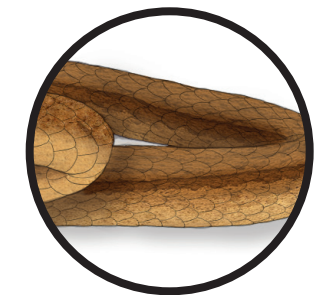
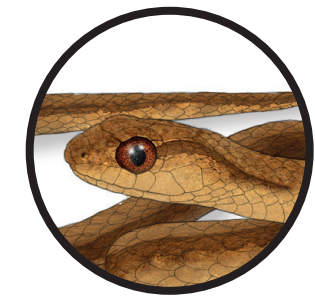
G2

MEDICAL IMPORTANCE GROUP 2

Snakes that **bite frequently**, but rarely causes serious and life-threatening envenoming



⚠ Poorly Reliable: Confidence for this species is poor due to the lack of data and information on Colombian populations. Therefore, most of our knowledge comes from a few studies and populations outside the national territory.



⚠ Detail of: Head, body and tail.

1. Envenomation symptoms

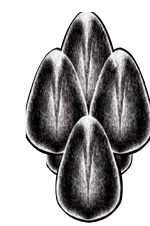


Currently, no records of the envenoming by *Dryophylax gambotensis* are available in the literature. However, here we will describe for the first time a case report of mild envenoming and the symptomatology experienced by one of the authors (MTGR). The patient was a 25-year-old female without medical pre-existing conditions. The accident occurred during a snake handling process, in which the snake bites hard for several seconds in the right index finger, trespassing a G40 polyurethane coated glove. Almost immediately after detaching the snake, the erythema (redness of the skin) was visible along with a warm sensation and an evident stiffness within the first phalanx of the finger. A noticeable edema (swelling) appeared 10 minutes after the bite and the skin redness decreased while a white halo appeared around the fang's penetration holes.

After 15 minutes the patient felt dizzy, although it could have been from the effect of nervousness. About 30 minutes after the bite, the edema reached its maximum extension spreading towards posterior phalanx, beginning gradually to decrease in size while the patient manifested a numb feeling in the hand. Almost 1 hour from the snakebite, the finger appeared normal, and it manifested a soft pain when pressured. On the second day, the patient only felt a warm sensation and soft pain in the affected region, and to the third day all the symptoms were gone. No other local symptoms (e.g., hemorrhage or transient bleeding) were observed, nor systemic symptoms (e.g., coagulopathy) were referred.

In Brazil and Venezuela have documented envenomation cases for related species (*Dryophylax hypoconia*, *T. pallidus*, y *Zonateres*) [1-4]. The snakebites reported for these three species have been classified as mild to moderate. The symptoms and their time of onset are very similar to those described here for *D. gambotensis*.

However, these related species have also been associated with additional symptoms, including excessive salivation with a metallic taste, headache, and ecchymosis (bruising) [1]. In cases of moderate envenomation, other reported symptoms include edema, ecchymosis, and tingling in the affected area. In all reported cases, these symptoms resolved within one week [3,4].



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2. Treatments and snakebite care



Currently, there is no specific antivenom for *Dryophylax gambotensis*, since most accidents with colubrid snakes in America are usually non-human-risky, with local symptoms that normally disappear without medical attention. Despite this, it is always desirable to get medical assistance. Treatment for the cases reported (previously described) include analgesics such as acetaminophen/paracetamol for the pain, anti-inflammatory like ibuprofen and diclofenac for the edema, and corticoids like hydrocortisone and betamethasone for the allergic reactions [1,4].

Traditional practices are discouraged because they delay the time for receiving medical attention. In addition, when the accidents are caused by this kind of mid-venomous non-lethal snakes, traditional treatments may reinforce the idea that they are useful, which is very counterproductive in the snakebite cases caused by truly venomous snakes like viperids or coral snakes. Often, many unknown substances used can have negative effects on the envenoming outcome. Thus, they can worsen the effects or be placebos (treatments with no therapeutic value).

3. Snakebite capacity



Dryophylax gambotensis is a relatively common species in the lowlands of the Caribbean coast of Colombia, which makes the encounter rate to be high. However, given its opisthoglyphous (rear-fanged) venom delivery system, these snakes need to bite with all their mouths for a long time to get effective envenoming, since the fangs and venom delivery system in colubrids are not as efficient as in the viperids or coral snakes (see Chapter 4). This makes infrequent the envenoming with this species since accidents may result in “dry bites” (bite without venom delivery).

4. Recognition



Species of the genus *Dryophylax* have historically been considered a complex taxonomic group, meaning that more than one evolutionary lineage is grouped under the same name [5,6] (see Chapter 1). Individuals of *D. gambotensis* are externally recognized as small to medium-sized snakes characterized by elliptical pupils, a dark postocular band, and an irregular dorsal pattern that usually displays a checkered design anteriorly, with dorsal stripes that become more accentuated posteriorly [8]. However, it is important to note that these traits are not exclusive to *D. gambotensis*, as they may be shared with other species within the genus. Currently, a combination of lepidosis characters (traits associated with the counts and shapes of scales) is required to distinguish this species from other colubrids [5].

Dryophylax gambotensis is easily distinguished from coral snakes by the absence of rings with aposematic coloration. In contrast, *D. gambotensis* exhibits cryptic coloration and aggressive defensive behavior, readily striking when threatened. This combination leads to it being mistaken for sympatric pitvipers such as *Bothrops asper*, *Crotalus durissus*, and *Porthidium lansbergii*.

However, *D. gambotensis* can be readily differentiated from all viperids in the region by several key morphological traits: it lacks a thermoreceptive loreal pit between the nostril and the eye (a feature present in all pitvipers); it possesses smooth or weakly keeled dorsal scales (as opposed to the strongly keeled scales of vipers); and it lacks an X-shaped dorsal pattern (which is characteristic of *B. asper* and *C. durissus*).

5. Distribution



Dryophylax gambotensis is an endemic species to Colombia, distributed in the dry forests of the lower Magdalena River basin and the Caribbean lowlands, ranging from 0 to 200 meters above sea level [9,10]. Their records are limited to the departments of Antioquia, Atlántico, Bolívar, Cesar, Córdoba, Magdalena and Sucre [9,10,11,12,13]. The potential area of the distribution of *Dryophylax gambotensis* in Colombia is 97,368 km².

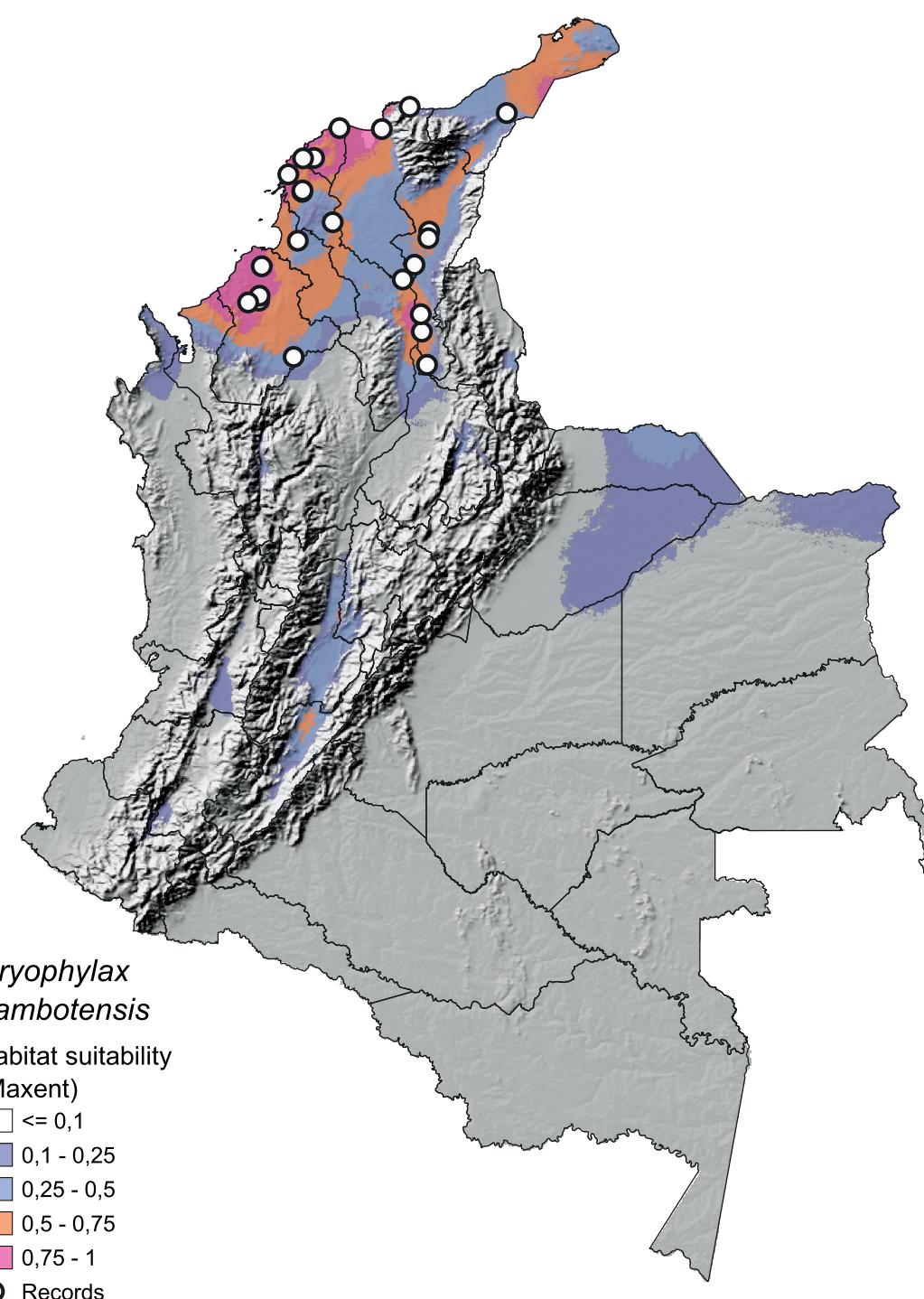
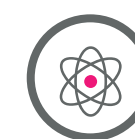


Figure 1. Geographic distribution of *Dryophylax gambotensis* in Colombia and its habitat suitability model. Based on bioclimatic variables, the habitat suitability model predicts the species' potential distribution in Colombia, identifying zones with suitable or unsuitable environmental conditions for its occurrence across the country. Values close to 1 indicate optimal environmental conditions (high probability of presence), while values close to 0 indicate unsuitable conditions (absence likely).

6. Natural history



Frequent or Common. The Gambote's house snake is a relatively small-sized and viviparous species that inhabits areas of low elevation [10]. This snake presents crepuscular and nocturnal activity, being adapted to live in different types of habitats, ranging from forests to highly intervened areas, such as herbaceous vegetation on the edge of wetlands in the middle of pastures, dry forest, palm-grove, and tree-lined savanna [10,11,12,13,14]. In addition, it can use both vertical and horizontal resources in the ecosystem thanks to its semi-arboreal and terrestrial habits [10,12]. *Dryophylax gambotensis* feeds mainly on frogs (e.g., Gladiator Treefrogs and Neotropical Grass Frogs) and small lizards of the *Anolis* and *Loxopholis* genera [15,16,17], which seems to influence their high abundance near riparian herbaceous vegetation.

7. See it in the wild, rural or peri-urban areas



Several studies have reported *Dryophylax gambotensis* as a common species because it is usually very abundant at night near grasslands, marshes, and flooded pastures, in the lower layer of the vegetation, either on the damp ground or in bushes [10,11,12,13,14]. During the day it can be found in moist microhabitats such as dense grasslands and shrublands, and in the night perching up to 1.5 to 3 on shrubs.

8. Conservation



Least Concern. In both a global and local assessment, *Dryophylax gambotensis* is considered as a least concern species [9,18]. Furthermore, this species is not listed in Resolution 1912/2017 from the Colombian Environmental Ministry, nor is considered as a CITES species. Although this is an endemic species, it seems to be abundant within its distribution range as it is common within biological collections and is easy to see during fieldwork. Thus, there is no evidence for the population to be in decline or stated within specific major threats [9]. However, as for most snakes in Colombia, this species may be threatened due to the killing of individuals based on human fear, roadkills, and deforestation or destruction of its habitat [19].

9. Nombre científico y comunes



The scientific name of *Dryophylax gambotensis* is composed of two words, the first one is the genus and the second is the specific epithet. The genus *Dryophylax* is a compound word in which the first part “*dryo*” (Δρῦς) is a Greek prefix that means “tree,” “oak,” or “forest”; whereas “*phylax*” (Φύλαξ) meaning “guardian,” “watcher,” or “keeper.” So, *Dryophylax* literally means “Guardian of the Trees” or “Watcher of the Forest”. On the other hand, the specific epithet “*gambotensis*” is in honor to the name of its type locality in Gambote, Bolívar [5].

In certain Caribbean municipalities this species is called “false patoco” or “matacaballo” because it can change the shape of its head and pupil to look like a viperid snake (pers. obs), which may influence its bite to be confused and treated -medically- like a pit viper bite [20].

Table 1. Summary of important biological, venom, epidemiological and medical traits.



★		
TOXICITY AND BIOLOGICAL ACTIVITY	VENOM ACTIVITY PROFILE	GENERAL BIOLOGICAL TRAITS
LD₅₀ (µg/mice): Unknown	Proteolytic: Unknown	Total Length (cm): ♂ 49,3–51,4 ♀ 40,4–45,7
MCD (µg/mL): Unknown	Neurotoxic: Unknown	Weight (g): ♂ ♀ Unknown
MDD (µg/mice): Unknown	Myotoxic: Unknown	Reproduction: viviparous
MED (µg/mice): Unknown	Hemotoxic: Unknown	Diet: lizards, frogs
MHD (µg/mice): Unknown	-	Distribution: Caribbean (mainland)

PROTEOME			
PLA₂: Unknown	SVSP: Unknown	SVMP: Unknown	NGF: Unknown
CRISP: Unknown	CTL: Unknown	DIS: Unknown	KUN: Unknown
BPPs: Unknown	VEFG: Unknown	3FTx: Unknown	
Crotoxin: None	Crotamine: None	LAAO: Unknown	

MAIN ENVENOMATION SYMPTOMS		RISK	GRADE OF ENVENOMATION
Hemorrhage: No	Ecchymosis: No	Bites per year: Unknown	Mild: Unknown
Nausea: Yes	Hematemesis: No		
Hypotension: No	Blisters: No	Bites per 1,000 people yearly: Unknown	Moderate: Unknown
Edema: Yes	Vomiting: No		
Coagulopathy: No	Diarrhea: No	Sequelae caused per year: Unknown	Severe: Unknown
Sialorrhea: No	Local Pain: Yes		
Hematuria: No	Necrosis: No	Deaths caused per year: Unknown	
Renal failure: No			

★ Poorly Reliable: Confidence for this species is poor due to the lack of data and information on Colombian populations. Therefore, most of our knowledge comes from a few studies and populations outside the national territory. LD₅₀: median lethal dose; MCD: minimum coagulant dose; MDD: minimum defibrinating dose; DEM: minimum edema-forming dose; DHM: minimum hemolytic dose; PLA₂: phospholipases A₂; SVSP: serine proteases, SVMP: metalloproteinases; NGF: nerve growth factor; CRISP: cysteine-rich secretory protein; CTL: C-type lectin/lectin-like, DIS: disintegrins, KUN: Kunitz peptides; BPPs: bradykinin-potentiating peptides; VEF: vascular endothelial growth factor; 3FTx: three-finger toxins; LAAO: L-amino acid oxidases.

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