

# • Cauca coralsnake •

## (*Micrurus multiscutatus*)

Bites, venoms, and venomous snakes of Colombia

### G4

MEDICAL IMPORTANCE GROUP 4

Snakes that **bite rarely**, and **have not caused significant envenoming** or have not caused documented bites



⚠ 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.



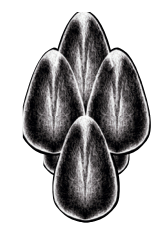
⚠ Detail of: Head, body and tail.

## 1. Envenomation symptoms



Although no cases of envenomation by *Micrurus multiscutatus* have been documented in the literature, its venom is expected to produce clinical manifestations similar to those of other coralsnake species [1,2]. Mild envenomation is generally associated with local signs of mild bleeding caused by the bite wound and erythema (superficial reddening of the skin), hypoesthesia (reduced sense of touch or sensation) or paresthesia (an abnormal sensation, typically tingling or pricking) at the bite site, but in many cases, there may be no local symptoms.

Moderate envenomation includes early systemic neurologic manifestations such as diplopia, blurred vision, blepharoptosis, and slurred speech [2]. In severe envenomation, the previous manifestations are accentuated, and other symptoms can appear, such as paralysis of the muscles of the neck, loss of balance and the muscle strength in the extremities, nausea, vomiting, confusion, disorientation, ophthalmoplegia, hypersalivation, jaw pain, tongue protrusion, aphonia, difficulty walking, and finally, respiratory paralysis [2].



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## 2. Treatments and snakebite care



The first steps for adequate treatment of a coralsnake bite correspond to keeping the patient at rest, monitoring their movements and respiratory performance, and having the necessary ventilation equipment in the event of a potential respiratory arrest; moving the patient as soon as possible to a medical center with mechanical ventilation equipment [2].

Currently, there is not specific antivenom to neutralize envenomation caused by *Micrurus multiscutatus*. However, through cross neutralization capacity of anticoral snake antivenom available in the market envenoming inflicted by this snake can be attended. The administration and dosage of antivenom should be guided by the patient's clinical manifestations of envenomation and the specifications in the manufacturer's technical data sheet for the specific serum brand: the recommended dose for the INS antivenom varies according to the severity of the accident, ranging from 5 vials for Andean coral species to 10 vials for corals from the Orinoquia and Amazon regions. [12]. Ancillary treatment should include strict monitoring of vital signs and oximetry, ensuring the availability of mechanical ventilation, and maintaining fluid, electrolyte, and glucose homeostasis. Additionally, antimicrobial therapy should be initiated if secondary infection or bronchoaspiration is suspected [1].

## 3. Snakebite capacity



This snake is relatively common and abundant within its type locality [3]. However, its evasive behavior and semifossorial habits significantly reduce the chances of human encounters. The risk of envenomation is further minimized by the region's low population density and by prevention and first-aid programs promoted by health institutions.

Coralsnakes also have small fangs (only a few millimeters in length) and a narrow buccal opening of about 30°, which makes it difficult for them to penetrate thick clothing, cowhide gloves, or boots. Rather than attacking, they usually adopt deterrent behaviors, such as dorsoventral body compression and tail coiling while concealing the head. As a result, bites typically occur only when the snakes are mishandled or exposed to high levels of stress.

## 4. Recognition



*Micrurus multiscutatus* is easily distinguishably from its congeners by its monadal bicolor pattern of 59-68 black body rings plus 3-4 black rings on the tail, alternate with red-orange rings often black-spotted; black rings slightly longer than red-orange rings; black head with a broad red frontoparietal band often clearest than red-orange rings; [4,5].

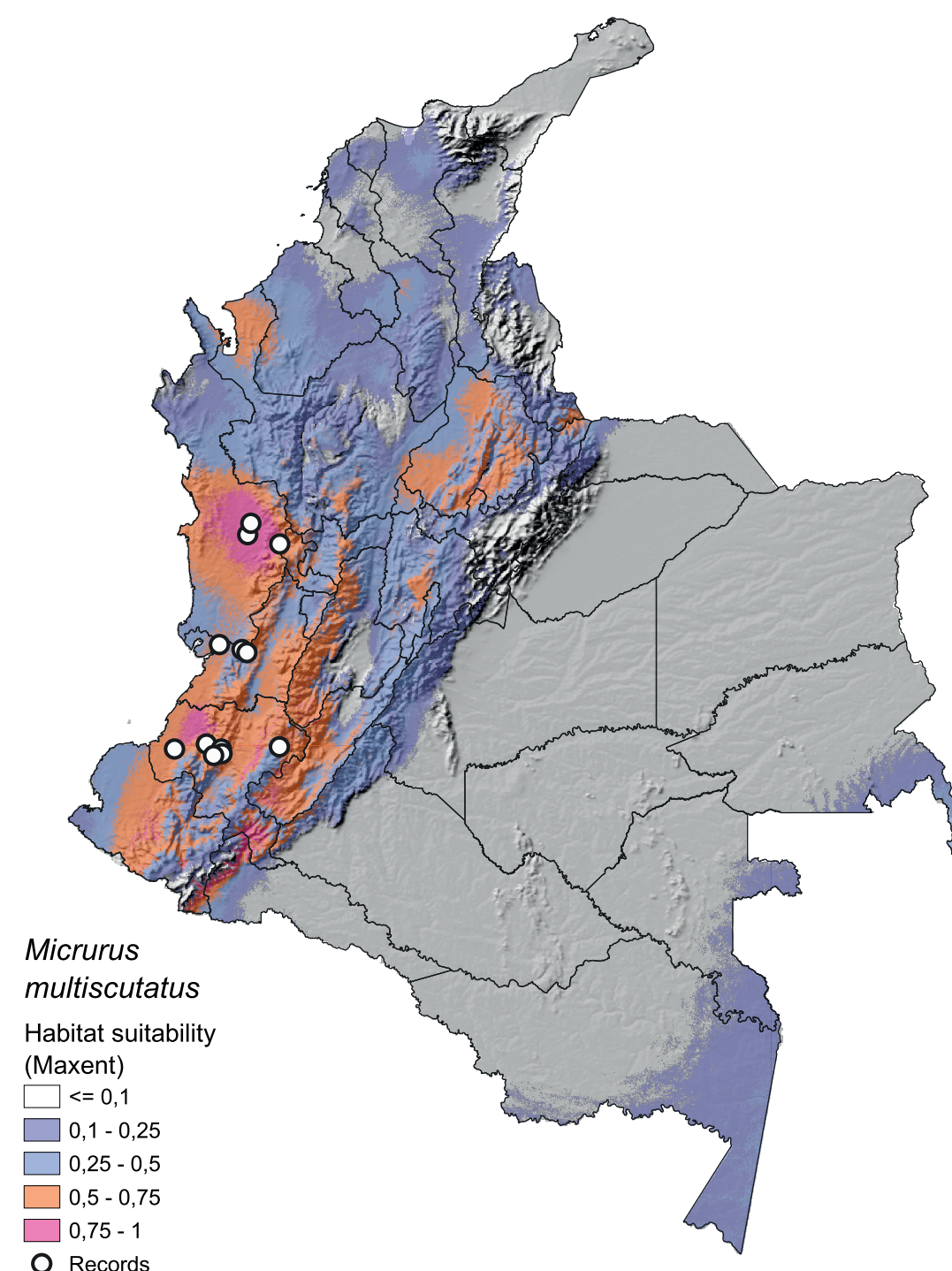
Three bicolored coral snakes are or may be sympatric with *M. multiscutatus*: *M. mipartitus* and *M. spurrelli*. *Micrurus mipartitus* can be distinguished by having white or yellow body rings (versus red-orange rings in *M. multiscutatus*), and different body/tail coloration patterns (black-white/yellow and black-red rings); and *M. spurrelli* also has a distinctive white prefrontal band [4,5].

The v-shaped condition of the posterior margin of the frontoparietal band ("bar") referred in the original description [6], it is a variable condition in the species since most individuals have a straight margin (pers. obs.).

## 5. Distribution

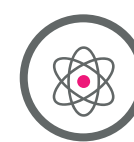


*Micrurus multiscutatus* is distributed along the western slopes of Cordillera Occidental in Colombia to Northwestern Ecuador, at lowlands and up to 1800 m of elevation [7,8]. In Colombia, the species had been only known from some localities from the departments of Cauca and Valle del Cauca [5,9,10,11], but new records are obtained from Risaralda and Chocó (Figure 1), where the lower elevation limit is 32 m [11]. Sampling in southwestern Colombia is necessary to complement the geographic distribution of this species [13]. Although there are no records to date, it is assumed that the species could be present in the department of Nariño. The potential area of the distribution of *M. multiscutatus* in Colombia is 33,790 km<sup>2</sup> (Figure 1).



**Figure 1.** Geographic distribution of *Micrurus multiscutatus* 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



Rare. Few records of *Micrurus multiscutatus* are documented from several of its localities from Colombia [9,10], and Ecuador where it is considered as an extremely rare species [8]. However, it is common at the region where its type locality is assumed [3,11,14]. *Micrurus multiscutatus* inhabits humid premontane and tropical humid forests, occupying habitats from highly conserved and secondary forests to small patches of intervened areas for small-scale agriculture and livestock [8,14].

This semifossorial coralsnake is active at day, mainly during morning hours, but nocturnal and twilight activity is also reported (less frequent) [8,10,14]. It can be observed on leaf litter and soil, crossing small paths, and near or within human infrastructure of the most remote rural areas [8,14]. It is a calm species that moves very slowly, but when it feels threatened, it quickly seeks refuge within microhabitats, especially within cracks in the ground [14].

*Micrurus multiscutatus* is oviparous and, as well as most coralsnakes, it is assumed to be an active forager preying on small snakes or snake-like animals, and it is preyed by snakes, birds and some mammals [4,5]. The unique specific prey reported for this coral snake is the caecilian (limbless amphibian) *Caecilia leucocephala* [8]. There is no relevant information about its reproductive biology.

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



*Micrurus multiscutatus* is relatively common in rural areas of the Pacific versant of municipality of El Tambo, department of Cauca, since most individuals are recorded from Parque Nacional Natural Munchique, particularly around the buffer zones and surrounding the protected areas [3,11]. This coral snake can be found mainly in morning hours, in open areas rounded by big extension of conserved forests such as minor pastures, rural edges, and even into human infrastructures [14], and is frequently found by people of rural communities during the development of its daily activities (pers. obs.).

## 8. Conservation



**Near Threatened.** *Micrurus multiscutatus* has been assessed in this category due to its relatively restricted distribution and the loss of habitat in extent and quality due mainly to the cultivation of illegal crops at the places where it has been reported [13,15]. In addition, artisanal small-scale gold mining has also been increasing rapidly and re-placed recently by illegal medium and large-scale operations in several areas of the Pacific region of Colombia [16,17], where the species is distributed. All these threats could generate a severe fragmentation of its populations that could qualify it the species in the Vulnerable category [15]. Nevertheless, this species is not listed into the resolution 1912 of 2017 of the Colombian Environmental Ministry.

## 9. Scientific name and common names



The genus *Micrurus* is derived from the Greek “*mikros*” and “*oura*”, meaning “small” and “tail” respectively, making reference to the short tail characteristic of coral snakes, whereas the specific epithet *multiscutatus* is derived from the Latin “*multi*” and “*scutum*”, meaning “many” and “scale” respectively, in reference to the numerous ventral scales of this species [4,5]. The common name by which the species has been widely known is “Cauca coralsnake” (Coral caucana, Spanish), and it is related to the department of Cauca, Colombia, where is the type locality [4,5,6]. In Pacific portion of the municipality of El Tambo, Cauca, where the species is relatively common, *Micrurus multiscutatus* is called by rural inhabitants as “coral” or “red coral”, the latter used to differentiate this species from other species of coralsnakes and their mimics present in this region (pers. obs.).

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



★		
TOXICITY AND BIOLOGICAL ACTIVITY	VENOM ACTIVITY PROFILE	GENERAL BIOLOGICAL TRAITS
<b>LD<sub>50</sub> (µg/mice):</b> Unknown	<b>Proteolytic:</b> Unknown	<b>Total Length (cm):</b> ♂ (23.0, juvenile) ♀ (84.2 max)
<b>MCD (µg/mL):</b> Unknown	<b>Neurotoxic:</b> Yes	<b>Weight (g):</b> Unknown
<b>MDD (µg/mice):</b> Unknown	<b>Myotoxic:</b> Unknown	<b>Reproduction:</b> oviparous
<b>MED (µg/mice):</b> Unknown	<b>Hemotoxic:</b> Unknown	<b>Dieta:</b> snakes and snakelike animals
<b>MHD (µg/mice):</b> Unknown	-	<b>Distribución:</b> Pacific Region and potentially in the Magdalena Valley, between 0 and 1500 m elevation

PROTEOME			
<b>PLA<sub>2</sub>:</b> Unknown	<b>SVSP:</b> Unknown	<b>SVMP:</b> Unknown	<b>NGF:</b> Unknown
<b>CRISP:</b> Unknown	<b>CTL:</b> Unknown	<b>DIS:</b> Unknown	<b>KUN:</b> Unknown
<b>BPPs:</b> No	<b>VEFG:</b> Unknown	<b>3FTx:</b> Unknown	
<b>Crotoxin:</b> No	<b>Crotamine:</b> No	<b>LAAO:</b> Unknown	

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

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# 10. References

1. Otero-Patiño, R. Snake bites in Colombia. In *Clinical Toxinology in Australia, Europe, and Americas*; Gopalakrishnakone, P., Vogel, C.-W., Seifert, S.A., Tambourgi, D.V., Eds.; Springer: Dordrecht, Nederland, **2018**; pp. 3–50; doi:10.1007/978-94-017-7438-3\_41
2. Cañas-Dávila, C.A.; Castro-Herrera, F.; Castaño-Valencia, R. *Serpientes venenosas: lecciones aprendidas desde Colombia*; Fundación Valle de Lili: Santiago de Cali, Colombia, **2016**; ISBN 9789585721722.
3. Vera-Pérez, L.E.; Zúñiga-Baos, J.A.; Ayerbe González, S. Reptiles del Parque Nacional Natural Munchique, Colombia. *Revista Novedades Colombianas* **2018**, 13, 97–131.
4. Roze, J.A. *Coral snakes of the Americas: biology, identification, and venoms*; Krieger Publishing Company: Malabar, Florida, USA, **1996**; ISBN 9780894648472.
5. Campbell, J.A.; Lamar, W.W. *The venomous reptiles of the Western Hemisphere (Vol. 1)*; Cornell University Press: Ithaca, New York, USA, **2004**; ISBN 0801441412.
6. Rendahl, H.; Vestergren, G. Notes on Colombian snakes. *Ark. Zool.* **1940**, 33A, 1–16.
7. Reptiles del Ecuador. *Micrurus multiscutatus*. Available online: <https://bioweb.bio/faunaweb/reptiliaweb/FichaEspecie/Micrurus%20multiscutatus> (accessed on 18 January 2022).
8. Vieira, J. Cauca Coralsnake (*Micrurus multiscutatus*). In *Reptiles of Ecuador: Life in the middle of the world*, Arteaga, A., Bustamante, L., Vieira, J., Guayasamin, J.M., Eds.; Tropical Herping: Quito, Ecuador, **2021**, doi:10.47051/NRVR4173
9. Castaño-M., O.V.; Cárdenas-A., G.; Hernández-R., E.J.; Castro-H., F. Reptiles en el Chocó Biogeográfico. In *Colombia diversidad biótica IV. El Chocó Biogeográfico / Costa Pacífica*; Rangel Ch., J.O., Ed.; Universidad Nacional de Colombia – Conservación Internacional: Bogotá D.C., Colombia, **2004**; pp. 599 – 631.
10. Cortés Gómez, A.M.; García Calderón, L.M.; Valencia Aguilar, A.; Villaquirán Martínez, D.F.; Cáceres Franco, A.D.P.; Castro Herrera, F. *Guía de los anfibios y reptiles. Área de conservación de la microcuenca Quebrada Pericos*; Corporación Autónoma Regional del Valle del Cauca, CVC, Dirección Técnica Ambiental – Grupo Biodiversidad: Santiago de Cali, Colombia, **2010**; ISBN 9789588332352.
11. Ayerbe González, S.; Arrieta Guevara, F.M.; Chantrè Ortiz, C.A.; Coral Plaza, E.R.; Guerrero Vargas, J.A. *Catálogo de los reptiles presentes en las colecciones de referencia y exhibición del Museo de Historia Natural de la Universidad del Cauca*; Taller Editorial Universidad del Cauca: Popayán, Colombia, **2007**; ISBN 9789584419262.
12. Instituto Nacional de Salud. Antiveneno anticoral polivalente. Available online: <http://www.ins.gov.co> (accessed on 03 December 2021).
13. Yáñez-Muñoz, M.H.; Altamirano B., M.A. Primer registro de una coral de dos colores (Squamata-Ofidia: Elapidae), reportada para el Chocó ecuatoriano. *Boletín Técnico 6, Serie Zoológica* **2006**, 2, 1–6.
14. Vera-Pérez, L.E.; Zúñiga-Baos, J.A. Diversidad de serpientes en tres hábitats con diferente grado de intervención antrópica en el Parque Nacional Natural Munchique, El Tambo, Cauca. Undergraduate thesis, Universidad del Cauca, Popayán, Cauca, Colombia. November 29, **2013**.
15. The IUCN Red List of Threatened Species. *Micrurus multiscutatus*. Available online: <https://www.iucnredlist.org/species/174106/44947559> (accessed on 27 March 2022).
16. Macuacé-Otero, R.A.; Cortés-Landázury, R. El Cauca, la mesoeconomía del oro y la retroactividad de la dependencia: anotaciones sobre coyuntura y desequilibrio territorial. *Civilizar* **2013**, 13(25), 103–120, doi: <http://dx.doi.org/10.22518/16578953.131>
17. Torres-Gutiérrez, J.I.; Pinzón-Salcedo, M.; Esquivia-Zapata, M.; Parra-Pizarro, A.; Espitia-Jiménez, E.H. *La explotación ilícita de recursos minerales en Colombia - Casos Valle del Cauca (Río Dagua) – Chocó (Río San Juan). Efectos sociales y ambientales*; Contraloría General de la República: Bogotá, Colombia, **2015**.