

Recent confirmed records of *Galictis vittata* in the department of Sucre, Caribbean region of Colombia

Registros confirmados recientes de *Galictis vittata* en el departamento de Sucre, región Caribe de Colombia

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Galictis vittata is a small carnivore distributed in all the natural regions of Colombia, but it is considered as a “demographic rarity” due to its low density throughout its range in the national territory. This note documents new records with some ecological data and compiles the existing evidence about the local distribution of *G. vittata* in the department of Sucre, Colombian Caribbean. The new records are the product of fieldwork aiming at evaluating mammal diversity in the region, among other ecological aspects, by applying camera-trapping and interviews. In addition, other confirmed records of the species in the department were compiled based on the available information in three online data portals. The new records of *G. vittata* presented include a camera-trap record in a disturbed area of tropical dry forest and one related to an event of attack by domestic dogs. The local distribution of the species is extended to the sub-regions of Golfo de Morrosquillo and San Jorge, based on that three preserved specimens confirm its presence in the Montes de María sub-region. This is among the first data compilation of *G. vittata* focused specifically to the department of Sucre, also confirming its current presence in disturbed zones of tropical dry forest. The new records contribute evidence to previous statements about the potential ecological tolerance of the species to landscape modifications and provide novel information on possible threats and habitat use, specially about the potential importance of some elements in fragmented landscapes.

Key words: Distribution; Greater Grison; habitat use; northern Colombia; threats.

Galictis vittata es un pequeño carnívoro distribuido en todas las regiones naturales de Colombia, pero es considerado como una “rareza demográfica” debido a su baja densidad en toda su área de distribución en el territorio nacional. Esta nota documenta nuevos registros con algunos datos ecológicos y recopila la evidencia existente sobre la distribución local de *G. vittata* en el departamento de Sucre, Caribe colombiano. Los nuevos registros son producto de un trabajo de campo con el objetivo de evaluar la diversidad de mamíferos en la región, entre otros aspectos ecológicos, mediante la aplicación de fototrampeo y entrevistas. Además, se recopilaron otros registros confirmados de la especie en el departamento con base en la información disponible en tres portales de datos en línea. Los nuevos registros de *G. vittata* presentados incluyen un registro de cámara trampa en un área perturbada de bosque seco tropical y uno relacionado con un evento de ataque por perros domésticos. La distribución local de la especie se extiende a las subregiones de Golfo de Morrosquillo y San Jorge, con base en que tres ejemplares preservados confirman su presencia en la subregión de Montes de María. Esta es la primera compilación de datos de *G. vittata* enfocada específicamente al departamento de Sucre, confirmando también su presencia actual en zonas perturbadas de bosque seco tropical. Los nuevos registros aportan evidencia a declaraciones anteriores sobre la potencial tolerancia ecológica de la especie a las modificaciones del paisaje y brindan información novedosa sobre posibles amenazas y uso del hábitat, especialmente sobre la importancia potencial de algunos elementos en paisajes fragmentados.

Palabras clave: Amenazas; distribución; hurón mayor; norte de Colombia; uso de hábitat.

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The Greater Grison, *Galictis vittata* (Schreber, 1776), is a small carnivore of the Mustelidae family with a widespread distribution from northeastern México to northern Argentina (Cuarón *et al.* 2016; Contreras-Díaz *et al.* 2020). This species has shown a low density throughout its known distribution range, with low detection in previous studies (Escobar-Lasso and Guzmán-Hernández 2014). It is considered one of the least known mustelids in America, with

many knowledge gaps regarding its biology (González-Maya *et al.* 2011; Bornholdt *et al.* 2013). The species faces serious threats derived from deforestation and habitat destruction, illegal hunting for trade (pet) and persecution as retaliation for poultry predation (González-Maya *et al.* 2019). However, it is categorized as Least Concern according to the IUCN Red List of Threatened Species (Cuarón *et al.* 2016).

In Colombia, *G. vittata* presents a wide distribution and it is confirmed for all the natural regions of the country, including the departments of Antioquia, Arauca, Atlántico, Bolívar, Caldas, Caquetá, Casanare, Cauca, Cesar, Chocó, Córdoba, Cundinamarca, La Guajira, Magdalena, Meta, Nariño, Santander, Sucre, Tolima and Vichada (Ferrer-Pérez *et al.* 2009; Muñoz-S. and Hoyos-R. 2012; González-Maya *et al.* 2013a; Solari *et al.* 2013; Cañón and Trujillo 2014; Díaz-Pulido *et al.* 2014; Escobar-Lasso and Gil-Fernández 2014; Escobar-Lasso and Guzmán-Hernández 2014; Race-ro-Casarrubia and González-Maya 2014; Chacón-Pacheco *et al.* 2015; González-Maya *et al.* 2015; Racero-Casarrubia *et al.* 2015; Castaño-Uribe *et al.* 2016; Jiménez-Alvarado *et al.* 2016; Muñoz-S. *et al.* 2016; Meza-Joya *et al.* 2018; Echarría-Rentería *et al.* 2018; Stevenson 2018; González-Maya *et al.* 2019). Nevertheless, most aspects of its ecology and population status remain unknown or with scarce and imprecise information mainly due to the lack of research (Jiménez-Alvarado *et al.* 2016; González-Maya *et al.* 2019). This hampers a proper conservation status assessment at local, regional and even national levels, so it is recognized among the top priorities for small carnivore research in the country (González-Maya *et al.* 2011).

Due to the large distribution range, it is assumed that *G. vittata* is potentially present in all the continental territory of the Colombian Caribbean (Jiménez-Alvarado *et al.* 2016), but previous studies have indicated it is one of the species with the lowest detection frequencies in the region (Díaz-Pulido *et al.* 2014). In addition, it is considered as a prioritized species given the scarce available information about its distribution, biology, uses and threats at regional level (Jiménez-Alvarado *et al.* 2016; Mesa-S. *et al.* 2016; González-Maya *et al.* 2019).

Considering that the Caribbean region of Colombia is one of the least studied regions for all small carnivores, and that most natural ecosystems were heavily transformed for the establishment of agricultural systems and livestock production (González-Maya *et al.* 2011; González-Maya *et al.* 2013b), here we present new records with some ecological data and compile the existing evidence about the local distribution of *G. vittata* in the department of Sucre.

Study area. The department of Sucre is located in the coastal plains of the Caribbean region of Colombia, north to the Central and Western Andean ranges (Durán and Pérez 2015), and it is circumscribed within the Alternohygric Tropical Zonobiome (Hernández-Camacho and Sánchez 1992). This department is politically divided in 26 municipalities distributed in five natural sub-regions (Golfo de Morrosquillo, Montes de María, Sabanas, San Jorge, and La Mojana), including a wide range of ecosystems, from tropical dry forests and natural savannas to wetlands and mangroves (De La Ossa-Lacayo 2017).

The new records of *G. vittata* were obtained in localities belonging to the sub-regions of Golfo de Morrosquillo and San Jorge. The first locality corresponds to the Buenos Aires extensive livestock system (8°52' N, 75°15' W;

77 m), located in the La Unión municipality, San Jorge sub-region. The other locality corresponds to El Tormento farm (9°25' N, 75°27' W; 46.5 m), located in the La Floresta village, Tolúviejo municipality, Golfo de Morrosquillo sub-region. Both localities are characterized by the presence of small and dispersed fragments of secondary tropical dry forest. Anthropogenic transformation is very conspicuous in these areas, where the original forest cover has been extensively transformed mostly into pastures, particularly for agricultural and livestock production.

Methodology. One of the new records were obtained using an array of six camera-traps (Bushnell Trophy Cam®) installed in the Buenos Aires extensive livestock system, as part of an exploratory sampling for the "Evaluación de la diversidad de mamíferos silvestres en la región del Caribe colombiano" project. The cameras were configured to capture videos with 30 seconds intervals. These were active throughout 72 consecutive hours during three days on April, 2018. The other new record was obtained by the report of an attack on a wild animal by dogs kept at the El Tormento farm on February, 2019. Complete information of the case was documented because the informant initially presented a photograph of the dead animal which generated interest on the species in question.

Additionally, we complemented the database based on a systematic search and compilation of other confirmed records in the department (*i.e.*, preserved specimens and machine or human observations with photographic support), obtained from online data portals such as the Global Biodiversity Information Facility (GBIF, <https://www.gbif.org/>), the Sistema de Información sobre Biodiversidad de Colombia (SiB Colombia, <https://sibcolombia.net/>) and iNaturalist (<https://www.inaturalist.org/>).

Two new records for *G. vittata* are presented for the department of Sucre (Figure 1). The first of them was obtained on April 19, 2018 at 10:00 h and is based on a video of a solitary adult foraging in the Buenos Aires extensive livestock system (Figure 2a). The second was obtained on February 24, 2019 at 10:30 h and corresponds to a solitary individual that stayed overnight in the El Tormento farm inside a plant of Corozo (*Bactris guineensis*, Arecaceae). This individual was killed by dogs due to blunt injuries, according to the comments from the farm keepers. The specimen was not collected because the carcass was disposed in an area of the farm where it was apparently consumed by scavengers and could not be found after conducting an exhaustive search in the area. Therefore, the record was only documented through the photograph presented to the authors (Figure 2b).

One recent record (November 1, 2017) was obtained from citizen science available through the iNaturalist portal, which came from human observation with photographic evidence of three individuals observed in a tropical dry forest fragment on the Reserva Natural de la Sociedad Civil (RNSC) Sanguaré, located in the San Onofre municipality, Golfo de Morrosquillo sub-region. Additionally,

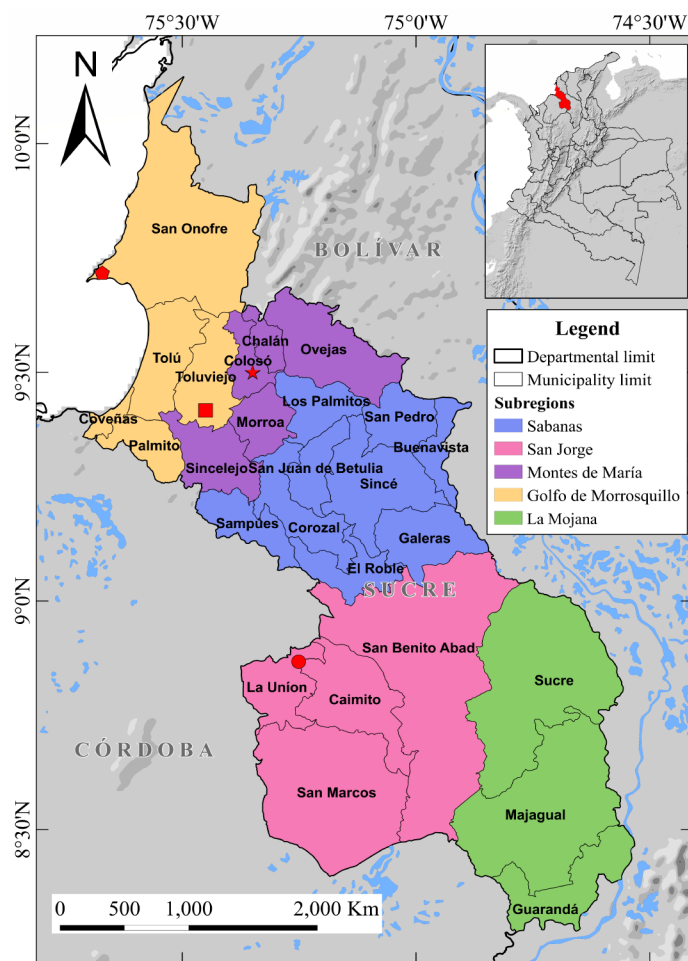


Figure 1. Confirmed records until mid-2020 of *Galictis vittata* in the department of Sucre, Colombian Caribbean region. Star: preserved specimens (historical records) from the Colosó municipality, Montes de María sub-region. Pentagon: photographic record in the Reserva Natural de la Sociedad Civil (RNSC) Sanguaré, San Onofre municipality, Golfo de Morrosquillo sub-region. Circle: camera-trap record in the Buenos Aires extensive livestock system, La Unión municipality, San Jorge sub-region. Square: record of an individual killed by domestic dogs in the El Tormento farm, La Floresta village, Toluviejo municipality, Golfo de Morrosquillo sub-region.

there are three historical records in GBIF and SiB Colombia, which correspond to specimen collections made by Philip Hershkovitz and Jorge 'El Mono' Hernández-Camacho during the previous century (only one specific date is provided in 1949) in the Colosó municipality, Montes de María sub-region (Table 1).

Table 1. Confirmed records until mid-2020 of *Galictis vittata* in the department of Sucre, Colombian Caribbean region. Recent records are presented with asterisk (*). FMNH-M = Mammal Collection of the Field Museum of Natural History; IAvH-M = Mammal Collection of the Instituto de Investigación de Recursos Biológicos Alexander von Humboldt.

Type of record	Date	Locality	Latitude	Longitude	Elevation (m)	Voucher specimen
Preserved specimen	01/06/1949	Las Campanas, Colosó, Montes de María	9.5	-75.35	175	FMNH-M 68906
Preserved specimen	n/a	?, Colosó, Montes de María		n/a	n/a	IAvH-M 5459
Preserved specimen	n/a	?, Colosó, Montes de María		n/a	n/a	IAvH-M 5547
Human observation (photographic evidence)*	01/11/2017	RNSC Sanguaré, San Onofre, Golfo de Morrosquillo	9.71	-75.67	n/a	iNaturalist 8876784
Machine observation (camera-trap)*	19/04/2018 (this note)	Buenos Aires extensive livestock system, La Unión, San Jorge	8.86	-75.25	77	n/a
Human observation (photographic evidence)*	24/02/2019 (this note)	El Tormento farm, La Floresta village, Toluviejo, Golfo de Morrosquillo	9.41	-75.45	46,5	n/a

This note constitutes the first specific data compilations for *G. vittata* in the department of Sucre, indicating that there are only six confirmed records of the species until mid-2020 in this portion of the Colombian Caribbean region. The three recent records extend its local occurrence towards the sub-regions of Golfo de Morrosquillo and San Jorge, because the other three historical records already indicated its presence for the Montes de María sub-region. Thus, its distribution is extended 42.11 km towards the northwest and 71.63 km towards the southwest of the department. Large local data gaps on this small carnivore can be attributed in part to the problems related with field research in the department, especially given the long history of social conflict in many areas, and particularly for the Montes de María sub-region (Aguilera-Díaz 2013).

Our records provide evidence about the presence of *G. vittata* in disturbed areas and its potential ecological tolerance to landscape modifications (González-Maya et al. 2019), as supported by previous records in urban areas also in northern Colombia (Chacón-Pacheco et al. 2015) and in secondary vegetation adjacent to livestock grasslands in México (De La Torre et al. 2009). Also, our records provide novel observations on the species' habitat use by recording it on extensive livestock systems with a high degree of transformation (Figure 2c), probably exploring all elements of the landscape. In fact, the species had been found strongly associated with natural water bodies and forests with dense vegetation cover in the Colombian Caribbean region (Jiménez-Alvarado et al. 2016).

The presence of *G. vittata* on *B. guineensis* represents new information, highlighting the potential importance of this element as refuge for the species in fragmented landscapes (Figure 2d). Indeed, *B. guineensis* is a very common and valued plant species for consumption by most Caribbean Colombian communities (Bernal and Galeano 2013), which makes it widely common and widespread across both natural and disturbed areas in the region, especially in the department of Sucre. On the other hand, attacks by domestic dogs have been previously considered as a possible threat for this mustelid, but its impact requires further study due to the frequent number of documented cases (De La Torre et al. 2009; Chacón-Pacheco et al. 2015; Meza-Joya et al. 2018).

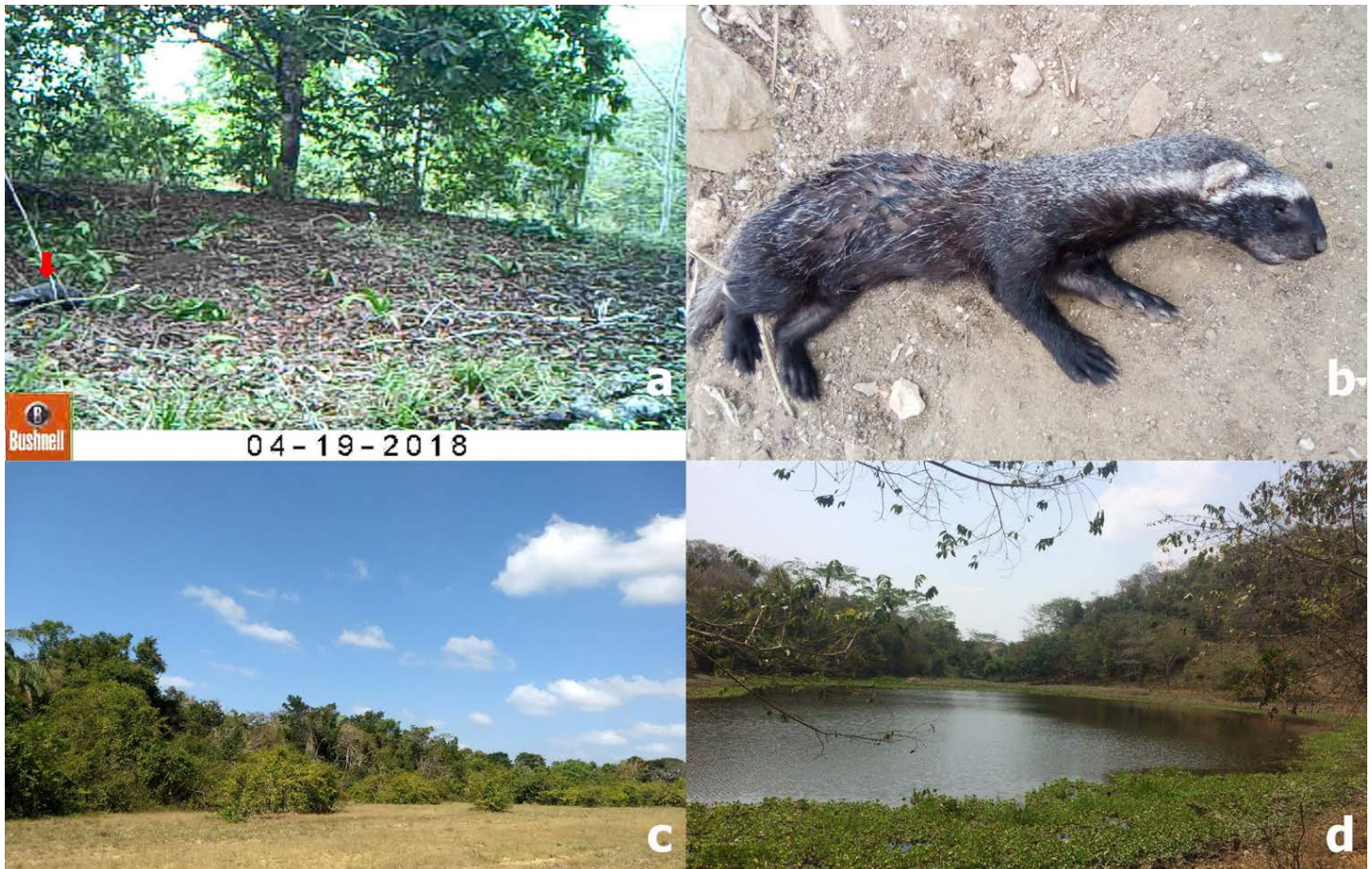


Figure 2. New confirmed records and habitat of *Galictis vittata* in the department of Sucre, Colombian Caribbean region. a) Individual recorded using camera-trap in the Buenos Aires extensive livestock system. b) Individual killed by domestic dogs in the El Tormento farm. c) Forest fragment in the La Unión municipality, San Jorge sub-region. d) Lagoon and surrounding forest fragment at the La Floresta village, Tolúvejo municipality, Golfo de Morrosquillo sub-region.

The evidence presented herein is a good reflection on how research and data systematization efforts can provide valuable information for poorly known species, also increasing the general knowledge of the biodiversity in areas where social conditions have prevented proper assessment, management and conservation. Systematic efforts seem warranted to further understand many aspects for many species in a region urgently needing adequate landscape and conservation planning. Specifically, the study of the response of *G. vittata* to habitat transformation and other associated threats in new environments would not only increase the knowledge of the species but would provide the necessary information for a proper assessment of its conservation status at multiple spatial scales.

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