

## Confirmation of the current occurrence of *Nasua narica* (Procyonidae) in the Caribbean region of Colombia

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### Abstract

The White-nosed Coati, *Nasua narica* is a small carnivore distributed from the United States to Ecuador, and whose occurrence in Colombia had only been confirmed from the biogeographic Chocó. Although it was previously erroneously considered widespread in the country, a recent revision identified inconsistencies with some supporting records there. Here we present a new distribution record for the species, which confirms previously alleged information about the presence of this procyonid in the Department of Magdalena, also confirming its current occurrence for the Caribbean region, and solving a long-due geographical distribution uncertainty in the country.

**Keywords**

Distribution, geographic range, habitat use, Magdalena, northern Colombia, White-nosed Coati

The white-nosed Coati, *Nasua narica* (Linnaeus, 1766), is a small carnivore of the family Procyonidae whose known geographic distribution ranges from the southern United States to the Andes in Ecuador (Espinoza-García et al. 2014; Silva-Caballero et al. 2014; Morales-Martínez et al. 2015). For Colombia, *N. narica* is one of the least known small carnivores, with scarce data on its distribution and almost absent information on its natural history and ecology (González-Maya et al. 2011a, 2015). In fact, its distribution is considered a research priority for the group in Colombia (González-Maya et al. 2011a; Andrade-Ponce et al. 2016), and not too long ago its range was significantly modified and reduced after a thorough revision of the available records for the country (González-Maya et al. 2011b).

In Colombia, *N. narica* is only known from a few confirmed localities mostly in the Pacific region of the country, west of the Andes, Departments of Antioquia, Chocó, Nariño, and Valle del Cauca (Andrade-Ponce et al. 2016), after many other alleged records and regions (e.g., Cundinamarca, Norte de Santander), especially to the east of the western branch of the Cordillera de los Andes, were considered as unreliable or requiring revision of the supporting vouchers (González-Maya et al. 2015). For the Caribbean region of Colombia, located north of the Andes, Alberico et al. (2000) documented the existence of a specimen assigned to *N. narica* from the Department of Magdalena, which was preserved in the collection of the Instituto de Ciencias Naturales (ICN) of the Universidad Nacional de Colombia (ICN-16360); nevertheless, this specimen is now catalogued as from Cundinamarca (Yacopí municipality) in the Cordillera Oriental, in central Colombia. This record was previously discarded as unreliable (González-Maya et al. 2011b) due to inconsistencies regarding its true locality of origin, the need for a taxonomic revision and the lack of clarity of its collection history (the specimen details changed its locality, and no further details are provided). Independent of its validity, the alleged locality was previously presented as from Magdalena, thus generating confusion, and is now amended to Cundinamarca, which further supports the supposition that no previous records existed for this department. This doubtful record locality, dragged by the general list of mammal species for the country without validation, somehow clouded the actual distribution of the species in the country; especially, it made the distribution strangely expand as a disjunct distribution polygon in northern Colombia (Cuarón et al. 2016), although without clear or confirmed supporting data, as previously mentioned. The distribution included for the IUCN species account thus included a separated polygon adjusted to the political limits of the department of Magdalena, clearly overestimating its range. Although it is understandable why Cuarón et al. (2016) included the Magdalena polygon as part of its range, the assumptions supporting such unusual polygon were rather appropriate. Subsequently, a revision of the Colombian mammal material deposited

at the Zoologische Staatssammlung Muenchen collection (ZSM, Germany), discovered a specimen (ZSM 1959/146) that was imported into Germany by A. Werner (08 July 1959) from Barranquilla, Department of Atlántico, located in the Caribbean region (Ramírez-Chaves 2014). Although it could be assumed that this specimen would potentially support the historical presence of the species in this region of the country, its origin generates doubts. This fact is due to that i) there is no more information about its collection locality and animal sellers had less than verifiable records of provenance, and ii) the only allegation about its provenance comes from one of the most important marine ports in the country, where probably most exported specimens and live animals were shipped overseas for the time.

To confirm the current occurrence of *N. narica* in the Caribbean region of Colombia, we present new records from two fortuitous sightings during tours in an urban sector of the Santa Marta city, department of Magdalena. Specifically, the new records consisted of five individuals of unidentified sexes and ages, photographed on April 17 and 19, 2020, at 10h00, on the lower part of the Manzanares river basin (11°13'55"N, 74°12'29"W; 19 m asl). The Manzanares river basin has approximately 18,472 ha and is located on the northwestern slope of the Sierra Nevada de Santa Marta. The Manzanares river has an extension of 34.22 km and is born in the San Lorenzo ridge at an approximate height of 2000 m asl to empty into Los Cocos beach in Santa Marta Bay, Caribbean Sea (Plata 2015). During the sightings, one of the individuals always maintained a vigilant attitude, while the others sniffed everything they found in the area (Fig. 1A). The location of the record is characterized by anthropic activities, especially reflected on the high levels of pollution due to the accumulation of solid wastes on the riverbank (Fig. 1B). Photographs were obtained as evidence and the taxonomic identification was carried out following Gompper (1995), Guzmán-Lenis (2004) and Morales-Martínez et al. (2015). *Nasua narica* has very clear diagnostic characteristics, such as white coloration of the fur of the snout at the tip and the eye area (Fig. 1A). The species can be confused with its sister species, the South American Coati, *Nasua nasua* (Linnaeus, 1766); nevertheless, *N. nasua* has black or brown facial coloration on the snout adjacent to the rinary (Morales-Martínez et al. 2015). Additionally, we sought the support of two small carnivore specialists to corroborate the identity of the species.

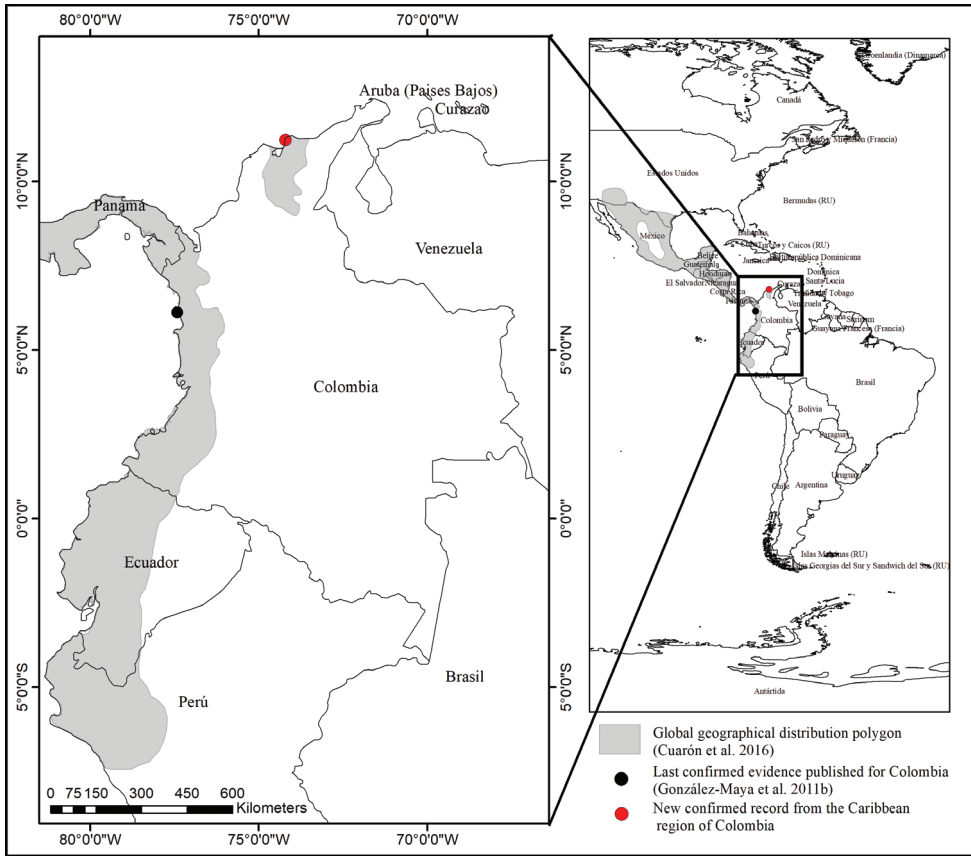
The information related to the occurrence of *N. narica* in the national territory is scarce and limited (González-Maya et al. 2011b), with few specimens in biological collections and most of the records derived from “human observations”; most of the localities for specimens and human observations have questionable credibility (see González-Maya et al. 2011b). More recently, previous works confirmed national records for this procyonid coming from the departments of Antioquia, Chocó, Nariño, and Valle del Cauca (Morales-Martínez et al. 2015; Andrade-Ponce et al. 2016), in the Chocó-Darién and Cauca provinces, all west of the Andes, in the Pacific slopes of the country. Our new records not only confirm the presence of the species for the Department of Magdalena, and overall, to the Caribbean region, but expand its range outside the Biogeographic Chocó (Chocó-Darién moist forests ecoregion; Olson et al. 2001) into the Guajira-Barranquilla xeric scrub ecoregion (Olson et



**Figure 1.** Confirmation of the current occurrence of *Nasua narica* in the urban area of Santa Marta city, Magdalena department, Caribbean region of Colombia **A.** Recent record (April 2020) of a group on the bank of the lower part of the Manzanares river basin **B.** Current situation of the record's locality.

al. 2001). In addition, most importantly, the records finally solve a longstanding geographical distribution riddle about the uncertain distribution of *N. narica* in Colombia. From the latest confirmed records (González-Maya et al. 2011b), the distribution range of the species for Colombia is extended approximately 667.2 km to the North (Fig. 2); considering the Barranquilla record (ZSM 1959/146), although no information exists for the collection details and is most likely a locality error, still our records are located at least 70 km north. However, we emphasize the lack of reliability of the geographic information associated for this specific record. In fact, this report constitutes the northernmost record of the species in South America. This readjustment validates the geographic distribution of the species in Colombia (Cuarón et al. 2016), although with a supporting specific locality which would help better inferences about its extent of occurrence, also validating the distribution in the department of Magdalena as previously stated (Alberico et al. 2000).

Additionally, our record provides evidence about the presence of *N. narica* in highly disturbed and anthropic areas in Colombia, probably exploring all elements of the landscape, and given its potential ecological tolerance to landscape modifications. This assumption is consistent with findings in Costa Rica, where the species appears to be highly adaptable to habitat modification and fragmentation (González-Maya et al. 2009). Nonetheless, interestingly, our records and those reported by González-Maya et al. (2011b) indicate that the species is usually associated with rivers in



**Figure 2.** Location of the most recent confirmed records of *Nasua narica* in Colombia.

Colombia. Furthermore, as adult males are generally solitary, it is more likely that the group reported here corresponds to a mother with her young, which usually forms groups of ranging from 2 up to 25 individuals depending on the locality and the season (Gompper 1995, 1997).

This confirmation also expands the number of confirmed species small carnivores for the Caribbean region of Colombia to 10 belonging to the families Mephitidae, Mustelidae and Procyonidae. These are *Conepatus semistriatus* (Boddaert, 1785); *Eira barbara* Linnaeus, 1758; *Galictis vittata* Schreber, 1776; *Lontra longicaudis* (Olfers, 1818); *Mustela frenata* Lichtenstein, 1831; *Bassaricyon medius* Thomas, 1909; *Nasua narica* (Linnaeus, 1766); *Potos flavus* (Schreber, 1774); *Procyon cancrivorus* Cuvier, 1798; and *Procyon lotor* Linnaeus, 1758. Although this number corresponds to 62.5% of the country’s small carnivores (Ramírez-Cháves et al. 2020), the Caribbean region of Colombia still remains as one of the least studied regions for this group in the country (González-Maya et al. 2011a; González-Maya et al. 2013).

Finally, it is remarkable the presence confirmation, and more likely considerable range extension for the species, in a completely different habitat and ecoregion, in a

very transformed locality, and with no other records between the known distribution and this new locality. Despite multiple efforts for documenting mammals between these two disjunct distributions (*e.g.*: Galván-Guevara 2010; Díaz-Pulido et al. 2014; Racero-Casarrubia and González-Maya 2014; Racero-Casarrubia and Reyes-Cogollo 2014; Jiménez-Alvarado et al. 2015; Pineda-Guerrero et al. 2015; Tinoco-Sotomayor et al. 2016; García-T. et al. 2020; Salcedo-Rivera et al. 2020), no other, presumed, or suspected, records exist for the species. Considering the large-scale transformation processes that have historically, and currently, affect the Caribbean region (González-M. et al. 2018; Correa-Ayram et al. 2020), assessing the extent of the distribution of the species and its response to human intervention seems warranted given no other information exists for the species, especially given the few records known in the country. Systematic research efforts are necessary for filling many information gaps about small carnivores and wildlife in general, and particularly for this species, which will allow defining real conservation actions; especially in a region urgently requiring adequate landscape and conservation planning efforts.

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