










## Sylvester not only captured Tweety: Records of wildlife hunting by *Felis catus* (Carnivora: Felidae) in the Colombian Caribbean

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### Resumen

El Gato doméstico es una especie invasora que ocasiona problemas para la vida silvestre en todo el mundo, pero el conocimiento de sus efectos en la región neotropical es escaso. En este estudio realizamos una aproximación sobre la mortalidad de fauna silvestre ocasionada por este felino en áreas urbanas y rurales de la región Caribe de Colombia. Encontramos 107 registros de cacería de 31 especies entre anfibios, reptiles, aves y mamíferos, de las cuales se destaca a *Cnemidophorus* sp. por tener el mayor número de casos (31). Adicionalmente, encontramos un registro de caza de una especie migratoria, *Porzana carolina*, y dos subespecies endémicas del Caribe colombiano (*Erythrolamprus melanotus lamari* y *Ameiva bifrontata divisa*). Los resultados de este trabajo son los primeros documentados para el país, advirtiendo del impacto potencial que puede estar generando el gato doméstico sobre la biodiversidad colombiana.

**Palabras clave:** cacería, especie invasora, especie migratoria, Gato doméstico, Neotrópico, vertebrados

### Abstract

The Domestic cat is an invasive species causing problems for wildlife throughout the world, but knowledge of its effects in the Neotropical region is scarce. In this study, we made an approximation of cases of mortality of wildlife caused by this feline in urban and rural areas of the Caribbean region of Colombia. We found 107 hunting records of 31 species among amphibians, reptiles, birds and mammals, of which highlights *Cnemidophorus* sp. for having the highest number of cases (31). Additionally, we found a hunting record of a migratory species, *Porzana carolina*, and two

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subspecies of endemic reptiles from the Colombian Caribbean region, *Erythrolamprus melanotus lamari* and *Ameiva bifrontata divisa*. The results of this work are the first documented for the country, warning of the potential impact that the domestic cat may be generating on Colombian biodiversity.

**Key words:** Domestic cat, hunting, invasive species, migratory species, Neotropics, vertebrates

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The Domestic cat (*Felis catus* Schreber, 1775) boasts a wide distribution because of its close association and long historical relationship with man, who has transported and introduced it in many parts of the world for its popularly considered as a companion animal and a generalist pest controller (Medina et al. 2008; Medina and Nogales 2009; Kutt 2012; Rocha 2015). However, it was included in the list of the 100 of the world's worst invasive alien species (Lowe et al. 2000), and there are information gaps on its general distribution patterns and its potential invasion in many areas is unknown (Rosa et al. 2020).

Even though domestic cats usually eat diets provided by humans, they are instinctive hunters with opportunistic predatory behaviors, and several authors affirm that they cause relevant conservation problems because its relationship with a significant percentage of the total mortality of wildlife in diverse areas of the world (Beckerman et al. 2007; Balogh et al. 2011; Tschanz et al. 2011; Lessa and Bergallo 2012; Kutt 2012; Ferreira et al. 2014; Mori et al. 2019; Legge et al. 2020; Seymour et al. 2020; Trouwborst et al. 2020); in fact, native species can be affected with detrimental consequences including extinction (Gillies and Clout 2003; Kays and DeWan 2004; Millan 2010; Bonnaud et al. 2011; Kutt 2012; Doherty et al. 2016).

In Colombia, *F. catus* is widely distributed at the continental level and on islands, with feral populations near human settlements (Ramírez-Chaves et al. 2011); nevertheless, there are no scientific publications on the hunting of wildlife species in the country. In this contribution, we document an approximation of the wildlife mortality by domestic cats in the Colombian Caribbean region.

The results come from a non-systematic study based on *in situ* observations of discrete cases of wildlife hunting, which were registered between 2018 and 2020 in urban and rural areas of Córdoba, Magdalena, and Sucre departments. Urban localities are characterized by presenting spaces dominated by populated centers with a dominance of buildings, recreational parks, and small adjacent green areas. Rural localities are associated with crops (corn, cotton, among others) and extensive livestock systems, with small patches of the surrounding vegetation. All domestic cats involved in wildlife hunting have owners and live in their houses; however, they do not have restrictions to move around in the environment, especially in rural areas. The taxonomic identification of the hunted species was achieved *in situ* through the researcher's previous experience. We follow the taxonomic treatment of AmphibiaWeb (2021), Handbook of the Birds of the World and BirdLife International (2020), Mammal Diversity Database (2021), and Uetz et al. (2021).

We present 107 hunting records (77 in urban areas and 30 in rural areas), belonging to 31 species distributed in 24 families, 12 orders, and the classes Amphibia, Sauropsida, and Mammalia (Table 1). Sauropsida was the class with the highest number of hunted species, with 11 reptiles and nine birds, and *Cnemidophorus* sp. was the species with the highest number of records (31 cases). We record a migratory bird native to North America, (*Porzana*

Carolina), and two endemic subspecies to the Colombian Caribbean region, *Erythrolamprus melanotus lamari*, and *Ameiva bifrontata divisa*.

Our results become the first published approach to the problem of wildlife hunting by the Domestic cat in Colombia, we suggest that the species should be considered as a not-natural hunter with a great capacity and a potential impact in the Caribbean region because of the number of affected species and their taxonomic spectrum. Birds and reptiles are the most impacted taxa, as has been described in other works (e.g. Gillies and Clout 2003; Medina and Nogales 2009; Tschanz et al. 2011; Galán 2013). However, the low number of mammals recorded may be underestimated taking into account the preference of domestic cats for rodents, rabbits, marsupials, and bats (Gillies and Clout 2003; Woods et al. 2003; Dexter et al. 2004; Dickman 2009; Medina and Nogales 2009; Ancillotto et al. 2013; Ferreira et al. 2014; Dickman and Newsome 2015; Rocha 2015).

**Table 1.** Records of wildlife hunting by the Domestic cat (*Felis catus*) in the Colombian Caribbean. Endemic subspecies are presented with an asterisk (\*) and the migratory species are presented with a double asterisk (\*\*). Abbreviations corresponds to departments of Córdoba (Cor), Magdalena (Mag) and Sucre (Suc).

Class	Order	Family	Taxon	Environment		Departament
				Urban	Rural	
Amphibia	Anura	Bufonidae	<i>Rhinella humboldti</i>	3		Mag
		Leptodactylidae	<i>Pleurodema brachyops</i>	1		Mag
Sauropsida	Squamata	Anomalepididae	<i>Liotyphlops albirostris</i>	1		Mag
		Colubridae	<i>Erythrolamprus melanotus lamari*</i>		2	Suc
			<i>Mastigodryas pleei</i>	2		Mag
		Iguanidae	<i>Iguana iguana</i>	1		Mag
		Scincidae	<i>Mabuya</i> sp		1	Suc
		Sphaerodactylidae	<i>Gonatodes albogularis fuscus</i>	3		Suc, Cór
			<i>Ameiva bifrontata divisa*</i>	4		Mag
		Teiidae	<i>Ameiva praesignis</i>	3		Mag
			<i>Cnemidophorus gagei</i>	10		Mag, Cór
			<i>Cnemidophorus</i> sp	21	10	Suc
			Gekkonidae	<i>Hemidactylus</i> sp	1	
Mammalia	Apodiformes	Trochilidae	<i>Lepidopyga goudoti</i>	1		Córd
	Cuculiformes	Cuculidae	<i>Crotophaga</i> sp		2	Suc
	Columbiformes	Columbidae	<i>Columbina talcopati</i>	9	7	Mag, Suc
	Gruiformes	Rallidae	<i>Porzana carolina**</i>	1		Suc
	Passeriformes	Thraupidae	<i>Tangara episcopus</i>	2		Suc
		Troglodytidae	<i>Campylorhynchus griseus</i>	4		Suc, Cór
		Tyrannidae	<i>Pitangus sulphuratus</i>	1		Suc
			<i>Tyrannus melancholicus</i>	1		Cór
	Psittaciformes	Psittacidae	<i>Eupsittula pertinax</i>	6		Suc
	Mammalia	Didelphimorphia	Didelphidae	<i>Didelphis marsupialis</i>	1	
			<i>Caluromys lanatus</i>		1	Suc
Chiroptera		Phyllostomidae	<i>Artibeus lituratus</i>	1		Suc
		Molossidae	<i>Molossus molossus</i>		1	Cór
Rodentia		Sciuridae	<i>Sciurus granatensis</i>		1	Suc
		Dasyproctidae	<i>Dasyprocta punctata</i>		1	Suc
		Cricetidae	<i>Oryzomys</i> sp		1	Suc
		<i>Zygodontomys brevicauda</i>		1	Cór	
	Lagomorpha	Leporidae	<i>Sylvilagus</i> sp		2	Suc
Total	12	24	31	77	30	3

Although this research presents the affectation of a considerable number of species and individuals at the regional level, this is a partial estimation of the hunting rate and the

taxonomic spectrum of species affected in urban and rural areas due to the lack of systematic sampling, and the nature of the data do not allow to compare the results between environments.

Contrary to the ample evidence of wild animals impacted by *F. catus* in many parts of the world, its current impact on populations remains uncertain (Trouwborst et al. 2020). Some researchers suggest that, for a more complete understanding of the situation of domestic cats impact on wildlife, it is necessary to know detailed information and aspects related to the availability of potentially affected species, the hunting habits in different occupied landscapes, the spatio-temporal hunting patterns, and the hunting taxonomic spectra from both house and feral individuals (Medina et al. 2008; Tschanz et al. 2011; Loss et al. 2013). Similarly, beyond estimating the mortality rate, it is important to identify the nature of the hunted species (e.g., native or non-native, common or rare, threatened, migratory, endemic, among others) to recognize the implications related to its conservation.

Finally, a systematic investigation should be carried out in Colombia in defined study areas, knowing the home range and the distance measurements between the place of hunt and the home of the cats. To know the hunting rates and the species most affected by hunting, and thus understand the effects on sensitive species such as those with restricted or endemic and migratory ranges. Also, it is important to propose efficient measures and control the negative effects of domestic cats on wildlife.

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