Domestic Cat as an Exotic Predator – Report of Predation of Native and Invasive Species in an Urban Area in Southern Brazil

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Abstract

Domestic cats (*Felis catus*) are listed among the 100 worst invasive species with the most impact on the environment and conservation, threatening a variety of native and even threatened animal species. Data indicate that they are responsible for the extinction of 33 species of birds. The objective of this work is to describe the predation of native and exotic species of fauna by a wildered domestic feline, specifically to bring data from the preyed species and data from the existing bibliographic of the predation by felines in the country. This is an observatory study, where the prey slaughtered and brought by the community cat were cataloged and listed over a period of 30 days in the summer of 2020. The animal brought the prey to the feeding place and dormitory, in front of one of the houses in which it received care. The study site is in the Camobi neighborhood, in the municipality of Santa Maria, state of Rio Grande do Sul, Brazil. Geographical location 29°41'47.9"S 53°44'20.4"W. This is the first report of the predation of two bird species (*Falco sparverius* and *Leptotila verreauxi*) and two Squamatas (*Tupinambis* and *Philodryas olfersii*) in Brazil. The results obtained may contribute to reduce the lack of information regarding the impacts of *Felis catus* and support the need to implement management policies and environmental education, aiming to combat the abandonment of domestic animals and encourage practices such as castration and responsible adoption of animals.

Introduction

With the domestication of felines, about 10,000 years ago, they began to occupy territories where they previously did not exist. At first, they acted as biological pest control in plantations, preying on rats and other unwanted synanthropic animals (De Freitas 2021). In contemporary society the felines have gone from ruralized animals to companion animals, however, there is still a large number of feral, not-domiciled, or semi-domiciled and wild-like cats, as in the case of the cat in this article. Semi-domiciled cats, unlike the feral ones have some degree of human dependence, many of these animals are considered community animals, and do not have a specific tutor but a community that watches over them. In such cases, the felines, when demonstrating their natural behavior, end up preying on animals and acting as exotic predators of the fauna. Domestic cats are responsible for the extinction of some species and the decrease in biodiversity, being recognized worldwide among the 100 worst invasive species that most impact the fauna (De Freitas, 2021). Brazil is the seventeenth country with the greatest biodiversity (Ribeiro and Ribeiro 2020), which makes it necessary to study the real impacts that these cats cause by showing the predated species, so that control and prevention measures can be taken in this country. The objective of this work is to describe the predation of native and exotic species of fauna by a wild domestic feline, specifically to bring data from the preyed species and data from the existing bibliographic of these predations by felines in an urban environment of a city in the south of the country.

Materials and methods

This is an observatory study, where the prey slaughtered and brought by a community cat (*Felis catus*) were catalogued and listed over a period of 30 days in the summer of 2020. The animal brought the prey...
to the feeding place and dormitory, in front of one of the houses in which it received care. The study site is in the Camobi neighborhood, in the municipality of Santa Maria, state of Rio Grande do Sul, Brazil. Geographical location 29°41'47.9"S 53°44'20.4"W.

Results

The predated animals were tabulated, with common and scientific names and their respective order/family, as shown in Table 1. The American Kestrel bird was preyed only once, as well as the Sipo Snake, the Tegu Lizard cub and the White-tipped Dove. The other animals were preyed at least twice by the feline presented in this work.

<table>
<thead>
<tr>
<th>Preyed animal</th>
<th>Common Name</th>
<th>Scientific name</th>
<th>Order/Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Kestrel</td>
<td><em>Falco sparverius</em> (Linnaeus, 1758)</td>
<td></td>
<td>Falconiformes, Falconidae</td>
</tr>
<tr>
<td>Ruddy Ground-dove</td>
<td><em>Columbina talpacoti</em> (Temminck, 1811)</td>
<td></td>
<td>Columbiformes, Columbidae</td>
</tr>
<tr>
<td>White-tipped Dove</td>
<td><em>Leptotila verreauxi</em> (Bonaparte, 1855)</td>
<td></td>
<td>Columbiformes, Columbidae</td>
</tr>
<tr>
<td>House Sparrow</td>
<td><em>Passer domesticus</em> (Linnaeus, 1758)</td>
<td></td>
<td>Passeriformes, Passeridae</td>
</tr>
<tr>
<td>Sipo Snake</td>
<td><em>Philodryas olfersii</em> (Lichtenstein, 1823)</td>
<td></td>
<td>Squamata: Colubridae</td>
</tr>
<tr>
<td>Puppy Tegu Lizard</td>
<td><em>Salvator merianae</em> (Duméril &amp; Bibron, 1839)</td>
<td></td>
<td>Squamata, Teiidae</td>
</tr>
<tr>
<td>Saffron Finch</td>
<td><em>Sicalis flaveola</em> (Linnaeus, 1766)</td>
<td></td>
<td>Passeriformes, Thraupidae</td>
</tr>
<tr>
<td>Great Kiskadee</td>
<td><em>Pitangus sulphuratus</em> (Linnaeus, 1766)</td>
<td></td>
<td>Passeriformes, Tyrannidae</td>
</tr>
<tr>
<td>Black Rat</td>
<td><em>Rattus Rattus</em> (Linnaeus, 1758)</td>
<td></td>
<td>Rodentia, Muridae</td>
</tr>
<tr>
<td>Norway rat</td>
<td><em>Rattus norvegicus</em> (Berkenhout, 1769)</td>
<td></td>
<td>Rodentia, Muridae</td>
</tr>
<tr>
<td>Home Rat</td>
<td><em>Mus musculus</em> (Schwartz &amp; Schwartz, 1943)</td>
<td></td>
<td>Rodentia, Muridae</td>
</tr>
</tbody>
</table>

Source: Prepared by the authors, 2023.

Discussion

In the literature we have a record of the predation of other snakes by domestic cats (Santos et al. 2011; Assis et al. 2022). The predation of the Linnaeus Sipo was opportunistic, it was preying on a bird's nest...
when it was preyed on by the feline. This is the first record of predation of this species by domestic cats in Brazil.

Among the birds, all preyed species have a large population available in the place (except for the Falconidae), favoring predation. About the Columbiforme *Leptotila verreauxi* is the first record of predation of the species by felines in the country.

In the Rodentias listed, all are present in the existing literature regarding the predation of mammals by domestic cats, probably because such species have high population density in urban environments, such as unwanted synanthropic fauna.

On the predation of *Tupinambis*, there are no reports of predation of these by domestic cats, however there is bibliography on the predation of other species of Squamatas (Santos et al. 2021; Smith 2018; Assisi et al. 2022; Gaiotto et al. 2020). Table 2 shows the prey of this study in comparison to the Brazilian literature and the status of the species in Brazil.
Table 2
Prey reported in this case (scientific name), whether they are native or exotic species in the country, and Brazilian studies reporting predation by domestic cats.

<table>
<thead>
<tr>
<th>Preyed animal</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Species</strong></td>
<td><strong>Scientific name</strong></td>
</tr>
<tr>
<td>Native</td>
<td><em>Falco sparverius</em></td>
</tr>
<tr>
<td>Native</td>
<td><em>Columbina talpacoti</em></td>
</tr>
<tr>
<td>Native</td>
<td><em>Leptotila verreauxi</em></td>
</tr>
<tr>
<td>Exotic</td>
<td><em>Passer domesticus</em></td>
</tr>
<tr>
<td>Native</td>
<td><em>Philodryas olfersii</em></td>
</tr>
<tr>
<td>Native</td>
<td><em>Salvator merianae</em></td>
</tr>
<tr>
<td>Native</td>
<td><em>Sicalis flaveola</em></td>
</tr>
<tr>
<td>Native</td>
<td><em>Pitangus sulphuratus</em></td>
</tr>
<tr>
<td>Exotic</td>
<td><em>Rattus Rattus</em></td>
</tr>
<tr>
<td>Exotic</td>
<td><em>Rattus norvegicus</em></td>
</tr>
<tr>
<td>Exotic</td>
<td><em>Mus musculus</em></td>
</tr>
</tbody>
</table>

Source: Prepared by the authors, 2023.

Among the species preys upon by this feline, 4 of them are invasive species in the country, such as the Rodentias and *Passer domesticus* (36% of the species listed in the article), but most of them are native species (64%). The feline while assisted in the control of exotic fauna (invasive species) acted as an exotic predator of native species, generating environmental impact on the biodiversity of the fauna.
The animal was captured and subjected to castration by the CED method – Capture, sterilization, and return. After sterilization the animal began to allow greater human contact, allowing touch. After 3 months the animal was adopted by one of the community members and it was kept indoor, without access to the street.

**Conclusion**

This study brought data on the predation of native and exotic species by domestic cats in Brazil, being two species of birds (*Falco sparverius* and *Leptotila verreauxi*) and two Squamatas (*Salvator merianae* and *Philodryas olfersii*) never reported in the Brazilian literature regarding their predation by *Felis catus*. We suggest the publication of more studies of the genus to further elucidate the impacts caused by these as exotic predators of fauna in Brazil and in the world.

**Declarations**

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*All authors contributed to the Study conception and design. Material preparation, data collection and analysis were performed by Luiza Isaia de Freitas, Thais Ito Isaia Lanzanova, Fabio Yuji Shibuya, Gabriela Monteiro de Andrade, Vanessa Cirinéa Tapia Barraza, Paulo Dilkin, Sonia de Avila Botton and Helton Fernandes dos Santos. The first draft of the manuscript was written by Luiza Isaia de Freitas and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.*

**References**


