



# Natureza & Conservação

Brazilian Journal of Nature Conservation

Supported by Boticário Group Foundation for Nature Protection

<http://www.naturezaeconservacao.com.br>



## Essays and Perspectives

### Domestic dogs in protected areas: a threat to Brazilian mammals?

Q1 Isadora Lessa<sup>a,\*</sup>, Tainah Corrêa Seabra Guimarães<sup>b</sup>, Helena de Godoy Bergallo<sup>c</sup>, André Cunha<sup>a</sup>, Emerson Vieira<sup>d</sup>

<sup>a</sup> Graduate Program in Ecology, Instituto de Ciências Biológicas (IB), Universidade de Brasília (UnB), Brasília, DF, Brazil

<sup>b</sup> Instituto Chico Mendes de Conservação da Biodiversidade (ICMBio), Brasília, DF, Brazil

<sup>c</sup> Laboratory of Mammal Ecology, Instituto de Biologia, Universidade do Estado do Rio de Janeiro (UERJ), Rio de Janeiro, RJ, Brazil

<sup>d</sup> Laboratory of Vertebrate Ecology, Department of Ecology, Instituto de Ciências Biológicas, Universidade de Brasília (UnB), Brasília, DF, Brazil

#### ARTICLE INFO

##### Article history:

Received 13 January 2016

Accepted 12 May 2016

Available online xxx

##### Keywords:

Alien species

*Canis lupus familiaris*

Protected area management

Anthropogenic impacts

Invasion ecology

#### ABSTRACT

The presence of domestic dogs (*Canis lupus familiaris*) in Brazilian protected areas is fairly frequent. The interaction of such dogs with native animals leads to population declines for many species, particularly carnivores. In this paper the main threats dogs bring about Brazilian biodiversity are assessed with a focus on protected areas. We collected information from papers on the interaction of dogs and wildlife species as well as from interviews with National Park managers. Studies in protected areas in Brazil listed 37 native species affected by the presence of dogs due to competition, predation, or pathogen transmission. Among the 69 threatened species of the Brazilian fauna, 55% have been cited in studies on dogs. Dog occurrence was assessed for 31 National Parks in Brazil. The presence of human residents and hunters in protected areas were the factors most often quoted as facilitating dog occurrence. These may be feral, street or domestically owned dogs found in protected areas in urban, rural or natural areas. Effective actions to control this invasive alien species in natural areas must consider dog dependence upon humans, pathways of entry, and the surrounding landscape and context.

© 2016 Published by Elsevier Editora Ltda. on behalf of Associação Brasileira de Ciência Ecológica e Conservação. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## Introduction

The introduction of alien species is one of the most significant threats inflicted by humans on biodiversity (Scholes and Biggs, 2005). Invasive alien species may alter environmental

conditions and cause severe impacts in natural community composition and structure (Richardson, 2011). The Convention on Biological Diversity defines invasive alien species as a species outside its native range which threatens the integrity of ecosystems, habitats, and the permanence of indigenous species. Interactions such as predation, competition,

\* Corresponding author.

E-mail address: [isadoracristinam@gmail.com](mailto:isadoracristinam@gmail.com) (I. Lessa).

<http://dx.doi.org/10.1016/j.ncon.2016.05.001>

1679-0073/© 2016 Published by Elsevier Editora Ltda. on behalf of Associação Brasileira de Ciência Ecológica e Conservação. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

pathogen transmission and hybridization initiate ecological processes that lead to native species population declines and changes in ecosystem dynamics (Simberloff and Von Holle, 1999). Domestic cats and dogs are considered invasive alien species when using or living in natural areas without human assistance. Cats are listed as one of the 100 worst invasive alien species on the planet (Lowe et al., 2000) and the majority of papers published in the past ten years on the interaction of dogs and native animals stress their negative impacts on biodiversity (Hughes and Macdonald, 2013), even in protected areas.

Domestic dogs (*Canis lupus familiaris*) may be considered a potential threat to the integrity of protected areas in Brazil, particularly of those in the highest level of protection. The presence of these animals in protected areas or their surroundings may reduce effectiveness in conserving biodiversity (MMA, 2013). The National Biodiversity Policy defines that it is vital to foresee, prevent, and take action against the origin of processes leading to considerable biodiversity decline or loss (Decree no. 4.339, August 22nd, 2002), such as invasive alien species. In this study we assessed information published on the impact of domestic dogs in protected areas, described these impacts particularly for Brazilian protected areas, and provided directions for protected area management in dealing with the problem. A literature review on the topic was carried out and complemented by interviews with National Park managers in Brazil. The information gathered was classified in five topics, the first two on basic information on dog natural history and interactions with native species, the third on papers published covering dog impacts in protected areas around the world, the fourth on problems in Brazilian national parks, and the last one on guidance for invasive dog management in protected areas in Brazil. This study is considered a preliminary approach to the problem and a source of information for future action and research for controlling domestic dogs in Brazilian protected areas.

### ***Canis lupus familiaris* (Linnaeus, 1758) natural history**

The global population of domestic dogs has been estimated at 700 million widely distributed around the world (Hughes and Macdonald, 2013). Brazil ranks as third in highest dog numbers after the United States and all European countries considered as a unit, with about 27 million dogs (Hughes and Macdonald, 2013). The highest density registered to this moment is 76 dogs per km<sup>2</sup> in a rural area in Brazil in Piracicaba, in São Paulo state (Campos et al., 2007). Dogs are distributed in different landscapes, mostly urban and rural under human intervention, but also in protected areas under the strict protection category in Brazil. Dogs have been associated with human populations for more than 33,000 years (Ovodov et al., 2011). In spite of providing some benefits to society, domestic dogs have generated many negative impacts on biodiversity, particularly due to interactions with native animals.

To better define the relationship of dogs with biodiversity they have been classified according to their dependence upon humans: owned dogs; street or free living dogs; and feral dogs (Srbek-Araujo and Chiarello, 2008; Campos et al., 2007; Lacerda

et al., 2009; Hughes and Macdonald, 2013). Owned dogs live in properties with resources such as food, shelter, and interactions provided by humans. Street dogs are not under human care, surviving opportunistically on food resources offered by humans. This class represents 75% of the 700 million dogs in the world (Hughes and Macdonald, 2013). Feral dogs live in natural areas, legally protected or not, yet close to human dwellings. These dogs may occasionally feed on resources offered by humans, but are not dependent upon them. They have a generalist diet (Macdonald and Carr, 1995; Campos et al., 2007), often feeding on food resources made available by humans, but also on animal carcasses and a great variety of animal and vegetal food items (Campos et al., 2007).

Domestication efforts have made dogs react with specific behavior responses when prompted by rewards in the form of food, playing, petting or simply attention (Scott and Fuller, 1974). Dogs in natural areas, however (alone or accompanied by humans), are stimulated by the environment and react similarly to their wild ancestors (Scott and Fuller, 1974; Gompper, 2013). These dogs develop greater hunting abilities and make better use the natural areas, changing their social behavior by forming packs (Rubin and Beck, 1982). The presence of dogs is therefore a threat to biodiversity and needs to be treated with effective management actions targeted at specific dog profiles in each protected area (Beck, 1973; Lavigne, 2015; Gompper, 2013).

### **Main threats to biodiversity by dogs**

#### **Competition for territory**

Dogs are considered the most abundant carnivores in several natural areas (Hughes and Macdonald, 2013), including the Brazilian Atlantic Forest (Paschoal et al., 2012). They often occur in much higher numbers than native carnivores, usually present in low densities. This indicates the potential high impact of dogs on the community as a whole, and particularly on vertebrates (Vanak and Gompper, 2009). High dog densities in natural areas may, at first, affect native carnivores due to competition. Dog density, predatory behavior, and pathogen transmission will determine the spatial range of competition and its resulting impact on native fauna as assessed through modeling based on empirical data (Vanak and Gompper, 2009). The mere presence of dogs in areas with native species intensifies competition for space and resources (Atickem et al., 2010). The presence of dogs in natural areas in India negatively affects the spatial distribution of the Indian fox, *Vulpes bengalensis*; the probability of site use by the fox is directly proportional to the distance from sites used by dogs, regardless of resource availability for the fox (Vanak and Gompper, 2010). In Brazilian Savannas the maned wolf (*Chrysocyon brachyurus*) avoids areas where domestic dogs are present, possible evidence of competition for territory between dogs and native carnivores (Lacerda et al., 2009).

#### **Predation**

Dogs often do not truly prey, as predation is defined as the act of capturing (directly or indirectly) and feeding on the

Download English Version:

<https://daneshyari.com/en/article/8849443>

Download Persian Version:

<https://daneshyari.com/article/8849443>

[Daneshyari.com](https://daneshyari.com)