

# Serra da Tiririca Dogs and Cats Project: Population Control Data in the Serra da Tiririca State Park, Rio de Janeiro

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**Abstract:** Interactions between domestic and wild animals in conservation units contribute to impacts on the native fauna and enable disease transmission between wildlife, domestic animals and humans. Within a One Health framework, the aim of the Serra da Tiririca Dogs and Cats Project is to control the population of cats and dogs in the state park by castration and consequently mitigate the aforementioned impacts. To date, the project 231 dogs and 99 cats have been recorded of which 132 have been castrated including 55 dogs and 77 cats. Consequently, the project contributes to a healthier ecosystem, improves animal and owner welfare, and can be used as a monitoring tool.

**Key words:** population control, conservation medicine, veterinary monitoring, One Health

## 1. Introduction

Intra-specific relationships between wild and domestic animals in units of conservation (UC) are consensually impactful. Predators such as domestic dogs and cats promote disease transmission, competition for food and territory, predation, and increased risk to human health [1-3]. The Serra da Tiririca State Park (PESET) encompasses the cities of Niterói and Maricá [4] and includes a number of family households in its domains; ergo, it has an urban profile and is susceptible to the aforementioned impacts [5]. By verifying the number, sanitary conditions and interactions of domestic animals with their environment in the PESET, in accordance with Nunes

V. M. A. et al. (2014) [5] and Bruno, S. F. et al. (2012) [6], the present work, which also touches upon local fauna management, can be considered as step towards in the area. The objective of this work is to report and evaluate initial population control actions of domestic dogs and cats in PESET (Fig. 1), its logistics, challenges and results.

## 2. Materials and Methods

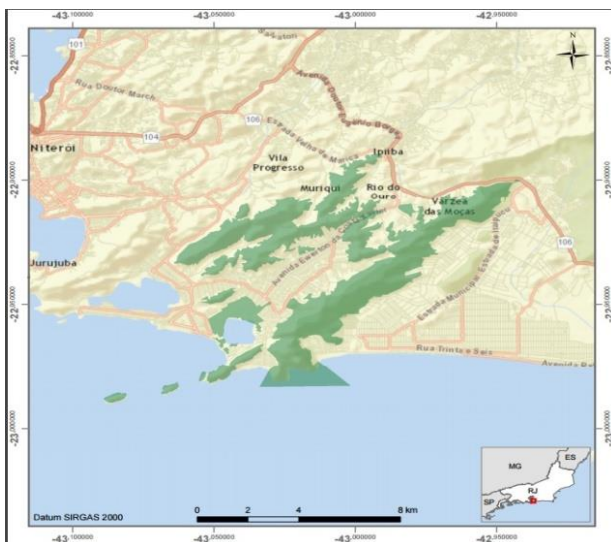
According to Nunes V. M. A. et al. (2014) and Bruno S. F. et al. (2012) [5, 6], there are 91 georeferenced households within the limits of the PESET with a total of 231 dogs and 99 cats. In the current phase, the aim of the project team, formed by graduate and post-graduate students from the Veterinary School of the Universidade Federal Fluminense as well as the PESET research coordinator, is to control the population of domestic animals by castration. For this, the team visits registered

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households in order to reinforce the monitoring and control of domestic animals residing in the PESET through direct contact with their families; to obtain the consent of their owners to conduct the necessary clinical and surgical procedures; to clinically evaluate the animals (Fig. 2); to fill in an epidemiological survey and questionnaire by interviewing the owner; and to collect data and blood samples for pre-surgical tests (complete blood count and biochemical tests (Fig. 3).

Once the aforementioned steps are finalized, the samples, under proper refrigeration, are sent to and processed at the



**Fig. 1** Map of the region that covers the Serra da Tiririca State Park. In green the area that covers the park. INEA, 2016.



**Fig. 2** Clinical evaluation of the patient in the tutor's residence (Mangueirão, Niterói, Sep. 2015).



**Fig. 3** Feline blood collection for preoperative exams (Jardim Fluminense, Niterói, Sep. 2015).

Laboratory of the Veterinary School of the Universidade Federal Fluminense. Once the animal is considered fit for the surgical procedure, the owner is contacted in order to define transportation logistics. A vehicle from the PESET-INEA is sent to transport the animals to the Veterinary Hospital (HUVET) and back to their households. The surgery is conducted in the surgical center of the HUVET under general anesthesia. The owner is responsible for the necessary post-surgical medication and monitoring of the animal. The sutures are removed by the team ten days after the surgical procedure.

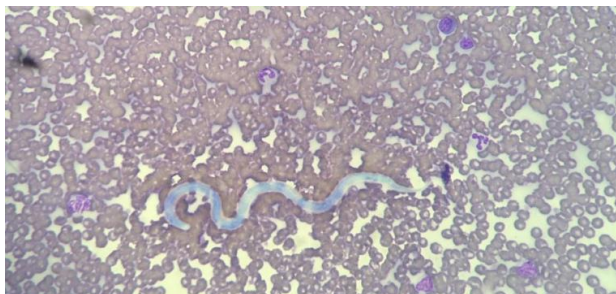
### 3. Results and Discussion

According to georeferencing conducted in 2013, there are 231 dogs and 99 cats in the PESET. Among the total number of dogs, 73% have access to the forest of which 38% have full access to the forest. From the beginning of the project (2015) to date, 239 animals have been examined and sampled including 147 dogs (61.5%) and 92 cats (38.4%). During this time, 132 animals have been castrated, including 55 dogs and 77 cats; consequently, the project contributes to a healthier ecosystem, improves animal and owner welfare, and can be used as a monitoring tool. A total of 107 (44.7%) animals were examined but not castrated (176 dogs - 76% and 22 cats - 22.2%) because they were unfit for the surgical procedure. Among the 89 interviewed owners,

52.8% saw their animals prey on native species of the PESET and 20.7% claimed to be unaware that they resided in a UC and its implications.

The number of domestic animals with free access to the forest is an impacting factor for the ecosystem's health and particularly for the survival of wildlife in a UC. Concerns have been raised regarding the influence of human and domestic animals in these areas [2, 7, 8]. Considering that the quantification of animals occurred in 2014 and that there have been no previous population control projects in the area, it is believed that the number of domestic animals may have increased. It should be noted that most residents have low purchasing power, which contributes to limited access to information and lack of veterinary medical assistance for dogs and cats. These factors resulted in the inability of most animals to undergo the surgical procedure, especially canines, since they had an incompatible clinical condition and considerable hematological alterations, such as anemia, thrombocytopenia, eosinophilia, hemoparasites and microfilariasis [8] as well as verminoses and, not to mention, other infectious diseases.

Although the majority of the dogs were unfit for the procedure, this does not exclude their impact on wildlife since most of the animals had unlimited access to the forest allowing them to prey on and compete with the wild animals. Moreover, they can carry serious pathogens of public health concern such as dirofilariasis and leishmaniasis, which were previously studied in the PESET by Frigeri E. (2013) [8] and Albuquerque G. L. (2017) [9], respectively. The felines



**Fig. 4 Microfilariae in blood smear from a dog. Quick stain. 400 x. LAMADIN – UFF - Niteroi – RJ - 2016.**

had good clinical condition and laboratory test results and are excellent predators. The objective of the project is to simply conduct pre-surgical procedures and castrate the domestic animals, therefore, it does not have the necessary resources for disease treatment which would have been vital to improve the project's effectiveness. We encountered methodological challenges in the monitoring of fauna in the UC, especially regarding disease control, which corroborates to the considerations of Klein-Gunnawiek M. F. C. [3]. Therefore, the castration of domestic animals is an important tool for population control which, consequently, reduces impacts on wildlife in UCs. Considering that the state of Rio de Janeiro alone has 18 fully preserved UCs and 15 UCs for sustainable use [4], we can anticipate major challenges in the management and monitoring of the fauna in the country's protected areas. The evaluation between domestic and wild animals in the PESET has finally provided valuable information for actions to be outlined in the UC management plan. Moreover, the castration of cats and dogs and the environmental education provided by the team to owners are essential tools for the park's health.

#### **4. Conclusions**

The project is justified as a feasible tool to mitigate the impacts domestic animals on the PESET wildlife and can be used as a model for other conservation units. Furthermore, it can monitor diseases in these animals and develop health and environmental awareness of their owners, thus contributing to a One Health approach.

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