CATEGORY: EPIDEMIOLOGY AND SURVEILLANCE

# Epidemiological and laboratory aspects of animal rabies surveillance in the northwest region of São Paulo State, Brazil

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## INTRODUCTION

Rabies epidemiological surveillance is one of the main tools for identifying risks of exposure to the rabies virus, both for timely decision-making regarding to human post-exposure prophylaxis, and in relation to animals, for the immediate adoption of control measures to block rabies outbreaks. Our objective is to analyze some epidemiological and laboratory aspects of rabies surveillance in the northwest region of São Paulo State, Brazil, between 1993 and 2019.

## METHODS

A retrospective study was conducted using data records from the Rabies Laboratory of the School of Veterinary Medicine at Unesp, Araçatuba, as well as the results of a semi-structured questionnaire used to evaluate the municipal zoonosis control services in the region of Araçatuba Epidemiological Surveillance Group (GVE-XI). The studied period was divided as: a) 1993 to 1998 - uncontrolled rabies (urban rabies epidemic); b) 1999 to 2007 - controlled rabies (both under the recommendation of annually sending 0.2% of the estimated canine population for rabies testing); c) 2008 to 2019 - controlled rabies under the recommendation of annually sending 0.1% of the estimated canine population for testing.

## RESULTS

The highest percentage of samples sent for rabies diagnosis (Table 1) were from bats (49.3%), followed by dogs (35.5%) and cats (9.8%). The goal of sending a percentage of canine samples for diagnosis as a surveillance tool was achieved or exceeded by most municipalities only during the rabies epidemic period (1993-1998). From 1999 onwards, there was a gradual decrease in the number of municipalities that fulfilled the goal and an increase of those that used not to send samples (Figure 1). The majority of the evaluated municipalities (97.5%) had at least one veterinarian on the team, 32.5% had accommodation for observing suspected dogs and only 27.5% had facilities for carrying out necropsies (Table 2).

**Table 1.** Distribution of positive, total and percentage of samples sent for rabies diagnosis in the period from 1993 to 2019, according to the year and animal species. Araçatuba, 2021

| Animal species | Year | 1993 - 1998 | 1999 - 2007 | 2008 - 2019 | Total |
|---|---|---|---|---|---|
| Dogs | P | 345 | 0 | 0 | **345** |
| | (%) | 84.8 | 0.0 | 0.0 | **65.6** |
| | T | 2,400 | 1,983 | 667 | **5,050** |
| | (%) | 64.4 | 31.2 | 16.1 | **35.5** |
| Bats | P | 5 | 45 | 31 | **81** |
| | (%) | 1.2 | 54.9 | 83.8 | **15.4** |
| | T | 431 | 3,520 | 3,056 | **7,007** |
| | (%) | 11.6 | 55.4 | 73.9 | **49.3** |
| Cattle | P | 28 | 34 | 4 | **66** |
| | (%) | 6.9 | 41.4 | 10.8 | **12.5** |
| | T | 201 | 251 | 76 | **528** |
| | (%) | 5.4 | 4.0 | 1.8 | **3.7** |
| Cats | P | 20 | 1* | 1* | **22** |
| | (%) | 4.9 | 1.2 | 2.7 | **4.2** |
| | T | 625 | 510 | 262 | **1,397** |
| | (%) | 16.8 | 8.0 | 6.3 | **9.8** |
| Others[a] | P | 9 | 2 | 1 | **12** |
| | (%) | 2.2 | 2.4 | 2.7 | **2.3** |
| | T | 67 | 87 | 72 | **226** |
| | (%) | 1.8 | 1.4 | 1.7 | **1.6** |
| **Total** | **P** | **407** | **82** | **37** | **526** |
| | **(%) by year** | **77.4** | **15.6** | **7.0** | **100.0** |
| | **T** | **3,724** | **6,351** | **4,133** | **14,208** |
| | **(%)** | **26.2** | **44.7** | **29.1** | **100.0** |

P: Positive

a other species: horses, pigs, sheep, goats, urban rodents and wild animals

* bat-transmitted cases

**Table 2.** Number and/or percentage of municipalities according to the structure of zoonosis control services and population size class, GVE XI – Araçatuba, 2021.

| | Total of municipalities | | Veterinarian | | Accommodation (%) | | | Physical-functional structure (%) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Population size | N | % | N | % | Dogs | Cats | None | Euthanasia | Necropsy | TSCC |
| Até 5.000 | 16 | 40.0 | 15 | 96.8 | 0.0 | 0.0 | 37.5 | 62.5 | 31.3 | 12.5 |
| 5.001 a 10.000 | 11 | 27.5 | 11 | 100.0 | 27.3 | 18.2 | 18.2 | 81.8 | 18.2 | 45.5 |
| 10.001 a 20.000 | 4 | 10.0 | 4 | 100.0 | 75.0 | 25.0 | 25.0 | 75.0 | 0.0 | 0.0 |
| 20.001 a 50.000 | 5 | 12.5 | 5 | 100.0 | 80.0 | 20.0 | 0.0 | 100.0 | 40.0 | 60.6 |
| 50.001 a 100.000 | 2 | 5.0 | 2 | 100.0 | 50.0 | 50.0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 101.000 a 500.000 | 2 | 5.0 | 2 | 100.0 | 100.0 | 100.0 | 0.0 | 100.0 | 0.0 | 100.0 |
| **Total** | **40** | **100.0** | **39** | **97.5** | **32.2** | **17.5** | **22.5** | **77.5** | **27.5** | **35.0** |

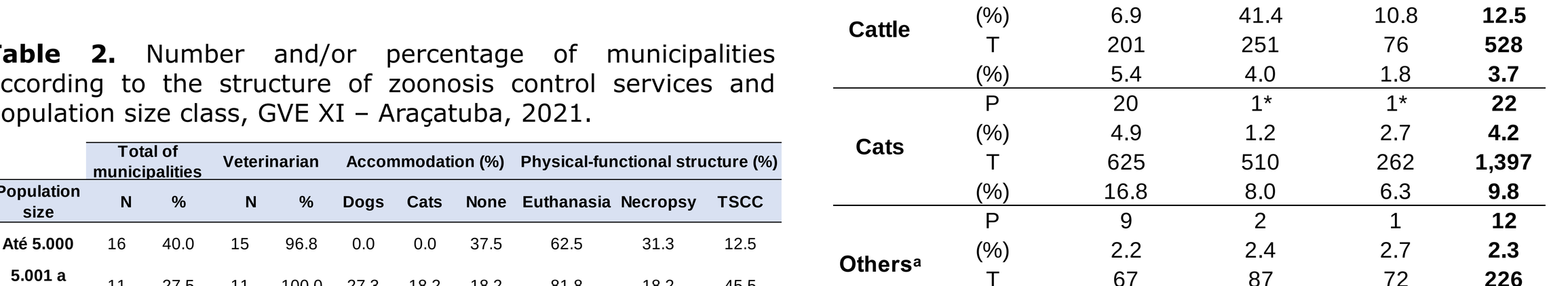


**Figure 1.** Spatial analysis of GVE XI municipalities according to the percentage of dog samples sent for laboratory diagnosis of rabies.

## CONCLUSION

Improving the physical structures of the municipal zoonosis control services and training professionals could ensure a proper rabies surveillance in the studied region.

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