

26 a 29 de outubro
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“RAIVA NAS AMÉRICAS 2021”



Interventions for rabies control outbreaks by the National Program of Zoonoses Control and Rabies National Center in Paraguay (2020-2021)



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Introduction

Rabies is a zoonotic disease, causes by a virus from the *Lyssavirus* genus, which infects mammals and causes fatal encephalitis. The Paraguayan Program for Rabies Control in herbivores aims to prevent the disease in cattle by focusing on the control of vampire bats (*Desmodus rotundus*), strategic vaccination and epidemiological surveillance of animal's rabies outbreaks cases based in the vaccination of human, dogs and cats exposed to the virus. Veterinary immunization is mostly provided by the Public Veterinary Services in coordination with the local municipalities; private veterinary services also provide vaccination. The last case of human rabies in Paraguay was in 2004.

Objective

The aim of this study was to show the interventions for rabies control outbreaks occurred from 2020 to September of 2021 in Paraguay.

Materials and methods

The samples came from all regions of the country and were sent voluntarily by farmers or by both private and public veterinarians. The samples sent to the government animal health laboratory were subjected to the direct immunofluorescence technique and to the biological proof (inoculation in mice). There were notified by the National Service of Quality and Animal Health (SENACSA), the National Program of Zoonoses Control and Rabies National Center and the Veterinary Diagnostic Laboratory (CEDIVEP).

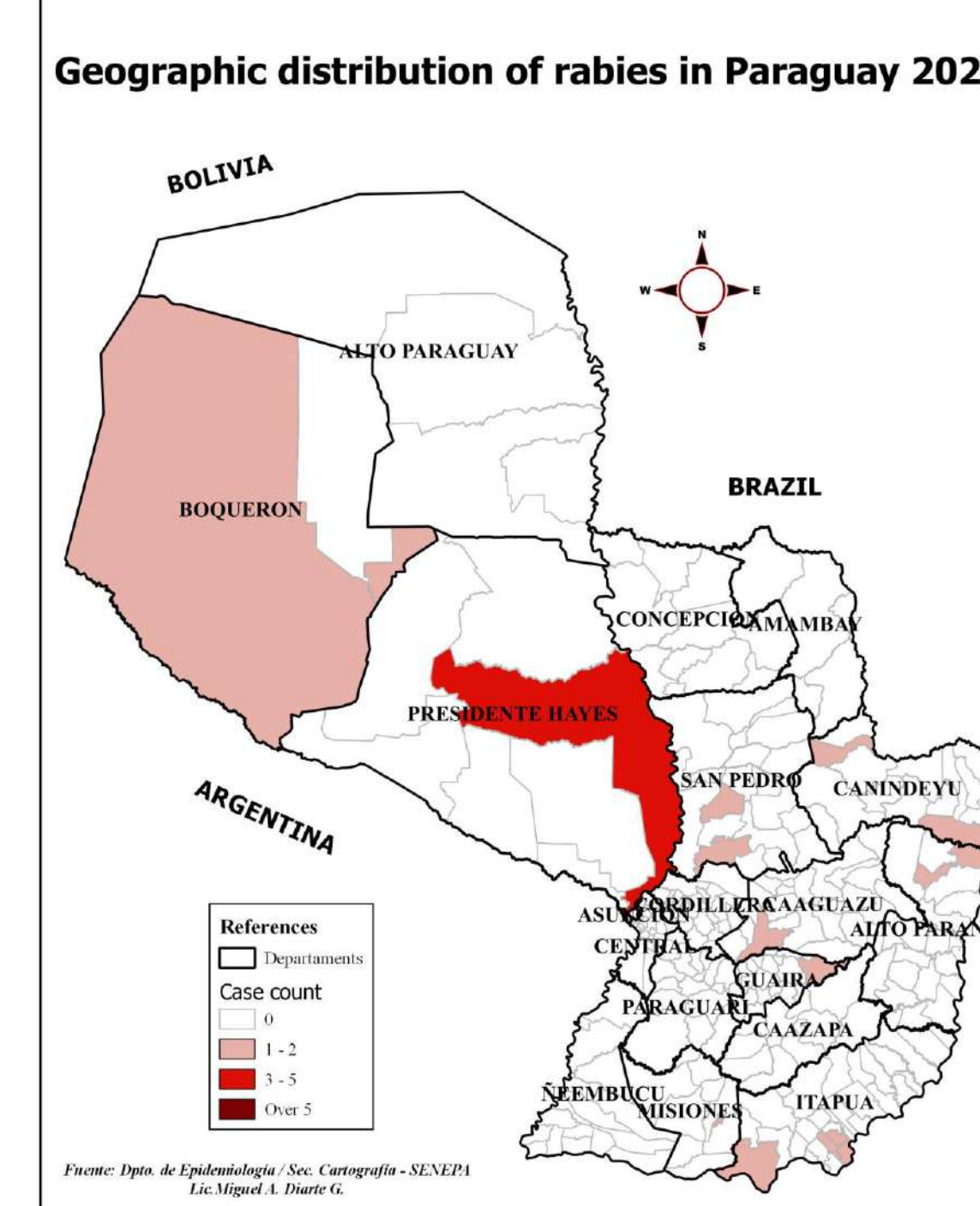
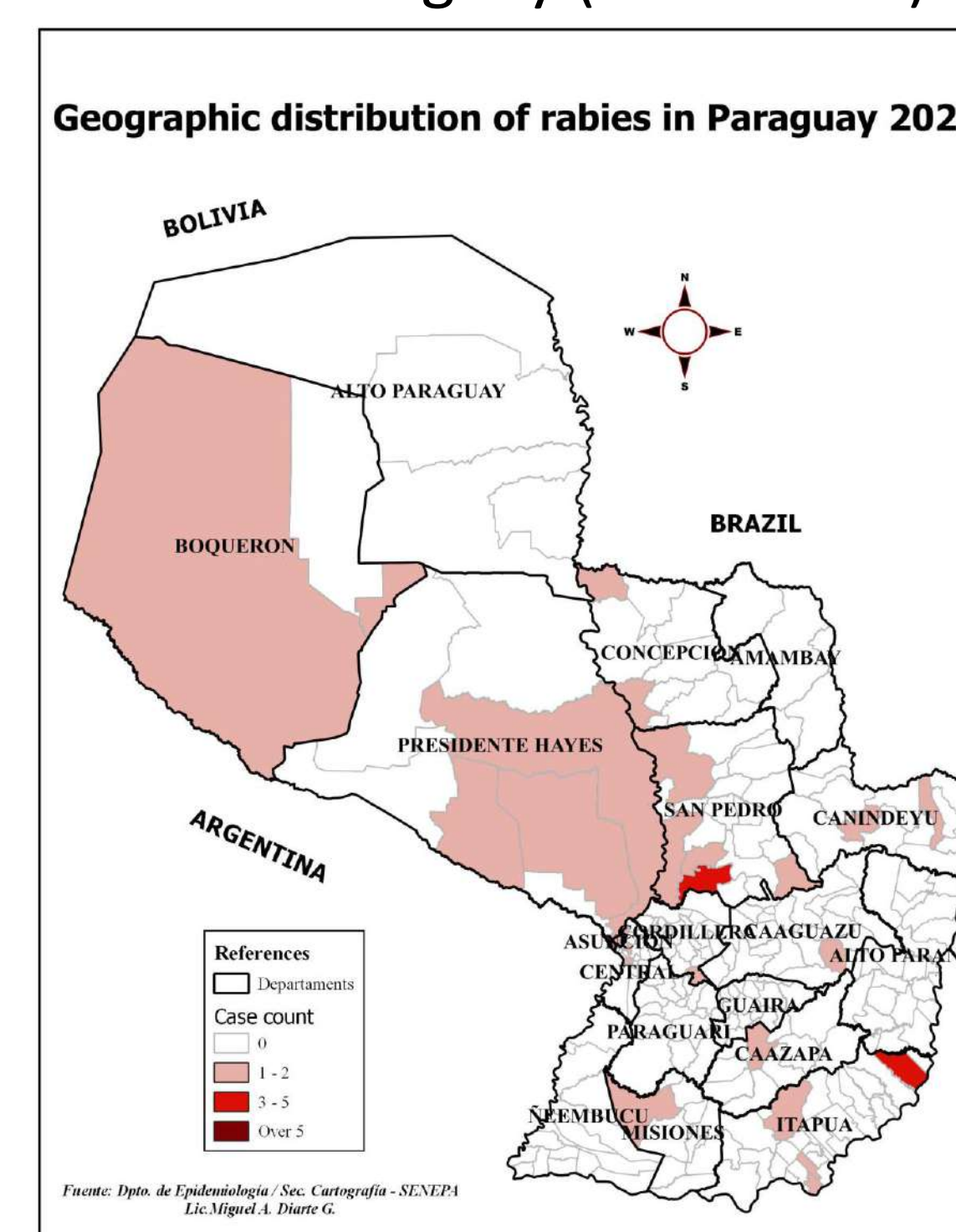
Results

There were notified 81 animals with rabies (71 cattle, 1 dog, 5 horses, 1 sheep, 1 fox, and 2 vampire bat) from 14/17 departments of the country. (Table 1 and Figures 3 and 4), 188 persons (farmers, and animal's owners) were vaccinated with Verorab® Sanofis®, France, and Rabivax-s®, Serum Institute of India®, vaccines against rabies in humans, 188 persons that were exposed to the virus (farmers, animal's owners), and 3095 dogs and cats living in a ratio of 5 kilometers around the animal's rabies case were immunized with the Rabimic®, Laboratorios Microsules®, Uruguay, and Rabigen® Mono, Virbac®, India, veterinary vaccine against rabies. (Figures 1-5 and Table 1).

Table 1: Cases of rabies outbreaks and people, dogs and cats vaccinated in Paraguay (2020-2021)

Departments of Paraguay	Location	Animals with rabies	Number of dogs vaccinated against rabies	Number of cats vaccinated against rabies	Number of people vaccinated against rabies
Concepción	Concepción, San Lázaro	1 cattle, 1 horse	12	14	8
San Pedro	25 de Diciembre, General Aquino, 8 de Diciembre, Itacurubí del Rosario, Capitibary, Villa del Rosario, San Pedro del Ycuamandiyú	10 cattle, 1 horse	290	130	11
Cordillera	Valenzuela	1 cattle	56	24	11
Guairá	Paso Yobai	1 cattle	105	32	0
Caaguazú	Coronel Oviedo, J. E. Estigarribia	1 cattle, 1 horse	69	31	7
Caazapá	Caazapá	1 cattle	0	0	4
Itapúa	Nueva Alvorada, San Cosme y Damián, Capitán Miranda, Trinidad, Cambyretá, San Pedro del Paraná, Carlos Antonio López	14 cattle	107	37	17
Misiones	San Juan Bautista, San Patricio	2 cattle	61	62	7
Paraguarí	Quyquyhó	9 cattle, 1 horse	559	191	35
Alto Paraná	San Alberto	2 cattle	0	0	0
Central	San Lorenzo, M. R. Alonso, Ypané	2 vampire bat, 1 dog, 1 sheep	307	164	12
Ñeembucú		0	0	0	0
Amambay		0	0	0	0
Canindeyú	Ypejhú, Yby pytá	4 cattle	220	117	5
Presidente Hayes	Villa Hayes, Pozo Colorado, Cadete Pando, Alborada, Teniente Irala Martínez	9 cattle, 1 fox, 1 horse	228	110	44
Boquerón	Filadelfia, Neuland, Teniente Ochoa, Mariscal Estigarribia, Pirizal, Loma Plata	15 cattle	16	12	13
Alto Paraguay		0	0	0	0
Asunción	Pettrossi's neighborhood	1 cattle	0	0	2
Total		81 animals	2129	966	176

Figures 1-2: Distribution of rabies cases in Paraguay (2020-2021)



Figures 3-4: Cat and dog's vaccinated against rabies. Figure 5: Person vaccinated from outbreaks of animal rabies

Conclusions

Implementation of control measures for rabies we recommend. Aggressive interventions that include regular animal's vaccination campaigns for farmers and dogs and cat's owners, improvement in vaccines provision for humans and animals, accompanied by regular campaigns of education in communities and sanitary professionals in public health centers for appropriate prevention and control strategies against rabies were carried out.