

Introduction

The disease

West Nile virus (WNV) is a mosquito-borne *Flavivirus* belonging to the Japanese encephalitis antigenic complex, within the family *Flaviviridae* and it can cause West Nile Fever (WNF). Its natural cycle involves transmission between ornithophilic mosquitoes, mainly *Culex* species, and birds, which act as amplifying hosts. Mammalian species, including humans and horses, may get infected, but they do not seem able to sustain the transmission cycle (see *figure 1*). The WNF is considered a notifiable disease by the OIE and the EU, and it's an emerging zoonosis in many parts of the world.

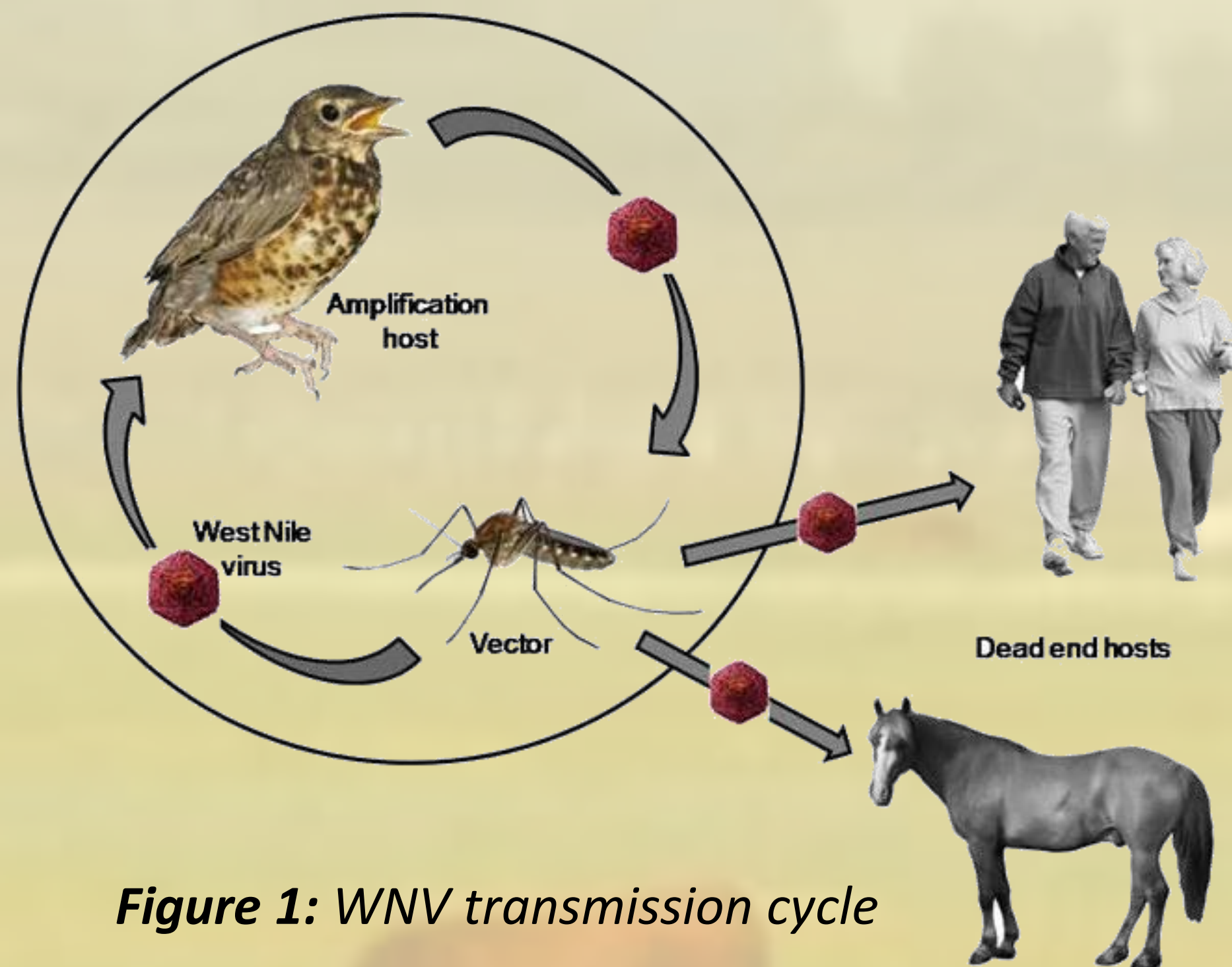


Figure 1: WNV transmission cycle

Catalonia is near from areas where the virus is present and has wetlands with important populations of birds and mosquitos. For this reason, is necessary the early detection of disease through passive and active surveillance in equines and birds.

Situation of the WNF in Spain and Catalonia

The WNF is present in the southern of Spain (see *figure 2*) since 2010. In Catalonia it has never been found WNV active infection in horses but virus belonging to Japanese encephalitis complex are circulating in equines. However, specific antibodies against WNV have been detected in migratory birds making possible the emergence of the disease in Catalonia.

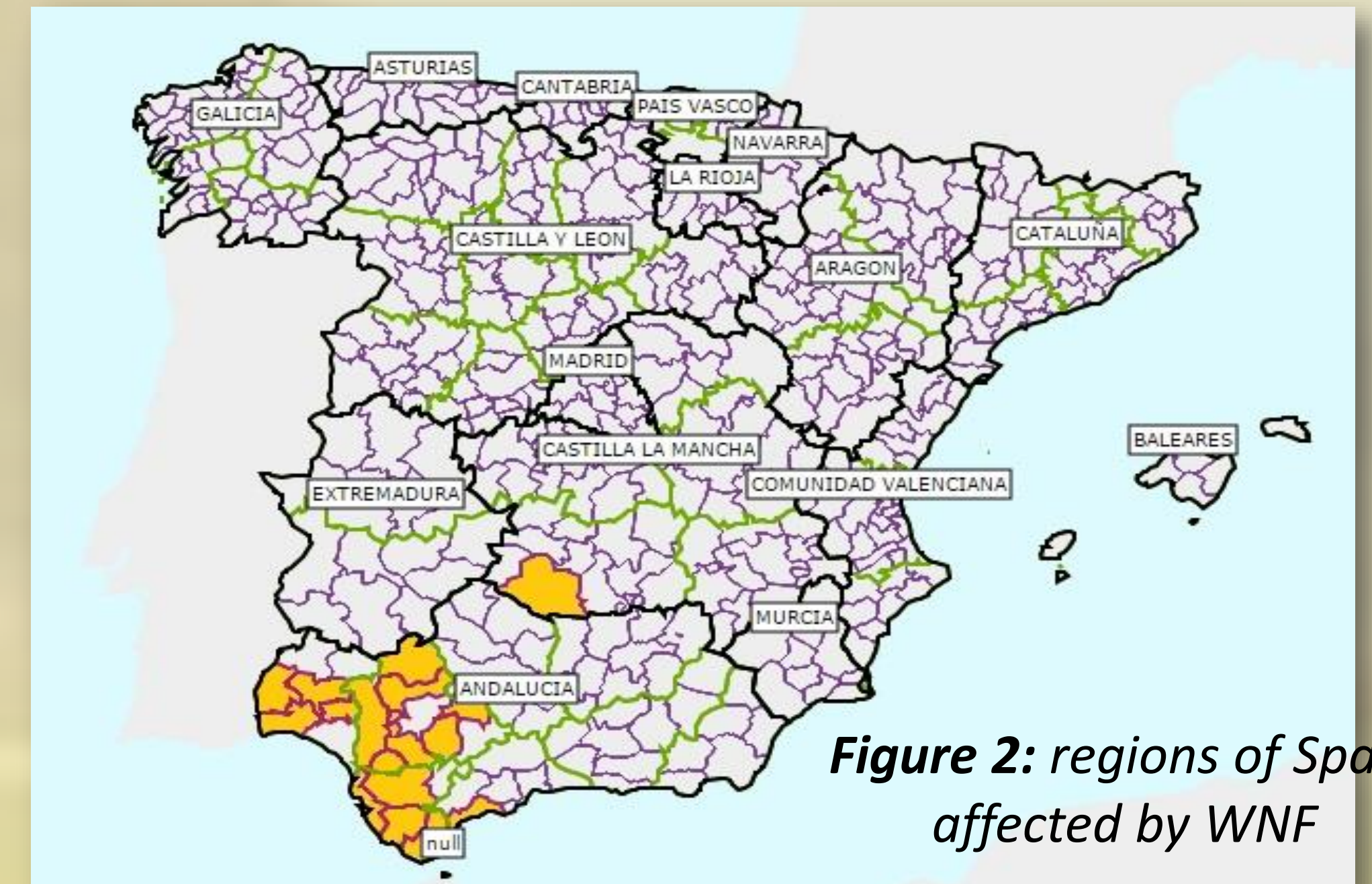


Figure 2: regions of Spain affected by WNF

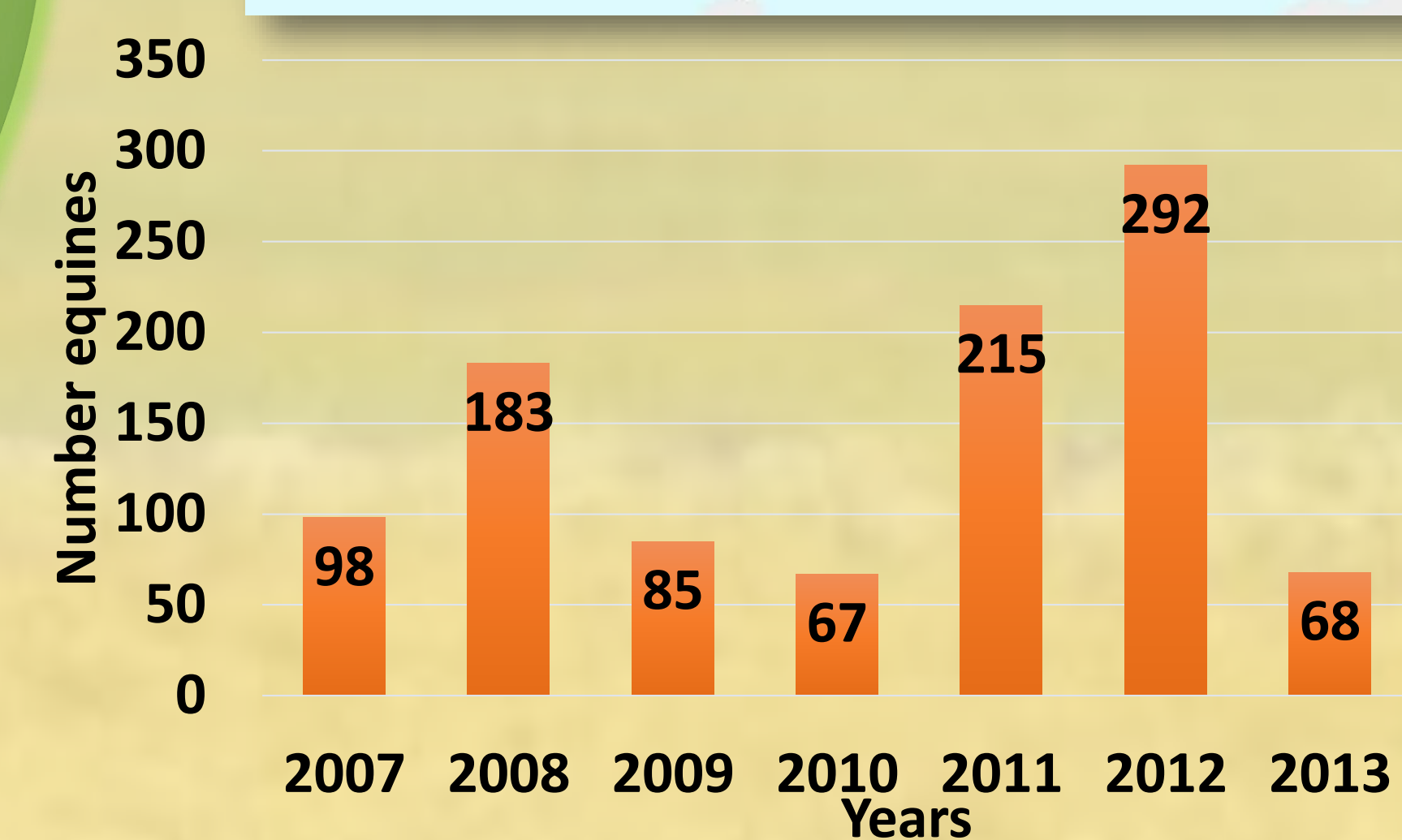


Figure 3: number of horses sampled from 2007 until 2013. Sampling decreased in 2013.

Objectives

- Improve the sensitivity of WNV surveillance in equines.
- Expand WNV serological sampling in horses (see *figure 3*).
- Encourage passive surveillance with the help of specific folded sheets.
- Know the procedures, official sampling circuits and laboratorial tests used to diagnose the disease.
- Assess the degree of knowledge and perception of clinical veterinarians by a small survey.

Material and methods

- Revision of WNV ecological surveillance results from 2007 until 2013.
- Identification of regions (see *figure 4*) where:
 - Don't have information about birds and have minimum apparent prevalence above 3%.
 - The sampling frequency is less than 1%. Also, regions with more than 25 samples taken were discarded.
 - The population of *Culex* mosquitoes (*Culex pipiens* and *Aedes albopictus*) could be important.
- Collaboration of 3 clinical veterinarians, visit of 3 equine farms per region and getting 3 samples for each farm (9 samples in total per region).
- Analysis of the samples with competitive ELISA (IgG) by CreSa. Analysis of positive samples with IgM capture ELISA by CreSa and confirmation of these with seroneutralization (SNT) by Veterinary Central Laboratory of Algete.

REGION	EQUINE FARMS	SAMPLES
Garrotxa	0	0
Cerdanya	3	9
Alt Camp	4	12
Baix Camp	3	9
Tarragonès	3	9
Pla d'Urgell	0	0
Urgell	1	3
Noguera	1	3
Segrià	2	4
Les Garrigues	2	4
Montsià	1	2
TOTAL	20	55

Figure 4: Selected regions and number of equine farms visited and total samples collected per region.

Results and discussion

Sampling

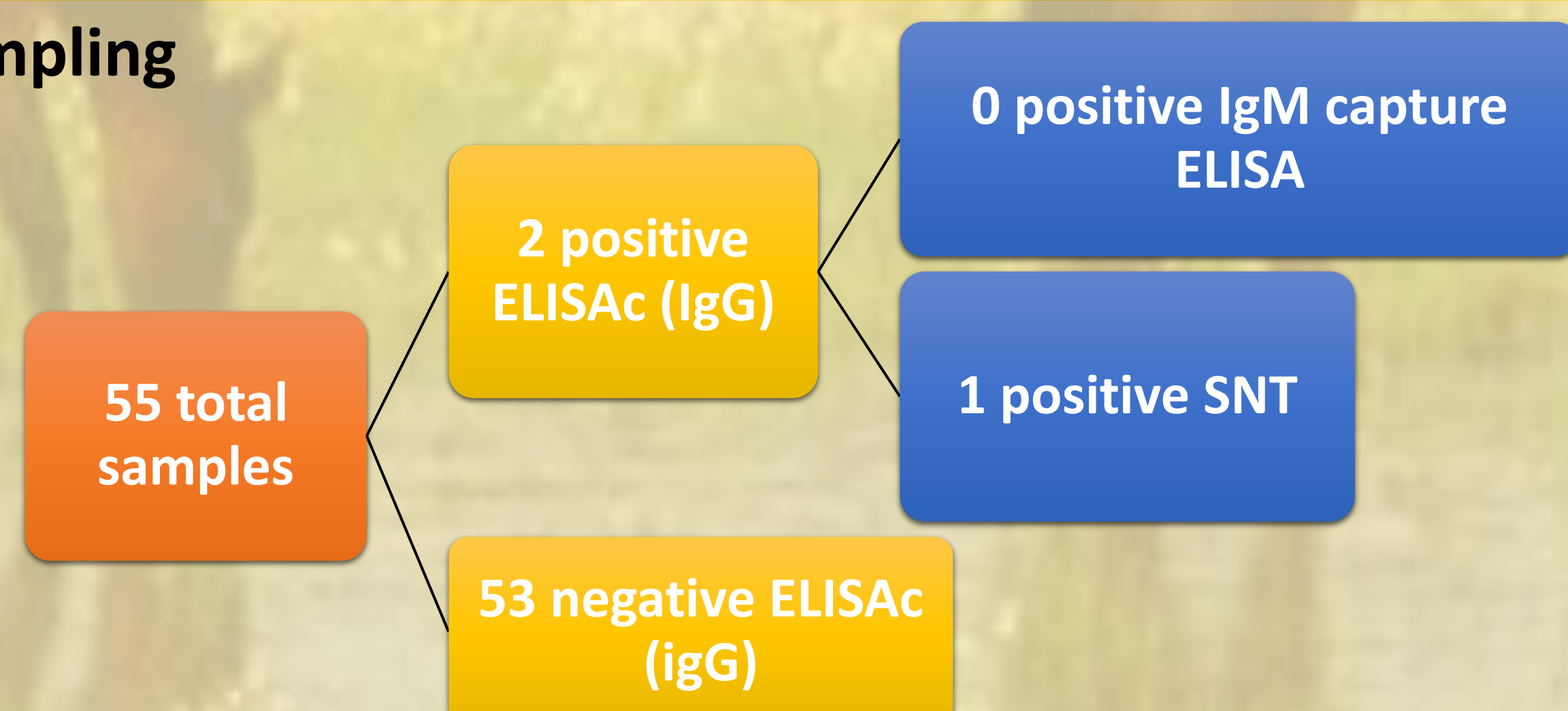


Figure 5: results of sampling; ELISAc: competition ELISA (IgG); SNT: seroneutralization.

Only one sample (from Tarragonès) has specific antibodies against WNV (positive to SNT, see *figure 5*). This horse has been, two months before, in Alcázar de San Juan (Castella La Manxa) where there is a very high risk of transmission of disease, making likely the contact between the virus and the horse in that area.

Survey

The most important result of surveys has been to find a high percentage of veterinarians (44.4%) who don't want to collaborate with the vigilance program. Some of reasons are:

- Lack of time due to their job demands.
- Lack of participation by the owners, because they haven't got REGA code or because they are reticent to have anything to do with a zoonosis.
- No observation of compatible clinical signs or detection of positive animals in the professional practice.

Conclusions

The WNV was not detected in any of the horses of this regions, but it's important to keep active and passive surveillance in different regions of Catalonia because the disease may appear at any time. However, virus belonging to Japanese encephalitis complex are still present.

The main weak point of the program is the lack of cooperation from clinical equine veterinarians. It's necessary to carry out measures to promote their participation.

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Figure 6: spatial distribution of sampling. Each red dot corresponds an equine farm.

References

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