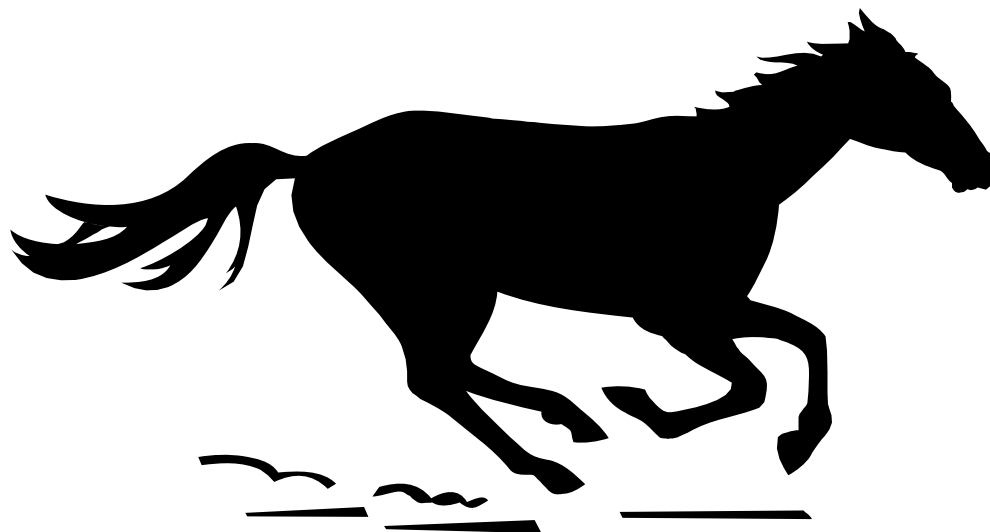




HELLENIC REPUBLIC
MINISTRY OF RURAL
DEVELOPMENT AND FOOD
DIRECTORATE GENERAL OF VETERINARY SERVICES
ANIMAL HEALTH DIRECTORATE

WEST NILE FEVER in Greece

Epidemiological Situation-Measures



PRESENTATION AT THE SCoFCAH meeting of 7-8 Sep 2010

1. Background

2. Present situation (summer 2010)

- **Epidemiological situation in humans**
- **Epidemiological situation in animals**

3. Surveillance and Control measures

Background

Pre-2001

Independent surveys

- 1978 , 1980, Koptopoulos and Papadopoulos
- 1990 Antoniadis et al.

detection of antibodies in several species as well as humans

2001-2004

Epidemiological Investigation Programme for Selected Equidae Diseases (Equine Infectious Anemia, African horse sickness , Equine Viral Arteritis, Piroplasmosis , Dourine, Glanders, West Nile fever).

Detection of neutralising antibodies in 4% of animals randomly selected (absence of clinical signs).

Attempts to isolate WNV from the brains of birds (~10 samples) with an unknown cause of death as well as cerebrospinal fluid from a patient (human) with encephalomyelitis produced negative results too.

2004-2010 (summer, before the onset of cases)

Small scale testing of equidae for infectious diseases including West Nile Fever (along with other diseases) mainly in the framework of pre-movement control (detection of antibodies in ~ 2% of animals, absence of clinical signs)

Papa et al. (article in press) , detection of antibodies in humans (1%), survey conducted in 2007

Present situation (summer 2010)

Humans

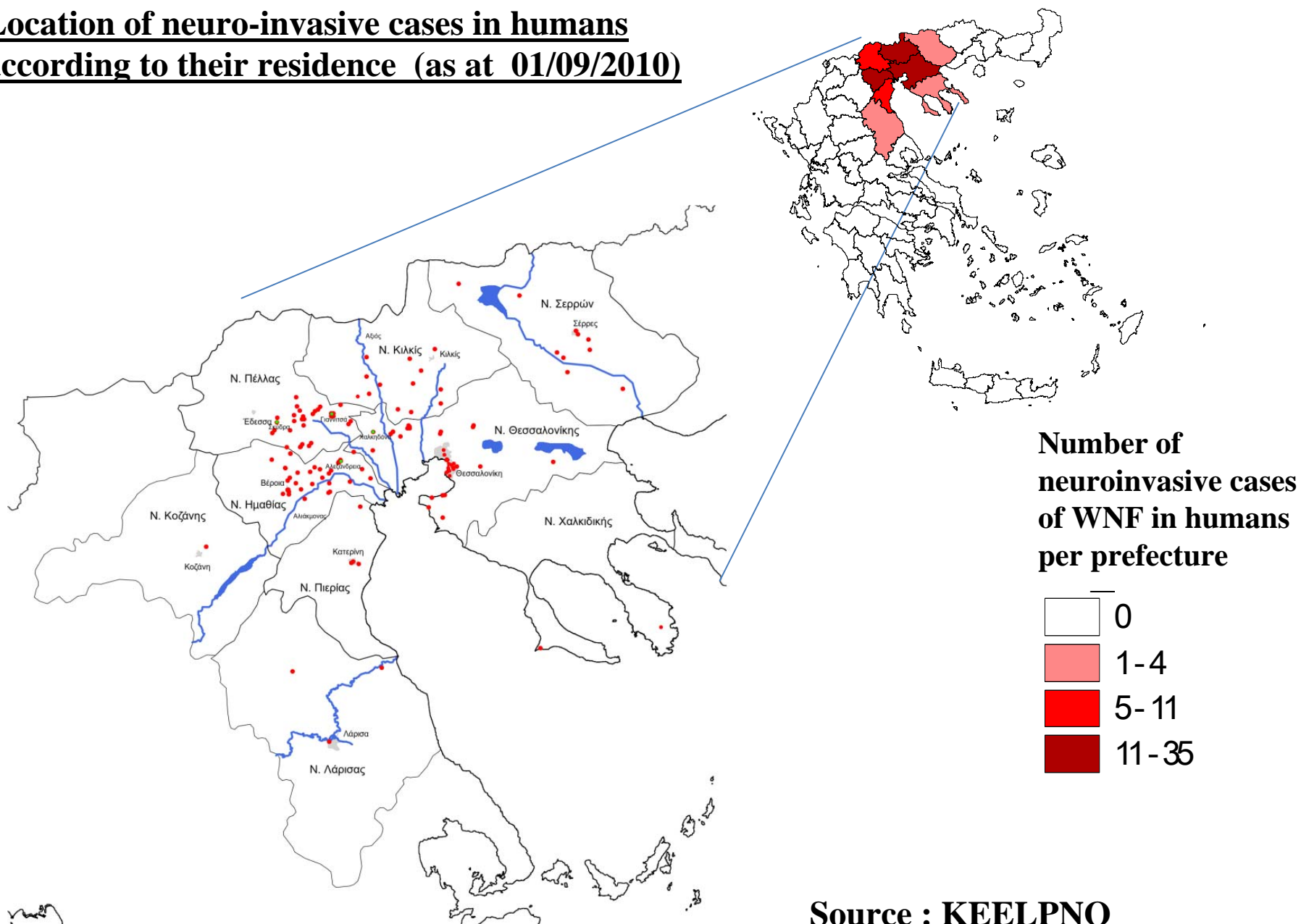
05/08/2010 Confirmation of the 1st case in humans

Since then (situation as at 02/09/2010) a total of 173 cases detected (15 fatalities)

148 cases demonstrated symptoms of CNS involvement while the rest demonstrated only mild symptoms (e.g. febrile reaction).

WEST NILE FEVER Situation in Greece –Present Situation – Humans

Location of neuro-invasive cases in humans according to their residence (as at 01/09/2010)



Animals

24 (25)/08/2010 Confirmation of the 1st outbreaks in horses

Laboratory of Microbiology and Infectious Diseases, Faculty of Veterinary Medicine, Aristotle University of Thessaloniki :

detection of antibodies against WNV (c-ELISA) in horses presented at the Faculty of Veterinary Medicine Companion Animal Clinic.

Athens Center of Veterinary Institutes, Institute of Infectious and Parasitic Diseases, Virology Department :

confirmation by IgM-capture ELISA

So far: 5 outbreaks involving 6 cases in horses, all in the prefecture of Thessaloniki (4 of them in 2 “pairs”, the 5th further to the west)

Cases demonstrate mild nervous symptoms –good prognosis with supportive therapy in 5/6 cases, 1 case with guarded prognosis finally succumbed (recent information)

Location of outbreaks in horses



WEST NILE FEVER Situation in Greece –Present Situation

Epidemiological features of the disease in humans (KEELPNO)

Majority of cases reported in the lowland plains between and around the Aliakmonas and Axios rivers (outbreak epicenter) .

Visits of humans to this area may have contributed in the occurrence of cases outside of it however evidence cannot exclude transmission of the virus around this epicenter.

Human cases currently reported from the city of Thessaloniki suggest that there might be an established urban cycle of transmission too.

Latest risk analysis suggests that an increase in the number of mosquitos occurred in the region of Central Macedonia due to a combination of unusual rainfall patterns and high temperatures (2010).

Epidemiological features of the disease in animals (horses)

Considerable delay in the occurrence of clinical manifestations compared to humans (approximately a month apart).

Nature of the virus

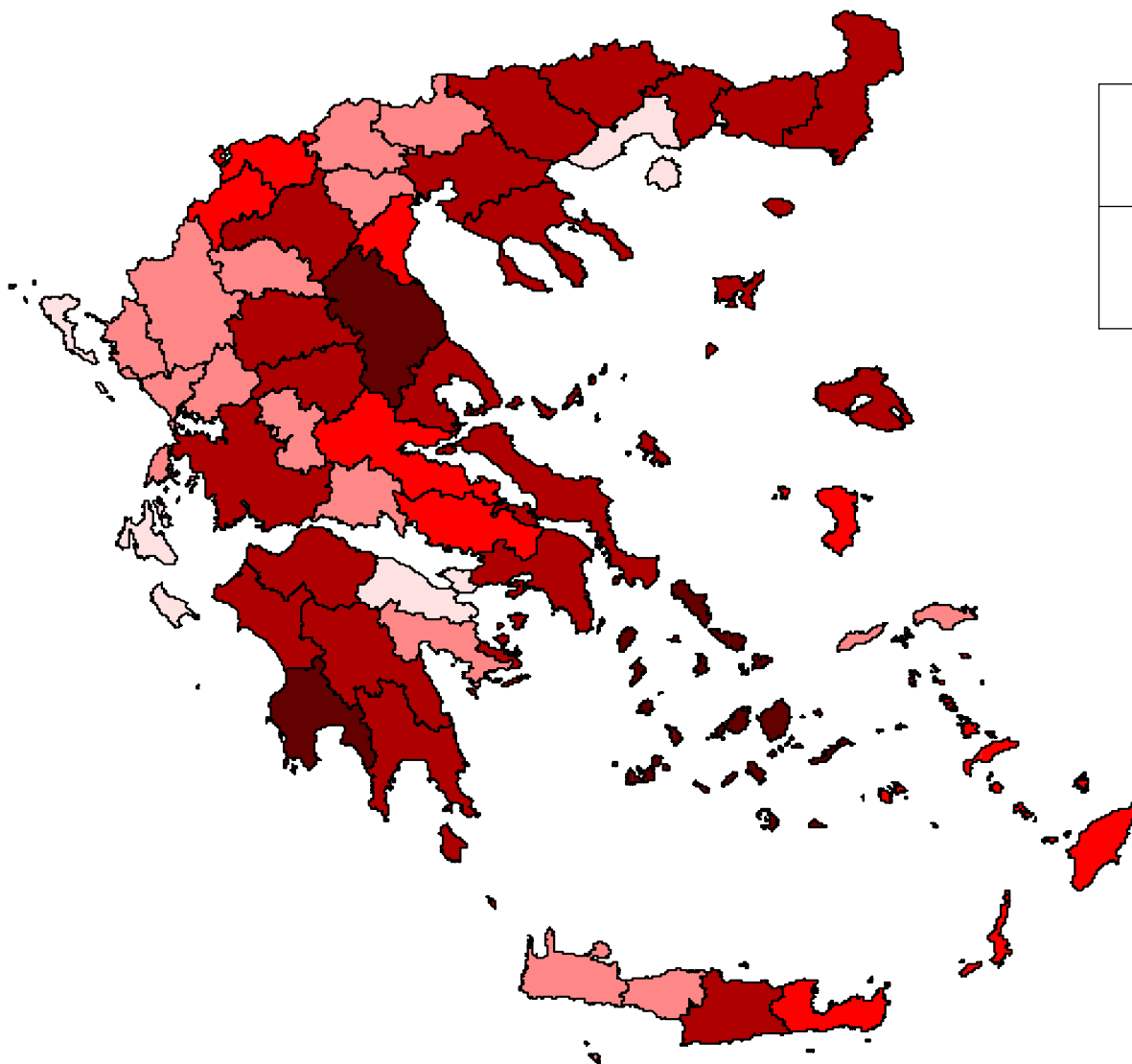
Virus detection since the 1st human case was possible only in a mosquito pool (trapping from a village where a human case occurred) with WNV identified as lineage 2 (preliminary results). Detection – characterisation of virus from human cases still pending.

Surveillance and Control measures in humans

Coordinated by : The Ministry of Health and Social Solidarity and KEELPNO (Hellenic Centre of Disease Control and Prevention) in cooperation with local Public Health authorities (under the jurisdiction of the Ministry of Interior)

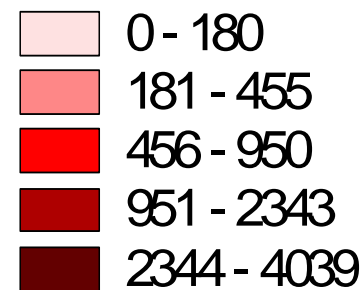
- Passive surveillance (WNF in humans is a notifiable disease)
- Field epidemiological investigation of cases
- Raising awareness among practitioners /human health workers and the general public
- Measures to ensure safety of blood banks (including molecular screening of blood units at risk, deferral of donations etc), and transplanted organs
- Vector control measures (undertaken by the local authorities , through private contractors) in order to reduce the number of adult mosquitos.

Present structure of the equidae population in Greece (latest data available)



Number of holdings	Number of equidae
21.921	42.028 (37% horses)

Total Number of equids per prefecture



Surveillance and Control measures in animals

Coordinated by : The Ministry of Rural Development and Food (Directorate General of Veterinary Services, Animal Health Directorate) in cooperation with local veterinary authorities at prefecture level

Passive surveillance:

Veterinary authorities at prefecture level (WNF is a notifiable disease)

Update of census of the equidae population throughout the country

Active surveillance :

- Sentinel equidae**
- Surveillance in wild birds**

Active surveillance : sentinel equidae

Phase 1

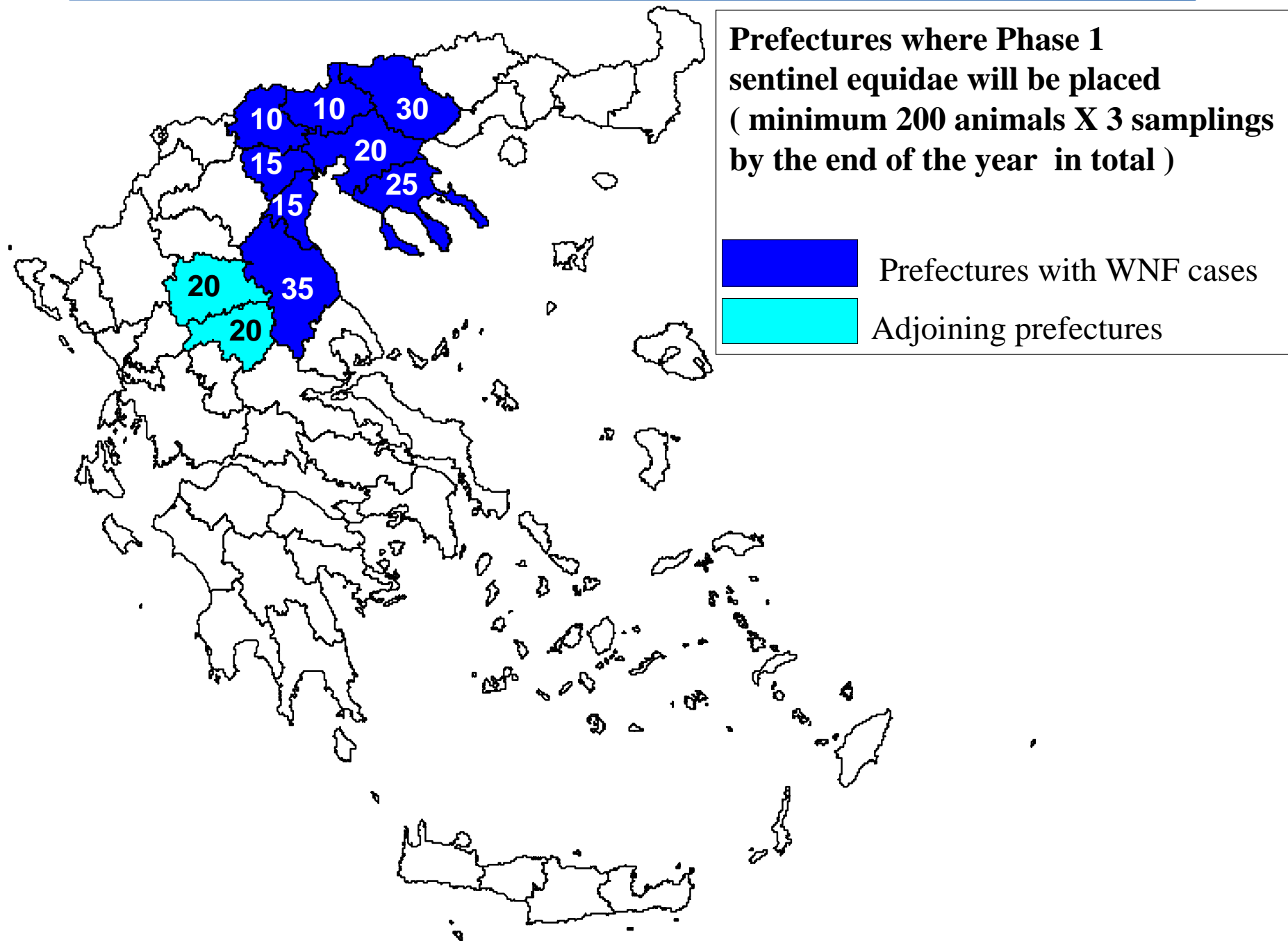
Establishment of a network of sentinel seronegative horses that will be sampled on a monthly basis within the prefectures where cases of WNF occurred and 2 adjoining prefectures , taking into account geographical and other criteria (effective as of September to the end of 2010).

Examination of sera by c-ELISA (screening) and , in case of positive results, further testing with IgM capture ELISA (Virology Department, Athens Center of Veterinary Institutes, Institute of Infectious and Parasitic Diseases)

Phase 2

Expansion of the sentinel network throughout the country (2011, details to be determined according to the activity of vectors and other available epidemiological data)

WEST NILE FEVER Situation in Greece – Measures - Animals



Criteria for sentinel selection within prefecture:

- **Epidemiological facts in humans**
- **Equidae population present**
- **Holdings – animals where no insecticides – insect repellents were used recently**
- **Wide dispersion of holdings selected within each prefecture**
- **Appr. 25% of sentinels in organised holdings (5 or more horses)**
- **No more than 2 horses per holding selected**

Adjustments of the sentinels' systems as appropriate depending on the progress of the epidemic in animals / humans

Surveillance in wild birds

In the same prefectures participating in the Phase 1 sentinel network capture and sampling (during the same period) of an estimated total number of 200 wild birds , mainly of the Corvidae family, by specialised personel to be tested for WNV (antibodies-virus detection).

Samples to be tested at the National Reference Laboratory for Avian Influenza (Thessaloniki Center of Veterinary Institutes)

Other Actions

Enhancement of cooperation with the competent human health authorities in Greece : Ministry of Health and Social Solidarity and KEELPNO through the establishment of Joint Committees.

Entomological surveillance : Results of the entomological surveillance carried out to be gathered and evaluated by a joint committee that will include representatives from the Ministry of Health and Social Solidarity/KEELPNO, Ministry of Rural Development and Food as well as University experts.

Enhancement of cooperation with private equidae practitioners

Acknowledgments

Hellenic Centre for Disease Control and Prevention (KEELPNO)

Virology Department (Athens Center of Veterinary Institutes, Institute of Infectious and Parasitic Diseases)

**Laboratory of Microbiology and Infectious Diseases
(Faculty of Veterinary Medicine, Aristotle University of Thessaloniki)**