# The "One Health" approach in West Nile disease surveillance: the experience of Southern Italy

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## Abstract

West Nile Disease is a zoonotic vector-borne infection involving viral pathogens, human and animal hosts, vectors and habitats with a complex transmission cycle. Cooperation among different disciplines has been promoted by the Italian Public Health Authorities to introduce a robust surveillance system and an integrated West Nile Virus (WNV) Surveillance Plan has been in force in Italy since 2016, in order to establish a medical, veterinary and entomological network. This represents a unique model in Europe. This study aims to present this "One Health" approach applied following the first recorded autochthonous case of West Nile Neuroinvasive Disease (WNND) in Sicily (Southern Italy). Serological and molecular tests were conducted on the blood, liquor and urine of a 38-year-old man with encephalitis and meningitis: WNND was confirmed by serological analysis on liquor and serum. Consequently, a veterinary and entomological surveillance was started. Overall, 160 mosquito catches were collected from six different sampling sites and 2704 adult culicides were morphologically identified. Female mosquitoes were analyzed in pools for WNV RNA detection. Serological and molecular assays for WNV were carried out in 11 horses, 271 chickens and 2 dogs sampled in farms around the man's residence. Collected mosquito species included Culex pipiens (93.6%), Aedes albopictus (5.25%), Culex hortensis (0.6%), Culiseta longiareolata (0.55%) and Anopheles maculipennis s.l. (0.04%). Mosquito pools were negative for WNV nucleic acid presence. Two dogs (100%) and two horses (18.2%) resulted positive for WNV-specific IgG antibodies. Since WNND epidemiology is influenced by several ecological factors and by the presence of several animal and vector species, the integrated surveillance system was crucial for understanding whether the virus had circulated/was circulating in the suburban, urban area and for preventing the spread of infection.

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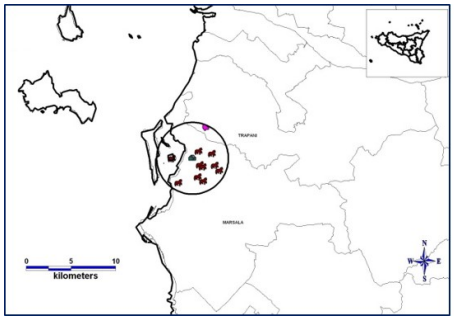


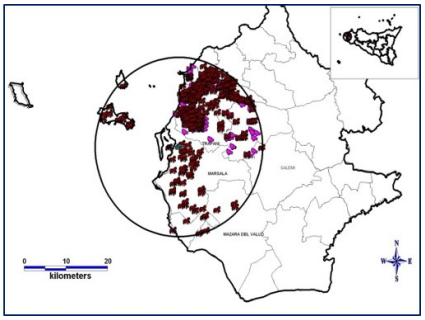


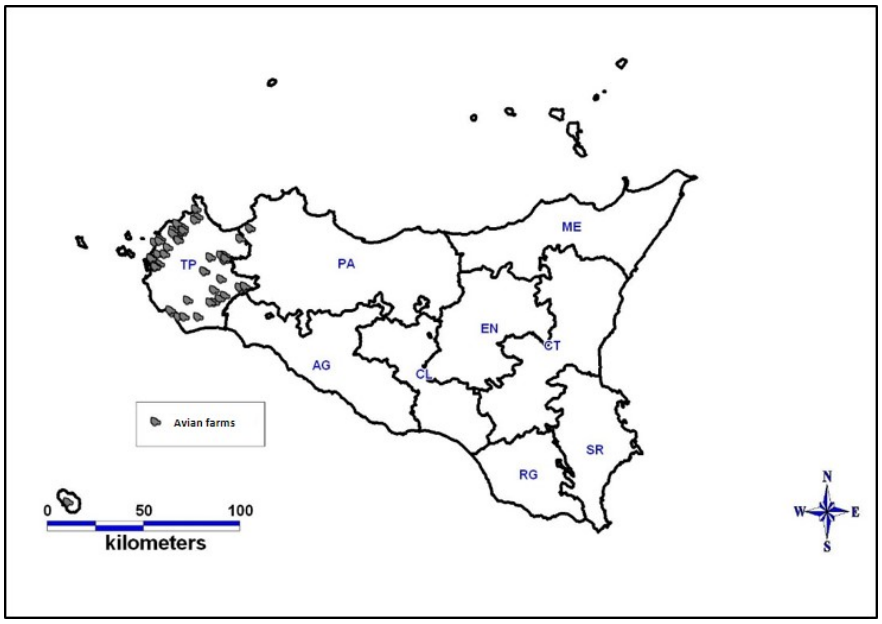

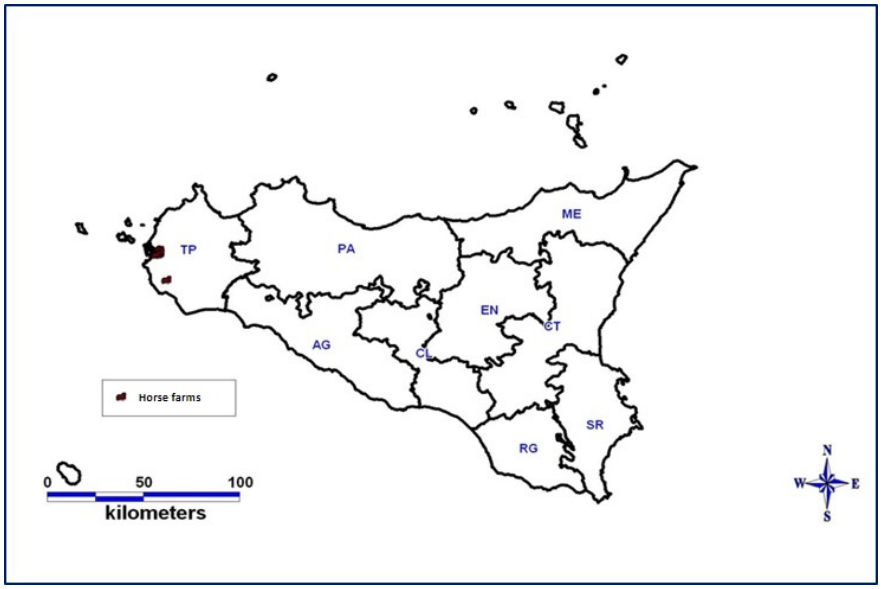


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