

Mosquito testing as early warning system for WNV outbreaks

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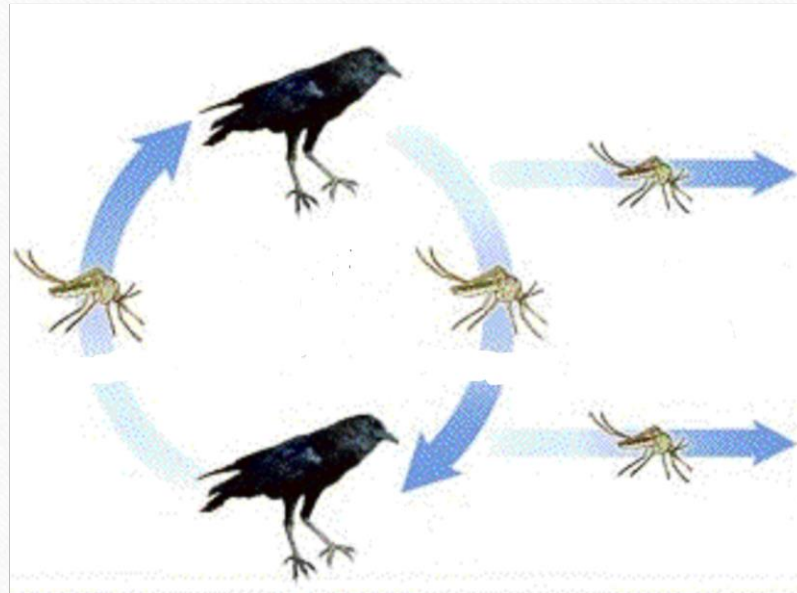
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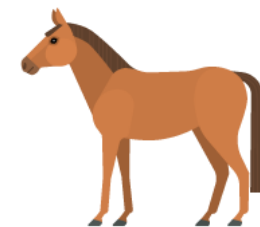
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West Nile virus (WNV) - Transmission cycle

Family *Flaviviridae*,
Genus *Flavivirus*



Dead-end hosts



WNV & Early Warning System

A statistical **Early Warning System** provides forecast disease outbreak risk maps.

In order to achieve to allow the indication of high risk areas or WNV and time intervals for the intensification of mosquito control measures and sensitization of population for personal protection against mosquitoes.

Data for an Early Warning System

- Entomological
- Epidemiological
- Climatologic, geographic and demographic data

Meta-analysis data

databases: PubMed, Web of Science

158 publications



41 publications
2001-2019

Continent	No of articles
Europe	16
America	22
Other	3

Species	No of articles
Mosquitoes	21
Birds	25
Horses	3

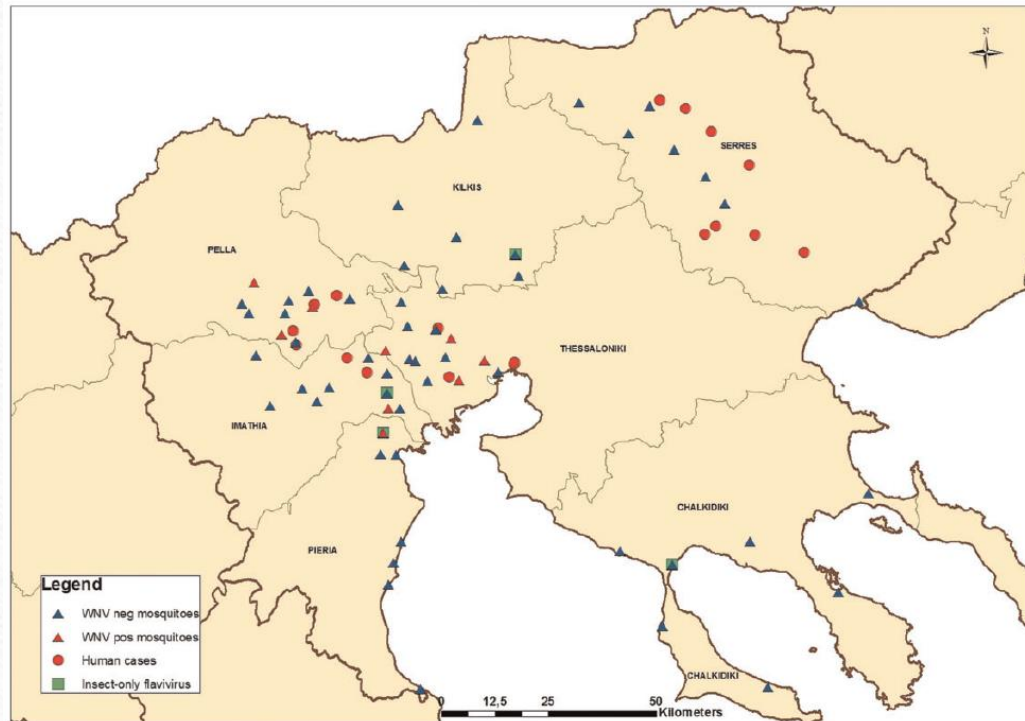
Mosquitoes

Prediction period	No of articles
< 15 days	3
15 - 45 days	5
> 45 days	4

WNV in Greece

- In Greece, WNV was detected for first time in 2010.
- Since 2010, outbreaks occurred in the country almost every year (except 2015 and 2016)
- The Greek strain (Nea Santa-Greece-2010) belongs to the Central European subclade of lineage 2.

WNV - Mosquitoes and human cases in Greece, 2013



295 pools of mosquitoes (25,780 *Culex* spp.)

9 WNV-positive mosquito pools in 4 regions
3.1%

Prediction period: ~1 month earlier

Trans R Soc Trop Med Hyg 2014; **108**: 555-559
doi:10.1093/trstmh/tru100 Advance Access publication 17 July 2014



Detection of West Nile virus and insect-specific flavivirus RNA in *Culex* mosquitoes, central Macedonia, Greece

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WNV - Mosquitoes and human cases in Greece, 2018



229 pools of mosquitoes (17,470 *Culex* spp.)

10 WNV-positive mosquito pools in 3 regions
4.4%

Prediction period: ~2 weeks earlier



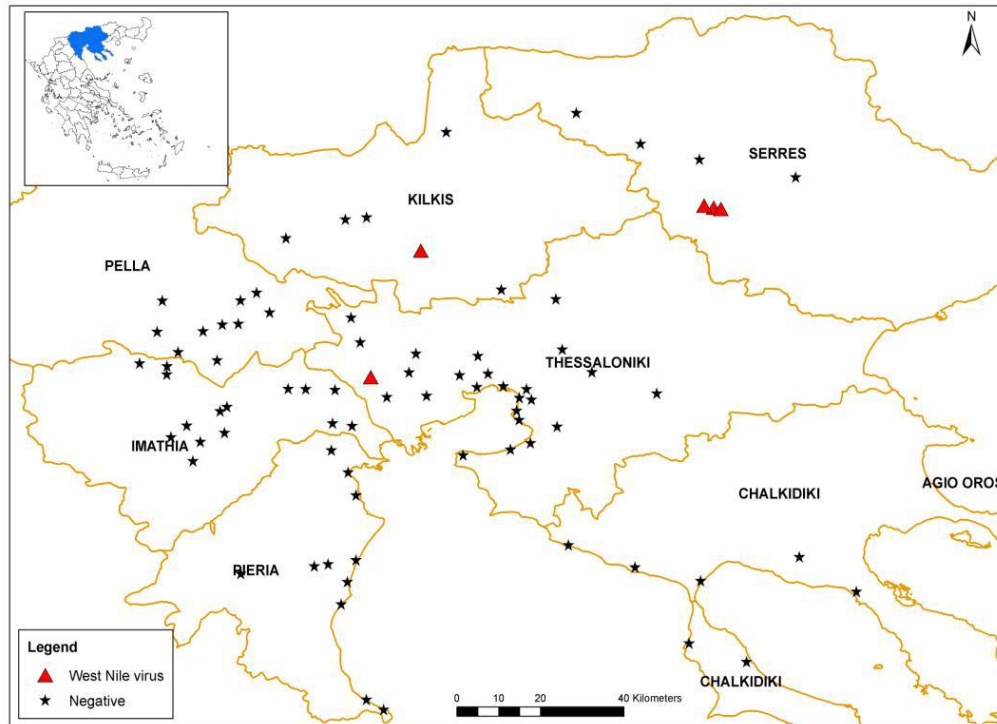
Acta Tropica
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Detection of flaviviruses and alphaviruses in mosquitoes in Central Macedonia, Greece, 2018

Anna Papa ^{a, *}, Sandra Gewehr ^b, Katerina Tsioka ^a, Stella Kalaitzopoulou ^b, Styliani Pappa ^a, Spiros Mourelatos ^b

WNV - Mosquitoes and human cases in Greece, 2019



346 pools of mosquitoes (26,614 *Culex* spp.)

5 WNV-positive mosquito pools in 3 regions
1.4%

Prediction period: ~2 weeks earlier only in one region

Conclusion

Testing mosquitoes for WNV may serve as early warning system, especially if the sites of the traps are selected based on specific criteria, but only when the circulation of the virus is relatively high.

Thank you!!



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