VectorNet

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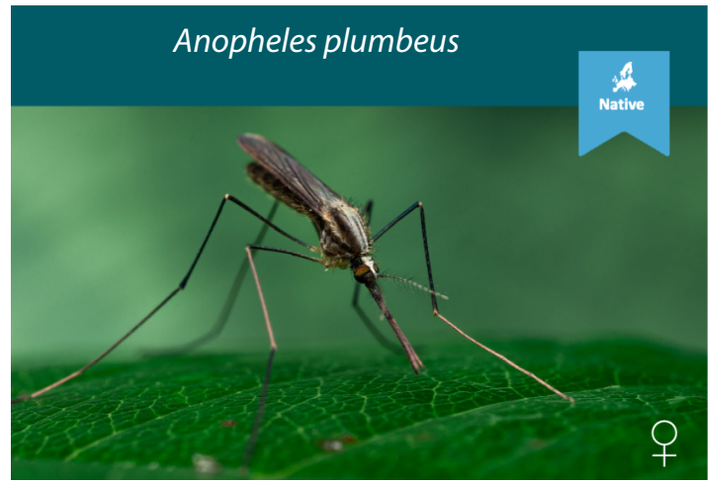
Welcome to the fifth VectorNet newsletter. VectorNet is a joint project of the European Food Safety Authority (EFSA) and the European Centre for Disease Prevention and Control (ECDC), which started in May 2014, and is now in its second iteration (2019–2023). The project is supported by a Scientific Coordination Committee with members from the Public and Animal Health community. In this project period, VectorNet aims to publish two newsletters per year.

VECTORNET: PUTTING VECTORS ON THE MAP

In this journal article, available here we describe the development and maintenance of our network that celebrated its 10th anniversary in 2020, and the value of its most tangible outputs, the vector distribution maps, that are freely available online and its raw data on request

VectorNet encourages usage of these maps by health professionals and sharing and usage of the raw data by the network and other experts in the science community.

A more complete technical description of the mapping procedure entitled ***VectorNet: Collaborative mapping of standardised distributions and surveillance for arthropod disease vectors in Europe and neighbouring countries*** will be published separately.



UPDATED AND EXTENDED REVERSE IDENTIFICATION KEY FOR MOSQUITOES

In 2021 *VectorNet* developed a so-called 'reverse' identification key for invasive mosquito species and native mosquitoes that can be confounded with invasive ones for lay persons. This key provides the non-specialist with reference material to help recognise an invasive mosquito species and gives details on the morphology (in the species-specific pages) to help with verification. This key has recently been updated (with new photographs and some corrections to drawings after feedback from the network) and extended with the following seven native mosquito species:

- *Aedes pulcritarsis*
- *Aedes vittatus*
- *Aedes zammitii*
- *Anopheles plumbeus*
- *Coquillettidia richiardii*
- *Orthopodomyia pulcripalpis*
- *Uranotaenia unguiculata*

The current key displays six invasive mosquito species that are present in the EU/EEA or have been intercepted in the past. It also contains 16 native species. The native species have been selected

- (1) based on their morphological similarity with the invasive species;
- (2) on the likelihood of encountering them; and
- (3) to include representatives of all mosquito genera present in Europe.

A PDF, a PPT as well as an interactive tool web-based of the updated key is available on the ECDC website

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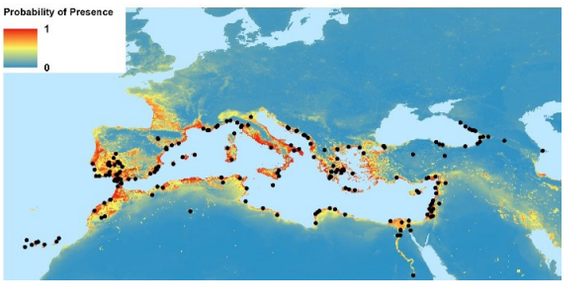
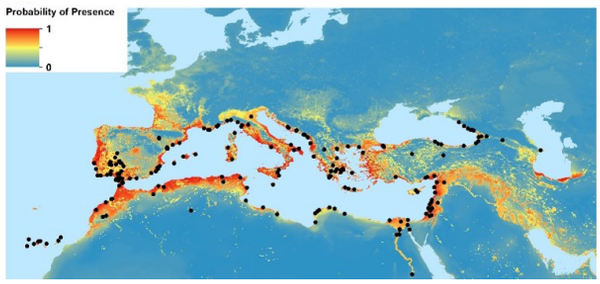
PAST, PRESENT AND FUTURE DISTRIBUTION OF THE YELLOW FEVER MOSQUITO: THE EUROPEAN PARADOX

The global distribution of the yellow fever mosquito *Aedes aegypti* is the subject of considerable attention because of its pivotal role as a biological vector of several high-profile disease pathogens including dengue, chikungunya, yellow fever and Zika viruses. There is also a lot of interest in the projected future species' distribution. However, less effort has been focused on its historical distribution, which has changed substantially over the past 100 years, especially in southern Europe where it was once widespread, but largely disappeared by the middle of the 20th century. In this article, all available historical records of the distribution of *Ae. aegypti* in southern Europe, the Near East within the Mediterranean Basin, and North Africa from the late 19th century until the 1960's were used to construct a spatial distribution model using matching historical environmental and demographic data. The result show that *Ae. aegypti* has not filled the large niche in the western Palaearctic region, as predicted suitable by the models for the current climate. On the other hand, it continues to spread in the parts of the USA which, as we have shown, have similar habitat suitability. The number of potential explanations why the vector has failed to re-establish in continental western and southern Europe is discussed.





1- Collect historical/current vector distribution data

2- Model historical spatial vector distribution and validate

3 - Use historical model with current climate to predict current distribution

NEWS FROM THE NETWORK

TRAINING

The first face-to-face training entitled "Role of entomology in the fight against vector-borne diseases" took place on 21-23 September 2022, at the University of Agronomic Sciences and Veterinary Medicine of Bucharest (USAMV) Cluj-Napoca, Romania organized by A. D. Mihalca, with presentations by M. Braks and N. Alexander (in collaboration with W. Wint). The overall aim of this training was to strengthen public and veterinary health professionals in their basic understanding of the role of entomology in the fight against vector-borne diseases. This included strengthening their capacity to assess the risks for human and veterinary health associated with vector invasion and establishment.

UPCOMING

- 8– 9 November 2022: Annual Entomological Network Meeting in Leiden, the Netherlands
- 2022: Paper entitled ***VectorNet: Collaborative mapping of standardised distributions and surveillance for arthropod disease vectors in Europe and neighbouring countries***. PI: W. Wint.
- 2022: Updated ***VectorNet vector distribution maps***. PI: W. Wint.
- 2022: Literature review on the topic of ***the monitoring of insecticide resistance of arthropod vectors of diseases of public and veterinary health importance in Europe.*** PI: W Van Bortel.
- 2022: Technical report on ***leishmaniosis in the EU and its neighbourhood – A spatial correlation analysis***. PI: E. Berriatua

RECENTLY PUBLISHED

- Fact sheet for experts: Lice, developed for ECDC by VectorNet (A. Mihalca)
- Webinar (live): Availability and regulation of biocides for the control of vectors of diseases of public and veterinary health importance (24 February 2022), a collaboration between VectorNet, ECDC, EFSA, RIVM and DGSANTE. Available on the ECDC Virtual Academy
- Paper entitled VectorNet: Putting Vectors on the map
- The updates of the vector distribution maps resulting from the routine VectorNet distribution data extraction and mapping activities for contract period 5, that ran from November 2021 to March 2022 have been available online since April. Vector distribution status changes in terms of spatial units since the previous update are highlighted per vector groups at the website. In summary: Invasive mosquito species Aedes albopictus have been recorded in Algeria, France, Germany, Spain, Ukraine (Crimea). For native mosquitoes, datasets were completed mainly by reporting 'Anticipated Absent' for countries where the species has never been observed. Important data sets for the occurrence of native species are included for Finland and Estonia, for which all maps can now be considered as completed. Tick maps include new areas of Hyalomma marginatum presence in Morocco and Turkey and introduced records in Belgium, Czech Republic, Finland and Hungary. Overall, Culicoides and sand fly distribution picture of VectorNet maps changed little since October 2021, though the data have filled significant gaps. Work is currently ongoing for the next update of the map.

To find out more about VectorNet please subscribe
https://ec.europa.eu/eusurvey/runner/VectorNet_Community_2020

ecdc EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL

efsa European Food Safety Authority