



Welcome to the sixth **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.

LEISHMANIA AND VECTOR DISTRIBUTION IN EUROPE AND NEIGHBOURHOOD

In this technical report (<https://www.ecdc.europa.eu/en/publications-data/spatial-relationship-between-presence-and-absence-leishmania-spp>) we present an analysis of the spatial relationship between the presence and absence of autochthonous *Leishmania* spp. (*L. infantum*, *L. tropica*, *L. major* and *L. donovani sensu stricto*) and clinical cases in humans and animals, and the presence and absence of their confirmed and suspected respective *Phlebotomus* spp. vectors, in Europe and neighbouring countries. The analysis showed that the distributions of a small number of vector species out of all confirmed and suspected vectors could explain some of the variation in the spatial distribution of *Leishmania* species and clinical forms. This result may be considered (weak) epidemiological evidence of differences in vectorial capacity among vector species that should be further investigated. This study highlights areas where *Leishmania* species and/or clinical forms have been diagnosed but no vectors have been reported so far, supporting the need for enhanced vector surveillance. Considering enhanced *Leishmania* spp. surveillance in peri-endemic areas where vectors are present may facilitate detection of parasite introduction via movement of infected people and animals.



Mating sand flies in the laboratory (Source: VectorNet)

INSECTICIDE RESISTANCE OF ARTHROPOD VECTORS

In the light of (re-)emerging vector-borne pathogens, EU/EEA countries are increasingly implementing intervention strategies in an attempt to decrease the public and veterinary health burden of these pathogens. In many cases, vector control is pivotal to prevent and control the transmission of vector-borne pathogens, as (prophylactic) drugs and/or vaccines are often unavailable. Control measures exist in a wide array and often utilise a biocide in their approach. The extensive use of these chemicals is known to give rise to resistance in the target vector populations, undermining the efficacy of the biocide and the control efforts. The aim of this report is to assess the state of biocide resistance of vectors present in the EU/EAA region through a literature search and by contacting the members of the **VectorNet** Entomological Network and their contacts. A literature review was done covering the period 2000–

2021. Biocide resistance (BR) assessment studies were included when performed on wild vector populations (mosquitoes, sand flies, biting midges and ticks) from the EU countries and selected neighbouring countries. Additional data were obtained through a questionnaire sent to the VectorNet Entomological Network members. We found that biocide resistance assessment studies have mainly been conducted in countries around the Mediterranean region and on mosquito species such as *Culex pipiens* and *Aedes albopictus*. Fewer studies have been done on ticks and sand flies, and no studies on biting midges were identified in this review. Resistance has been confirmed in multiple species and regions and for multiple biocide classes.

[Literature review - biocide resistance in wild vector populations in the EU and neighbouring countries \(europa.eu\)](https://www.ecdc.europa.eu/en/publications-data/literature-review-biocide-resistance-wild-vector-populations-eu-and-neighbouring-countries)

NEWS FROM THE NETWORK

ANNUAL ENTOMOLOGICAL NETWORK MEETING

VectorNet's Annual Entomological Network Meeting (AENM) took place in Leiden, the Netherlands, from 8–9 November 2022. The main objective of an AENM to strengthen the VEN was met by creating the ample opportunity to network through a hybrid meeting with all VEN members, a workshop on site entitled Entomologists in public and animal health to share experiences and best practices, plenary sessions as well as the field trip to the Dutch dunes. Apart from networking, another important objective of this specific AENM was met, namely to provide EFSA a qualitative assessment of the risk of introduction of 18 vector-borne zoonotic diseases in the EU based on expert opinion, previous assessments and knowledge gathered by **VectorNet** during a workshop entitled EFSA-One Health.



Participants AENM 2022, Coastal dunes, The Netherlands (Source: VectorNet)



RECENT ACTIVITIES

ACTIVITIES

- **22 March 2023** 14:00 CET: Webinar (live via EVA platform) entitled Leishmaniasis in the European Union and its neighbourhood
- **13 April 2023** 14:00 CET: Webinar (live via EVA platform) entitled Biocide resistance in wild vector populations in the EU and neighbouring countries

RECENTLY PUBLISHED

- Training material of the face-to-face training entitled Role of entomology in the fight against vector-borne diseases took place on 21-23 September 2022, at USAMV Cluj-Napoca, Romania organized by A. D. Mihalca, with presentations by M. Braks and N. Alexander (in collaboration with W. Wint). Available on the ECDC Virtual Academy <https://eva.ecdc.europa.eu>
- 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. [Literature review - biocide resistance in wild vector populations in the EU and neighbouring countries \(europa.eu\)](https://www.ecdc.europa.eu/en/publications-data/spatial-relationship-between-presence-and-absence-leishmania-spp)
- Technical report on *leishmaniosis* in the EU and its neighbourhood – A spatial correlation analysis. PI: E. Berriatua <https://www.ecdc.europa.eu/en/publications-data/spatial-relationship-between-presence-and-absence-leishmania-spp>
- VectorNet contributed to the following two EFSA scientific reports published in the EFSA Journal
 - » Coordinated surveillance system under the One Health approach for cross-border pathogens that threaten the Union – options for sustainable surveillance strategies for priority pathogens ([surveillance proposals](#))
 - » Prioritisation of zoonotic diseases for coordinated surveillance systems under the One Health approach for cross-border pathogens that threaten the Union ([priority pathogens](#);
- The updates of the vector distribution maps resulting from the routine VectorNet distribution data extraction and mapping activities for contract period 6, that ran from April 2022-December 2022. In total, approximately 77,500 data lines have been entered this period –more than double the number submitted in Period 5. The summary distribution highlights are described and presented under Vector maps at the website: <https://www.ecdc.europa.eu/en/data/maps>

UPCOMING ACTIVITIES

ACTIVITIES

- **Week 37 of 2023:** Final VectorNet's Annual Entomological Network Meeting Leiden, the Netherlands (details will follow)

PRODUCTS

- **Spring 2023:** Technical Report: Updating estimates of the spatial distribution of CCHF in Europe and its neighbours. PI: W. Wint. (in clearance)
- **Summer 2023:** Paper: VectorNet: Collaborative mapping of standardised distributions and surveillance for arthropod disease vectors in Europe and neighbouring countries. PI: W. Wint. Eurosurveillance (in press)
- **Autumn 2023:** Systematic literature review: Pathogen detection in vectors in the field. PI: W. Van Bortel, EFSA Journal:
- **Autumn 2023:** Systematic literature review: Vector competence in the lab. PI: W. Van Bortel EFSA Journal