One-Health VectorNet Entomology Network

Minutes of the 2nd meeting – Open to observers

25–27 November 2025
13:00–18:00 /09:00–18:00 /09:00–12:00

Location: Room 922 Semmelweis, ECDC premises, Gustav III:s Boulevard 40, Solna, Sweden; online: WebEx.

Attendees:

- Network Participants:

Network role	Country	Affiliation
CPO	Albania	Instituti i Shëndetit Publik
NVE	Austria	AGES
OCP	Austria	Österreichische Agentur für Gesundheit und Ernährungssicherheit GmbH
NVE	Belgium	Sciensano
OCP	Belgium	Sciensano
NVE	Bosnia and Herzegovina	Veterinary Faculty, University of Sarajevo
NVE	Bulgaria	Национален център по заразни и паразитно болести
OCP	Bulgaria	Национален център по заразни и паразитно болести
NVE	Croatia	Hrvatski veterinarski institut
NVE and OCP	Cyprus	Ministry of Agriculture, Rural Development and Environment
OCP	Cyprus	Υπουργείο Υγείας, Κυπριακή Δημοκρατία
OCP	Czech Republic	Státní zdravotní ústav
NVE, OCP and VectorNet Consortium	Denmark	Copenhagen University (KU)
NVE	Estonia	Estonian University of Life Sciences
OCP	Estonia	Terviseamet
NVE and OCP	Finland	Helsingin Yliopisto
NVE	France	Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail/French Agency for Food, Environmental and Occupational Health and Safety (ANSES)
OCP	France	Ministère de la Santé et de la Prévention
OCP	France	Santé publique France
NVE and OCP	Germany	Friedrich-Loeffler Institut

NVE	Greece	Ministry of Rural Development and Food
OCP	Greece	Πανεπιστήμιο Δυτικής Αττικής
OCP	Iceland	Institute for Experimental Pathology/Keldur
NVE and OCP	Ireland	University College Dublin
OCP	Italy	Istituto Superiore di Sanità
OCP	Italy	Istituto Superiore di Sanità
NVE and VectorNet Consortium	Italy	Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise "G. Caporale"
NVE and CPO	Kosovo	Universiteti i Prishtinës
NVE	Latvia	Institute of Food Safety, Animal Health and Environment "BIOR"
NVE	Lithuania	Lithuanian University of Health Sciences
OCP	Lithuania	Nacionalinis visuomenės sveikatos centras
NVE	Luxembourg	Musée national d'histoire naturelle - Luxembourg
NVE	Malta	Veterinary Surgeons' Council (VSC) at Ministry for Agriculture, Fisheries and Animal Rights (MAFA)
OCP	Malta	Superintendence of Public Health
OCP and VectorNet Consortium	Netherlands	Rijksinstituut voor Volksgezondheid en Milieu
NVE	North Macedonia	Faculty of veterinary medicine
OCP	Norway	Nasjonalt folkehelseinstitutt
NVE	Poland	National Veterinary Research Institute State Research Institute
NVE and OCP	Portugal	Centro de Estudos de Vectores e Doenças Infeccios, Instituto Nacional de Saúde Dr. Ricardo Jorge (INSA)
OCP	Romania	Direcţia De Sănătate Publică Botoşani
NVE	Serbia	Faculty of Agriculture, University of Novi Sad
NVE	Slovak Republic	The University of Veterinary Medicine and Pharmacy in Košice in the Slovak Republic
OCP	Slovakia	Slovak Academy of Science
NVE and OCP	Slovenia	Univerza na Primorskem
NVE	Spain	Ministry for Agriculture, Fisheries and Food
NVE and OCP	Spain	Universitat de les Illes Balears
NVE	Sweden	National Veterinary Institute (SVA)
NVE	Türkiye	Ministry of Agriculture and Forestry-Pendik Veterinary Control Institute
CPO	Türkiye	Saglik Bakanligi

NVE: Network for Veterinary Entomology; OCP: Operational contact point entomology; CPO: Contact point for operations entomology

- Hearing experts:

Avia-GIS N.V., Benaki Phytopathological Institute, Charles University, CIRAD, Environmental Research Group Oxford, Epimundi, European Mosquito Control Association, Fondazione Edmund Mach, Fondazione Edmund Mach, Global Biodiversity Information Facility, Hacettepe University, Institute of Tropical Medicine, Istituto Pasteur Italia – Fondazione Cenci Bolognetti, Mabritec AG, National Laboratory of Virology, One-Health Secure, Parasitology Consultancy Group, The UK Health Security Agency, University of Pécs

- European agencies

DG SANTE, DG HERA, JRC

EFSA: Sofie Dhollander, Donna Lucas, Ieva Baltusyte, Giusi Amore, Miguel Melo

ECDC: Tamas Bakonyi, Leonardo Bonaldo, Claire Bouet, Olivier Briet, Olivier Cecchi, Celine Gossner, Joana Haussig, Nathalie Jourdan-da Silva, Sharon Kuhlmann Berenzon, Esther Kukielka Zunzunegui, Nina Lagerqvist, Dorothee Obach, Ines Reulet, Liese van Gompel

- Observers (online)

One Health Surveillance network-vector data providers: Austrian Agency for Health and Food Safety (Austria), National Institute of Public Health (Czeck Republic), Terviseamet Health Board (Estonia), Hellenic National Public Health Organization (Greece), National Food Chain Safety Office (Hungary), University College Dublin (Ireland), Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise "G. Caporale" (Italy), Institute of Food Safety, Animal Health and Environment (Latvia), National Veterinary Research Institute State Research Institute (Poland), University of Veterinary Medicine and Pharmacy in Košice (Slovakia), Coordinated Centre for Health Alerts and Emergencies (Spain), National Veterinary Institute (Sweden)

- Other Observers (online)

Instituto Nacional de Saúde (Portugal), Global Health and Tropical Medicine (Portugal)

1. Welcome and apologies for absences

Participants were welcomed by the VN coordinator on behalf of VectorNet, EFSA, and ECDC, after which a tour de table allowed attendees to introduce themselves.

2. Adoption of agenda

The agenda was adopted without changes.

3. Presentation of rules for observers

Observers were welcomed to participated in all aspects of the meeting, except the group work.

4. Agreement of the minutes of the previous meeting

The minutes of the 1st Network meeting held on 30–31 October 2024, in Antwerp had been previously agreed by written procedure in January 2025 and published on the EFSA website on 25 January 2025.

5. Joint opening of the meeting

5.1 Update on vector-borne diseases affecting humans in the EU

ECDC presented an update on vector-borne diseases from the human health perspective, highlighting recent epidemiological trends and public health challenges. During the discussion that followed, several important points were raised. Participants noted that vector-borne diseases can have a significant impact on endangered wildlife species, underlining the need for improved monitoring and response strategies; however, responsibility for this area remains unclear across agencies. It was also emphasized that limited funding and fragmented institutional responsibilities continue to hinder effective vector control and disease management across countries. In addition, the need for improved communication and coordination between national and local authorities was highlighted, particularly with regard to surveillance activities and implementation of control measures.

5.2 Update on vector-borne diseases affecting animals in the EU

In 2024–2025, animal disease impacts in the EU varied. Among the four reportable diseases, BTV caused the most outbreaks in 2024 (711) with 49,852 losses, decreasing in 2025 mainly due to vaccination. EHD affected 4 MS in 2024 (250 outbreaks, 31,301 losses) without outbreaks in 2025. LSD emerged in 2025 (199 outbreaks, 8,997 losses), vaccination ongoing. WNV had lower impact on domestic animals in 2025 (913 outbreaks, 9,041 bird and horse losses), with horse vaccination common in endemic areas. CCHF showed no animal health impact in 2025, though seropositive livestock and wildlife were detected in France and Portugal. RVF is circulating in Senegal and Mauritania. Other non-reportable VBDs present in the EU, including Leishmaniosis, Babesiosis, TBE, and Lyme, likely have underestimated clinical impacts on animals.

5.3 Discussion: Entomological activities of OHVEN to prepare for and respond to these VBD

Participants noted that vector-borne diseases may have a substantial impact on endangered wildlife, underscoring the need for stronger monitoring and response strategies, and that the agency responsible for this work remains unclear. They highlighted that limited funding, and fragmented responsibilities continue to hinder effective vector control and disease management across countries. The discussion also stressed the need for improved communication and coordination between national and local authorities regarding vector surveillance and control efforts.

6. Update on VectorNet activities

6.1. Organization of surveillance and control of WNV vectors and Aedes invasive mosquitoes in Europe and identification of needs

This presentation provided an overview of the preliminary results of a survey done in May 2025 and workshop in June 2025 on surveillance and control of WNV vectors and *Aedes* invasive mosquitoes.

For the survey, target respondents were OCPs and CPOs for entomology of EU/EEA countries, EU enlargement policy countries, and the UK. The questionnaire focused on the organisation of surveillance and control, from design to implementation, where it is implemented (national or sub-national), and the objectives of surveillance and control, funding, and needs. Out of 38 invited countries, 26 responded.

WNV is recognised as a public and/or veterinary health concern, and surveillance activities are used to inform response efforts: outbreak investigations and assessing the level, location, and timing of transmission risk. The organisation and execution depend on national structures and responsibilities. Funding is often limited in amount and duration. A range of control methods is used across countries, with adult mosquito control using biocides being the most common approach.

The objectives of Aedes Invasive Mosquitoes Surveillance are to assess the introduction and spread, and to inform response and address associated public or health concerns. The organisation and implementation vary widely across countries, reflecting differences in national structures and responsibilities as well as risk context: some countries have preventive control embedded into long-term strategies for disease risk reduction. Others implement reactive control, often funded on an ad-hoc basis. Funding mechanisms for control remain unclear. Preventive and elimination measures typically target immature stages, using biocidal and non-biocidal interventions, combined with formalised social mobilisation programmes. Reactive control, in contrast, generally targets adult mosquitoes using biocides.

For the workshop, 21 countries participated, as well as ECDC, HERA, SANTE and the VectorNet consortium. The objectives were to map existing resources and capacities of mosquito surveillance and control, identify country needs for mosquito surveillance and control, identify possible actions to address needs for mosquito surveillance and control, and to foster cross-regional collaboration.

Identified challenges were lack of stable funding (often project based) and entomological expertise in public health; fragmented and unclear coordination and roles and responsibilities, rigid planning and complex regulation, and insufficient data and knowledge to link vector parameters to disease risk.

From the survey and meeting, the following possible actions were identified:

Development of practical training materials tailored to both entomologists and professionals involved in surveillance and control activities to facilitate continuous capacity building programmes;

Reviewing the legal and regulatory frameworks —particularly the EU Biocidal Products Regulation— will help identify opportunities and limitations for adopting vector surveillance and control strategies within and across countries;

Establishment of a dedicated platform for regular exchange between Member States and relevant (regional) authorities to foster collaboration, share good practices, harmonise surveillance and control where possible, support coordinated responses and emergency preparedness mechanisms for rapid mobilisation of cross-border expertise and resources in case of outbreaks or unusual vector-borne disease events;

Establishment of a European Union Reference Laboratory network for Entomology and supporting networks to provide technical expertise, standardise methods, and build laboratory and field capacities;

Establishing a network focused on insecticide resistance monitoring, data sharing, and capacity building will further support sustainable and effective vector control;

Fostering of research to close key knowledge gaps, especially in understanding the link between vector abundance and disease risk, is essential to inform evidence-based targets and promote innovation in surveillance and control tools.

6.2 Systematic literature on vector competence

The updated systematic literature reviews for 25 vector-borne pathogens under the EFSA mandate were presented. One review focused on field detections of vectors testing positive for any of the pathogens, while the other examined laboratory transmission experiments demonstrating vectorial transmission. Vector status was determined based on the available evidence.

6.3 Risk of introduction of 25 vector-borne pathogens in the EU through active and passive vector movement

An update on the risk assessment for 25 vector-borne disease agents was presented, building on previous reports. The assessment highlighted the need for practical methodologies, given the limited data available on transport pathways. Entry pathways for the diseases were categorized into natural and human-mediated transport methods.

6.4 Niche-habitat modelling to predict Culicoides distribution

New Culicoides niche-habitat models were presented, based on high-quality data and independent statistical relationships to ensure accuracy. The improved data quality enhanced the model predictions and understanding of species distribution across regions. The new presence/absence models indicated a wider species distribution compared to the 2017 abundance models.

7. Data collection and sharing

7.1 Introduction to GBIF-EFSA-ECDC collaboration

A memorandum of cooperation was signed between GBIF, EFSA, and ECDC to host VectorNet datasets on the GBIF portal (vectornetdata.org). Countries can upload their data after validation by VectorNet. Participants raised concerns about data publication licenses and potential conflicts with their own publications. It was clarified that datasets can be published in stages—initially with limited details, followed by full datasets—allowing simultaneous scientific publications without conflict. Published data on GBIF will need to be cited and can be reused for other purposes, herewith also increasing the impact of the work.

7.2 Demonstration of the GBIF VectorNet hosted portal and achievements

A new validation tool was introduced to streamline data quality checks before submission to the Vectornet data portal on GBIF. The validation tool is more stringent than the general GBIF checks, ensuring higher data quality. The email-based system accepts spreadsheets, auto-validates entries, and returns errors, while warnings can be overridden. Reference entomologists receive data already cleaned of syntactic errors, allowing them to focus on taxonomic and epidemiological validation. Attendees raised questions about adding extra columns without triggering errors. It was confirmed that this can be done, but they will not be validated. The meeting highlighted the need for clear communication on data submission processes, e.g. by providing detailed instructions in a short guide.

7.3 Summary of validation process and demo of the vector surveillance data entry tool

Following the presentations on the VectorNet Data Portal on GBIF and the demonstration of the new data entry tool, some participants were uncertain about whether all data providers would be required to submit data through the new system. EFSA clarified that the use of the tool is encouraged for all contributors—not only One Health data providers—to ensure that high-quality and validated data are uploaded to the portal.

7.4 Distribution status mapping

The distribution mapping workflow was presented. New is that the process will be converted to GBIF's Darwin Core (DwC), the inclusion of (other) sources from GBIF, and algorithms for automatic generation of (anticipated) absence predictions. A further proposal is to ask EU/EEA countries to voluntarily report *Aedes albopictus* and *A.aegypti* statuses directly to ECDC. Vector Group Leads (VGLs) review maps with the current status, new occurrences, and suggested reversals (introduced → present or present → absent), with decisions communicated before public release. It is proposed to also include all old datapoints as an optional layer to facilitate decisions on reversals. Shapefiles of the maps will be published on the VectorNet portal for stakeholder download.

8. Data collection and sharing by the OHVEN Network

8.1 VectorNet field work in 2025: highlights

Updates on mosquito field studies addressing data gaps in priority species across specific regions were presented. Key points included local collaborations between VectorNet and countries, new

findings for various vector groups, training for local scientists to enhance surveillance and data sharing, and collaboration with other initiatives such as CLIMOS.

8.2 One-Health vector surveillance in Austria

Austria provided an overview of its One Health surveillance activities. Mosquito and tick data from 2023–2024 included the first national monitoring of West Nile virus vectors and invasive Aedes species, as well as citizen-science tick drop-off sites, which collected 1,420 ticks in 2023 and over 4,700 in 2024. West Nile virus lineage 2 was detected in three mosquito pools in Burgenland and Styria, and Usutu virus was detected in Vienna. Tick findings included *Ixodes ricinus* and *Hyalomma marginatum/rufipes* (nymphs and adults), with additional detections of *Borrelia miyamotoi* in *Dermacentor reticulatus* and *Rickettsia* spp. Challenges remain in publishing data to GBIF due to Austria not being a GBIF member, but the Integrated Publishing Toolkit (IPT) is now supported.

8.3 One-Health vector surveillance in Luxembourg

Luxembourg provided an overview of its One Health surveillance activities. Mosquito monitoring showed widespread presence of West Nile virus vectors (*Culex pipiens*, *C. torrentium*), with C. modestus detected in a southeast wetland. Aedes japonicus is established nationwide, while Ae. albopictus is found along highways and at the airport and may be establishing. Tick surveillance identified 16 species, including *Dermacentor marginatus* (first detected in 2018), *Hyalomma marginatum/rufipes*, and *R. sanguineus* (2024), as well as 27 *Ixodes hexagonus* collected from hedgehogs through citizen-science and One Health tick drop-off networks. Sandfly monitoring detected *Phlebotomus mascittii* at 13 sites (2023–2025), supported by targeted training, though peri-urban sampling remains limited. *Culicoides* surveillance yielded 81 specimens of eight species in 2006, with 2025 samples pending identification at ITG. GBIF uploads across all groups were completed in February 2025, with more than 2,500 dataset downloads. An interministerial coordination framework is in place, and a national One Health data platform ("FRESH") was launched in 2025.

8.4 Chikungunya outbreak response and prevention in France

France provided an overview of its chikungunya outbreak response and preventive measures. Arbovirus notification is mandatory year-round, and imported cases—most originating from Réunion Island—trigger immediate larvicide and adulticide interventions. In 2025, seven regions were affected, with early and intense transmission leading to twice as many adulticide treatments as in 2024. Preparedness activities included seminars in February, official alerts in March, SOH safety measures in April, a webinar with regional agencies in May, travel advisories, and laboratory and network training. Future needs identified included greater legislative flexibility, sustained laboratory capacity, enhanced communication, and clearer prioritization of contingency measures during exceptional seasons. Larviciding is targeted to suspected cases, while adulticiding is scaled up for cluster containment, supported by continuous public communication that intensifies during peak periods.

8.5 Chikungunya outbreak response and prevention in Italy

Italy's approach to chikungunya preparedness and response was presented, focusing on integrated surveillance, early warning systems, and coordinated vector control actions. The presentation reflected on experiences from past outbreaks and how these have shaped current strategies, particularly regarding coordination between national and regional authorities. The discussion emphasised the importance of sustaining response capacity over time and adapting measures to evolving epidemiological contexts.

8.6 Lumpy skin disease: vector control for mechanical vectors

Italy reported its first cases of lumpy skin disease, emphasizing the critical role of vector control strategies in managing livestock disease outbreaks. Discussions covered the role of various biting flies as vectors of livestock diseases and their impact on cattle health. The importance of vector control in outbreak management and prevention was reiterated, alongside the conclusion that vaccination remains the most effective measure against livestock diseases, particularly in recent outbreaks. The presentation also examined the role of mechanical vectors in the transmission of lumpy skin disease, highlighting current knowledge and control strategies. The speaker discussed evidence gaps and operational challenges associated with controlling mechanical vectors, stressing the need to better integrate entomological considerations into animal health responses. The topic was positioned as an area requiring further research and cross-sectoral collaboration.

8.7 West Nile Fever in Italy

An update was provided on the epidemiological situation of West Nile fever in Italy, including surveillance findings and implications for vector control. The presentation underscored the importance of continuous monitoring and timely data sharing at national and European levels to support risk assessment and preparedness. Italy provided more detail on the 2025 WNV outbreak. They noted a shift in West Nile virus cases from northern to southern Italy, suggesting potential environmental influences on disease distribution.

9. Planned activities

9.1 Vector control trial: proposed study design- building further on discussions during AGM 2024

The proposed study design for a vector control trial was presented as a continuation of discussions initiated during the 2024 Annual General Meeting, with the aim of strengthening the empirical evidence base for vector control interventions in Europe. The presenter outlined the overall rationale for conducting coordinated trials, emphasising the current limitations in comparable, field-based evidence on the effectiveness of different control measures across epidemiological and ecological contexts. Key elements of the proposed design included considerations around study endpoints, selection of vector species and settings, intervention types, and the need for standardised outcome measures to enable meaningful comparison across sites.

Methodological challenges were discussed in detail, including issues related to randomisation, control areas, operational feasibility, and the influence of environmental and socio-economic factors on trial outcomes. The importance of balancing scientific rigour with practical implementability was highlighted, particularly given the diverse capacities and regulatory frameworks across participating countries. Ethical considerations, stakeholder engagement, and the need for close coordination with public health and veterinary authorities were also noted as critical components of successful trial implementation.

Participants expressed broad support for further development of the proposed study, recognising its potential contribution to improving evidence-based decision-making on vector control strategies at national and EU levels. The discussion concluded with agreement on the need to further refine the study protocol, clarify resource requirements, and explore opportunities for pilot implementation, building on existing surveillance and control infrastructures within the OHVEN and VectorNet networks.

9.2 Private biocide-based measures citizens in Europe can take to protect themselves and their families against bites from vectors of infectious diseases

The presentation addressed private biocide-based measures available to citizens for protection against vector bites, discussing their effectiveness, limitations, and regulatory context. Emphasis was placed on the need for evidence-based guidance and clear public communication to ensure appropriate use and realistic expectations regarding personal protective measures.

9.3 EFSA's VBD mandate: a collaborative effort

This agenda item was not addressed due to time constraints.

9.4 Available vector control measures for 25 VBD's

This agenda item aimed to introduce the breakout sessions for the following day. The breakout session aimed to review and amend a matrix of control measures across different vector groups. Four epidemiological scenarios were considered: a pathogen-free area, a new outbreak in a previously free area, pathogen spread following a first outbreak, and a pathogen-endemic area. Participants were organized into groups with specific tasks: to identify one vector–pathogen–scenario combination where vector control is not feasible and provide justification; to identify one combination where control is feasible, proposing an optimal mix of methods with supporting rationale; and to highlight evidence gaps that need to be addressed to refine recommendations.

10. Other initiatives on VBDs

10.1 Updates from DG SANTE

The presentation provided an overview of recent developments under the EU Regulation on serious cross-border threats to health, highlighting its significance as one of the first binding EU legal frameworks addressing health threats beyond national competence. The speaker emphasised the regulation's broad scope, which includes infectious diseases, environmental and climate-related threats, and their interaction with health outcomes. Particular attention was given to the regulation's strong emphasis on integrated data systems, encouraging the combination of health, environmental, climate, and other relevant datasets to better capture risk factors rather than focusing solely on disease outcomes. New obligations under the Early Warning and Response System were described, including the possibility for Member States to notify environmental events posing potential health risks. Substantial EU investments in surveillance and laboratory capacity were outlined, including large-scale funding to strengthen national surveillance systems, the establishment of EU Reference Laboratory networks, and targeted initiatives on vector-borne diseases. Specific projects were highlighted, such as coordinated laboratory networks for emerging zoonotic pathogens and a pilot project in Cyprus using the sterile insect technique as a case study for potential mosquito elimination. Broader One-Health initiatives were also discussed, including joint public health–veterinary field visits, preparedness assessments, and the creation of an EU-level expert pool to support countries during outbreaks, with explicit encouragement for entomological expertise to be included.

10.2 HERA: presentation of call on vector surveillance and control

The HERA presentation outlined the agency's mandate to strengthen EU preparedness, prevention, and response to serious cross-border health threats through access to medical countermeasures, including vaccines, treatments, diagnostics, and protective equipment. Vector-borne diseases were identified as one of HERA's four priority threat areas, particularly in the context of climate change, environmental transformation, urbanisation, and globalisation. HERA highlighted that the focus is on mosquito-borne diseases in public health. The speaker described the rationale behind a new programme of direct grants to Member States aimed at scaling up national vector surveillance and control capacities. These grants, amounting to approximately €11.6 million over three to four years, require the formation of multinational consortia and are designed to address structural weaknesses such as limited staffing, insufficient training, short-term funding, and fragmented data systems. Eligible activities include strengthening surveillance programmes, implementing and evaluating vector control measures, improving laboratory capacity—particularly for insecticide resistance testing—enhancing data integration, and promoting citizen engagement. The expected outcomes include more robust national capacities, improved interoperability of datasets, and better evidence on the effectiveness and scalability of vector control strategies, with strong emphasis on coordination with ECDC and avoidance of duplication with existing initiatives.

Participants from two countries that are were not eligible to participate expressed their willingness to voluntarily share data (without budget at the project) to HERA and Joint programming on VBD by EFSA project.

10.3 EFSA: Joint programming on VBD

The call for proposals "Joint programming on VBD" aims to strengthen risk assessment capacities for vector-borne diseases (VBDs) across the EU by establishing four Framework Partnership Agreements (one per lot), each targeting a specific geographical region: Northern Europe, Southern Europe, Western Europe and Eastern Europe. Eligible applicants include Art36 organisations responsible for VBD risk assessment at the national level, requiring a statement from the Chief Veterinary Officer (CVO) as evidence. The total budget of €6 million (€1.5 million per lot) supports 48-month projects focused on scientific tasks, coordination, and knowledge dissemination. Applications can be submitted as single applicants or consortia, with subcontracting permitted only for non-core activities. The deadline for proposals is 15/01/2026.

10.4 One Health Secure: a unique OH network engaged in vector-borne diseases prevention in the Mediterranean region

The One Health SECURE project was presented as a large, EU-supported initiative targeting countries in the wider Mediterranean region, building on more than a decade of previous One-Health networking activities. The project aims to mitigate emerging vector-borne diseases by strengthening preparedness and response through integrated human, animal, environmental, and

public health collaboration. The speaker described an extensive multidisciplinary network comprising hundreds of experts from national reference laboratories and public institutions, covering regions complementary to the VectorNet geographic scope. Achievements to date include extensive training programmes, development of vector identification tools, external quality assessments, and multi-sectoral exercises. The current phase of the project focuses on addressing remaining gaps, such as genomic surveillance, resistance monitoring, risk mapping, wildlife surveillance, and community engagement. Particular emphasis was placed on entomological capacity-building through training on insecticide resistance, surveillance system design, innovative vector control tools, and digital identification resources. The project ultimately seeks to translate technical expertise into policy impact by empowering national experts, supporting One-Health action plans, and fostering dialogue with decision-makers to strengthen implementation of One-Health approaches at country level.

10.5 Collaborative Surveillance Network project in Greece: Mosquito Data Management for Invasive Species Control and One Health Surveillance

The presentation from Greece introduced a nationally coordinated project aimed at strengthening mosquito surveillance and data management through a collaborative, One-Health-oriented framework. The initiative was developed using European funding instruments and is structured around a consortium model involving national public health authorities, ministries, and other competent institutions, with clearly defined roles for beneficiaries, affiliated partners, and associated partners. A central objective of the project is the development of a unified digital "data lake" to enable harmonised collection, integration, and analysis of surveillance data across diseases, vectors, and sectors, with mosquitoes identified as a key initial focus area.

The speaker described how the project seeks to address long-standing challenges related to fragmented datasets, heterogeneous reporting systems, and limited interoperability between public health, veterinary, and environmental surveillance. By creating shared digital tools and standardised data flows, the project aims to support a more coherent follow-up of vector-borne diseases and invasive mosquito species at national level, while ensuring compatibility with European-level systems such as VectorNet. The initiative also places strong emphasis on governance and coordination, recognising that effective surveillance depends not only on technical solutions but also on sustained collaboration between institutions and alignment with national decision-making structures.

Overall, the project was presented as a practical example of how EU funding mechanisms can be leveraged to operationalise One-Health principles, strengthen national surveillance capacity, and improve preparedness for emerging and re-emerging vector-borne disease threats, while contributing data and experience back to the wider European surveillance landscape.

11. Breakout session

11.1 Suitability of vector control measures in different epidemiological scenarios, to control different VBD-agents

The theory and practice of vector control was introduced emphasizing a three-tiered decision chain. First, the aim of control must be defined—whether the objective is nuisance reduction, prevention of vector introduction or establishment, reduction of pathogen transmission risk, or outbreak control. Second, the specific targets shall be identified, including vector species and life stages (larvae or adults), environmental breeding sites, or points of vector–host contact. Third, appropriate methods are to be selected, ranging from chemical and non-chemical approaches to innovative tools.

The presenter outlined the main types of interventions. Larval control includes the use of microbial larvicides such as *Bacillus thuringiensis israelensis* and habitat management. Adult control approaches comprise space spraying, residual insecticides, the sterile insect technique, and genetic methods. Measures to reduce vector–host contact include repellents, bed nets, and treated surfaces. Environmental management focuses on removing or modifying breeding habitats, while social mobilization was highlighted as essential to support vector control measures, as household-level engagement often determines the success of public-sector interventions.

Key challenges were noted, particularly the rapid growth of vector populations under favourable conditions, which requires timely and repeated interventions. As most measures do not have long-lasting effects, routine maintenance is necessary unless eradication is achieved.

11.2 Feedback breakout sessions

One presenter per group presented decisions that his/her group made and that other participants could ask and discuss what was presented.

The discussion emphasised that no single vector control measure is sufficient on its own and that effective strategies typically require a combination of interventions, including adulticiding, larviciding, environmental management, personal protective measures, and social mobilisation. Participants stressed that such integrated approaches must be tailored to local ecological conditions and epidemiological contexts in order to be effective. Several important knowledge and operational gaps were identified, notably the limited capacity to identify and detect sandfly breeding sites, highlighting the potential need for innovative approaches such as environmental DNA methods. Uncertainties also remain regarding the effectiveness of treated bed nets and repellents against ticks and sandflies under European conditions, as well as the definition of clear operational thresholds for initiating interventions in newly affected areas experiencing emerging West Nile virus or dengue transmission. In addition, the real-world uptake, sustainability, and impact of community-based source reduction campaigns were recognised as areas requiring further evaluation.

Clarification was provided regarding the labelling of summary tables, noting that numbered cells serve solely as identifiers for specific scenario–vector combinations. The feasibility of acaricide use in pathogen-free areas at risk for Crimean–Congo haemorrhagic fever was discussed, particularly in relation to regions where *Hyalomma* ticks overwinter. There was broad agreement that, given the currently low prevalence of infection in tick populations, widespread acaricide use is not justified, and that any interventions should be limited to surveillance-triggered, targeted treatments of livestock. With regard to dengue control, the discussion highlighted that larviciding and adulticiding should be viewed as complementary rather than alternative measures, with adulticiding providing rapid suppression during outbreaks and larviciding playing a key role in preventing population rebound.

The relative importance of personal protection measures versus physical screening was also examined. While window and door screening were considered critical components of prevention, particularly in residential settings, participants noted that repellents and protective clothing remain essential, especially during the evening and early night when Culex and Aedes species are most active. The potential use of bed nets against sandflies was discussed, with the observation that standard mosquito nets are often too coarse to effectively block *Phlebotomus* species. Although insecticide-treated fine-mesh nets may offer protection, their social acceptability and real-world effectiveness in European contexts remain uncertain and require further study. Finally, experience from Sardinia was cited in relation to lumpy skin disease control, where proactive regional livestock vaccination campaigns were implemented, illustrating a preventive approach.

The breakout sessions were very useful and productive because of sharing the experience but also facing with the gaps in the knowledge required for the particular scenarios.

11.3 Wrapping up of the meeting

VectorNet will consolidate criteria for evaluating the suitability of vector control measures by disease and epidemiological scenario, refine the intervention matrix, and convene a follow-up workshop to develop standardized guidance for EU Member States. Finally, participants discussed the possibility of shifting the timing of the next Annual General Meeting to February in order to improve participation.

The next annual OHVEN meeting will likely take place in February 2027 in Antwerp

The meeting was closed by the Vectornet Scientific Coordinator. People were thanked for their attendance and contributions.

ANNEX I Group findings

Group 1:

Crimean-Congo haemorrhagic fever (CCHF) in pathogen-free area → control not justified

- Justification: low cost-effectiveness if no local vectors acquired pathogen circulation; risk of sporadic *Hyalomma* incursions treated via surveillance and targeted acaricide on livestock only if warranted
- If preventive action deemed necessary, focus on personal protection (repellents), citizen awareness, livestock acaricide treatments
- Evidence gaps: none highlighted beyond standard epidemiological surveillance

Group 2:

Leishmaniasis in endemic area → control not prioritized for vectors

- Justification: sandfly breeding habitats poorly defined; dog reservoirs targeted via vaccination and topical spot-on repellents/collars; limited utility of mass vector suppression
- Citizen engagement to eliminate peridomestic resting sites (cracks, organic debris)

Dengue in pathogen-free area (scenario 1) → control feasible

- Measures: microbial larvicides, removal of breeding sites, social mobilisation for source reduction; optional sterile insect technique (SIT) for adults
- Evidence gaps: quantification of citizen adherence to source-reduction campaigns; resistance status of local mosquito populations

Group 3: Dengue outbreak in previously free area → control feasible

- Primary goal: rapid adult suppression within ~500 m cluster radius via adulticiding; concurrent larvidicing in private/public domains to curtail rebound
- Supplementary measures: window screening, personal protective measures (repellents, long clothing) during daytime and evening; SIT if available
- Scenario 22: Tick-borne encephalitis virus (TBEV) endemic area → control not feasible
- Justification: ticks dispersed by wildlife; human vaccine exists; targeted acaricide on domestic animals only
- Evidence gaps: real-world efficacy of personal repellents against ticks; citizen behaviour impact on tick-bite prevention

Group 4:

African horse sickness (AHS) in pathogen-free area → control not feasible

- Justification: poor knowledge of competent Culicoides species and ecology; low feasibility of vector-targeted measures
- Recommended: movement restrictions if neighbouring incursions; no mass vector control

West Nile fever (WNF) in endemic area → control feasible upon early detection in mosquitoes or birds

- Measures:
- Environmental: remove/modify breeding sites (e.g., drainage, larval-site films like Aquatain®) in urban/peri-urban areas
- Personal protection: repellents, clothing for evening outdoor activities, window screens
- Adult control: targeted adulticiding in mixed urban/agricultural interfaces if rapid suppression needed
- Evidence gaps: mosquito species composition, density and seasonality data; phylogenetic tracing of WNF strains; capacity for rapid adulticiding in urban settings

Group 5:

Lumpy skin disease (LSD) in pathogen-free area → control not justified (unless close to high-risk zones)

- Primary defense: vaccination of susceptible livestock where permitted; vector-proofing stalls if domestic risk elevates

Leishmaniasis outbreak in shelter (scenario 24) → control feasible

- Measures: dog-targeted: spot-on insecticides, impregnated collars; shelter structures: perimeter residual sprays
- Household measures: indoor residual sprays not recommended; encourage bed nets and repellents during dusk–dawn for people
- Evidence gaps: efficacy of mass trapping around kennels; identification and mapping of actual sandfly breeding sites

Group 6:

Tick-borne encephalitis (TBEV) endemic area → control not feasible

- Surveillance only: hotspot mapping, public warnings, vaccination encouragement

West Nile fever in previously free area → control feasible depending on geographic setting

- Measures: citizen alerts for personal protection; larvidicing of peri-urban breeding sites; window screens; evaluation of vaccine use in horses
- Evidence gaps: regulatory permitting and operational capacity for rapid urban larvidicing; thresholds for action based on human case timing

Group 7:

CCHF in high-risk (neighbouring-circulation) area → limited control via livestock acaricide and public warnings; selective environmental and acaricidal application criticized as arbitrary.

- Evidence gaps: efficacy of livestock and environmental acaricide targeting; social uptake of advice of how to avoid infection

Leishmaniasis in newly detected zone (scenario 24) → control feasible

- Measures: targeted residual spraying around dog shelters; dog-spot-ons and repellents; promote peridomestic habitat clean-up; bed nets of appropriate mesh size for sandflies
- Evidence gaps: validation of eDNA methods for sandfly breeding-site detection; practicality of insecticide-treated nets against *Phlebotomus papatasi*.

ANNEX II Agenda

One-Health VectorNet Entomology Network

2nd annual meeting – OPEN to observers

25–27 November 2025

Hosted by EFSA and ECDC and organized by the VectorNet Consortium

Location: Room 922 Semmelweis, ECDC premises, Gustav III:s Boulevard 40, Solna, Sweden; online: WebEx

Chair: Cedric Marsboom

Day 1: 25 November 2025

Time	No.	Item	Presenter/moderator
13:00	1	**Welcome and apologies for absences**	Cedric Marsboom
	2	**Adoption of the agenda**	
	3	**Presentation of rules for observers**	
	4	**Agreement of the minutes of the previous meeting**	
	5	**Joint opening of the meeting**	Olivier Briet/Sofie Dhollander
14:10	5.1	Update on vector-borne diseases affecting humans in the EU	Esther Kukielka Zunzunegui/Tamas Bakonyi
14:30	5.2	Update on vector-borne diseases affecting animals in the EU	Sofie Dhollander
14:50	5.3	DISCUSSION: Entomological activities of OHVEN to prepare for and respond to these VBD	Cedric Marsboom
15:15		*Coffee break*	
	6	**Update on VectorNet activities**	
15.45	6.1.	Organization of surveillance and control of WNV vectors and Aedes invasive mosquitoes in Europe and identification of needs	Wim Van Bortel
16:15	6.2	Systematic literature on vector competence	Wim Van Bortel
16:45	6.3	Risk of introduction of 25 vector-borne pathogens in the EU through active and passive vector movement	Marieta Braks (online)
17:15	6.4	Niche-habitat modelling to predict *Culicoides* distribution	Willy Wint
17:45		*End of the first day*	

Day 2: 26 November 2025

Time	No.		Presenter/Moderator
	7	**Data collection and sharing**	
09:00	7.1	Introduction to GBIF-EFSA-ECDC collaboration	Dmitry Schigel (online video)
09:10	7.2	Demonstration of the GBIF VectorNet hosted portal and achievements	Marie Grosjean (online)
09:30	7.3	Summary of validation process and demo of the vector surveillance data entry tool	Angus Cameron (online)
10:00	7.4	Distribution status mapping	Olivier Briet
10:30-11:00		*Coffee break*	
	8	**Data collection and sharing by the OHVEN Network**	
11:00	8.1	VectorNet field work in 2025: highlights	Alessandra della Torre, Valentina Tagliapietra (online), Vıt Dvorak and Maria Goffedro
12:00	8.2	One-Health vector surveillance in Austria	Karin Bakran-Lebl
12:15	8.3	One-Health vector surveillance in Luxembourg	Alexander Weigand
12:30	8.4	Chikungunya outbreak response and prevention in France	Arnaud Cannet and Frederic Jourdain (online)
12:45	8.5	Chikungunya outbreak response and prevention in Italy	Luciano Toma
13:00-14:00		*Lunch break*	
	9	***Planned activities***	
14:00	8.6	Lumpy skin disease: vector control for mechanical vectors	Maria Goffredo
14:15	8.7	West Nile Fever in Italy	Luciano Toma
14:30	9.1	Vector control trial: proposed study design- building further on discussions during AGM 2024	Rene Bodker (or Marieta Braks, online)
14:50	9.2	Private biocide-based measures citizens in Europe can take to protect themselves and their families against bites from vectors of infectious diseases	Wim Van Bortel
15:00	9.3	EFSA's VBD mandate: a collaborative effort	Sofie Dhollander

15:10	9.4	Available vector control measures for 25 VBD's	Alessandra della Torre, Annapaola Rizzoli, Vıt Dvorak and Thomas Balenghien
15:30		*Coffee break*	
	10	**Other initiatives on VBDs**	
16:00	10.1	Updates from DG SANTE	Laura Gillini
16:15	10.2	HERA: presentation of call on vector surveillance and control	Margarida Alho
16:30	10.3	EFSA: Joint programming on VBD	Sofie Dhollander, Dona lucas
16:45	10.4	One Health Secure: a unique OH network engaged in vector-borne diseases prevention in the mediterranean region	Maud Seguy
17:00	10.5	Collaborative Surveillance Network project in Greece: Mosquito Data Management for Invasive Species Control and One Health Surveillance	Antonios Michaelakis
17:15		*End of the second day*	
19:30-22:00		Meeting dinner	Hotel Gio

Day 3: 27 November 2025

Time	No.		Presenter/moderator
	11	**Breakout session**	
09:00	11.1	Suitability of vector control measures in different epidemiological scenarios, to control different VBD-agents	Alessandra della Torre, Vıt Dvorak and Thomas Balenghien
10:30		*Coffee break*	
11:00	11.2	Feedback breakout sessions	Rapporteurs of breakout sessions
12:00	11.3	Wrapping up of the meeting	Cedric Marsboom
		End of the third day	