

**EREN Satellite Workshop**  
**7 November 2018 (2 to 5 PM)**

**“Invasive species and associated pathogens”**

**Proceedings**

**Location:**

Federal Public Service Health, Food Chain and Environment  
Eurostation II, Victor Hortaplein, 40 bus 10  
1060 Brussel

**Meeting room:** Bara area, 1<sup>st</sup> floor

**Acces plan:** <https://www.health.belgium.be/en/contact-us>

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## EREN Satellite Workshop

7 November 2018 (2 to 5 PM)

# "Invasive species and associated pathogens"

## Programme

14:00	Welcome ( <i>Federal Public Service Health, Food Chain and Environment</i> )
14:05	Invasive species and associated pathogens: general introduction ( <i>Claude Saegerman, Member of the EREN network</i> )
14:10	Risk assessment and pathogen pollution by non-native animals in Belgium ( <i>Etienne Branquart, Tim Adriaens, Bram D'hondt and Sonia Vanderhoeven; presented by E. Branquart, Head of the Walloon Invasive Species Unit</i> )
14:40	The first discovery of the Moku virus in Asian hornet and honeybee in Europe ( <i>Mutien-Marie Garigliany, ULiège</i> )
15:10	The walnut husk fly invades Europe: Risk analysis and development of a biological control strategy ( <i>François Verheggen, ULiège</i> )
15:40	Belgian surveillance of human diseases transmitted by invasive mosquitos ( <i>Javiera Rebolledo, Sciensano</i> )
16:10	Selection of EFSA activities related to the subject ( <i>Caroline Merten, Sophie Dhollander, Maria Rosario Mannino, Ana Afonso, EFSA</i> )
16:30	Discussion
17:00	Closing

## Practical information:

- **Coffee** will be freely available starting from 13:00 in the meeting room.
- Lunch will be freely available **only** for the members of the EREN network and EFSA staff between 12:00 and 14:00 (same room).
- The **meeting room** is the Bara area, 1<sup>st</sup> floor (contact the reception on the ground floor to obtain an access badge).

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## Invasive species and associated pathogens: general introduction

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Claude SAEGERMAN <sup>(1)</sup> <sup>(2)</sup>

*(1) Fundamental and Applied Research for Animal and Health (FARAH) Center, Faculty of Veterinary Medicine, Liège University*

*(2) Member of the Emerging Risks Exchange Network (EREN)*

An integrated pan-European approach to the identification of emerging risks in the food chain is essential to protect consumer health and also the interests of the food industry which is an important economic and social driver within the European Union. In this regard EFSA's role as a central coordinator of emerging risk activities in the fields of food and feed safety, animal health and plant health is essential and provides a mechanism through which information can be shared and evaluated on a scientific basis. In this respect, EFSA established an Emerging Risks Exchange Network (EREN) to exchange information between EFSA and the Member states (MSs) on possible emerging risks for food and feed safety. This Network is composed of delegates from MSs and Norway designated through the Advisory Forum of EFSA and observers from the European Commission, EU pre-accession countries, the Food and Drug Administration of the USA and the Food and Agricultural Organisation of the United Nations. One of the topics that can be of interest for the EREN network is the phenomenon of "*Invasive species and associated pathogens*".

Intensifying global trade increase number of plant or animal pests and associated pathogens species inadvertently transported along with cargos, trucks, planes, boats, trains or other means. This EFSA satellite workshop is dedicated to stimulated brainstorming on this emerging topic. However, it is not possible to cover all aspects of the topic in a half day. For this reason, as general introduction, the first invited speaker (Etienne Branquart, Head of the Walloon Invasive Species Unit) presents a framework for risk assessment and pathogen pollution by non-native animals in Belgium. Next, three concrete examples are presented. The first example is related to invasive Asian hornet and the associated discovery of a new virus in Europe, the Moku virus and its recent passage to the honeybees (Prof. Mutien Garigliany, Liège University). This example concerns notably animal health, impact on biodiversity and environmental aspect related to the use of pesticides against Asian hornets. The second example is related to the invasion of the walnut husk fly in Europe, more specifically the risk analysis and development of a biological control strategy to assess and mitigate this invasion (Prof. François Verheggen, Liège University). This example concerns many aspects like plant health, impact on the biodiversity and the environment. The third example is related to the Belgian surveillance of human diseases transmitted by invasive mosquitos (Javiera Rebolledo, Sciensano). This example concerns many aspects like human health, impact on biodiversity and environment. Next EFSA activities related to the preparedness for risk assessment and risk management related to the topic will be presented (Caroline Merten, EFSA). All presentations will be serve as starting points of discussion with all participants.

## Risk assessment and pathogen pollution by non-native animals in Belgium

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Etienne BRANQUART <sup>(1)</sup>, Tim ADRIANS <sup>(2)\*</sup>, Bram D'HONDT <sup>(3)</sup>, Sonia VANDERHOEVEN <sup>(4)</sup>

*(1) Invasive Species Unit, Service Public de Wallonie, Gembloux, Belgium*

*(2) Instituut voor Natuur- en Bosonderzoek, Brussels, Belgium*

*(3) Agentschap voor Natuur en Bos, Brussels, Belgium*

*(4) Belgian Biodiversity Platform, Brussels, Belgium*

Non-native animals are increasingly acknowledged as a source of pathogen pollution to new hosts. They often act as asymptomatic reservoirs for new pathogens that may subsequently infect naive host populations, causing transient disease epidemics with high mortality rates amongst them. As a result, pathogen introduction may cause exclusion of new hosts and facilitate invasion by non-native animals through competition release. So far, pathogen-mediated competition was shown to facilitate invasion by a few non-native animals introduced in Belgium and is suspected to play a role in the invasion success of many other species. Although standardised protocols were recently developed to assess biological risks linked to emerging diseases, the outcome of pathogen introduction on biological communities is difficult to predict because of numerous knowledge gaps concerning e.g. potential for cross-species transmission as well as competency, pathogenicity and virulence in new hosts from the invaded range. An enhanced cooperation between pathologists and ecologists is needed to achieve significant progress in this issue.



## Short CV of the speaker - Etienne BRANQUART

Between October 1991 and December 2000, Etienne Branquart works as agronomist in the *Faculté universitaire des Sciences agronomiques*, Gembloux (Belgium), more specifically for scientific research in ecology, eco-toxicology and biocontrol. Between January 2001 and December 2009, she was a Senior government official Science Policy Office, Brussels (Belgium). Its activities within the Platform focused on the animation of the Belgian Forum on Invasive Species or BFIS, a specialised working group gathering Belgian scientists interested in biological invasions. This forum encourages interdisciplinary cooperation among scientists as a support to develop prevention and mitigation measures to reduce the impacts of invasive species. The BFIS developed the Harmonia information system (<http://ias.biodiversity.be>), which includes the reference list of exotic species naturalised in Belgium that are suspected to be detrimental to the environment (black and watch list species). The BFIS is also in charge of performing risk analyses based on a standardised risk assessment protocol. Since January 2010, she becomes Head of the Walloon Invasive Species Unit (CiEi), in the Public Service of Wallonie, Gembloux (Belgium), This official structure is in charge of coordinating the preventive and control action against biological invasions in Wallonia, Belgium. It is also in charge of data collection, communication actions and legislation development dealing with invasive alien species (<http://biodiversite.wallonie.be/invasives>).

# The first discovery of the Moku virus in Asian hornet and honeybee in Europe

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Mutien-Marie GARIGLIANY <sup>(1)</sup>, Noémie EL AGREBI <sup>(1)</sup>, Mathieu FRANSEN <sup>(1)</sup>, Louis HAUTIER <sup>(2)</sup>, Claude SAEGERMAN <sup>(1)</sup>

(1) *Fundamental and Applied Research for Animal and Health (FARAH) Center, Faculty of Veterinary Medicine, Liège University, Belgium*

(2) *Walloon Agricultural Research Centre, Gembloux, Belgium*

The European honeybee (*Apis mellifera*) is the most commonly managed bee in the world and is a key contributor to the pollination of food crops and wild plants. Multiple stressors including predators are responsible for bee mortality and decline. The Asian yellow-legged hornet (*Vespa velutina nigrithorax*), a natural predator of honeybees, has a native range spanning from India to Indonesia.

It was accidentally introduced from China into France in 2004 and spread to neighbouring countries, including Belgium since 2011. The Asian hornet does not only contribute to the loss of honeybee colonies by hunting, it also interacts with them and can act as viral reservoirs infecting them via spillover events.

To explore this possibility in Belgium, we performed a viral metagenomic analysis of Asian hornets collected in 2016 (pool of 10 specimens) and identified, among other viruses, the presence of an emerging Iflavirus, the Moku virus. Moku virus had only been described in Hawaii so far. To confirm the discovery and possible spread of the Moku virus (Iflaviridae family) in 2017, a specific TaqMan RT-qPCR was developed and validated. A total of 65 honeybees from 22 hives with a history of attacks by Asian hornets in three locations in southwestern Belgium near the French border were collected in 2017 and screened by PCR. Moku virus RNA was detected in 56/62 (90.3%) of Asian hornets and 33/65 (50.8%) of honeybees. We further analyzed 30 additional honeybees collected from 10 hives from the same area in 2013, among which 13 revealed positive for Moku virus RNA.

For the first time in Europe, we report the detection of Moku virus in both invasive Asian hornet and honeybee in Belgium. This constitutes an unexpected report of this Iflavirus outside of Hawaii, where it was recently described in social wasps. Although its virulence is currently unknown, its potential spread raises major concern for European honeybee populations.



### **Short CV of the speaker – Mutien-Marie GARIGLIANY**

Dr Garigliany is doctor in veterinary medicine and PhD from the Liège University, also Diplomate of the European College of Veterinary Pathologists (ECVP). His current position is Professor of Pathology at the Veterinary Faculty of the University of Liège. His research activities focus on the biology of viruses and related host-pathogen interactions.



# The walnut husk fly invades Europe: risk analysis and development of a biological control strategy

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François VERHEGGEN <sup>(1)</sup>

(1) Gembloux Agro-Bio Tech, University of Liege, Belgium

*Rhagoletis completa* is a fly native to California that invaded Western Europe in the late 1980s. The fly was initially identified in Switzerland (1988) and Italy (1991), from where it spread to at least seven additional countries (France, Spain, Germany, Austria, Croatia, Slovenia and Hungary). *Rhagoletis completa* has not reached the limits of its potential distribution. Walnut trees are widely distributed in Europe favouring the probability of fly establishment in currently fly-free areas.

Since its introduction in Europe, it causes important damage to walnuts. In orchards where *Rhagoletis completa* is present and uncontrolled, 100% of walnut trees can be infested, causing losses in walnut yields of up to 80%. The negative effect is low (<10% yield loss) under phytosanitary control, although additional costs must also be considered to support specific monitoring for *Rhagoletis completa*.

Europe aims at reducing the amount of phytosanitary products in its territory (e.g. Directive 2009/128/CE), resulting in the necessity to develop environment-friendly methods of pest control. After a 4-year research project conducted jointly in Gembloux Agro-Bio tech (Belgium) and in Chatte (France), we have proposed a new biological method to monitor and control walnut husk flies in walnut orchards. This pheromone-based control strategy is currently being tested in the field, thank to a close association with an industrial partner. This pesticide-free biological product should allow a reduction of the damages caused by the walnut husk fly.



## Short CV of the speaker – François VERHEGGEN

François Verheggen is a bioengineer from Gembloux Agro-Bio Tech (University of Liege). He received his PhD in Agronomic Sciences and Biological Engineering in 2008 after a 6-month scientific stay in the United States of America (Pennsylvania State University). François Verheggen was successively promoted Lecturer (2009), Senior Lecturer (2013) then Associate Professor (2017) at the University of Liège.

François Verheggen's teaching activities (>150 hours per year) concern general zoology, ethology, applied entomology, biological control and plant pest risk analyses.

François Verheggen's research projects deal with many facets of applied entomology. He is the author of more than 120 scientific publications (h-index 23). His research focuses on the identification of semiochemicals involved in the modification of insect behavior. The development of new methods of biological control of insect pests is among the final objectives of his work. He is also interested in invasive alien species, forensic entomology and the impact of climate change on plant-insect interactions. Finally, it attaches great importance to North-South collaborations, through projects focusing on the entomological biodiversity of the countries of the South (Madagascar, Burkina-Faso, Niger, Vietnam). His expertise includes: Plant protection, Applied Entomology, Plant pest risk analyses, Invasive Alien Species, Integrated Crop Protection, Plant-Insect Interactions.

François Verheggen is acting as an expert for the French National Agency for Food Safety, Environment and Labor (ANSES - France), since 2011. He is acting as an expert for the federal Agency for the Safety of the Food Chain (FASFC - Belgium) since 2017. He is the editor of a member of the editorial board of several scientific journals including *Entomologia Generalis*, *Physiological Entomology* and *Faunistic Entomology*.

François Verheggen has been awarded several recent scientific prizes:

- Young researcher 2017, Science & Medecine, Agence Universitaire Francophonie ([auf.org](http://auf.org))
- Awardee of the Fondation Désiré Jaumain 2017 ([fondation-desire-jaumain.be](http://fondation-desire-jaumain.be))
- Awardee of Royal Academy of Sciences of Belgium – Wetrems 2018 ([academieroyale.be](http://academieroyale.be))

## Preparedness for Risk assessment and Risk management - EFSA activities

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Caroline MERTEN <sup>(1)</sup>, Sophie DHOLLANDER <sup>(1)</sup>, Maria Rosario MANNINO <sup>(1)</sup>, Ana AFONSO <sup>(1)</sup>

*(1) Scientific Committee and Emerging Risks (SCER Unit), EFSA, Italy*

Outbreaks of exotic plant pests and animal diseases have occurred in the EU with devastating health, economic and environmental consequences. The EU policy in this area has a focus on prevention. EFSA has an important role in supporting risk managers to effectively increase preparedness for emerging diseases.

In view of the recently adopted Plant Health regime, EFSA was requested to develop a horizon-scanning tool to regularly screen scientific and other relevant publications or media to identify harmful organisms (pests) that might be of concern to the EU territory. EFSA established a protocol with the Joint Research Centre (EC) for developing ontologies, based on the listed plant pest of the new plant health regulation. Ontologies allow automated monitoring of open-source media. The news sources are screened using the publicly accessible MEDISYS (Medical Information System) platform. Media monitoring-related data can support surveillance or plant pests' management programs by early warning and can help understand the impacts of plant pests and the societal response to new plant health threats. Here, we report the example of monitoring for *Xylella fastidiosa*.

Updated scientific advice to assess the risk of introduction of new vector-borne diseases and to determine if further measures are needed is fundamental to protect animal and public health. EFSA received in 2014 a request from the European Commission to identify, rank and characterise the vector-borne diseases that present a risk for the EU because of their introduction, re-introduction or further spread. Thirty-six vector-borne animal diseases and relevant zoonoses were assessed. The assessment included pathways for introduction and spread, the potential health consequences and other impacts to the EU and the feasibility, availability and effectiveness of the main disease prevention and control measures. The work included the development of a risk assessment framework and an online free access Risk Assessment model, extensive data collection from literature and the field and an innovative visualization of risk assessment outputs (story maps) aiming at the interaction between assessors and managers and a continuous update.



### **Short CV of the speaker – Caroline MERTEN**

Dr Caroline Merten, a veterinarian specialised in food sciences, currently holds a position as Scientific Officer at the European Food Safety Authority (EFSA) in the Scientific Committee and Emerging Risks unit in Parma, Italy. She is coordinating the EFSA working group on uncertainty and all related research activities. As well, she is coordinating EFSA's Emerging Risk Exchange Network (EREN) and oversees multiple methodological research projects to identify emerging risks in the remit of EFSA's mandate. Before joining EFSA she has worked in the Emergency Prevention System for food safety (EMPRES) group at the Food and Agriculture Organisation of the United Nations (FAO) in Rome. Her responsibilities included planning and managing programs to strengthening prevention and response to food safety emergencies in developing countries, mainly in Africa and Asia and provided the FAO secretariat for the WHO/FAO International Food Safety Authorities Network (INFOSAN). In her previous positions she worked as an exposure assessor in the Data Collection and Monitoring unit (DCM) at EFSA and coordinated developmental programs to improve food safety in West Africa.

## Discussion

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