

MONITORING OF EXOTIC MOSQUITOES IN BELGIUM

MEMO+



Symposium de Santé Animale

26/03/2024

Background

Invasive mosquitoes in Europe

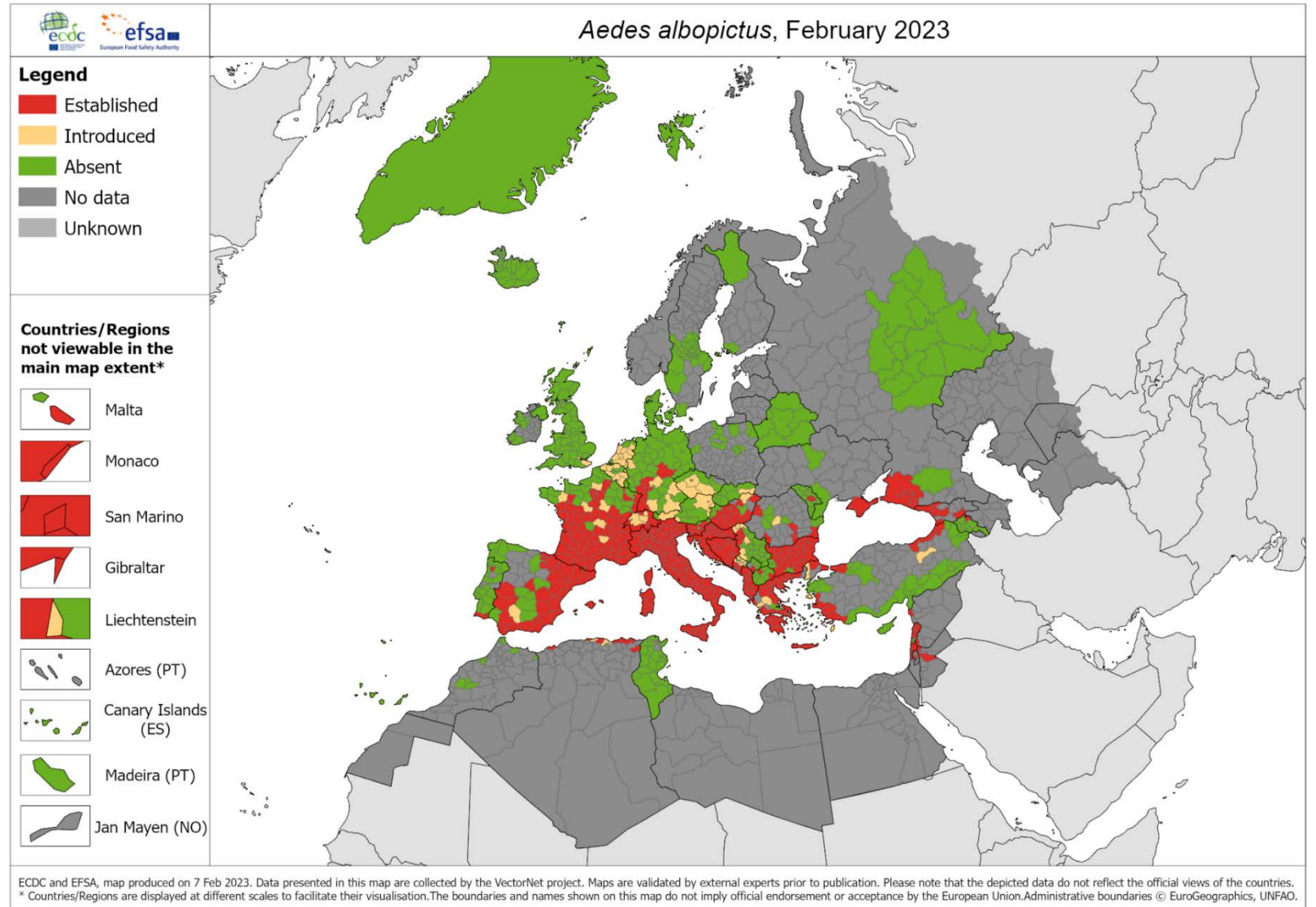
Mosquitoes:

- *Ae. albopictus*,
 - *Ae. aegypti*,
- } Effective vectors of diseases
- *Ae. atropalpus*,
 - *Ae. japonicus*,
 - *Ae. koreicus*,
 - *Ae. triseriatus*
- } Have not yet been implicated as important vectors of viruses



Background

Ae. albopictus (Tiger mosquito)





ExoSurv project



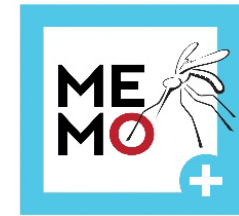
Inventory of endemic and invasive mosquito species in Belgium

2006-2009

2012



2017 - 2020
Active monitoring of Exotic mosquitoes in Belgium



2022 - 2024
Active and **passive** monitoring of Exotic mosquitoes in Belgium



MEMO+ Project



- One year “project” (extended 3 times) → start Sept 2021
- Funding: Federal and Federated Entities for “Health” and “Environment”
- Carried out by consortium: ITM and Sciensano (coordinator)
- Budget: 340K + 100K (since 2023)

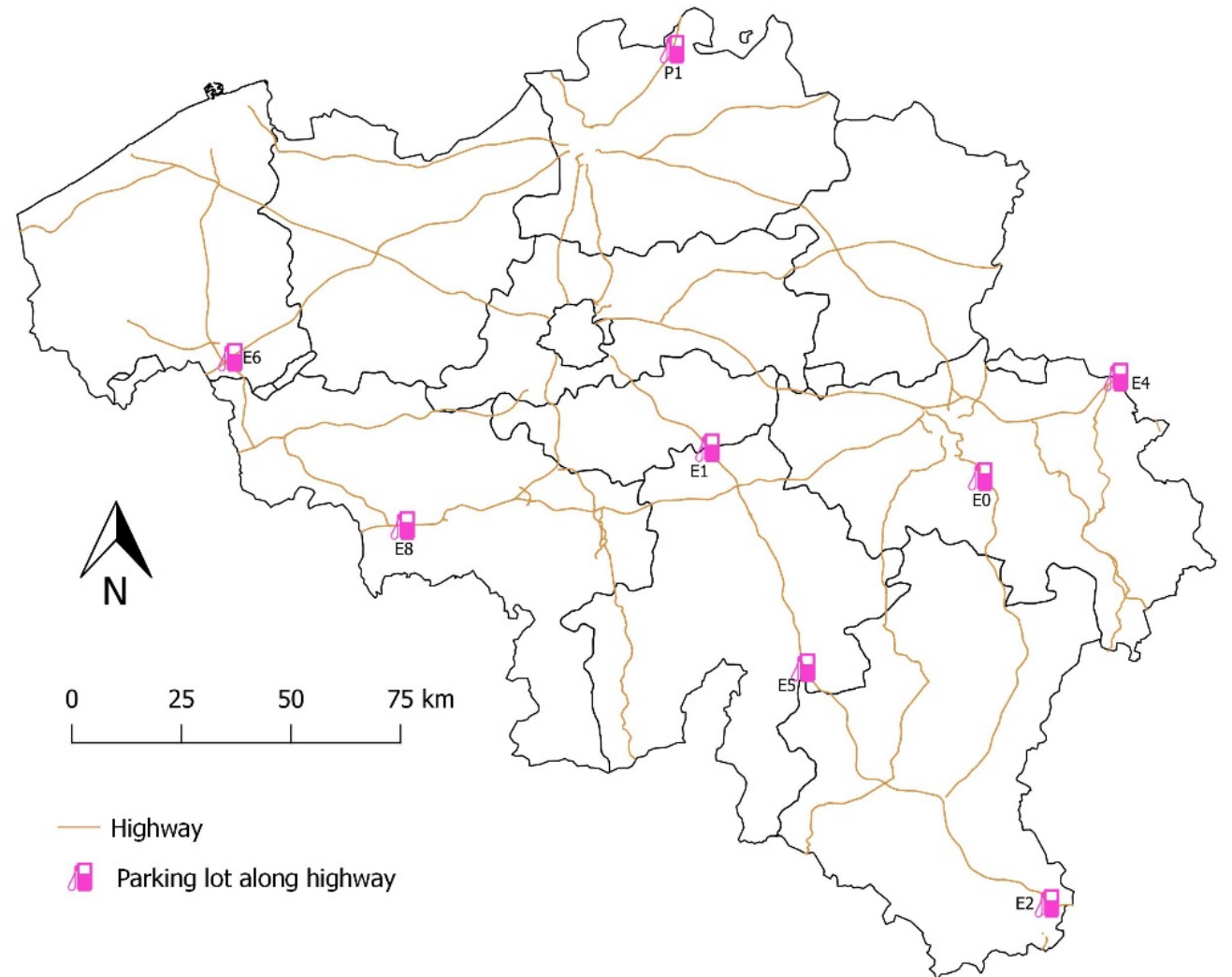
Main Objective: *To monitor the presence of Aedes species beyond the PoE’s in order to early detect their introduction and prevent or delay their establishment.*

Relies on two independent but complementary parts:

1. **Passive surveillance** based on citizen science [Sciensano]
2. **Active surveillance** carried out at eight PoE’s and where the presence of *Ae. albopictus* is suspected [ITM]

Active surveillance

- Carried out by ITM
- At 8 PoE (parking lots)
- Actively looking for Mosquitoes
- Placing 10 ovitraps



Passive surveillance



- **Citizen Science** : Relies on citizens for notification
- Website launched end of May 2022
- App Launched August 2023
- It contains two sections :
 1. **Informative tool for the citizens**
 - general Information
 - mosquito-borne diseases
 - prevention
 2. **Notification of *Ae. albopictus***



Identification and validation

Identification:

- Check of every notification (picture) and determine (morphological identification) whether it is *Ae. albopictus* or not
- Feedback is sent automatically to the notifier

Possible scenarios:

- a) Negative** (not *Ae. albopictus*) → No further action
- b) Doubtful** (not clear but potentially *Ae. albopictus*) → request for more and clearer picture(s)
- c) Positive** (*Ae. albopictus* identified) → collect more information on the specific location and the context







Field team deployed for inspection of the place and confirm the presence and assess its extent (IPM)

RESULTS SURVEILLANCE 2023

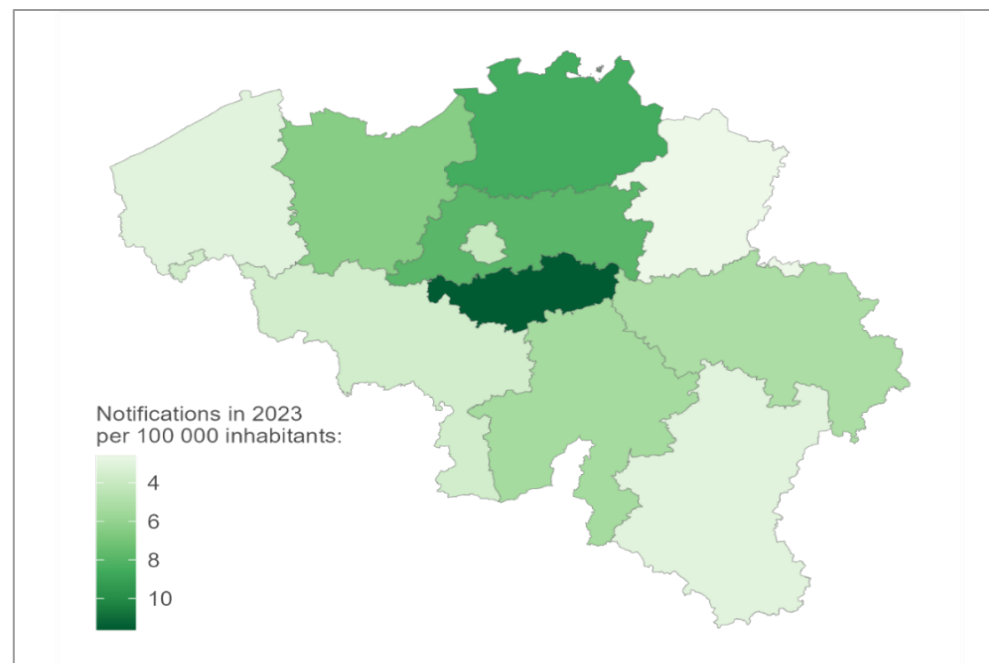


Results passive Surveillance - notifications 2023

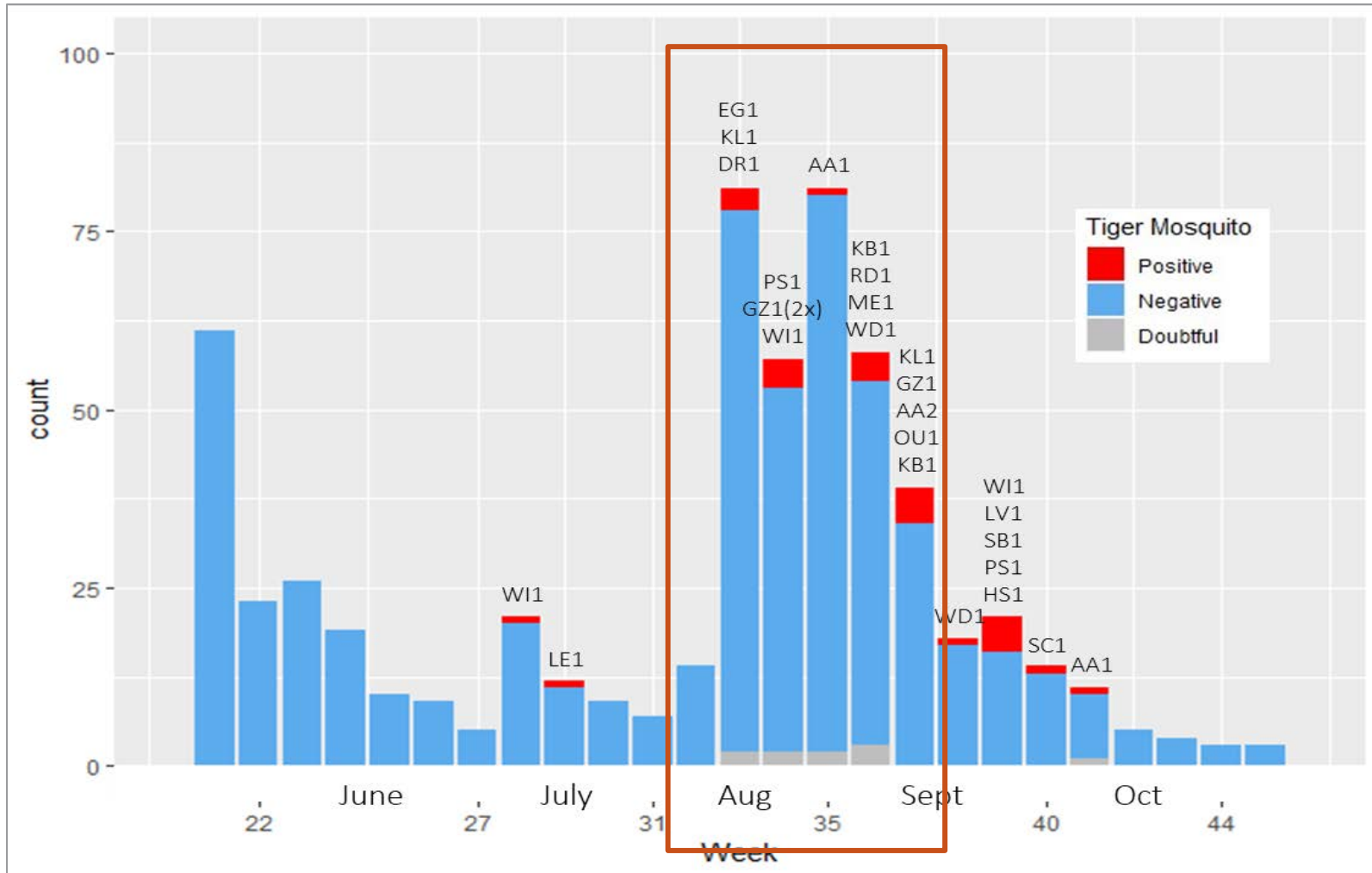
				
2023	661	486	27	18

Mosquito genus	Platform	Email
Genus Aedes	223	18
Genus Anopheles	1	0
Genus Culex	2	0
Genus Culiseta	220	16
No genus defined (Culicidae)	40	14
TOTAL	486	48

Province	Number of tiger mosquito pictures	Positive locations
Antwerpen	6	2
Vlaams-Brabant	7	5
Oost-Vlaanderen	9	8
Brussels	1	1
Hainaut	3	1
Liège	1	1
Total	27	18



Results – notifications 2023



- Most notifications August till mid-Sept
- 27 positive notifications

Results – Passive surveillance

16 new locations = 11 with IPM + 5 without IPM

Flanders:

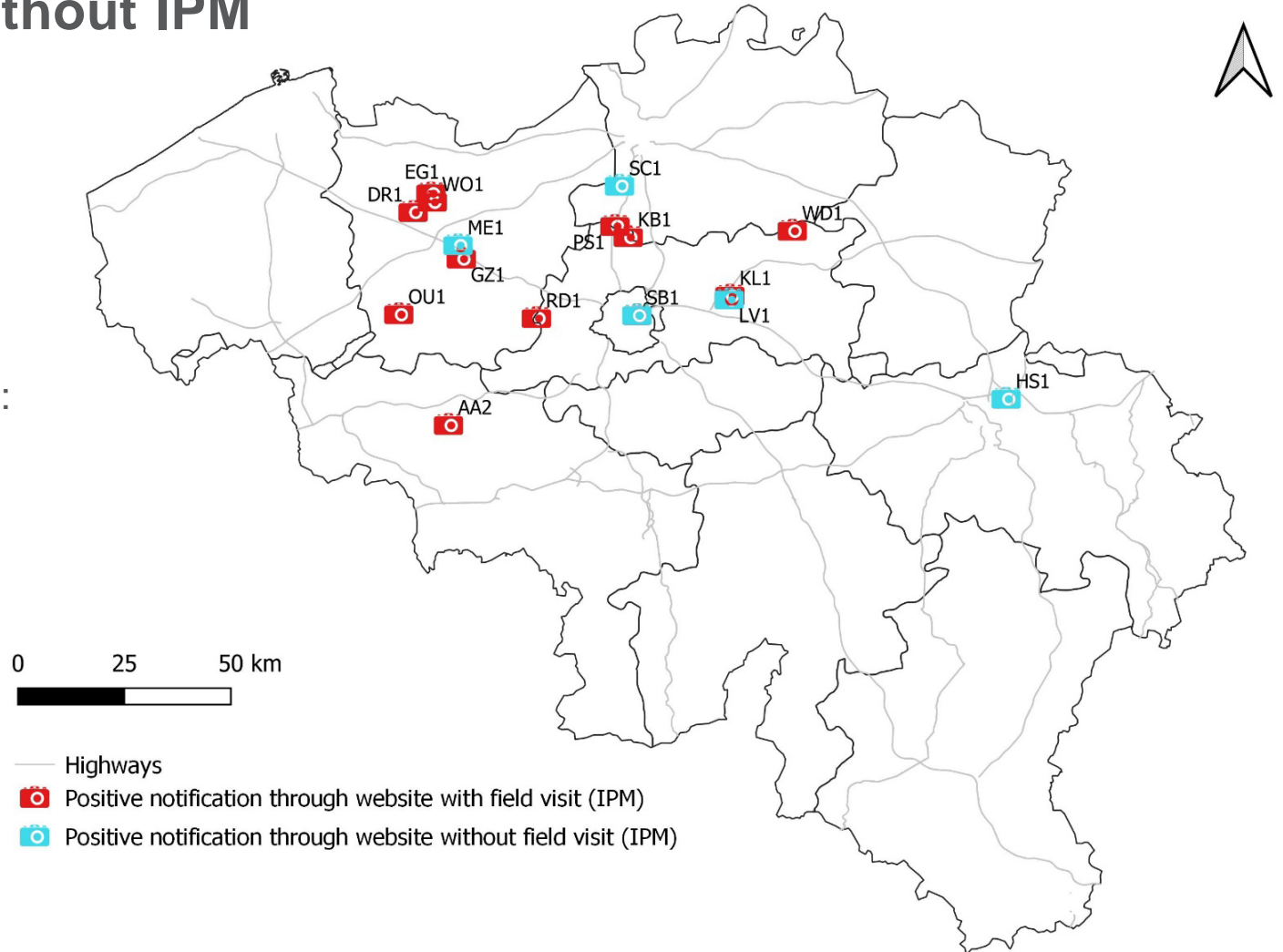
- Evergem (EG1)
- Kessel-Lo (KL1)
- Drongen (DR1)
- Puurs-Sint-Amands (PS1)
- Gijzenzele (GZ1)
- Kapelle-op-den-Bos (KB1)
- Roosdaal (RD1)
- Wolfsdonk (WD1)
- Oudenaarde (OU1)
- Wondelgem (WO1)
- Melle (ME1)
- Leuven (LV1)
- Schelle (SC1)

Wallonia:

- Ath (AA2)
- Herstal (HS1)

Brussel-Capital Region:

- Schaarbeek (SB1)



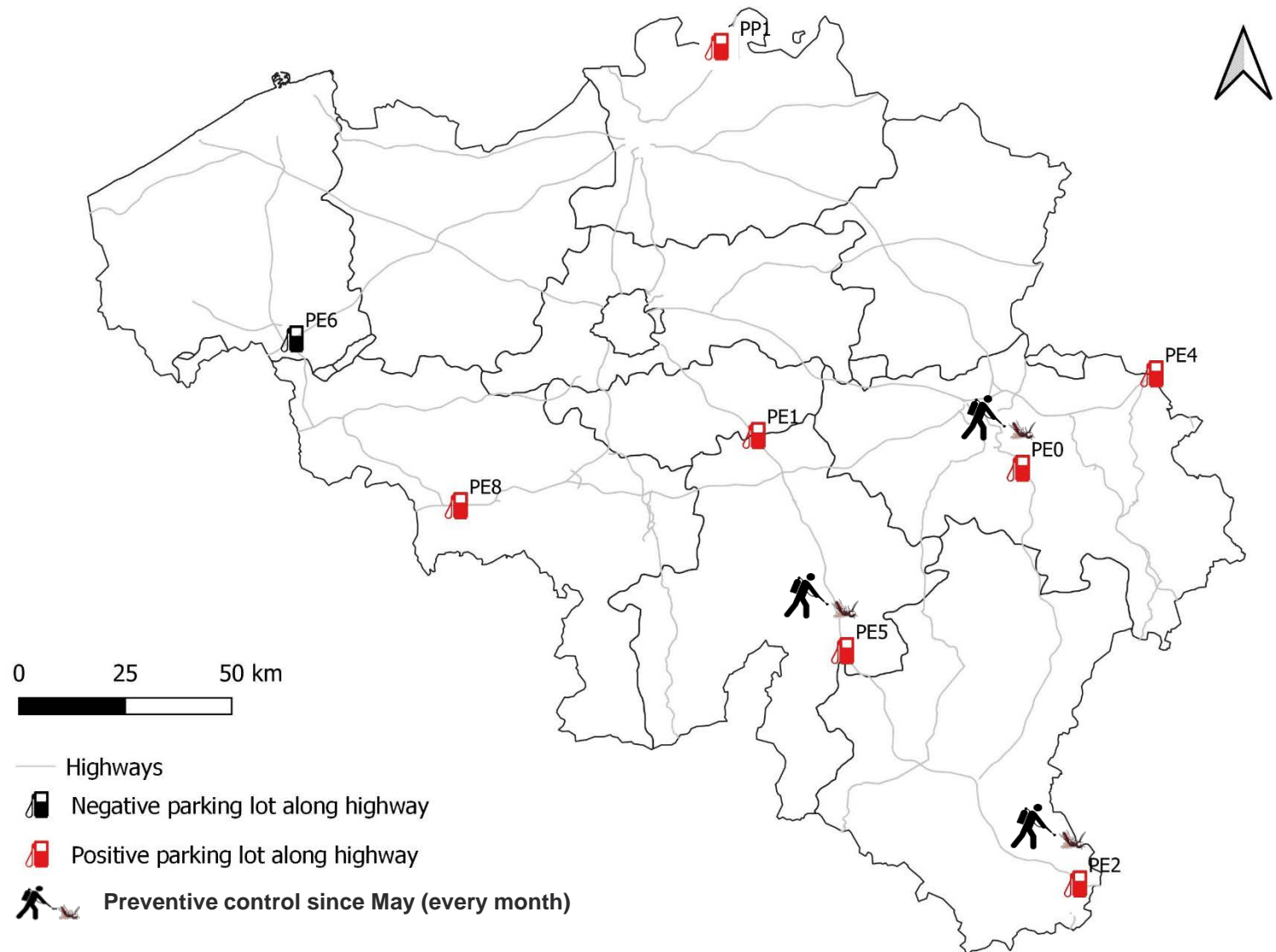
Results – Active surveillance Parking lots

Flanders

- Minderhout (PP1)
- Marke (PE6)

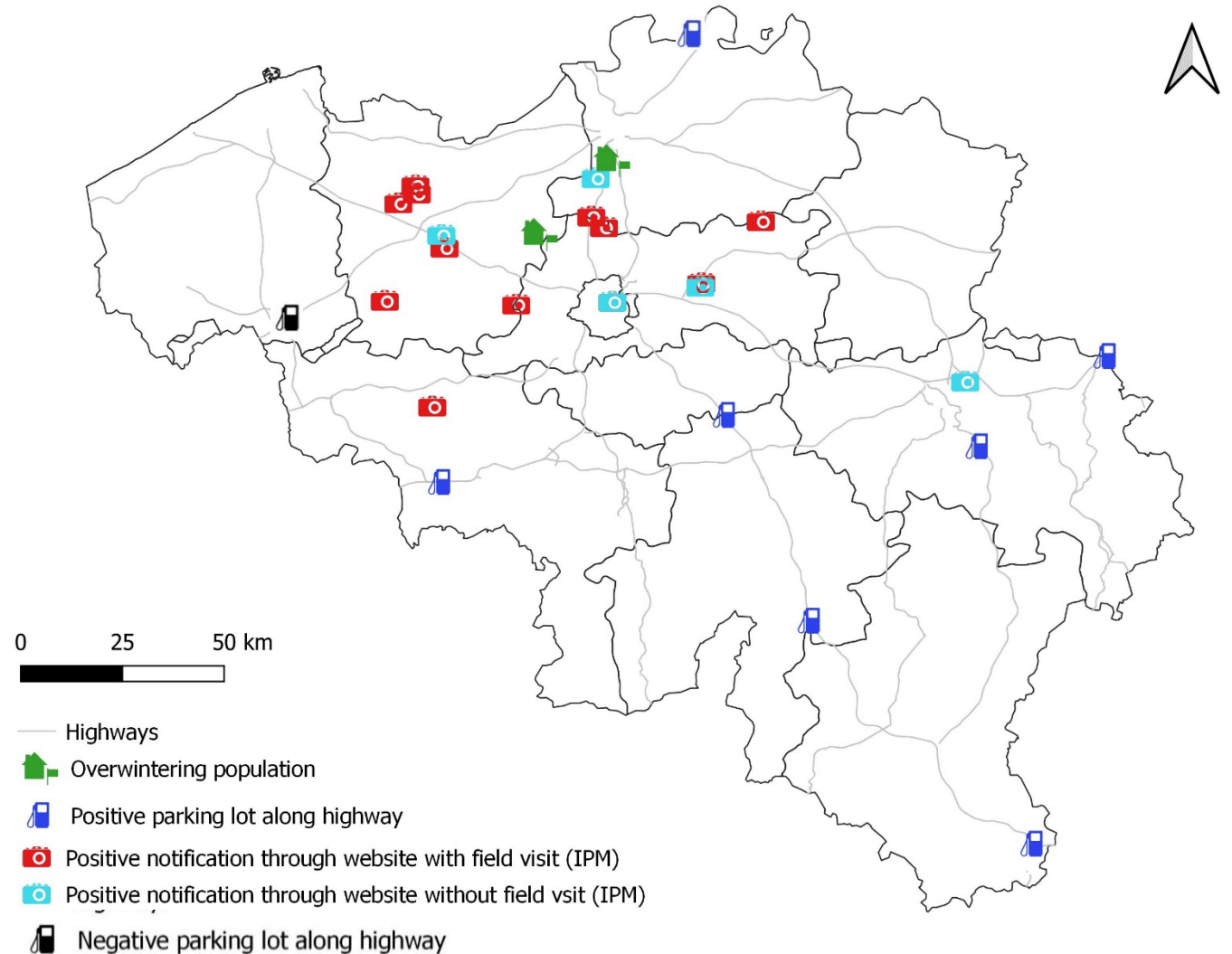
Wallonia

- Sprimont (PE0)
- Aische-en-Refail (PE1)
- Hondelange (PE2)
- Raeren (PE4)
- Wanlin (PE5)
- Saint-Ghislain (PE8)



Results – Summary 2023

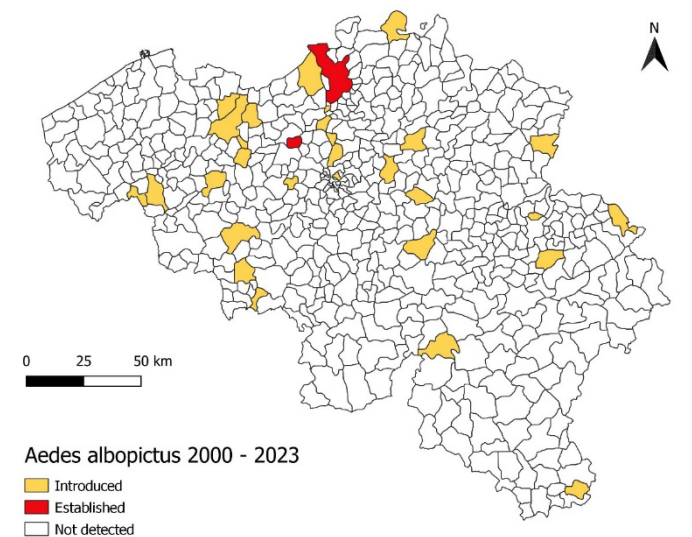
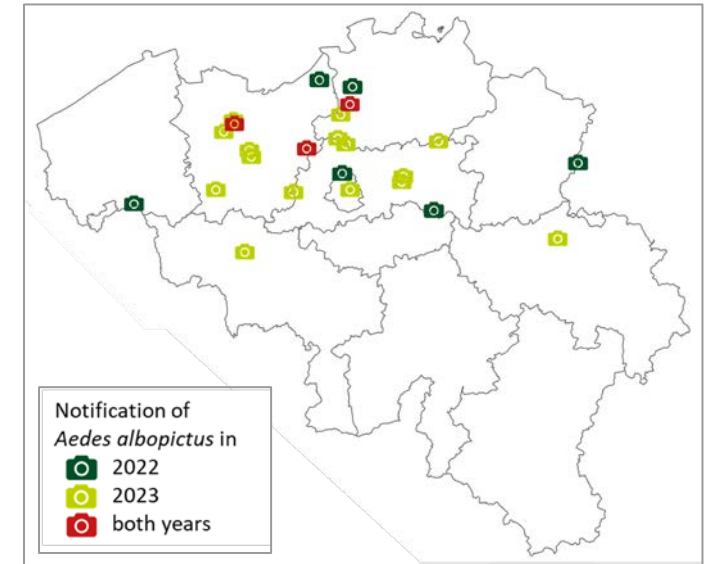
- 27 positive notifications in 18 different locations, of which 16 new locations (passive surveillance):
 - Lebbeke & Wilrijk
 - Ath, Drongen, Evergem, Gijzenzele, Kapelle-op-den-Bos, Kessel-Lo (Leuven Oudenaarde, Puurs-Sint-Amands, Roosdaal, Wolfsdonk (Aarschot), Wondelgem
 - Melle, Schelle, Schaerbeek, Leuven, Herstal
- 7 positive PoEs (active monitoring):
 - Sprimont/Noidré, Aische-en-Retail, Hondelange, Raeren, Wanlin, Minderhout, Saint-Ghislain
- Presence of *Aedes japonicus* in:
 - Hondelange



Discussion & Conclusion 2023

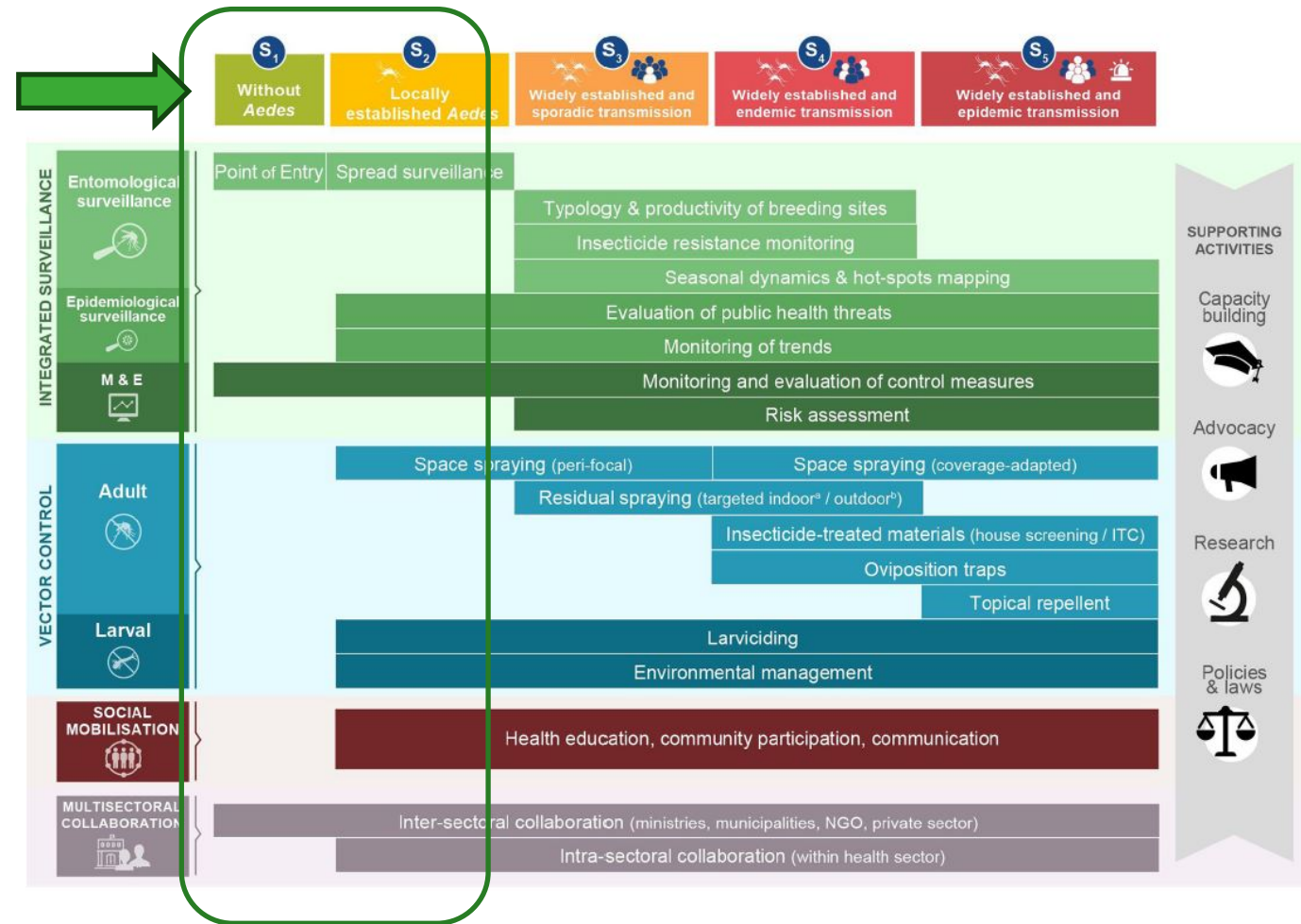
- Results **confirm** that the citizens surveillance platform is an effective tool to survey *Ae albopictus* presence in Belgium
- Tool **complements** well the active surveillance
- The situation of *Ae albopictus* in Belgium is **different** than the one expected
- In 2023, number of locations **doubled** compared to 2022
- **16 new** locations and **two locations** that were the same as in 2022 (overwintering)
- Detected at **seven out of the eight** parking lots on the highway
- Increasing import of tiger mosquitoes by road traffic

→ Belgium is clearly at the invasion front of the tiger mosquito, and we expect that the number of findings will only increase in the coming years.



Challenges/gaps

- Overall **coordination** and need for a **strong cooperation** across policy areas and across regions
 - SPOC needed!
 - Multisectoral collaboration
 - governance
- Need for a structural **“National Action plan for the prevention, monitoring and control of *Aedes albopictus* and the prevention of *Aedes*-borne diseases”**:
 - sustainable vector surveillance
 - exhaustive and timely human diseases surveillance
 - efficient vector control strategy
 - good communication/sensitisation strategy
 - strong governance.



Integrated *Aedes* management (IAM) system (Roiz et al. 2018)

Thanks !

Any question?



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Aknowledgments:

- Marie Hermy (Sciensano)
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- Valeska Laisnez (Sciensano)
- Tinne Lernout (Sciensano)
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- Isra Deblauwe (ITM)
- Anna Schneider (ITM)
- Ruth Müller (ITM)



Passive surveillance : Citizen Science

- Notification of *Ae. albopictus* sightings through the upload of pictures



1 Taille 2 Couleur 3 Pattes arrière 4 Lieu d'observation 5 Photos et contact

Le moustique tigre est un petit moustique qui mesure **entre 4 ou 5 millimètres**, mais pouvant aller jusqu'à 9 millimètres de longueur. Il est plus petit qu'un quart d'une pièce de 5 centimes d'euros.

La première image représente le moustique tigre, la deuxième un autre insecte (Limoniidae) et la troisième une comparaison du moustique tigre avec d'autres moustiques communs en Belgique (du genre *Culex* et *Culiseta*).

S'agit-il d'un moustique plus petit qu'un quart d'une pièce de 5 centimes d'euros ?

Non
 Oui

Consultez nos conseils pour prendre une bonne photo d'un moustique tigre.

1 Taille 2 Couleur 3 Pattes arrière 4 Lieu d'observation 5 Photos et contact

Le moustique tigre est noir et présente des marques blanches argentées, très contrastée comme le montrent les photos ci-dessous.

Quelle est la couleur générale du moustique ?

Noir et blanc, très contrastée
 Plutôt jaune et brun
 Autre(s) couleur(s)
 Je ne suis pas sûr(e)

< Retour Suivant >

Consultez nos conseils pour prendre une bonne photo d'un moustique tigre.

1 Taille 2 Couleur 3 Pattes arrière 4 Lieu d'observation 5 Photos et contact

Les pattes arrière du moustique tigre sont noires et ont cinq rayures blanches, avec le bout des pattes arrière complètement blanc. De nombreuses espèces de moustiques ont les pattes rayées, mais plutôt dans des tons brun-beige.

ATTENTION ! Si vous n'êtes pas sûr de la présence de cinq rayures blanches sur les pattes, veuillez choisir la réponse « Je ne suis pas sûr.e »

Est-ce que les pattes arrière sont noires, présentent cinq rayures blanches et ont le bout blanc ?

Oui
 Non
 Je ne suis pas sûr(e)

< Retour Suivant >