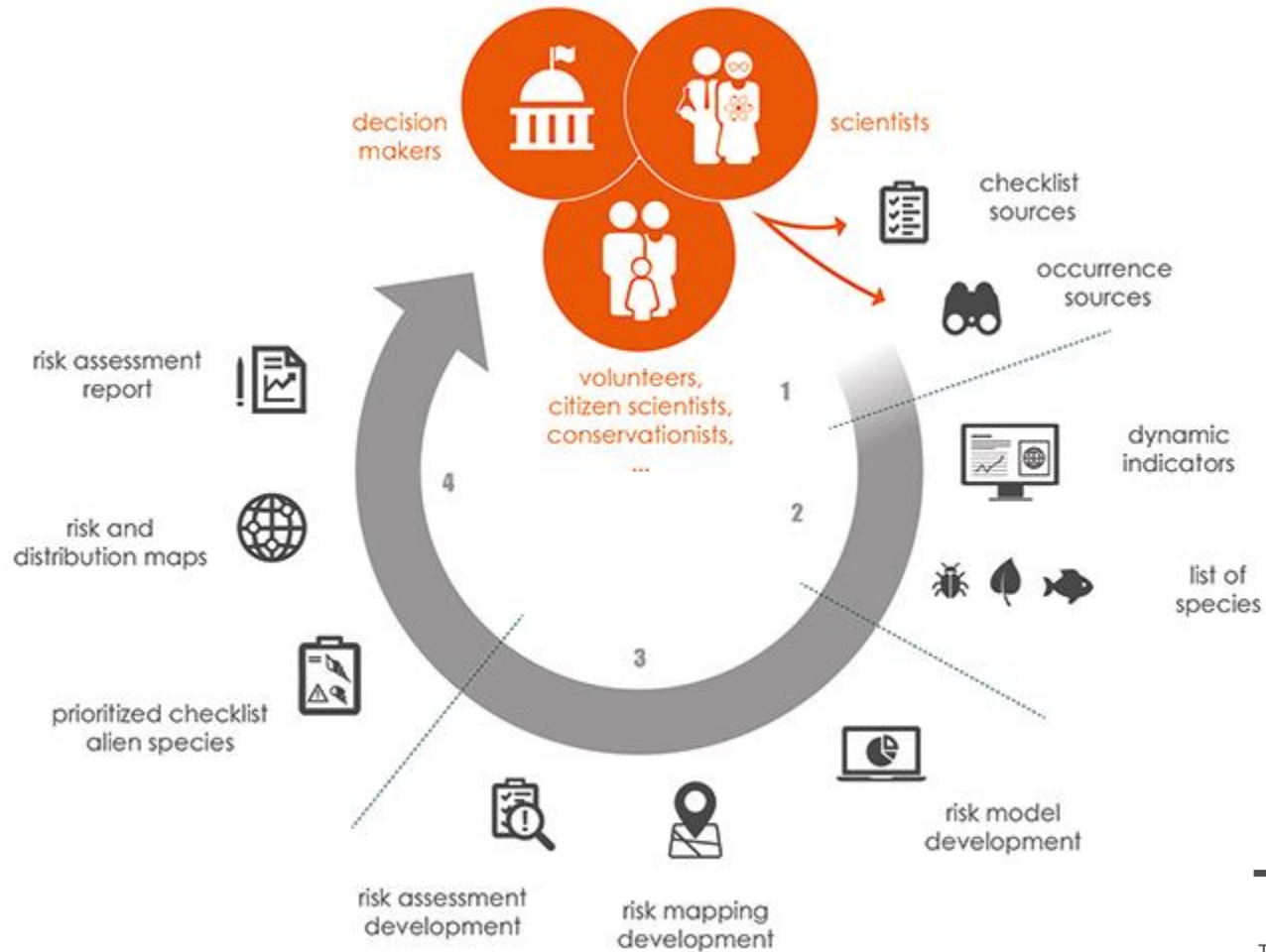


# Contribution of citizen science to Belgian biodiversity information



**Empowering Biodiversity Research II**  
**24-25 May 2022**

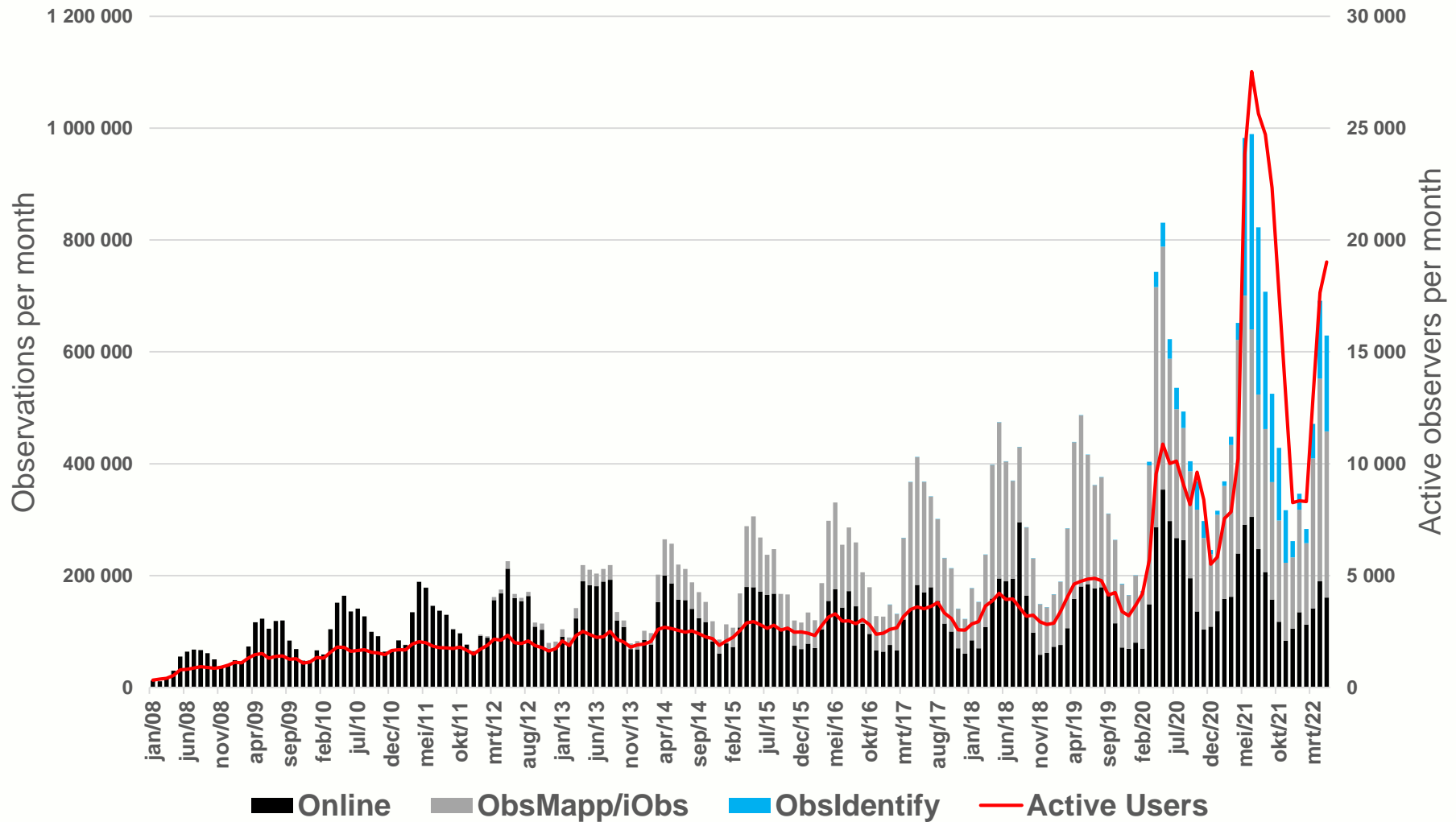
**Kristijn Swinnen**  
**Natuurpunt Studie**



- Data quantity and use
- Technology and implications
- What's specific to citizen science

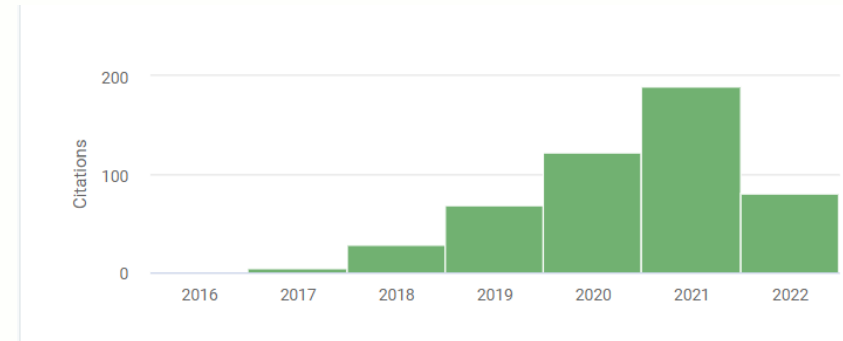


*Volunteer driven nature conservation organisation*





- 39,649,059 Occurrences in Belgium
- Waarnemingen.be on GBIF
  - 18,548,047 Occurrences → 47% of GBIF data
  - 11 Datasets
  - 495 Citations



# Most data contribution datasets for Belgium



## Top datasets contributing data about Belgium

Waarnemingen.be - Bird occurrences in Flanders and the Brussels Capital Region, Belgium. *12,811,851 occurrences in Belgium.* (Last updated 30 Apr 2021)

Bird tracking - GPS tracking of Lesser Black-backed Gulls and Herring Gulls breeding at the southern North Sea coast. *6,857,925 occurrences in Belgium.* (Last updated 4 Jun 2021)

Florabank1 - A grid-based database on vascular plant distribution in the northern part of Belgium (Flanders and the Brussels Capital region). *4,738,399 occurrences in Belgium.* (Last updated 16 Dec 2021)

Waarnemingen.be - Plant occurrences in Flanders and the Brussels Capital Region, Belgium. *2,300,868 occurrences in Belgium.* (Last updated 30 Apr 2021)

Waarnemingen.be - Butterfly occurrences in Flanders and the Brussels Capital Region, Belgium. *1,298,346 occurrences in Belgium.* (Last updated 30 Apr 2021)

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## CHALLENGES AHEAD

Non-Linnean names



DwC-A star schema limitations



Easier publishing process



No more **birds**, please!



Redefine participation



# Non-native animals & plants



- [Waarnemingen.be - Non-native animal occurrences in Flanders and the Brussels Capital Region, Belgium](#)
  - 927,613 occurrences
- [Waarnemingen.be - Non-native plant occurrences in Flanders and the Brussels Capital Region, Belgium](#)
  - 660,203 occurrences



**GBIF**

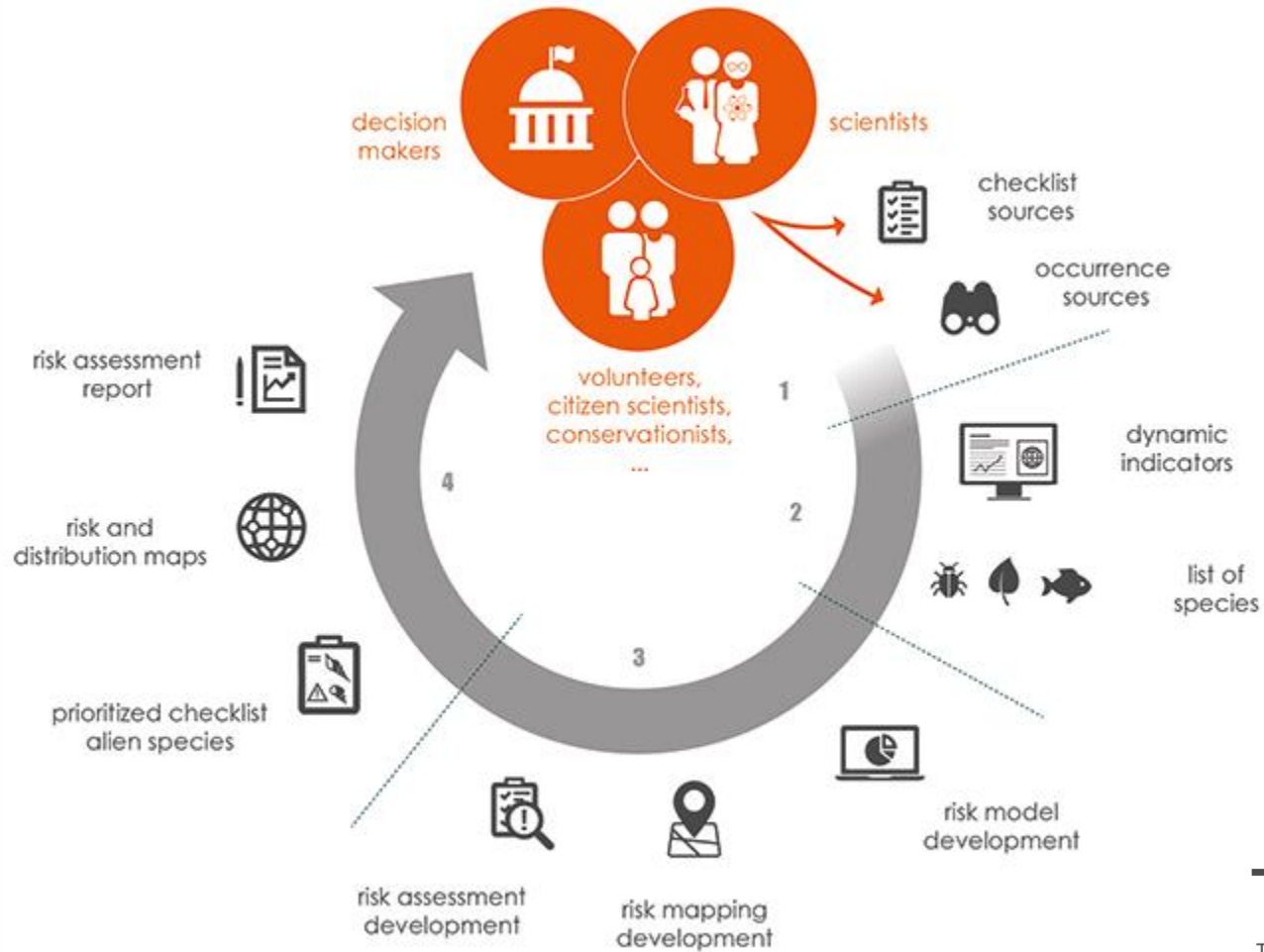


RESEARCH INSTITUTE  
NATURE AND FOREST

**TrIAS** ▶▶  
Tracking Invasive Alien Species

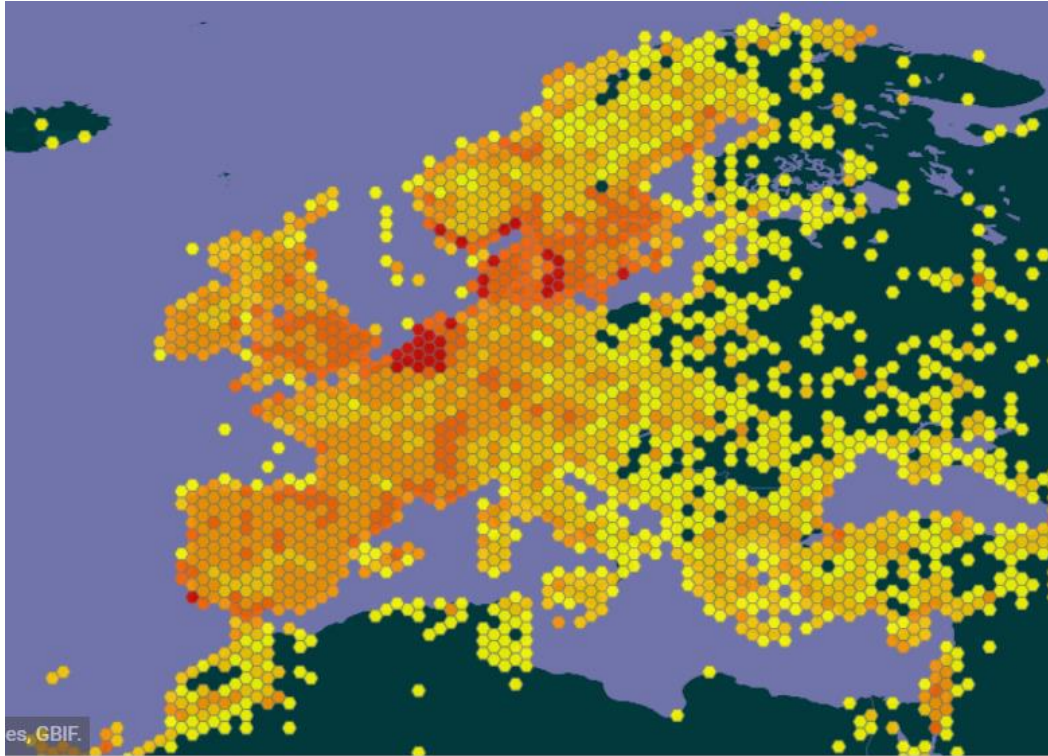


# TrIAS cyclic workflow



**Groom et al. 2019** *Fig 1: Empowering Citizens to Inform Decision-Making as a Way Forward to Support Invasive Alien Species Policy. Citizen Science: Theory and Practice 4(1)*

# Data density

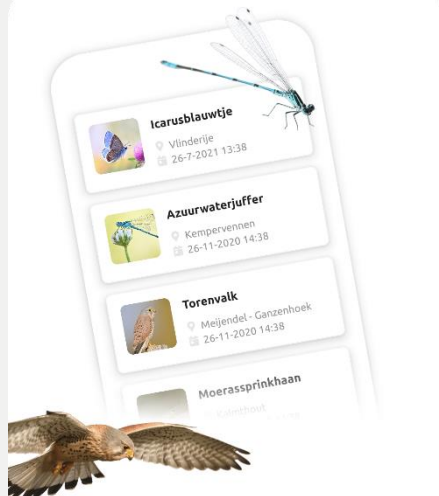


# ObsIdentify



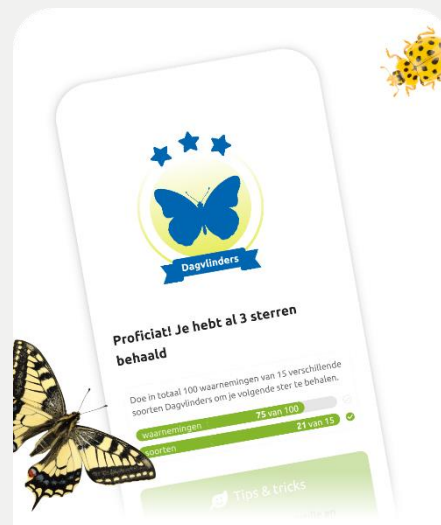
## Herken de natuur in één klik

Neem een foto van een wild dier of plant en kom te weten wat het is.



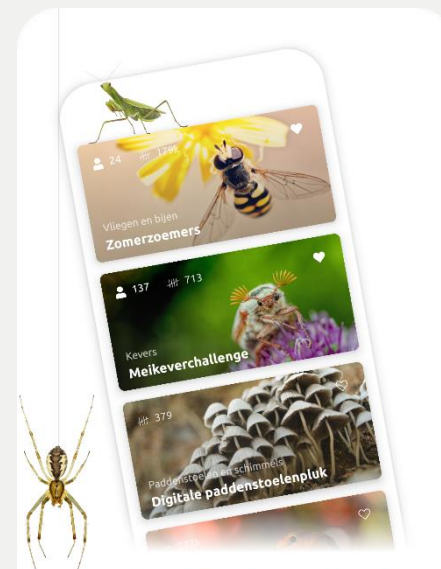
## ObsIdentify brengt al je waarnemingen samen

Met de app en online op de grootste natuurdatabank. Zo komen we veel meer te weten over de natuur.



## ObsIdentify beloont je met badges

Doe een waarneming en behaal automatisch een badge. Voor elke badge kan je tot 5 sterren behalen. Hoe ver kom jij?



## ObsIdentify daagt je uit

Kies jouw challenge. Zo maken jouw waarnemingen, samen met die van anderen, deel uit van onderzoek naar deze soorten.

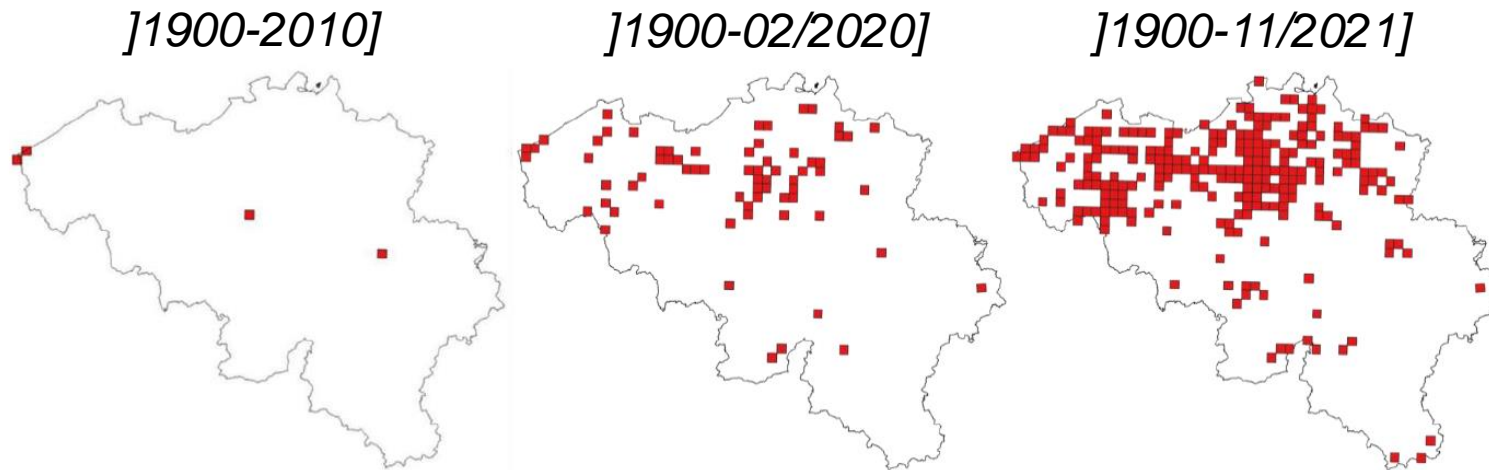


# ObsIdentify: Provide tools



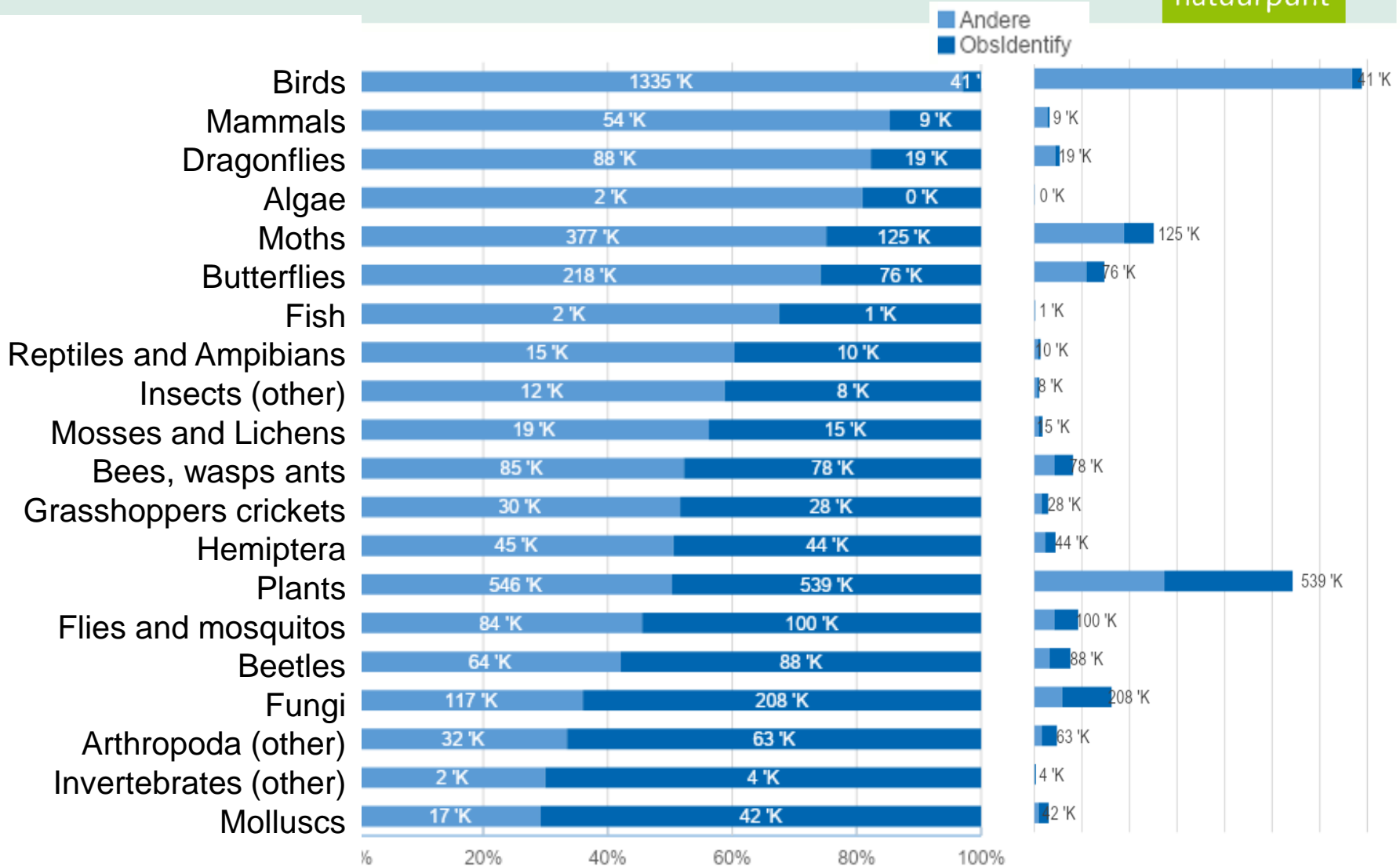
## Distribution

*Odiellus spinosus*



**Figure 2:** Left: Known distribution of *Odiellus spinosus* as published by Luc Vanhercke in 2010. Middle: Known distribution of *O. spinosus* based on the observations registered in Waarnemingen.be until just before the launch of ObsIdentify, up to and including February 2020. Right: Known distribution of *O. spinosus* based on the observations registered in Waarnemingen.be up to and including November 2021.

# ObsIdentify effect



# Peacock butterfly



natuurpunt



(a) Immaculate condition



(b) Slightly worn



(c) Moderately worn



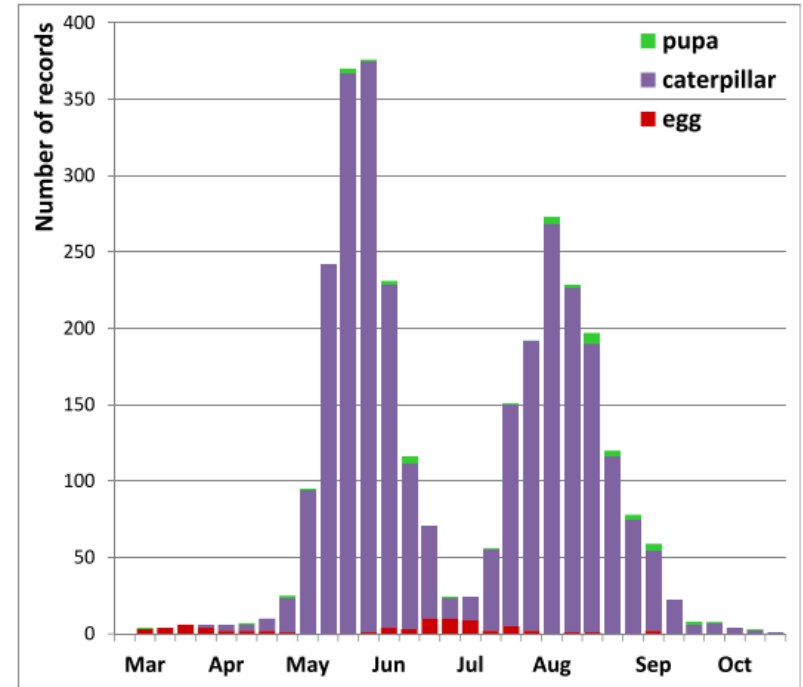
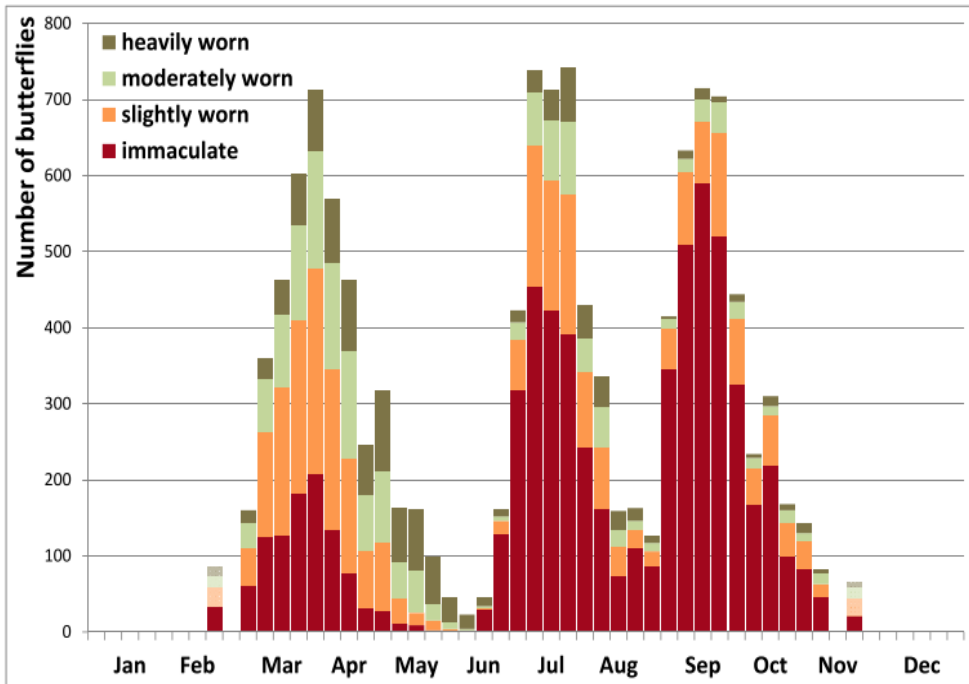
(d) Heavily worn

- 319 684 Observations
- 12 425 pictures scored

# Peacock butterfly



natuurpunt



**Herremans et al. (2021)** Abundant citizen science data reveal that the Peacock Butterfly *Aglais io* recently became bivoltine in Belgium. *Insects* 12,683.

# IUCN Red List Butterflies in Flanders



Tabel 1. Aantal gegevens in de verschillende gegevensbronnen in Vlaanderen.

Gegevensbron	# gegevens	#medewerkers
INBO databank	658.859	1.600
Waarnemingen.be	1.781.854	11.964
Monitoringgegevens		
Algemene vlindermonitoring	138.828	136
Routes waarnemingen.be	69.044	190
Meetnetten.be	22.206	112
<b>Totaal</b>	<b>2.668.791</b>	



# Animals under wheels



- Project for Department of Environment and spatial Development
  - Datacollection by citizen scientists
    - 90.000 animal victims (2008-2020), 145.000 km of transect monitoring



Registratie van faunaslachtoffers in het verkeer: "Dieren onder de wielen 3.0"

Eindrapport

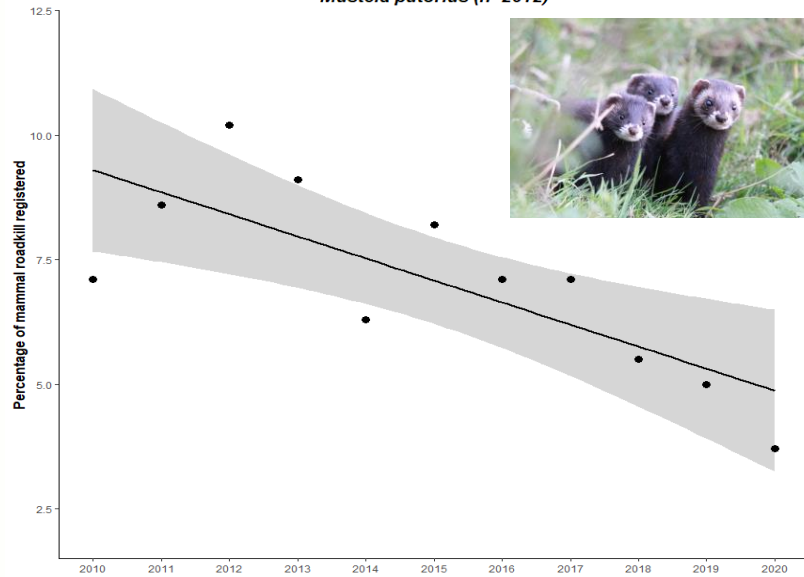
DEPARTEMENT  
OMGEVING

omgevingvlaanderen.be

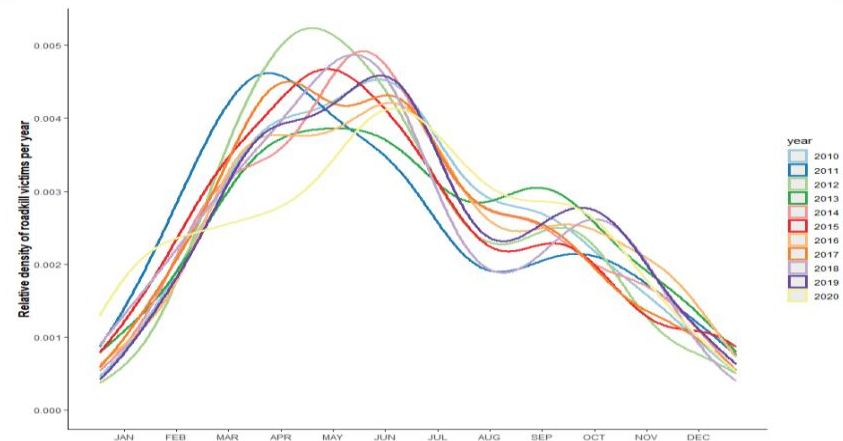
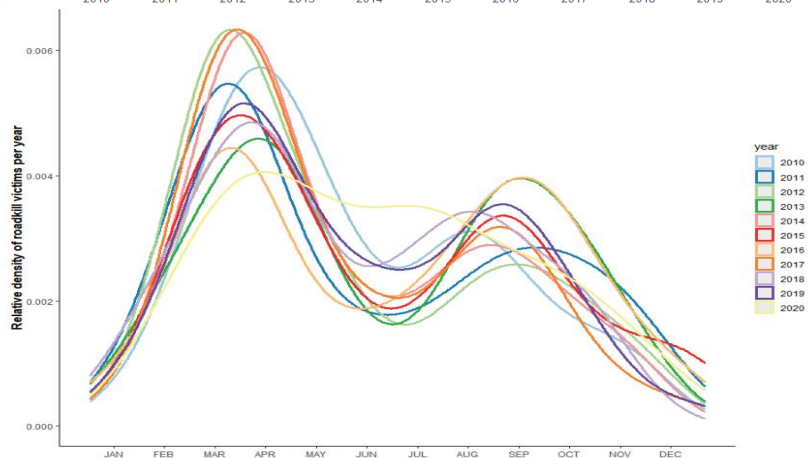
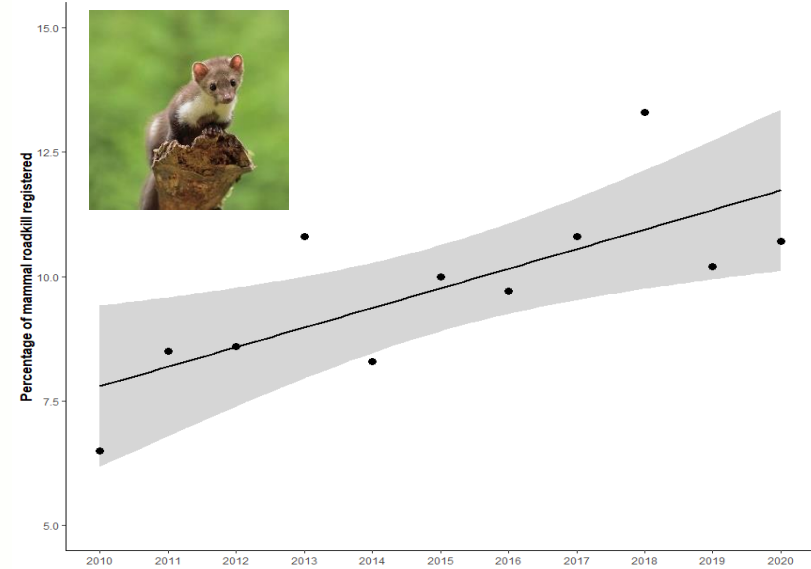
# Animals under wheels



*Mustela putorius* (n=2612)



*Martes foina* (n=3700)



**Swinnen et al. (2022)** 'Animals under wheels': Wildlife roadkill data collected by citizen scientists as a part of their nature recording activities. *Nature Conservation* 47: 121-153

# Animals under wheels



- Communication and feedback is key!
  - Observer Network
    - Newslette (12), Natuurbericht (11), Magazine contributions (15), video (1)
  - General public
    - Symposia (10), written press (47), radio (20), tv (3)



Registratie van faunaslachtoffers in het verkeer: "Dieren onder de wielen 3.0"

Eindrapport

DEPARTEMENT  
OMGEVING

omgevingvlaanderen.be

# Feedback



1210  
soorten dit jaar

19788  
waarnemingen dit jaar

434  
gebruikers dit jaar

Waarnemingen.be  
mogelijk gemaakt door



Zot van tellen? Doe mee met een telproject



Leer bij en ga op stap met een werkgroep



Start met Waarnemingen.be!  
Website en apps voor natuur in heel België!

## Recente waarnemingen

1 dag 1 week 1 maand 1 jaar

1



Bijen, wespen en mieren

**Grote zijdebij**

*Colletes cunicularius*

1

waarneming

1



Reptielen en amfibieën

**Alpenwatersalamander**

*Ichthyosaura alpestris*

1

waarneming

1



Vliegen en muggen

**Onvoorspelbare bijvlieg**

*Eristalis similis*

1

waarneming

1



Wantsen en cicaden

**Geribde prachtblindwants**

*Miris striatus*

1

waarneming

1



Wantsen en cicaden

**Vuurwants**

*Pyrrhocoris apterus*

2

waarnemingen

1



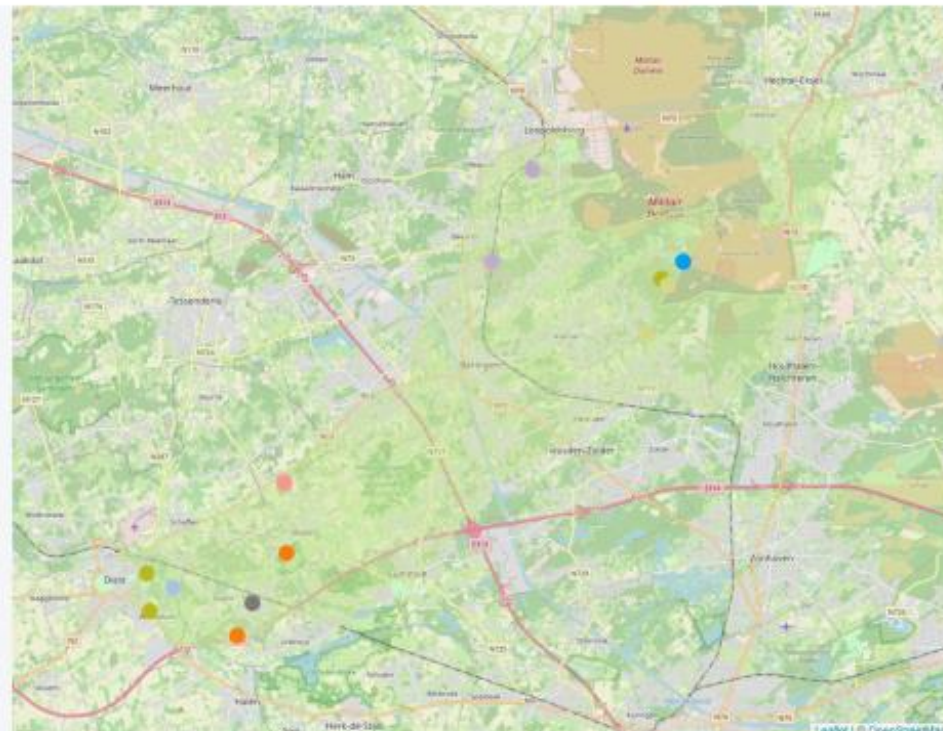
Vogels

**Gekraagde Roodstaart**

*Phoenicurus phoenicurus*

2

waarnemingen



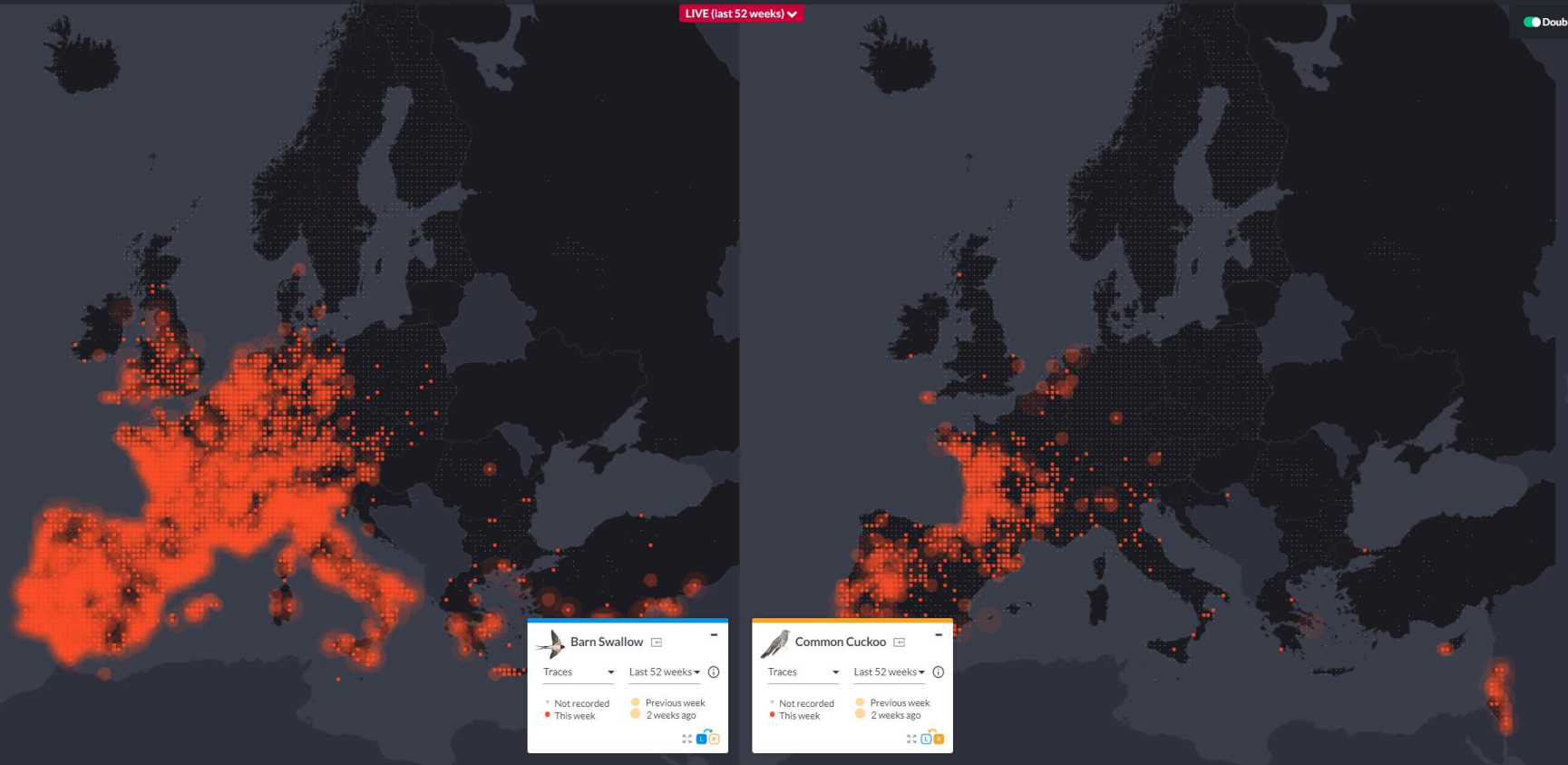
Leefbaar | © OpenStreetMap

# Feedback: Euro bird portal



LIVE (last 52 weeks)

Double map



**Barn Swallow**

Traces Last 52 weeks

- Not recorded
- This week
- Previous week
- 2 weeks ago

**Common Cuckoo**

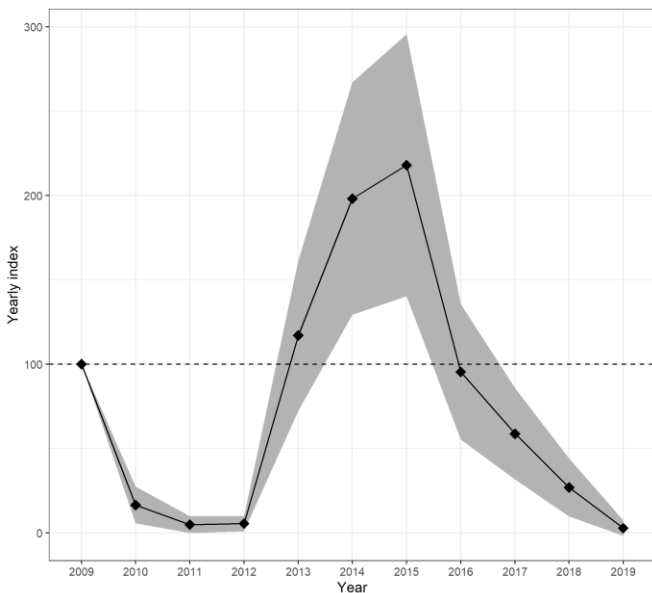
Traces Last 52 weeks

- Not recorded
- This week
- Previous week
- 2 weeks ago

# Moth monitoring network



- Abundance dataset
- Standardised method (start 2009)
- Added 321 species to the Living Planet Index for Flanders (out of 540)



# Meetnetten.be

65 European protected and Flemish priority species (including all birds)

Plants, Amphibians, butterflies, dragonflies, spiders, grasshoppers, mammals, beetles and snails

Standardised protocol

2016 – 2020

350 observers

> 10.000 standardised counts

7 FTE in case fieldwork could be done whole year round.

2021-...



# Transect monitoring

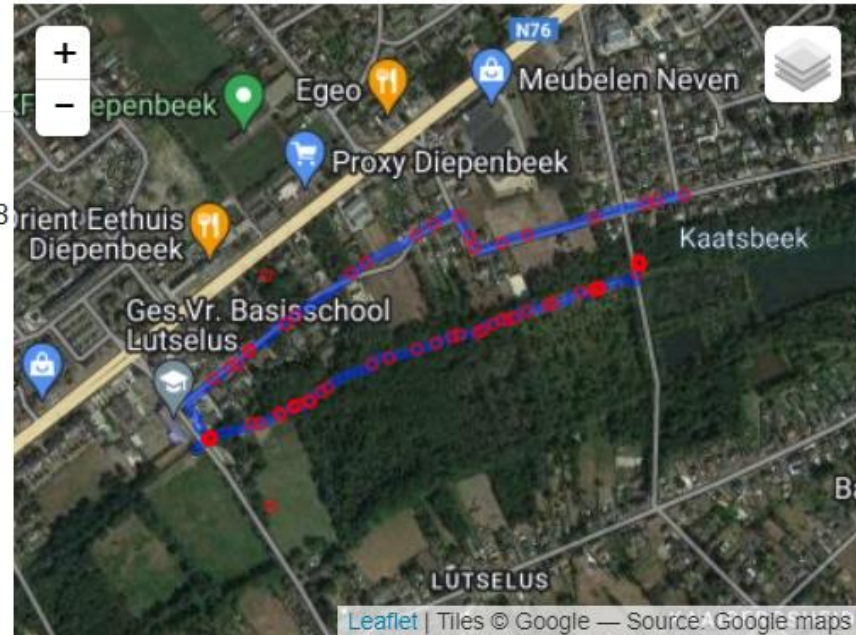


natuurpunt

## Kristijn Swinnen

### Streeplijst (samenvatting)

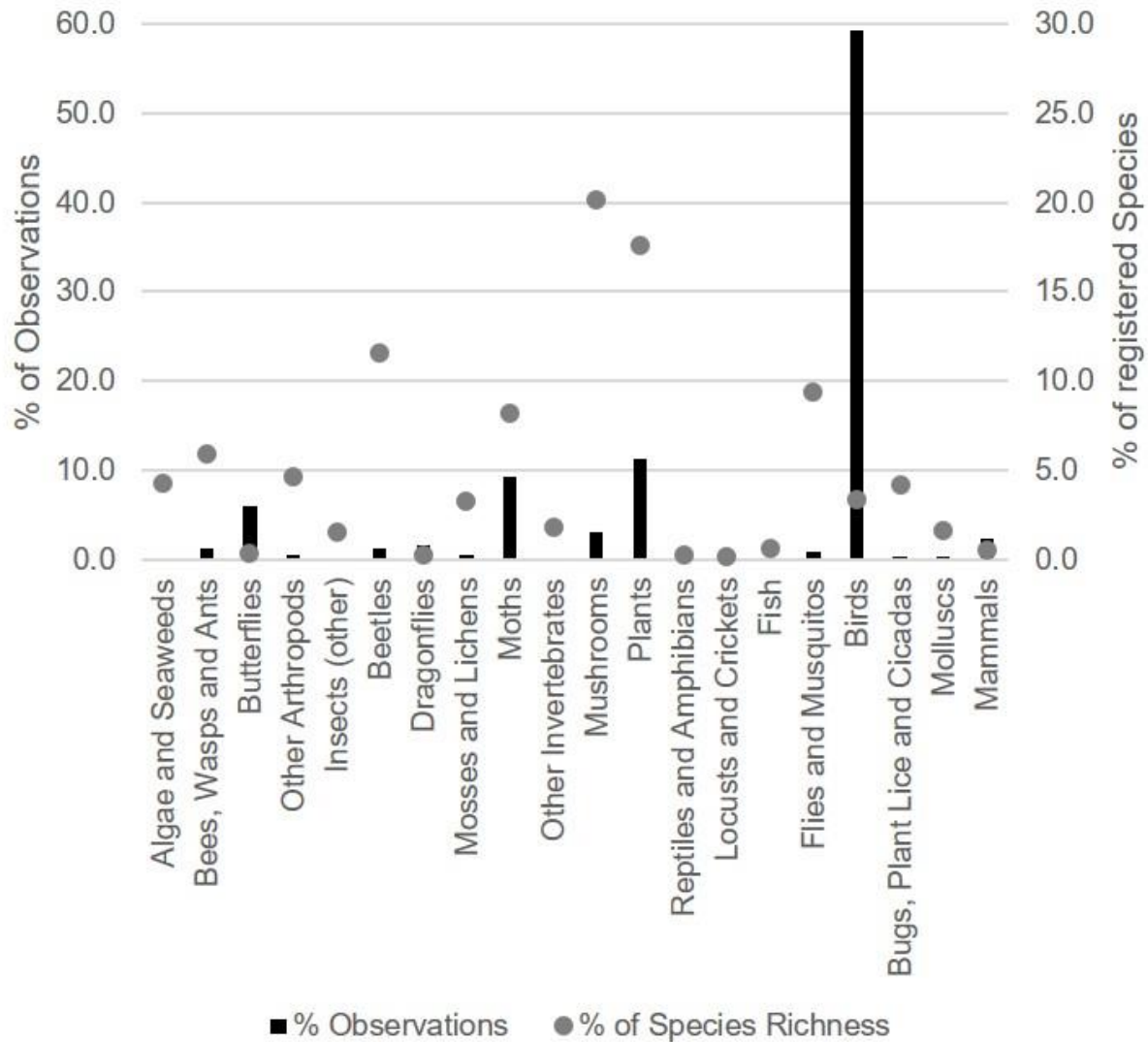
Type: Telling (transect) 1.786 km  
Datum: 2022-04-18 Tijd : 09:15 - 10:08  
Observatieduur: 00:53  
Snelheid: 2.02 km/h  
Gemiddelde afstand: 104 m  
Maximale afstand: 133 m  
Soortgroep: Vogels  
Soorten: 21  
Alle soorten geteld: Ja  
Alle exemplaren geteld: Ja



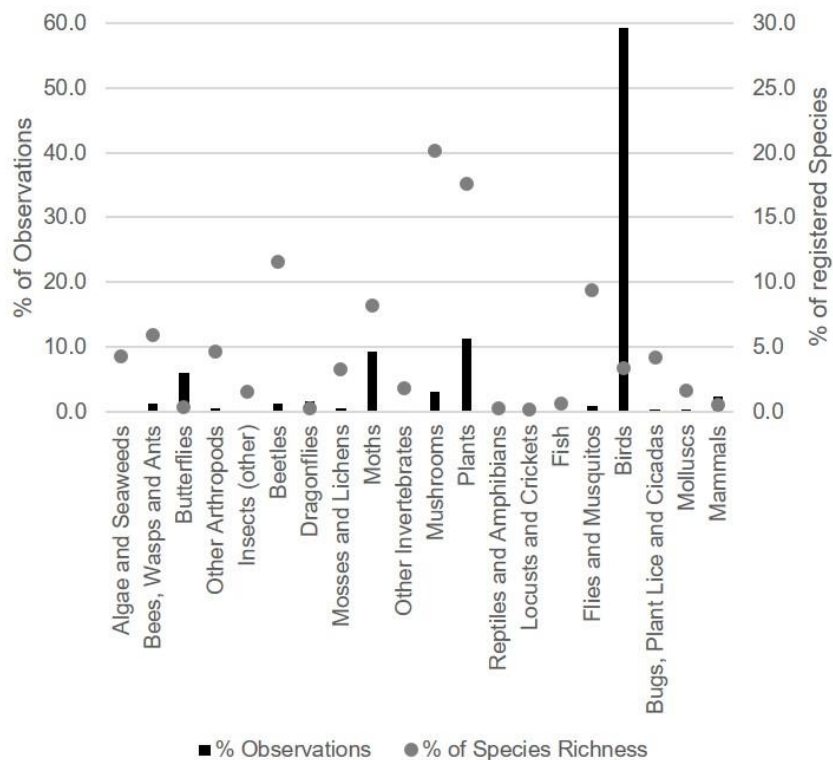
Soort	Waarnemingen	#
Boomklever - <i>Sitta europaea</i>	2	2
Groenling - <i>Chloris chloris</i>	2	2
Grote Bonte Specht - <i>Dendrocopos major</i>	3	3
Grote Canadese Gans - <i>Branta canadensis</i>	1	1
Houtduif - <i>Columba palumbus</i>	8	10
Huismus - <i>Passer domesticus</i>	6	7
Kauw - <i>Coloeus monedula</i>	2	3
Koolmees - <i>Parus major</i>	6	8
Merel - <i>Turdus merula</i>	3	3



# Challenges



# Challenges



■ % Observations ● % of Species Richness

## Spinicornis

landpissebedden van België

After discovering a population of *P. monticola*, for the first time in Belgium, it became clear that little was known about Belgian terrestrial isopods. Therefore, four isopod enthusiasts decided to make a complete inventory of the entire territory of Belgium within a five-year period. In order to facilitate this, the working group "Spinicornis" was founded.

Pallietter De Smedt<sup>1,2</sup>, Gert Arijjs<sup>1</sup>, Pepijn Boeraeve<sup>1</sup> & Stijn Segers<sup>1</sup>

<sup>1</sup>SPINICORNIS, Miquelbeek 2, B-2820 Borchardon (email: info@spinicornis.be)

<sup>2</sup>Forest & Nature Lab, Ghent University, Coupurebergsesteenweg 207, B-9000 Melle (Belgium) (email: pallietter.de.smedt@UGent.be)

**2014**

*Porcellio monticola*

Spinicornis was founded

**2015**

*Philoscia affinis*

*P. monticola* Lereboullet, 1853 a new species for Belgium

**2016**

*Metatrichoniscoides leydigii*

*T. alemannicus* Verhoeff, 1917 a new species of woodlice for Belgium

Confirmation of *M. leydigii* (Weber, 1889) in Belgium, 60 years after discovery

**2017**

*Trichoniscus alemannicus*

A long-expected finding: the first record of the isopod *E. caelatum* (Miers, 1877) from Belgium

Woodlice of the green houses at Ghent Botanical Garden and Botanic Garden Meise with two new exotic species for Belgium

*P. affinis* Verhoeff, 1908 new to Belgium

**2018**

*Eluma caelatum*

Woodlice of Belgium: An annotated checklist and bibliography

**2020**

Book: Terrestrial isopods of Belgium

Forest affinity of Belgian terrestrial isopods

**2021**

Habitat and seasonal activity patterns of the terrestrial isopods of Belgium

**2022**

Inventory of the terrestrial isopods in Belgium (2011-2020)

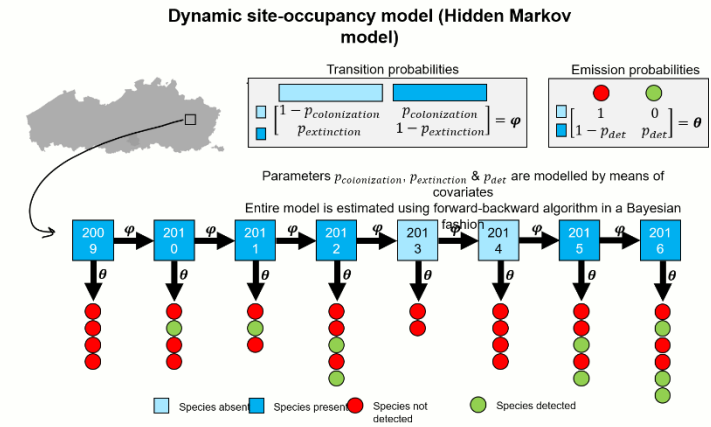
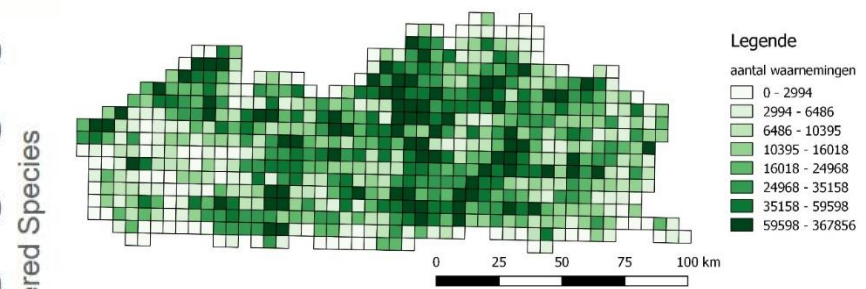
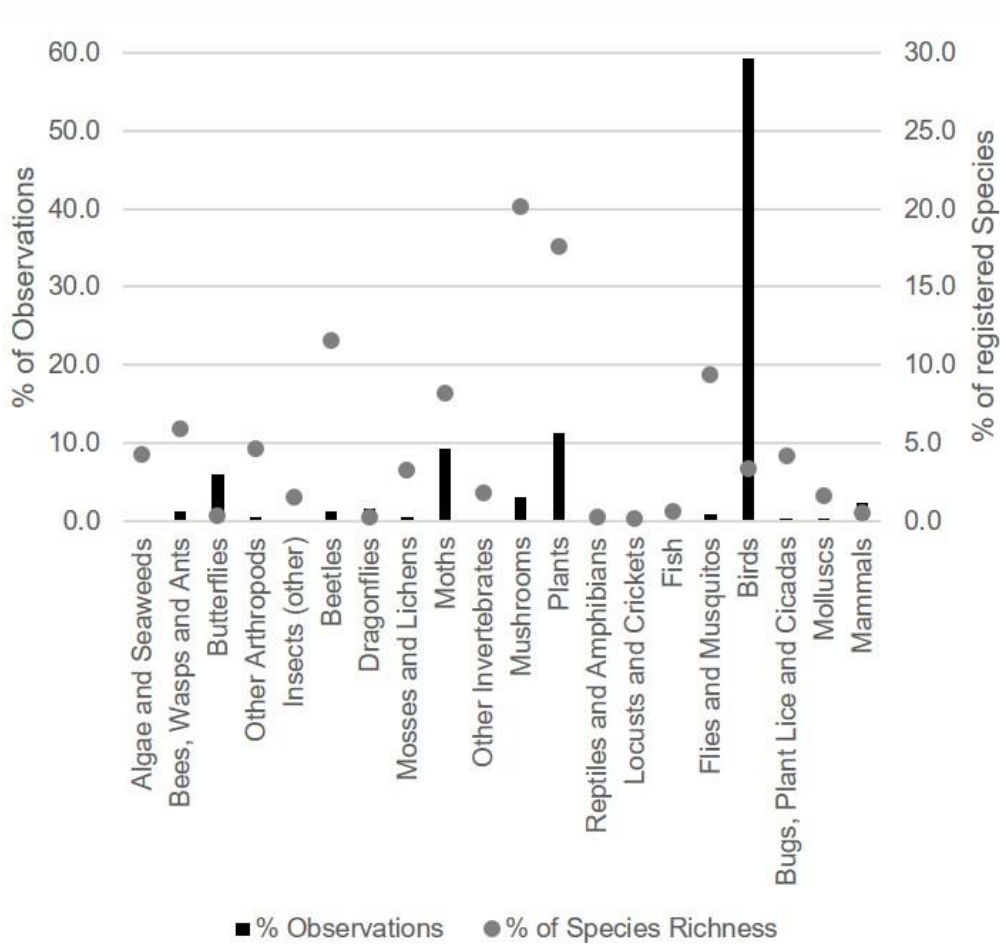
A Red List of terrestrial isopods (Isopoda: Oniscidea) in Flanders and its implications for conservation

info@spinicornis.be  
www.spinicornis.be

Belgian Biodiversity Platform  
Empowering Biodiversity Research II  
24-25 May 2022



# Challenges



# Challenges



icoon	code	korte beschrijving
■	O	Unknown
✓	J	Approved by species specialist based on proof
✓	P	Approved by species specialist
⚙️	A	Approved by AI
🕒	I	Under investigation
✖️	N	Rejected
⦿	U	Cannot be evaluated currently

Validation → 160 species specialists

Ecological Modelling 444 (2021) 109453

Contents lists available at [ScienceDirect](#)

 **Ecological Modelling**

journal homepage: [www.elsevier.com/locate/ecolmodel](http://www.elsevier.com/locate/ecolmodel)





The impact of data quality filtering of opportunistic citizen science data on species distribution model performance

Camille Van Eupen <sup>a,b,\*</sup>, Dirk Maes <sup>c</sup>, Marc Herremans <sup>d</sup>, Kristijn R.R. Swinnen <sup>d</sup>, Ben Somers <sup>b,#</sup>, Stijn Luca <sup>a,#</sup>

Ecological Modelling 467 (2022) 109910

Contents lists available at [ScienceDirect](#)

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Species profiles support recommendations for quality filtering of opportunistic citizen science data

Camille Van Eupen <sup>\*,a,b</sup>, Dirk Maes <sup>c,d</sup>, Marc Herremans <sup>e</sup>, Kristijn R.R. Swinnen <sup>e</sup>, Ben Somers <sup>\*,b</sup>, Stijn Luca <sup>\*,a</sup>

# Future steps



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- Species list Belgium on GBIF
- Viable open data agreement and pathway towards 'complete' open data
- Adding of structured data and pictures

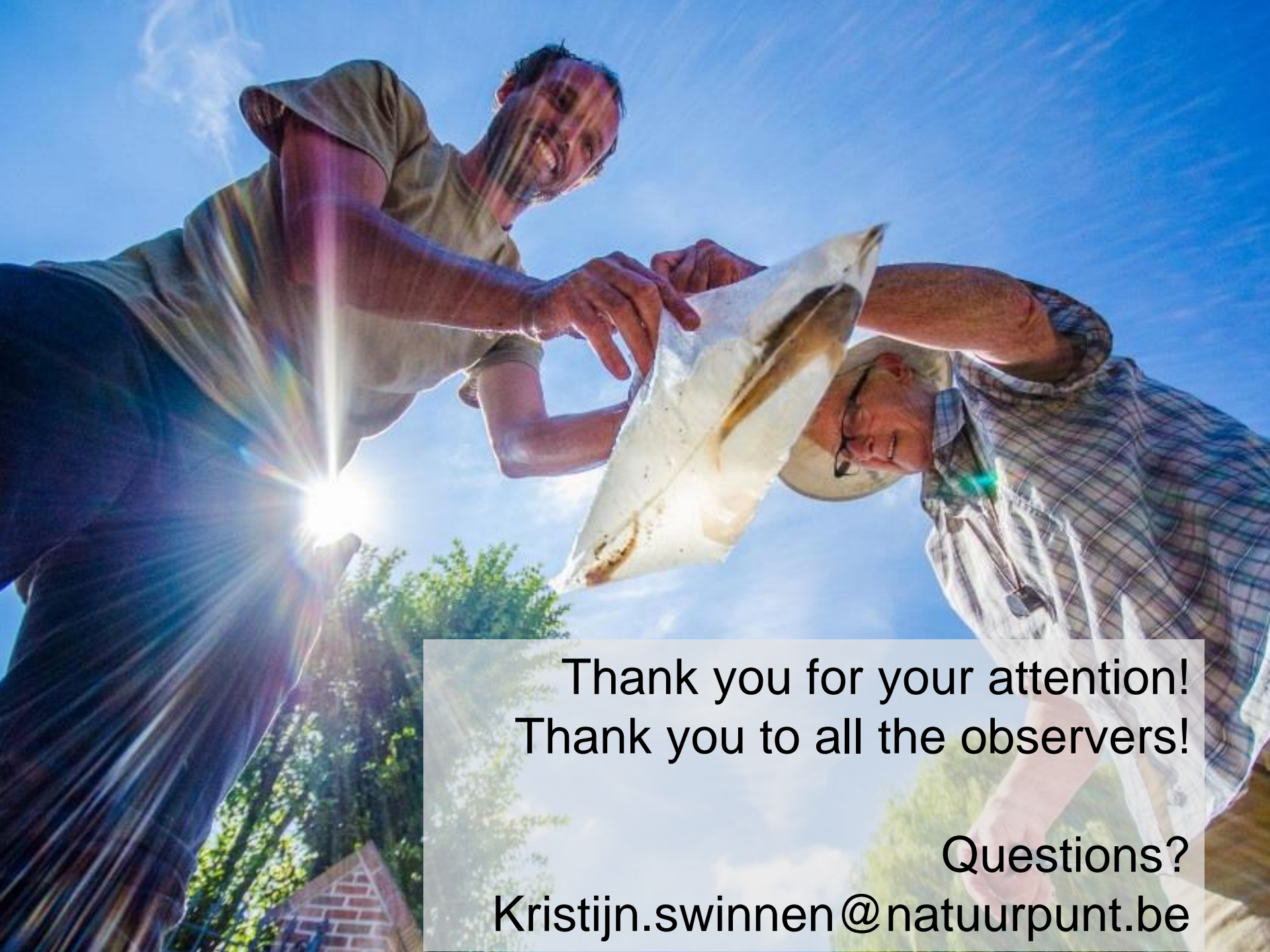


# Take home messages



- Citizen science → very valuable contribution
- Citizen science data is not generated automatically
- Goals of citizen scientist are not necessarily equal to fastest knowledge increase for science
- Power of open data is clear
  - sufficient support for data providers





Thank you for your attention!  
Thank you to all the observers!

Questions?  
[Kristijn.swinnen@natuurpunt.be](mailto:Kristijn.swinnen@natuurpunt.be)