

SPIN-CITY

@Scivil 15/11/2022





Spin-City: can spiders adapt to living in the city?

Citizen scientists take pictures of spiders in the SpiderSpotter app, use the online tool to analyse these and can explore their results on an interactive map.

Specific hypotheses:

- Spider colour
- Spider size
- Web



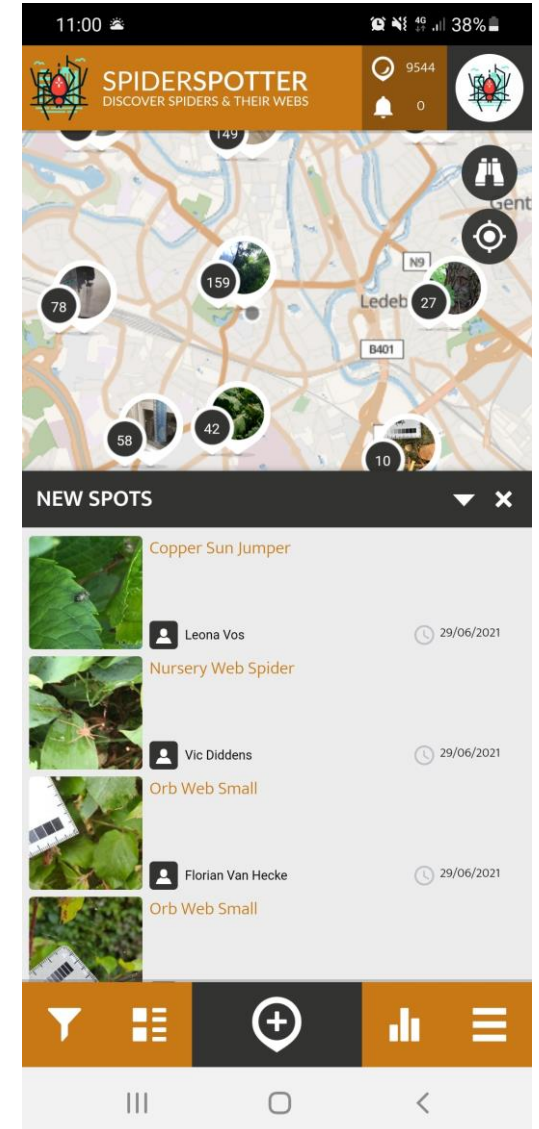
Win-win. Participants can experience setting up and executing a scientific project, scientists get valuable data.

Launch: september 2019, in Flanders.

More info: www.spiderspotter.be!

SPIDERSPOTTER





DISCOVER SPIDERS & THEIR WEBS



Spin-City: semi-structured citizen science project.

Pictures can be uploaded from any spider species and web type, but guidance is given on how to take pictures and there are clear hypothesis about urbanisation effects.

- 76 predetermined spider species
 - Information panels for 41 species.
- Five types of webs (orb, funnel, messy, sheet, tripwire)

CATEGORY	
Cross Orbweaver <i>Araneus diadematus</i>	
Four-spot Orbweaver <i>Araneus quadratus</i>	
Wasp Spider <i>Argiope bruennichi</i>	
Cucumber Green Spider <i>Araniella cucurbitina</i>	
Walnut Orb Weaver <i>Nuctenea umbratica</i>	
Silver-sided Sector Spider <i>Zygiella x-notata</i>	
Furrow Orbweaver <i>Larinioides cornutus</i>	
Grey Cross Spider <i>Larinioides sclopetarius</i>	



Arabel beeldbank: ©Bert Van Der Krieken



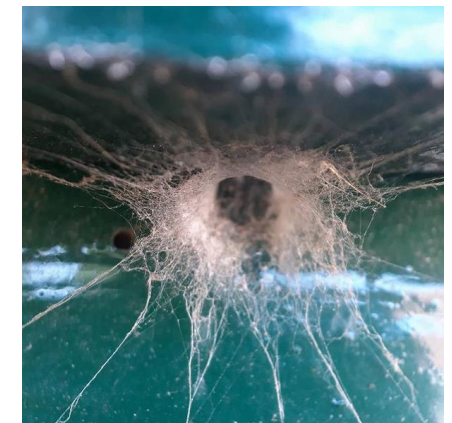
Arabel beeldbank: ©Bart Librecht



Arabel beeldbank: ©Richard Louvigny



Arabel beeldbank: ©André Hermans



©Bram Vanthournout

Which spider species and spider webs have been spotted and does this give insight into how citizen science biodiversity research functions?



11532 observations

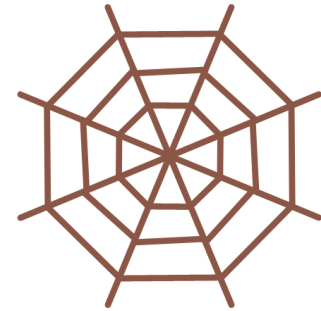


8093 spiders

115 species

25 families

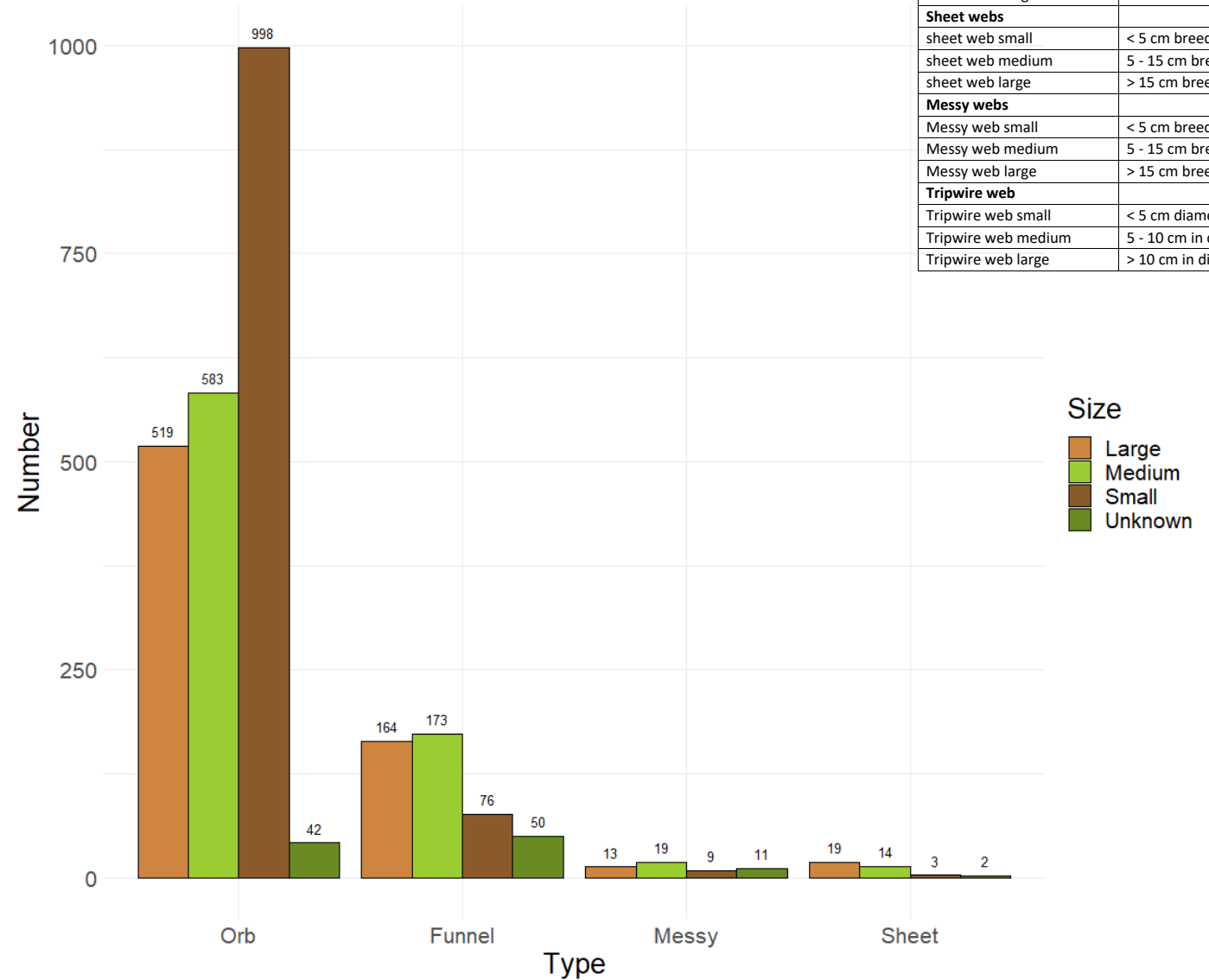
16% total Belgian
spider fauna



2695 webs

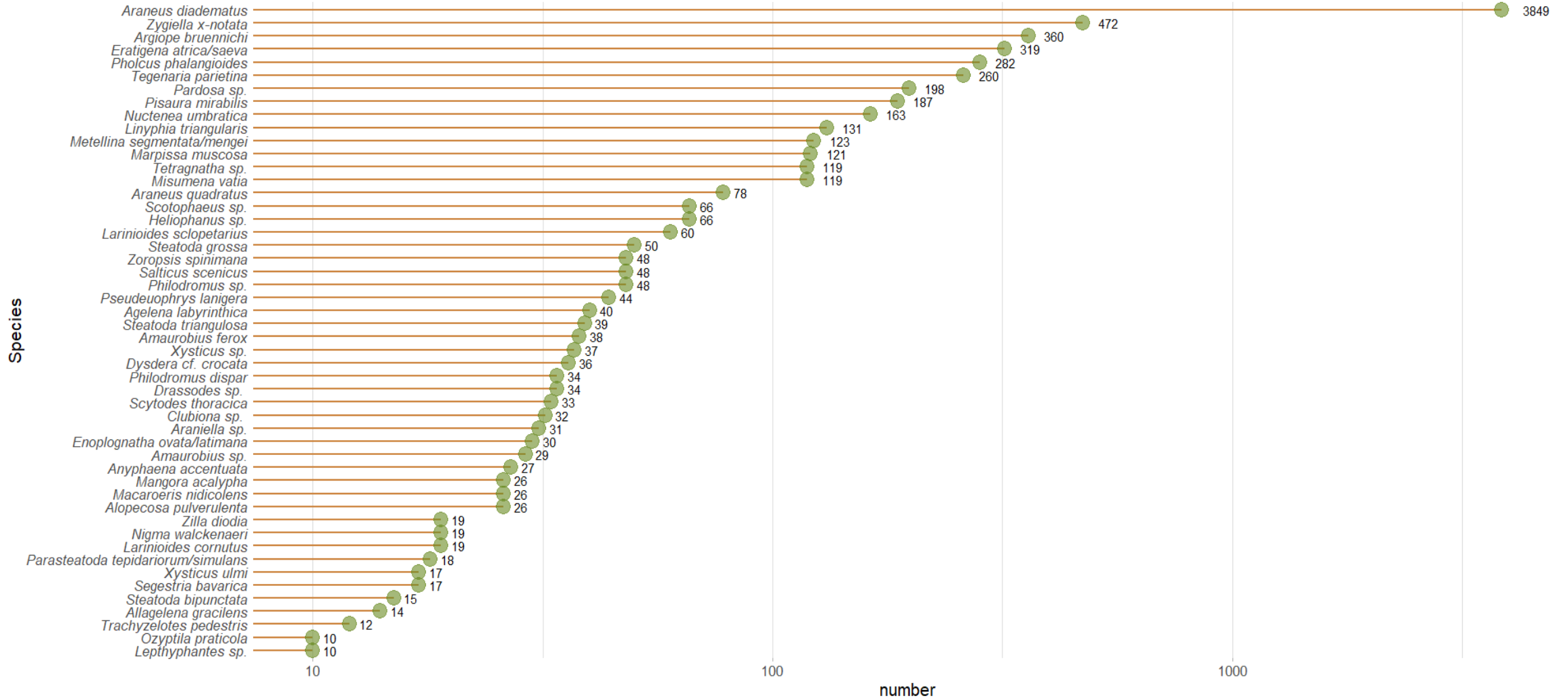
Orb webs have been recorded most, followed by funnel webs.

There were more medium and larger webs observed, though more small orb webs were submitted (density effect?).



Web type	Size
Orb web	
Orb web small	< 20 cm diameter
Orb web medium	20 - 30 cm diameter
Orb web large	> 30 cm diameter
Funnel webs	
funnel web small	< 10 cm breedte
funnel web medium	10 - 25 cm breedte
funnel web large	> 25 cm breedte
Sheet webs	
sheet web small	< 5 cm breedte
sheet web medium	5 - 15 cm breedte
sheet web large	> 15 cm breedte
Messy webs	
Messy web small	< 5 cm breedte
Messy web medium	5 - 15 cm breedte
Messy web large	> 15 cm breedte
Tripwire web	
Tripwire web small	< 5 cm diameter
Tripwire web medium	5 - 10 cm in diameter
Tripwire web large	> 10 cm in diameter

Spider species with at least 10 observations.



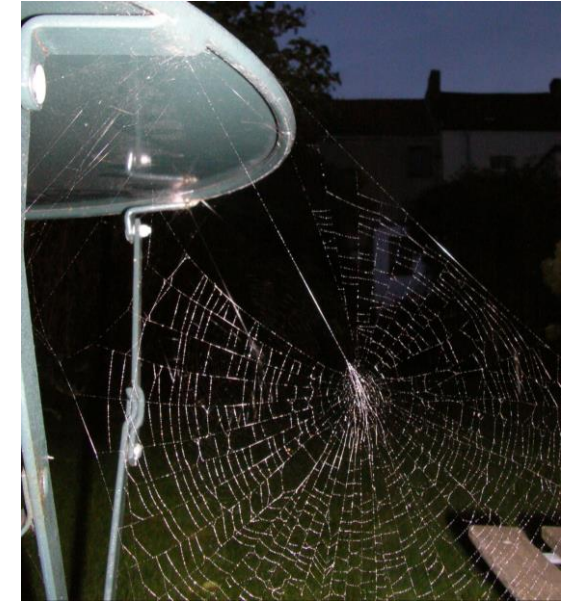
Top five of spotted spiders.

1. European garden spider
(*Araneus diadematus*, 3849)



Arabel beeldbank ©Ludwig Jansen

2. Silversided sector spider
(*Zygiella x-notata*, 472)



Arabel beeldbank ©Cor Kuijpers

Arabel beeldbank ©Richard Louvigny

Top five of spotted spiders.

3. Wasp spider (*Argiope bruennichi*, 360)



Arabel beeldbank ©Danny Declercq

4. Giant house spider (*Eratigena atrica/saeva*, 319)



Arabel beeldbank ©Danny Declercq

Top five of spotted spiders.

5. Cellar spider (*Pholcus phalangioides*, 282)

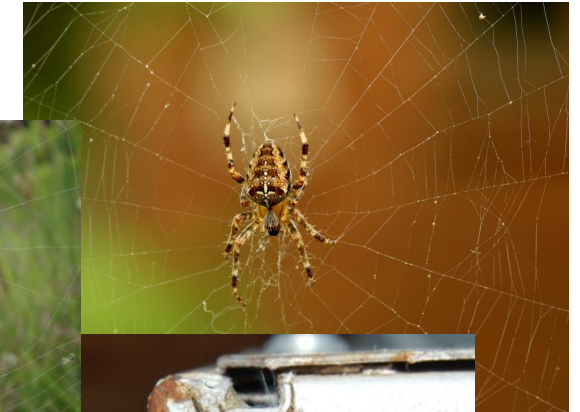


Any patterns in SPIN-CITY biodiversity data?

- Mostly orb webs spotted
 - Best known orb web type?
- More spiders than webs
- Three species in top five are orb web weavers (*A. diadematus*, *Z. x-notata*, *A. bruennichi*)
 - Stationary, easy to spot
- Big(ger) spiders
- Close or inside homes



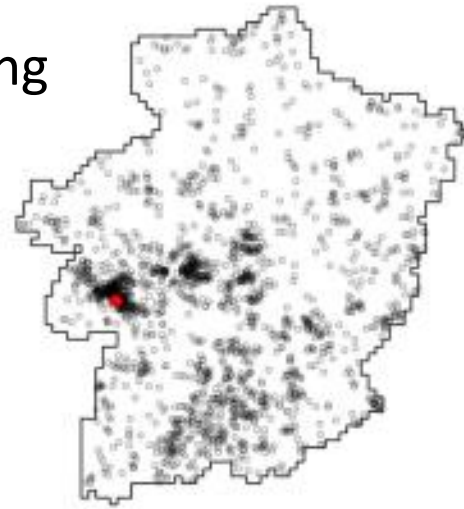
Arabel beeldbank: ©Bert Van Der Krieken



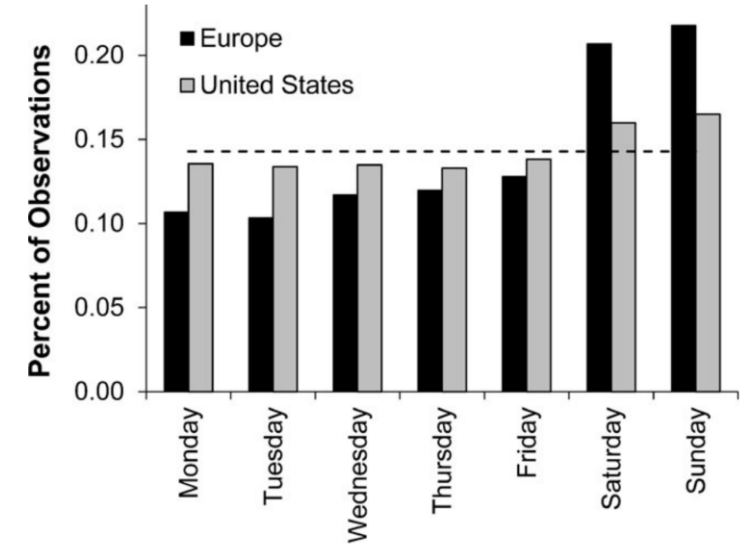
Biases in citizen science: spatial, temporal and species specific.

Opportunistic sample: sampling locations

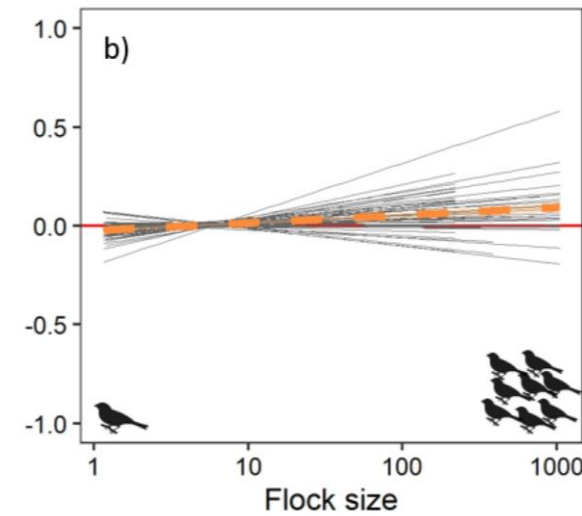
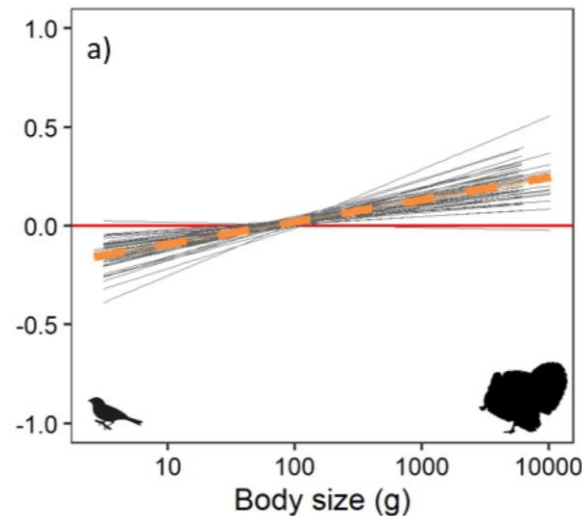
Higher propensity of sampling close to home (Neyens et al. 2019).



More observations in the weekend (Courter et al. 2013).



Larger birds and birds in larger flocks are spotted more (Callaghan et al. 2021).

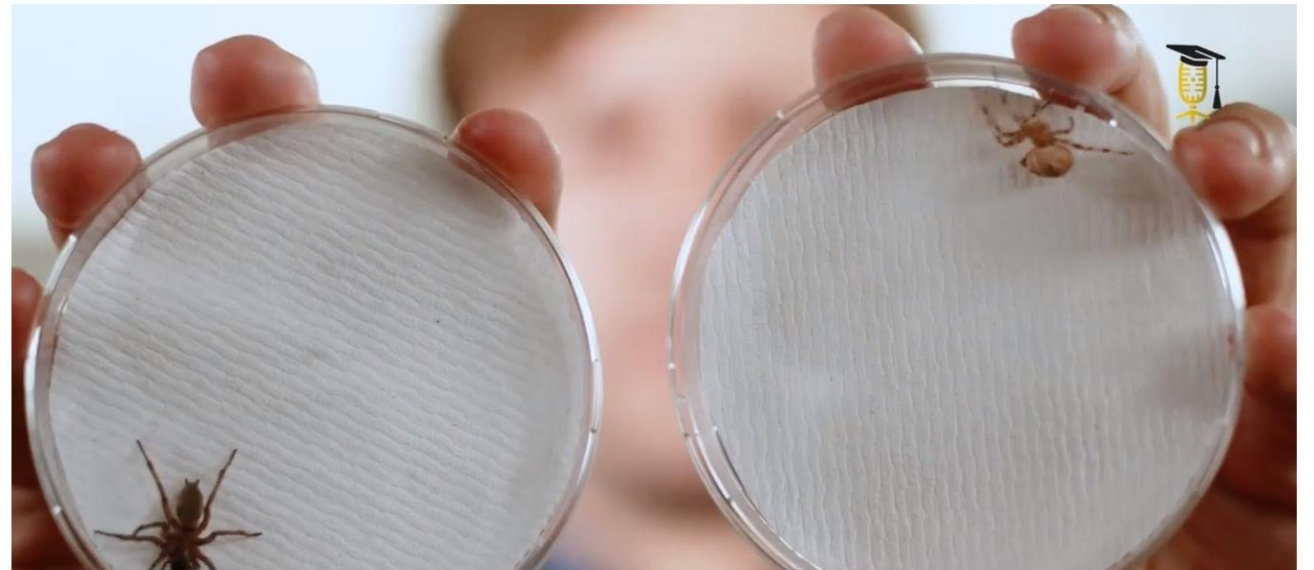


How to start/keep participants participating.



Starting/keeping the participants participating: Importance of launch method?

- Short movie clip (collaboration with Science Figured Out).
- Launch event for written/spoken press with schoolkids city park of Ghent.



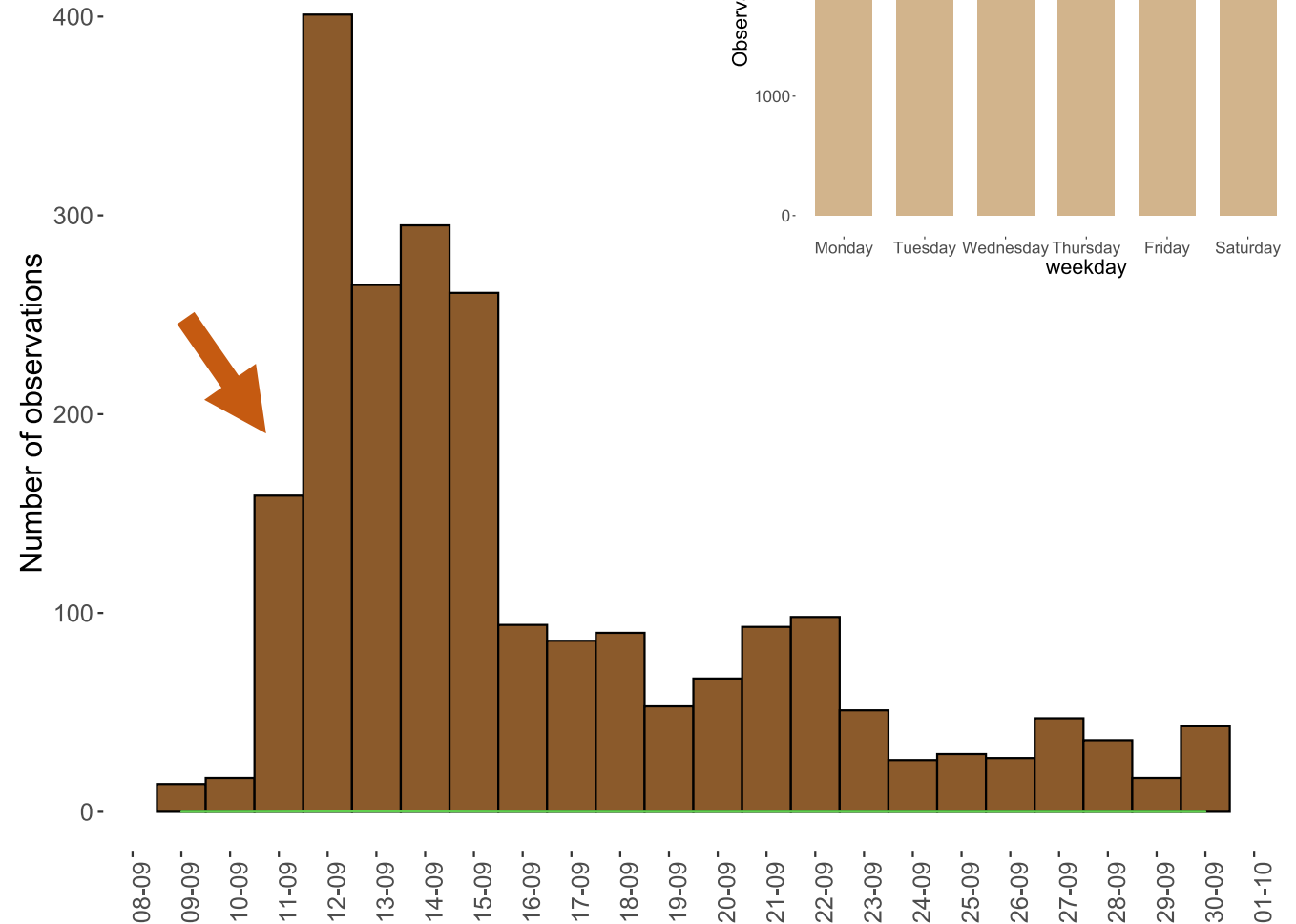
Starting/keeping the participants participating: Importance of launch time?

Species specific limitations

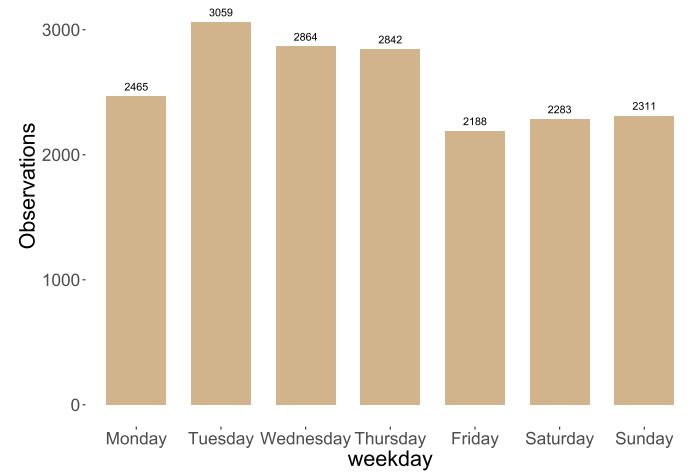
Launch: Wednesday 11th of September.

Clear effect of launch event.

Carried through in the weekend,
decline on Monday



No general weekend effect though!

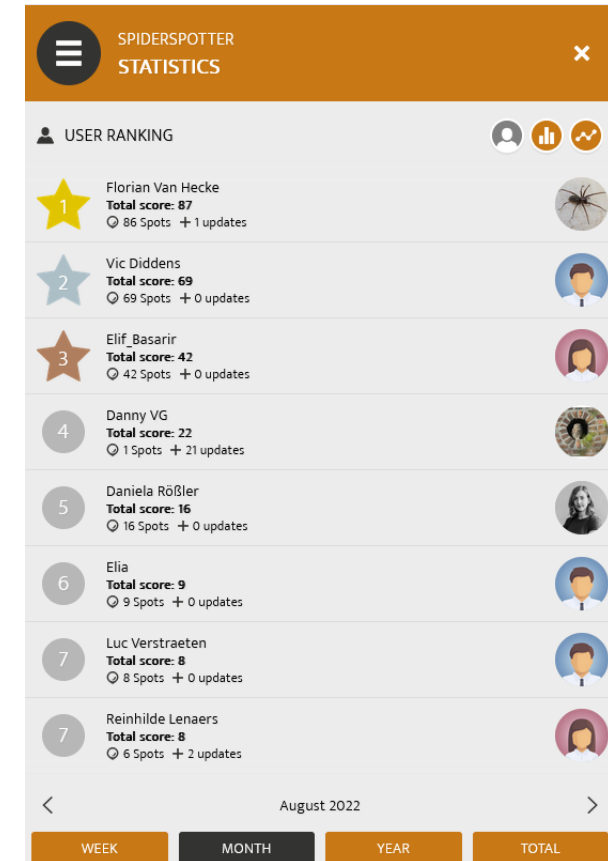


Keeping the participants participating: gamification (badges, leaderboards).



Badges

Earned by ongoing participation, Badges are rewards for the user for active involvement and are visible to all connections in the user community.



Keeping the participants participating: Community building.



Community Motivation

Due to the integrated **digital-social Community Toolkit**, users find an active and welcoming environment for participation.

03/01/2020
SPINY FALSE WOLF SPIDER

03/01/2020

Checked Spot

Spiny False Wolf Spider

Other common spiders

Valse wolfspin

Not sure

4 3

Aspm90

Valse wolfspin

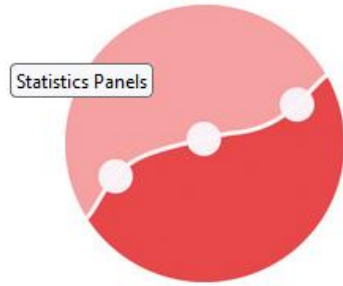
COMMENTS SPOT UPDATES

Lien Ceüppens
Is it just me or do you also see the head of an alien on the upper body of the spider?
3 years ago 3

Christophe Mantei
Haha never noticed that before.
Good one.
3 years ago 2

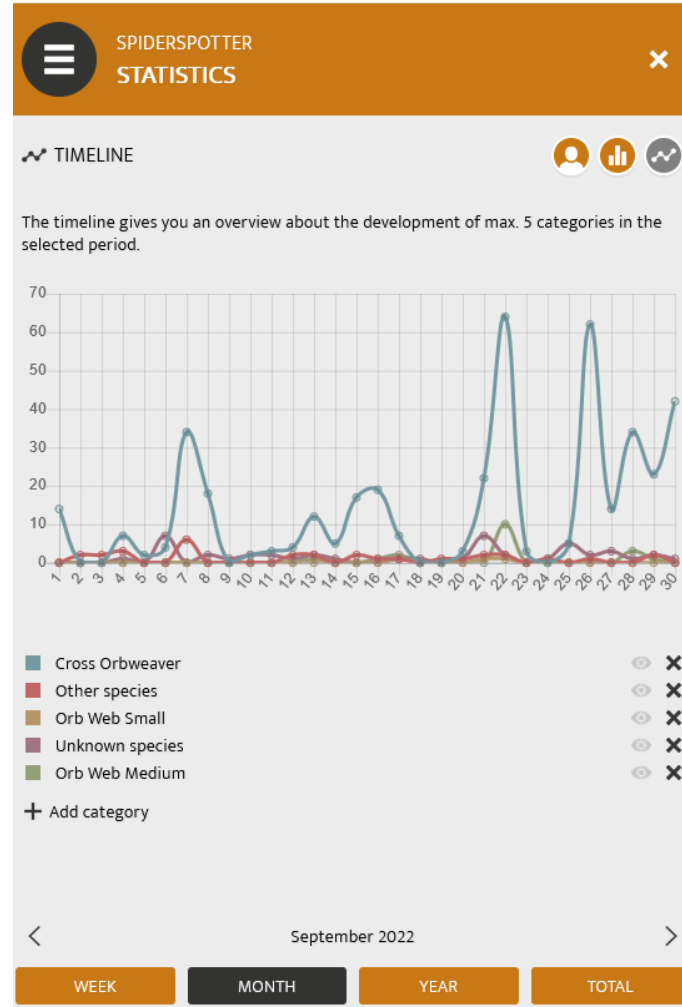
Ka vonSeiten
Haha nice:) #pareidolia
3 years ago 1

Keeping the participants participating: Info sharing.



Statistics Panels

Displaying chronological data from
Timeline observations in the form of
line charts and statistics in the
detail-view of a Spot



Custom Push Messages

Integrated tool for reaching
out to every participant in
your project's App with
custom short messages for
news, updates, and project
involvement

Starting/Keeping the participants participating: Optimising work flow?

Personal experience, feedback.

→ Possibility to include web measurements
in spider observations.

- Broad availability of species.

Initially: focus on few species → all species available

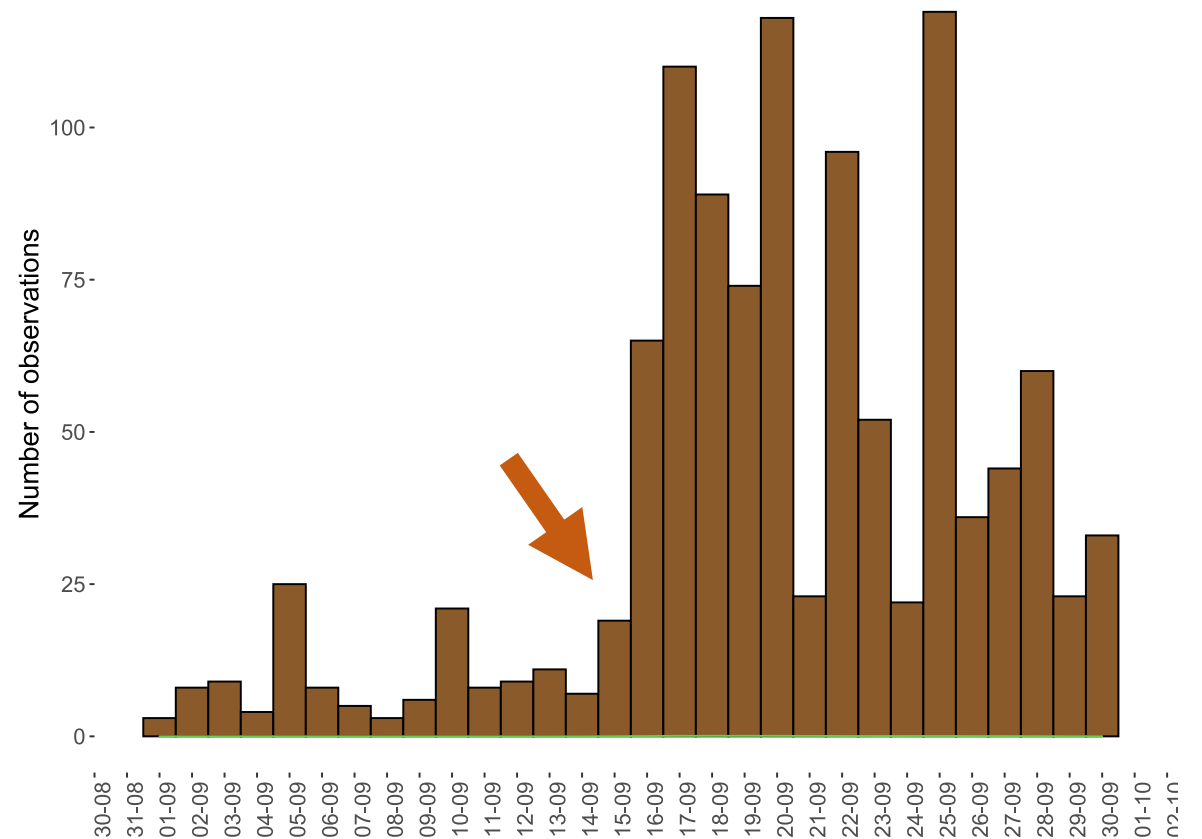
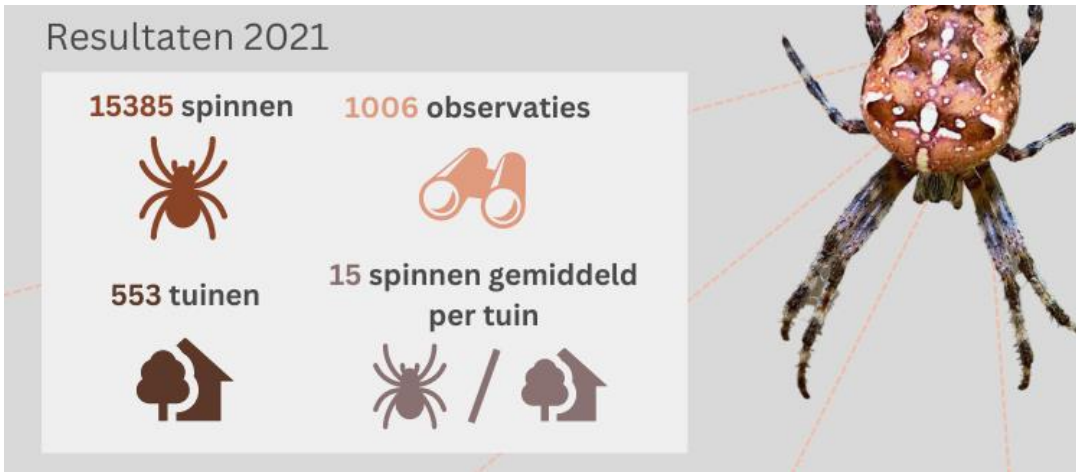
Avoid loss of motivation if observation can't

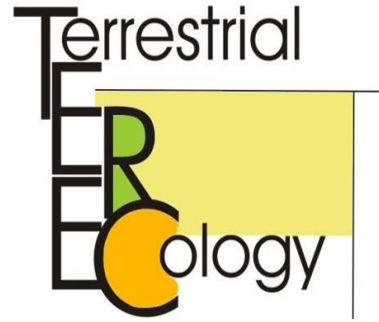
Be included.

The screenshot shows a mobile application interface for 'SPIDERSPOTTER' with a title bar 'ADD SPOT'. The form is for reporting a spider sighting. It starts with a text input field containing 'Cross Orbweaver'. Below this is a question: 'What is the sex / lifestage of the spider?'. There are four buttons: 'FEMALE' (with a female symbol), 'MALE' (with a male symbol), 'JUVENILE' (with a spider icon), and 'NOT SURE' (with a question mark). Below these is an optional checkbox labeled 'Optional: I want to add a size or color measurement'. The next question is 'Do you see a web?'. There are three buttons: 'ORB WEB' (with a spider web icon), 'OTHER WEB' (with a question mark and spider icon), and 'NO WEB' (with an 'X' icon). Below this is a section titled 'PLEASE ADD A PICTURE, BEST WITH A REFERENCE OBJECT:'. It features a camera icon in a square frame and a large orange button labeled 'Select picture'. At the bottom is a text input field with the placeholder 'Can you describe your observation? (optional)'. The interface uses a clean, modern design with orange and white colors.

Keeping the participants participating: New initiatives?

- Spider count on 15 September 2021 on MijnTuinlab
- Also noticeable in app.





Prof. Matthew Shawkey
Bram Vanthournout

- Colour function (a.o. thermoregulation) + production mechanisms.
- Spider ecology and evolution.

Prof. Dries Bonte
Pieter Vantiegheem
Maxime Dahirel
Lynda Beladjal
Katrien De Wolf

- Spatial Ecology and Evolution
- Arthropods as a model, incl. urban ecology.
- Angela Chuang (Florida University)

Partners



Vlaamse
overheid

fwo
Opening
new
horizons