

# Meetnetten.be

Monitoring data on European and Flemish priority plant and animal species

*Biodiversa+ workshop on data interoperability and harmonisation*

Research Institute for Nature and Forest (INBO)

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0000-0002-0846-9116

Open science lab for biodiversity (INBO) &  
Belgian Biodiversity Platform



# Meetnetten.be

- A suite of monitoring networks
- For collecting high-quality information on about 78 priority plant and animal species.
  - species on which Flanders has to report on
    - habitat and bird directives
  - species that are important for the Flemish nature policy
    - species protection plan available
- Cooperation between
  - Agency for Nature and Forest
  - Natuurpunt
  - Research Institute for Nature and Forest

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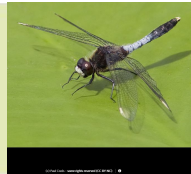


# Meetnetten.be

- Since 2016, operational since 2018
- Data collected by trained citizen scientists and professionals
- No casual observations
  - although important, they don't do the trick for exhaustive monitoring and reporting
- Developed by [Zoster](#)

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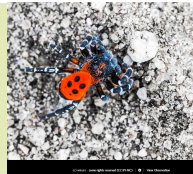
# The Monitoring Networks



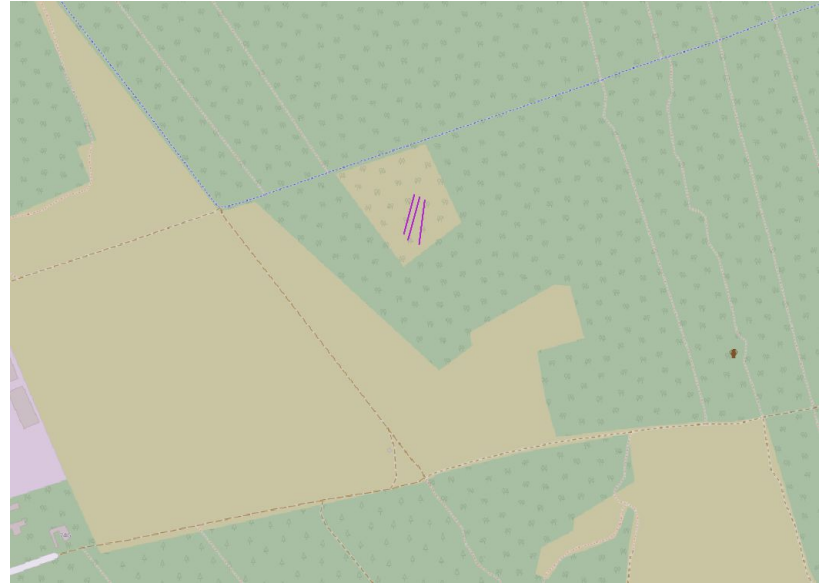
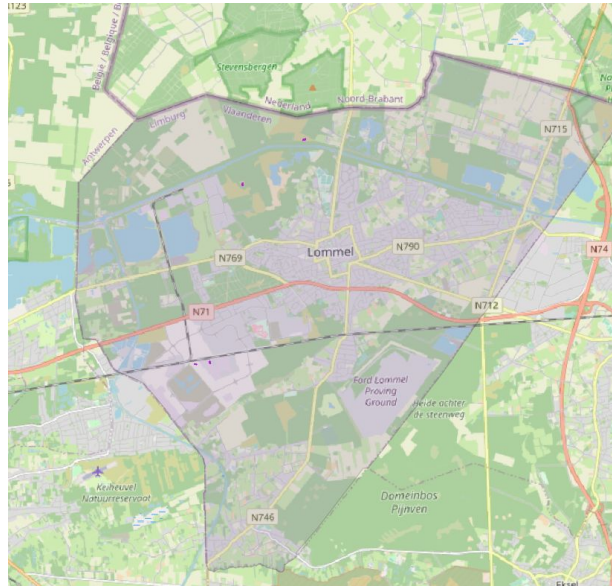
- Fixed sample locations
- Target species are counted based on standardized protocols.
- Data collection relies mainly on specialized volunteers, coordinated by the NGO Natuurpunt Studie.
- Fieldwork is planned and monitored with the web tool <https://meetnetten.be>, which is also used for entering the collected data.

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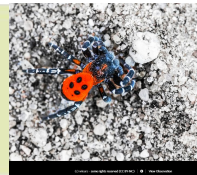


# The Monitoring Networks



## Meetnetten.be

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# The website

## Welkom bij Meetnetten.be

De Vlaamse overheid wil door middel van meetnetten kwaliteitsvolle informatie verzamelen over een aantal prioritaire plant- en diersoorten. Dat zijn soorten waarover Vlaanderen moet rapporteren aan Europa in het kader van de Habitat- en Vogelrichtlijn, maar ook andere soorten die van belang zijn voor het Vlaamse natuurbeleid.

In een meetnet worden gegevens ingezameld volgens een strikt vastgelegde methodiek. De te bezoeken locaties liggen vast. Meetnetten.be is de webtool voor de planning en opvolging van dit veldwerk en voor de invoer van de veldgegevens op een laagdrempelige en efficiënte manier.

## Hoe kan ik meedoen?

1. Registreer je [hier](#)
2. Meld je aan voor een meetnet
3. Kies één of meerdere tellocaties in je buurt.

De meetnetcoördinator zal je contacteren voor verdere afspraken. De monitoring gebeurt in nauwe samenwerking met Natuurpunt, dat de vrijwilligers binnen dit project zal coördineren. Iedereen met een goede kennis van de soort in kwestie kan zich aanmelden voor deelname aan een meetnet. Voor sommige meetnetten is gespecialiseerd materiaal nodig. Dit materiaal en de nodige vergunningen worden ter beschikking gesteld van de medewerkers. Waar nodig voorzien we ook opleiding.

Tijdens het veldwerk moeten soms privé-terreinen betreden worden. Daarom werd er ook een afsprakenkader en gedragscode opgesteld.

In de loop van de komende jaren starten we regelmatig nieuwe meetnetten op en voegen ze toe aan deze website. Een overzicht van alle geplande meetnetten vind je in de [blauwdrukken](#).

Met vragen kan je altijd terecht bij de coördinatoren of via [info@meetnetten.be](mailto:info@meetnetten.be).

Meer info? Zie <http://www.natuurpunt.be/vaak-gestelde-vragen-soortenmeetnetten>.

## Projecten

Amfibieën Libellen Planten Dagvlinders Vleermuizen Andere zoogdieren Mollusken Vogels Overige


- Boomkikker
- Heikikker
- Kamsalamander
- Knoflookpad
- Poeltkikker
- Rugstreeppad
- Vuursalamander

# Meetnetten.be

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# The dashboard

Projecten ▾ Locaties ▾ Mijn Meetnetten.be ▾ Dimitri Brosens ▾ 

## Dimitri Brosens

Details **Locaties** Taken Bezoeken Waarnemingen Meldingen Export

mijn prioritaire locaties voor 2022 :

Cyclus	Naam	Voor project	Acties
geen resultaten			

Mijn andere locaties:

Cyclus	Naam	Voor project	Acties
geen resultaten			

Reservegebruiker voor:

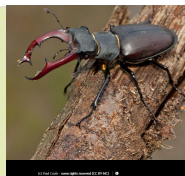
Cyclus	Naam	Voor project	Acties
geen resultaten			



Toon alle objecten

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# The Goal

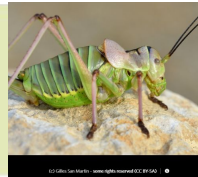
- Longtime trend for the number of individuals (population size) for Flanders
- Distribution of species in Flanders (+ casual observations)
- Create valid complex models based on a standardized field protocol

Based on

- Defined count period
- Defined count frequency
- Defined time
- Defined locations

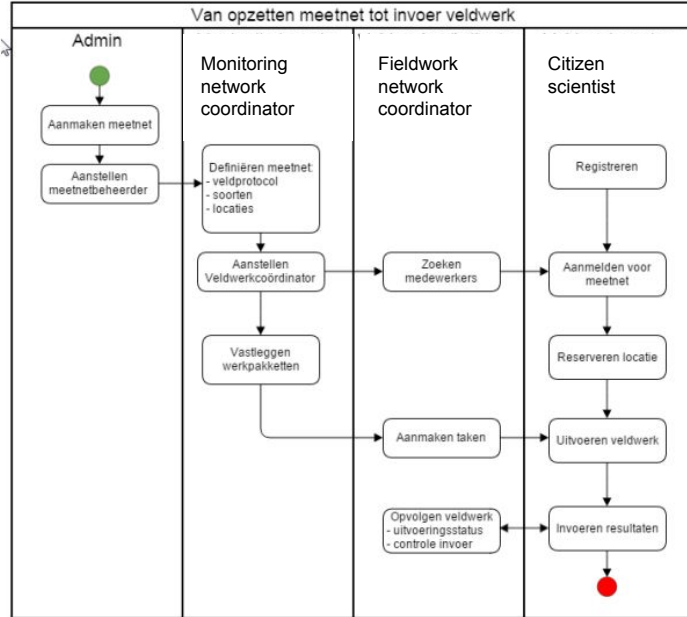
**Meetnetten.be**

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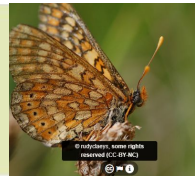
# How it works



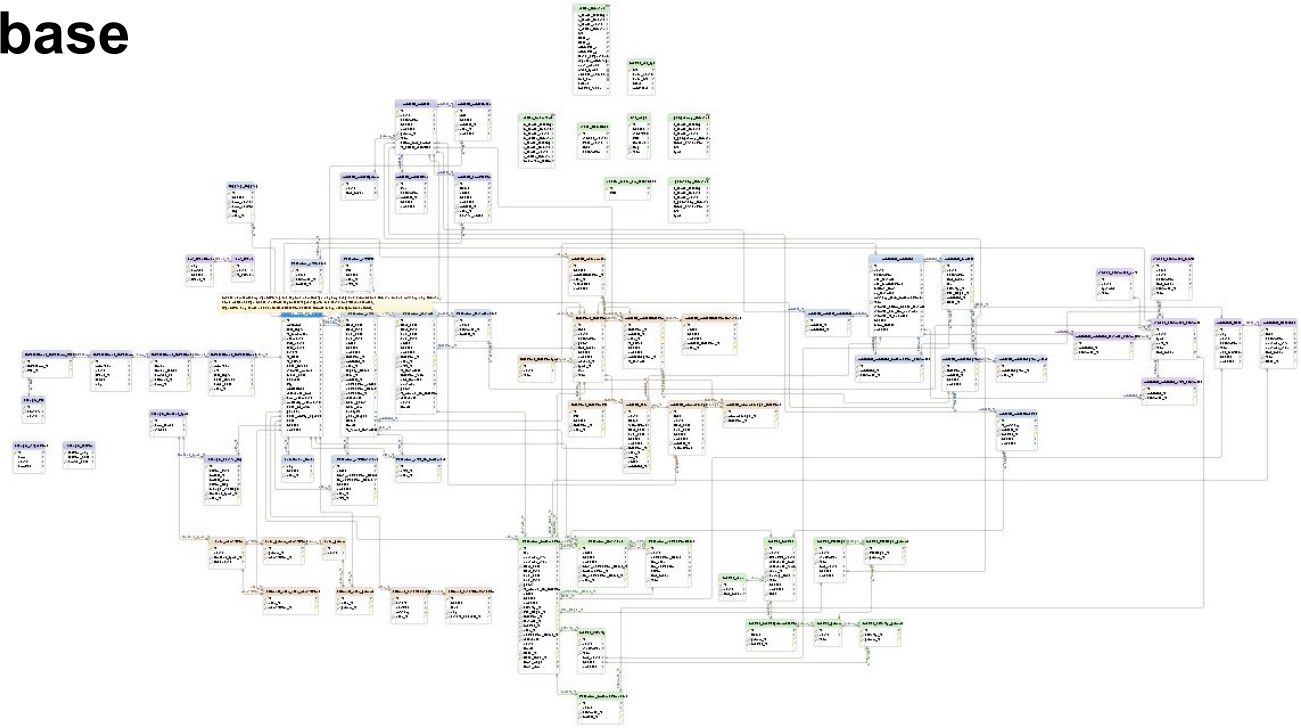
- from building a monitoring network to data import

## Meetnetten.be

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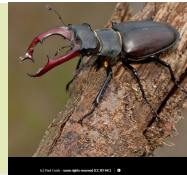


# The Database



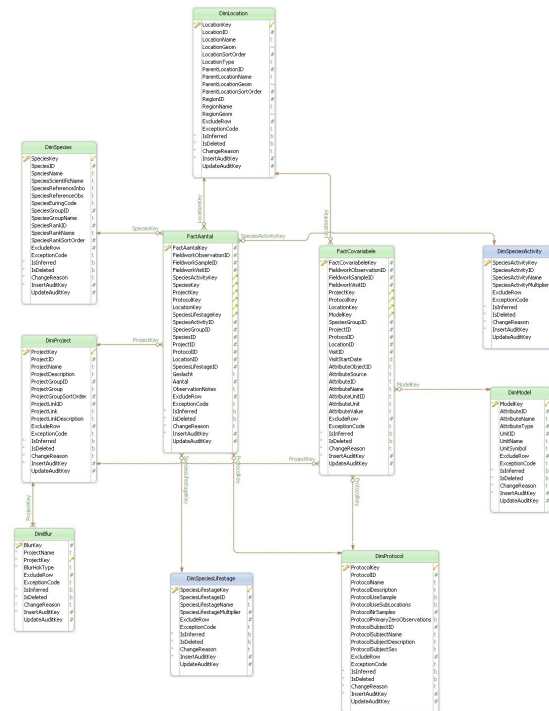
## Meetnetten.be

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# From database to dissemination and publication

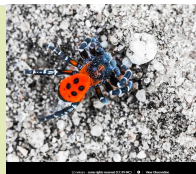
- Dissemination in the **Research Institute**
  - Data Warehouse
    - Star Scheme(easy to query)
  - Rstudio - R
  - ODBC - Access
- Dissemination to our partner **ANB**
  - Mapservice (High resolution)
- Datapublication to **GBIF**
  - IPT / Darwin Core (Lower resolution)



Generated using ERStudio

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# From database to data dissemination in INBO

- R & R studio
- R Packages

```
```{r}
```

```
library(DBI)
```

```
library(glue)
```

```
library(tidyverse)
```

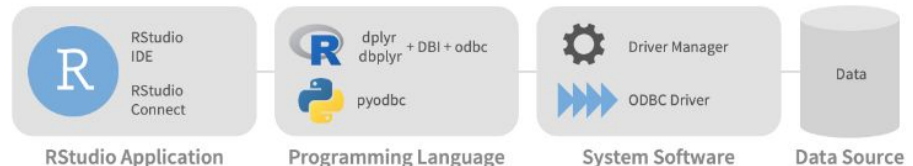
```
library(inbodb)
```

```
```
```

The screenshot shows the RStudio interface with the following components:

- Source Editor:** Contains R code for connecting to a database and querying data.
- Environment:** Shows loaded packages like dplyr, DBI, glue, and inbodb.
- Console:** Displays the execution output, including package attachment status and a data table.
- Viewer:** Shows a table of species data.

| SpeciesKey | SpeciesID | SpeciesName     | SpeciesScientificName | SpeciesReferenceInbo | SpeciesReferenceObs |
|------------|-----------|-----------------|-----------------------|----------------------|---------------------|
| 1          | 2         | Vloedmeesterpad | Alytes obstetricans   | NHMSYS000080161      | 457                 |
| 2          | 4         | Gewone pad      | Bufo bufo             | NHMSYS000080159      | 442                 |
| 3          | 5         | Rugstreeppad    | Epidalea calamita     | NHMSYS0000012399     | 80687               |
| 4          | 6         | Buonickkikker   | Hyla arborea          | NHMSYS000080165      | 439                 |



# From database to data dissemination INBO

- Access to the database in R

```
```{r}
```

```
my_meetnetten <-  
connect_inbo_dbase  
("S0008_00_Meetnetten")
```

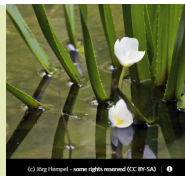
```
```
```

```
```{r}  
my_meetnetten <- connect_inbo_dbase("S0008_00_Meetnetten")  
...  
...  
```{r}  
rel_taxa <- dbReadTable(my_meetnetten, "DimSpecies")  
head(rel_taxa) %>% knitr::kable()
```

SpeciesKey	SpeciesID	SpeciesName	SpeciesScientificName	SpeciesReferenceInbo	SpeciesR
1	2	Vroedmeesterpad	Alytes obstetricans	NHMSYS0000080161	457
2	4	Gewone pad	Bufo bufo	NHMSYS0000080159	442
3	5	Rugstreeppad	Epidalea calamita	INBSYS0000012399	80687
4	6	Boomkikker	Hyla arborea	NHMSYS0000080165	439
5	7	Alpenwatersalamander	Ichthyosaura alpestris	INBSYS0000012389	438
6	8	Vinpootsalamander	Lissotriton helveticus	INBSYS0000012390	456

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# From database to dissemination in INBO

- RUN SQL queries in R

```
```{r}
```

```
measurement <-
dbGetQuery(my_meetnetten,
paste("SELECT TOP 10 * FROM
IPT.vwGBIF_INBO_meetnetten_02_
_amfibieen_fuiken_events"
))
head(measurement) %>%
knitr::kable()
```

```
```
```

The screenshot shows the RStudio environment with a source editor containing an R script that connects to a database and retrieves data. The console shows the execution of the query, and the Environment pane displays the resulting data frame.

| type  | language | license   | rightsHolder | accessRights                          | datas  |
|-------|----------|---|--------------|---------------------------------------|--------|
| Event | en       | http://creativecommons.org/publicdomain/zero/1.0/ | INBO         | https://www.inbo.be/en/norms-data-use | https: |
| Event | en       | http://creativecommons.org/publicdomain/zero/1.0/ | INBO         | https://www.inbo.be/en/norms-data-use | https: |
| Event | en       | http://creativecommons.org/publicdomain/zero/1.0/ | INBO         | https://www.inbo.be/en/norms-data-use | https: |
| Event | en       | http://creativecommons.org/publicdomain/zero/1.0/ | INBO         | https://www.inbo.be/en/norms-data-use | https: |
| Event | en       | http://creativecommons.org/publicdomain/zero/1.0/ | INBO         | https://www.inbo.be/en/norms-data-use | https: |

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# From database to dissemination in INBO

ACCESS

- ODBC connection

The screenshot shows Microsoft Access with a table named 'dbo\_DimSpecies' containing the following data:

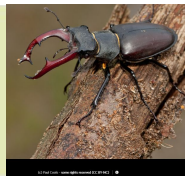
| SpeciesKey | SpeciesID | SpeciesName     | SpeciesScien     | SpeciesRe |
|------------|-----------|-----------------|------------------|-----------|
| 1          | 2         | Vroedmeester    | Alytes obstetric | NHMSYSC   |
| 2          | 4         | Gewone pad      | Bufo bufo        | NHMSYSC   |
| 3          | 5         | Rugstreepad     | Epidalea calam   | INBSY500  |
| 4          | 6         | Boomkikker      | Hyla arborea     | NHMSYSC   |
| 5          | 7         | Alpenwatersali  | Ichthyosaura a   | INBSY500  |
| 6          | 8         | Vinpootsalam    | Lissotriton hely | INBSY500  |
| 7          | 9         | Kleine watersal | Lissotriton vulg | NHMSYSC   |
| 8          | 10        | Amerikaanse sl  | Lithobates cate  | NHMSYSC   |
| 9          | 11        | Knoflookpad     | Pelobates fusc   | INBSY500  |
| 10         | 12        | Levantijnse me  | Pelophylax bed   | INBSY500  |
| 11         | 13        | Poelkikker      | Pelophylax less  | NHMSYSC   |
| 12         | 14        | Meerkikker      | Pelophylax ridi  | NHMSYSC   |
| 13         | 15        | Heikikker       | Rana arvalis     | INBSY500  |
| 14         | 16        | Springkikker    | Rana dalmatini   | INBSY500  |
| 15         | 17        | Bruine kikker   | Rana tempor      | NBSY500   |
| 16         | 18        | Vuursalamand    | Salamandra sal   | NHMSYSC   |
| 17         | 19        | Kamsalamand     | Triturus cristat | NHMSYSC   |
| 18         | 20        | Dagpauwoog      | Aglais io        | INBSY500  |
| 19         | 21        | Kleine vos      | Aglais urticae   | NHMSYSC   |
| 20         | 22        | Oranjetipje     | Anthocharis ca   | NHMSYSC   |
| 21         | 24        | Grote weersch   | Apatura iris     | NHMSYSC   |
| 22         | 25        | Koevinkje       | Aphantopus hy    | NHMSYSC   |
| 23         | 26        | Front nearderd  | Annoya crataeg   | NHMSYSC   |

The diagram shows the following relationships:

- 'dbo\_DimSpecies' (SpeciesKey, SpeciesID) is linked to 'dbo\_DimProtocol' (ProtocolKey, ProtocolID).
- 'dbo\_DimSpecies' (SpeciesKey) is linked to 'dbo\_DimProtocol1' (ProtocolKey).
- 'dbo\_DimProtocol' (ProtocolKey) is linked to 'dbo\_FactAantal' (FactAantalKey).

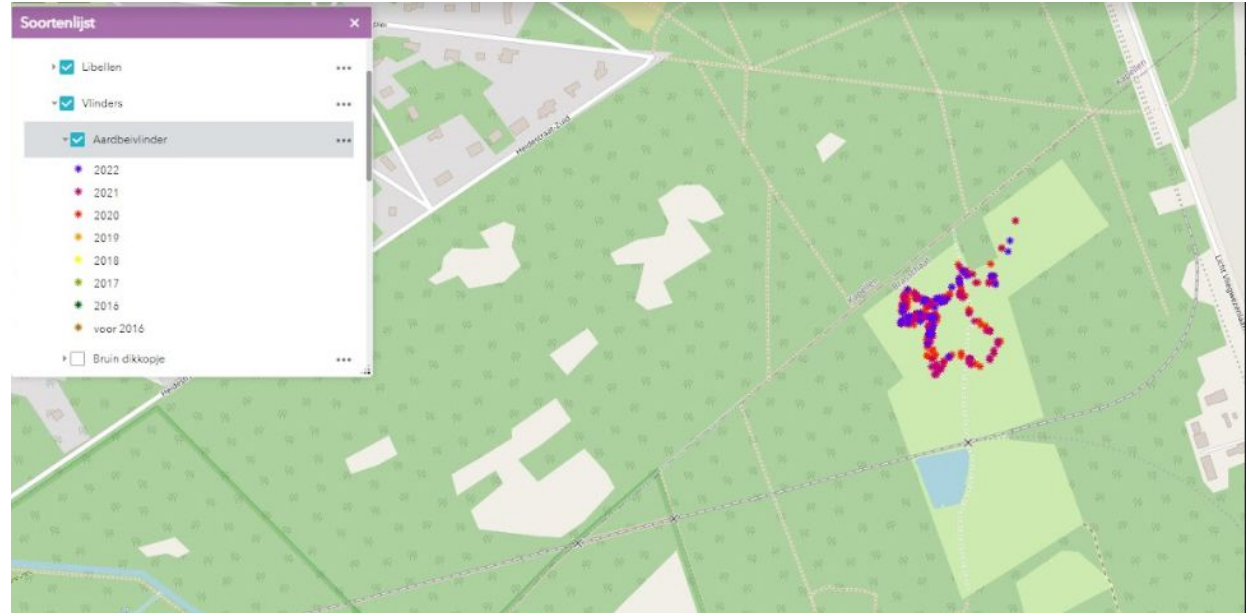
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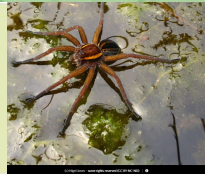
# From database to dissemination for our partner ANB

- mapservice



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# From database to data publication on GBIF

- Metadata completion
  - Data publication team
  - Check by Monitoring Network Coordinator
  - Copy Metadata in IPT - tool
  - [Eml.xml](https://eml.ecoinformatics.org/) (https://eml.ecoinformatics.org/)

## Metadata for meetnetten.be datasets VAATPLANTEN OPPERVLAKTE POPULATIES

### Basic metadata

#### Shortname

meetnetten-vaatplanten-oppervlakte-occurrences

#### Title

Meentnetten.be - monitoring network of vascular plants (priority for Flanders) occupancy

#### Description

Meentnetten.be - monitoring network of vascular plants (priority for Flanders) occupancy in Flanders, Belgium is a sampling event dataset published by the Research Institute of Nature and Forest (INBO). It is part of the Meentnetten.be suite of monitoring networks for priority species in Flanders, in which data are collected at fixed locations using a standardized protocol (<https://meetnetten.be>). This dataset data for 13 priority species. Here it is published as a standardized Darwin Core Archive and includes for each sampling event an eventID, date, location and sampling protocol (in the event core) and for each occurrence an occurrenceID, the occupied m<sup>2</sup> recorded, status (present/absent) and scientific name (in the occurrence extension). Issues with the dataset can be reported at <https://github.com/inbo/meentnetten-occurrences/issues>

Generalized and/or withheld information: as these are sensitive priority species, location information is generalized to 1.5 or 10 km Universal Transverse Mercator (UTM) grid cells. Original locations are available upon request.

We have released this dataset to the public domain under a Creative Commons Zero waiver. We would appreciate it if you follow the INBO norms for data use.

#### Description ⓘ

The target plant species for Meentnetten.be are listed at <https://meetnetten.be/#group-5>. This dataset covers the plant occupancy per m<sup>2</sup> protocol, for which there are 13 target species.

ⓘ Add several taxa

Scientific Name \*

Common Name

Rank

Plantae

kingdom

DELETE

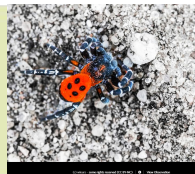


Wouter Van Landuyt  
4:19 PM Oct 19

suite of set ?

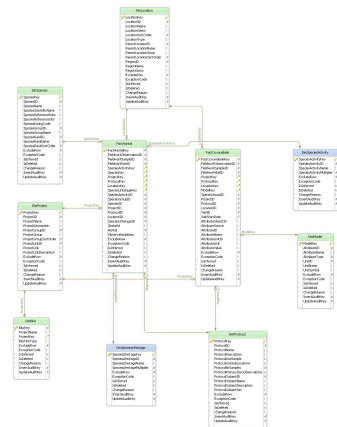
# Meentnetten.be

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# From database to data publication on GBIF

- Mapping of data to Darwin Core
  - On Staging version
  - Create DwC - GBIF - IPT SQL view



```

-- [pt.vwGBIF_INBO_meetnetten_09_37_abelen_lervehuidjes_Meas
-- [pt.vwGBIF_INBO_meetnetten_09_37_abelen_lervehuidjes_occurrences
-- [pt.vwGBIF_INBO_meetnetten_09_37_abelen_lervehuidjes_events
-- [pt.vwGBIF_INBO_meetnetten_1_vinders_transacten_Event
-- [pt.vwGBIF_INBO_meetnetten_1_vinders_transacten_Update
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-- [pt.vwGBIF_INBO_meetnetten_10_vaatplanten_oppervlakte_occurrences_mees
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-- [pt.vwGBIF_INBO_meetnetten_13_sprinkhanen_zadelsprinkhanen_occurrences
-- [pt.vwGBIF_INBO_meetnetten_14_sprinkhanen_schavertje_event
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-- [pt.vwGBIF_INBO_meetnetten_28_39_vinders_area_count_Meas
-- [pt.vwGBIF_INBO_meetnetten_28_39_vinders_area_count_occurrences
-- [pt.vwGBIF_INBO_meetnetten_29_vinders_transacten_als_event
-- [pt.vwGBIF_INBO_meetnetten_29_vinders_transacten_als_mees
-- [pt.vwGBIF_INBO_meetnetten_29_vinders_transacten_als_occurrences
-- [pt.vwGBIF_INBO_meetnetten_34_nugtestroepd_sighting_events
-- [pt.vwGBIF_INBO_meetnetten_34_nugtestroepd_sighting_occurrences
    
```

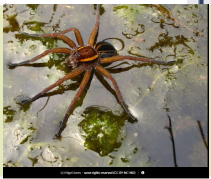
```

-- [locality] = CONCAT (ParentLocationName, ', ', locationName)
-- [georeferenceRemarks] = 'coordinates are centroid of used grid square'

-- USE FOR UNBLURRED DATA
-- [[decimalLatitude_unblur] = CASE dl.GeoType
-- WHEN 'LINESTRING' THEN CONVERT(decimal(10,5), dl.LocationGeom.MakeValid().STStartPoint().STX)
-- WHEN 'MULTILINESTRING' THEN CONVERT(decimal(10,5), dl.LocationGeom.MakeValid().STStartPoint().STY)
-- WHEN 'POINT' THEN CONVERT(decimal(10,5), dl.LocationGeom.MakeValid().STStartPoint().STX)
-- WHEN 'POLYGON' THEN CONVERT(decimal(10,5), dl.LocationGeom.MakeValid().STCentroid().STX)
-- ELSE NULL
-- END
-- [[decimalLongitude_unblur] = CASE dl.GeoType
-- WHEN 'LINESTRING' THEN CONVERT(decimal(10,5), dl.LocationGeom.MakeValid().STStartPoint().STX)
-- WHEN 'MULTILINESTRING' THEN CONVERT(decimal(10,5), dl.LocationGeom.MakeValid().STStartPoint().STX)
-- WHEN 'POINT' THEN CONVERT(decimal(10,5), dl.LocationGeom.MakeValid().STStartPoint().STX)
-- WHEN 'POLYGON' THEN CONVERT(decimal(10,5), dl.LocationGeom.MakeValid().STCentroid().STX)
-- ELSE NULL
-- END
-- USE FOR BLURRED DATA IN GBIF
-- [[decimalLatitude] = CASE --is blurred
-- WHEN db1.BlurWorkType = 'UTM 10k' AND utm.IsInM10Zone = '1' THEN CONVERT(nvarchar(20), utm.Centroid_5_Lat)
-- WHEN db1.BlurWorkType = 'UTM 10k' AND utm.IsInM10Zone = '1' THEN CONVERT(nvarchar(20), utm.Centroid_1_Lat)
-- WHEN db1.BlurWorkType = 'UTM 50k' THEN CONVERT(nvarchar(20), utm.Centroid_5_Lat)
-- WHEN db1.BlurWorkType = 'UTM 50k' THEN CONVERT(nvarchar(20), utm.Centroid_10_Lat)
-- ELSE 'checkthis!'
-- END
-- [[decimalLongitude] = CASE --is blurred
-- WHEN db1.BlurWorkType = 'UTM 10k' AND utm.IsInM10Zone = '1' THEN CONVERT(nvarchar(20), utm.Centroid_5_Long)
-- WHEN db1.BlurWorkType = 'UTM 10k' AND utm.IsInM10Zone = '1' THEN CONVERT(nvarchar(20), utm.Centroid_1_Long)
-- WHEN db1.BlurWorkType = 'UTM 50k' THEN CONVERT(nvarchar(20), utm.Centroid_5_Long)
-- WHEN db1.BlurWorkType = 'UTM 50k' THEN CONVERT(nvarchar(20), utm.Centroid_10_Long)
-- ELSE 'checkthis!'
-- END
-- [[coordinateUncertaintyInMeters] = CASE --is blurred
    
```

**Meetnetten.be**

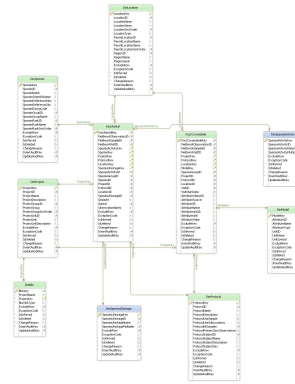
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# From database to data publication on GBIF

- Mapping of data to Darwin Core
  - Event Core
  - Occurrence Extension
  - Measurement or Fact Extension



-- 2021\_06\_16 issue convert numeric nvarchar opgelost, kijk naar de check this

```
/**ALTER VIEW [ipt].[vwGBIF_INBO_meetnetten_10_vaatplanten_opervlakte_events]
AS**/
SELECT TOP 1000 --fa.* --unieke kolomnamen
--RECORD --
```

| type  | language | license   | rightsHolder | accessRights                |
|-------|----------|---|--------------|-----------------------------|
| Event | en       | http://creativecommons.org/publicdomain/zero/1.0/ | INBO         | https://www.inbo.be/en/noms |
| Event | en       | http://creativecommons.org/publicdomain/zero/1.0/ | INBO         | https://www.inbo.be/en/noms |
| Event | en       | http://creativecommons.org/publicdomain/zero/1.0/ | INBO         | https://www.inbo.be/en/noms |
| Event | en       | http://creativecommons.org/publicdomain/zero/1.0/ | INBO         | https://www.inbo.be/en/noms |
| Event | en       | http://creativecommons.org/publicdomain/zero/1.0/ | INBO         | https://www.inbo.be/en/noms |
| Event | en       | http://creativecommons.org/publicdomain/zero/1.0/ | INBO         | https://www.inbo.be/en/noms |
| Event | en       | http://creativecommons.org/publicdomain/zero/1.0/ | INBO         | https://www.inbo.be/en/noms |
| Event | en       | http://creativecommons.org/publicdomain/zero/1.0/ | INBO         | https://www.inbo.be/en/noms |
| Event | en       | http://creativecommons.org/publicdomain/zero/1.0/ | INBO         | https://www.inbo.be/en/noms |
| Event | en       | http://creativecommons.org/publicdomain/zero/1.0/ | INBO         | https://www.inbo.be/en/noms |
| Event | en       | http://creativecommons.org/publicdomain/zero/1.0/ | INBO         | https://www.inbo.be/en/noms |
| Event | en       | http://creativecommons.org/publicdomain/zero/1.0/ | INBO         | https://www.inbo.be/en/noms |
| Event | en       | http://creativecommons.org/publicdomain/zero/1.0/ | INBO         | https://www.inbo.be/en/noms |
| Event | en       | http://creativecommons.org/publicdomain/zero/1.0/ | INBO         | https://www.inbo.be/en/noms |
| Event | en       | http://creativecommons.org/publicdomain/zero/1.0/ | INBO         | https://www.inbo.be/en/noms |

| occurrenceID | eventID                  | basisOfRecord             | collectionCode   | occurrenceStatus | occurrenceRemarks | recordedBy         | individualCount       | lifeStage | scientificName |                 |
|--------------|--------------------------|---------------------------|------------------|------------------|-------------------|--------------------|-----------------------|-----------|----------------|-----------------|
| 1            | INBO:MEETNET-OCC:0000766 | INBO:MEETNET-EVENT:000404 | HumanObservation | meetnetten       | absent            | target species     | https://meetnetten.be | 0         | imago          | Melittaea cirix |
| 2            | INBO:MEETNET-OCC:0000767 | INBO:MEETNET-EVENT:000405 | HumanObservation | meetnetten       | absent            | casual observation | https://meetnetten.be | 0         | imago          | Anthocharis c   |
| 3            | INBO:MEETNET-OCC:0000768 | INBO:MEETNET-EVENT:000405 | HumanObservation | meetnetten       | absent            | casual observation | https://meetnetten.be | 0         | imago          | Platylabus arg. |
| 4            | INBO:MEETNET-OCC:0000769 | INBO:MEETNET-EVENT:000405 | HumanObservation | meetnetten       | absent            | target species     | https://meetnetten.be | 0         | imago          | Melittaea cirix |
| 5            | INBO:MEETNET-OCC:0001193 | INBO:MEETNET-EVENT:000565 | HumanObservation | meetnetten       | present           | casual observation | https://meetnetten.be | 1         | imago          | Leptidea sinz   |
| 6            | INBO:MEETNET-OCC:0001194 | INBO:MEETNET-EVENT:000565 | HumanObservation | meetnetten       | present           | casual observation | https://meetnetten.be | 3         | imago          | Coenonymph      |
| 7            | INBO:MEETNET-OCC:0001195 | INBO:MEETNET-EVENT:000565 | HumanObservation | meetnetten       | present           | target species     | https://meetnetten.be | 3         | imago          | Melittaea cirix |
| 8            | INBO:MEETNET-OCC:0001196 | INBO:MEETNET-EVENT:000566 | HumanObservation | meetnetten       | present           | casual observation | https://meetnetten.be | 2         | imago          | Leptidea sinz   |
| 9            | INBO:MEETNET-OCC:0001197 | INBO:MEETNET-EVENT:000566 | HumanObservation | meetnetten       | present           | casual observation | https://meetnetten.be | 2         | imago          | Coenonymph      |
| 10           | INBO:MEETNET-OCC:0001198 | INBO:MEETNET-EVENT:000566 | HumanObservation | meetnetten       | absent            | target species     | https://meetnetten.be | 0         | imago          | Melittaea cirix |
| 11           | INBO:MEETNET-OCC:0001202 | INBO:MEETNET-EVENT:000568 | HumanObservation | meetnetten       | present           | casual observation | https://meetnetten.be | 1         | imago          | Leptidea sinz   |
| 12           | INBO:MEETNET-OCC:0001203 | INBO:MEETNET-EVENT:000568 | HumanObservation | meetnetten       | absent            | casual observation | https://meetnetten.be | 0         | imago          | Coenonymph      |
| 13           | INBO:MEETNET-OCC:0001204 | INBO:MEETNET-EVENT:000568 | HumanObservation | meetnetten       | absent            | target species     | https://meetnetten.be | 0         | imago          | Melittaea cirix |
| 14           | INBO:MEETNET-OCC:0001205 | INBO:MEETNET-EVENT:000569 | HumanObservation | meetnetten       | present           | casual observation | https://meetnetten.be | 1         | imago          | Leptidea sinz   |
| 15           | INBO:MEETNET-OCC:0001206 | INBO:MEETNET-EVENT:000569 | HumanObservation | meetnetten       | present           | casual observation | https://meetnetten.be | 2         | imago          | Coenonymph      |
| 16           | INBO:MEETNET-OCC:0001207 | INBO:MEETNET-EVENT:000569 | HumanObservation | meetnetten       | present           | target species     | https://meetnetten.be | 1         | imago          | Melittaea cirix |
| 17           | INBO:MEETNET-OCC:0001208 | INBO:MEETNET-EVENT:000570 | HumanObservation | meetnetten       | absent            | casual observation | https://meetnetten.be | 0         | imago          | Leptidea sinz   |
| 18           | INBO:MEETNET-OCC:0001209 | INBO:MEETNET-EVENT:000570 | HumanObservation | meetnetten       | present           | casual observation | https://meetnetten.be | 1         | imago          | Coenonymph      |

to complete Meetnetten.be - Vascular plants in Flanders, Bel... INBO INBO INBO INBO INBO

to complete Meetnetten.be - Vascular plants in Flanders, Bel... INBO INBO INBO INBO INBO INBO INBO INBO INBO INBO

to complete Meetnetten.be - Vascular plants in Flanders, Bel... INBO INBO INBO INBO INBO INBO INBO INBO INBO INBO

to complete Meetnetten.be - Vascular plants in Flanders, Bel... INBO INBO INBO INBO INBO INBO INBO INBO INBO INBO

to complete Meetnetten.be - Vascular plants in Flanders, Bel... INBO INBO INBO INBO INBO INBO INBO INBO INBO INBO

Executing query... | inbo-sql08-prd.inbo.be, 143... | INBO\dimitri\_brosens (79) | S0008\_00\_Meetnetten | 00:00:14 | 0 rows

# From database to data publication on GBIF

- Connect data in IPT
- DwC mapping (automatic)

Source Name ⓘ  Readable ●

Database System

Host ⓘ  Database ⓘ

Database user  Database password

SQL Statement ⓘ

ⓘ Mapping Source Data  
Meetnetten.be - monitoring network of vascular plants (priority for Flanders) occupancy  
Mapping source data meetnetten-vaatplanten-oppervlakte-events to core extension: Darwin Core Event.

Record-level

Event ⓘ

Source Sample: INBO.MEETNET.EVENT:193846 | INBO.MEETNET.EVENT:193847 | INBO.MEETNET.EVENT:193849 | INBO.MEETNET.EVENT:193850 | INBO.MEETNET.EVENT:193848

Location

GeologicalContext

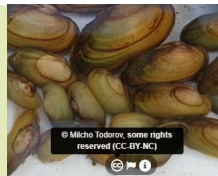
Unmapped columns

ⓘ Filter

Hide unmapped fields  Record-level

## Meetnetten.be

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# From database to data publication on GBIF

- Publish on GBIF
  - Make data public
  - Register to GBIF
  - Publish resource

The screenshot shows the GBIF dataset page for 'Meetnetten.be - Transects for butterflies in Flanders, Belgium'. The page is titled 'SAMPLING EVENT | REGISTERED DECEMBER 23, 2019'. It is published by the 'Research Institute for Nature and Forest (INBO)' and lists several authors: Plesschaert F • Maes D • Broens D • Westra T • Desmet P • Ledegen H • Verghert W • Van de Poel S • Pollet M. The page features a navigation bar with 'DATASET', 'PROJECT', 'METRICS', 'ACTIVITY', 'DOWNLOAD', and 'HOME PAGE'. A green badge indicates '51,521 OCCURRENCES' and a dark grey badge shows '26 CITATIONS'. Below the navigation bar, there is a section titled 'BECAUSE YOU ARE TRUSTED CONTACT' with a 'HISTORY' tab and 'INGEST NOW' and 'LOGS' links. The main content area contains a description of the dataset, a 'Meetnetten.be' logo, and metadata including Project ID, Publication date (August 16, 2022), Metadata last modified (August 16, 2022), Hosted by (Research Institute for Nature and Forest (INBO)), and Licence (CC0 1.0). There are also links for 'How to cite' and a DOI (10.15468/4hny4). Below the metadata, there are four circular progress indicators: '51,521 Occurrences' (100%), '100% With taxon match', '100% With coordinates', and '100% With year'. At the bottom, there is a map titled '51,521 GEOREFERENCED RECORDS' showing the location of the transects in Flanders, Belgium, with a 'Generated 2 hours ago © OpenStreetMap contributors, © OpenMapTiles, GBIF' and a 'Any year' slider set to '2016 - 2021' and an 'EXPLORE AREA' button.

# From database to data publication on GBIF

- Find all monitoring data on GBIF
  - [https://www.gbif.org/occurrence/search?collection\\_code=metnetten](https://www.gbif.org/occurrence/search?collection_code=metnetten)
  - Almost 100000 records available

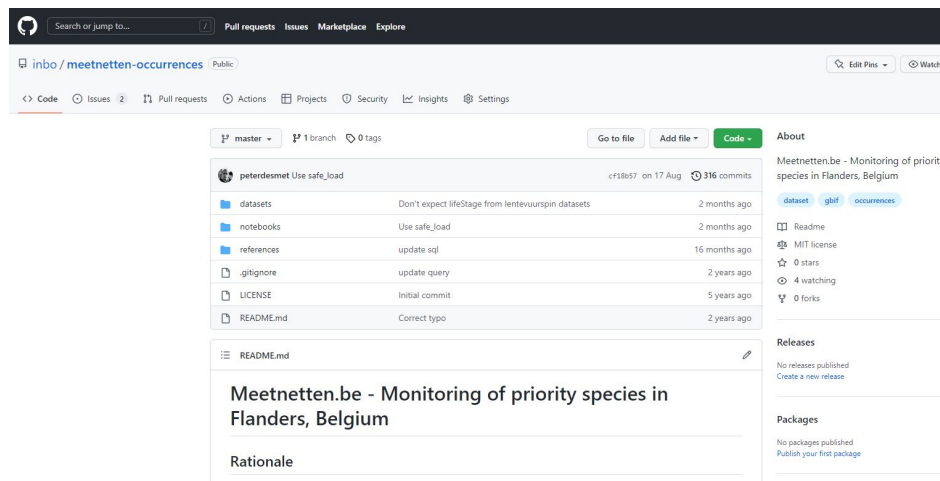
SEARCH OCCURRENCES | 14,729 RESULTS

| TABLE | GALLERY                                       | MAP             | TAXONOMY    | METRICS      | # DOWNLOAD        |                   |   |          |            |         |             |             |        |         |  |  |  |
|-------|---|-----------------|-------------|--------------|-------------------|-------------------|---|----------|------------|---------|-------------|-------------|--------|---------|--|--|--|
| ID    | Scientific name                               | Country or area | Coordinates | Month & year | Occurrence status | Back of record    | Dataset   | Kingdom  | Phylum     | Class   | Order       | Family      | Genus  | Species |  |  |  |
| 1     | <a href="#">Pyrgus malax (Linnaeus, 1758)</a> | Belgium         | 51.26, 4.5E | 2021 April   | Absent            | Human observation | <a href="#">Metnetten.be - Transparen for biodiversity in</a> | Animalia | Arthropoda | Insecta | Lepidoptera | Hesperiidae | Pyrgus | Pyrgus  |  |  |  |
| 2     | <a href="#">Pyrgus malax (Linnaeus, 1758)</a> | Belgium         | 51.26, 4.5E | 2021 April   | Absent            | Human observation | <a href="#">Metnetten.be - Transparen for biodiversity in</a> | Animalia | Arthropoda | Insecta | Lepidoptera | Hesperiidae | Pyrgus | Pyrgus  |  |  |  |
| 3     | <a href="#">Pyrgus malax (Linnaeus, 1758)</a> | Belgium         | 51.26, 4.5E | 2021 April   | Absent            | Human observation | <a href="#">Metnetten.be - Transparen for biodiversity in</a> | Animalia | Arthropoda | Insecta | Lepidoptera | Hesperiidae | Pyrgus | Pyrgus  |  |  |  |
| 4     | <a href="#">Pyrgus malax (Linnaeus, 1758)</a> | Belgium         | 51.26, 4.5E | 2021 April   | Absent            | Human observation | <a href="#">Metnetten.be - Transparen for biodiversity in</a> | Animalia | Arthropoda | Insecta | Lepidoptera | Hesperiidae | Pyrgus | Pyrgus  |  |  |  |
| 5     | <a href="#">Pyrgus malax (Linnaeus, 1758)</a> | Belgium         | 51.26, 4.5E | 2021 April   | Absent            | Human observation | <a href="#">Metnetten.be - Transparen for biodiversity in</a> | Animalia | Arthropoda | Insecta | Lepidoptera | Hesperiidae | Pyrgus | Pyrgus  |  |  |  |
| 6     | <a href="#">Pyrgus malax (Linnaeus, 1758)</a> | Belgium         | 51.26, 4.5E | 2021 April   | Absent            | Human observation | <a href="#">Metnetten.be - Transparen for biodiversity in</a> | Animalia | Arthropoda | Insecta | Lepidoptera | Hesperiidae | Pyrgus | Pyrgus  |  |  |  |
| 7     | <a href="#">Pyrgus malax (Linnaeus, 1758)</a> | Belgium         | 51.26, 4.5E | 2021 April   | Absent            | Human observation | <a href="#">Metnetten.be - Transparen for biodiversity in</a> | Animalia | Arthropoda | Insecta | Lepidoptera | Hesperiidae | Pyrgus | Pyrgus  |  |  |  |
| 8     | <a href="#">Pyrgus malax (Linnaeus, 1758)</a> | Belgium         | 51.26, 4.5E | 2021 April   | Absent            | Human observation | <a href="#">Metnetten.be - Transparen for biodiversity in</a> | Animalia | Arthropoda | Insecta | Lepidoptera | Hesperiidae | Pyrgus | Pyrgus  |  |  |  |
| 9     | <a href="#">Pyrgus malax (Linnaeus, 1758)</a> | Belgium         | 51.26, 4.5E | 2021 April   | Absent            | Human observation | <a href="#">Metnetten.be - Transparen for biodiversity in</a> | Animalia | Arthropoda | Insecta | Lepidoptera | Hesperiidae | Pyrgus | Pyrgus  |  |  |  |
| 10    | <a href="#">Pyrgus malax (Linnaeus, 1758)</a> | Belgium         | 51.26, 4.5E | 2021 April   | Absent            | Human observation | <a href="#">Metnetten.be - Transparen for biodiversity in</a> | Animalia | Arthropoda | Insecta | Lepidoptera | Hesperiidae | Pyrgus | Pyrgus  |  |  |  |
| 11    | <a href="#">Pyrgus malax (Linnaeus, 1758)</a> | Belgium         | 51.26, 4.5E | 2021 April   | Absent            | Human observation | <a href="#">Metnetten.be - Transparen for biodiversity in</a> | Animalia | Arthropoda | Insecta | Lepidoptera | Hesperiidae | Pyrgus | Pyrgus  |  |  |  |
| 12    | <a href="#">Pyrgus malax (Linnaeus, 1758)</a> | Belgium         | 51.26, 4.5E | 2021 April   | Absent            | Human observation | <a href="#">Metnetten.be - Transparen for biodiversity in</a> | Animalia | Arthropoda | Insecta | Lepidoptera | Hesperiidae | Pyrgus | Pyrgus  |  |  |  |
| 13    | <a href="#">Pyrgus malax (Linnaeus, 1758)</a> | Belgium         | 51.26, 4.5E | 2021 April   | Absent            | Human observation | <a href="#">Metnetten.be - Transparen for biodiversity in</a> | Animalia | Arthropoda | Insecta | Lepidoptera | Hesperiidae | Pyrgus | Pyrgus  |  |  |  |
| 14    | <a href="#">Pyrgus malax (Linnaeus, 1758)</a> | Belgium         | 51.26, 4.5E | 2021 April   | Absent            | Human observation | <a href="#">Metnetten.be - Transparen for biodiversity in</a> | Animalia | Arthropoda | Insecta | Lepidoptera | Hesperiidae | Pyrgus | Pyrgus  |  |  |  |
| 15    | <a href="#">Pyrgus malax (Linnaeus, 1758)</a> | Belgium         | 51.26, 4.5E | 2021 April   | Absent            | Human observation | <a href="#">Metnetten.be - Transparen for biodiversity in</a> | Animalia | Arthropoda | Insecta | Lepidoptera | Hesperiidae | Pyrgus | Pyrgus  |  |  |  |
| 16    | <a href="#">Pyrgus malax (Linnaeus, 1758)</a> | Belgium         | 51.26, 4.5E | 2021 April   | Absent            | Human observation | <a href="#">Metnetten.be - Transparen for biodiversity in</a> | Animalia | Arthropoda | Insecta | Lepidoptera | Hesperiidae | Pyrgus | Pyrgus  |  |  |  |
| 17    | <a href="#">Pyrgus malax (Linnaeus, 1758)</a> | Belgium         | 51.26, 4.5E | 2021 April   | Absent            | Human observation | <a href="#">Metnetten.be - Transparen for biodiversity in</a> | Animalia | Arthropoda | Insecta | Lepidoptera | Hesperiidae | Pyrgus | Pyrgus  |  |  |  |
| 18    | <a href="#">Pyrgus malax (Linnaeus, 1758)</a> | Belgium         | 51.26, 4.5E | 2021 April   | Absent            | Human observation | <a href="#">Metnetten.be - Transparen for biodiversity in</a> | Animalia | Arthropoda | Insecta | Lepidoptera | Hesperiidae | Pyrgus | Pyrgus  |  |  |  |
| 19    | <a href="#">Pyrgus malax (Linnaeus, 1758)</a> | Belgium         | 51.26, 4.5E | 2021 April   | Absent            | Human observation | <a href="#">Metnetten.be - Transparen for biodiversity in</a> | Animalia | Arthropoda | Insecta | Lepidoptera | Hesperiidae | Pyrgus | Pyrgus  |  |  |  |
| 20    | <a href="#">Pyrgus malax (Linnaeus, 1758)</a> | Belgium         | 51.26, 4.5E | 2021 April   | Absent            | Human observation | <a href="#">Metnetten.be - Transparen for biodiversity in</a> | Animalia | Arthropoda | Insecta | Lepidoptera | Hesperiidae | Pyrgus | Pyrgus  |  |  |  |

Previous 1 2 3 4 5 - Next

# From database to data publication on GBIF

- All documentation (data publication) on <https://github.com/inbo/meetnetten-occurrences>



The screenshot shows the GitHub repository page for `inbo/meetnetten-occurrences`. The repository is public and has 316 commits. The main branch is `master`. The repository contains several files and folders:

| File/Folder             | Description  | Last Commit   |
|-------------------------|--|---------------|
| <code>datasets</code>   | Don't expect lifeStage from lentevuurspin datasets | 2 months ago  |
| <code>notebooks</code>  | Use safe_load                                      | 2 months ago  |
| <code>references</code> | update sqj   | 16 months ago |
| <code>.gitignore</code> | update query                                       | 2 years ago   |
| <code>LICENSE</code>    | Initial commit                                     | 5 years ago   |
| <code>README.md</code>  | Correct typo                                       | 2 years ago   |

The repository is titled "Meetnetten.be - Monitoring of priority species in Flanders, Belgium". The README section is visible, showing the title and the start of the "Rationale" section.

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# From database to data publication on GBIF

## Method steps

1. Researchers from INBO and Natuurpunt Studie define and document the appropriate sampling protocol for the target species.
2. Fieldwork is planned and coordinated by Natuurpunt Studie, using <https://meetnetten.be>.
3. Data are collected in the field by specialized volunteers, using the predefined sampling protocol.
4. Volunteers enter the collected data in <https://meetnetten.be>.
5. A custom SQL view is created in the [meetnetten.be](https://meetnetten.be) database to map the original data to Darwin Core as an event core and occurrence extension.
6. The Darwin Core views are connected to the INBO IPT and documented with metadata.
7. The dataset is published and registered with GBIF.

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# Meetnetten =

Toon Westra, Geert De Knijf, Hannes Ledegen, Luc De Bruyn, Dirk Maes, Thierry Onkelinx, Frederic Piesschaert, Wouter Vanreusel, Bernard Van Elegem, Marc Pollet, Paul Quataert, Dimitri Brosens, **and hundreds of citizen scientists** .....



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AGENTSCHAP  
Natuur & Bos



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