

Dutch Moth Monitoring Scheme



What kind of data do we have?

- Opportunistic data
 - 13.4 million records



Disadvantages

- Counting all individuals
- Not always exact location
- Which method/lamp?
- Which life stage?
- How long did you count?



Diacrisia purpurata



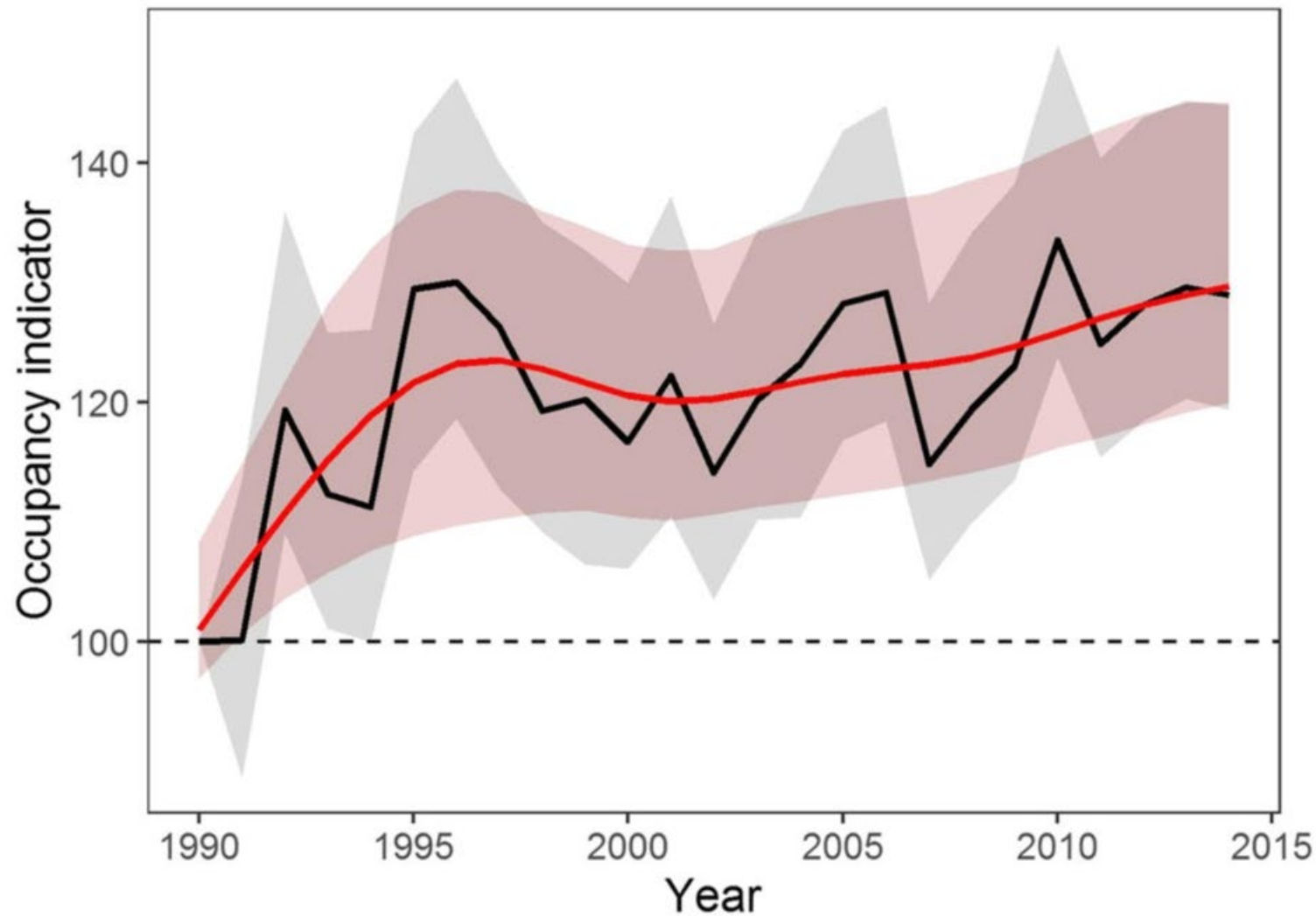


Fig. 4 Moth occupancy indicator (black) and smoothed indicator (red), with 95% confidence intervals derived via the parametric bootstrap approach. The indicator is scaled with respect to a 1990 baseline year (dashed line). (Color figure online)

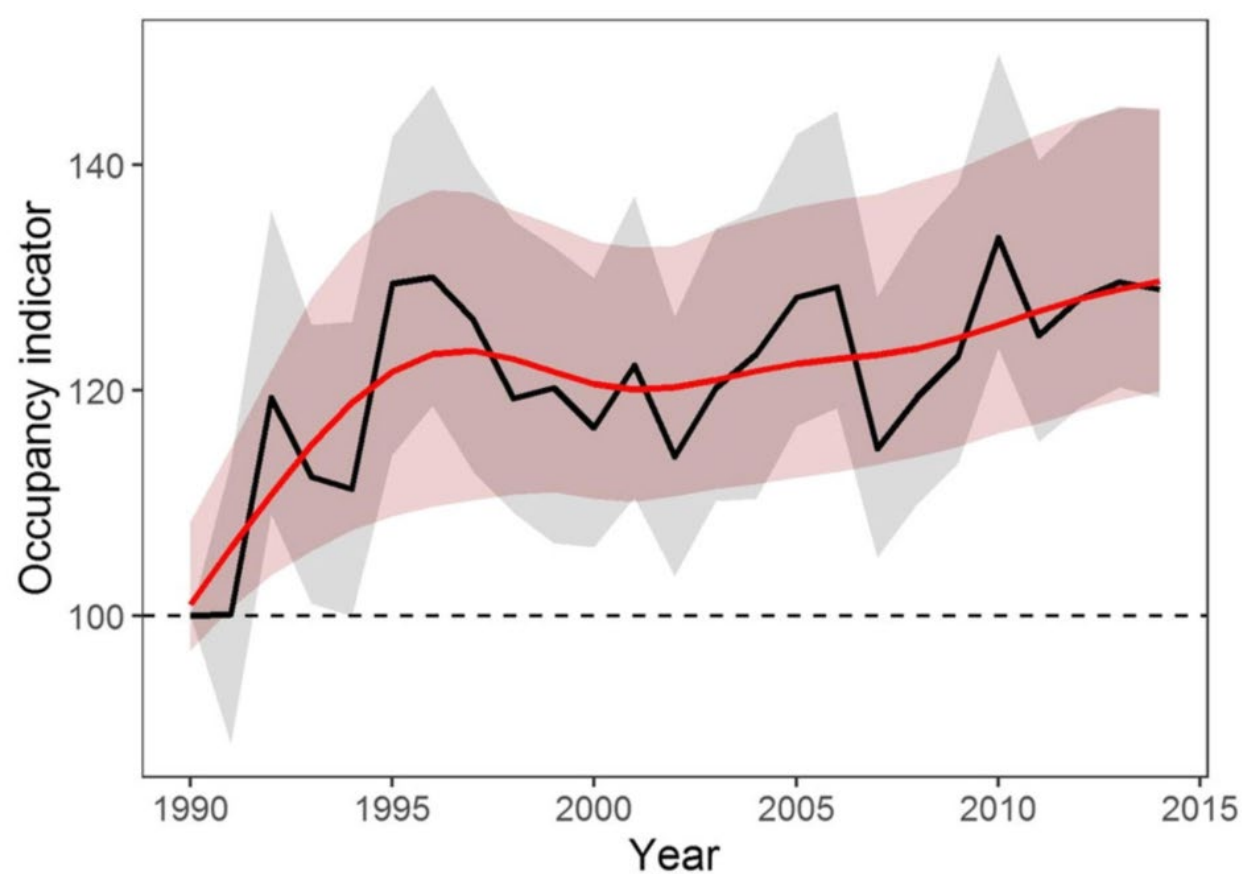


Fig. 4 Moth occupancy indicator (black) and smoothed indicator (red), with 95% confidence intervals derived via the parametric bootstrap approach. The indicator is scaled with respect to a 1990 baseline year (dashed line). (Color figure online)

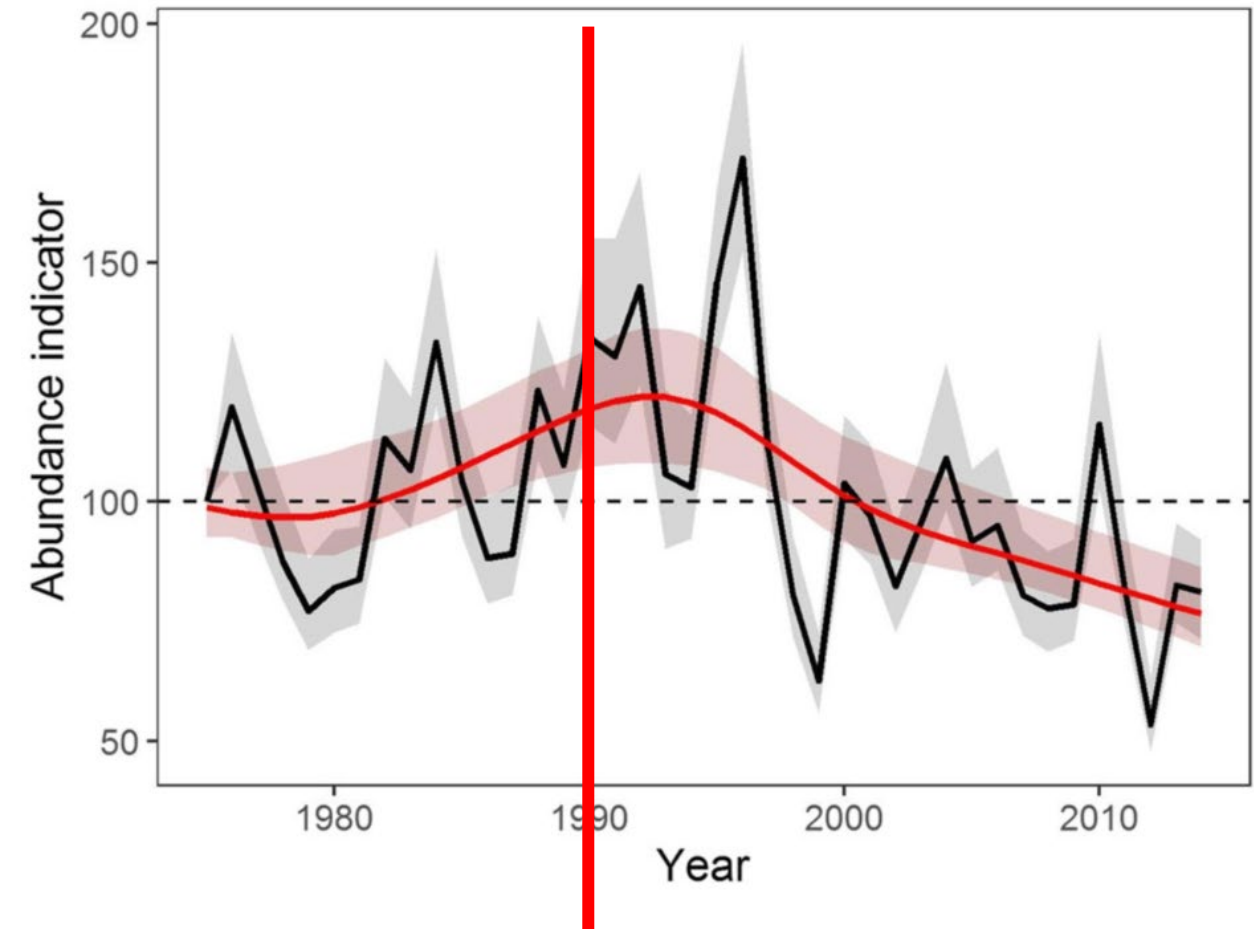
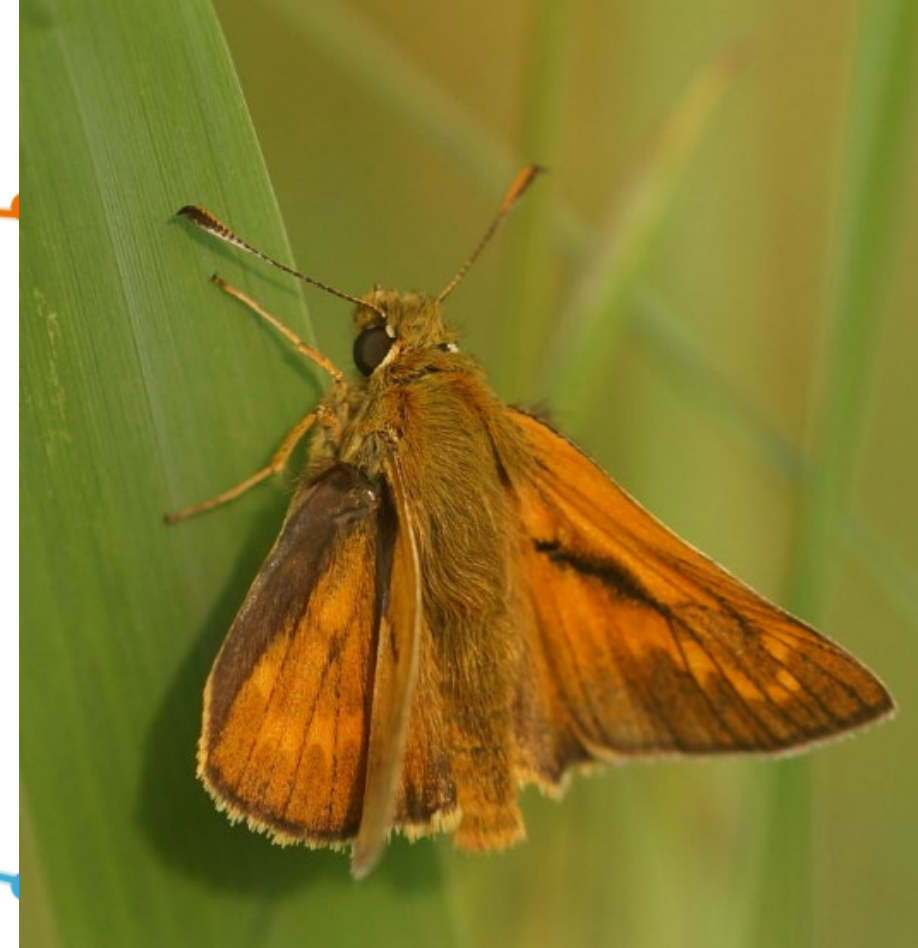
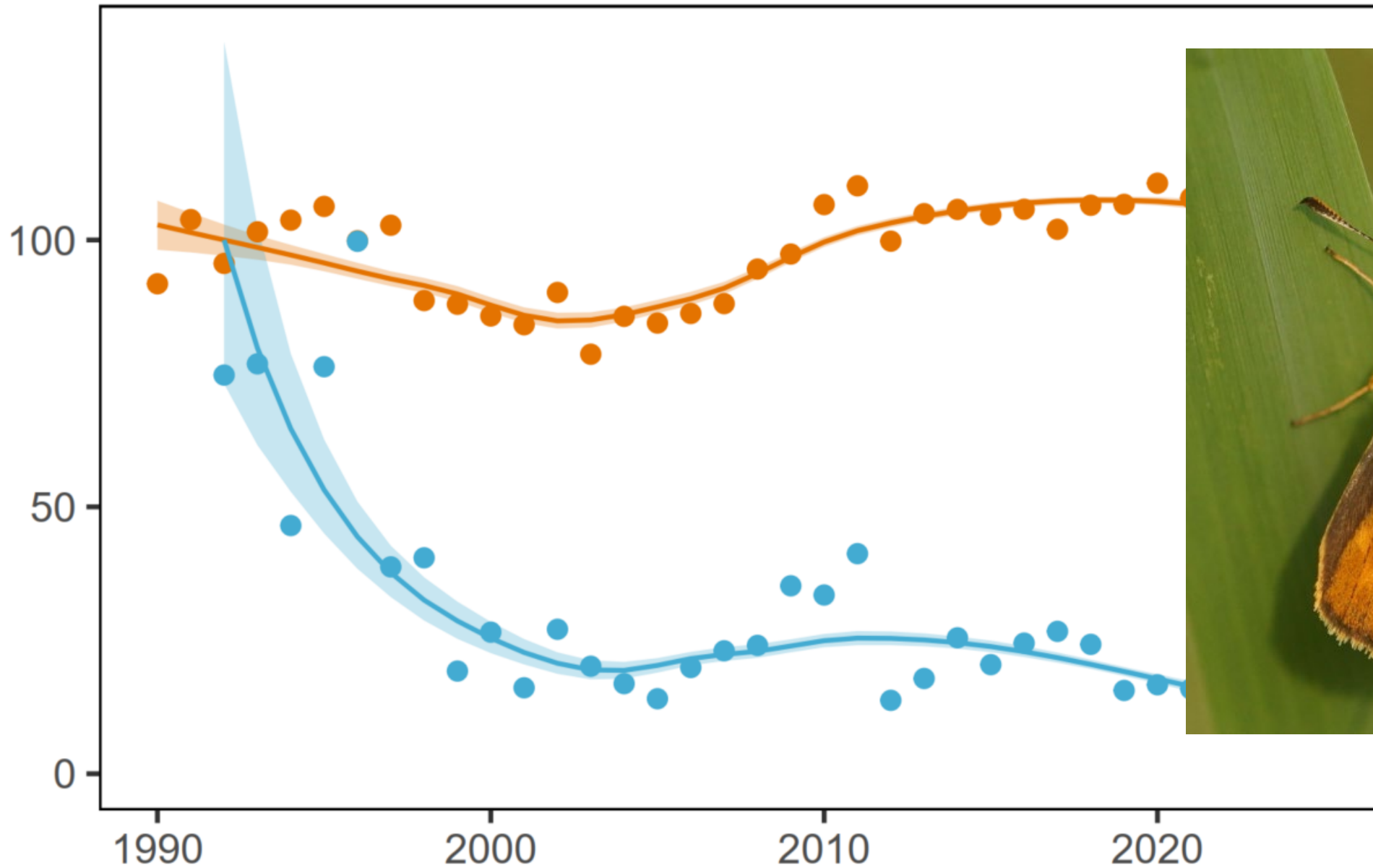


Fig. 2 Moth abundance indicator (black) and smoothed indicator (red), with 95% confidence intervals derived via the parametric bootstrap approach. The indicator is scaled with respect to a 1975 baseline year (dashed line). (Color figure online)

Large skipper - *Ochlodes sylvanus*

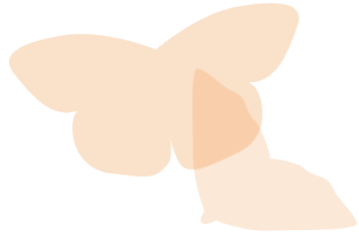


What kind of data do we have?

- Opportunistic data
 - 13.4 million records
- Standardised moth monitoring scheme
 - 90.000 trapping nights
 - 1.25 million individuals



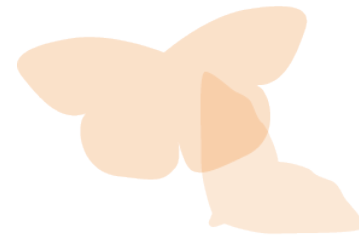
Dutch moth monitoring scheme



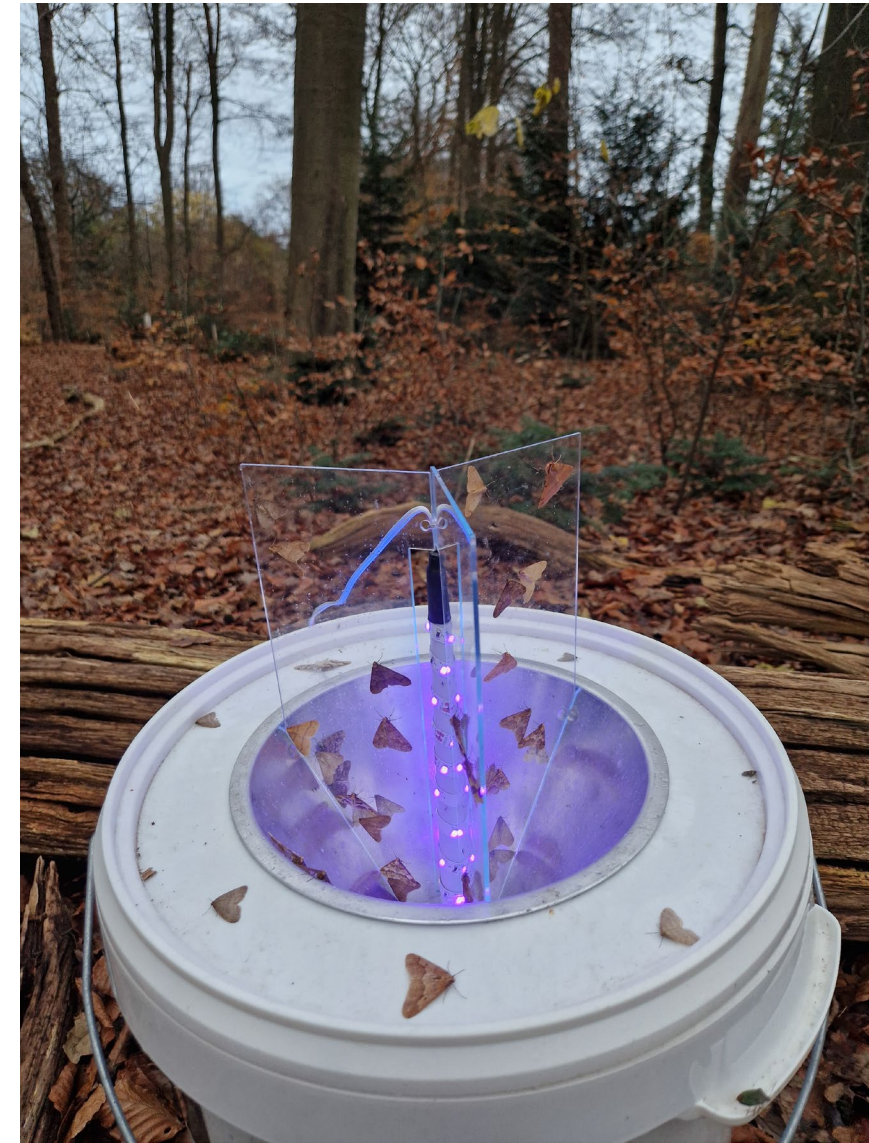
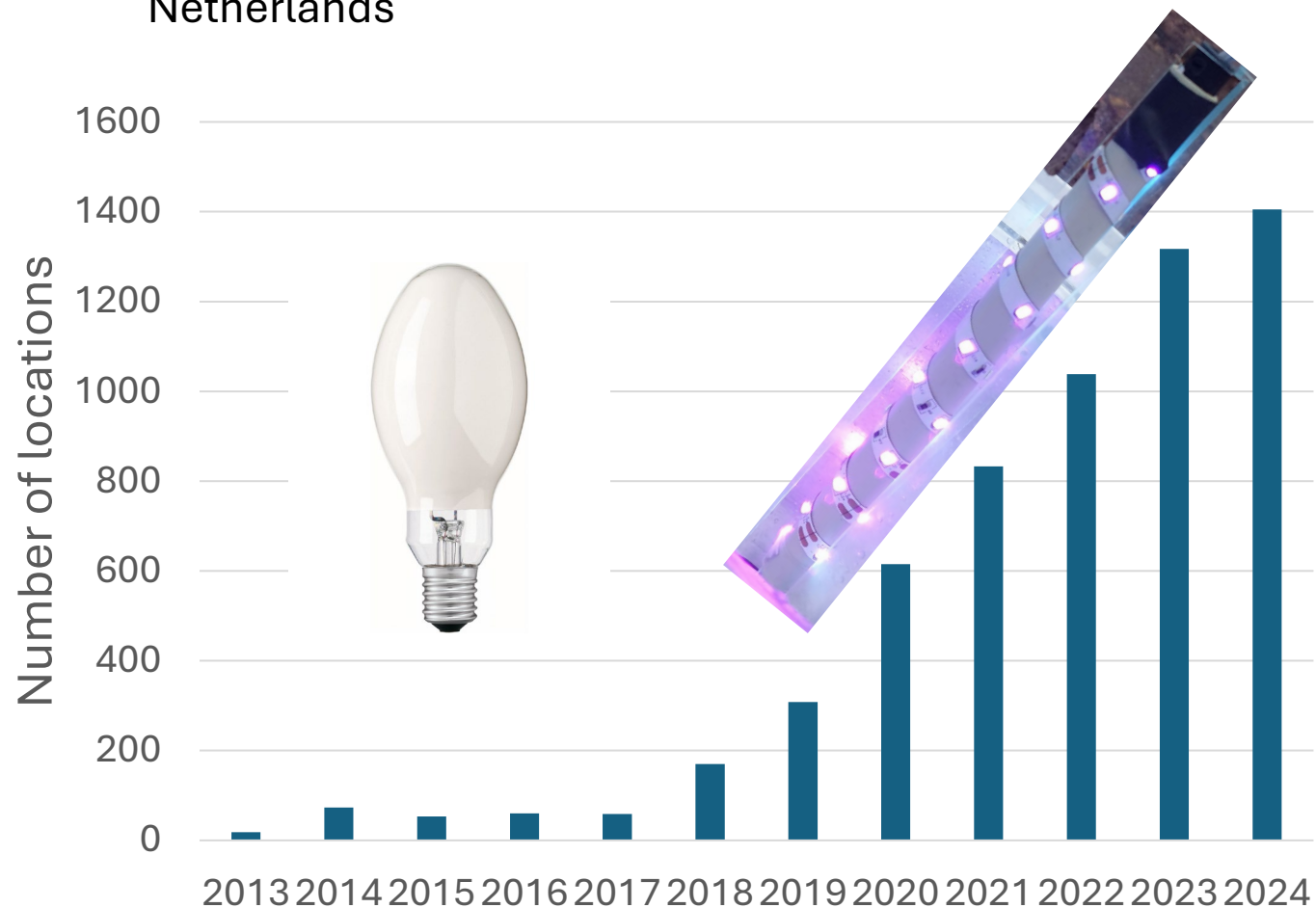
- Started in 2013 with larger moths in gardens
- Expanded in 2021 with micro moths
- Analysis by Statistics Netherlands



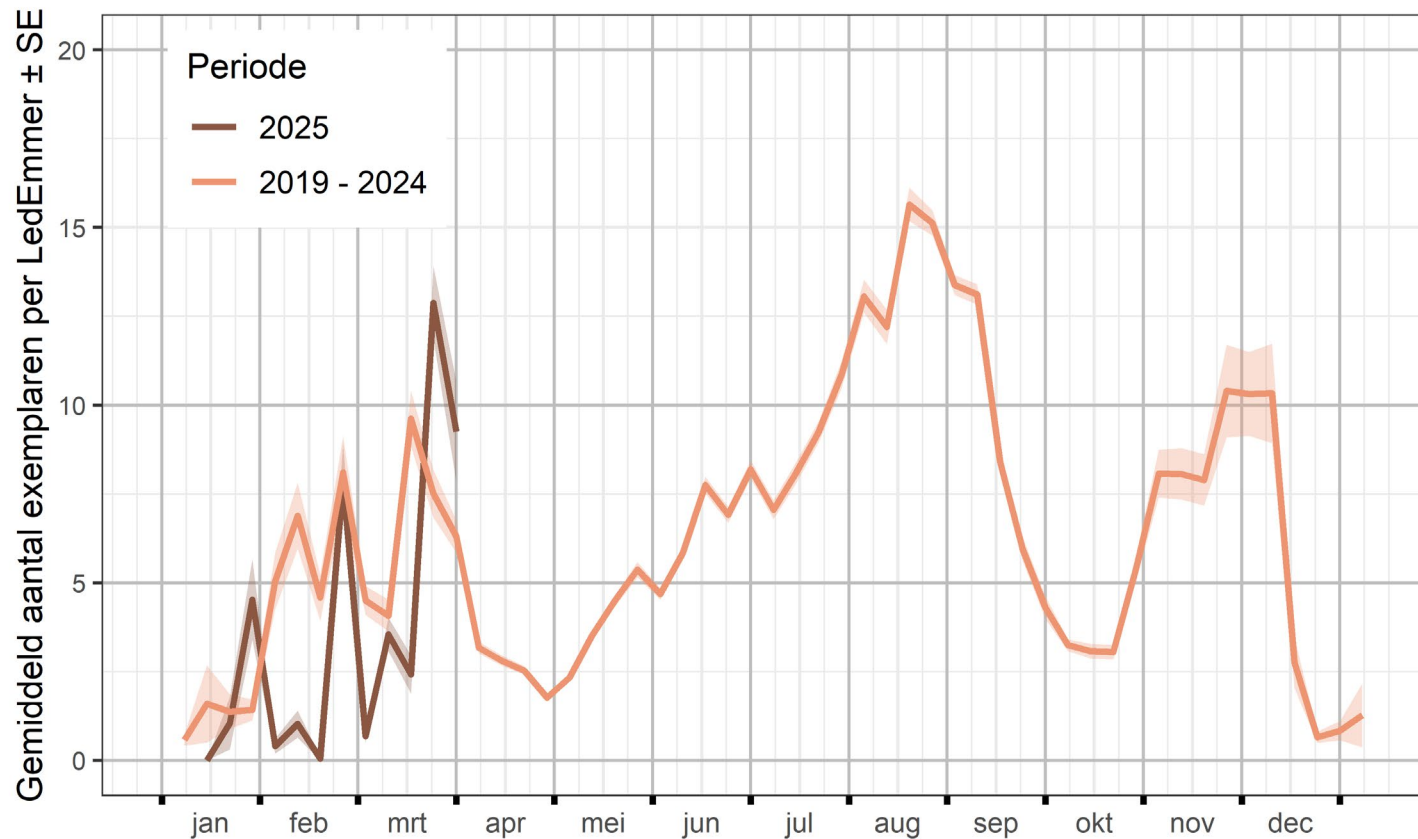
Background Dutch Monitoring Scheme



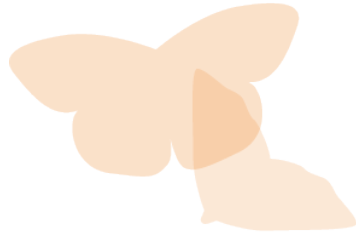
What is the difference between lamp types?
Presentation by Karen from Statistics
Netherlands



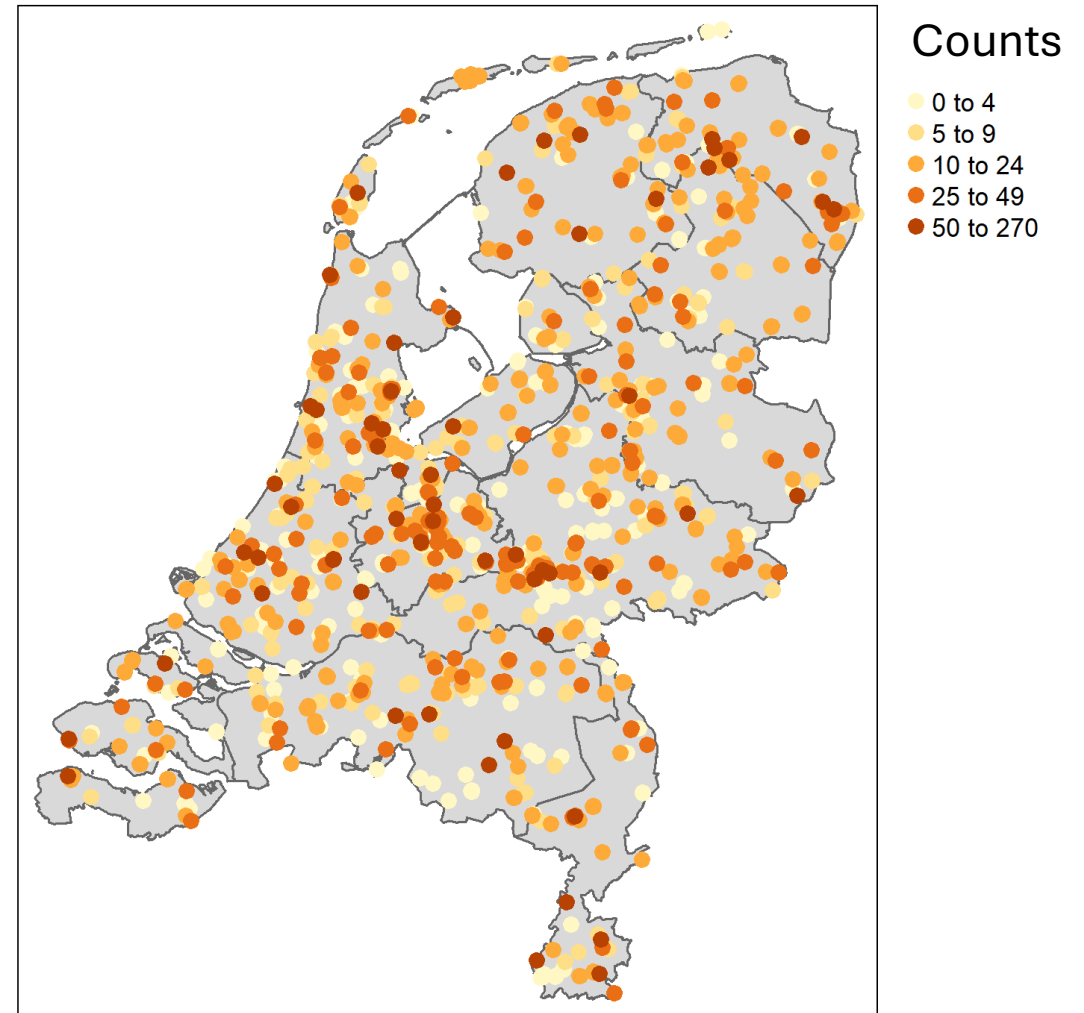
Count both inside and outside the trap



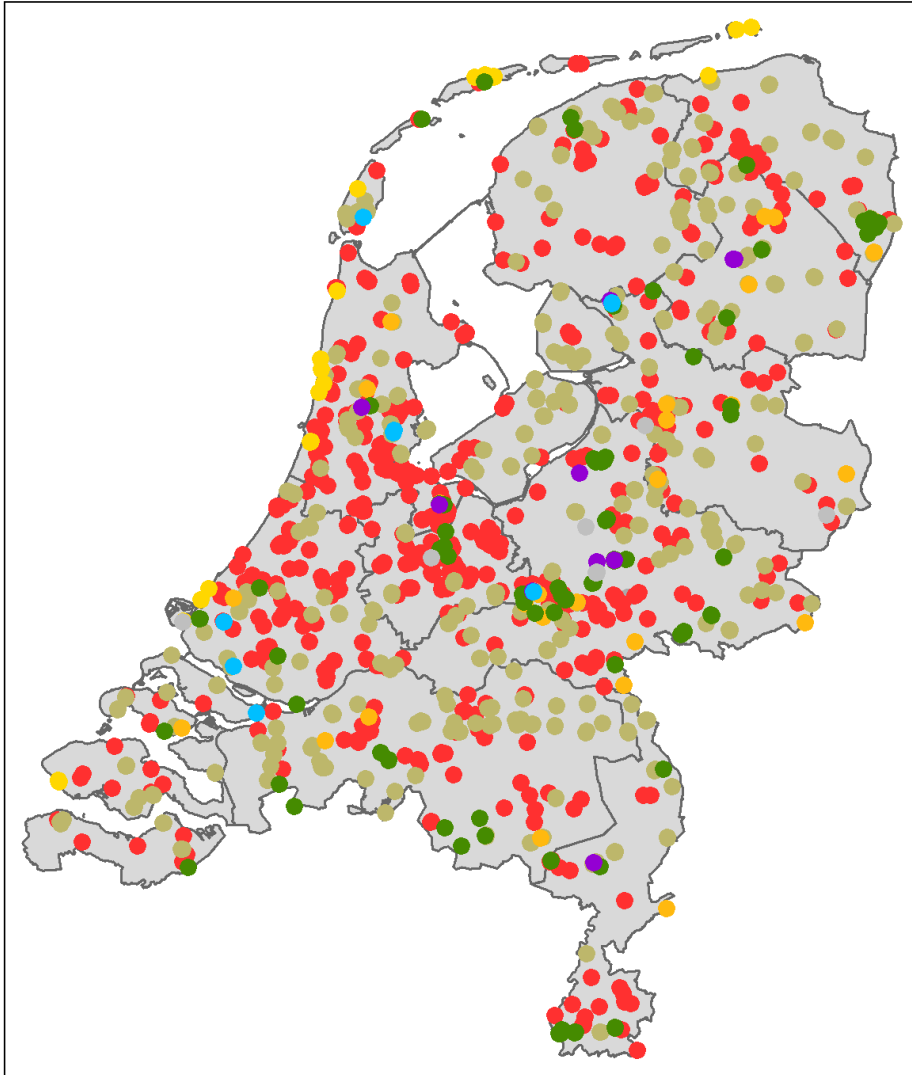
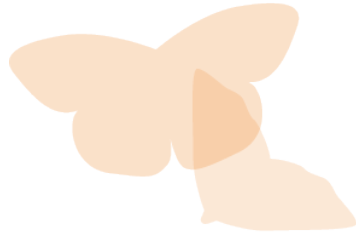
Numbers in 2024



- 1405 locations (650 micro)
- Count once per 2 weeks
 - On average 15 counts per location
- 761 volunteers
- 626 + 669 species

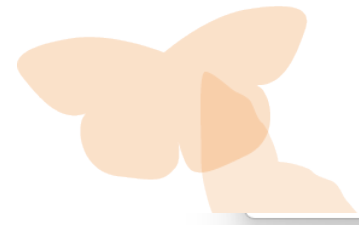


Habitat types 2024

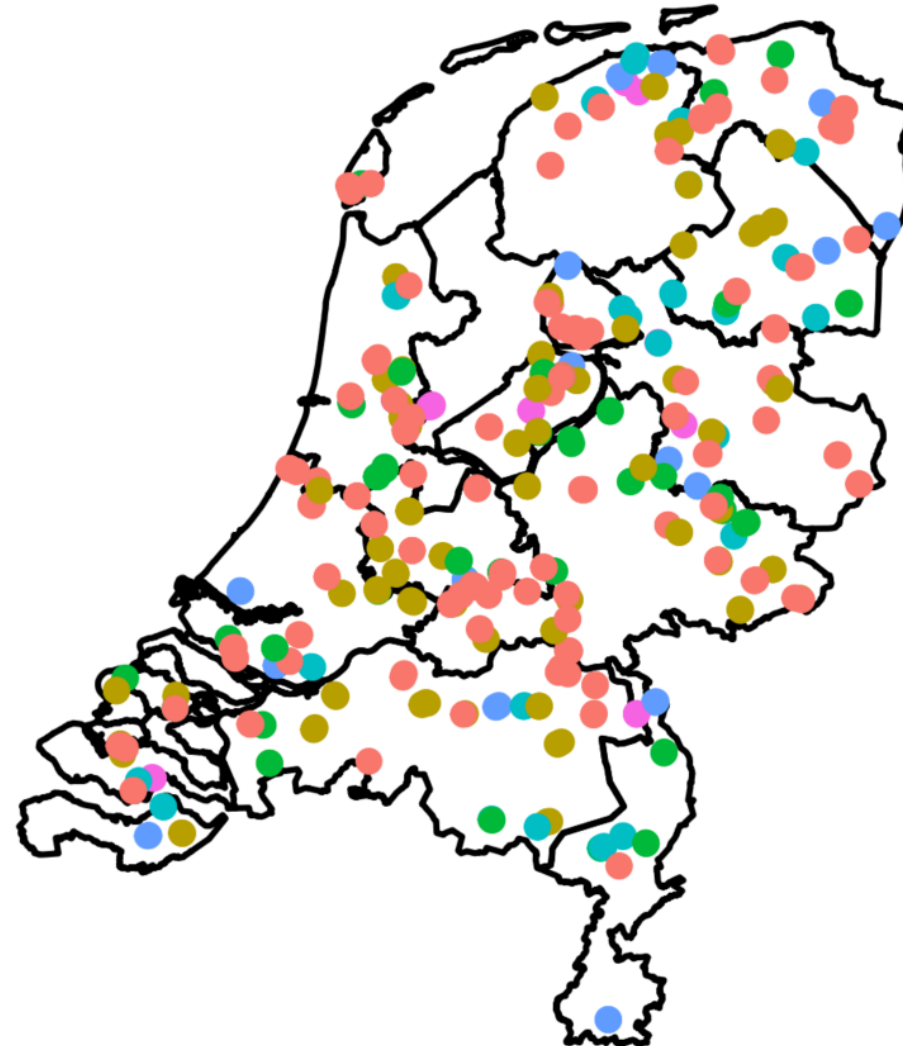
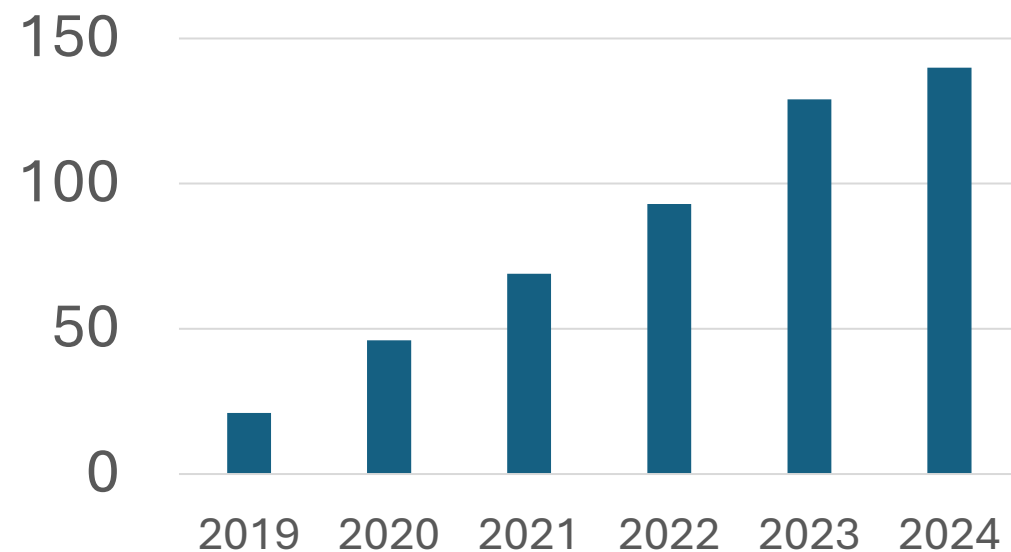


| | # |
|--------------------|-----|
| Agricultural | 594 |
| Forest | 134 |
| Dunes | 27 |
| Natural grasslands | 32 |
| Heathland | 14 |
| Swamps | 10 |
| Unknown | 17 |
| Rural | 563 |
| Missing | 2 |

Farmers counting moths - BIMAG



- Started 2019
- 3 LED traps per farmer
- 207 participants
- Image recognition

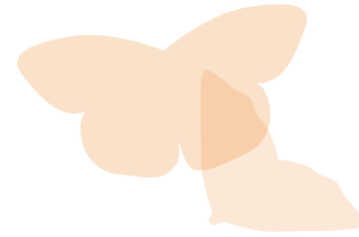


Years counted

- 1
- 2
- 3
- 4
- 5
- 6

Farmers monitoring

- Also in Ireland, UK and Belgium

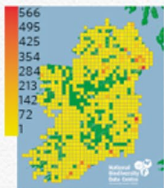


Moths: six common farmland species

www.biodiversityireland.ie/farmland/



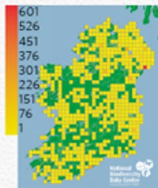
Spilosoma lubricipeda
White Ermine



- Length 34-48 mm
- White background colour with small black speckles
- May - July



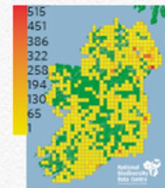
Korscheltellus fusconebulosa
Map-winged Swift



- Length 28-52 mm
- Chestnut-brown with paler map-like markings
- May - July



Diachrysia chrysitis
Burnished Brass

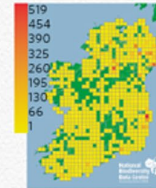


- Length 28-35 mm
- Chocolate-brown with brassy-green wing markings
- June - August

The species chosen here are based on data generated from the Farmer Moth Monitoring European Innovation Partnership (EIP) Project. The maps represent the number of records per 10km² submitted to Biodiversity Maps. Photos: Gail Hampshire, Ben Sale, Len Worthington, Patrick Clement and Janet Graham. The Farmer Moth Monitoring Project is an EIP (European Innovation Partnership) project being administered by the National Biodiversity Data Centre. The Project is funded by the EU Recovery Instrument Funding under the Rural Development Programme 2014-2022. Is tionscadal EIP (Comhpháirtíocht Nuálaíochta Eorpach) é an Farmer Moth Monitoring atá á riaradh ag National Biodiversity Data Centre. Tá an Tionscadal maoinithe ag Maoiniú Ionstraim Téarnaimh an AE faoin gClár um Fhorbairt Tuaithe 2014-2022.



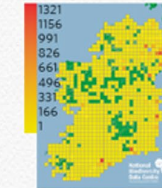
Laothoe populi
Poplar Hawkmoth



- Length 65-90 mm
- Large ashy-grey moth with reddish hindwings which sit beneath and slightly in front of the forewings at rest
- May - August



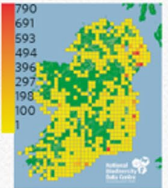
Noctua pronuba
Large Yellow Underwing



- Length 45-55 mm
- Variable upperwing colour with orange hindwings with a broad black margin
- June - September



Agrotis exclamationis
Heart and Dart



- Length 30-40 mm
- Pale greyish-brown with dark heart and dart markings on each forewing
- May - August



Gem aantal macro's per LedEmmer ± se

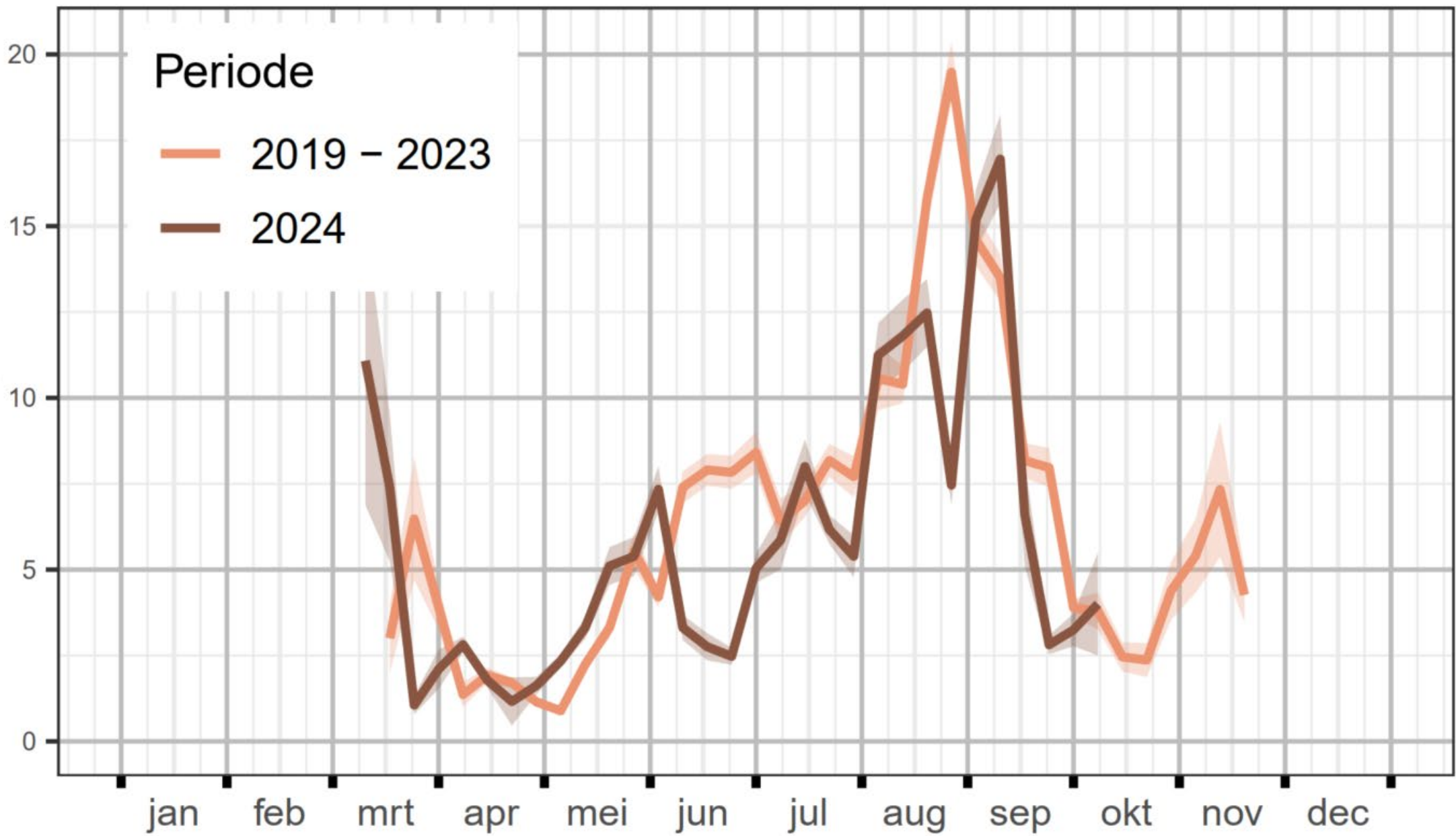


Image recognition




Soortnaam


Soortnaam

We zijn er bijna zeker van dat dit in dit genus zit:

 **Cucullia**
Geslacht [Bekijken](#)

Dit zijn onze topvoorstellen:

 **Zwarte-Toortsvlinder**
Cucullia lychnitis
Visueel vergelijkbaar / In de buurt verwacht [Bekijken](#)

 **Kuifvlinder**
Cucullia verbasci
Visueel vergelijkbaar / In de buurt verwacht [Bekijken](#)

 **Cucullia asteroides**
Soort [Bekijken](#)
Visueel vergelijkbaar

 **Cucullia florea**
Soort [Bekijken](#)
Visueel vergelijkbaar

 **Helmkruidvlinder**
Cucullia scrophulariae
Visueel vergelijkbaar [Bekijken](#)

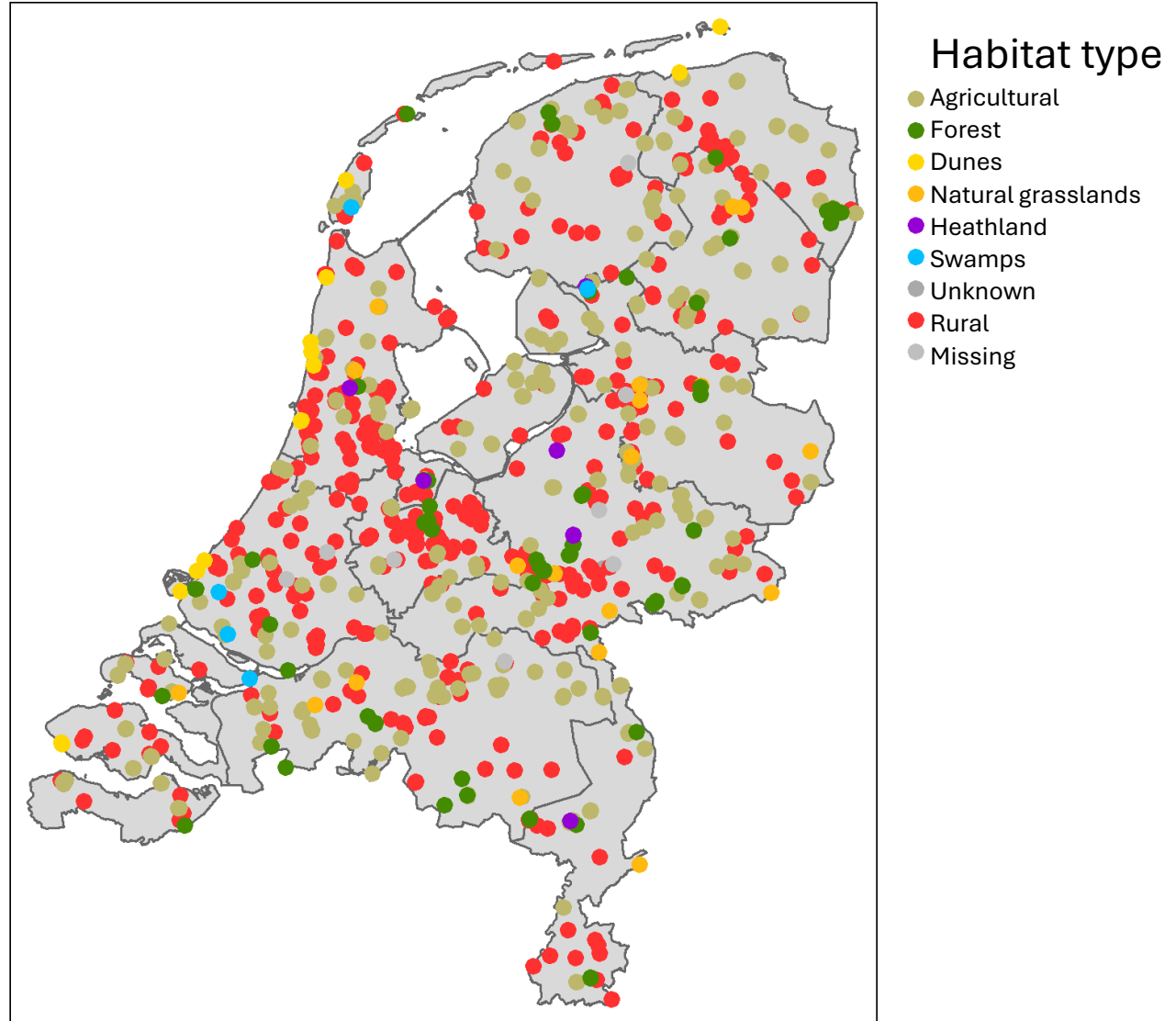
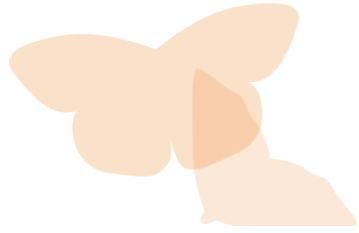
 **Cucullia convexipennis**
Soort [Bekijken](#)
Visueel vergelijkbaar

 **Nystalea**
Geslacht [Bekijken](#)
Visueel vergelijkbaar

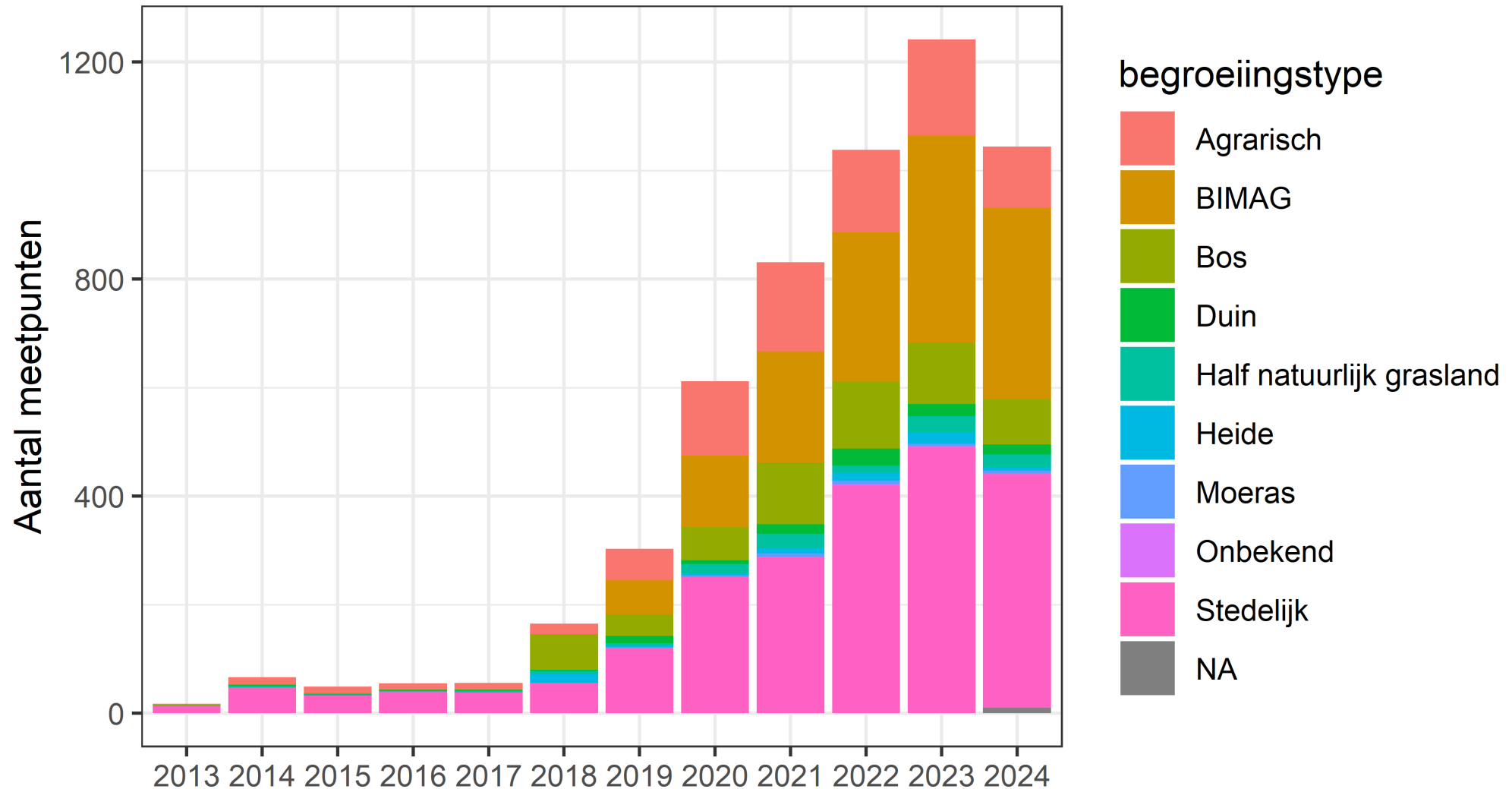
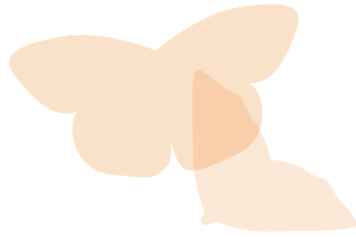
 **Nycterotis**
Geslacht [Bekijken](#)
Visueel vergelijkbaar

[Bekijk alleen soorten uit de omgeving](#)

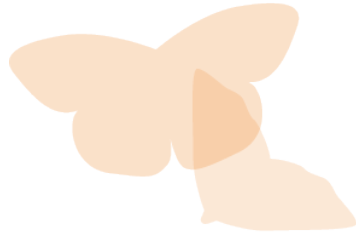
Challenge 1: Equal national distribution



Challenge 2: Equally distribution in habitat

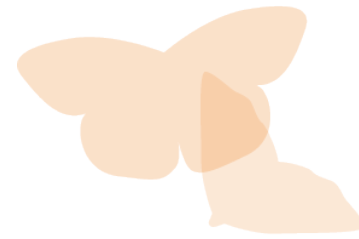


Challenge 3: equal time series



| # years counted | # locations |
|-----------------|-------------|
| 1 | 1113 |
| 2 | 598 |
| 3 | 330 |
| 4 | 210 |
| 5 | 120 |
| 6 | 57 |
| 7 | 12 |
| 8 | 7 |
| 9 | 6 |
| 10+ | 23 |



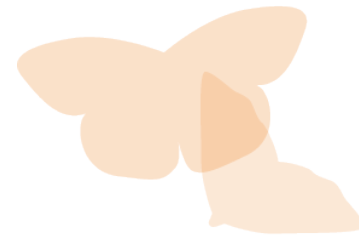


Data-analysis

- Same as for butterflies

2 methods

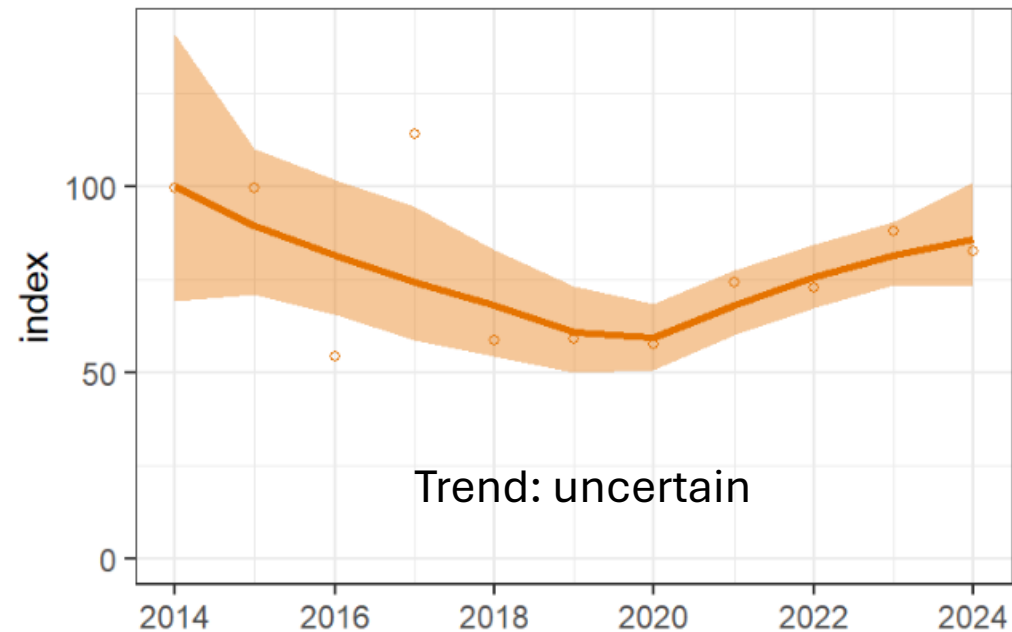
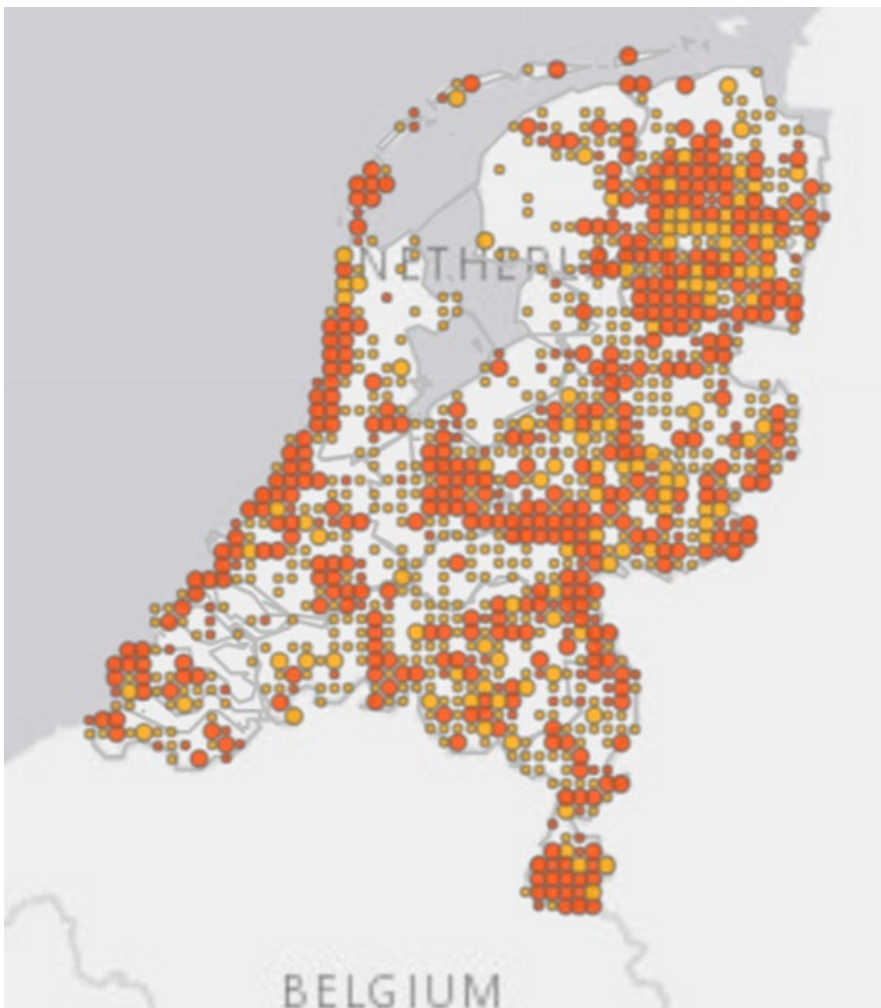
- 1. Calculate flight curve (RBMS)
- 2. Week as factors (RTRIM)



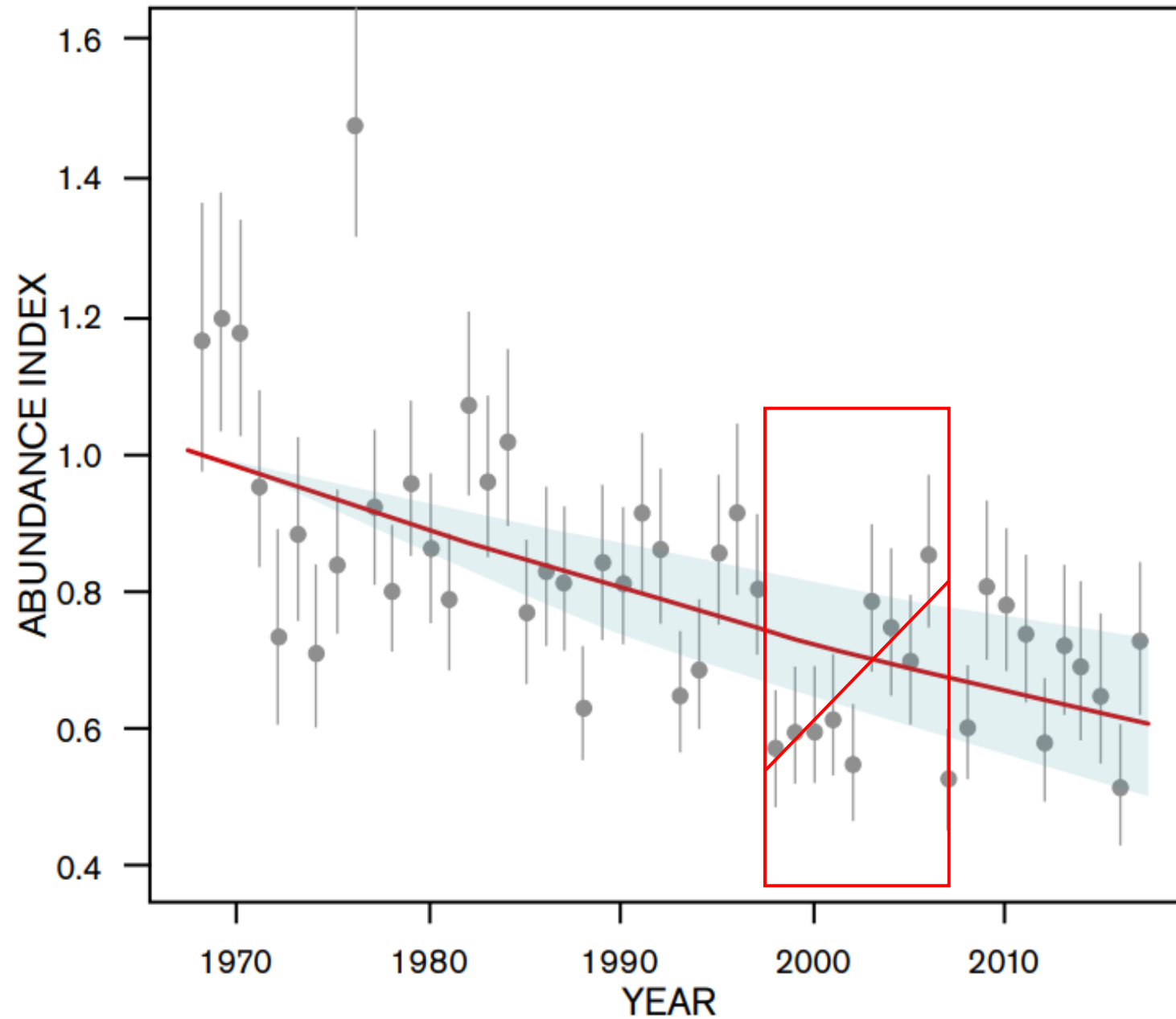
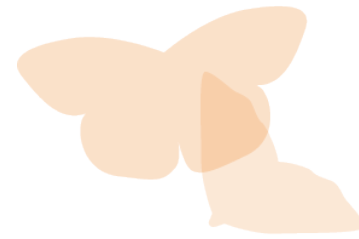
Trends

- Trends calculated by Statistics Netherlands
- Starting year when at least 20 positive sites
- Population trends for 349 species
 - 107 a certain short term trend
 - 43 species increase
 - 29 stable
 - 45 decline

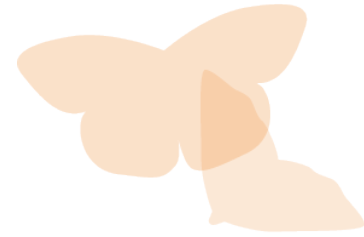
Ligdia adustata



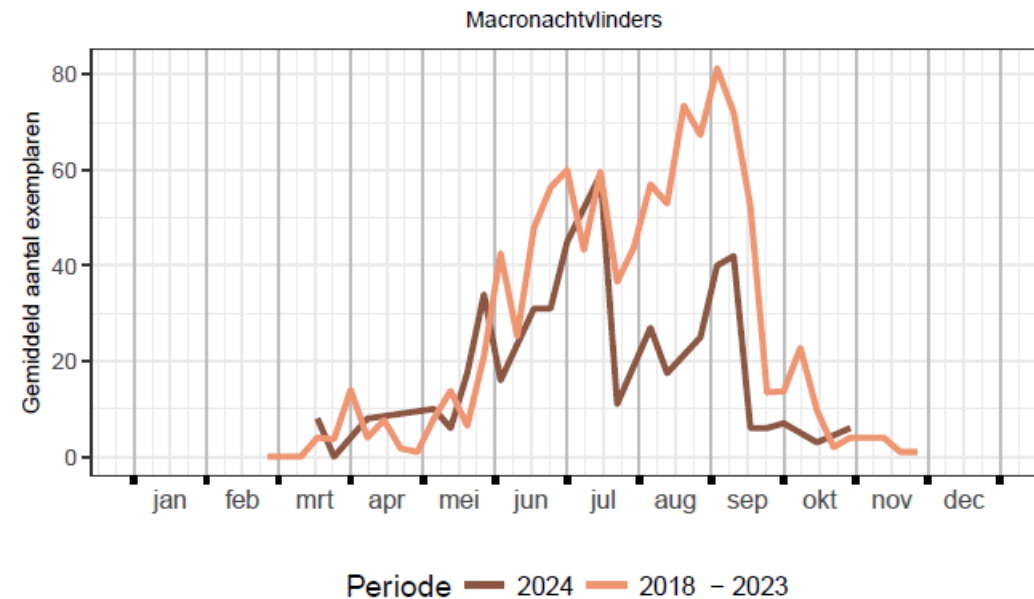
SOUTH



How to keep volunteers enthusiastic



- Newsletter once every month
- Personal newsletter based on their results
- Annual report



Tabel 1: Jouw vijf zeldzaamste soorten die dit jaar zijn ingevoerd in het meetnet

| soort | Door jou waargenomen | Exemplaren meetnet | Totaal meetpunten |
|--------------------|----------------------|--------------------|-------------------|
| smeewortelsteltnot | 1 | 1 | 1 |
| klispalpmot | 1 | 4 | 4 |
| azaleasteltnot | 1 | 5 | 4 |
| diamantborsteltnot | 1 | 6 | 5 |
| kersenpedaaltnot | 1 | 6 | 5 |

How to join?

- Every location helps!
- Easiest: Butterflycount app

