

# To a European Moth Monitoring

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Dutch Butterfly Conservation

Butterfly Conservation Europe



# SPRING task 4.1 Moths

## LedBucket

- Cheap, not very powerful (attracts local moths)
- Automatically switched on all night
- Not very notable
- Already used in NL in moth monitoring

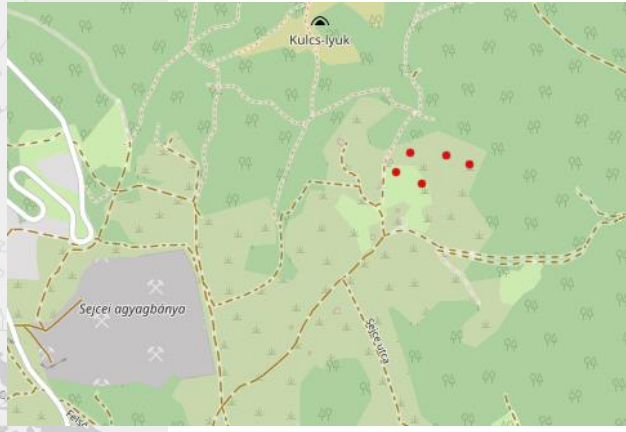
## Refinement of field protocol

- In NL, 25 traps >3 times/week in different habitats
- Info on variation in time and space

## Validation

- In D (continental), S (boreal), E (mediterranean), H (pannonian): 5 series (each in another habitat) of 5 traps, 12 times/year
- Moths photographed → feed into AI of Naturalis





# Advantage of monitoring moths

- Many species (>3000 macromoths, even more micromoths)
- Use of traps makes it possible to standardise effort in time
- Not all traps need to be the same (spatially different), however the same trap in time
- Traps can be deployed by anyone
- Make photos
- Identification by app possible with AI of Naturalis partner



[Dagvlindermonitoring](#)[eBMS achtergrond](#)[Mijn meetnet](#)[Mijn data](#)[EBMS gegevens](#)[Meetnet admin](#)[Mijn account](#)

## Moth trap details

[Weergeven](#)[Vertalen](#)

Please provide the spatial reference of the location. You can enter the reference directly, or search for a place then click on the map to set it.

Land:

Netherlands

Location Name:

Vlinderstichting kantoor

Spatial Ref:

51.96645N, 5.65555E

Search for Place:

Zoeken

Include country to limit suggestions, e.g. *Wageningen, Nederland*





Moth trap type:

- ☒ LED funnel trap
- ☐ Other funnel trap
- ☐ Trap with 2 sheets
- ☐ Other trap

Types of lamp in trap:

In the table below, list all the lamps in the trap. Add a row for each lamp type.

Lamp type	Additional description of lamp	How many of this lamp
LED->Ledstrip->395-405 SMD 2835	2 watt	2
<Please select>		
LED->Ledstrip->395-405 SMD 2835		
LED->Ledstrip->395-405 SMD 5050		
LED->PowerLED->Please describe		
LED->LepiLed->Mini		
LED->LepiLed->Standard		
LED->LepiLed->Maxi		
LED->LepiLed->Maxi switch		
LED->Other->Please describe		
TL->Actinic->6W		
TL->Actinic->8W		
TL->Blacklight->18W		
TL->Other->Please describe		
E27->Mercury vapour - ML->160W		
E27->Mercury vapour - ML->250W		
E27->Mercury vapour - ML->500W		
E27->Mercury vapour - HPL->125W		
E27->Mercury vapour - HPL->400W		
E27->Mercury vapour - Blacklight->160W		
E27->Mercury vapour - Blacklight->400W		

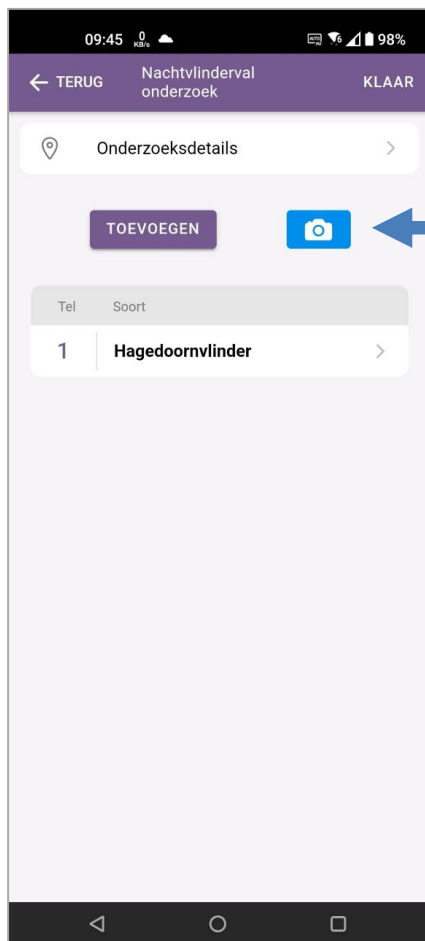


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Adding a photo will start image recognition from Naturalis partner and will add species and counts











heathland

N804

Deelensweg

Deelenwoud

Deelen

woodland

Nutrient rich grassland

Vliegbasis  
Deelen

scrubland

Nutrient poor grassland

N804

Hoenderse

Veteranenlandgoed















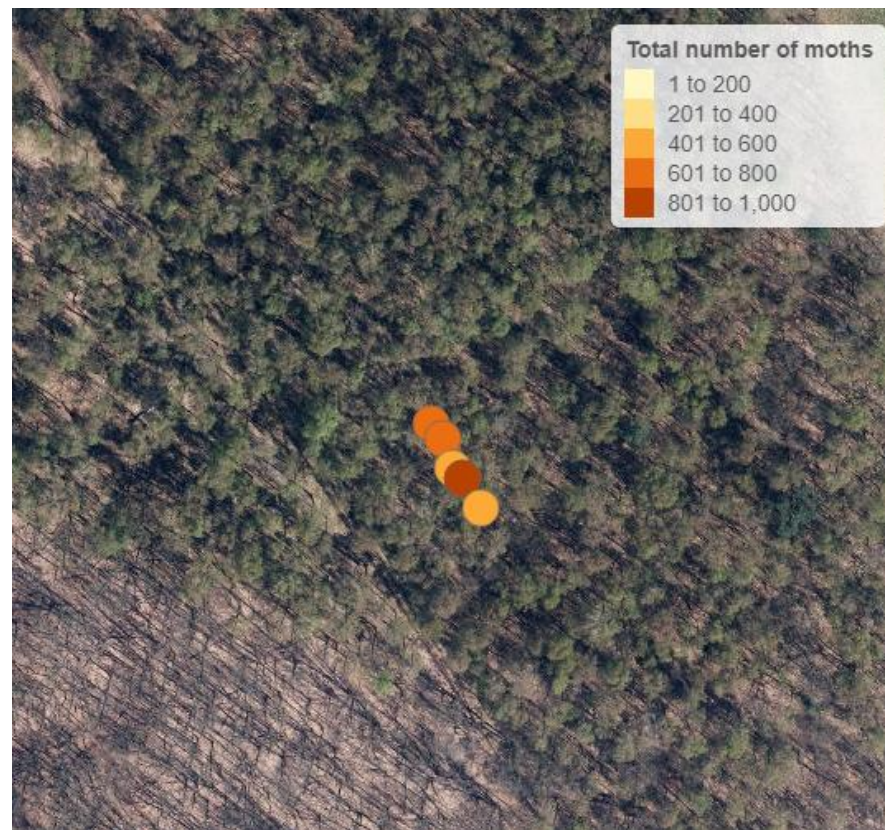
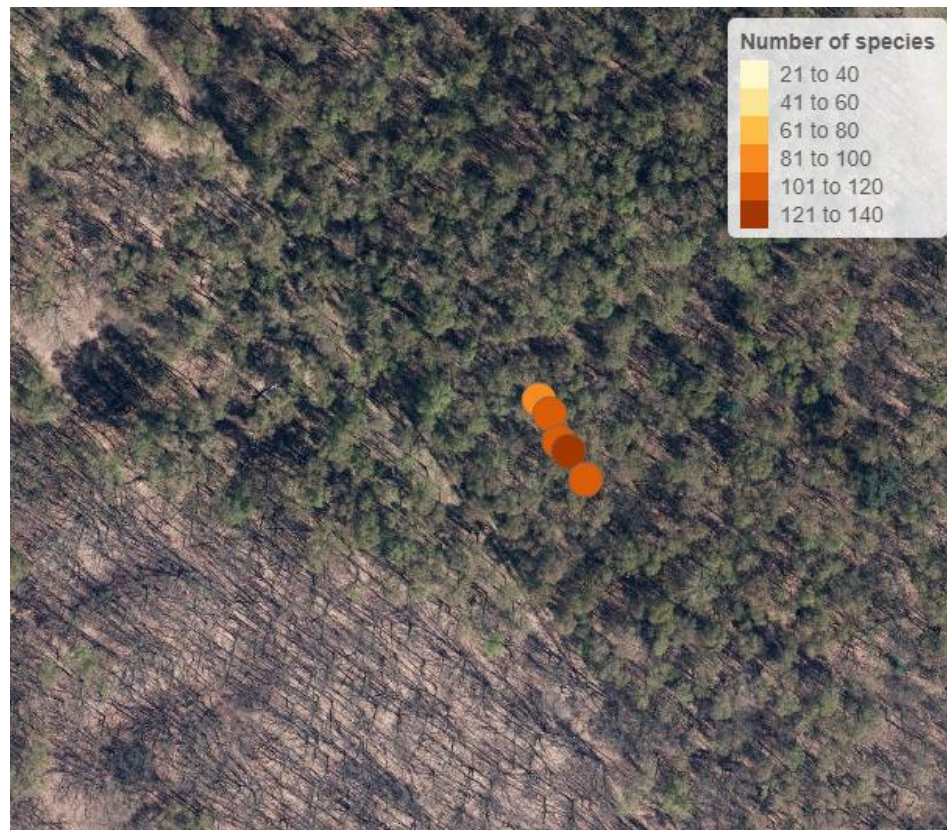


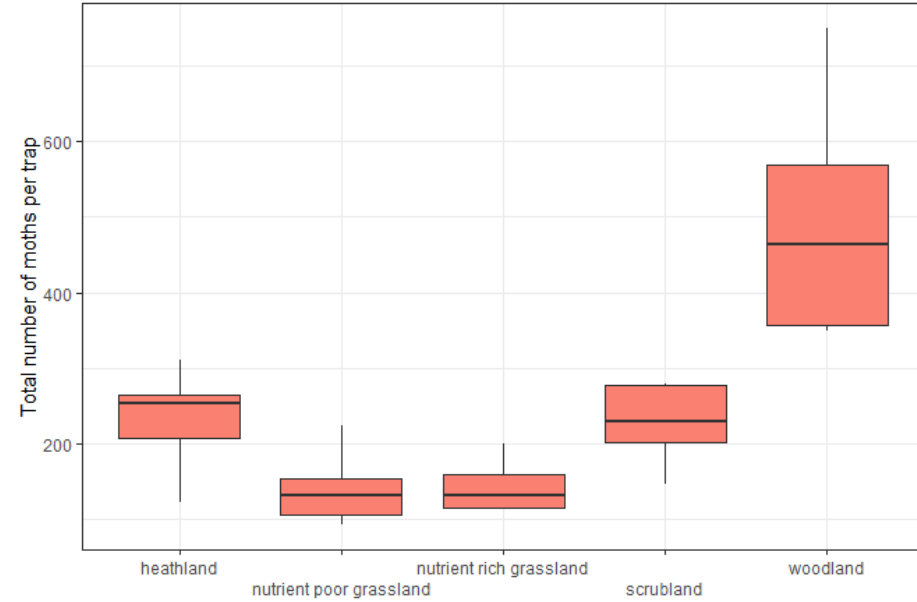
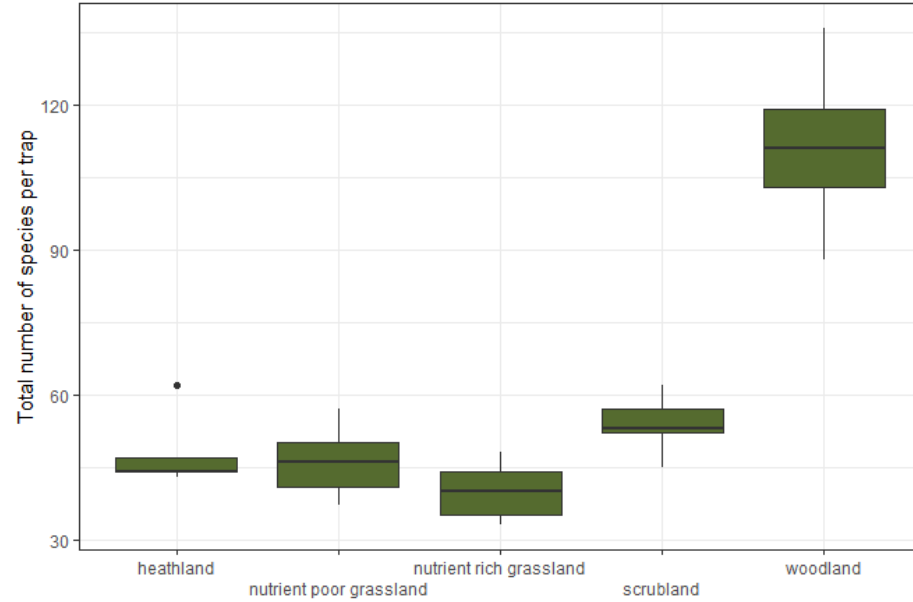


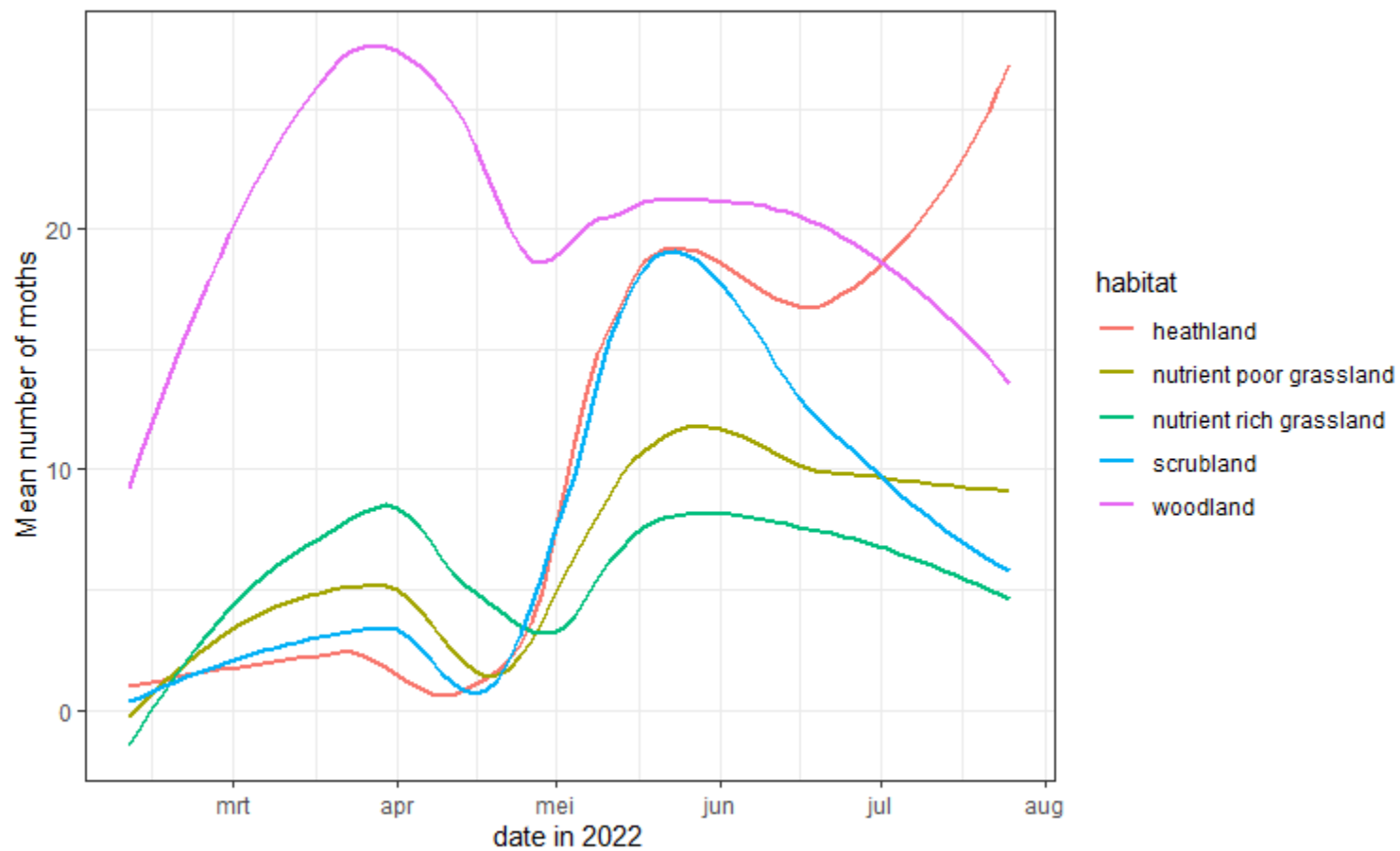










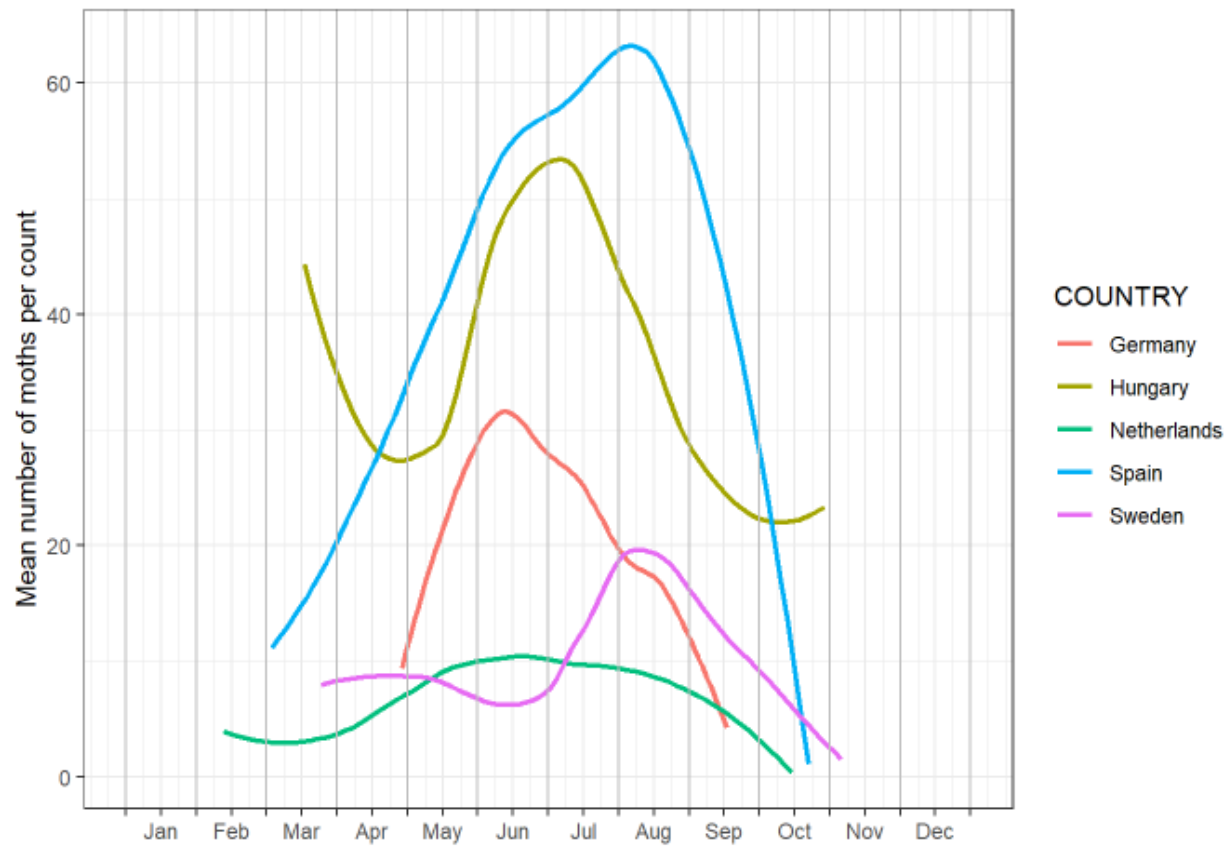


## Number of taxa

In 2022 a total number of 1092 taxa have been reported. This includes micromoths as well as specimens only identified to genus level or as 'aggregated species' (as *Noctua janthe/janthina*). However numbers vary strongly per country, and some of the most abundant ones are only found in one country. The ten most abundant taxa inside the traps are:

Species	Total number of counts	Germany	Hungary	Netherlands	Spain	Sweden
<i>Thisanotia chrysonuchella</i>	1201	0	0	1201	0	0
<i>Peribatodes rhomboidaria</i>	647	18	57	6	563	3
<i>Caradrina spec.</i>	585	0	0	0	585	0
<i>Paracolax tristalis</i>	566	3	542	1	19	1
<i>Watsonalla uncinula</i>	482	0	0	0	482	0
<i>Ectropis crepuscularia</i>	436	14	265	151	0	6
<i>Orthosia cruda</i>	409	0	118	287	4	0
<i>Noctua fimbriata</i>	366	0	342	2	21	1
<i>Eilema uniola</i>	315	0	0	0	315	0
<i>Lycia hirtaria</i>	309	18	14	144	77	56







# Poweranalysis on Dutch Moth monitoring data

- Done by Statistics Netherlands (CBS)
- Using BIMAG data: moth monitoring on farms by farmers

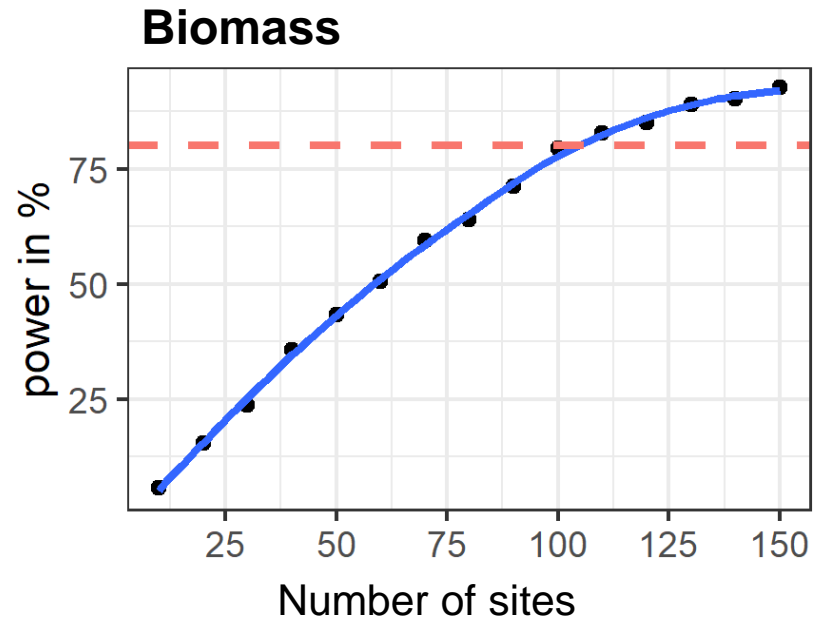
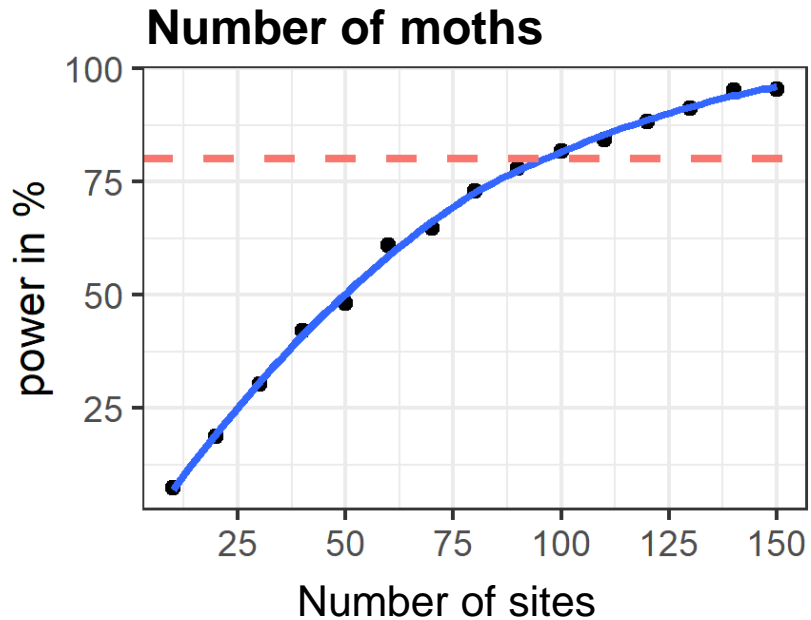




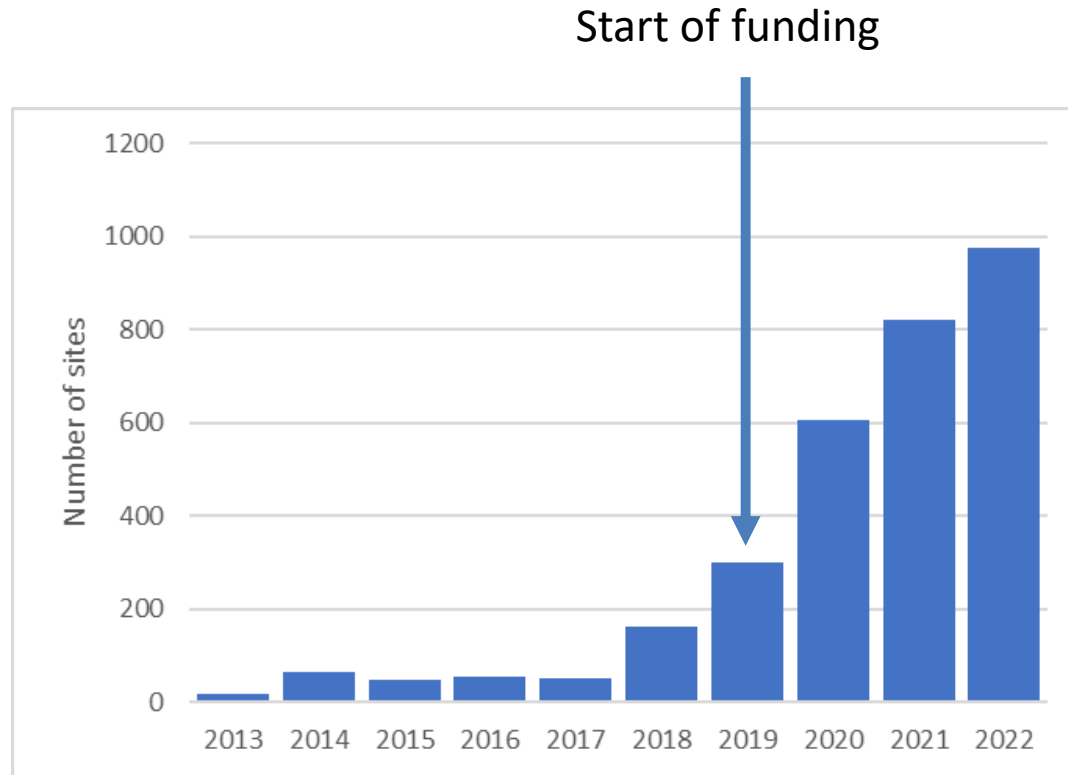


alle BIMAG boerderijen (n=86)

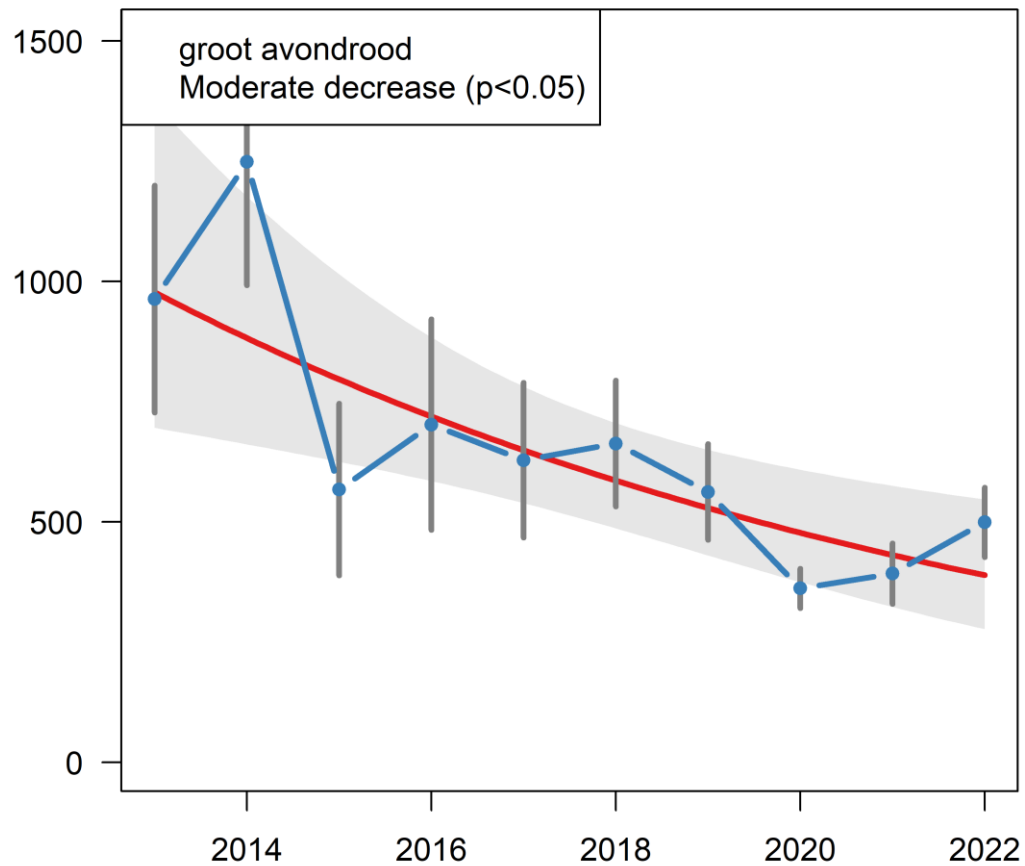




# Dutch Moth monitoring Scheme

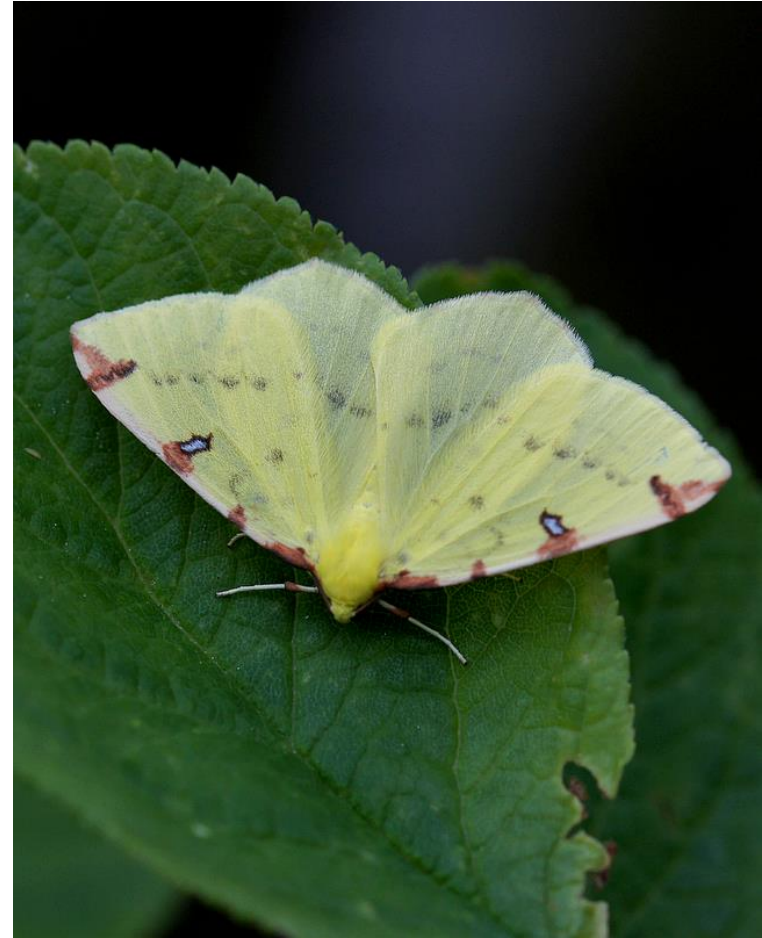
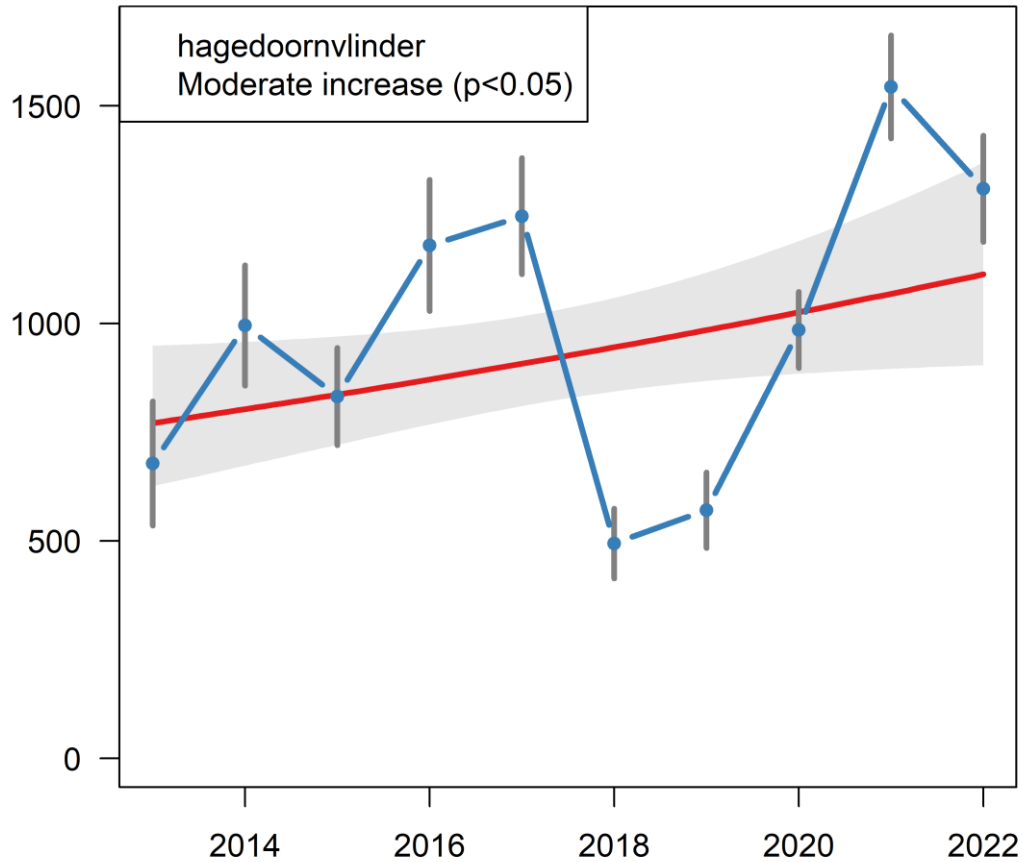


## *Deilephila elpenor*

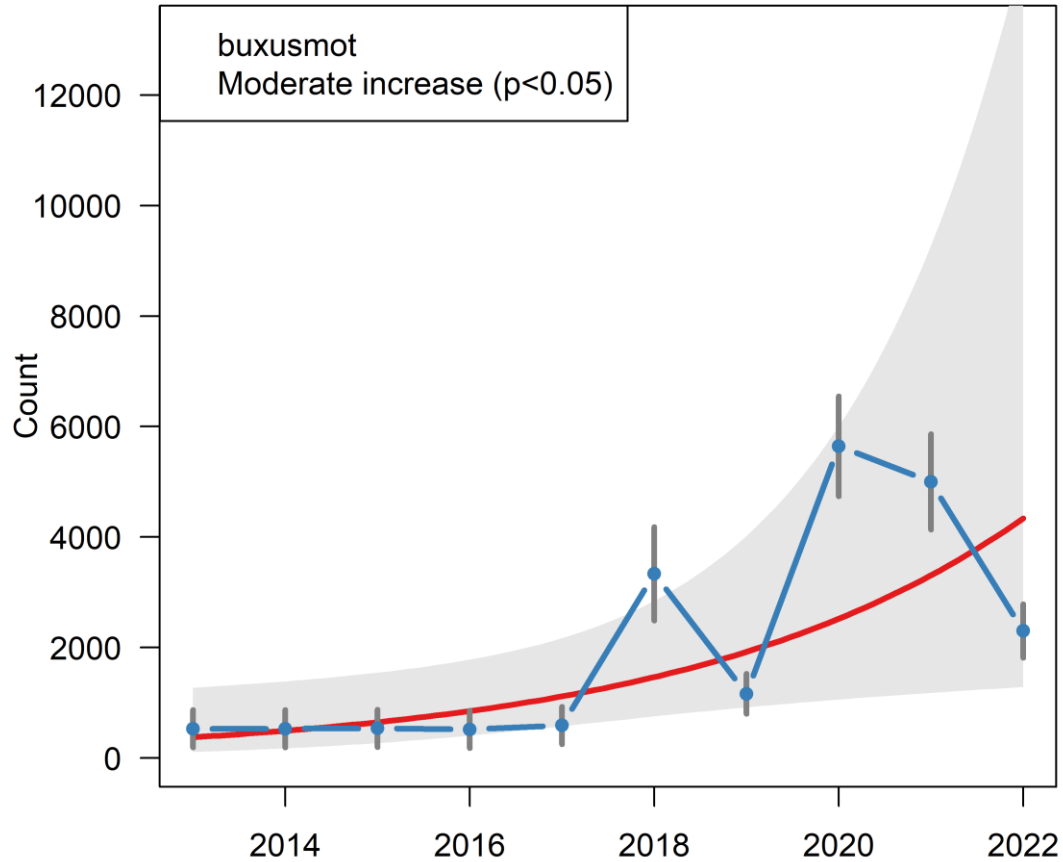




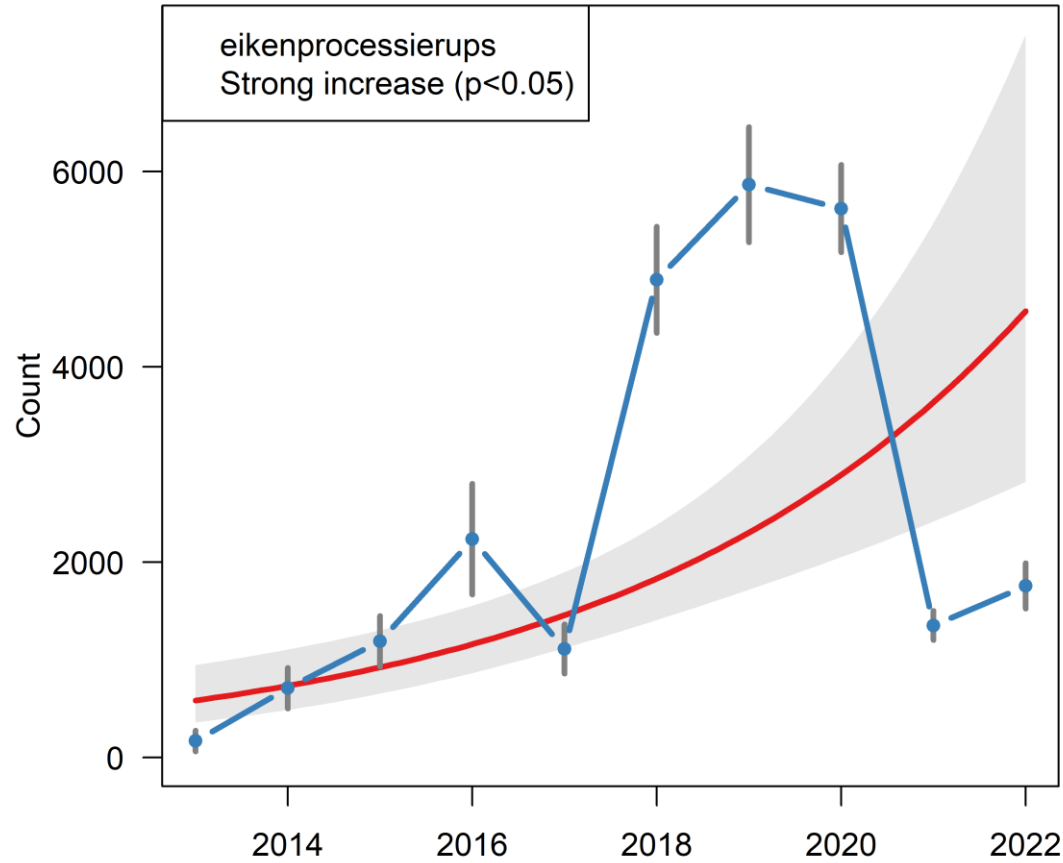
## *Opisthograptis luteolata*



## *Cydalima perspectalis*



## *Thaumetopoea processionea*







BIOLOGY  
LETTERS

royalsocietypublishing.org/journal/rsbl

## Research

**Cite this article:** Walton RE, Sayer CD, Bennion H, Axmacher JC. 2020 Nocturnal pollinators strongly contribute to pollen



## Conservation biology

Nocturnal pollinators strongly contribute to pollen transport of wild flowers in agricultural landscape

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ELSEVIER

The effects of agricultural intensification on pollinators and their pollination services

Melanie Hahn\*, Anna-Maria  
Institute for Environmental Sciences

Agriculture, Ecosystems and Environment

Contents lists available at ScienceDirect



Department of Biological, Biomedical and  
Vallingsford, U.K. and <sup>3</sup>Butterfly

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## Research

**Cite this article:** Alison J, Alexander JM, Diaz Zeugin N, Dupont YL, Iseli E, Mann HMR, Høye TT. 2022 Moths complement bumblebee



## Community ecology

Moths complement bumblebee pollination of red clover: a case for day-and-night insect surveillance

Jamie Alison<sup>1,3</sup>, Jake M. Alexander<sup>4</sup>, Nathan Diaz Zeugin<sup>4</sup>, Yoko L. Dupont<sup>1</sup>, Evelin Iseli<sup>4</sup>, Hjalte M. R. Mann<sup>1,2</sup> and Toke T. Høye<sup>1,2</sup>

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Emerging Topics in Life Sciences (2020)  
https://doi.org/10.1042/ETLS20190134

## Review Article

Nocturnal pollination: an over-looked service vulnerable to environmental change

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# 'Problems' we had

- 'Normal' traps catch much more / too many moths to deal with
- Traps get destroyed (e.g. by animals)
- App and especially website still need improvements





# Outlook SPRING

- 2023 extra fieldwork
- Power analysis of Dutch data shows  $\pm 100$  traps can generate good insight in change in numbers and biomass
- Dutch Moth Monitoring Scheme shows it can be done with volunteers
- Making moths good candidates for monitoring
- National/regional coordination needed however
- Free traps help



# Moth monitoring in Europe for BCE

- Any trap can join (but LED traps offer freedom to place them anywhere)
- Website and app work
- Image recognition means anyone can use it, even without id-skills on moths (as farmers)
- Which makes it one of the best species groups to monitor biodiversity
- So consider widening moth monitoring in your country too



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