

Tagfalter Trends und Indikatoren

Lokal – Regional – National – Kontinental- global



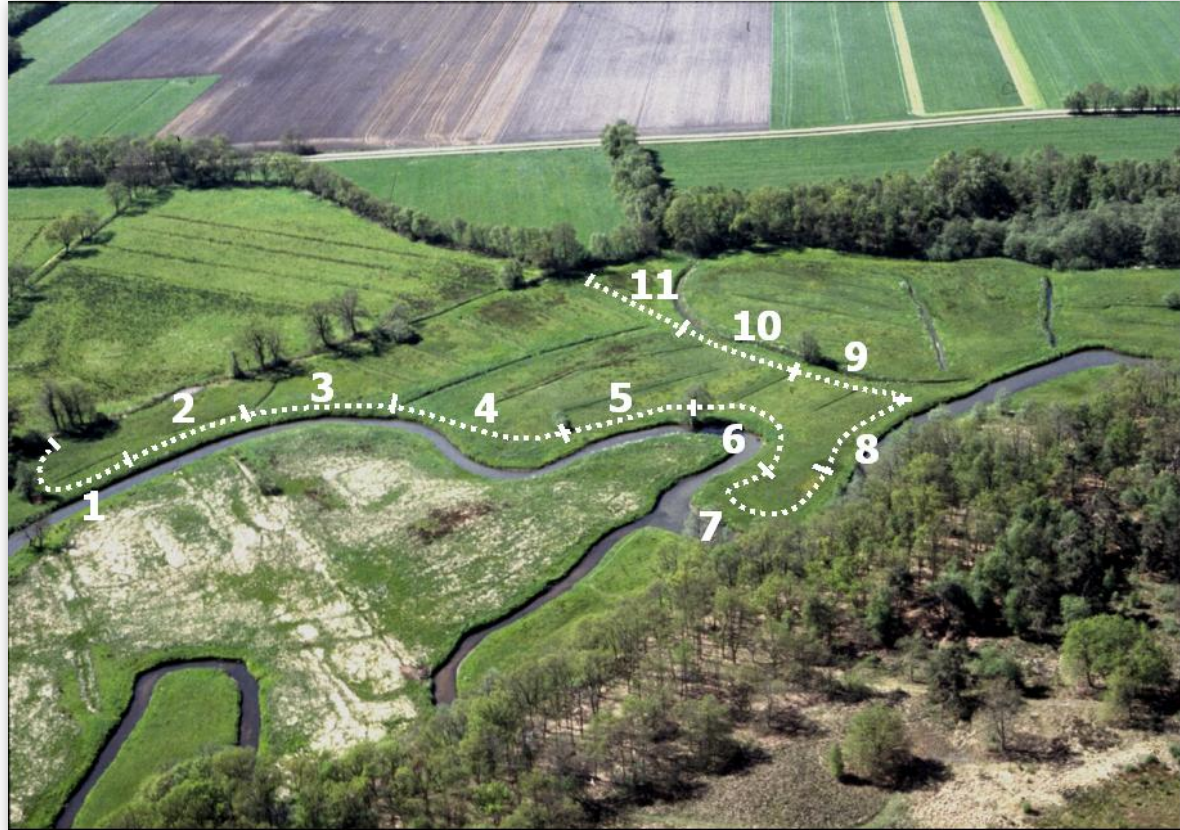
Chris van Swaay
Dutch Butterfly Conservation / Vlinderstichting
Butterfly Conservation Europe

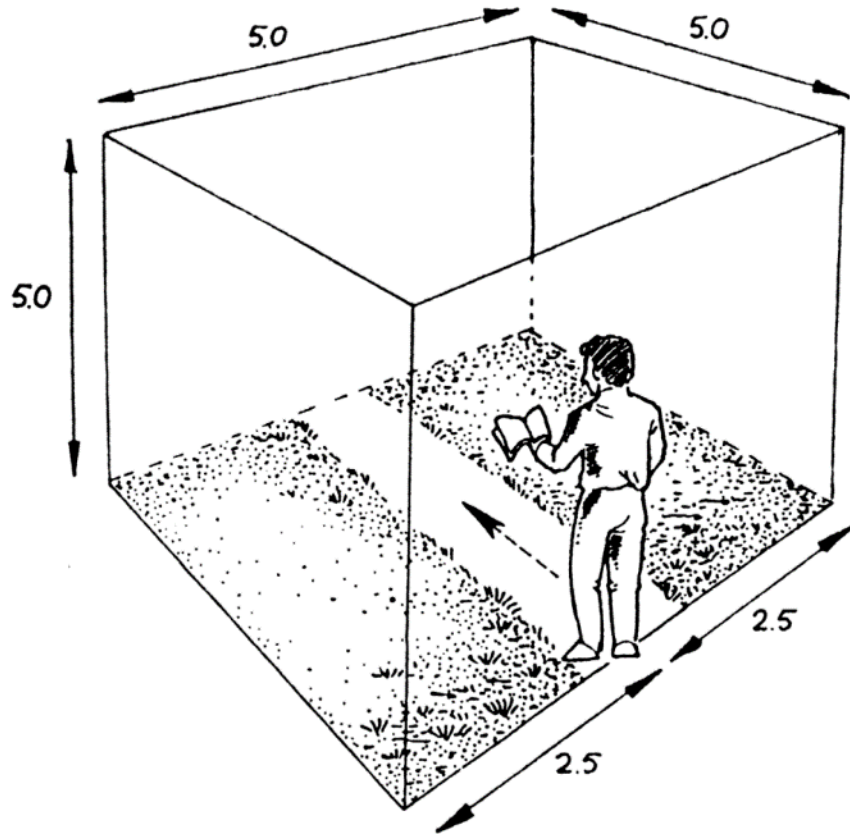




Population trend

- The population size can be difficult to assess, but for the trend we have sound methods
- Standard methods: in Europe transect counts
- All data brought together in central database eBMS





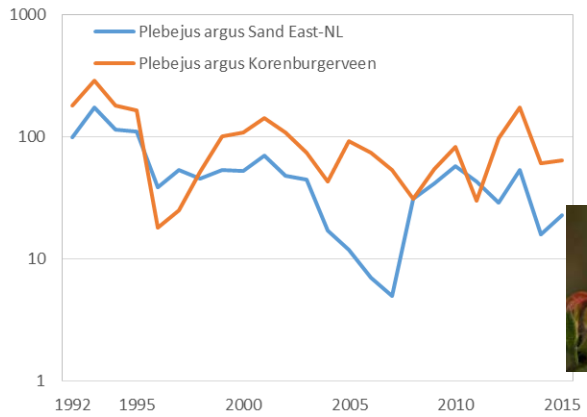
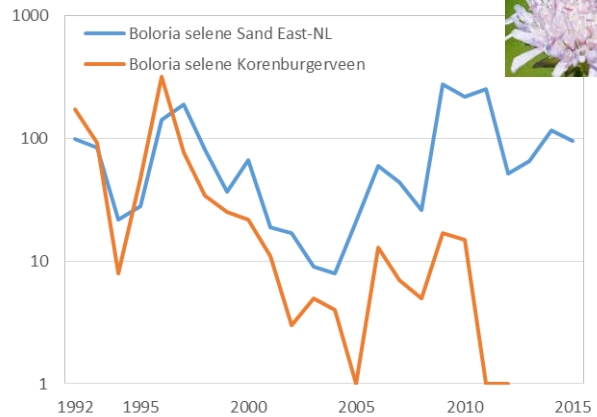
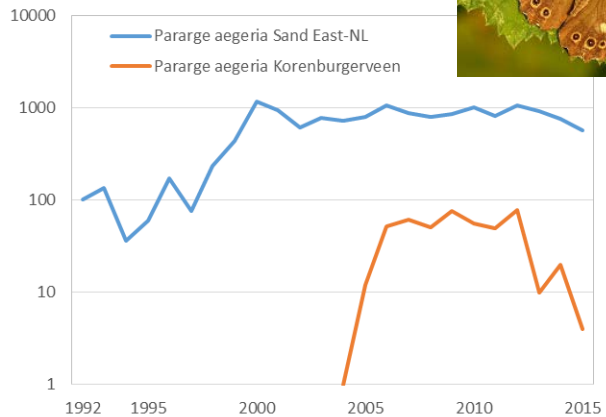
- Following strict protocol (e.g. weather)
- Almost all counted by expert volunteers
- Scientifically tested
- Everywhere in Europe the same
- Makes it possible to calculate reliable population trends



Local

- Species come and go
- Species composition (community) changes

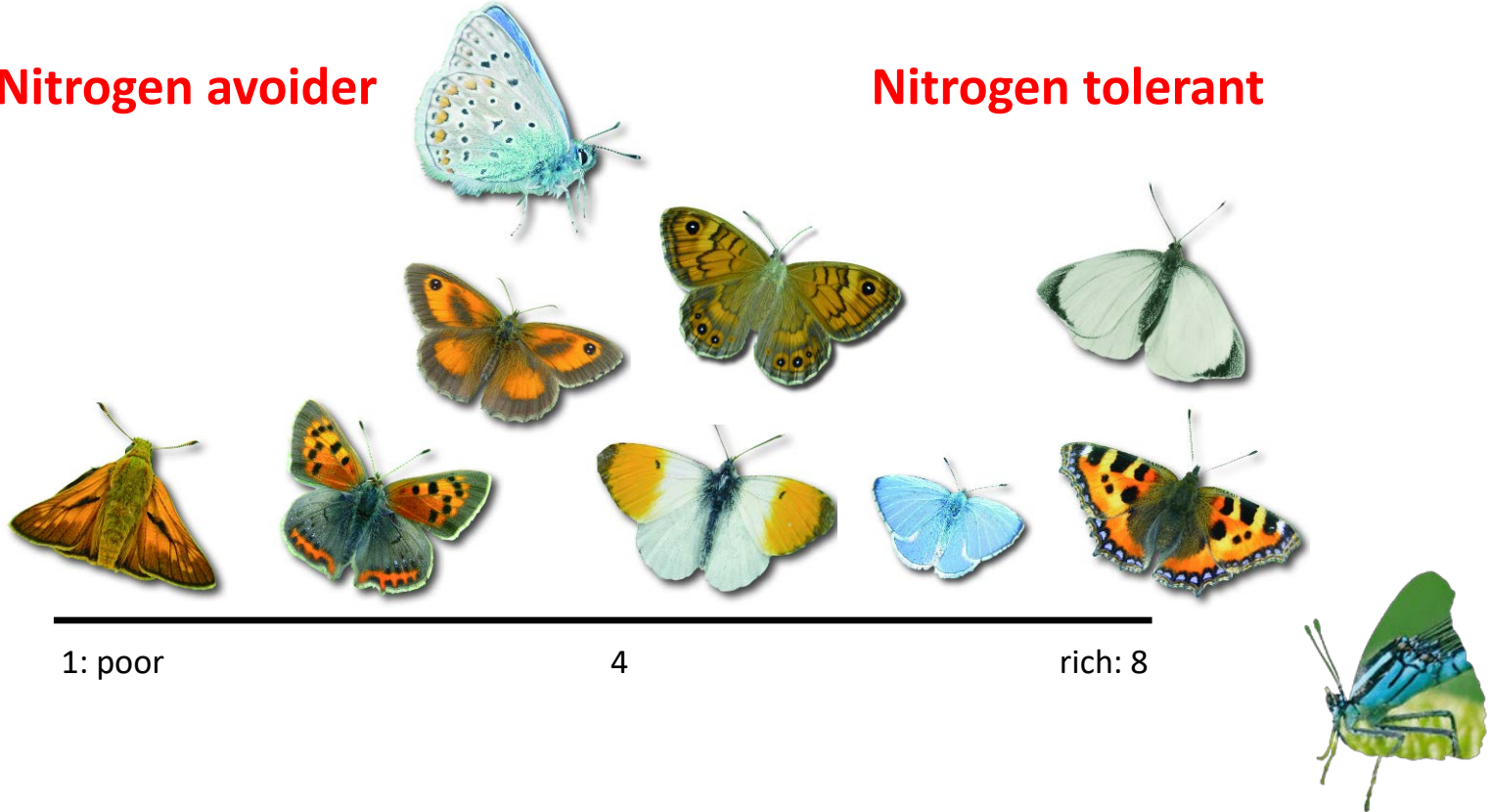




Butterflies as nitrogen indicators

Nitrogen avoider

Nitrogen tolerant

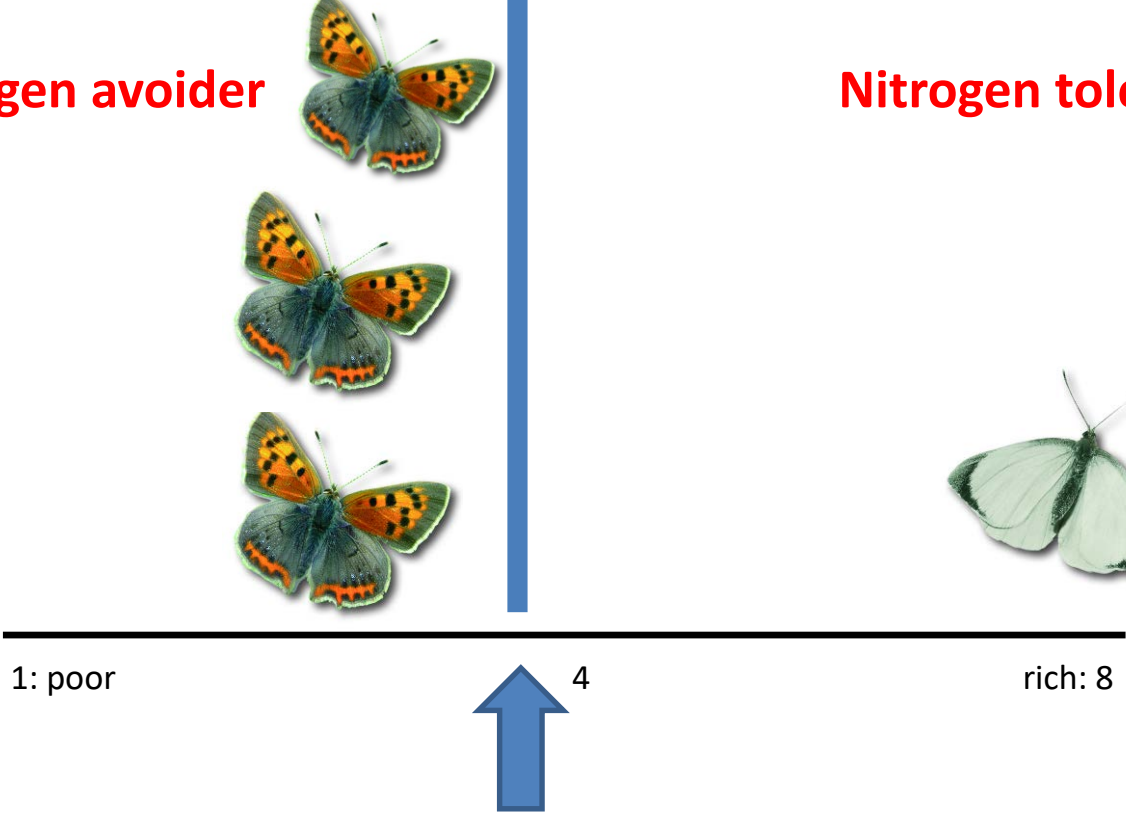


Community Indicator

Nitrogen avoider



Nitrogen tolerant



1: poor

4

rich: 8

Community Indicator

Nitrogen avoider



Nitrogen tolerant



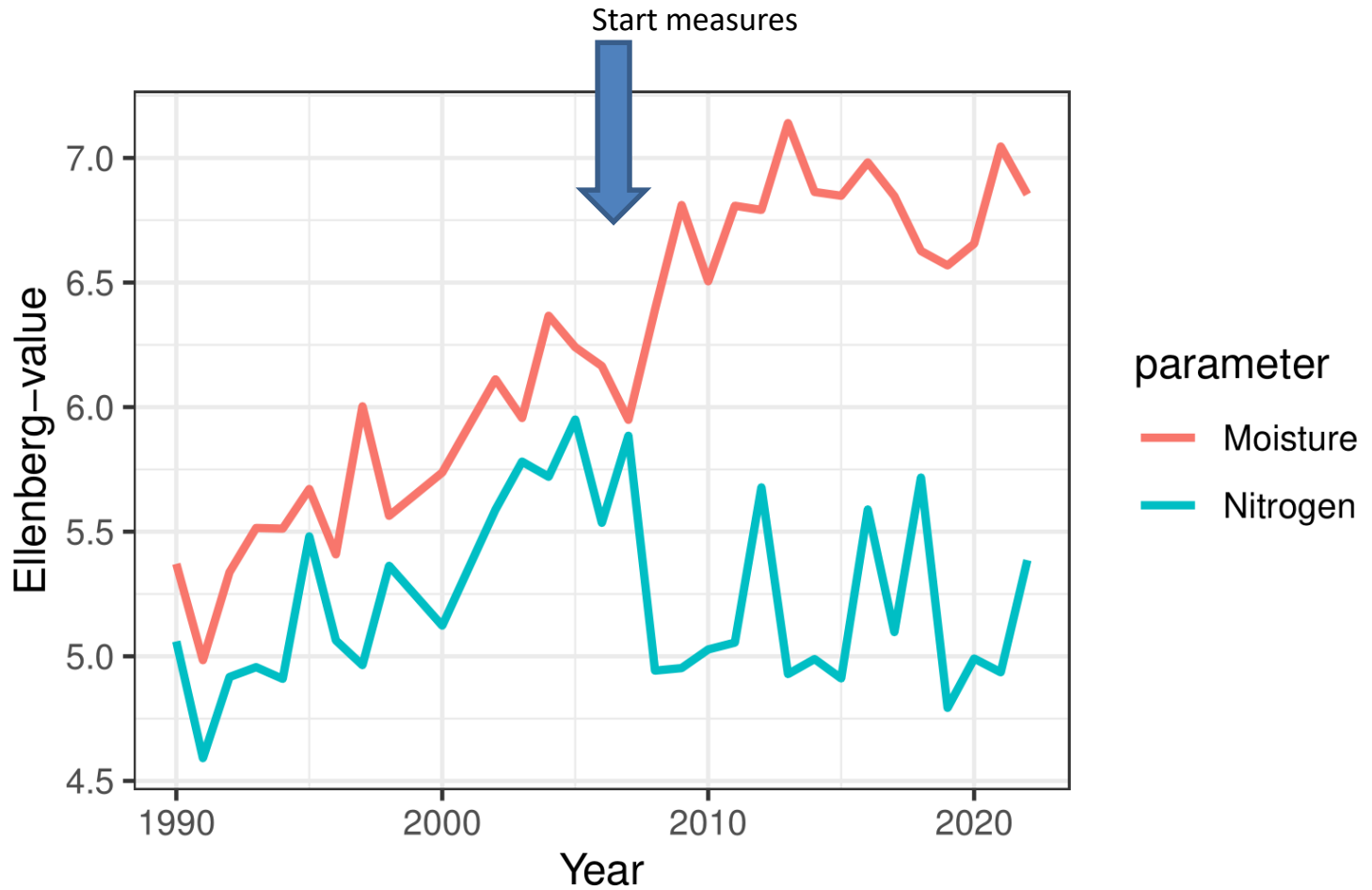
1: poor

4

rich: 8



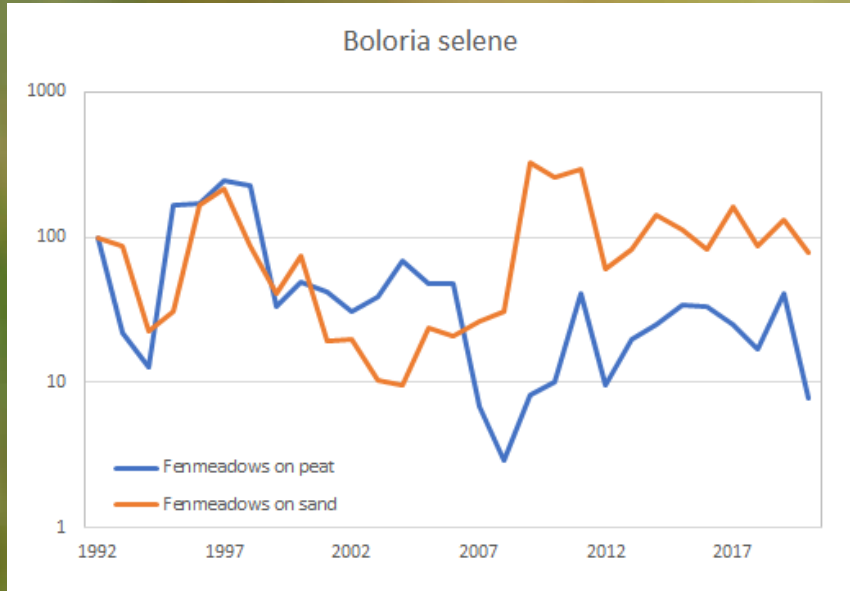




Regional

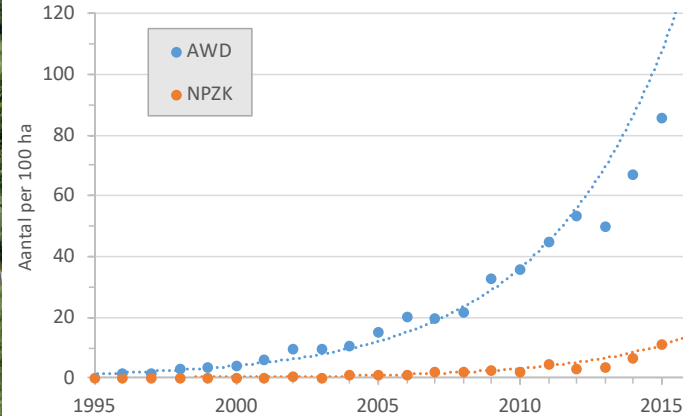
- Species show different trends in different regions, soil types, habitats, management, etc
- Species composition (community) changes

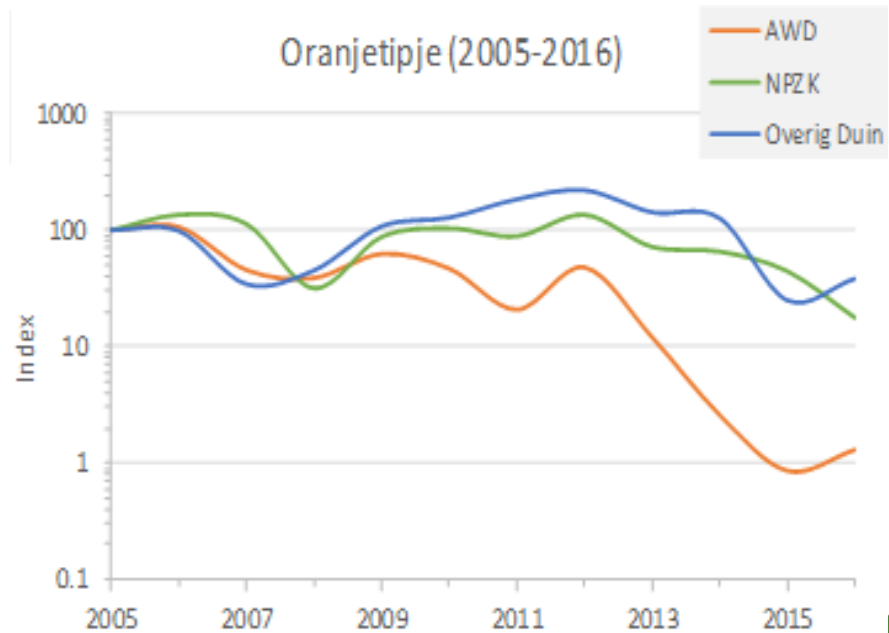




Different trend in different habitats

Overgrazing by fallow deer (Damhirsch)

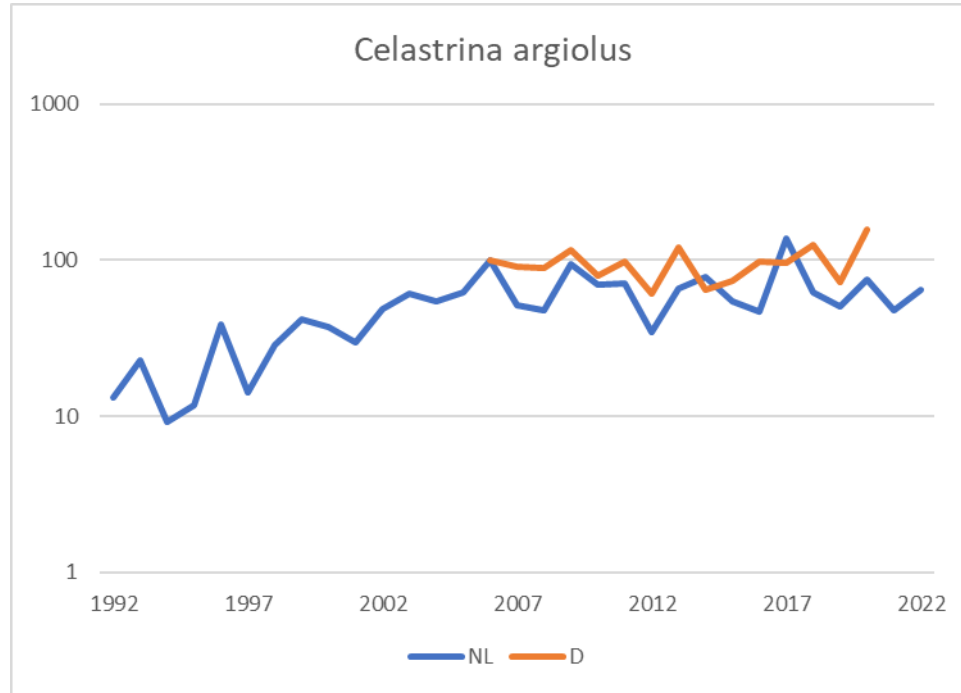




National

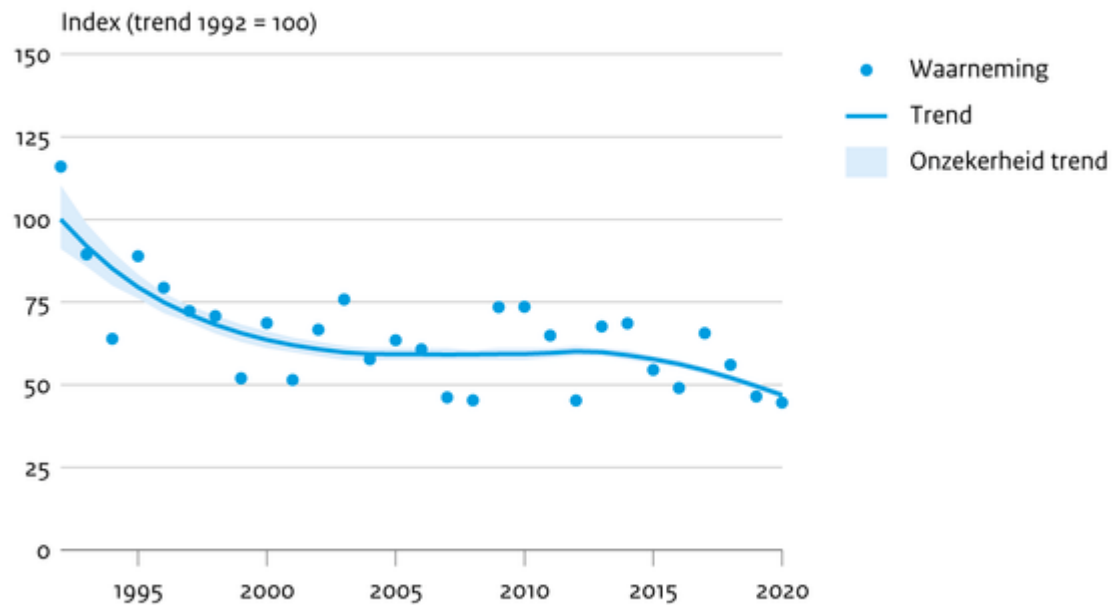
- Trends per country
- Indicators







Aantalstrend dagvlinders



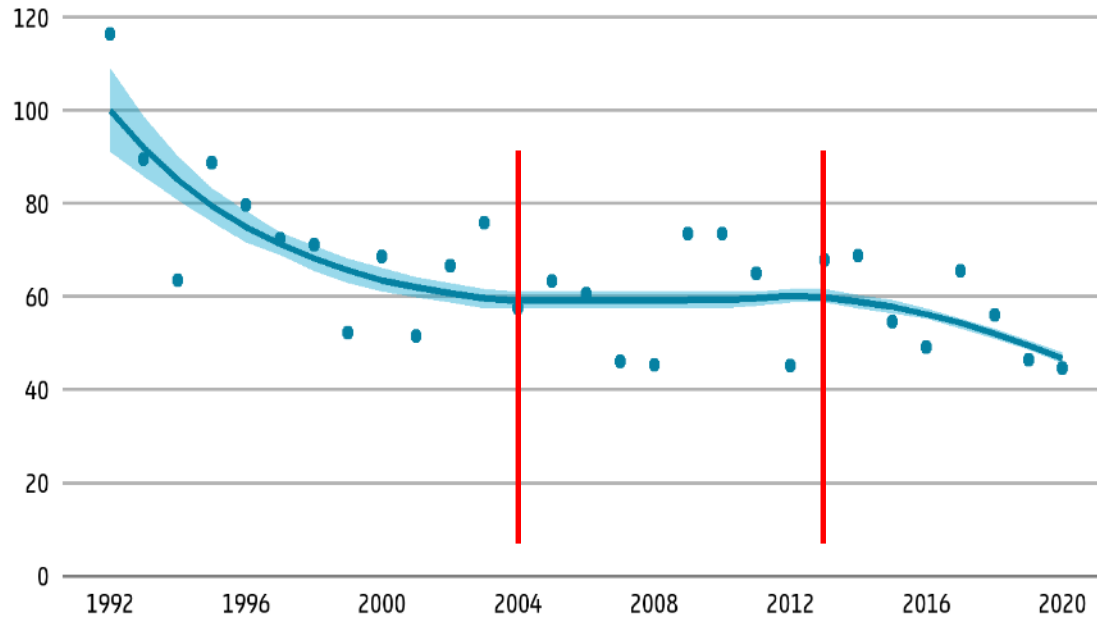
Bron: NEM (Vlinderstichting, CBS)

CBS/jun21
www.clo.nl/nl138618



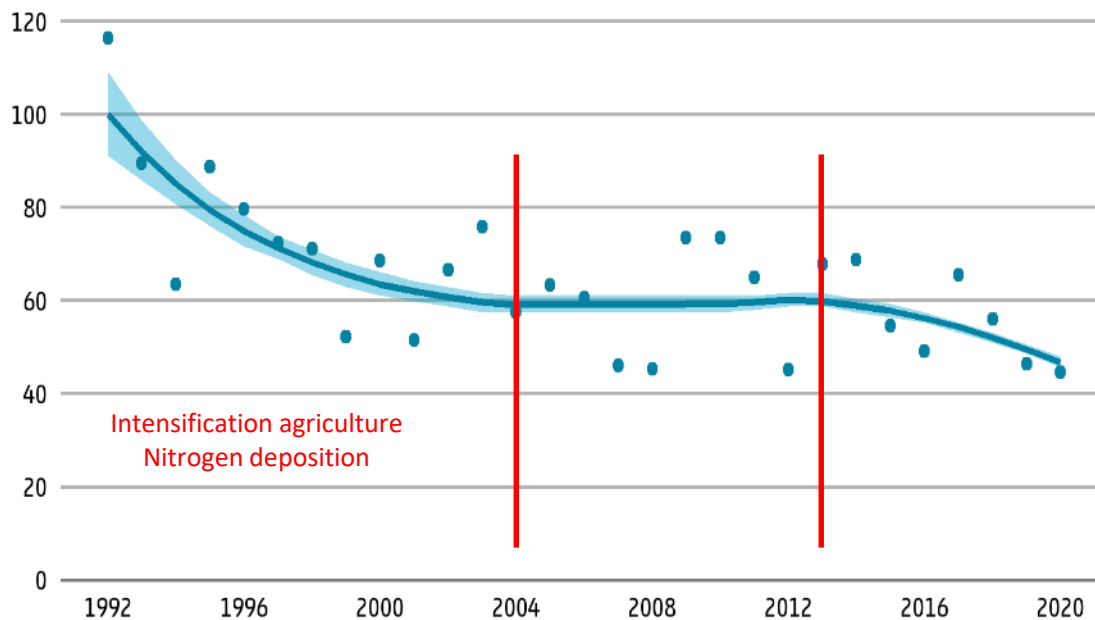
Vlinders

Index (1992=100)



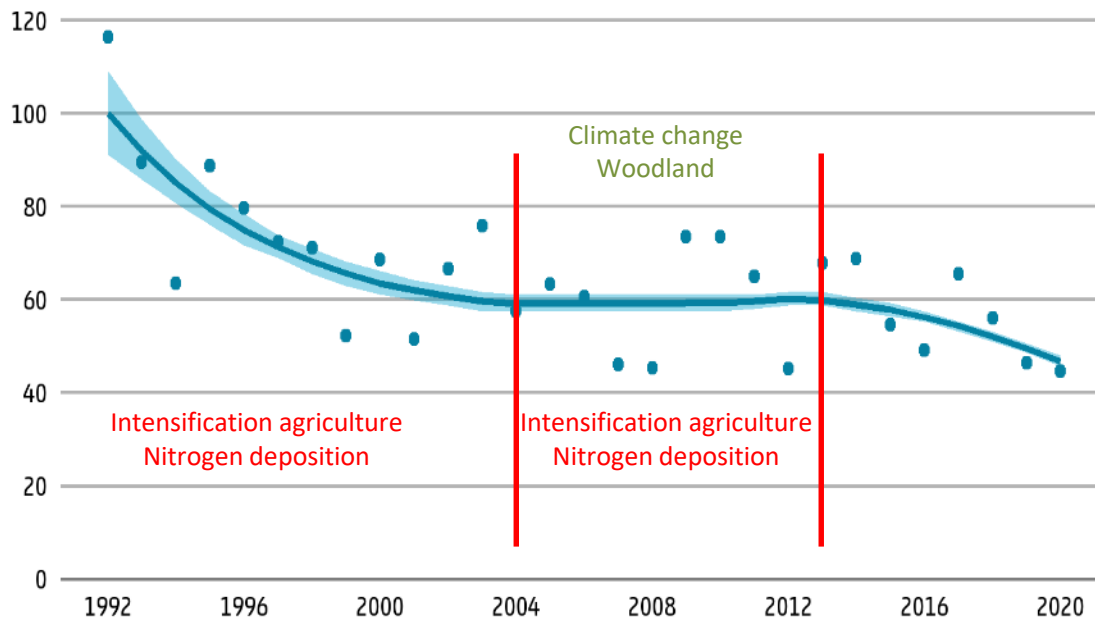
Vlinders

Index (1992=100)



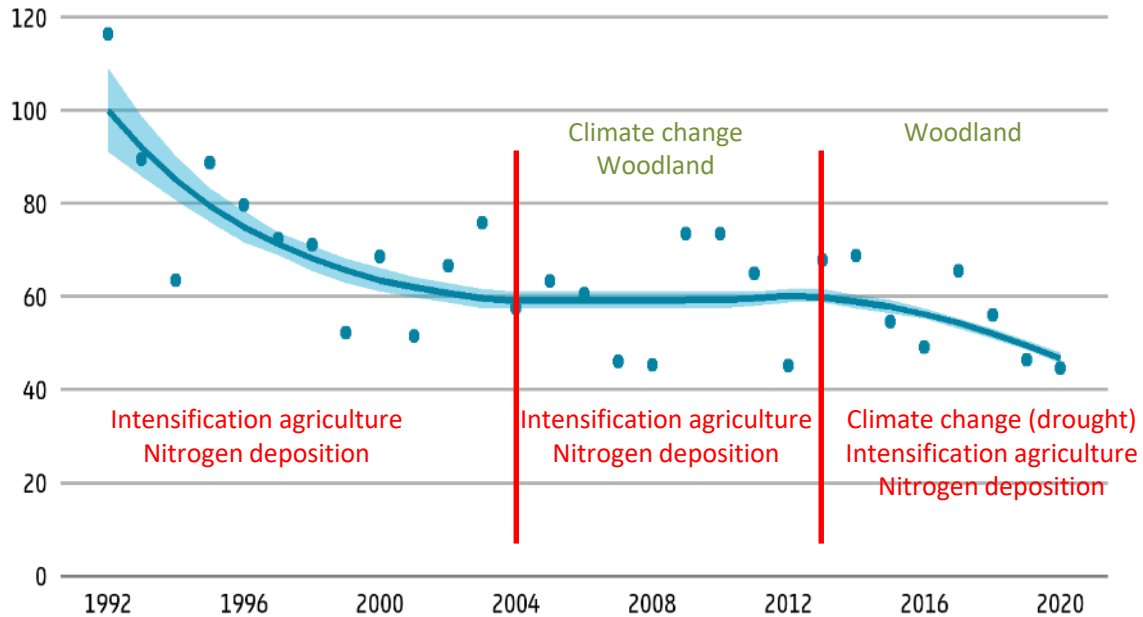
Vlinders

Index (1992=100)



Vlinders

Index (1992=100)

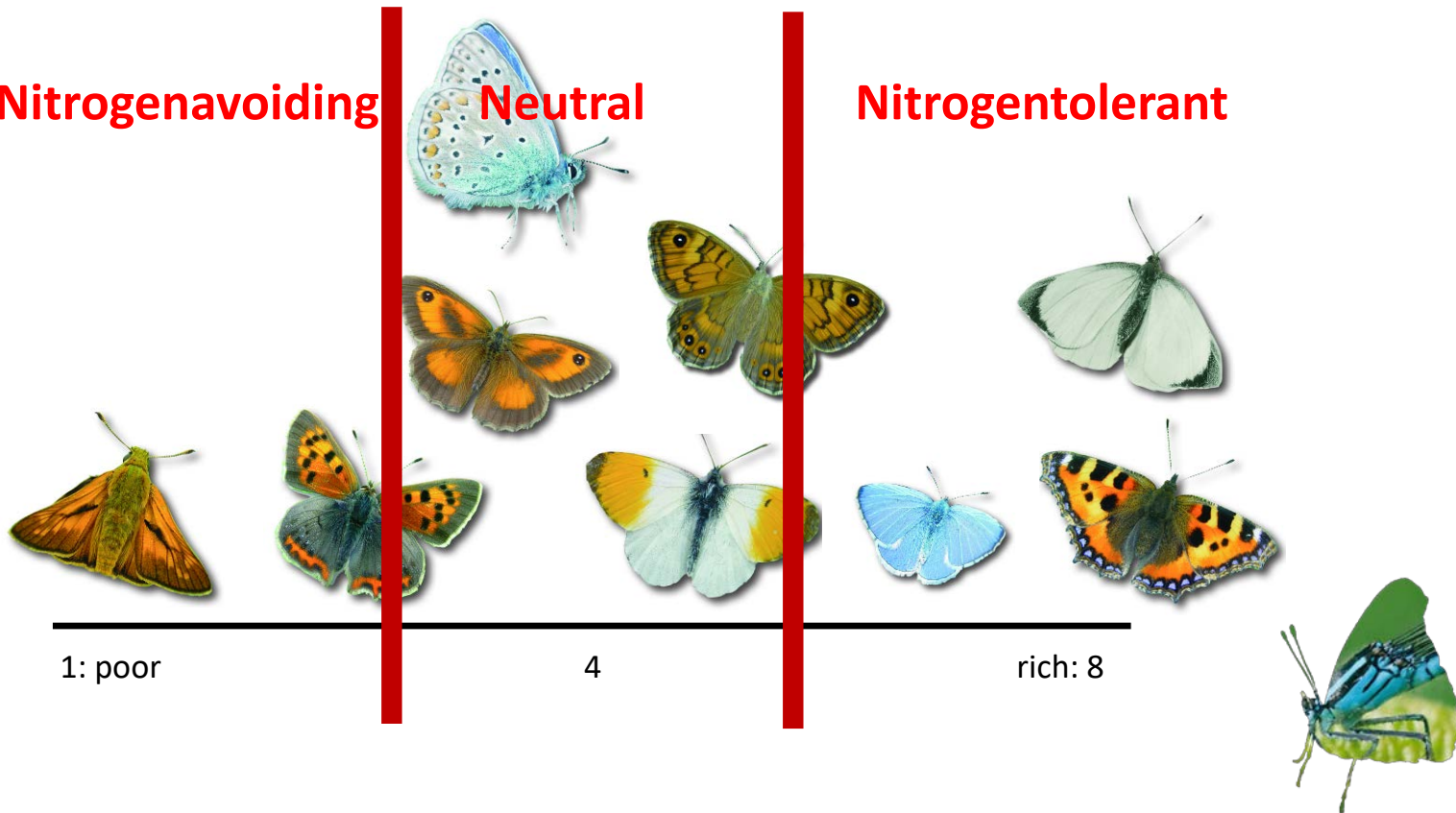


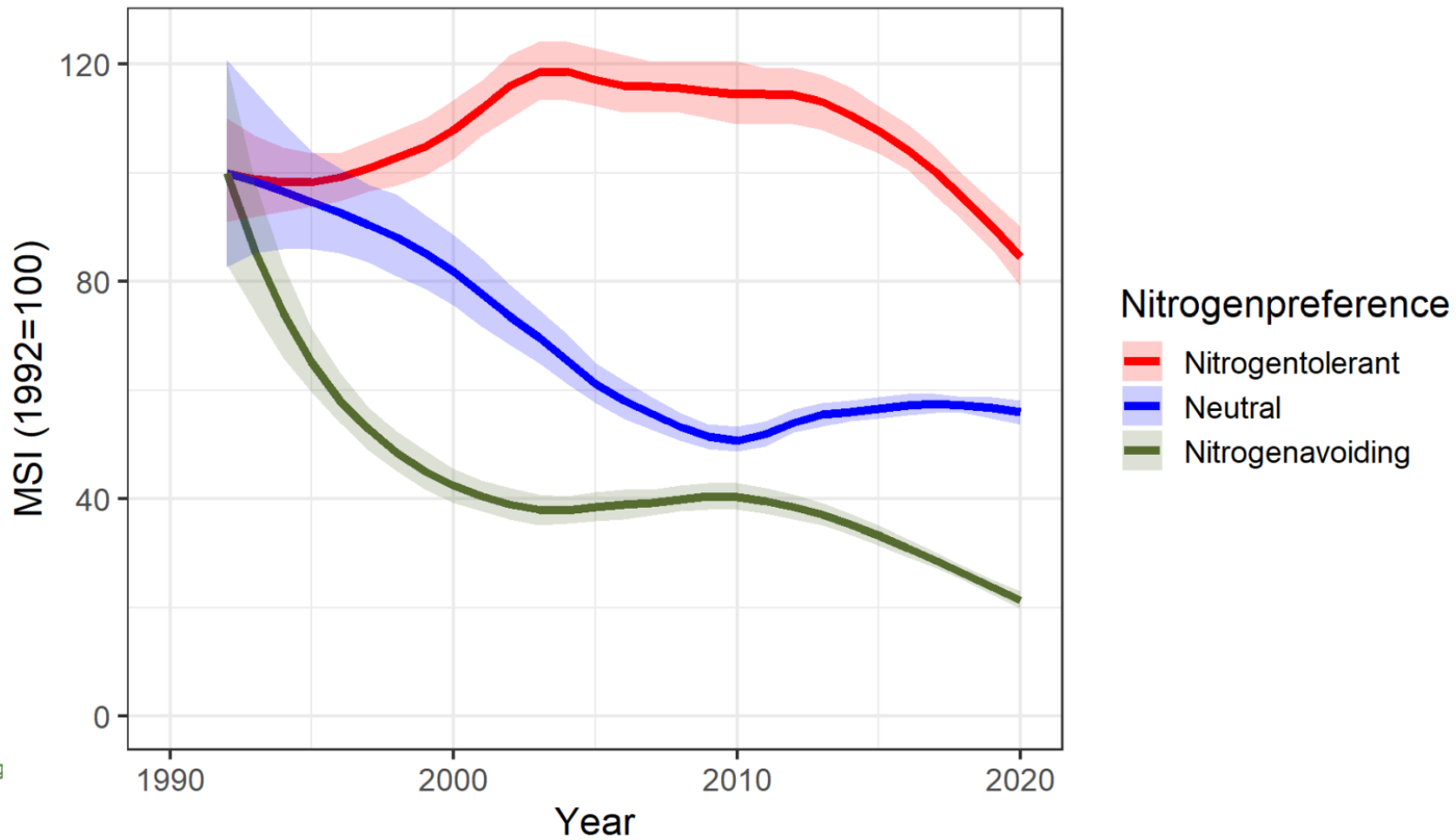
Butterflies as Nitrogen indicators

Nitrogenavoiding

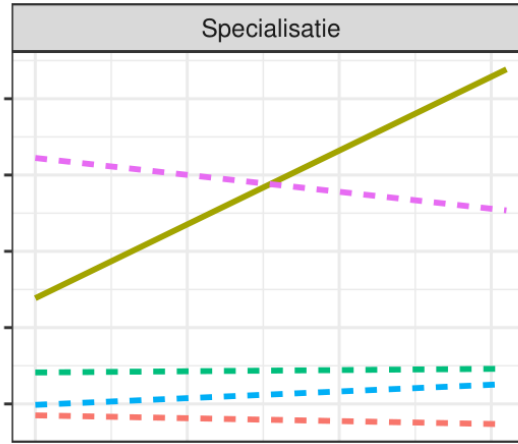
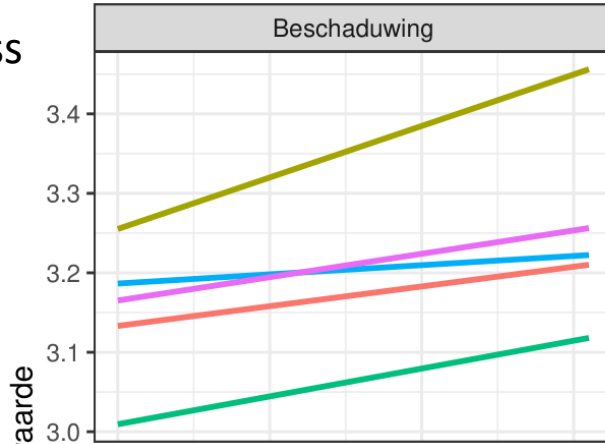
Neutral

Nitrogentolerant





Shadiness

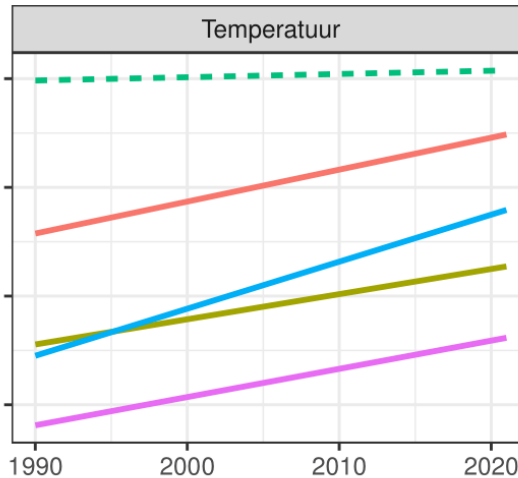
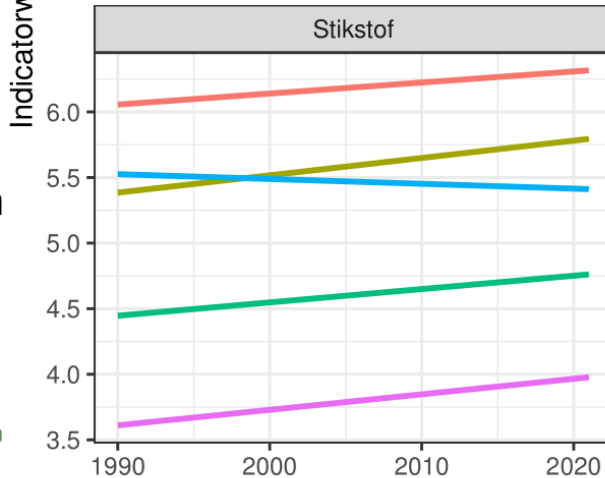


Specialisation

Habitat

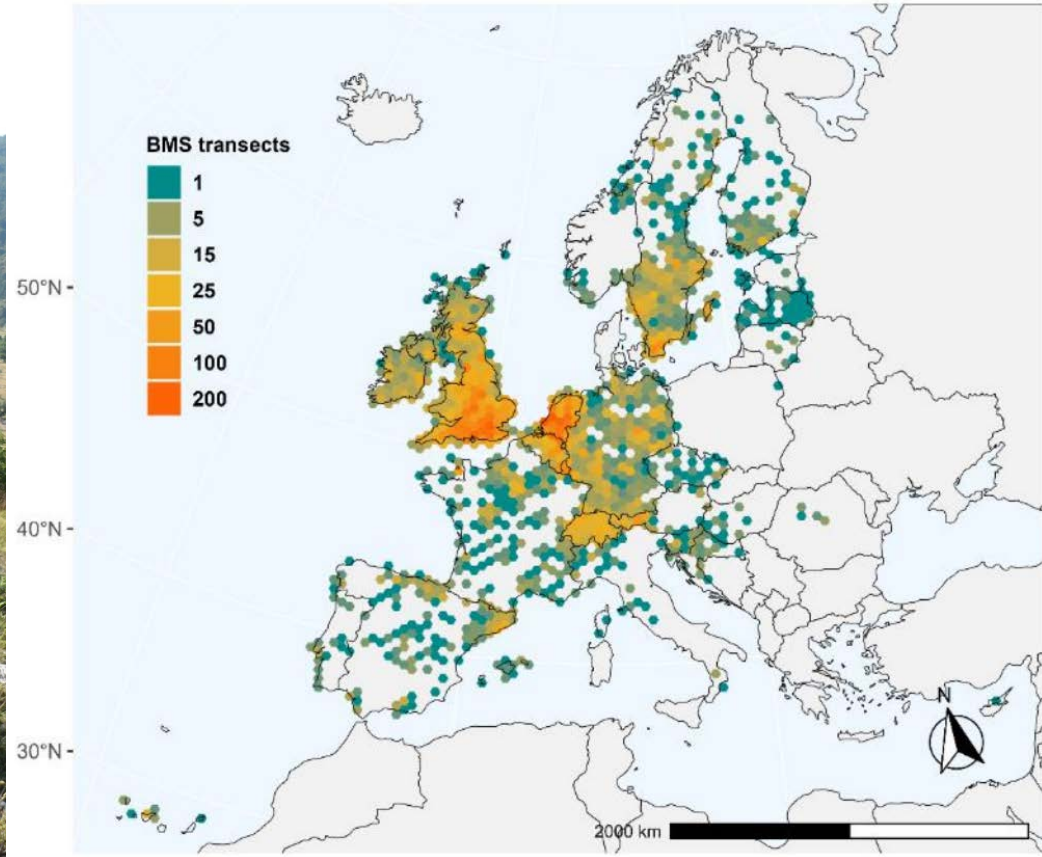
- Agriculture
- Woodland
- Coastal dunes
- Semi-natural grassland
- Heathland

Nitrogen



Temperature

Population trend: butterfly transects

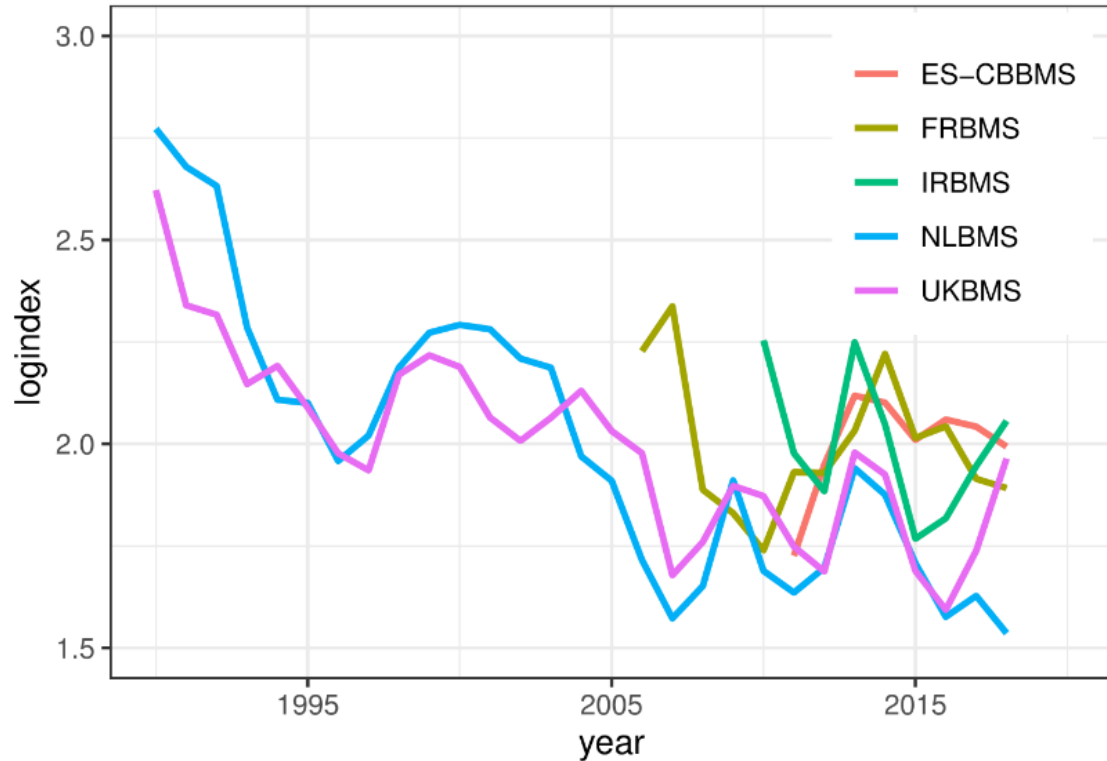


Continental

- Trends per country
- Indicators



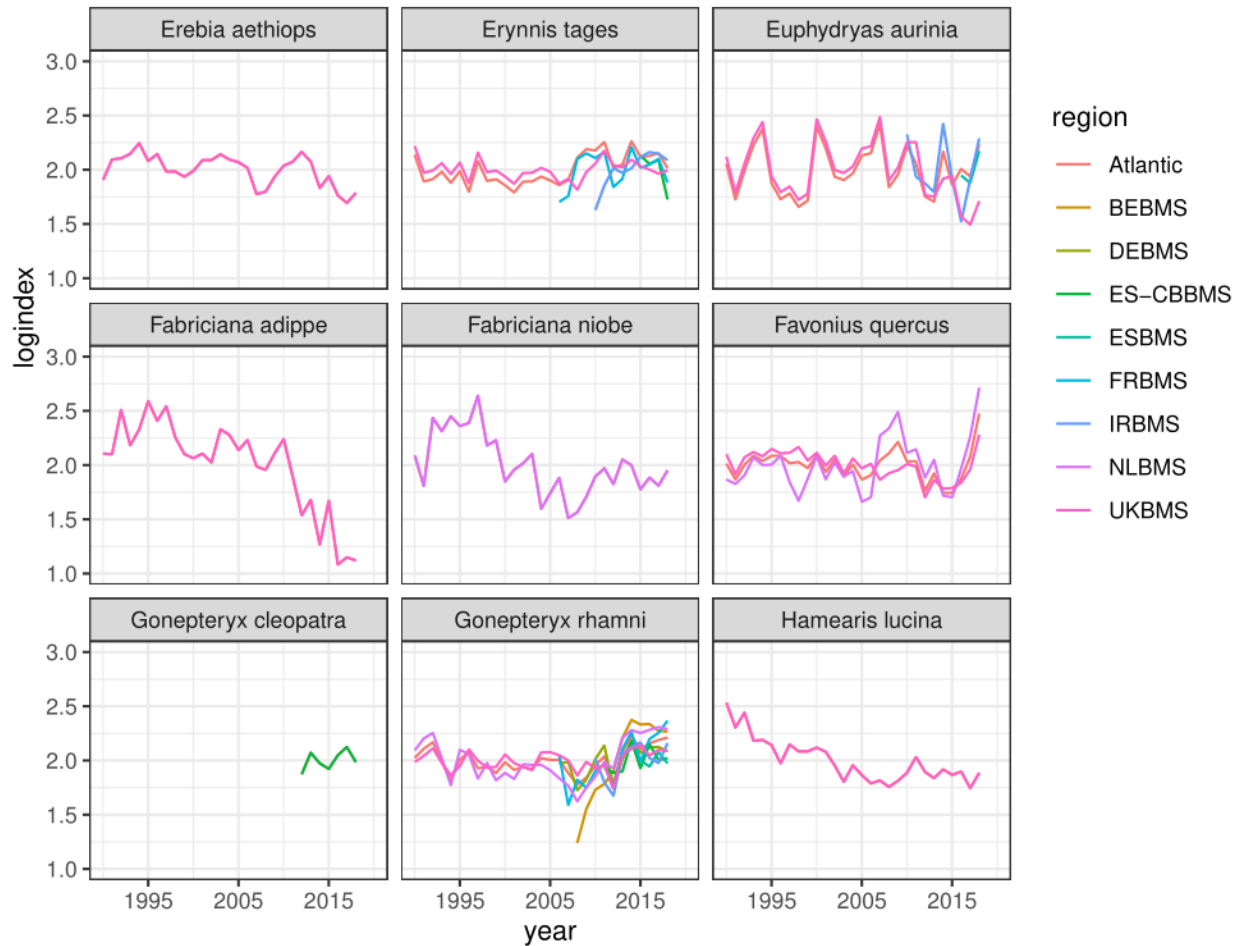
Wall (*Lasiommata megera*)



European Butterfly Monitoring Scheme (eBMS)

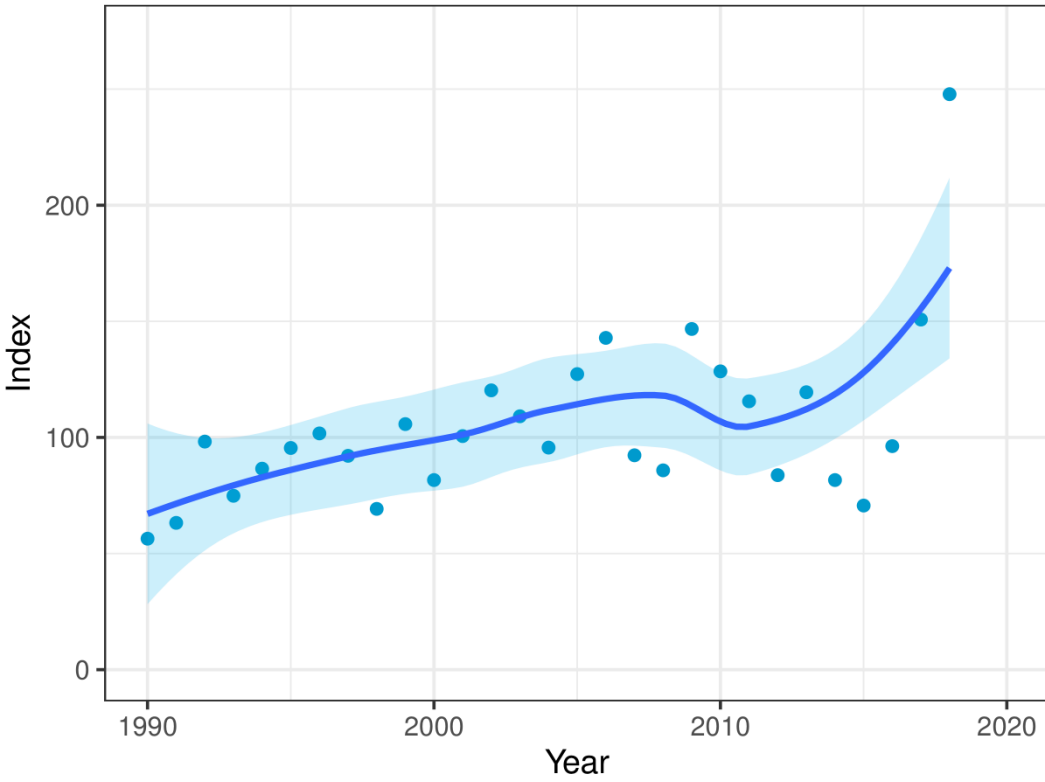
- www.butterfly-monitoring.net
- All European Butterfly Monitoring programs work together
- Data is shared to be used on a European scale
- Data freely available for science and conservation
- National analysis and publications always by national partner





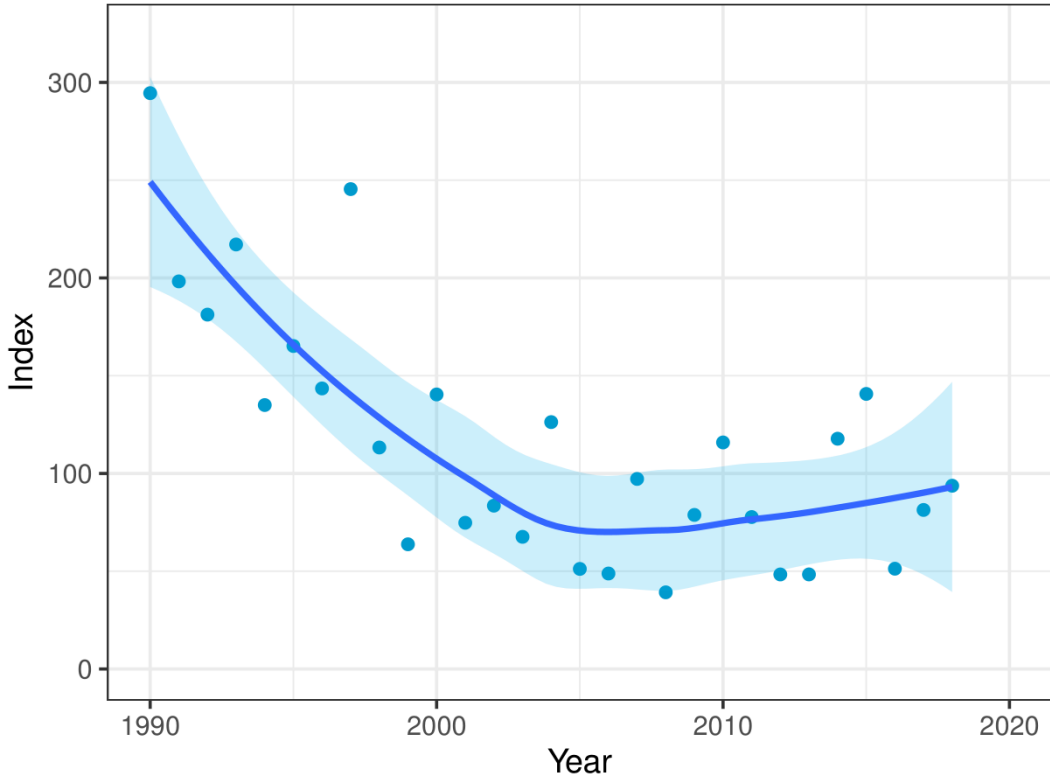
Species increasing

Argynnis paphia



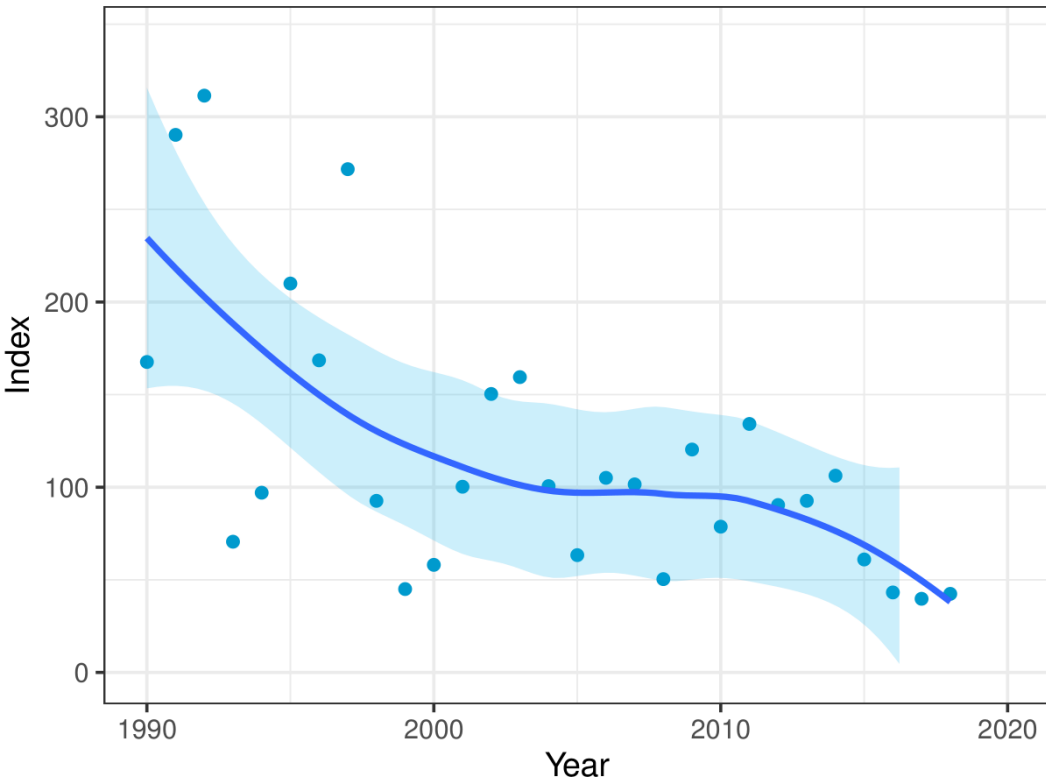
Species declining

Boloria euphrosyne



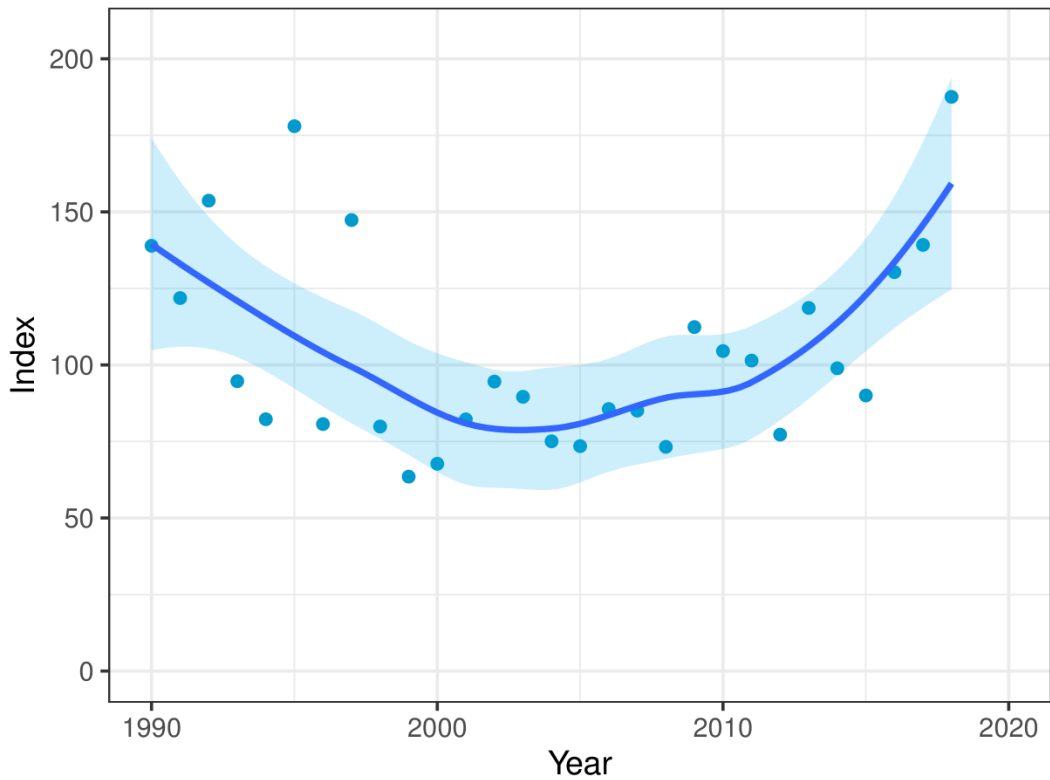
Species declining

Aglais urticae



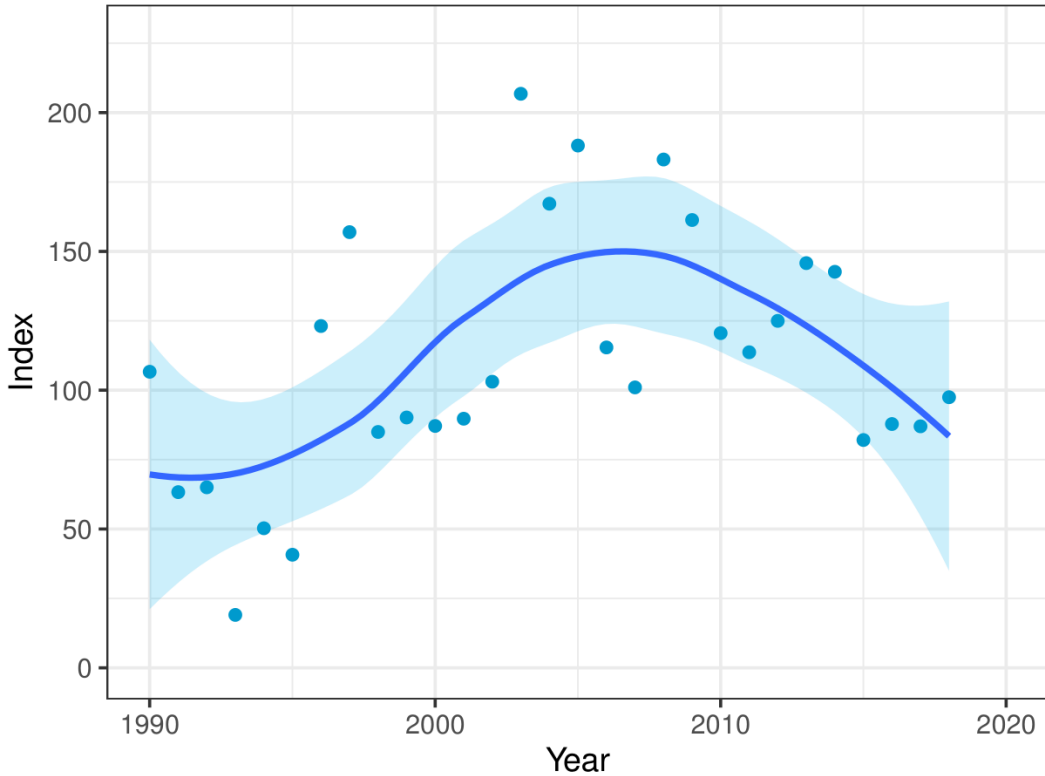
Mixed trends

Issoria lathonia

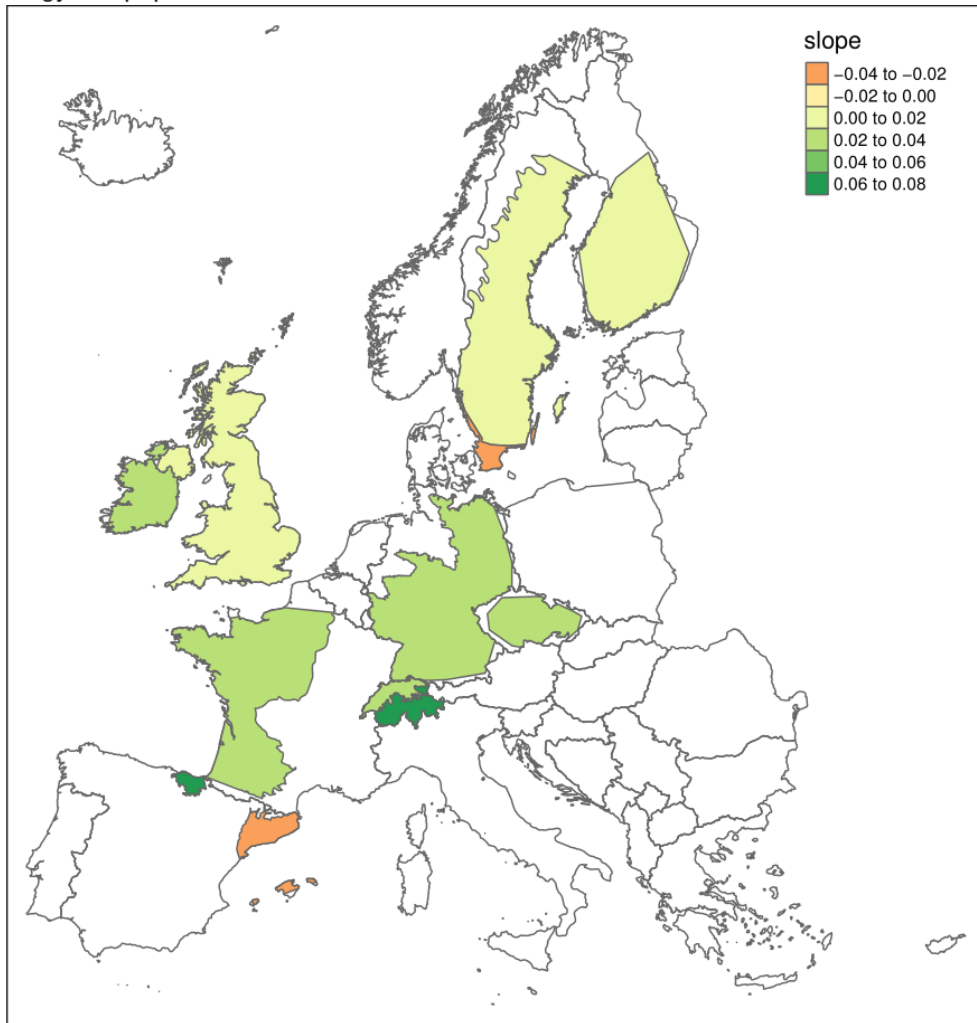


Mixed trends

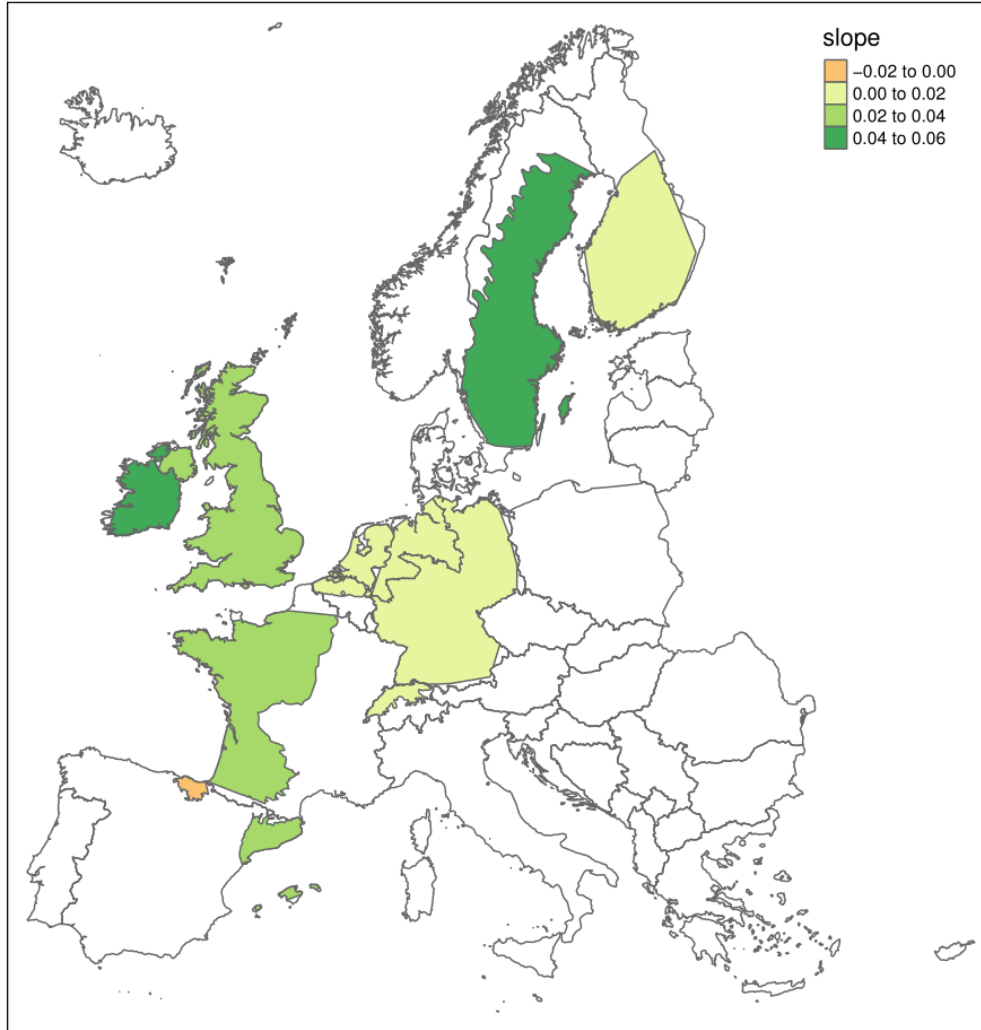
Lysandra bellargus



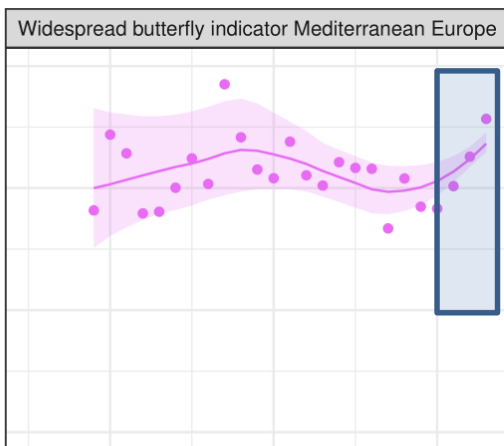
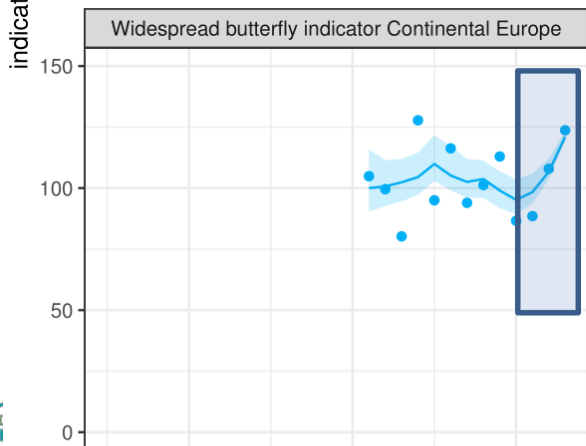
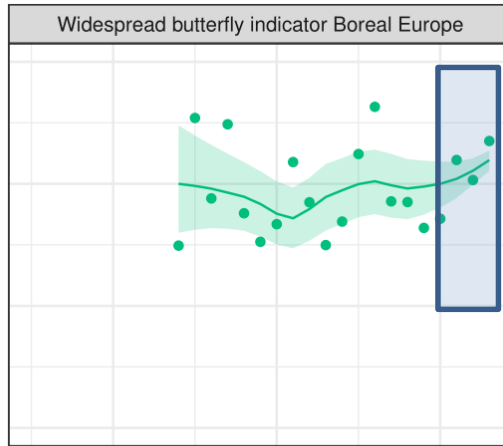
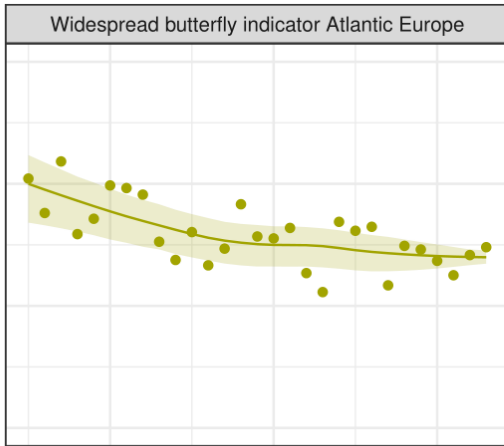
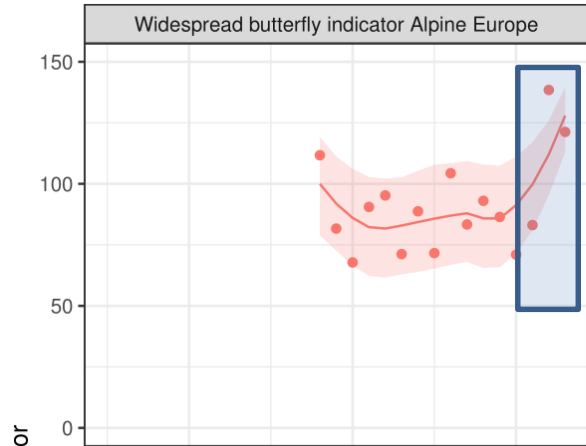
Argynnis paphia 2009–2018

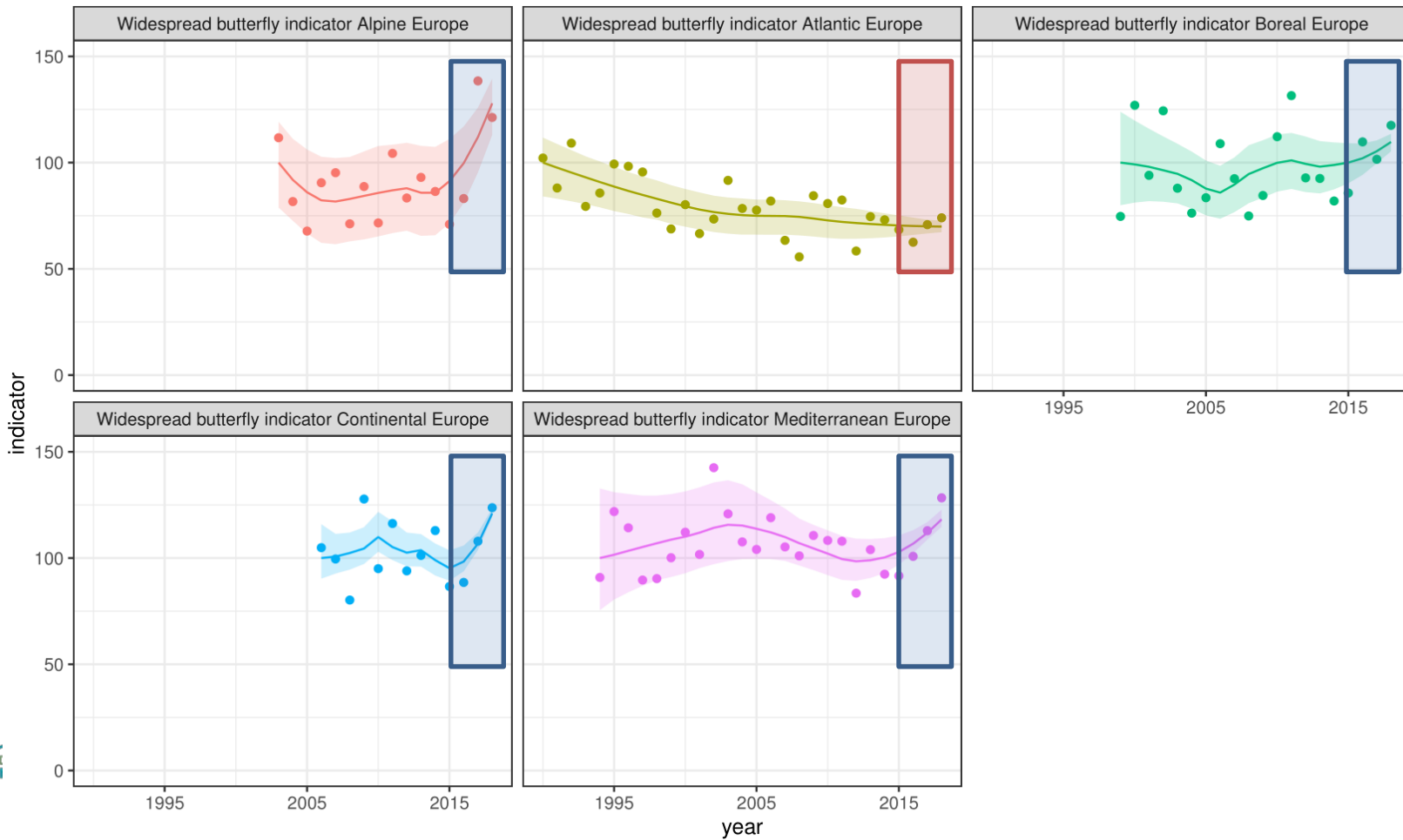


Celastrina argiolus 2009–2018







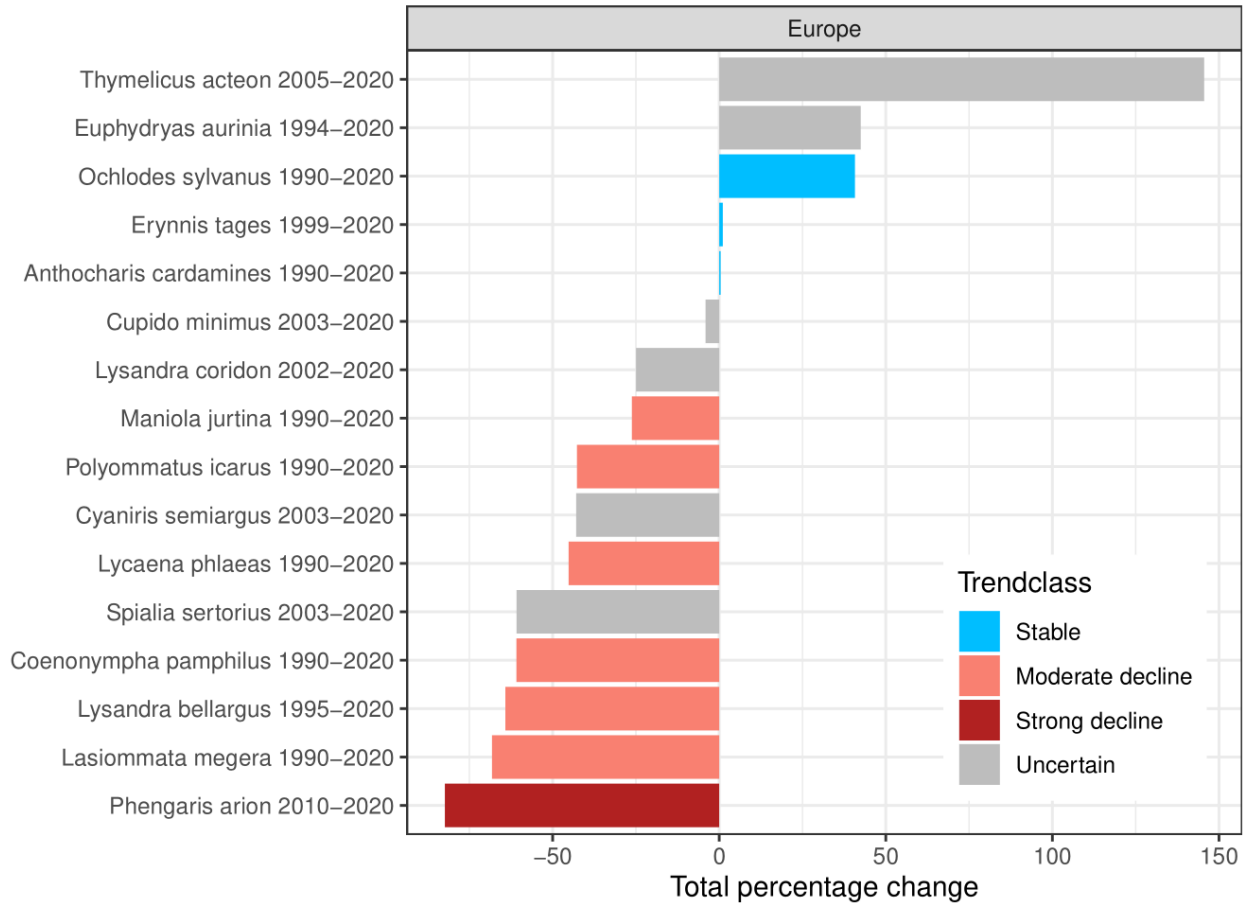


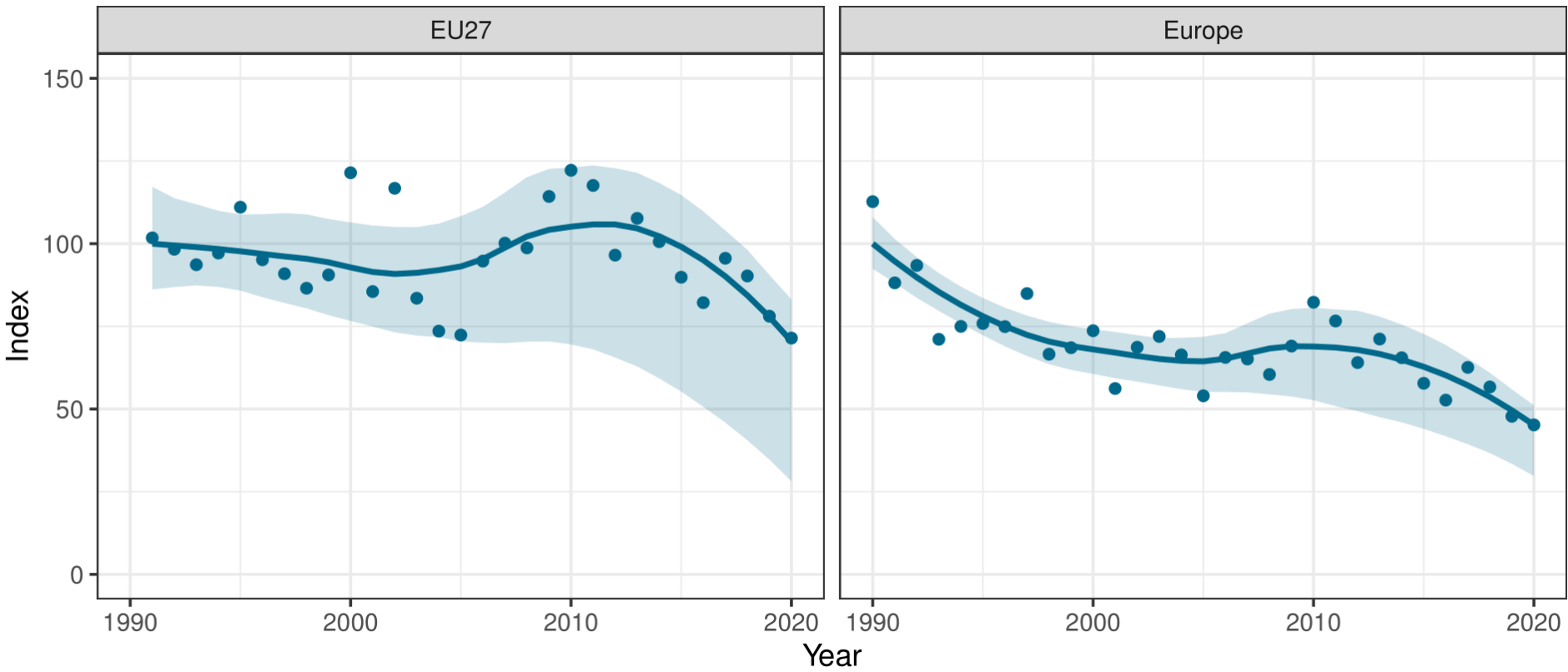
European Grassland Butterfly Indicator



- Oldest butterfly indicator: since 2005
- 17 characteristic grassland butterflies
- Both specialist and widespread species







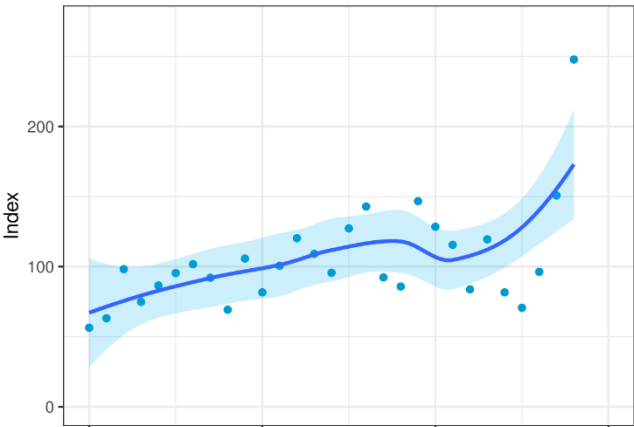


Woodland Butterfly Indicator

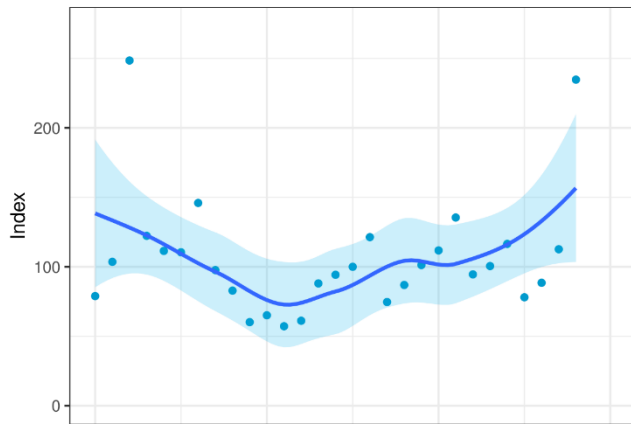
- 67 species occurring more in woodland than in any other habitat (Van Swaay et al., 2006)



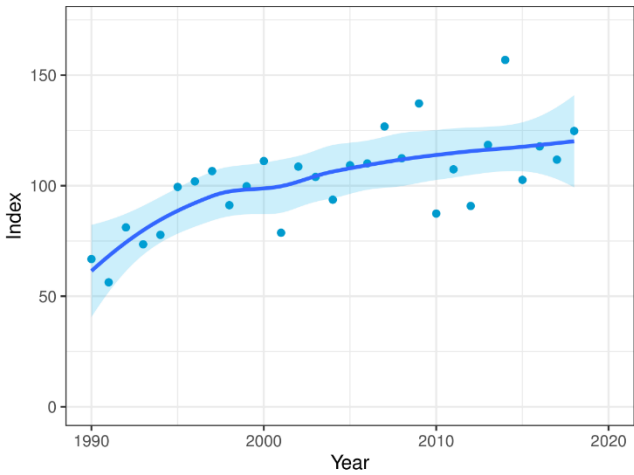
Argynnis paphia



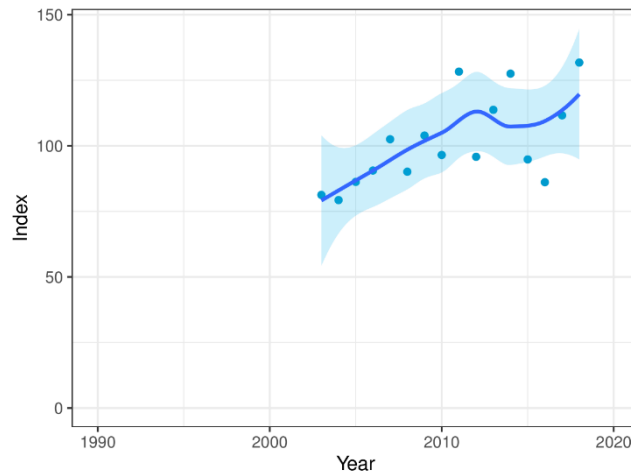
Limenitis camilla

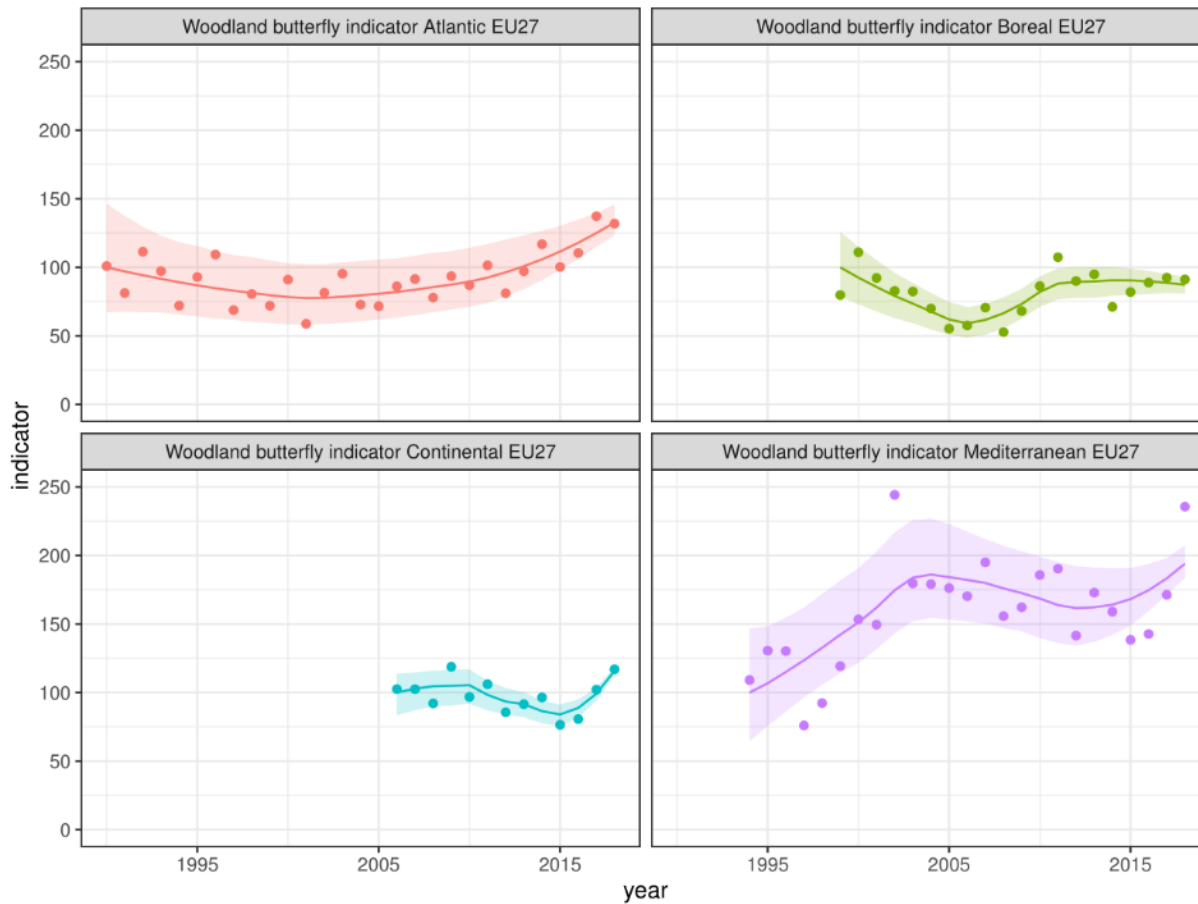


Pararge aegeria



Apatura iris





Global

- To a global butterfly indicator



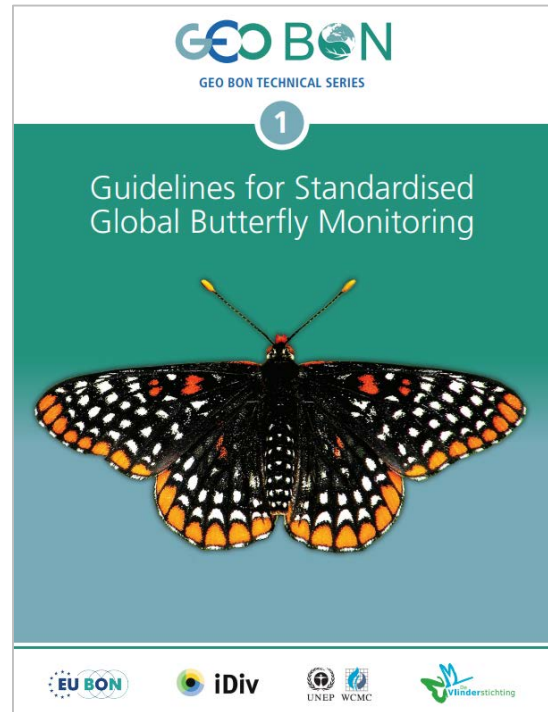




Figure 6: Step-by-step illustration of setting up and checking a fruit bait trap (Pereira et al., 2014)

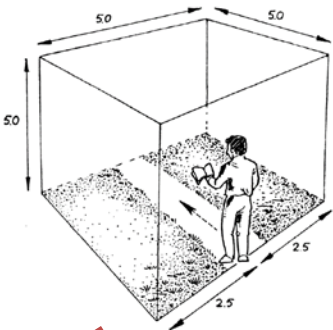


Global Butterfly Monitoring

- Two main protocols:
 - Transect counts (Pollard walks), almost everywhere
 - Fruit baiting (esp. (sub)tropical forests)
- Alternative protocols, e.g.
 - 15 minute counts
 - Urban garden monitoring
 - Point observations with time limit, eg. hill-topping
 - Other life stages, e.g. eggs or larvae



Field counts



Into a database

Waarnemingen

Grebbedijk Wageningen (1827), 2021-07-19 12:48 - 13:15 (0:27)

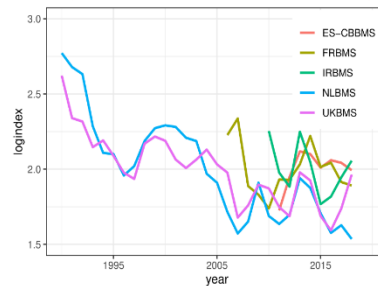
Widderoort: 1
Bewaking: 6
Temo: 20

☑️ Dagvlinderstelling (repositie)

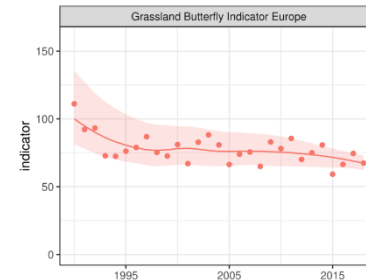
Sectie

	1	2	3	4	5	6	7	8
afkomst								
soort zandgrond			1				1	1
soort klei								
soort grasland	1			1	3	2	4	3
soort zandgrond	1	17	8	11	25	15	8	18
soort veld								
doggerwoning	1					1		

Get speciestrends per region



Build indicators



Collect data via app



Analyse

Package 'rtrim'

April 21, 2020

Version 2.1.1

Date 2020-04-19

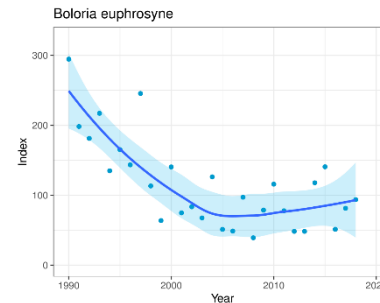
Title Trends and Indices for Monitoring Data

Description The TRIM model is widely used for estimating growth and decline of animal populations based on (possibly sparsely available) count data. The current package is a reimplementation of the original TRIM software developed at Statistics Netherlands by Jeroen Pannekoek. See <https://www.cbs.nl/en-gb/society/nature-and-environment/indices-and-trends%24%2dtrim%24%2d> for more information about TRIM.

A home for the latest rbms R package

retoschmucki.github.io/rbms/

Get European speciestrends



Butterfly population monitoring

- Great fun!
- Learns you all about the butterflies on your patch
- Species trends
- Can be used at regional, national, EU/European and global scale
- Combining multiple species produces indicators
- Evidence-based conservation is built on good data



Chris van Swaay

chris.vanswaay@vlinderstichting.nl

De Vlinderstichting

Mennonietenweg 10

Postbus 506

6700 AM Wageningen

info@vlinderstichting

www.vlinderstichting.nl

