

European Butterfly Monitoring Schemes: capacity building and cost effectiveness



Cristina G. Sevilleja

Dutch Butterfly Conservation (*Vlinderstichting*) &
Butterfly Conservation Europe



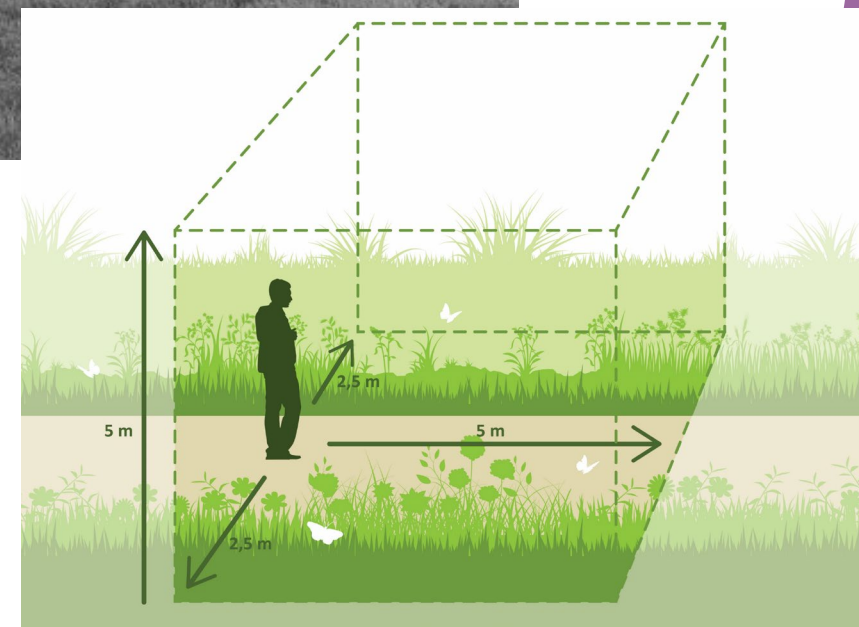
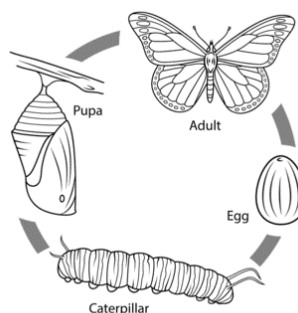
Monitoring method: BMS

- First **Butterfly Monitoring Scheme (BMS)** since 1976 in the United Kingdom
- Nowadays all EU MSs with BMS
- BMS as a monitoring system: based on citizen scientists + expert coordination

Trained volunteers:
experts over time

Butterflies as indicators

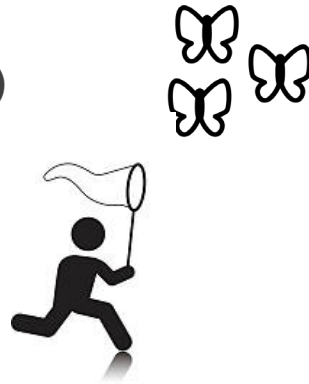
- **Short life** with several stages and some species habitat-specific
- **Respond rapidly** to changes in habitat condition and climate
- Well documented (biology, ecology, distr. 50 years monitoring methods)
- **Easy to observe** and train on identification
- Great popularity in society = involve **citizen science**



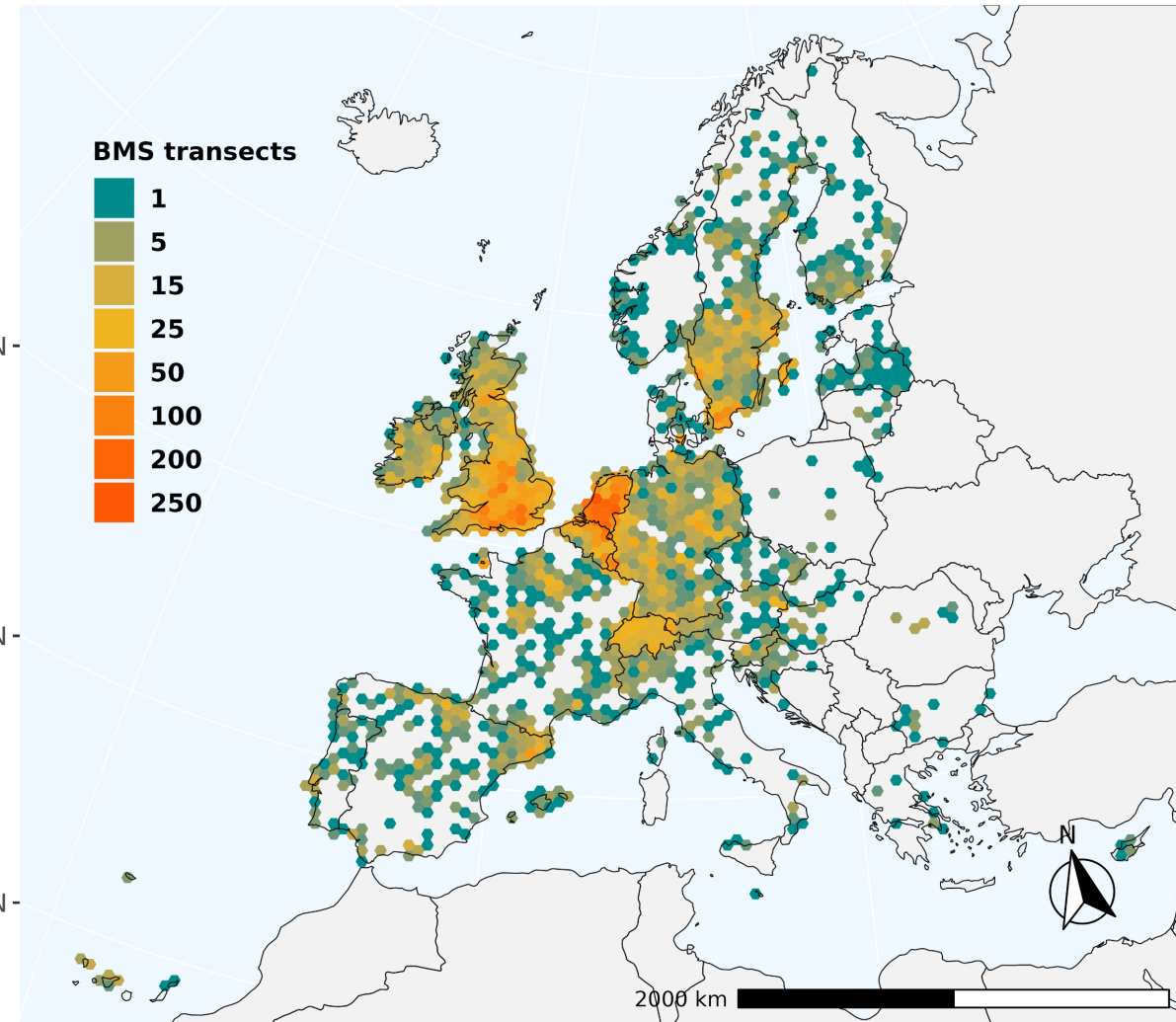
eBMS central database

European database in numbers (1990 - 2023)

- ~10,000 volunteers
- 18 million counts
- **34 BMS** in 30 countries (Europe)
- 1,3 million visits
- 15,149 transects
- 49,418 km monitored
- **353** registered butterfly species

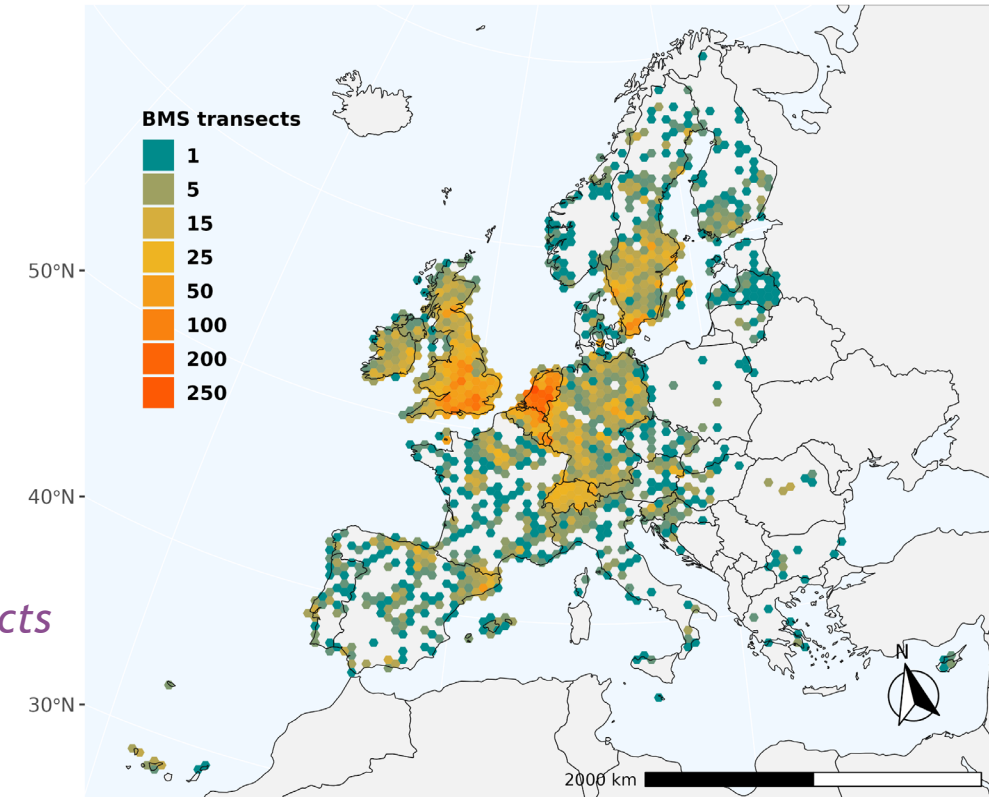
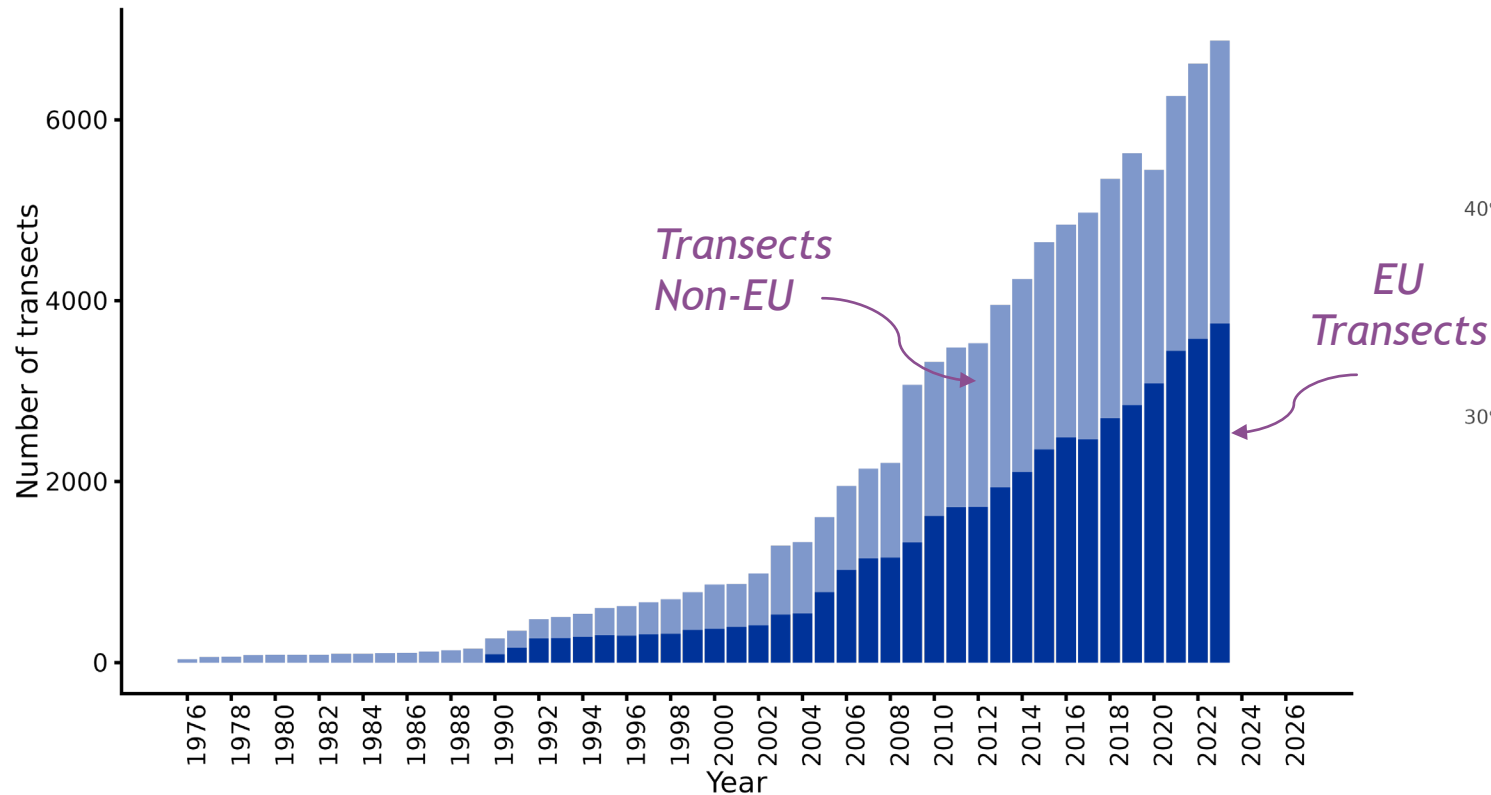


Biggest systematic
database of insects
in the world



eBMS database + network

- BMS growing fast across Europe
- Same methodology: comparison between countries/schemes



eBMS growth in the EU 2018-2024

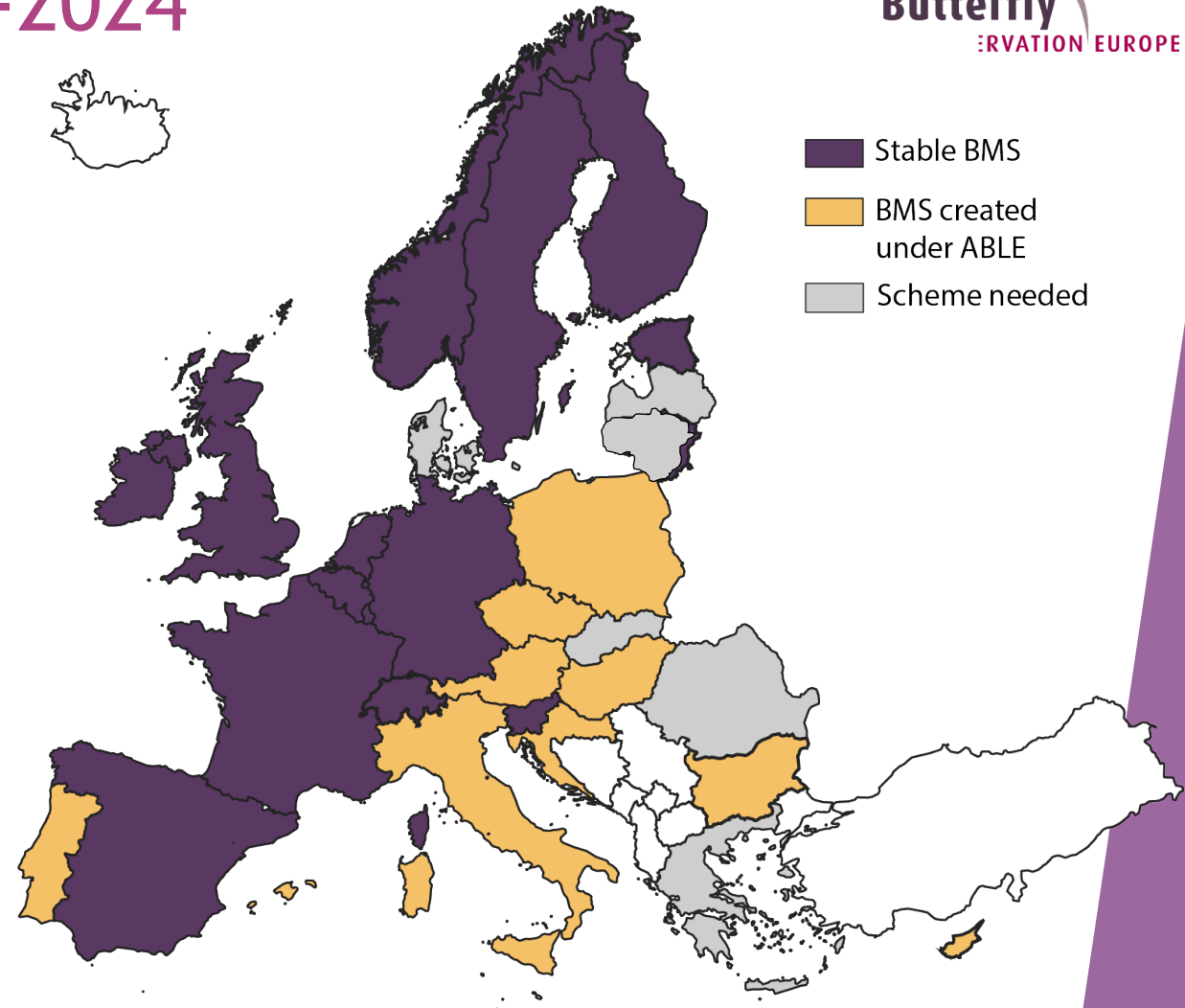
ABLE BMSs created – Fledging schemes:

- | | |
|-------------|-------------------|
| 1. Italy | 6. Czech Republic |
| 2. Portugal | 7. Croatia |
| 3. Hungary | 8. Malta |
| 4. Cyprus | 9. Bulgaria |
| 5. Austria | 10. Poland |



Focus countries on SPRING:

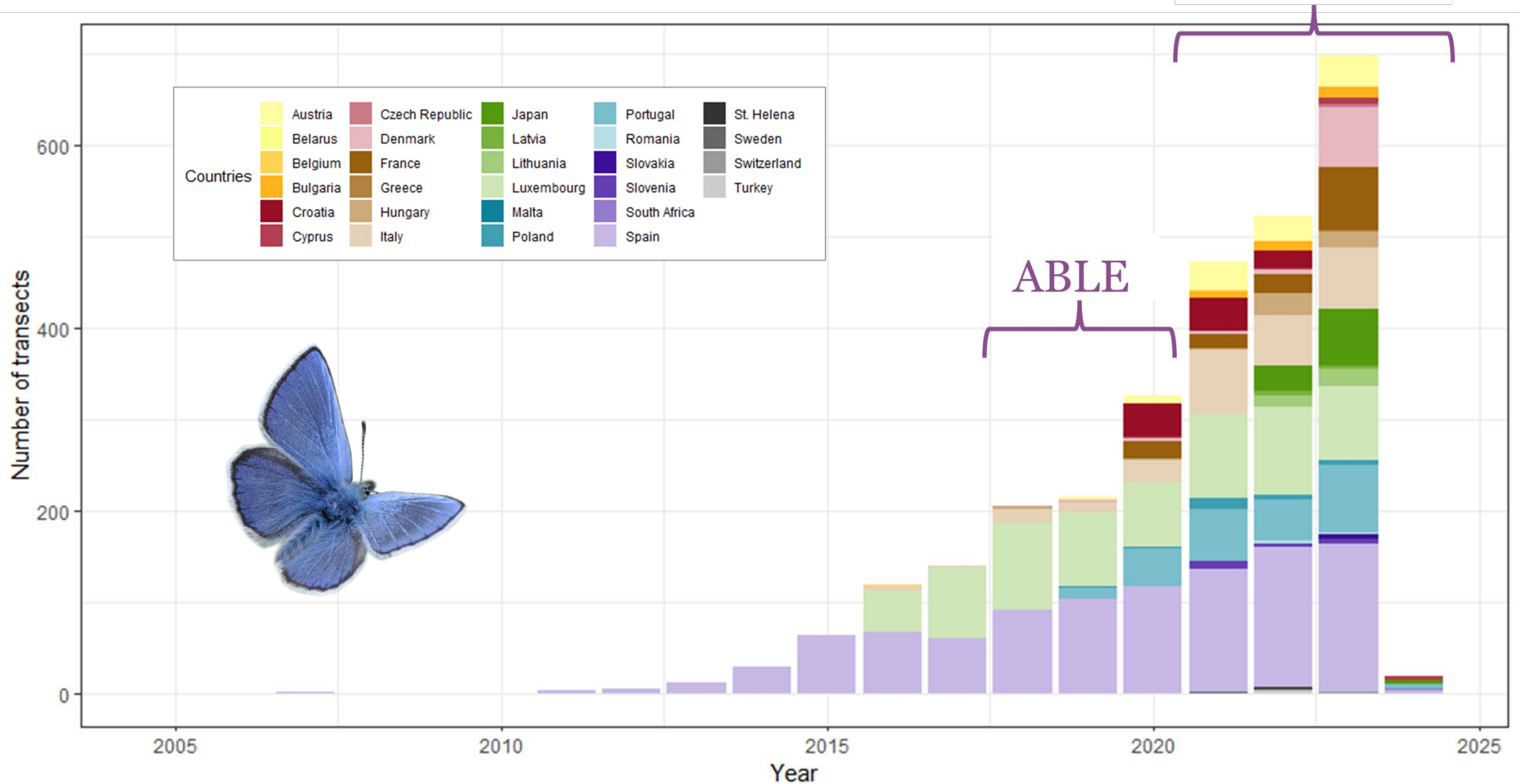
- | | |
|--------------|-------------|
| 1. Denmark | 4. Slovakia |
| 2. Lithuania | 5. Romania |
| 3. Latvia | 6. Greece |



EU funded
projects

eBMS growth in the EU 2018-2024

Active transects on eBMS website until January 2024: new schemes

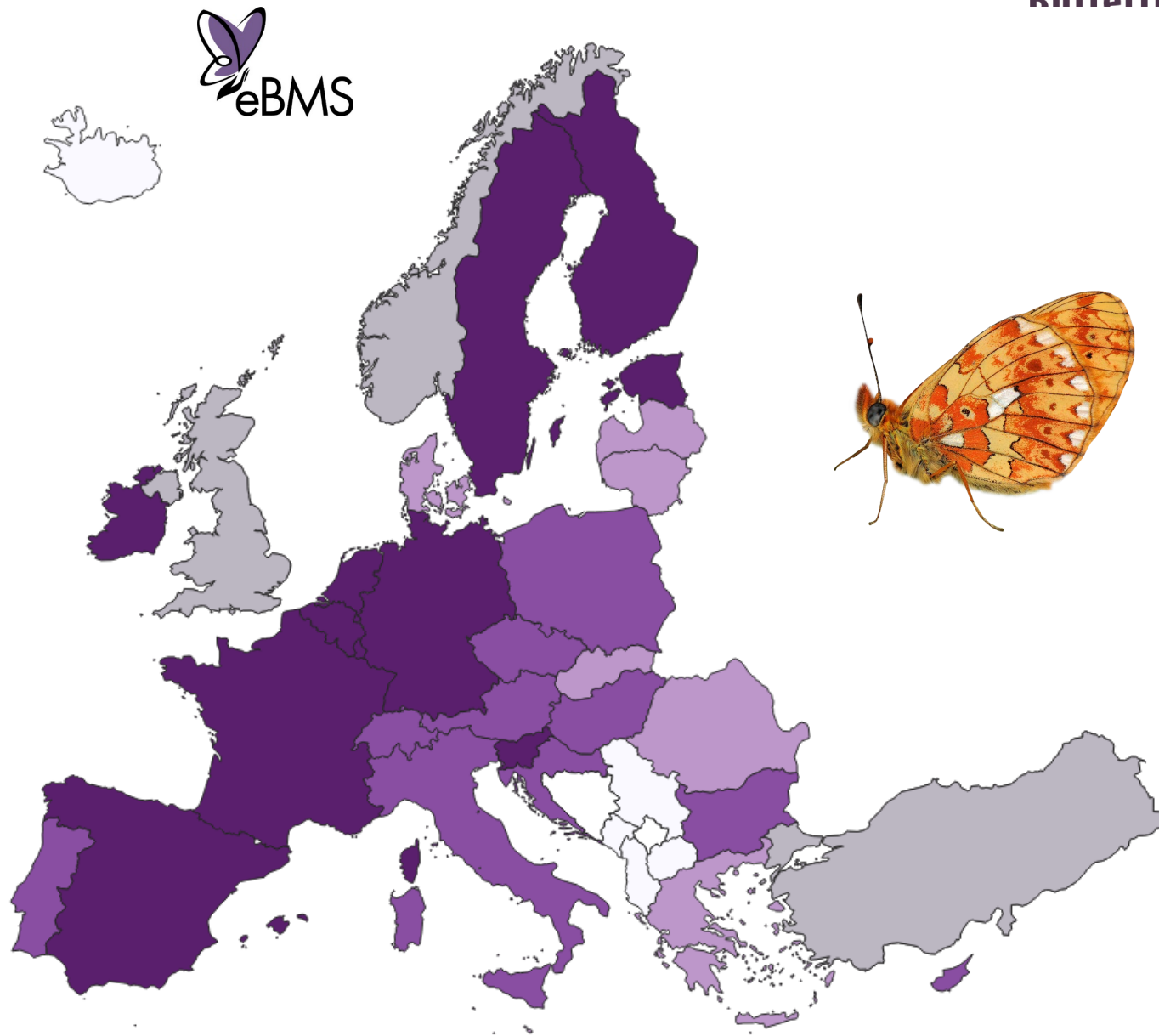


eBMS status 2024

Robust network of Butterfly
Monitoring, 27 EU MSs running BMS

 Stable BMS

- Scheme with long-term monitoring data (decades of data)
- In general, supported by institutions/governments (national/regional)
- Produce trends, reports, papers, indicators



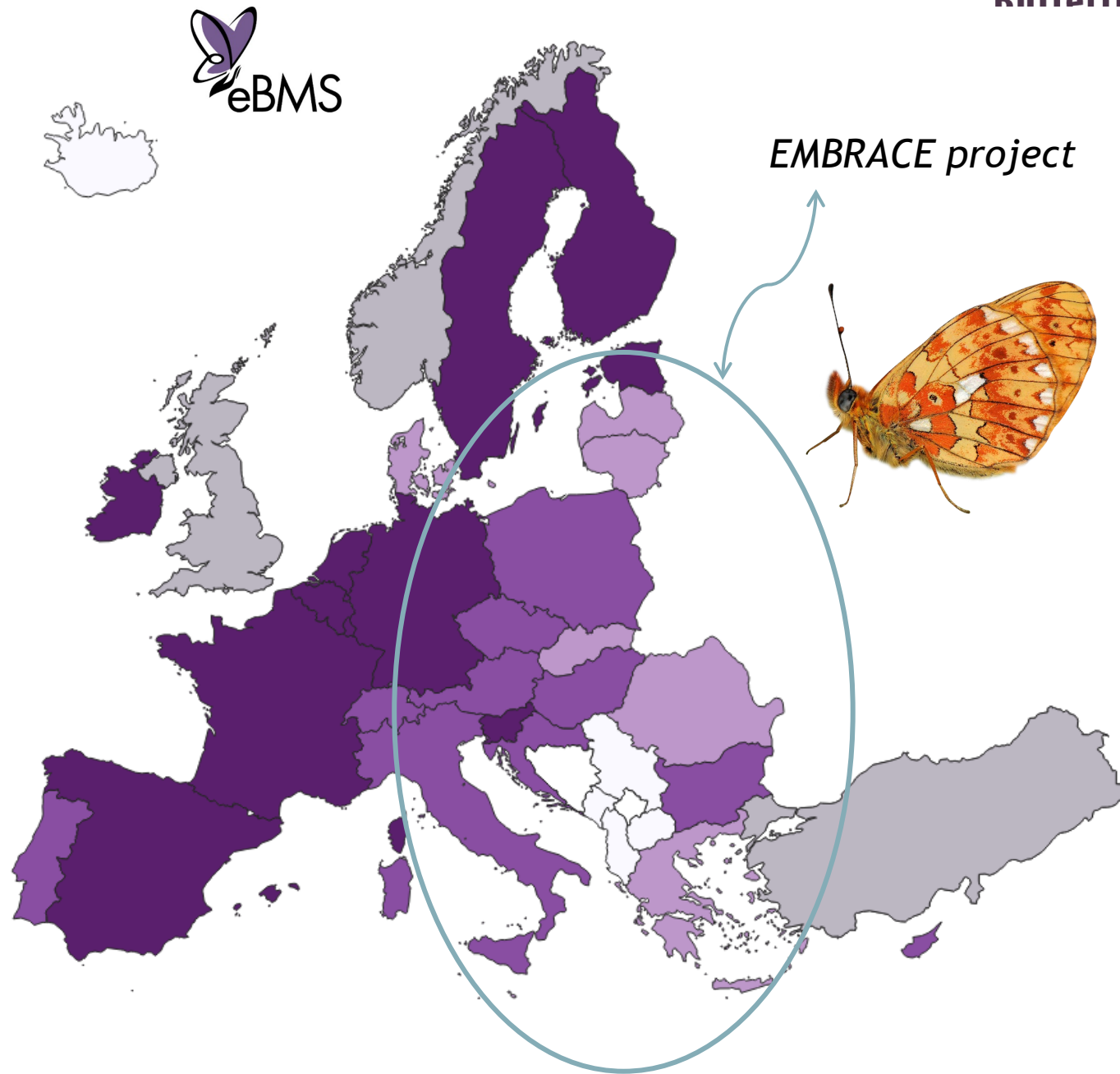
eBMS status 2024

Robust network of Butterfly
Monitoring, 27 EU MS running BMS

 In Progress BMS

 Starting BMS

- Some years of monitoring
- Volunteer coordinators
- No national institutional/government funding to date
- Schemes are vulnerable, need to increase capacity



eBMS network



eBMS network

- BCE partners: butterfly experts from each European countries
- Close **relationships and trust**
- Robust and connected network: European coordination
- Enhancing the butterfly community
- Growth of national butterfly NGO and societies



eBMS - Laufen Meeting 2019



Laufen meeting - 2009



Laufen meeting - 2022

eBMS network



Hungary



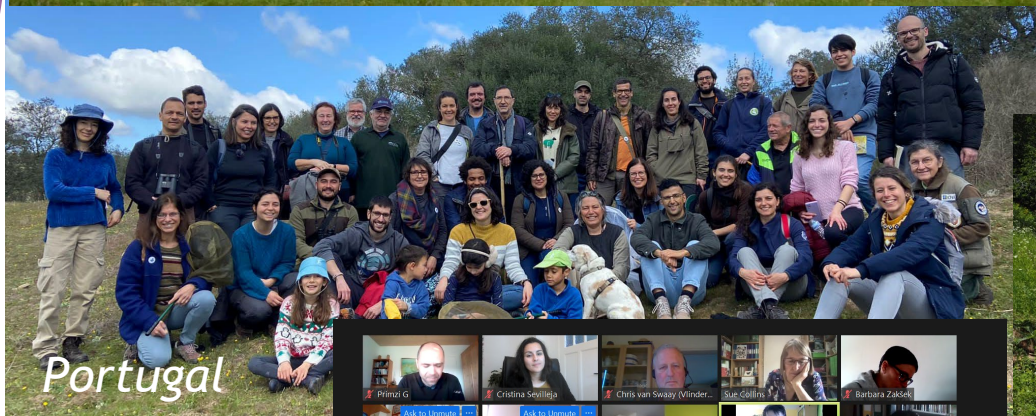
Lithuania



Bulgaria



Cyprus



Portugal



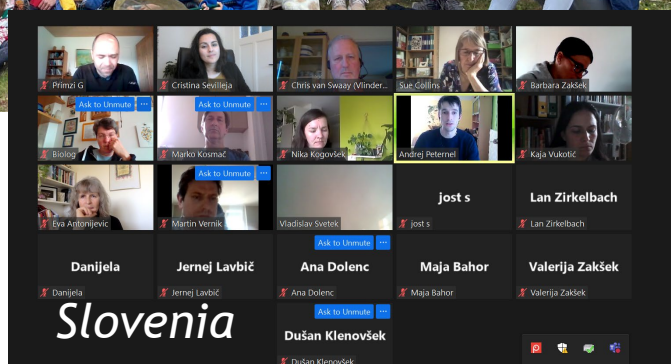
Cyprus



Italy



Poland



Slovenia

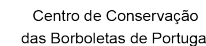
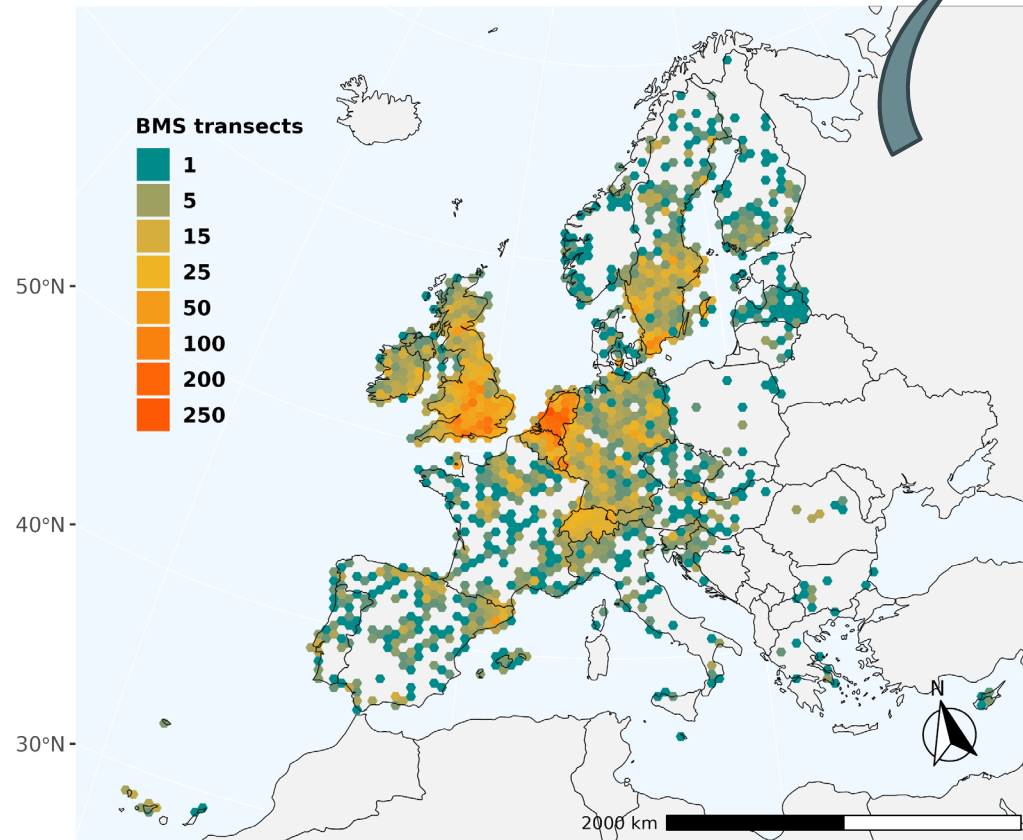
eBMS network

Support from older schemes



eBMS network

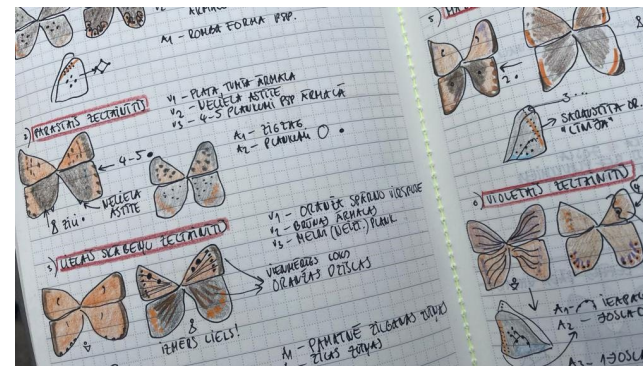
- Great connection across the continent
- **Standardisation** at EU level
- **30 countries with 42 BMSs** collecting data to eBMS annually



Work of National Coordinators

- *Recruitment, training and support of volunteers*
- *Collection of data:* Supervision of volunteers, design of transects, train on identification and tools
- *Data:* verification of data, submission to eBMS database, annual reports, calculation of trends/indicators
- *Dissemination:* feedback to MS, volunteers, institutions, stakeholders and social media
- *Community:* organization of events, communication with volunteers, keep the community

Volunteer work
(most countries)



eBMS coordination

Standardised protocol + Scientific and statistical quality control

Gathering of data, support to national coordinators, training, sharing tools and resources, promotion of BMS and whole European network coordination.

New EU projects:

- **EMBRACE project:** training coordinators: 2nd April Wageningen (NL) *training on the use of data (GBI national calculations)*
+ meeting December (DE) *Enhance the network*
- **EPIC-Butterfly Project:** taxonomic training for EUPoMS
Build on many years of experience in ID training by BCE partners; cooperation with bees and hoverflies (Pollinator Academy online resources www.pollinatoracademy.eu/)



BMS: citizen science

Trained volunteers on butterfly identification:

- Selection transect sites by volunteers, supervised by coordinator = ↑ frequent visits per year
- Familiarise with the environment and species (expert)
- Coordinators provide materials, seminars, supervision and encouragement (retain volunteers)
- Belong to a community = volunteers attached to nature & understanding need of protection/changes



- Verification
- Statistical quality control
- Calculation EU Indicators



From data to policy

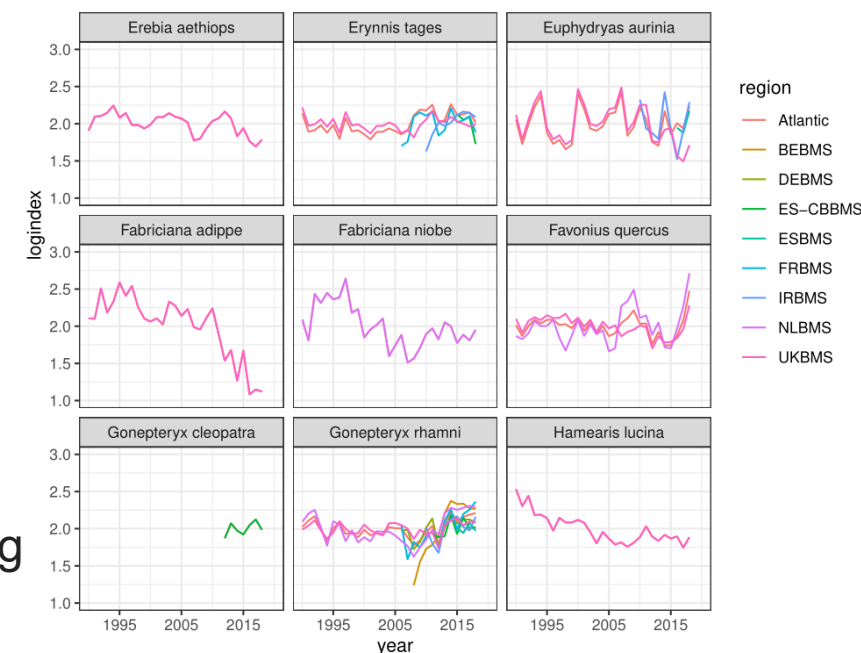


eBMS benefits

BMSs provide data on butterfly trends at species and site level.

eBMS Records:

- Butterflies at **species level** on all transects
- Species **abundance** and diversity
- Monitoring throughout **whole butterfly season**
- Captures the profile of abundance of each species including the peaks



Produce:

- Long term time series databases on a standardised basis
- Vital input data for scientific research and validation of models of environmental change

eBMS benefits

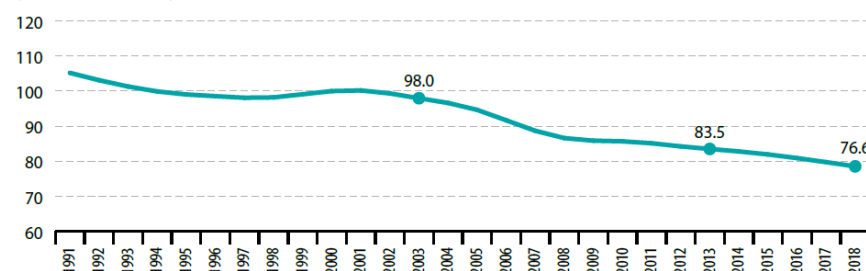
Contribution to European and International commitments on biodiversity

Useful data for MSs policy makers to use for:

- High quality **HD Art 17** Favourable Conservation Status (fcs) assessments of listed butterfly species
- Red Data Book (**RDB**) assessments for rare species
- Evaluation of effectiveness of agricultural incentives
- Management of sites and species and evaluation of restoration measures
- Reports to EU and CBD on Biodiversity and SD Strategy implementation



Figure 15.10: Grassland butterfly index, EU, 1991–2018
(index 2000 = 100)



Compound annual growth rate (CAGR): – 1.5% per year in the period 2003–2018; – 1.2% per year in the period 2013–2018.
Source: EEA, Butterfly Conservation Europe, European Butterfly Monitoring Scheme partnership, Assessing Butterflies in Europe (ABLE) project (Eurostat online data code: [sdg_15_61](#))


↓ LONG TERM
2003–2018
↓ SHORT TERM
2013–2018



eBMS benefits

Population and society

- **EU Nature Restoration Regulation (NRR)** requires Member States to **promote citizen science** in the collection of monitoring data
- BMS volunteers are pool of expert parataxonomists to help implement the EU Pollinator Monitoring Scheme (**EUPoMS, Art.10 NRR**)
- Butterfly monitoring is a popular form of citizen science:

- 
- Disseminate results
 - Raises profile of insect declines
 - Engages citizens in positive action for nature
 - Connection with surroundings (improve managements)



Room for improvement

Remaining challenges

- **Securing MS support** for stable jobs for national and where needed regional **coordinators**
- **Retaining volunteers** to repeatedly walk the same transects year after year
- **Increasing** the number of **transects** across the whole of a MS
- Growing the **use of butterfly count results** by MSs and the EU to support recovery of wild pollinators

Long-term data = robust and quality data





Acknowledgements

Volunteers
Coordinators
Assistants
Rangers
Institutions
Experts
European Commission
MEPs
DG Environment

Cristina G. Sevilleja
Email: cristina.Sevilleja@bc-europe.eu

EMBRACE Project: EC-ENV/2024/NP/0040: Grassland
butterfly indicator and European Butterfly
Monitoring Scheme update (2021-2026)