



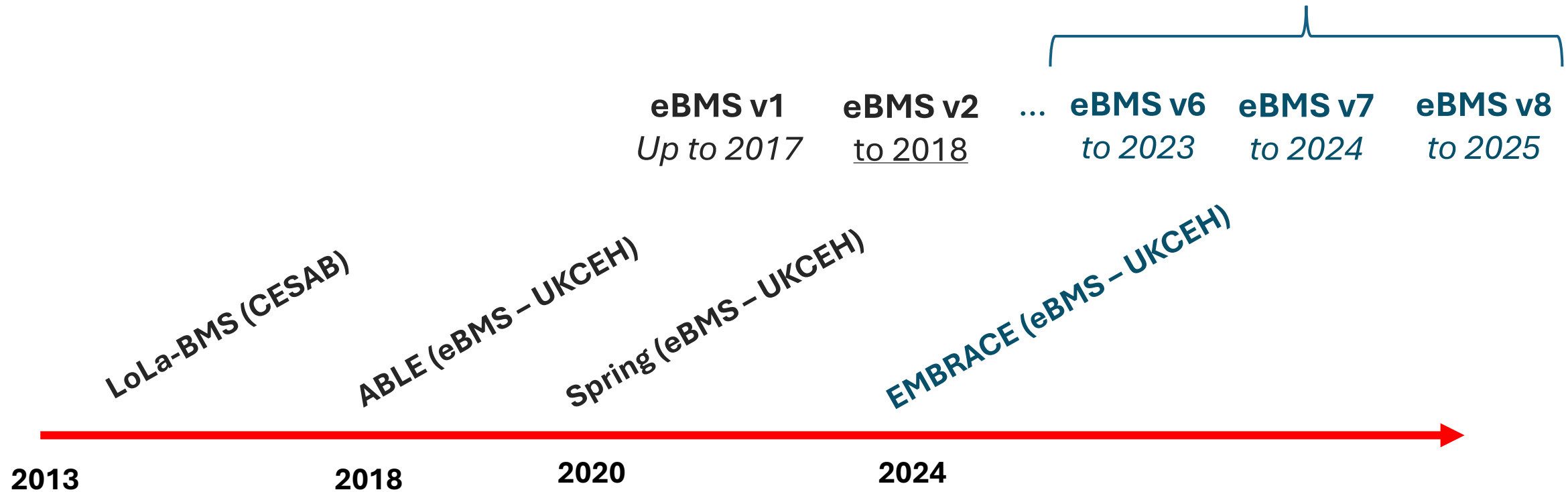
eBMS

Database and GBI update

Reto Schmucki

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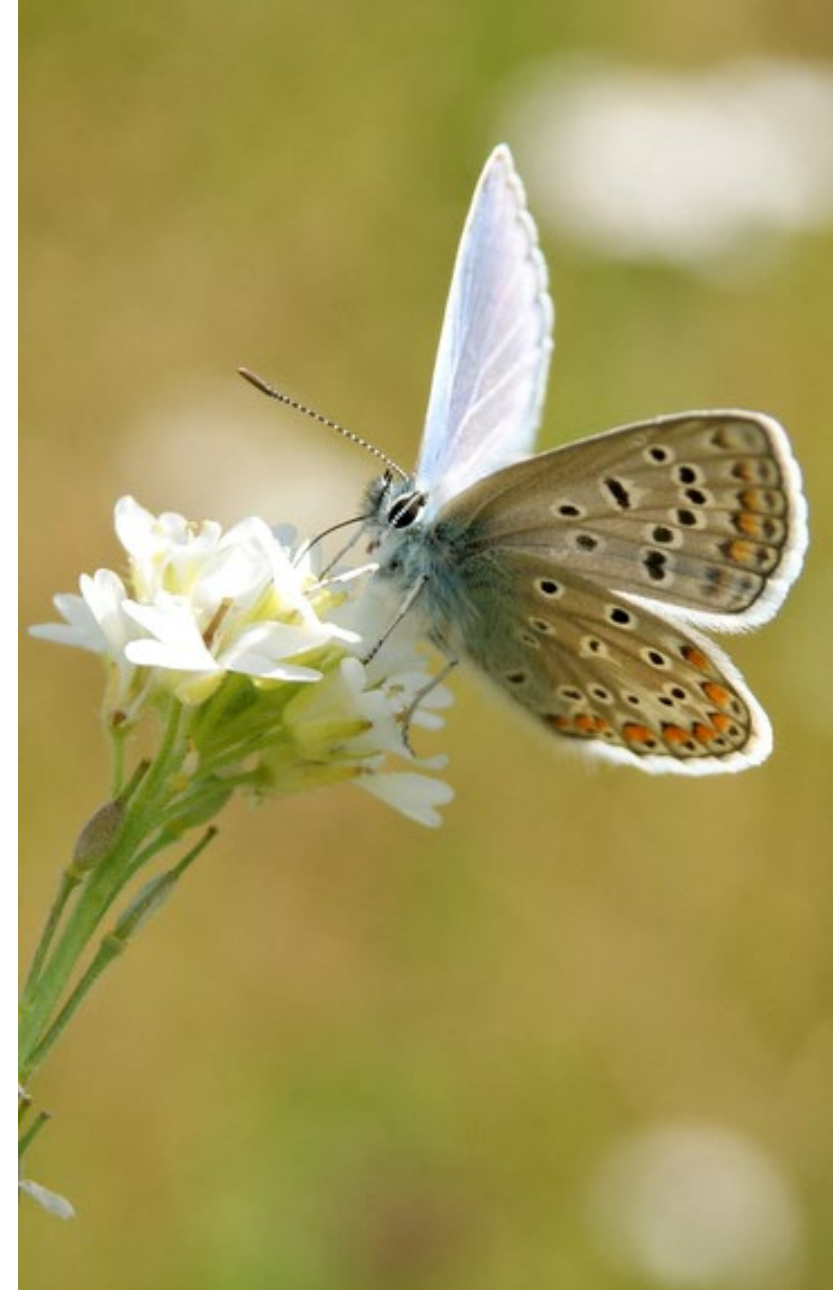
eBMS



eBMS

v7.0 - released November 2025

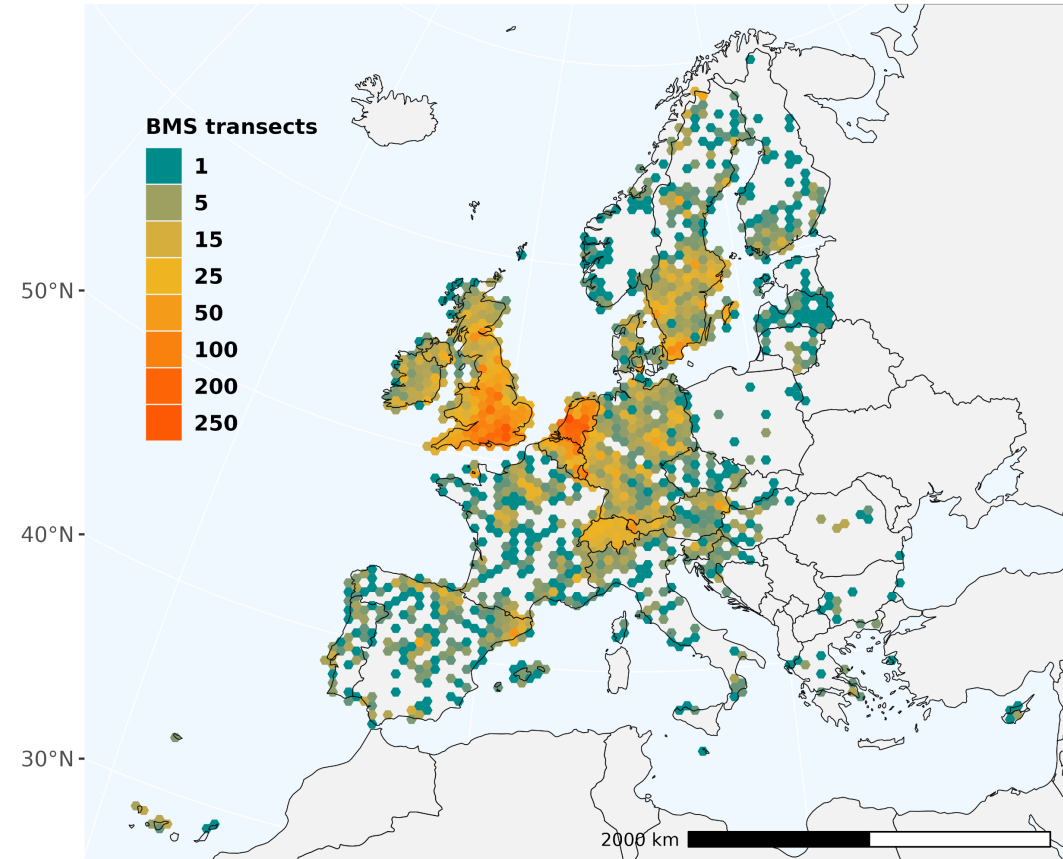
- 19,136,578 count records
- 1,369,613 monitoring session
- 16,152 transect (51,340 km)
- 368 species
- Across 30 countries (35 BMS)



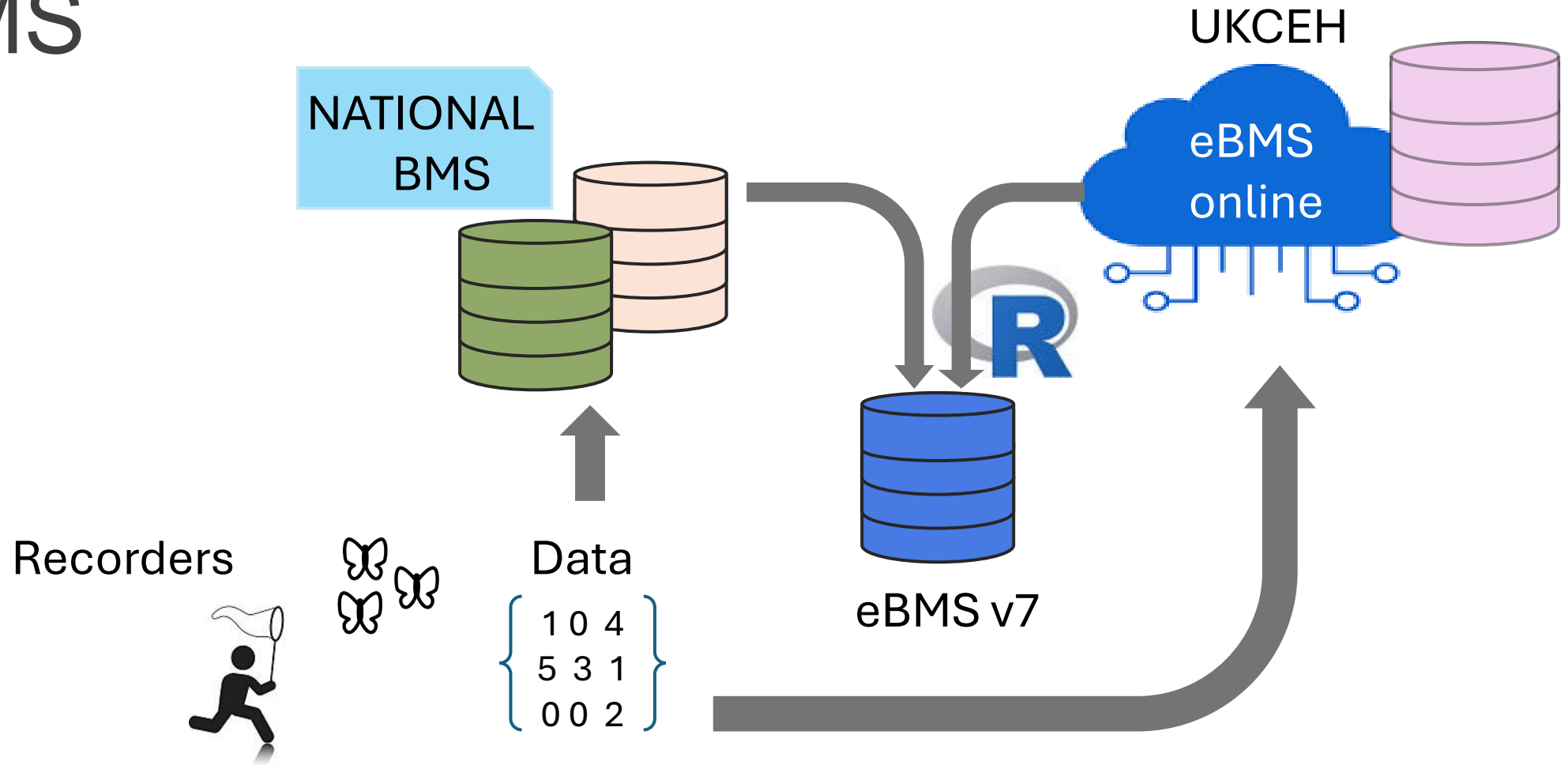
eBMS

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eBMS



eBMS



eBMS v7

Site

0	2	1	0	4	5	3	1
0	0	2	1	0	4	5	3
3	4	1	0	0	2	4	6

Visit

0	2	1	0	4	5	3	1
0	0	2	1	0	4	5	3
3	4	1	0	0	2	4	6

Count

0	2	1	0	4	5	3	1
0	0	2	1	0	4	5	3
3	4	1	0	0	2	4	6

Site ID
Coordinates
Length/area
Habitat
Transect/section

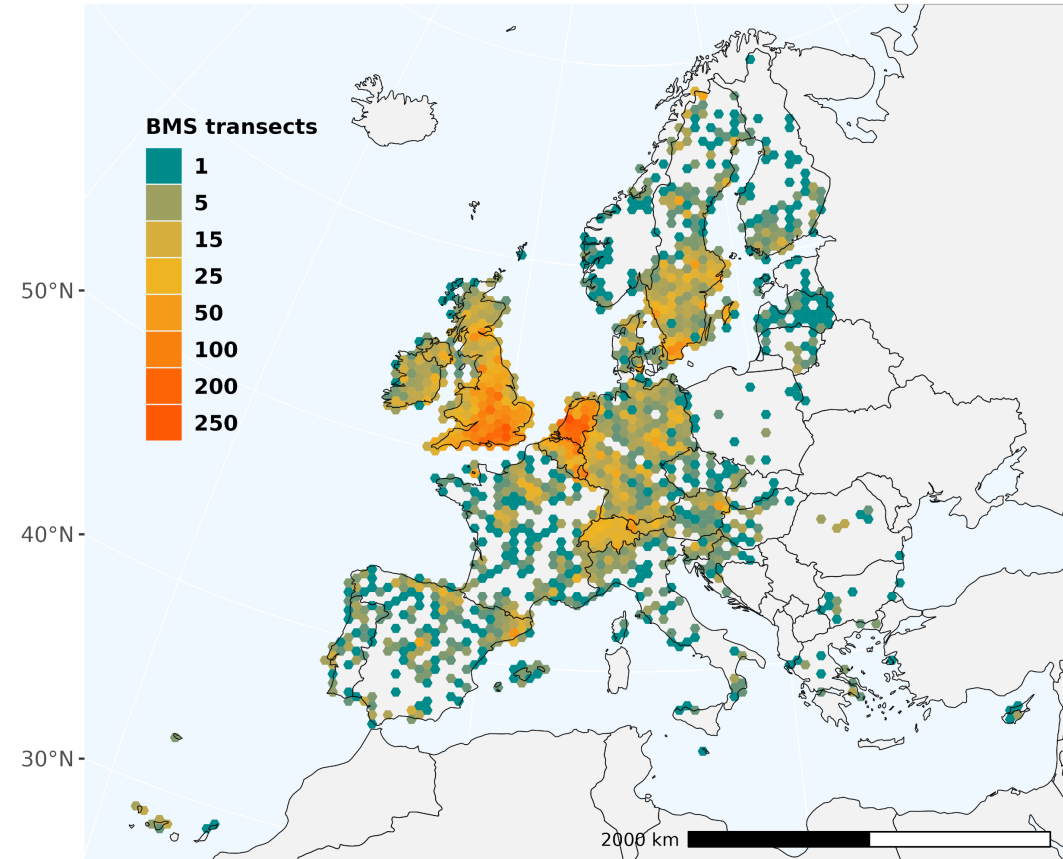
Visit ID
Site ID
Cloud
Temperature
Wind
Time
Recorder

Count ID
Visit ID
Site ID
Species / aggregate
Count

eBMS

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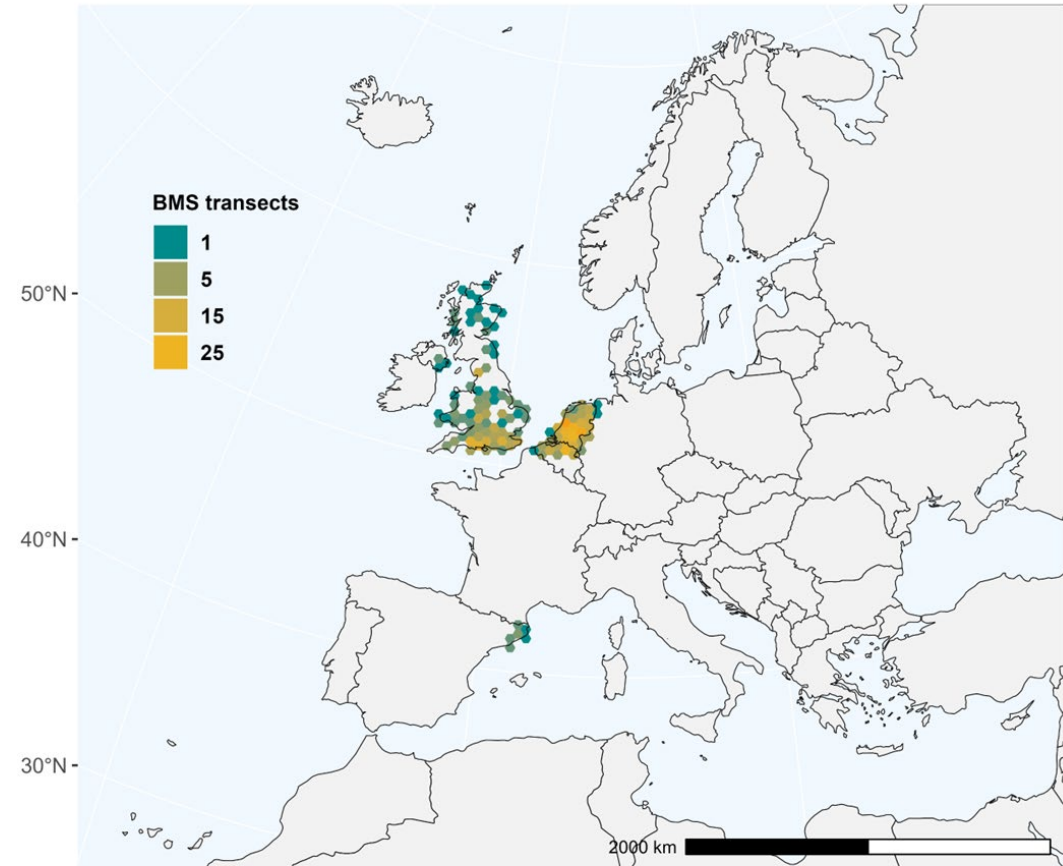


eBMS

1990-1994

v7.0 - released November 2025

- 19,136,578 count records
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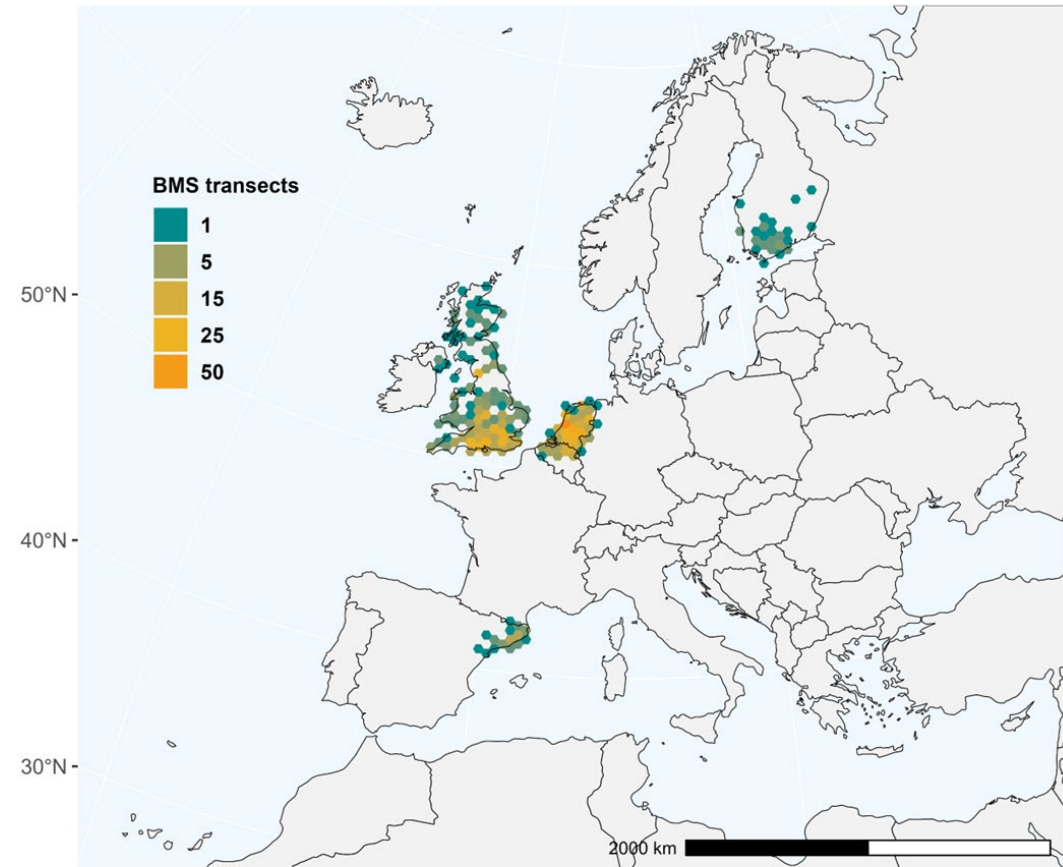


eBMS

1995-1999

v7.0 - released November 2025

- 19,136,578 count records
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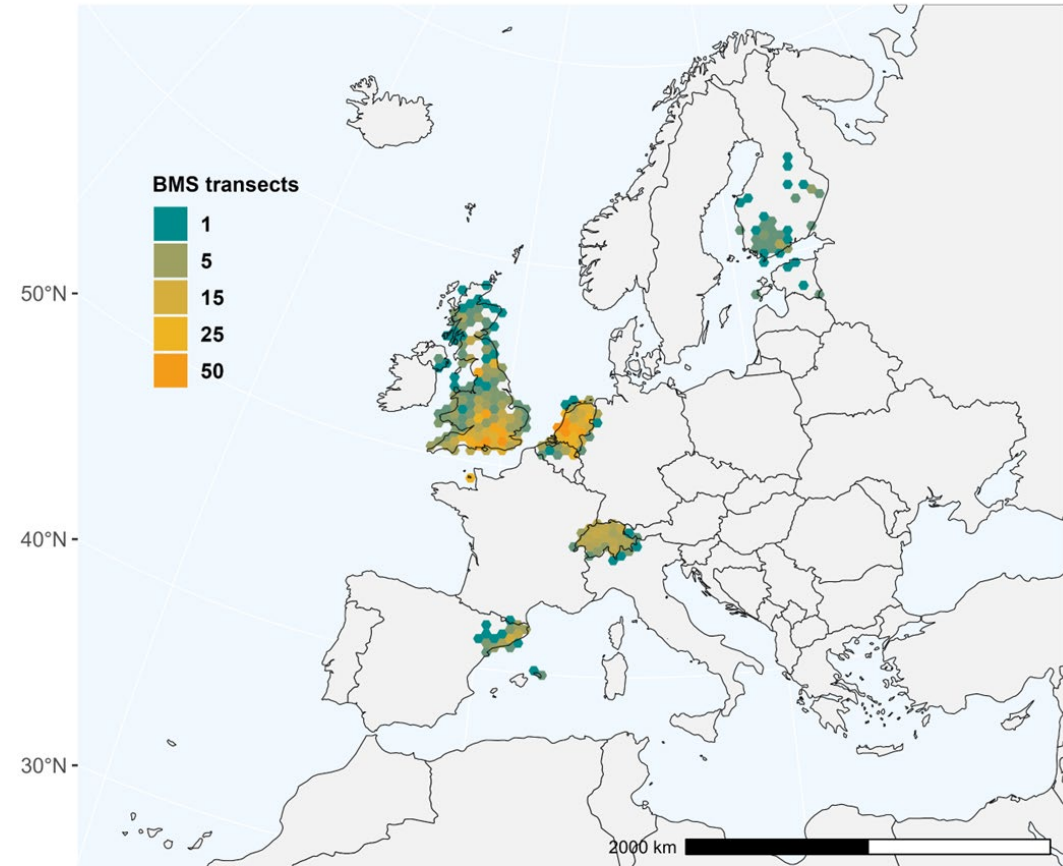


eBMS

2000-2004

v7.0 - released November 2025

- 19,136,578 count records
- 1,369,613 monitoring session
- 16,152 transect (51,340 km)
- 368 species
- Across 30 countries (35 BMS)

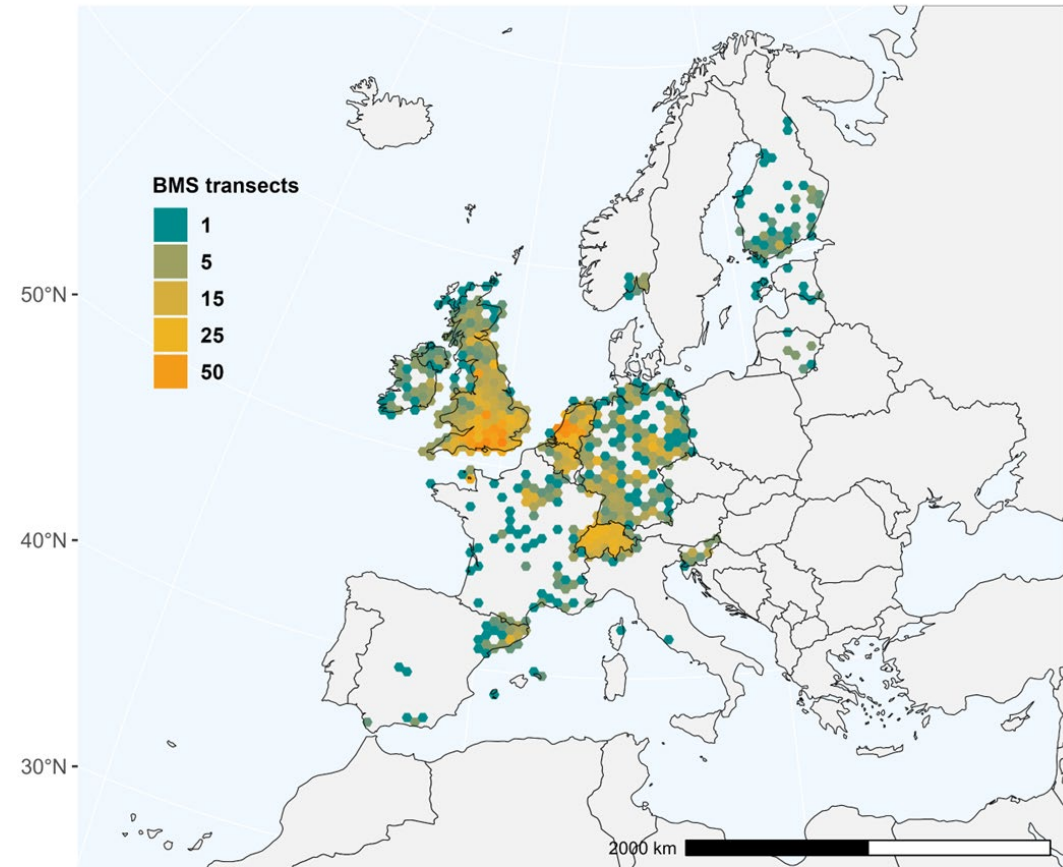


eBMS

2005-2009

v7.0 - released November 2025

- 19,136,578 count records
- 1,369,613 monitoring session
- 16,152 transect (51,340 km)
- 368 species
- Across 30 countries (35 BMS)

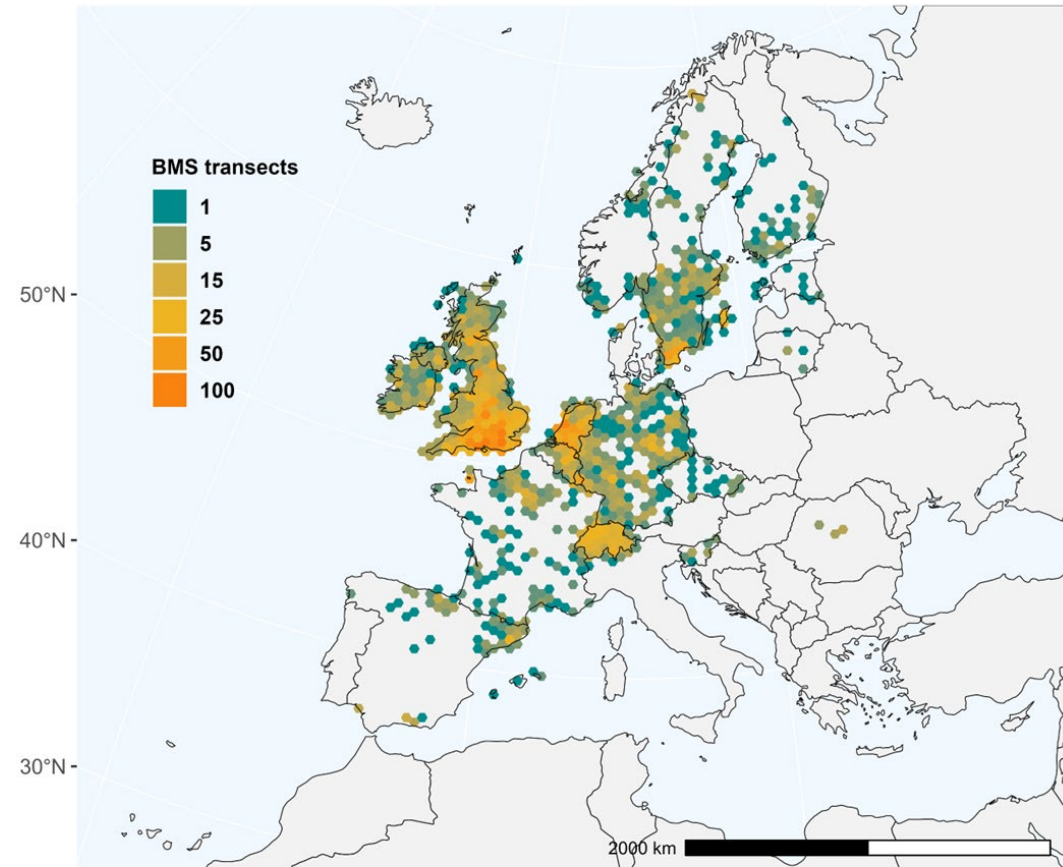


eBMS

2010-2014

v7.0 - released November 2025

- 19,136,578 count records
- 1,369,613 monitoring session
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- 368 species
- Across 30 countries (35 BMS)

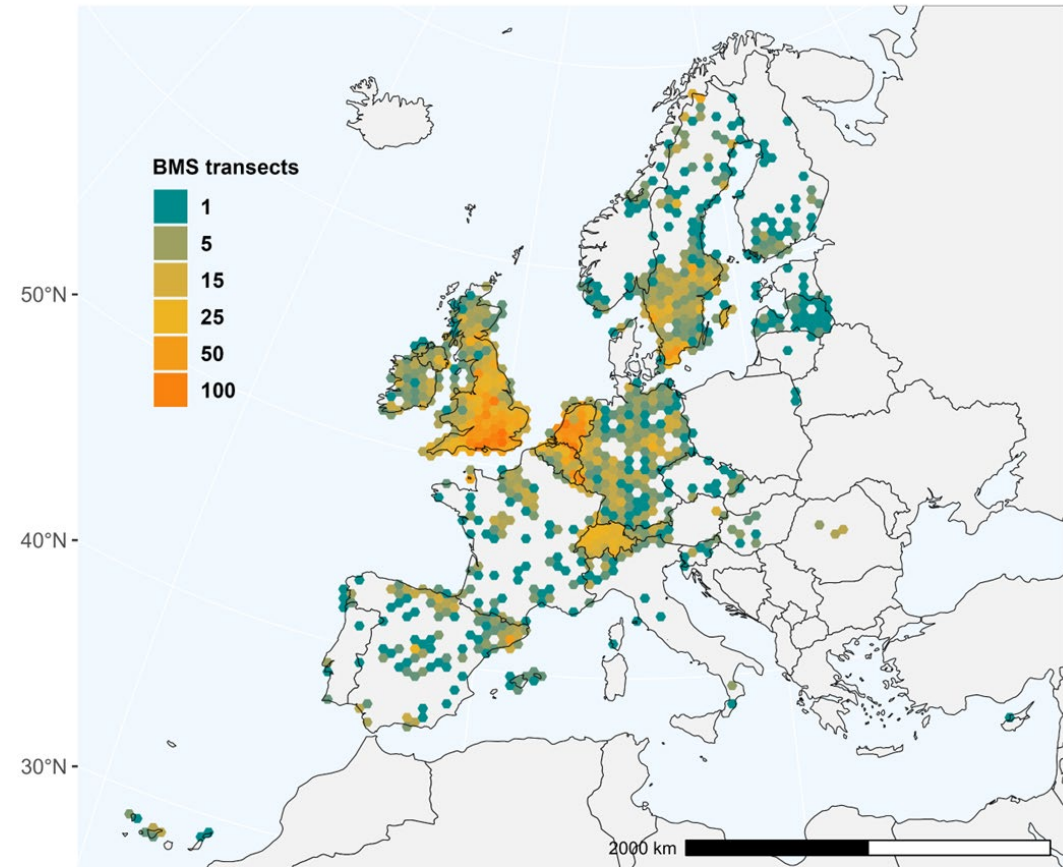


eBMS

2015-2019

v7.0 - released November 2025

- 19,136,578 count records
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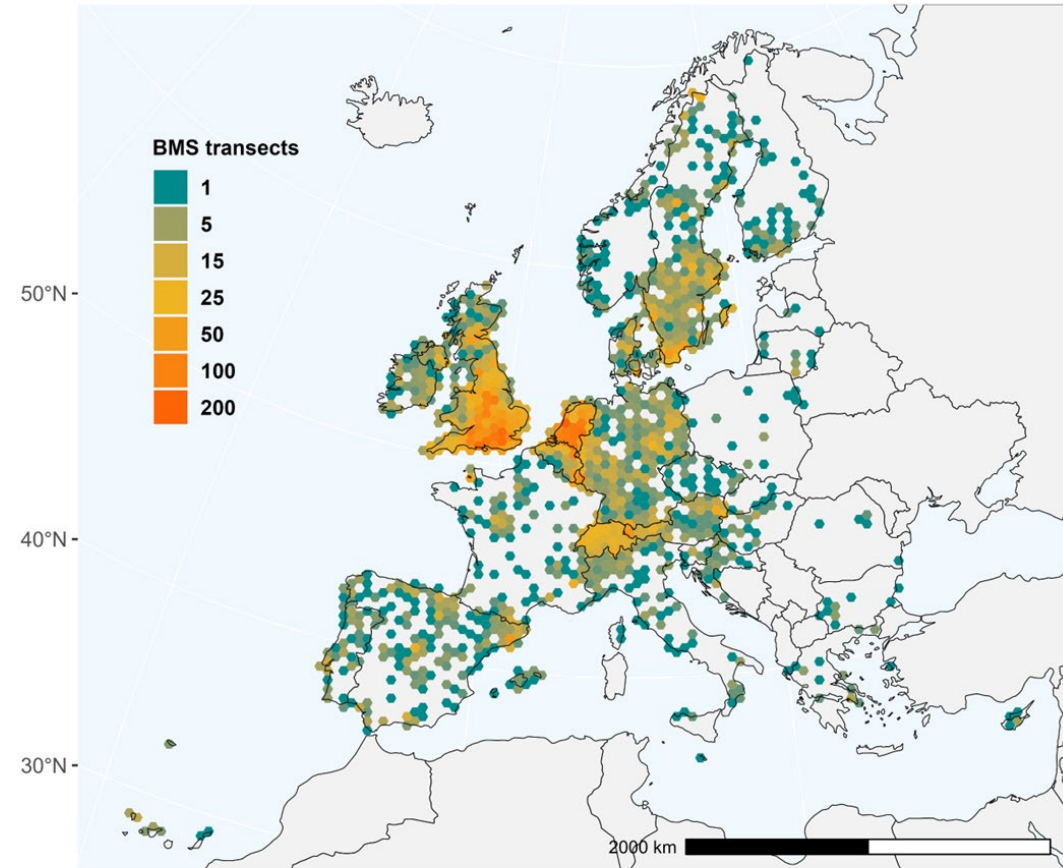


eBMS

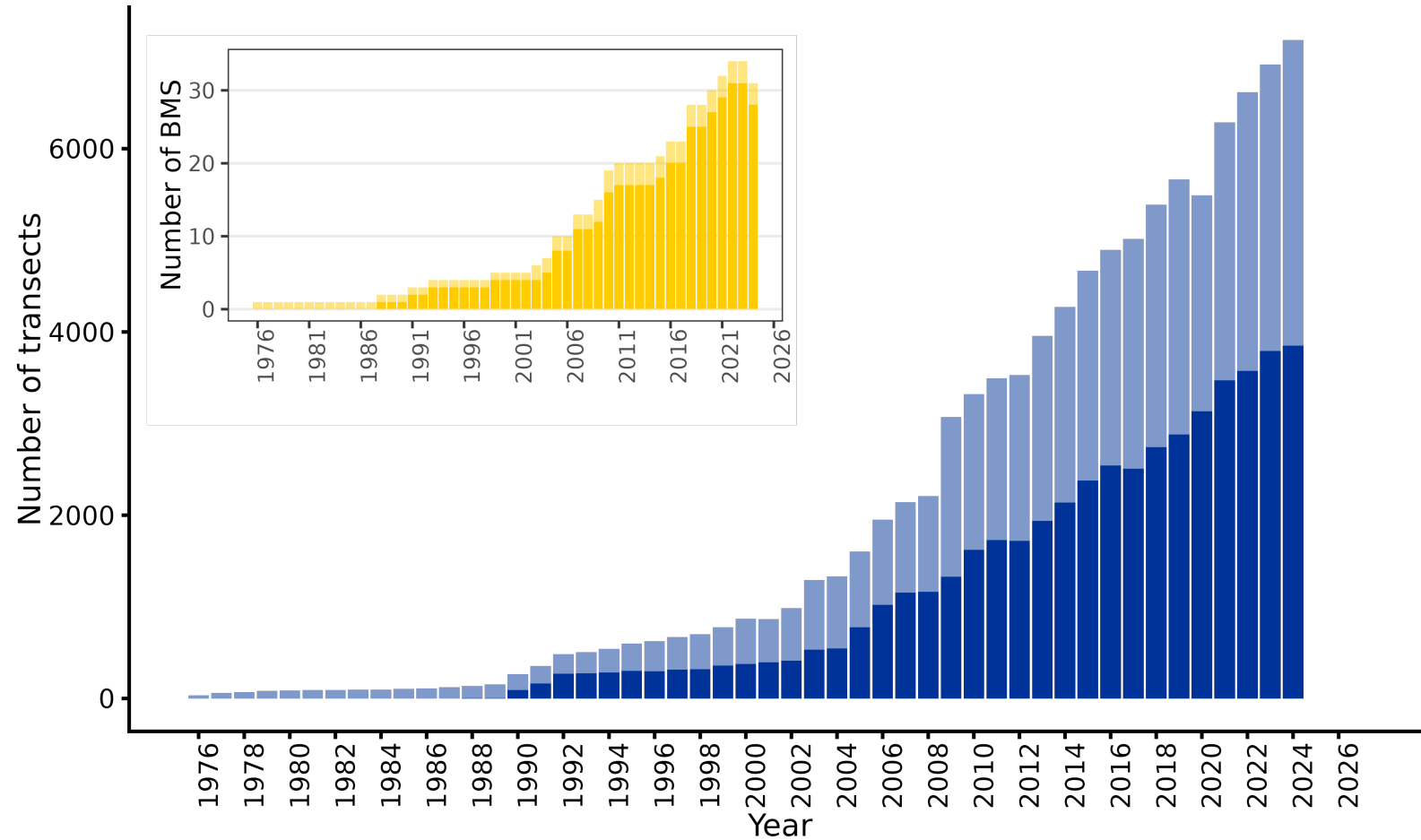
2020-2024

v7.0 - released November 2025

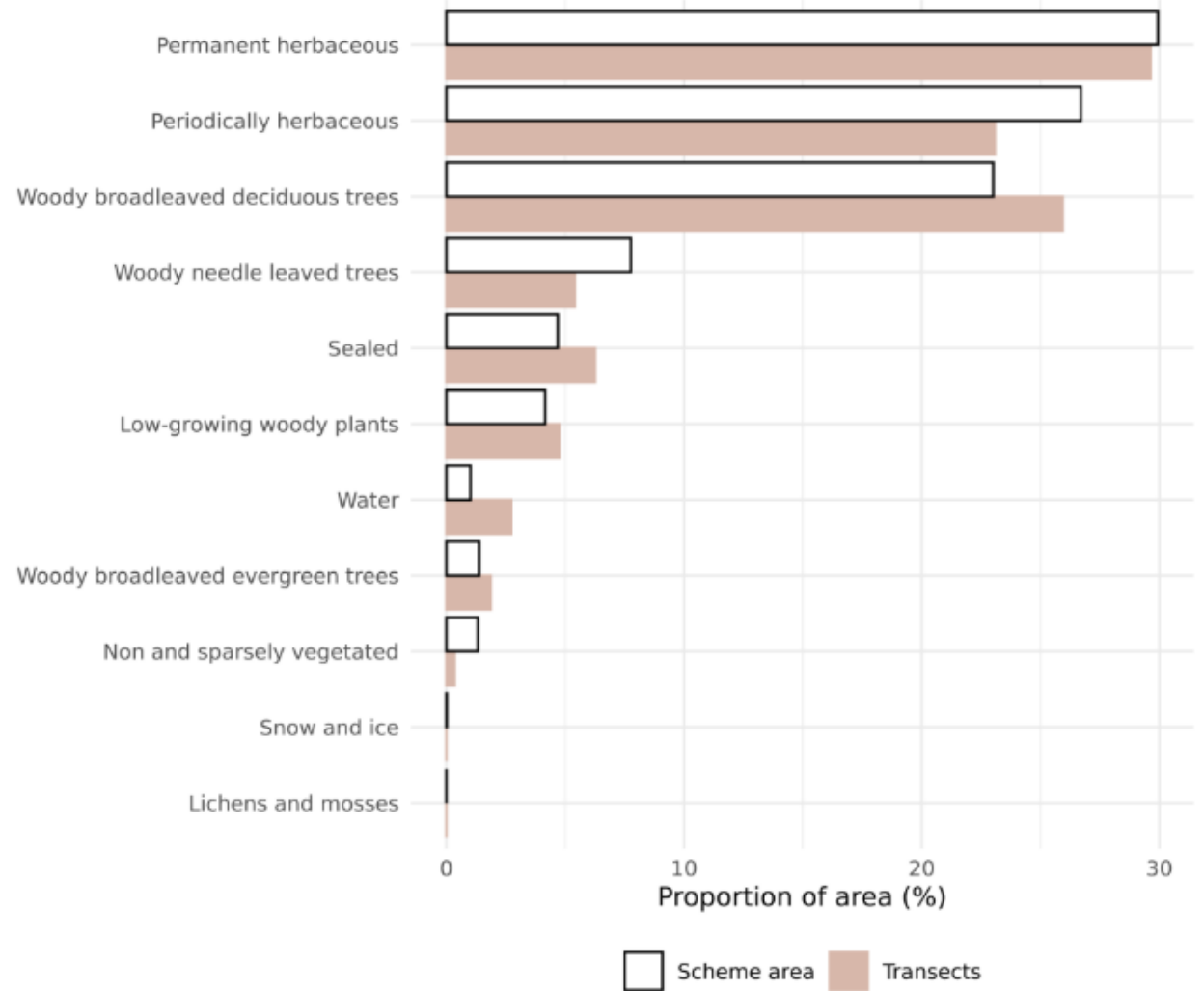
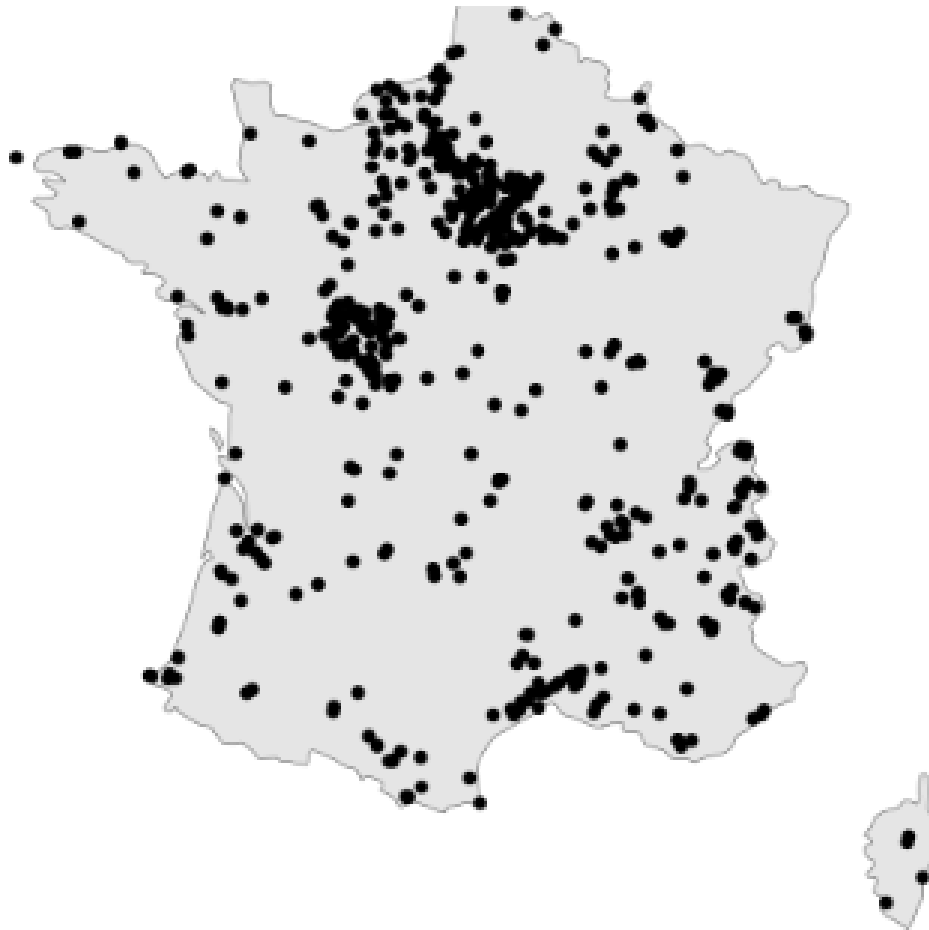
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eBMS



eBMS - coverage



eBMS - support research

Global Ecology
and Biogeography

A Journal of
Macroecology

RESEARCH ARTICLE |  Full Access

Connectivity and climate influence diversity–stability relationships across spatial scales in European butterfly metacommunities

Wagner de F. Alves , Leonardo C. de Souza, Oliver Schweiger, Victor R. di Cavalcanti, Josef Settele, Martin Wiemers, Reto Schmucki, Mikko Kuussaari, Olga Tzortzakaki ... [See all authors](#) 

PRE-PRINT

Predicted decline in common bird and butterfly species despite conservation policies in Europe

Stanislas Rigal¹, Maxime Lenormand¹, Léa Tardieu^{1,2}, Ainārs Auniņš^{3,4}, Tristan Bakx⁵, Mattia Brambilla⁶, Lluís Brotons^{5,7,8}, Tomasz Chodkiewicz^{9,10}, Benoît Fontaine¹¹, Zdeněk Faltýnek Fric¹², Anna Gamero¹³, Sergi Herrando^{5,7,14}, John Atle Kålås¹⁵, Johannes Kamp^{16,17}, Petras Kurlavičienė^{18,19}, Mikko Kuussaari²⁰, Aleksis Lehtikainen²¹, Dirk Maes^{22,23}, Xavier Mestdagh²⁴, Martin Musche²⁵, Ingar Jostein Øien²⁶, Lars Pettersson²⁷, Jiří Reif^{28,29}, Johannes Markus Rüdisser³⁰, Martina Šašić³¹, Reto Schmucki³², Constanti Stefanescu³³, Bård Gunnar Stokke¹⁵, Nicolas Strebel³⁴, Nicolas Titeux²⁴, Sven Trautmann¹⁷, Chris Van Swaay³⁵, Sandra Luque¹

communications biology

ARTICLE

<https://doi.org/10.1038/s42003-022-03088-3>

OPEN

 Check for updates

Local adaptation to climate anomalies relates to species phylogeny

Yolanda Melero ^{1,2} , Luke C. Evans¹, Mikko Kuussaari³, Reto Schmucki ⁴, Constanti Stefanescu⁵, David B. Roy ⁴ & Tom H. Oliver ¹

Measuring the pulse
of European biodiversity

European Red List of Butterflies

Chris van Swaay, Martin Warren, Sam Ellis, Joanne Clay,
Vittorio Bellotto, David Allen, Aurélien Trollet

eBMS - Grassland Butterfly Indicator



SUSTAINABLE DEVELOPMENT GOALS

15. Life on land



Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and halt biodiversity loss.

SDG 15 seeks to protect, restore, and promote the conservation and sustainable use of terrestrial ecosystems. This includes efforts to sustainably manage forests and halt deforestation, combat desertification, restore degraded land and soil, halt biodiversity loss, and protect threatened species.

In the EU context, monitoring SDG 15 focuses on alterations in ecosystem status, land degradation and biodiversity.

- [Common bird index by type of species - EU aggregate \(sdg_15_60\)](#)  
- [Grassland butterfly index - EU aggregate \(sdg_15_61\)](#)  

Grassland Butterfly Indicator

Aim: Inform about the change in the abundance of this group of 17 species.

Widespread species

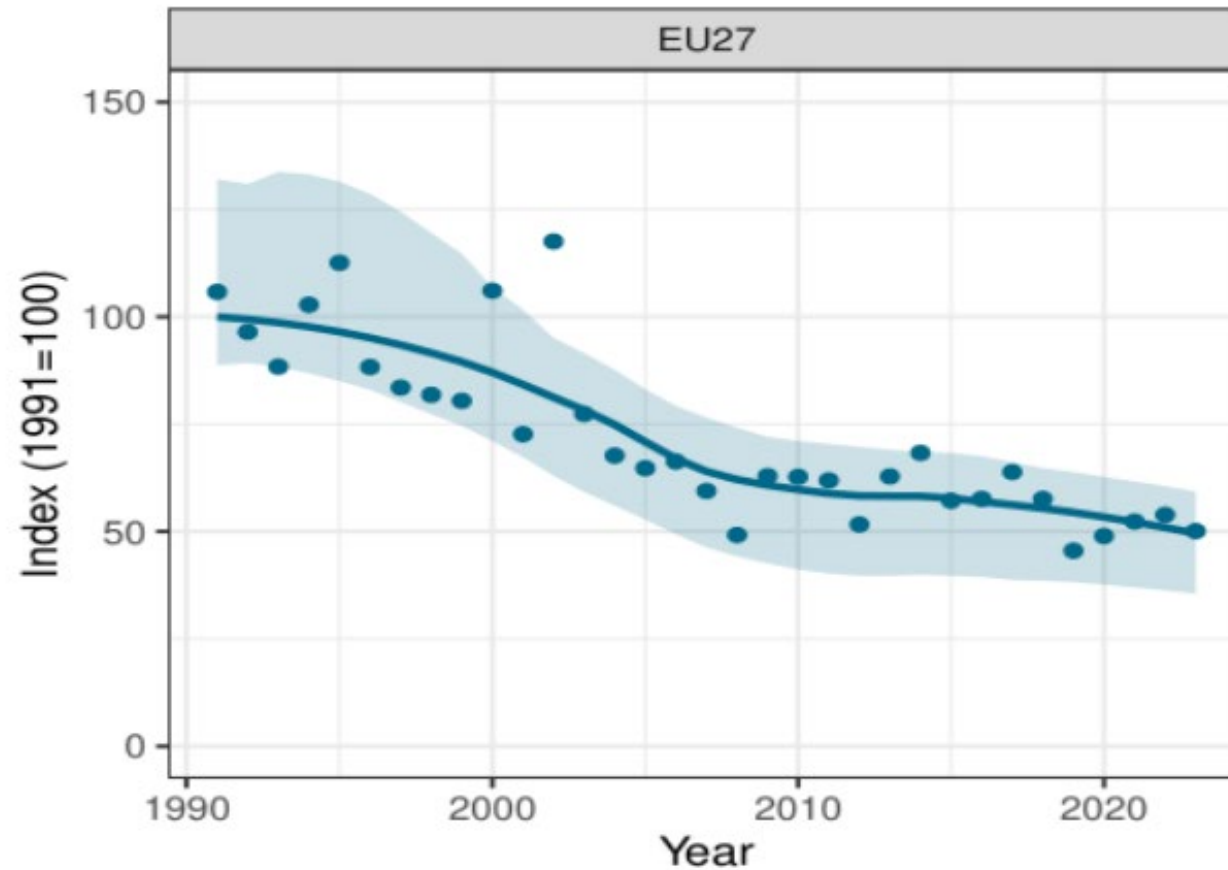
- 1) *Ochlodes sylvanus*
- 2) *Anthocharis cardamines*
- 3) *Lasiommata megera*
- 4) *Coenonympha pamphilus*
- 5) *Maniola jurtina*
- 6) *Lycaena phlaeas*
- 7) *Polyommatus icarus*

Specialist species

- 8) *Spialia sertorius*
- 9) *Cupido minimus*
- 10) *Phengaris arion*
- 11) *Cyaniris semiargus*
- 12) *Polyommatus coridon*
- 13) *Euphydryas aurinia*
- 14) *Erynnis tages*
- 15) *Thymelicus acteon*
- 16) *Phengaris nausithous*
- 17) *Polyommatus bellargus*



Grassland Butterfly Indicator

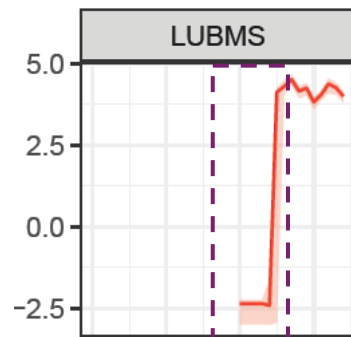


Grassland Butterfly Indicator

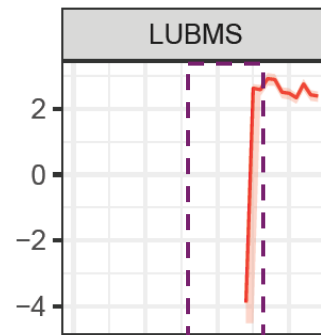
1. Calculate **annual flight curves**
2. Calculate **annual site abundance indices**
3. Calculate **collated index** (National or Regional – BMS)
Bootstrap resampling
4. Calculate **multi-BMS index**
Distribution area weighting
5. Calculate **multi-species index**

Grassland Butterfly Indicator

Cupido minimus



Errynis tages



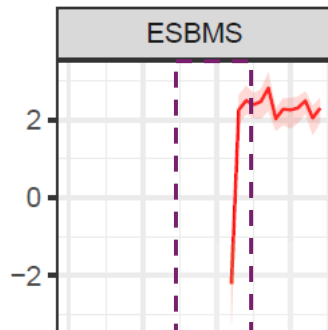
Early years are sometimes not informative

- Potentially not enough transects

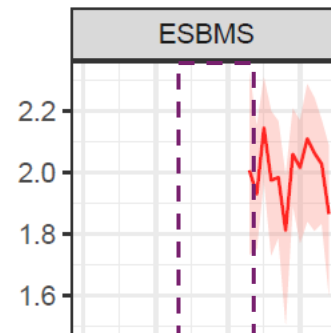
Very short time series with dramatic changes

- Potentially not enough transects

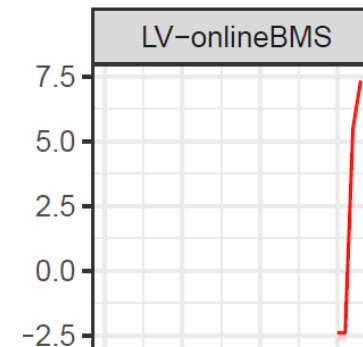
ESBMS



ESBMS

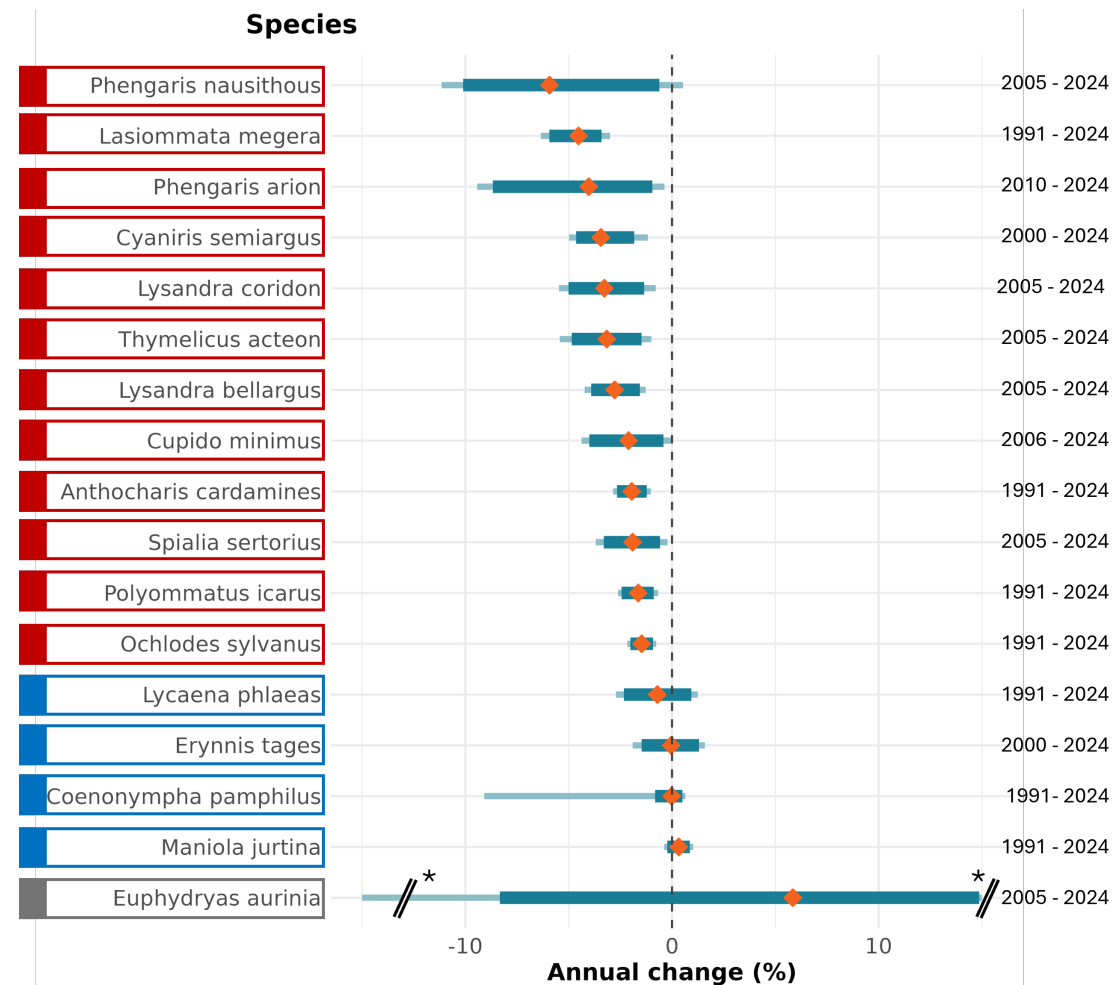
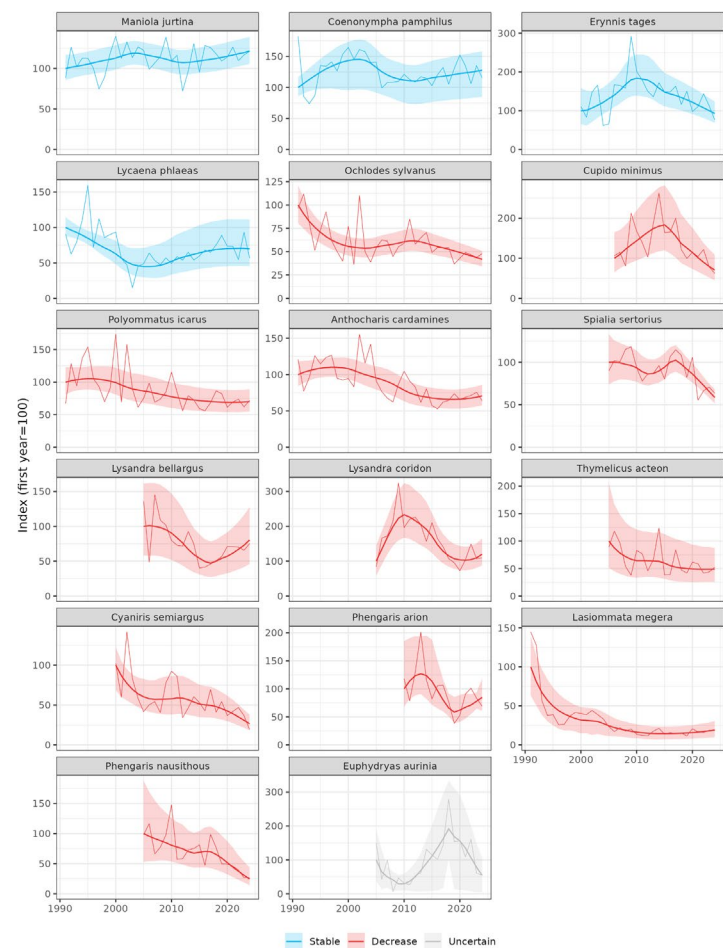


LV-onlineBMS

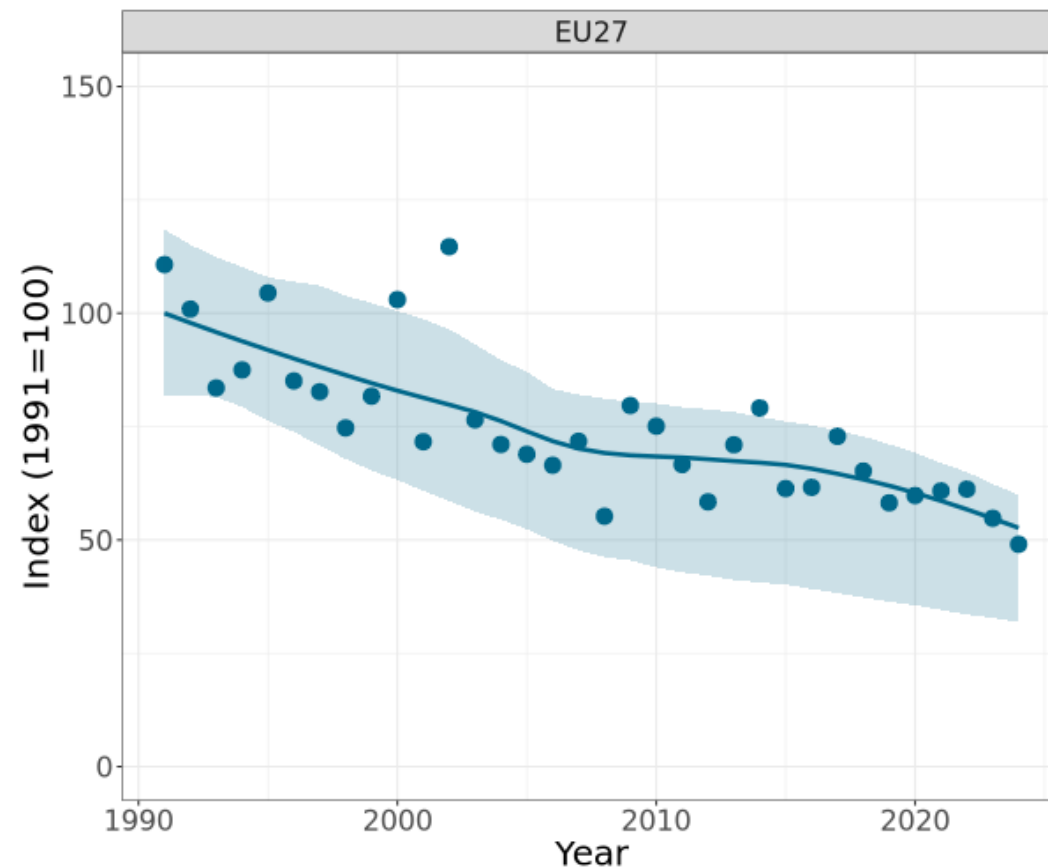


Anthocharis cardamines

Grassland Butterfly Indicator



Grassland Butterfly Indicator



Grassland Butterfly Indicator

EU Grassland Butterfly Index 1991-2024



Chris A.M. Van Swaay^(1, 2), Reto Schmuck⁽³⁾, David B. Roy^(1, 3, 4), Emily B. Dennis⁽⁵⁾, Sue Collins⁽¹⁾, Richard Fox⁽⁶⁾, Zdravko D. Kolev^(1, 6), Cristina G. Sevilleja^(1, 2, 7), Martin S. Warren⁽¹⁾, Aidan Whitfield⁽¹⁾, Irma Wynhoff^(1, 2), Harriet J.H. Arnberg⁽⁸⁾, Maksims Balalajins⁽⁹⁾, José M. Barea-Azcón^(7, 10), Andreas M.B. Boe⁽¹¹⁾, Simona Bonelli^(1, 12), Marc S. Botham⁽⁹⁾, Nigel A.D. Bourn⁽¹⁾, Juan P. Cancela^(7, 13), Roger Caritt⁽¹⁴⁾, Leonardo Dapporto⁽¹⁵⁾, André Ducry⁽¹⁶⁾, Goran Dušej⁽¹⁶⁾, Mathieu de Flores⁽¹⁷⁾, Claude Dopagne⁽¹⁸⁾, Ruth Escobés⁽¹⁹⁾, Anne E. Eskildsen⁽¹¹⁾, Zdenek F. Fric⁽²⁰⁾, José M. Fernández-García⁽²¹⁾, Benoît Fontaine⁽²²⁾, Primož Glogovčan⁽²³⁾, Jostein Gohlr⁽²⁴⁾, Ana Gracianteparaluceta⁽²¹⁾, Andrea Grill^(25, 26), Alexandre Harpke⁽²⁷⁾, Colin Harrower⁽³⁾, Janne K. Heliöla⁽²⁸⁾, Toke T. Høye⁽¹¹⁾, Michelle Judge⁽²⁹⁾, Vassiliki Kati⁽³⁰⁾, Harald W. Krenn^(25, 26), Elizabeth Kühn⁽²⁷⁾, Mikko Kuussaari⁽²⁸⁾, Andreas Lang⁽³¹⁾, Daniela Lehner⁽²⁵⁾, Liam Lysaght⁽²⁹⁾, Dirk Maes^(1, 32), Denise McGowan⁽³³⁾, Yolanda Melero⁽³⁴⁾, Xavier Mestdaghe⁽³⁵⁾, Ian Middlebrook⁽³⁵⁾, Yeray Monasterio⁽¹³⁹⁾, Eva Monteiro⁽³⁶⁾, Aitor Montes⁽²¹⁾, Miguel López Munguira^(1, 7, 37), Martin Musche⁽²⁷⁾, Francisco J. Olivares^(7, 38), Ozge Ozden⁽³⁹⁾, Clara Pladevall⁽¹⁴⁾, Alois Pavličko⁽⁴⁰⁾, Lars B. Pettersson^(1, 8), Laszlo Rákosi⁽⁴¹⁾, Tobias Roth⁽⁴²⁾, Johannes Rüdiger⁽⁴³⁾, Martina Šašić^(1, 44), Stefano Scalerio⁽⁴⁵⁾, Manfred Schönwälder^(25, 46), Josef Settele^(1, 27, 47, 48), Izabela Sielezniew⁽⁴⁹⁾, Marcin Sielezniew⁽⁵⁰⁾, Gaëlle Sobczyk-Moran⁽¹⁷⁾, Constanti Stefanescu^(1, 51), Giedrius Švitra⁽⁵²⁾, András Svabádfalvi⁽⁵³⁾, Anu Tiitsaar^(1, 54), Nicolas Titeux⁽⁵⁵⁾, Elli Tzirkali⁽⁵⁶⁾, Olga Tzortzakaki⁽⁵⁷⁾, Andreu Ubach-Permanyer⁽⁵¹⁾, Eglė Vičiuvienė⁽⁵⁸⁾, Sarah Vray⁽³⁵⁾, Konstantina Zografou⁽³⁰⁾.

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eBMS - Grassland Butterfly Indicator

Remaining challenges:

eBMS

1. Update the data on an annual basis,
2. Harmonising and integrating new datasets,
3. Inconsistency in data structure

GBI

4. Integrating new schemes – minimum requirements
5. Build capacity for National GBI

eBMS - Grassland Butterfly Indicator

