The benefits and cost effectiveness of Butterfly Monitoring Schemes: making the case to Member States

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Butterfly Conservation Europe

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eBMS

UK Centre for Ecology & Hydrology

Butterfly Conservation

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Dutch Butterfly Conservation

European Commission environment

Outline

- Overview: Benefits of BMS
- Experience from various BMS:
  - Catalonia – Constanti Stefanescu
  - Sweden – Lars Pettersson
  - Italy – Simona Bonelli
  - Portugal – Eva Monteiro
- DISCUSSION

Context

- EU Biodiversity Strategy 2030
- Nature Restoration Regulation
- Grassland Butterfly Index
- EU Pollinator Monitoring Scheme
- Habitats and Species Directive
- Monitoring Natura 2000 sites

All have elements that BMSs can contribute

Making the case to Member States

The benefits and cost-effectiveness of Butterfly Monitoring Schemes

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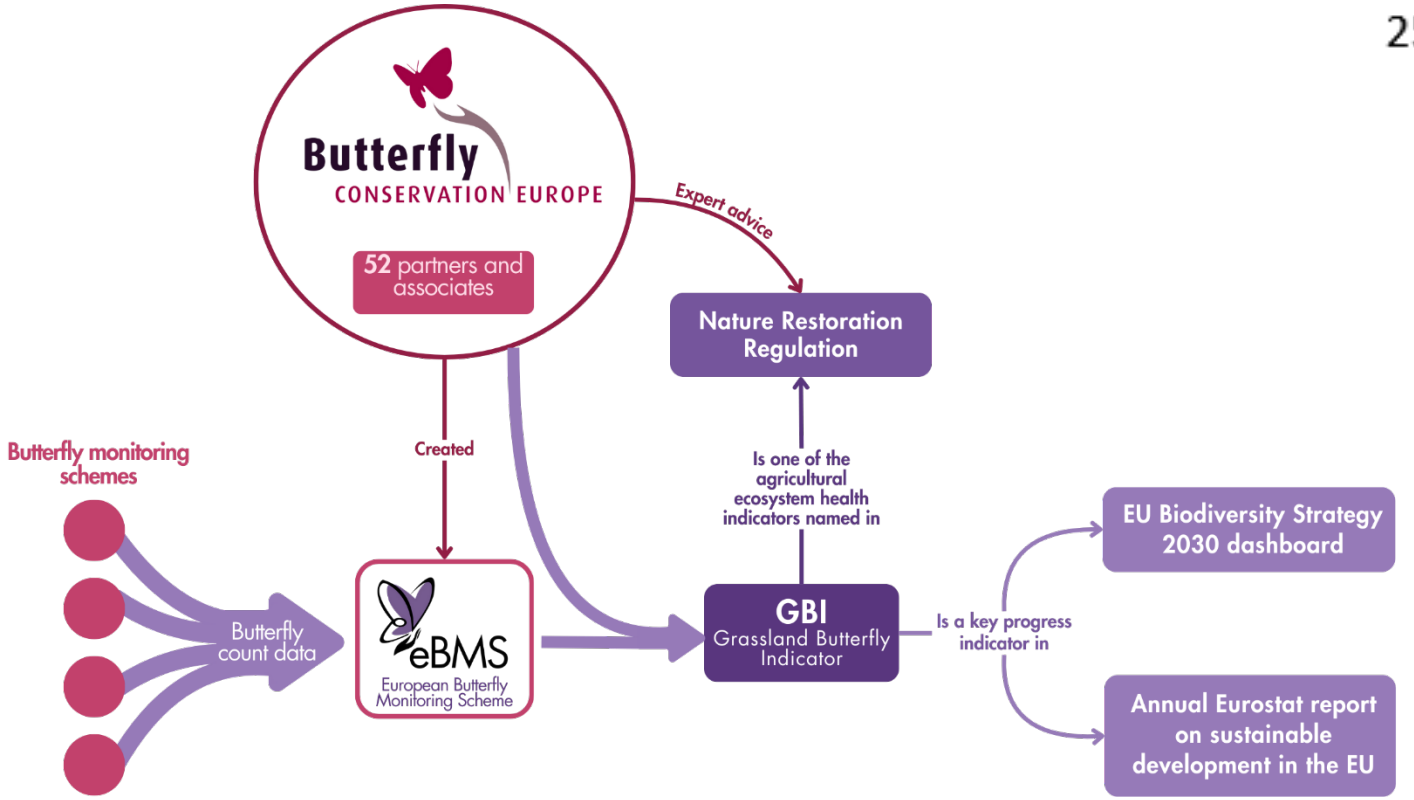

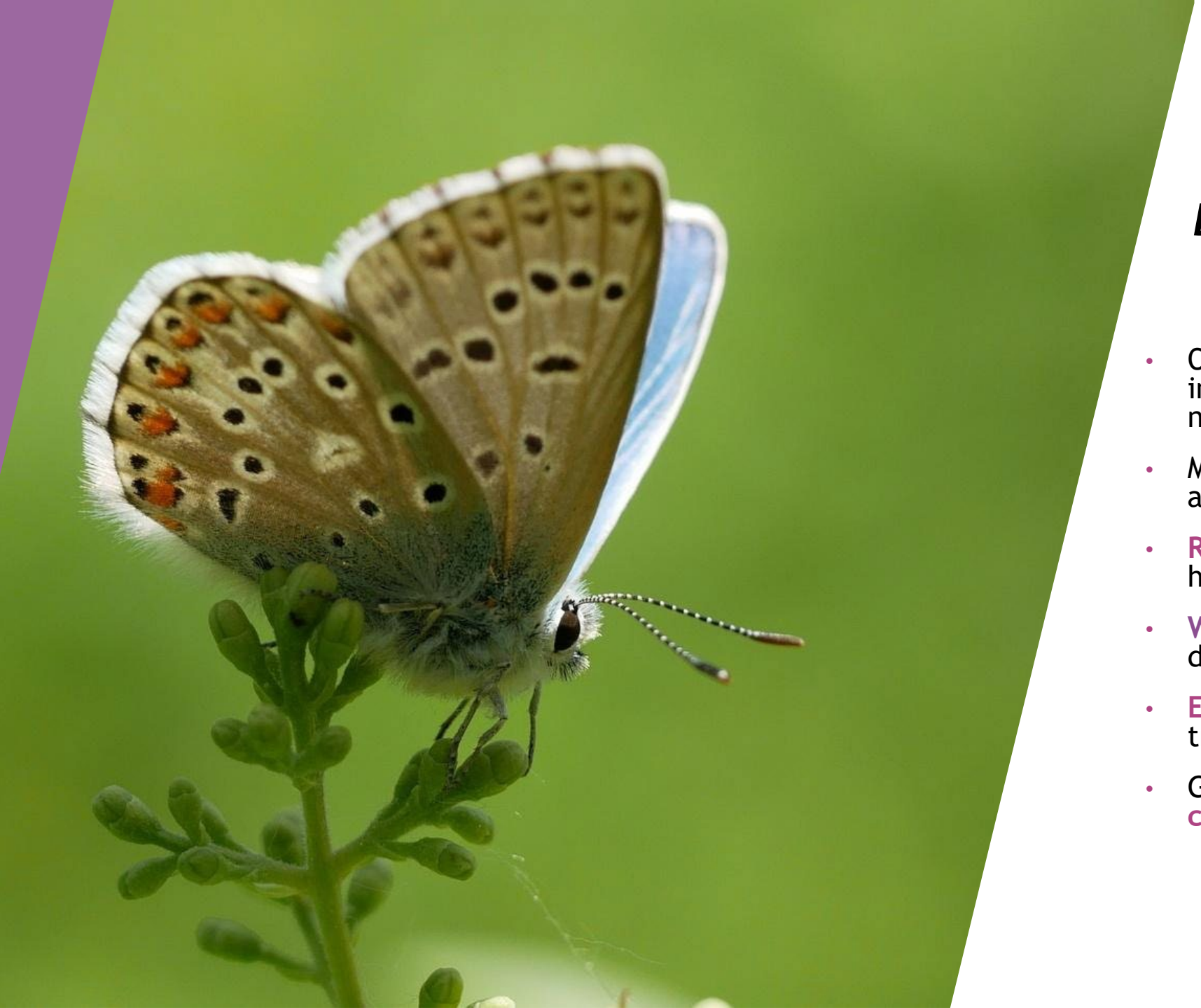

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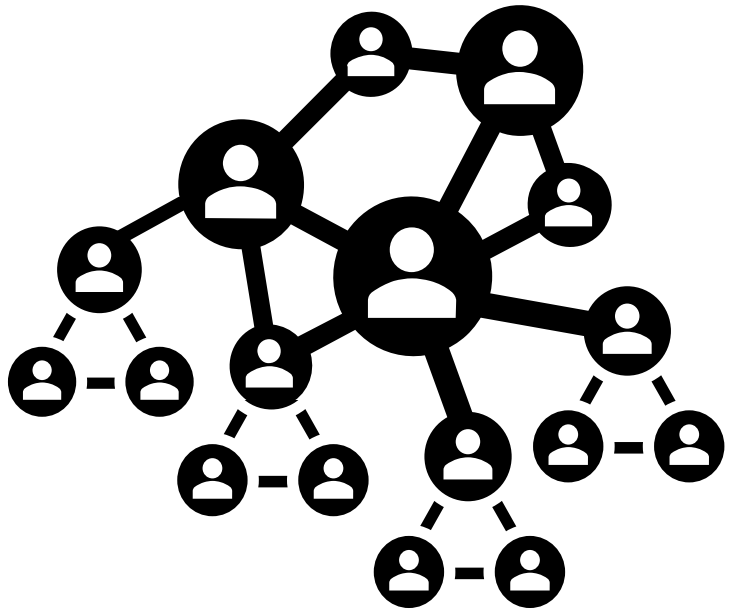
Butterflies as indicators

- Occur in **wide range of habitats**, including farmland, urban and semi-natural
- Many **habitat specific** so tell you about the health of habitats
- **Respond rapidly** to changes in habitat condition and climate
- **Well documented** (biology, ecology, distr. 50 years monitoring methods)
- **Easy to observe** and identify (with training)
- Great popularity in society = involve **citizen science**

BMS are extremely cost effective

- **Expert (mostly unpaid) volunters** walk monitoring transects (several times per year)
- Sustainable schemes require a paid coordinator: **this investment is multiplied many times in volunteer effort**
- **Volunteers are motivated by helping butterflies**: not based on money



e.g. BMS with 100 transects walked every week = €312,000 (volunteers @ €120/day)

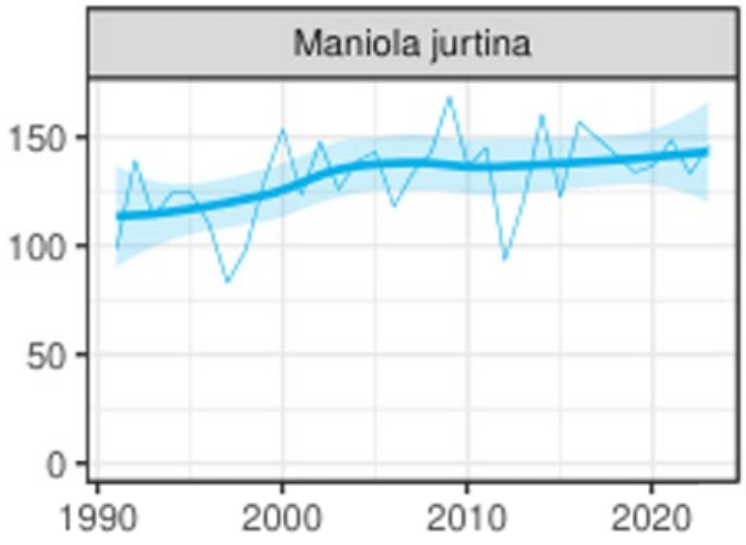
eBMS = 10,000 transects walked every 2 weeks = €15 million pa

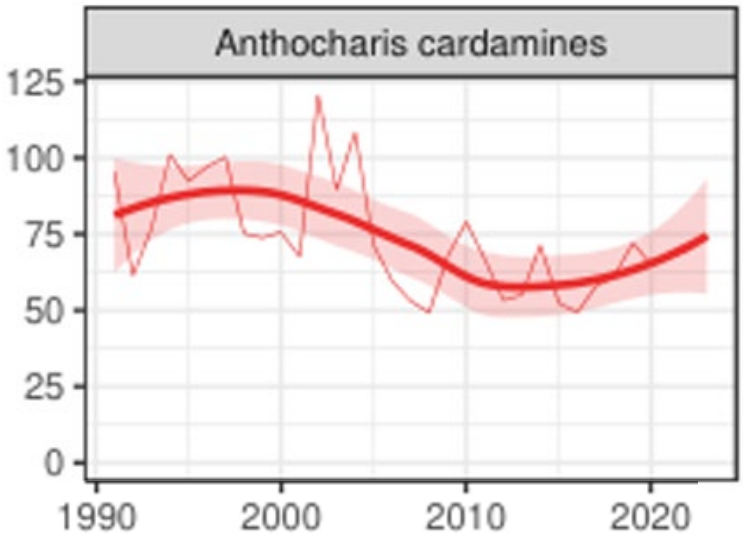
EU Biodiversity Strategy 2030

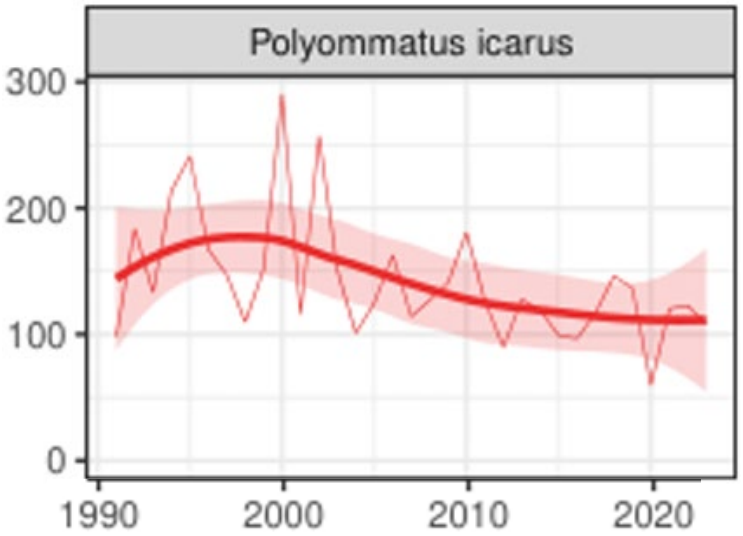
- 1. By 2030 ….. habitats and species show no deterioration in conservation trends and status; and at least 30% reach favourable conservation status **or at least show a positive trend.**

- **2. The decline in pollinators is reversed.**

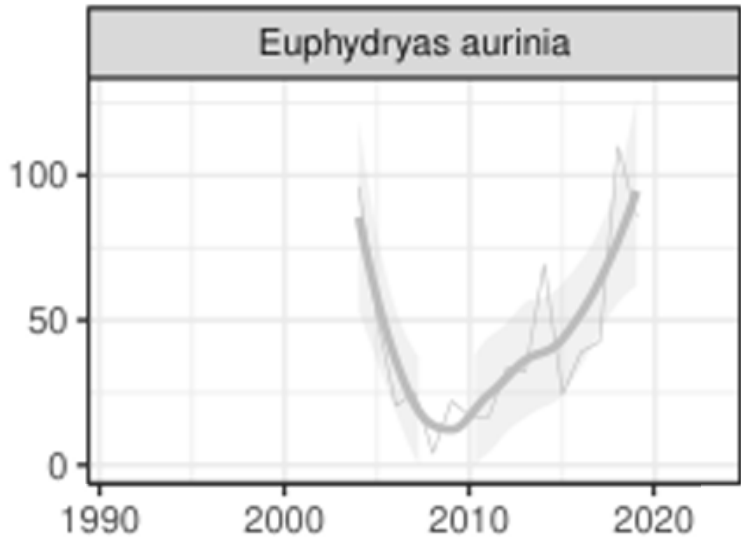
BMS benefits: Trends of widespread species

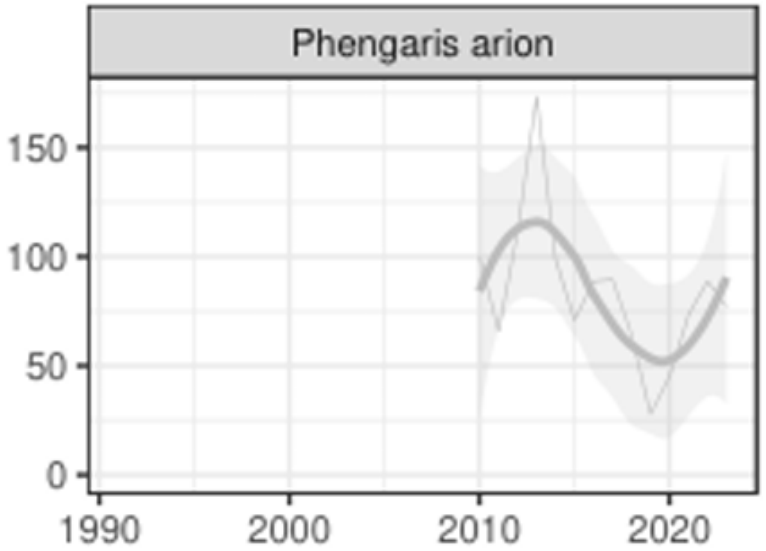


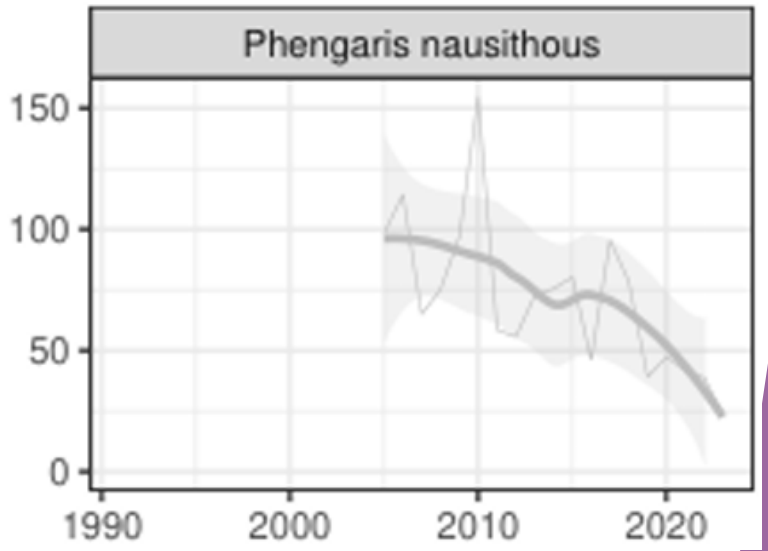




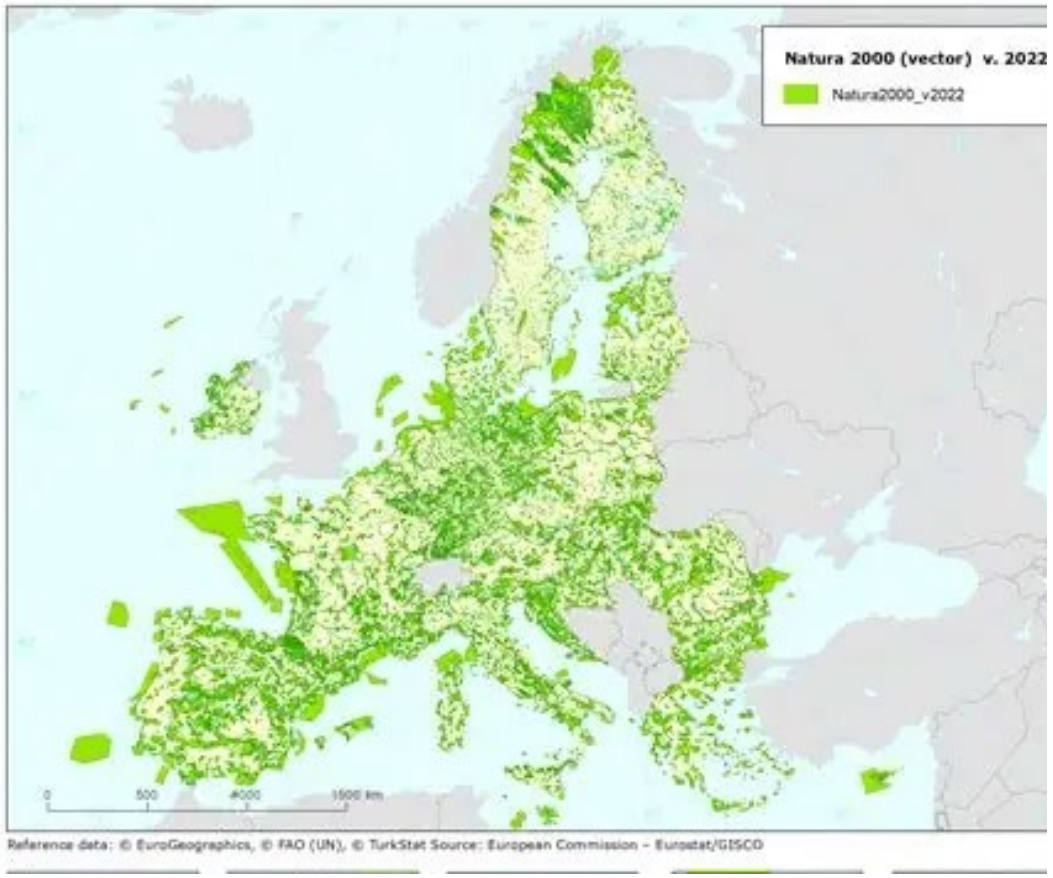
BMS benefits: Trends of Habitats Directive species

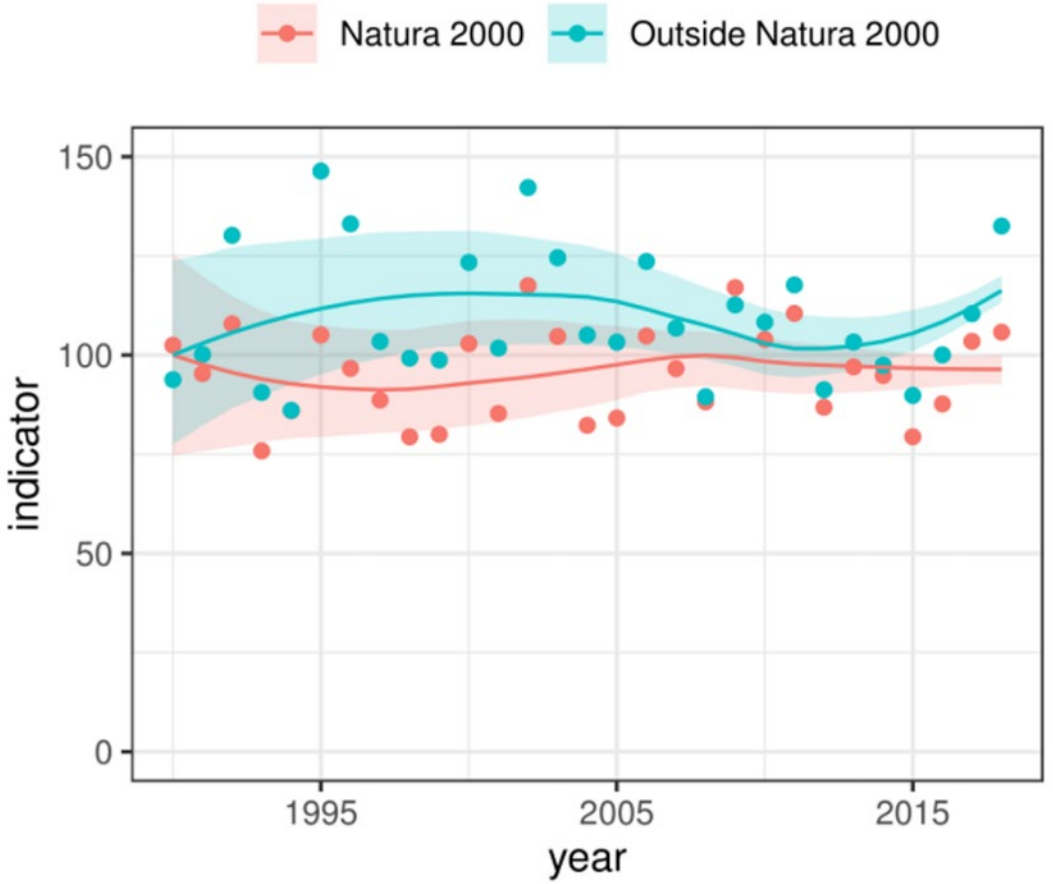






BMS benefits: Monitoring Natura 2000 sites





Nature Restoration Regulation

Article 10. Restoration of pollinator populations

Article 11. Restoration of agricultural ecosystems

Article 14. National restoration plans

Article 20. Monitoring

Nature Restoration Regulation: Role of Citizen Science

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Article 10. Restoration of pollinator populations

1. MS shall improve pollinator diversity and reverse the decline of pollinator populations at the latest by 2030 and thereafter achieve an increasing trend of pollinator populations.

2. + 3. A science-based method for monitoring pollinator diversity and pollinator populations (EUPoMS)

4. When using the method referred to in paragraph 2, Member States shall ensure that monitoring data comes from an adequate number of sites to ensure representativeness across their territories. Member States shall promote citizen science in the collection of monitoring data where suitable and provide adequate resources for the performance of those tasks

eBMS

EU PoMS

- MS have to establish a random network of sampling squares
- EUPoMS will likely only establish trends on common and widespread species (only 40-120 squares per country)
- BMS can produce trends on more species + species of conservation concern
- BMS results can help interpret EU PoMS results and put in wider context
- BMS flight period curves can be used to improve the analysis of EUPoMS trends

EU PoMS: BMS provides pool of parataxonomists

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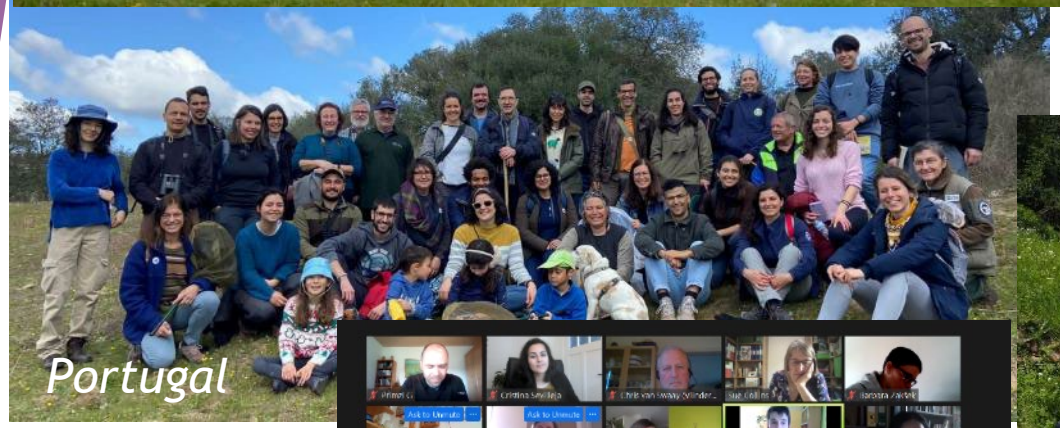
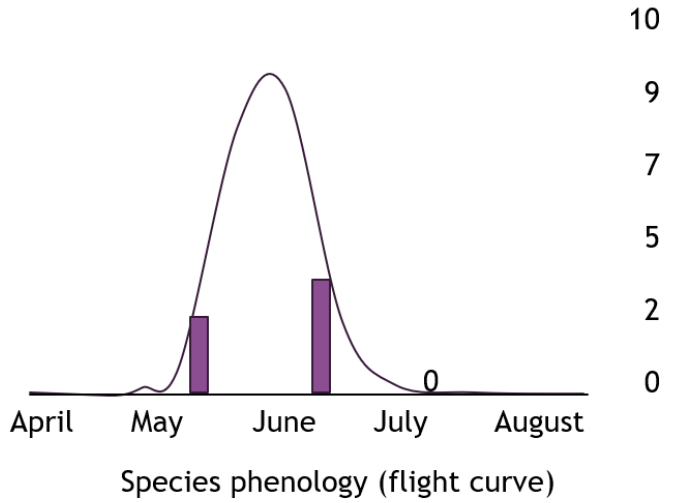


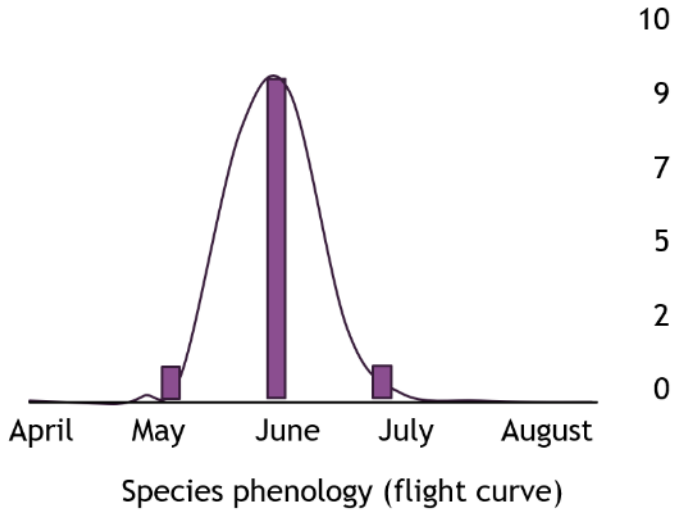
eBMS

EU PoMS: Benefits of flight period curves



Species phenology (flight curve)

- Monthly counts miss peak
- Index = 5



Species phenology (flight curve)

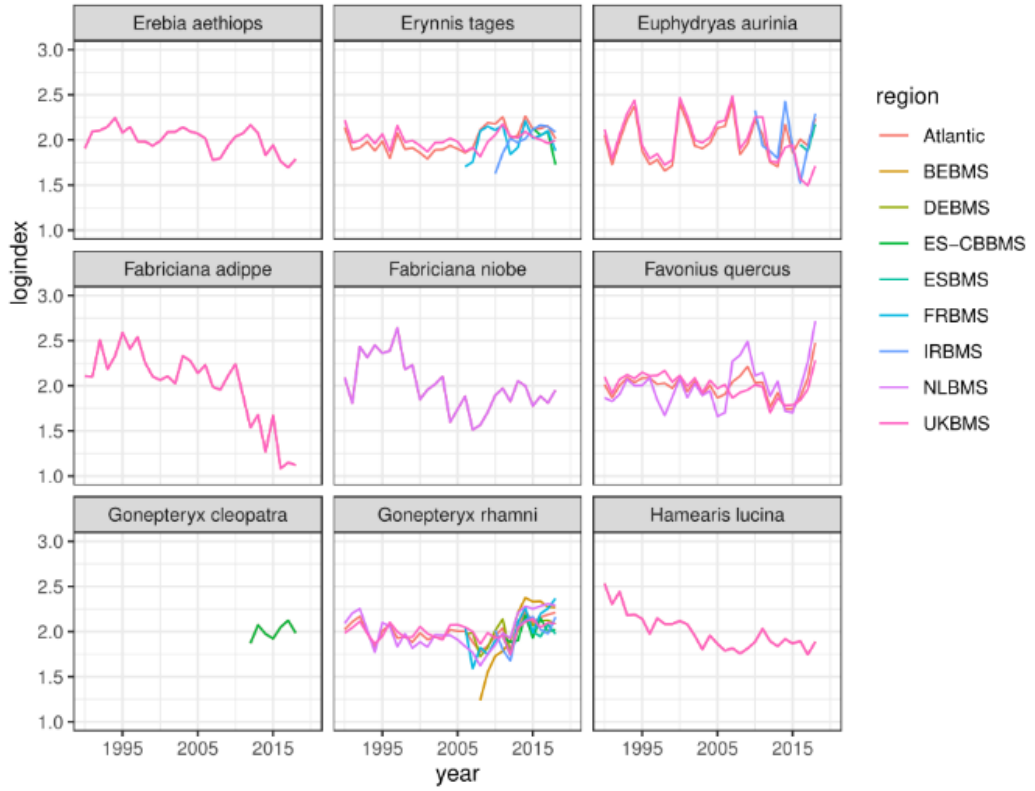
- Monthly counts hit peak
- Index = 11

BMS data can create flight curves to improve accuracy of analysis

BMS benefits: trends on many more species

Robust data on butterfly trends at species and site level.

- At Species level on each transects
- Individual Species abundance and trends
- Species diversity
- Monitoring throughout whole butterfly season
- Captures the profile of abundance of each species including the peaks



Nature Restoration Regulation:

Article 11. Restoration of agricultural ecosystems

1. MS shall put in place the restoration measures to enhance biodiversity in agricultural ecosystems

2. MS shall put in place measures to achieve an increasing trend at national level of at least two out of the three following indicators for agricultural ecosystems

(a) grassland butterfly index;
(b) stock of organic carbon in soils;
(c) share of agricultural land with high-diversity landscape features

Restoring Agricultural ecosystems

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Synergies between two indicators: GBI and landscape features

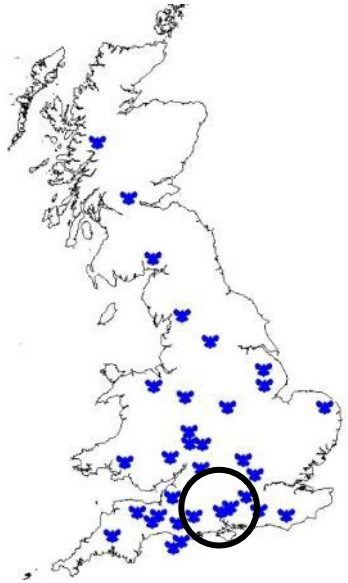
eBMS

Restoring agricultural ecosystems
How to bend the curve

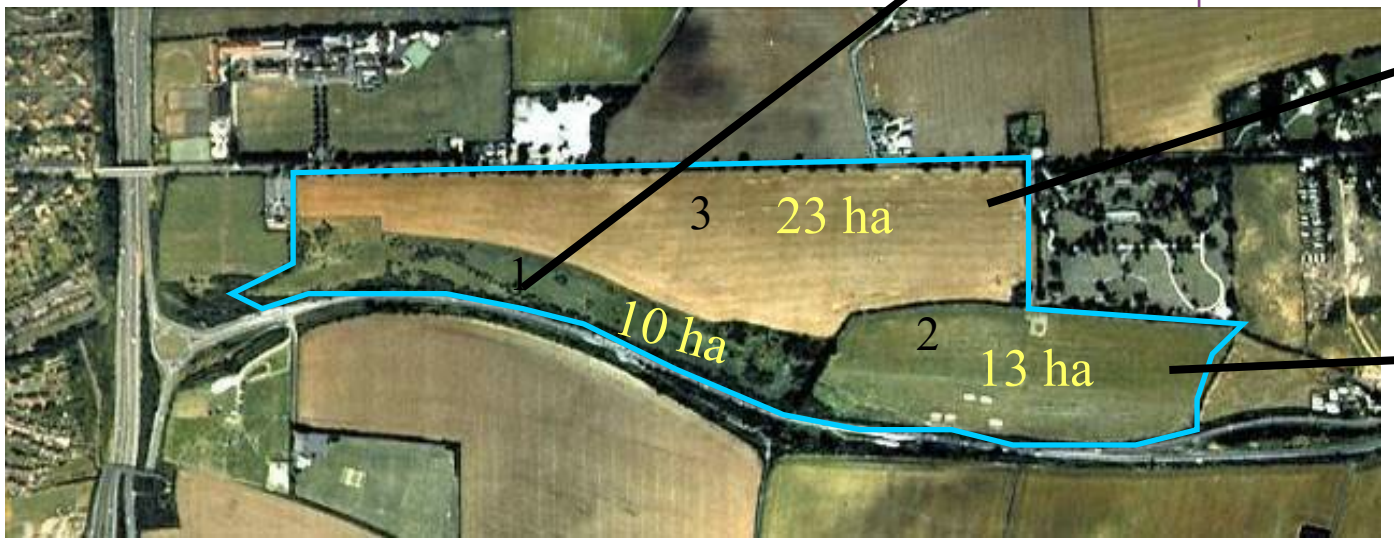
- **BMS experts have local expertise**
- **BMS can monitor outcomes**

Monitoring restoration: Bending the curve

Magdalen Hill Down BC reserve: restoration from arable



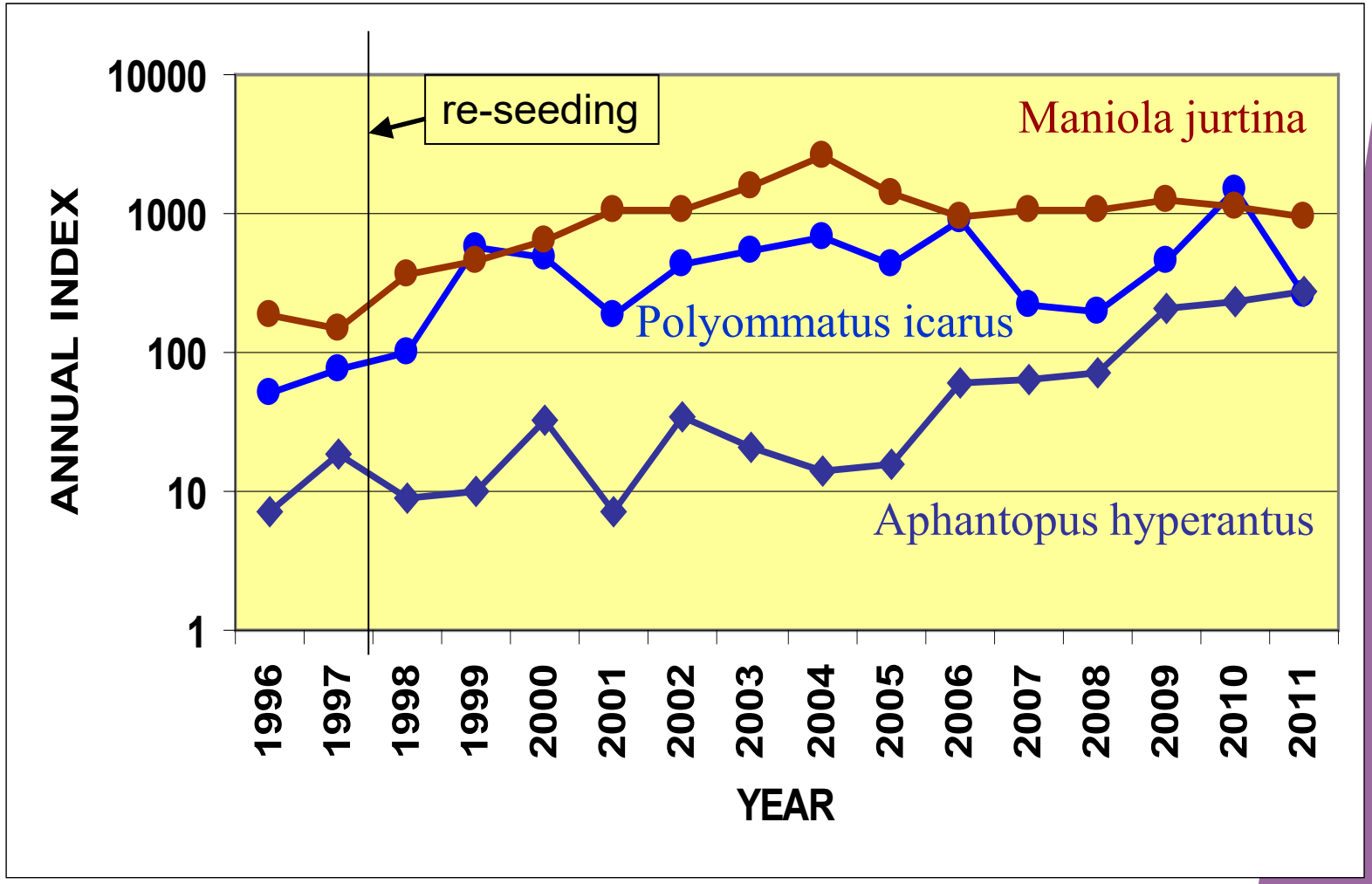
1991
Original reserve



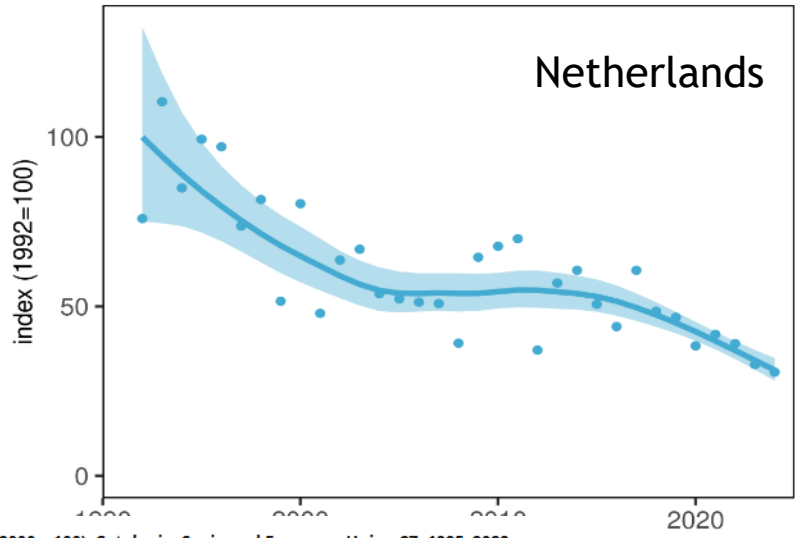
North Extension 2005

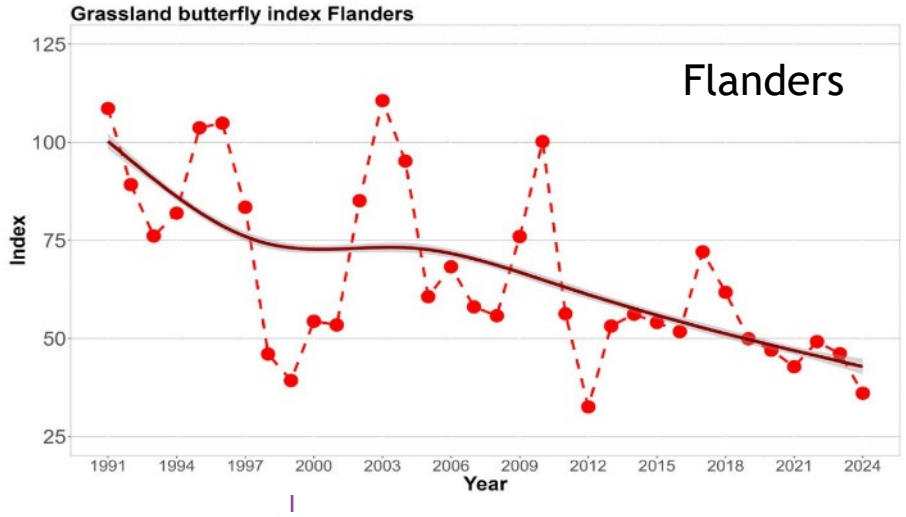
East Extension 1997

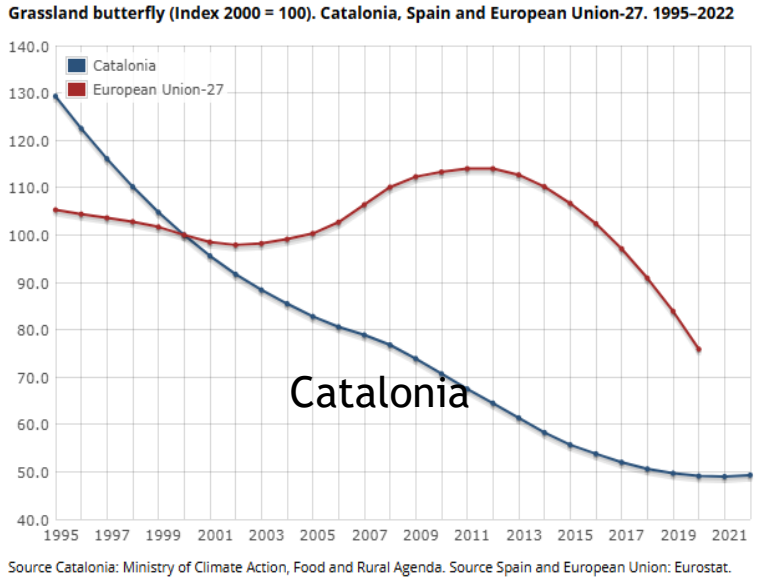
Measuring restoration: Bending the curve

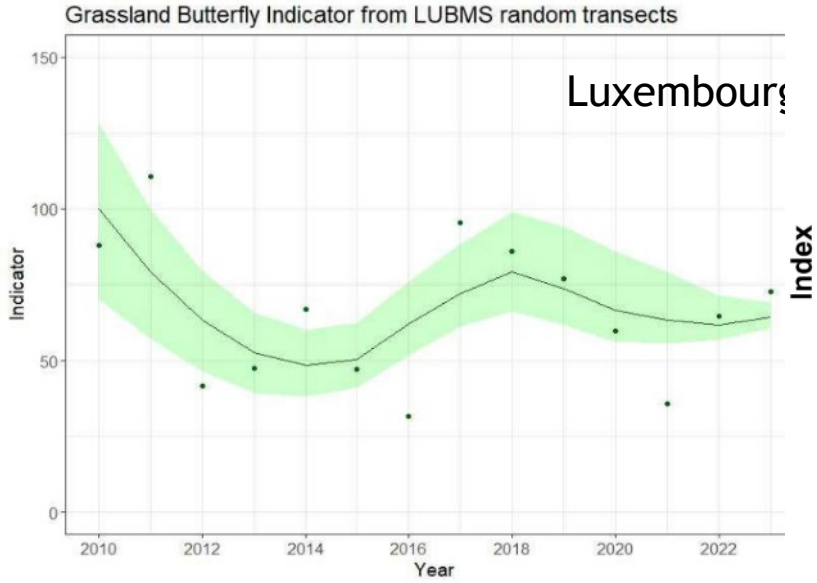


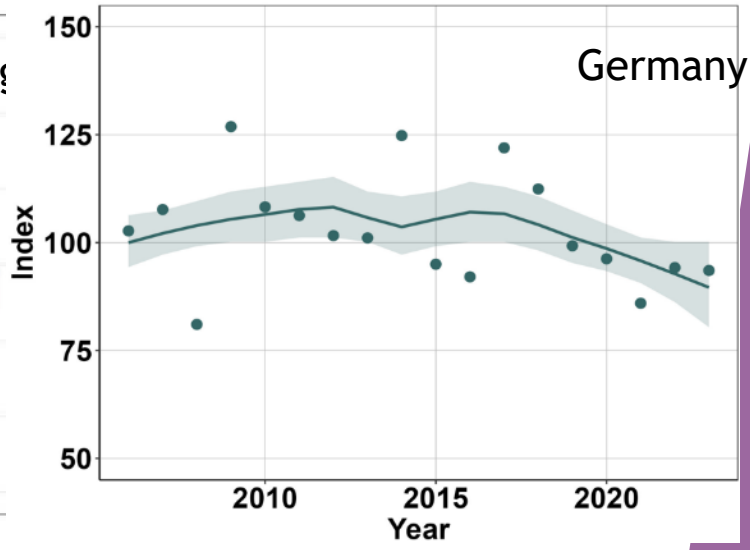
Grassland Butterfly Index: From MS to EU











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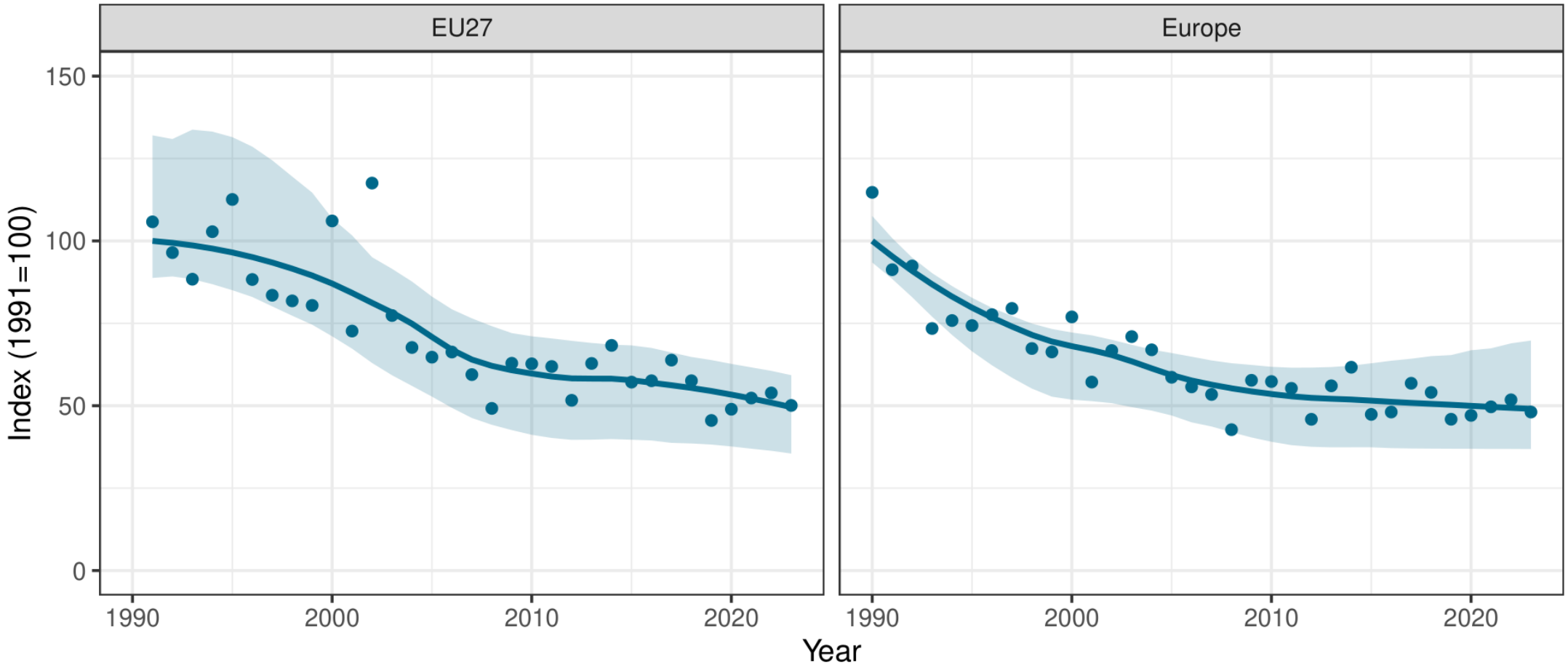

Nature Restoration Regulation

Article 14. National restoration plans

Article 20. Monitoring

BMS can help

- Expertise to design restoration plans (eg farmland, forestry, urban)
- Monitor habitat condition using butterflies as indicators
- Monitor outcomes of interventions
- Evaluate climate change impacts
- Provide indicators of habitats, HD sp, RL sp etc

Summary

BMS can provide multiple benefits for MS and implementing the various biodiversity regulations:

- Cost-effective monitoring
- Trends on widespread and threatened species
- Indicators of habitats and Natura 2000
- Assessment of policy success
- National GBI
- Engaging the public via Citizen Science
- Providing a pool of parataxonomists to help EUPoMS
- Expert advice and evidence to improve policies (e.g. farmland)

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