

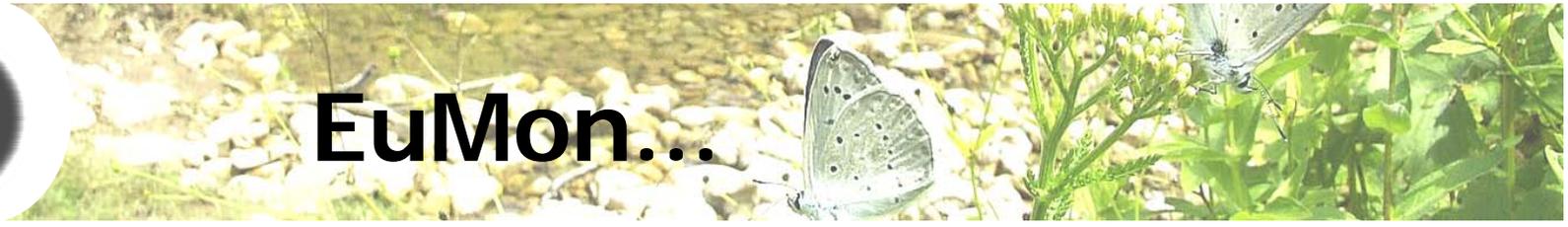
The EuMon-project – an overview

Klaus Henle
UFZ
&
The EuMon Team



The image shows the EuMon logo, which consists of the letters 'EU' stacked above 'MON' in a stylized, bold font. To the right of the logo are two rectangular buttons: 'EUMON Portal' and 'EUMON in a nutshell'. Below the logo is a digital countdown timer with four columns labeled 'days', 'hours', 'minutes', and 'seconds'. The timer shows 0853 days, 03 hours, 23 minutes, and 1 second remaining. To the right of the timer is the text 'left until the Year 2010'.

days	hours	minutes	seconds	
0853	03	23	1	left until the Year 2010



EuMon...

EU-wide monitoring methods and systems of surveillance for species and habitats of Community interest

A Policy Support Project



Contract Number: 6463





The EuMon team

16 Partners from 12 countries

- UFZ – Germany
- University Durham – UK
- University Paris – France
- MNHN – France
- Est Agric Uni Tartu – Estonia
- De Vlinderstichting – Netherlands
- Academy of Sciences – Slovenia
- University Debrecen – Hungary
- University Krakow – Poland
- University Klaipeda – Lithuania
- Uni Ljubljana – Slovenia
- Forestry Institute – Slovenia
- University Patras – Greece
- NINA – Norway
- CKFF – Slovenia
- University Vilnius – Lithuania



EuMon - Background

In 2001 at the European Council in Gothenburg, the Heads of State made the commitment to "halt biodiversity loss by 2010", which became widely known as [Agenda 2010](#). To accompany the political process, regular assessments of state and trends of biodiversity are necessary. [Monitoring](#) thus becomes a [key tool](#) but [needs further development](#) to ensure that questions by decision makers are answered adequately. This includes:

- **Coordination and standardization of biodiversity monitoring across Europe**
- **Efficient and effective spending of the limited resources available for monitoring**
- **More regular and integrated reporting of monitoring results**

Though there is a strong [political commitment](#) to reach the 2010 target, there remains [uncertainty on how to monitor biodiversity](#) and thus whether the target will be met. Policymakers need to know whether policies and their implementations to protect and use biodiversity in a sustainable manner are effective. Managers need to know to which extent they are meeting the goals of Directives and Biodiversity Conservation Strategies. The public should also have access to such assessments. [Monitoring programs that meet above criteria can result in concrete messages for decision makers and the public.](#)

EuMon is a specific targeted research project (**STREP**) supported by the **European Commission** under the **6th Framework Programme**.



EuMon is about ...

- **Database** characterizing existing monitoring schemes
- **Methods** and approaches generally suitable for **monitoring** of species & habitats
- Role of **volunteers** in biodiversity monitoring
- Methods to determine **national responsibilities and conservation priorities** for species and habitat conservation
- Methods for **systematic reserve site selection** and identification of **gaps in the Natura 2000** network



EuMon is not

- **Database** of original monitoring data or results
- **Tool** to substitute or do the reporting of Member States
- **Handbook** for field/taxa specific methods



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About the online **Databases**

EuMon designed two databases to provide an overview of monitoring approaches and monitoring organisations in Europe:

The database on Participatory Monitoring Networks (PMNs), covers **characteristics of organisations that involve volunteers** in biodiversity monitoring.

The database on European Monitoring Schemes (DaEuMon) addresses **coverage and methodological aspects of biodiversity monitoring**.

The **input to the database still continues**, making the database the most comprehensive one in Europe. However, not all countries and species groups are covered equally well and this should be considered in any analyses of the data from DaEuMon.

The usefulness of the EuMon database as a reference to monitoring schemes will further increase with time due to on-going efforts to maintain the database and extend its popularity.



Why databases on biodiversity monitoring activities in Europe ?

EuMon Databases

- **CBD: "Hold biodiversity decline by 2010"**

...data for assessment of achieving this target

- **EU: Evaluation of status of Natura 2000 sites**

...standard site-based methods and comparable data

- **EU: Directives require reporting on state and trend of distribution and population size for Directive species and their habitats (surveillance of conservation status)**

...integration of existing monitoring data for assessment

...launching of monitoring activities to fill gaps

Relevant issues

DATA
AVAILABILITY

BIOLOGICAL
COVERAGE

SPATIO-
TEMPORAL
COVERAGE

CURRENT
PRACTICES

GAP
IDENTIFICATION

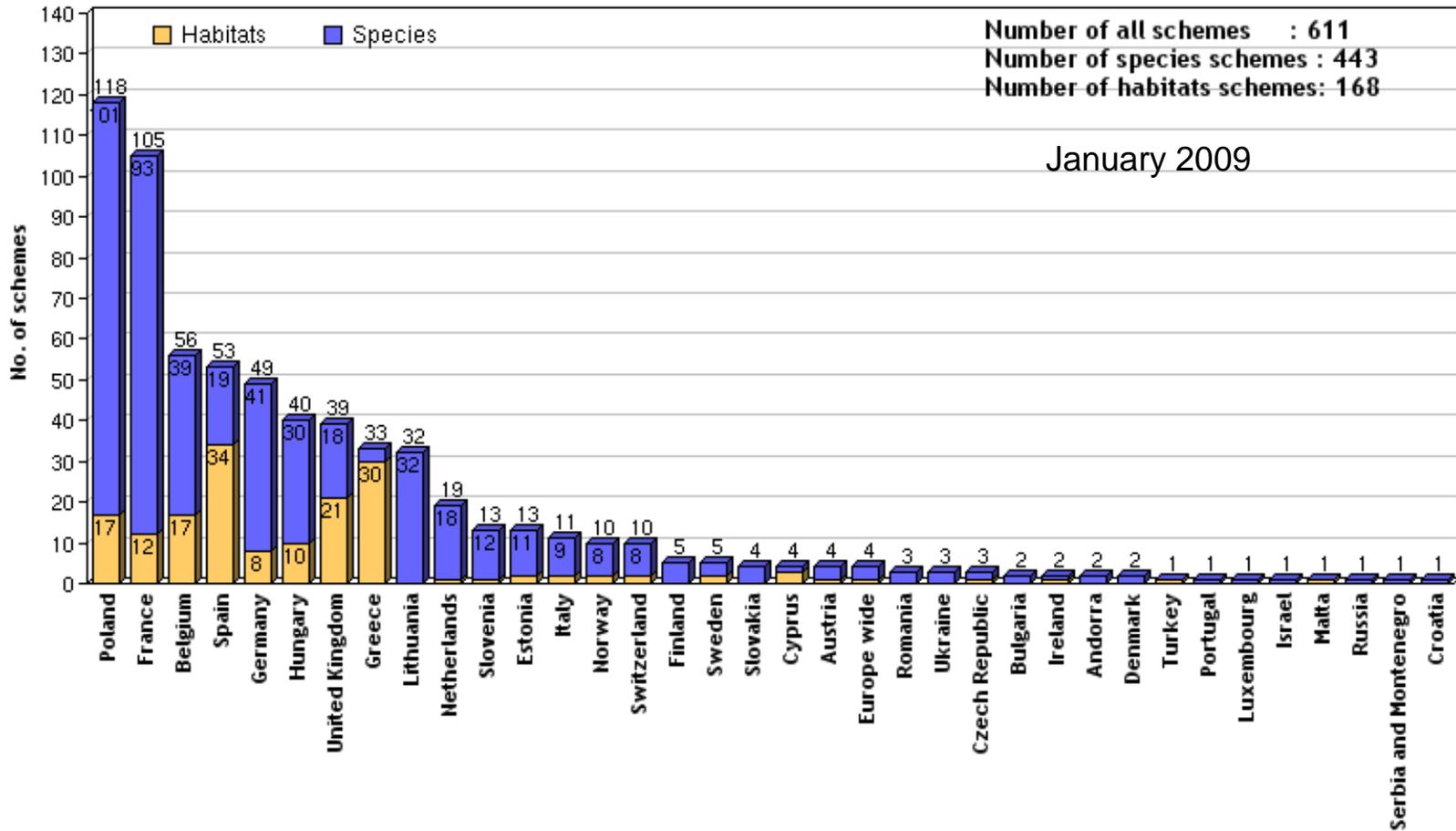


The EuMon Database on European Monitoring Schemes



01. Monitoring schemes by country

EuMon Databases



Most countries with EuMon partners comparably well covered

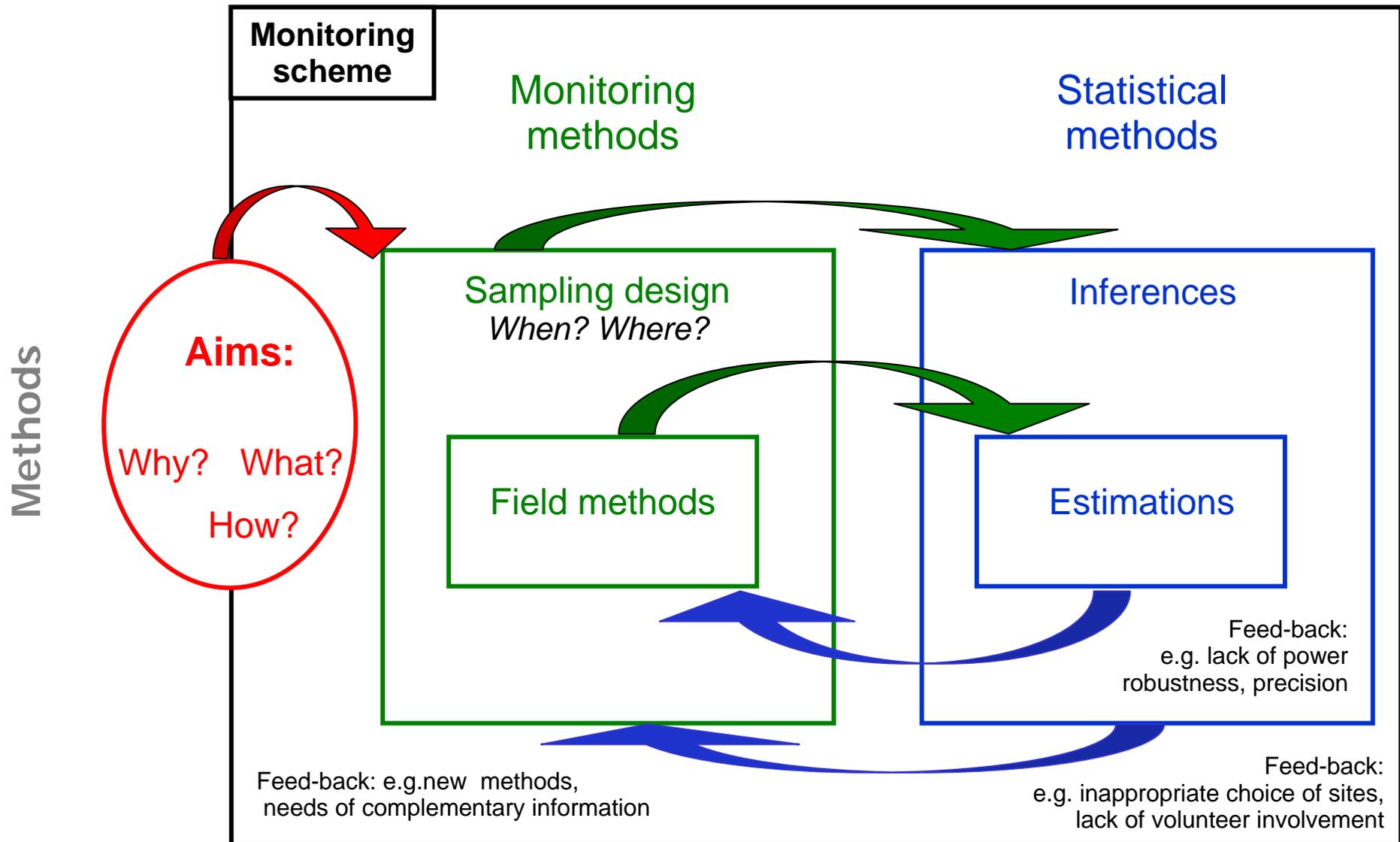


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Main steps in a monitoring life





References for **monitoring design** and **data analysis**

Important criteria for designing monitoring schemes

- **Representativity of data**
 - Sampling design
 - Stratification, selection of monitoring sites
 - Selection of species
 - Consideration of detection probability of species (number of sampling per year)
- **Statistical verifiable change in time and space**
 - Number of monitored sites
 - Duration of monitoring schemes
 - Monitoring-frequency

Methods

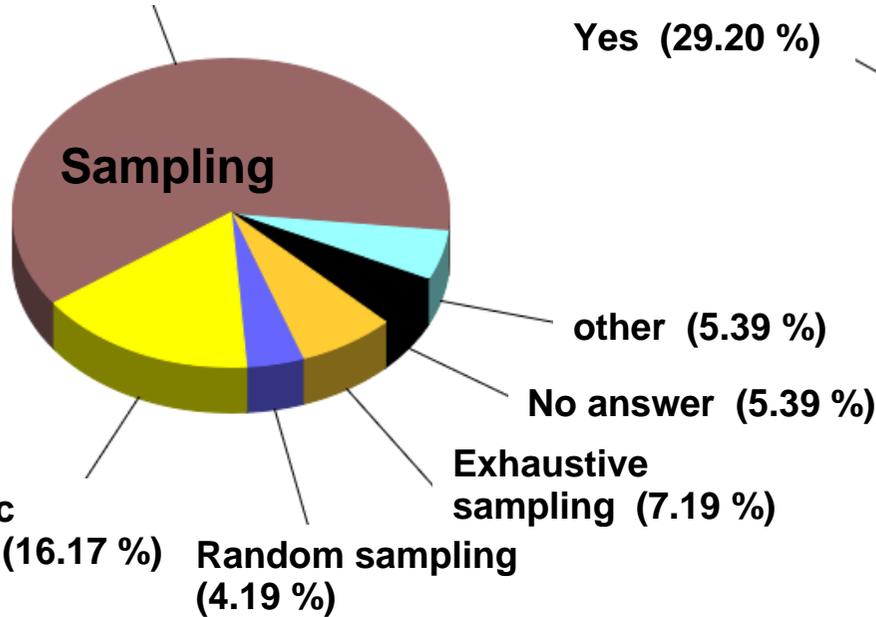


Study design

three main criteria for the **quality** of monitoring schemes

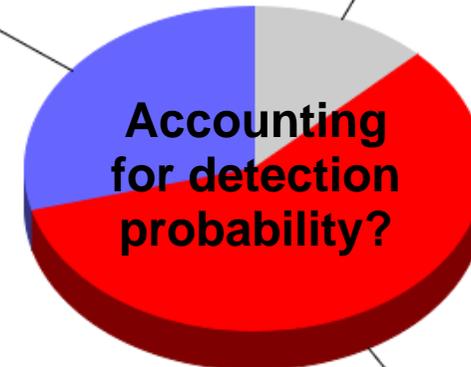
Methods

Personal or expert knowledge (61.68 %)



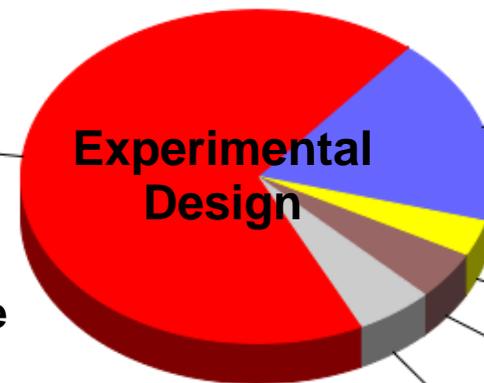
No answer (12.61%)

Yes (29.20 %)



No (58.19 %)

No (68.14 %)



Yes (Before/After) (18.36 %)

Yes (Control) (3.54 %)

Yes (Before/After + control) (4.65 %)

No answer (5.31 %)

Frequency of methods used in EuMon Database

Number of species schemes: 443 - Nov-08





Compilation of **recommended methods** for the design and analysis of **species monitoring data**

Methods

- Define the **goals** of the monitoring
- Use **biodiversity indicators**
- **Design** your monitoring: when and where to monitor ?
Account for sources of measurement error.
- Statistical methods **to analyse** monitoring data
- **Integrating** existing monitoring schemes: increased precision - generality / same effort

See policy brief no 2: "**Primer for biodiversity monitoring**"



Recommended methods for the design and analysis of species monitoring data

The methods to estimate state and trends that have been illustrated are:

- **distribution** analysis with **presence-absence** data
- **population size** analysis with **relative abundance** data
- **population size** analysis with **CMR** data

Methods

The methods have been applied to bird, butterfly, and plant monitoring data for each type of analysis.

See Deliverable 12: [Statistical methods for population and species monitoring](#)



Recommended methods for the analysis of combined data from different monitoring schemes

Methods

- how to produce average estimates across schemes
- how to analyse data from different schemes
- how to post-stratify data
- how to weight data

see Deliverable 16: Framework for integration of
different species monitoring schemes

Deliverable 18: Methods for analysis of combined data
from different monitoring schemes



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Volunteers in Monitoring Programs

Volunteers

The **cost and resource base** for monitoring schemes is generally **inadequate** to cover the necessary monitoring exercises. **Unpaid contribution** of large numbers of **amateur** (i.e. non-professional) **naturalists is essential** for the development of reliable and achievable monitoring methods. In the UK, for example, Participatory Monitoring Networks (PMNs) are currently being harnessed for the implementation of local Biodiversity Action Plans.

EuMon has shown that **PMN based monitoring schemes perform as well as paid monitoring schemes** in most quality criteria.

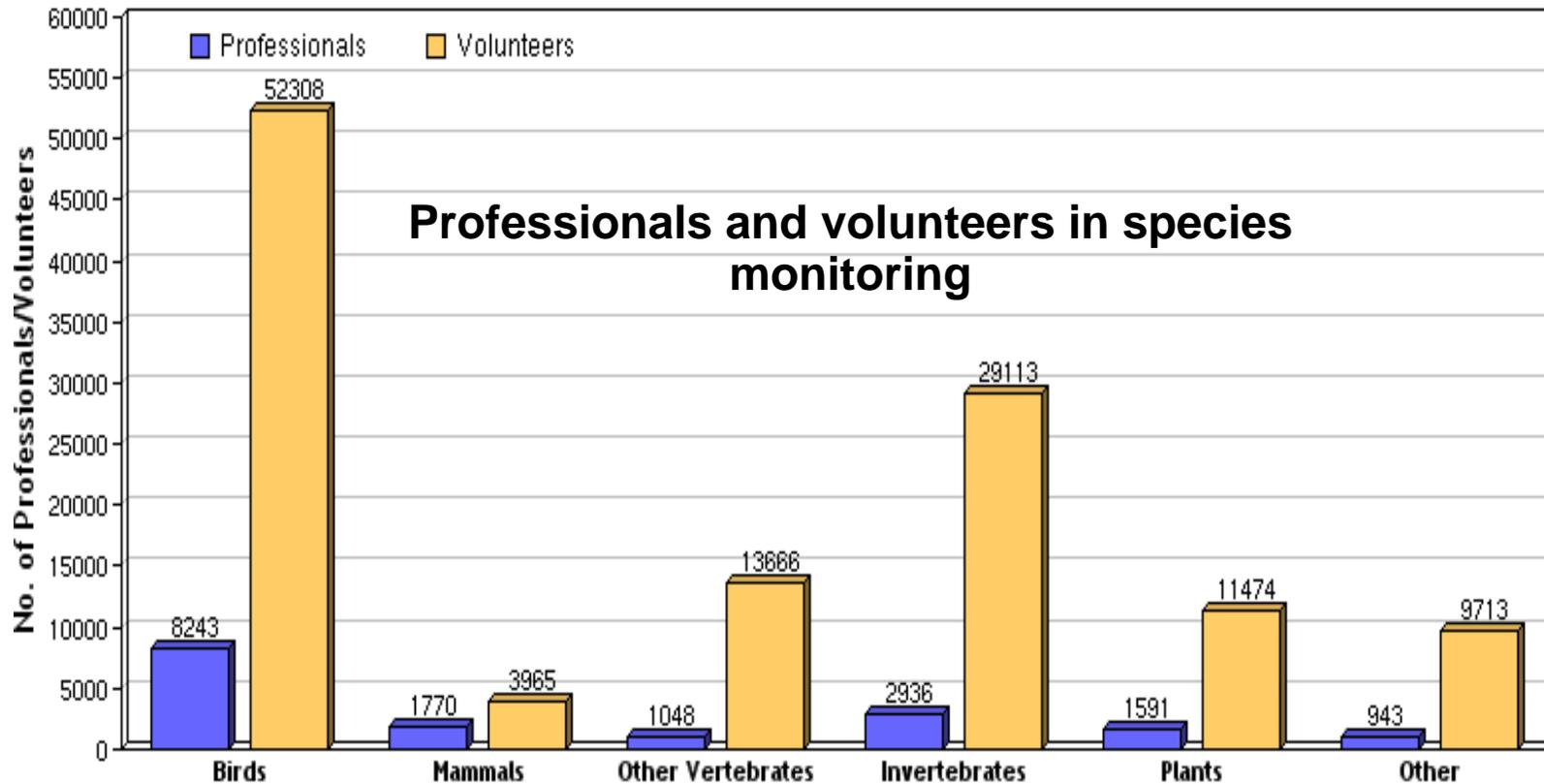
However, the range and degree of coverage, by PMNs across Europe, in terms of geographical range and species coverage, is unknown.

The **EuMon database on PMN** provides a first overview of PMNs in **Europe** (but some biases in country representation exist).



Volunteers in Species Monitoring

Volunteers





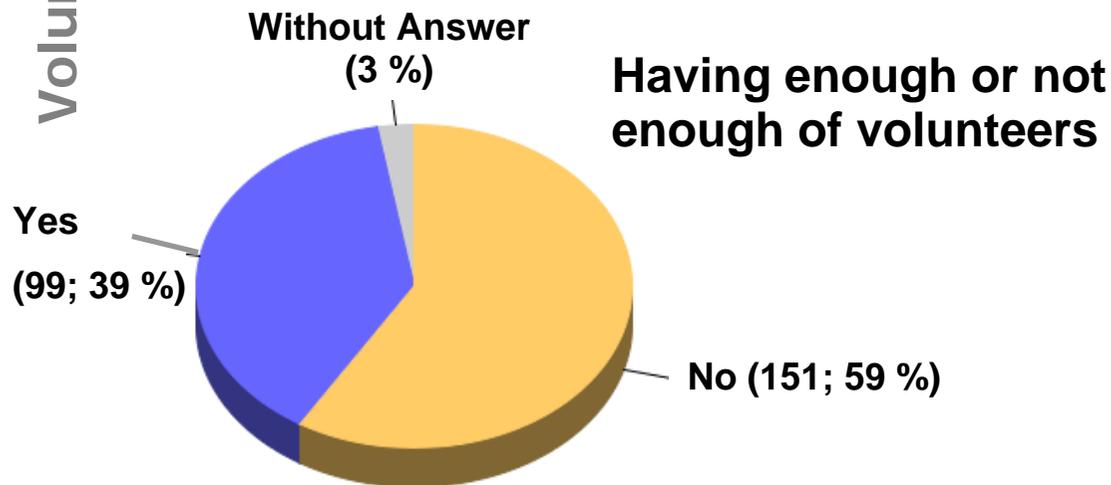
Volunteers



The **integration of volunteers** in biodiversity monitoring has many **effects**

- Increase of nature understanding in society
- Sensibilisation
- better **cost efficiency** in monitoring
- conflict with professional working experts

Volunteers





Volunteers – Conclusions

Key factors for successful volunteer involvement in biodiversity monitoring:

1. Socio-political background influences levels of participation
2. Different strategies needed for recruitment and retention of volunteers
3. Inform volunteers about how the data that they collect is used
4. Several factors motivate volunteers – think about them all
5. Carefully consider relations between professionals and volunteers
6. Collaboration with other PMNs adds value to monitoring

Volunteers

see policy brief no 1: "People Count Too - key issues for success in recruiting and retaining volunteers for biodiversity monitoring"



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National Responsibilities – Species EuMon method

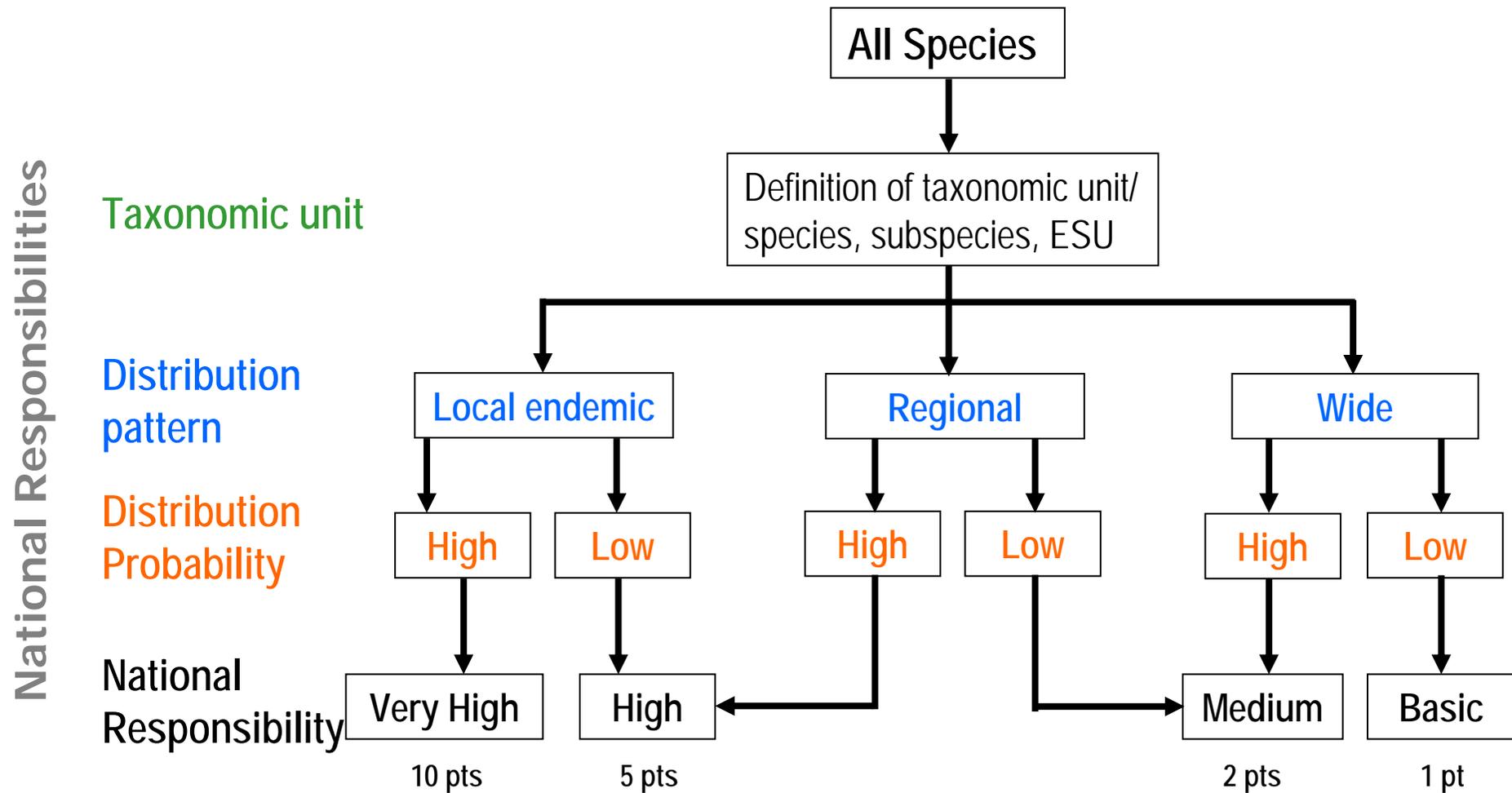
The **concept of national responsibilities** has been introduced in the late 1990ies to **overcome some of the shortcomings** of using Red Lists for setting conservation priorities.

EuMon reviewed existing methods and derived a new one that overcomes limitations of these methods and, most importantly, is **freely scalable**, i.e., can be applied to countries or regions of any size in a standardized way. The **method is based on the distribution pattern and distribution range of species**. Most importantly, the method **clearly distinguishes** between the **national responsibilities of countries** and the **conservation priority a species receives within a certain country**.

National Responsibilities



National Responsibilities – Species EuMon method





Advantages of the concept of National Responsibilities

National Responsibilities

- contains few, clear categories and decision steps
- is applicable to any species taxon
- considers the size of the focal area
- possible to incorporate historical-biogeographical aspects
- works with limited data, but can be extended (e.g. abundance data)
- clearly distinguishes between national responsibilities and conservation priorities



From National responsibilities to Conservation priorities

Conservation priorities are given by the combination of national responsibilities and threat status (Annexes of the Birds and Habitats Directives, IUCN Red list, national red lists). We tested this new methodology for countries of different size and biogeographic location: Central Europe (Germany), South-Eastern Europe (Hungary), Scandinavia (Norway), and the Baltic countries (Estonia). National responsibilities are crucial to pinpoint action plans in the different EU Member states on a legal basis and to meet the NATURA 2000 requirements.

Conservation Priorities





Advantages of the concept of Conservation priorities

Conservation Priorities

- **Scientifically** sound reasoning
- **Few** categories
- **Adjustable** to future changes of distribution data and threat status
- Adjustable to **different scales**
- **Automatization** possible (database needs to be constructed)

see policy brief no 3: "Identification of national responsibilities and conservation priorities in Europe"



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Natura 2000

Networks of protected areas are the backbone of most biodiversity conservation strategies. In terms of sites involved NATURA 2000 is probably the largest network of conservation areas in the world.

EuMon reviewed methods to systematically develop networks of protected sites and analysed information gaps that may hamper a systematic approach to the development of European networks of protected areas. EuMon further analysed gaps in the existing NATURA 2000 network in terms of the representation of species and habitats of the European Nature Directives.

The effectiveness of the [selection process](#) and the existing Natura 2000 network has often been questioned as each state made its designations largely independently and in [most cases without references to theory of optimal reserve site selection](#).

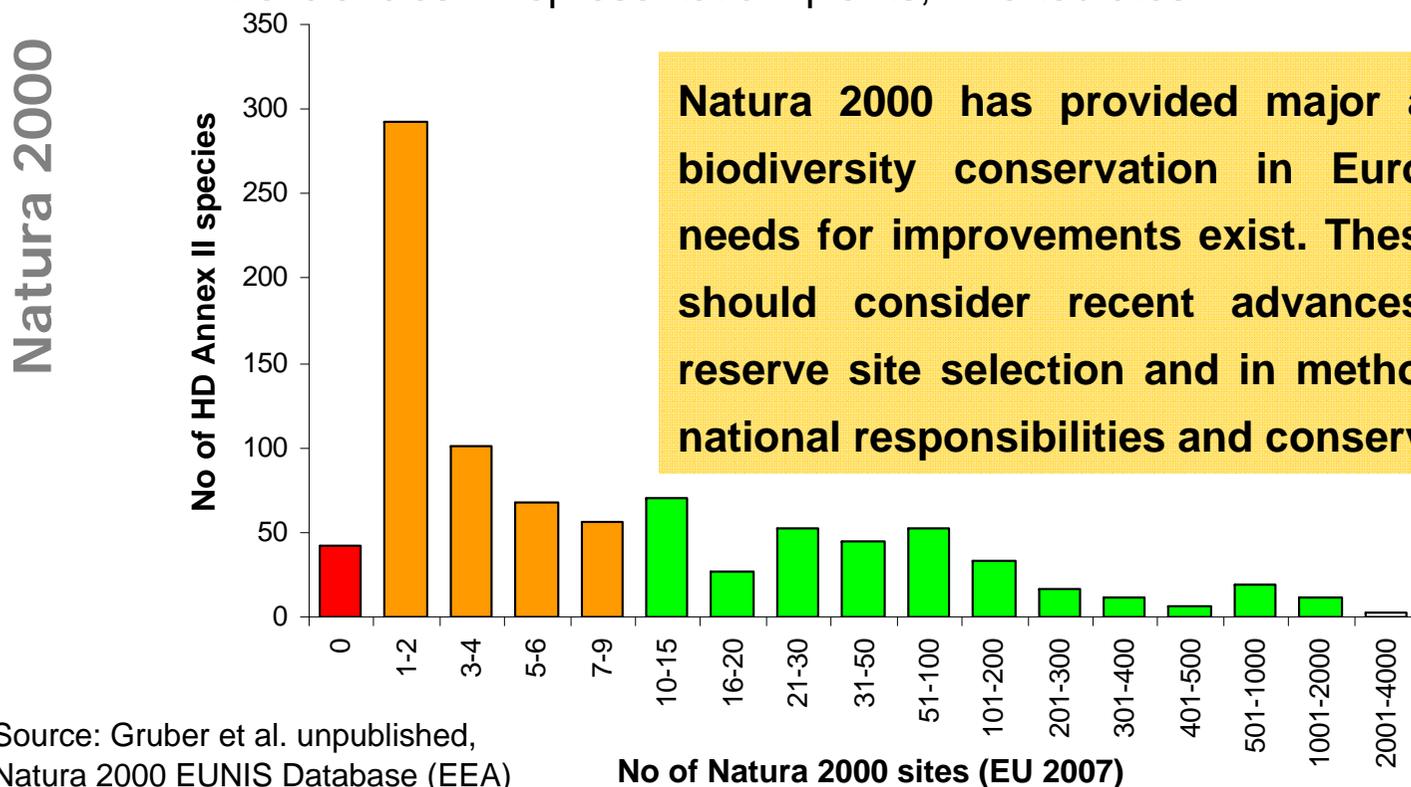
See Deliverables 11: [Methodology for systematic reserve site selection](#)

Deliverable 14: [Information gaps in monitoring programs and gaps in the Natura 2000 network](#)



Representation gaps in the Natura 2000 network

- Natura 2000 network is effective in avoiding gap species (15 gap species out of 905 species)
- but representativeness varies considerably among species
 - Well represented: mammals, amphibians, reptiles, fish
 - Deficiencies in representation: plants, invertebrates



Source: Gruber et al. unpublished, Natura 2000 EUNIS Database (EEA)



Information gaps in the Natura 2000 network

Based on the findings of EuMon we made recommendations how research, monitoring, and data management programs could contribute to filling identified information gaps.

A first important information gap is the lack of an explicit quantitative criterion regarding the representation of the target species and habitats.

For the management and improvement of the Natura2000 network the following information should be available:

- (1) quantitative representation targets,
- (2) monitoring information about the selected targets within the existing network and outside, and ideally
- (3) information about viability of species and connectivity requirements.

Natura 2000

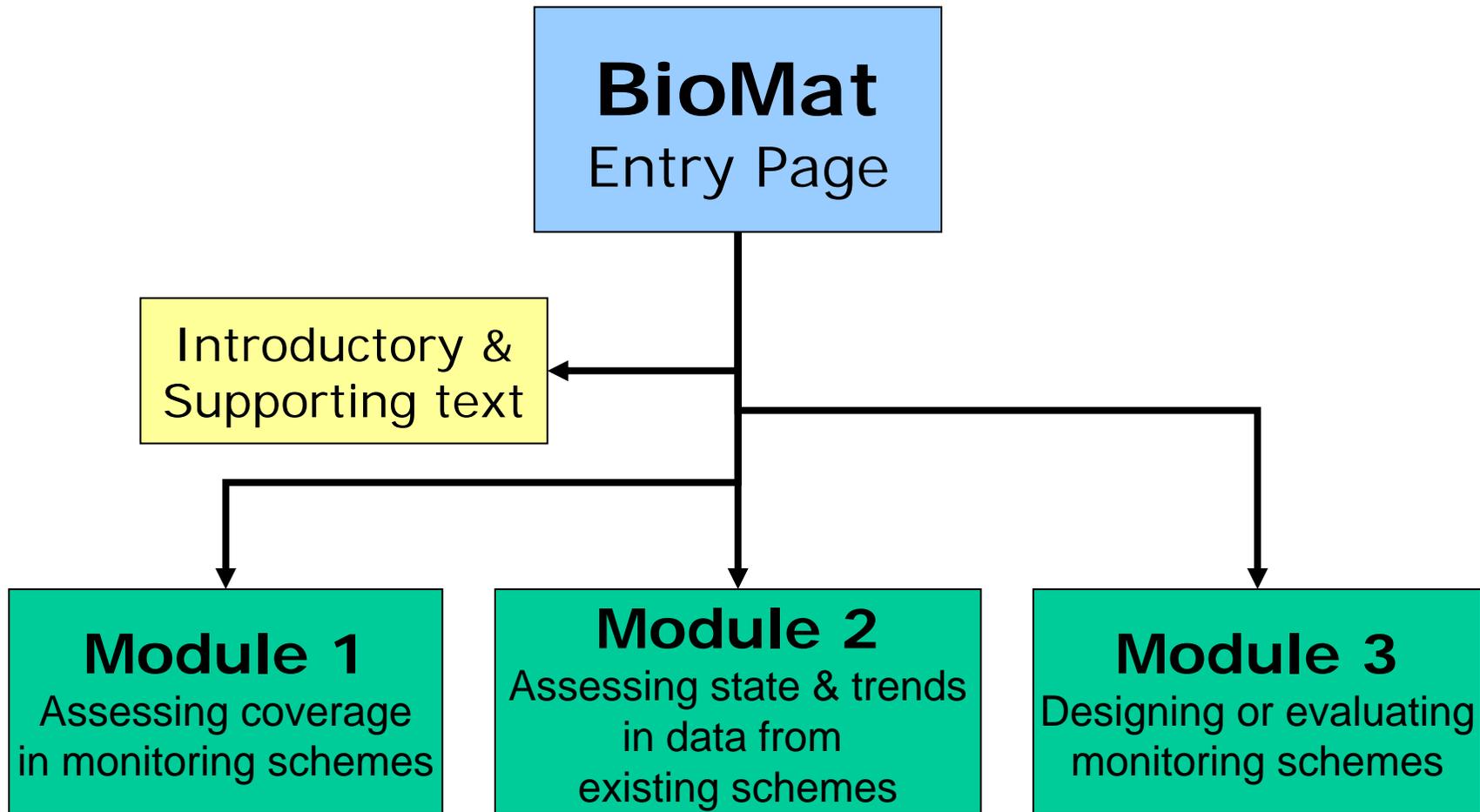


EuMon - Products

- **Database** of existing monitoring schemes
- **Internet portal** with downloadable tools & manuals to promote and integrate biodiversity monitoring (**BioMAT**)
- **Policy Briefs**
 - **No 1: People Count Too** - key issues for success in recruiting and retaining volunteers for biodiversity monitoring
 - **No 2: A primer** for biodiversity monitoring
 - **No 3: Identification** of national responsibilities and conservation priorities in Europe



EuMon - Products: BioMAT



BioMAT

Monitoring species and habitats is essential to assess state and trends in biodiversity

Assessing the coverage of species and habitat monitoring schemes in Europe

Assessment of state and trends from monitoring data

Design and evaluation of monitoring schemes

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<http://euemon.ckff.si/biomat/>



Key information about BioMAT

- [What is covered?](#)
- [Basic approach](#)
- [Policy relevance](#)
- [EuMon database](#)

Background information

- [What is biodiversity?](#)
- [What is biodiversity monitoring?](#)
- [Environmental pressures](#)
- [Surrogate indicators](#)
- [Aggregated biodiversity indicators](#)
- [Glossary](#)
- [The EuMon project](#)
- [Additional useful web links for biodiversity monitoring policy and methods](#)



BiMAT

The EuMon integrated Biodiversity Monitoring & Assessment Tool

← [BioMAT](#) > [Assessing monitoring schemes](#) > [Monitoring in general](#) > [Search](#) > [Country report](#)

Assessing the coverage of species and habitat monitoring schemes in Europe

Monitoring of species and habitats in general

Country report

Slovenia

Location: 45-47°N, 13-17°E

Area (km²): 20 270

Biogeographic regions: Continental, Alpine, Pannonian

Number of species schemes covering main taxonomic groups

Birds	Mammals	Other Vertebrates	Invertebrates	Plants	Other
5	2	2	4	0	0

Number of habitat schemes covering main habitat types

COASTAL AND HALOPHYTIC HABITATS	COASTAL SAND DUNES AND INLAND DUNES	FORESTS	FRESHWATER HABITATS	NATURAL AND SEMI-NATURAL GRASSLAND FORMATIONS	RAISED BOGS AND MIRES AND FENS	ROCKY HABITATS AND CAVES	SCLEROPHYLLOUS SCRUB (MATORRAL)	TEMPERATE HEATH AND SCRUB
0	0	1	0	0	0	0	0	0

Number of schemes covering Nature Directive Annexes

Hab. Dir. I	Hab. Dir. II	Hab. Dir. IV	Hab. Dir. V	Birds Dir. I
0	0	0	0	0



Contact EuMon

More Information about the
EuMon project and its
products can be found on
the project **Web page**:

<http://eumon.ckff.si>

Coordination: eumon@ufz.de