

MonViA – Monitoring of biological diversity in agricultural landscapes in Germany (MonViA)

Petra Dieker

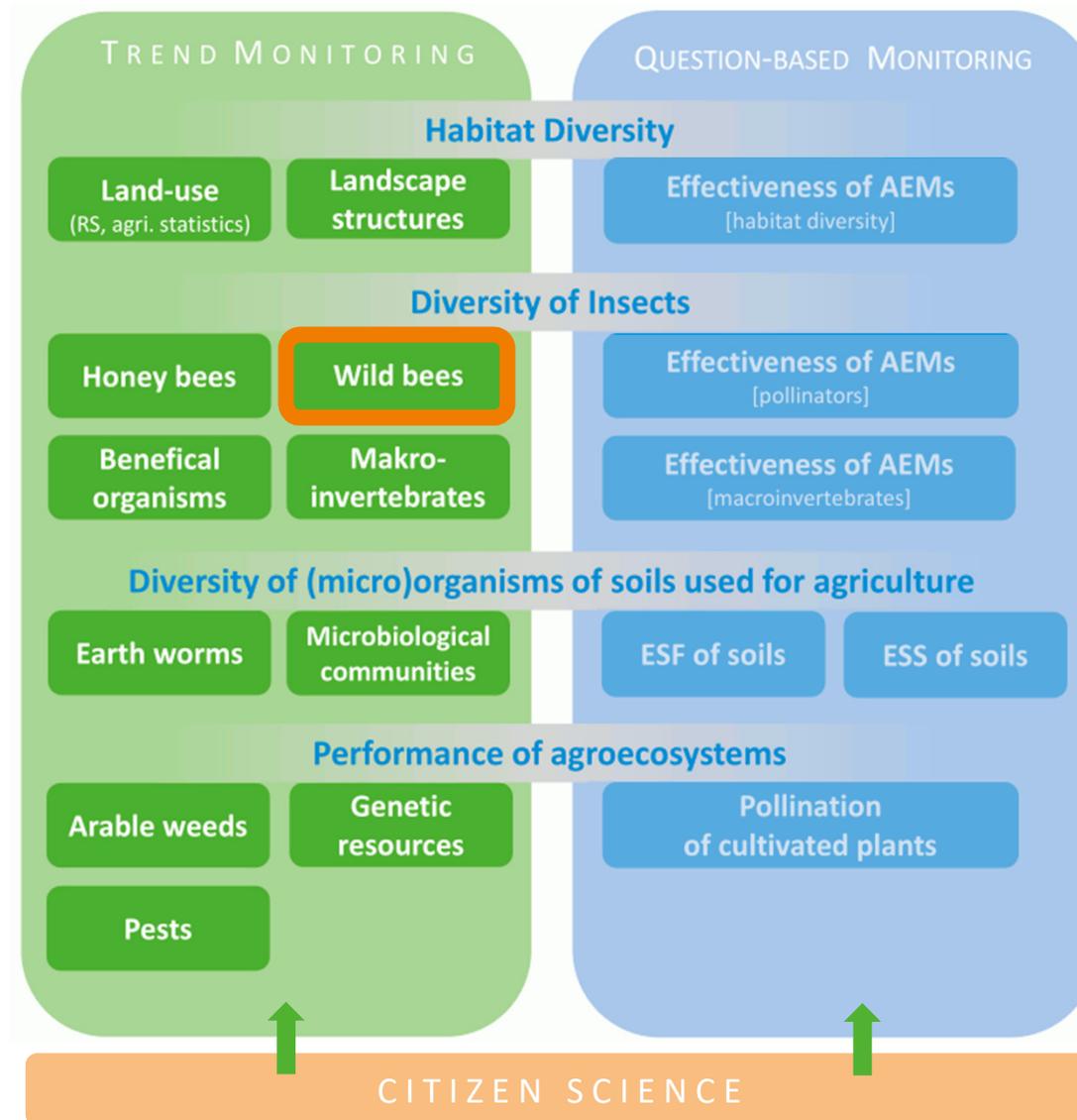
Thünen Institute of Biodiversity

Online Workshop, 21.10.2021





Pilot phase 2019-2023





Motivation for a wild bee monitoring

48 % of the native wild bee species **are** listed as **endangered** in the Red List [Germany] **or have already disappeared**. In addition, the **data basis** for 57 % of European bee species is **insufficient** [no IUCN Red List status].

47 % of the area in Germany is used for agricultural purpose.





Objectives of the wild bee monitoring

Create a **data basis** on the **status** and **development of wild bees** in **agricultural landscapes** by integrating **volunteers** in monitoring activities using **non-lethal sampling approaches**.

Reporting results through **national wild bee indicator**.





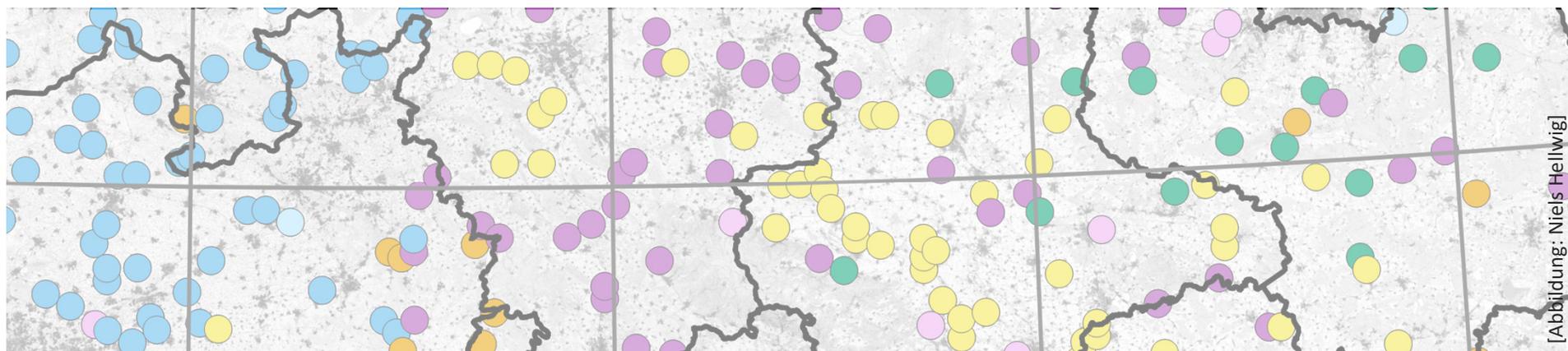
Structure of the wild bee monitoring

Modular structure

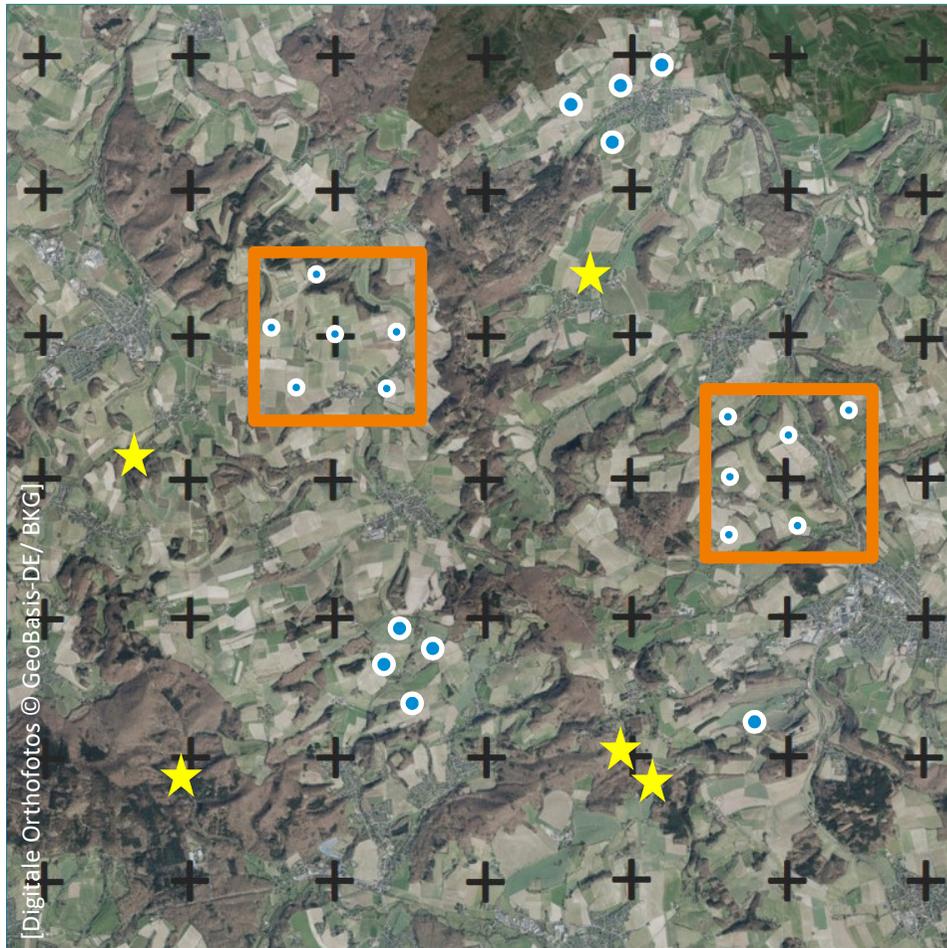
Monitoring of cavity-nesting wild bees

Sampling Design and integrative monitoring approach

Implementation of **volunteers** in monitoring activities



Sampling design and integrative monitoring approach



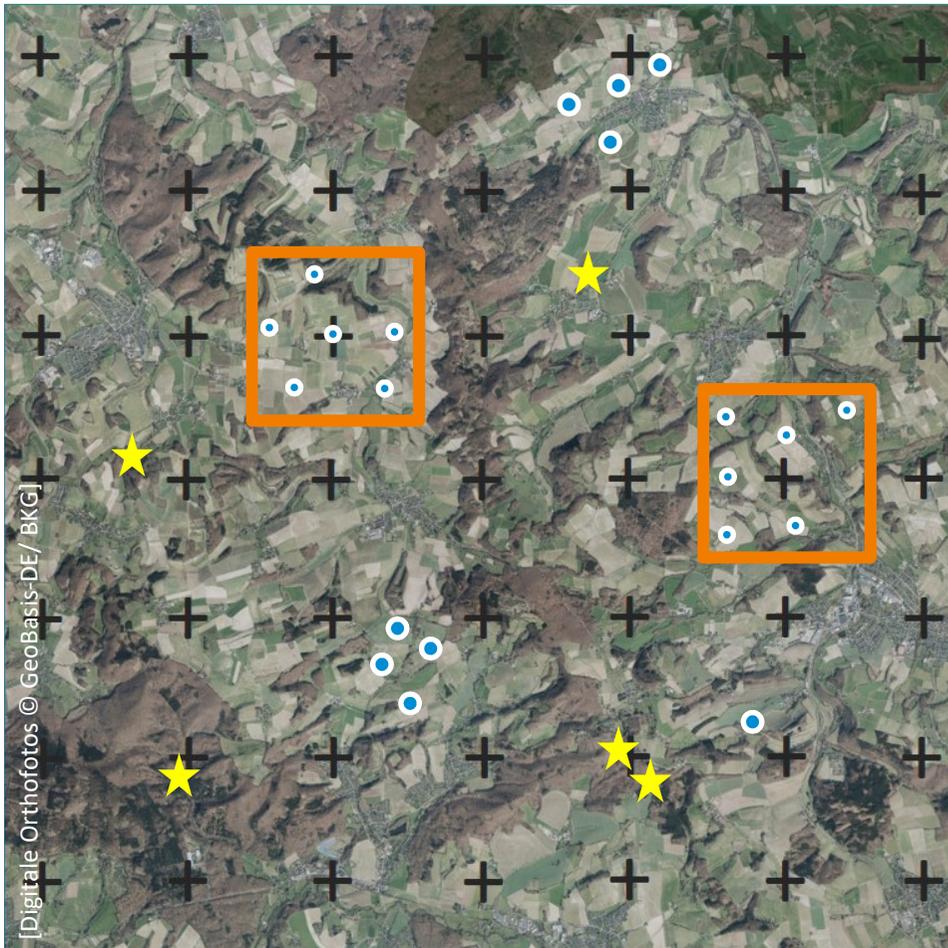
Standardized, representative survey (LUCAS plots)
[structured data]

Standardized, non-representative survey (farm-scale) [semi-structured data]

Casual observations
[unstructured data]



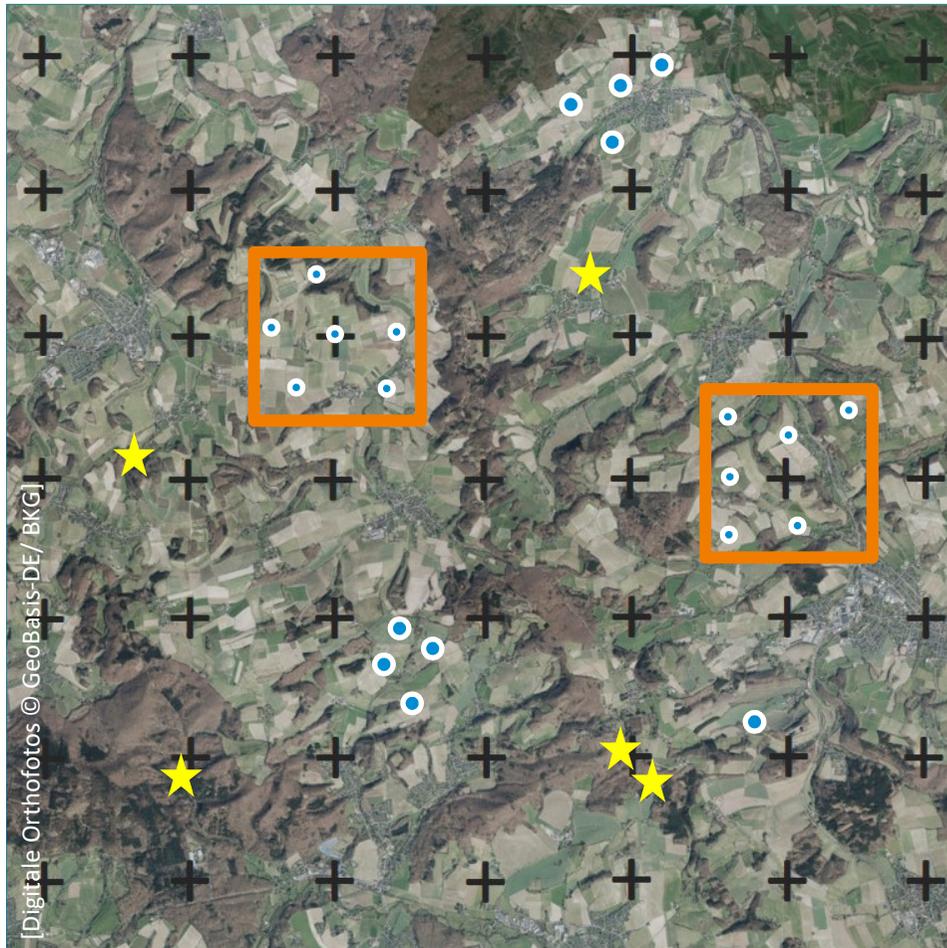
Sampling design and integrative monitoring approach



Integration of **heterogeneous data structures improve**

- trend analysis
- information on (rare) species distribution

National wild bee indicator



Wild bee data
diversity, abundance

+

Data on



Land-use
(RS, agri. statistics)

Landscape
structures



National wild bee indicator

Monitoring of cavity-nesting wild bees

Standardized nesting aid – Citizen Science-based sampling approach



Offer **trainings** for identifying cavity-nesting wild bees and wasps

Volunteers vs. wild bee experts
- comparable **data quality**?

Inform about project progress and give feedback –
share the results with volunteers

Monitoring of cavity-nesting wild bees

Standardized nesting aid – basis for non-lethal sampling (eDNA)



Non-lethal sampling approach **after hatching**

Satisfactory matching between taxonomic and molecular **biological species identification**

Pollen analyses:

- Information on **spatio-temporal use of food resources**
- Determine **pesticide residues**



What is the potential for monitoring and evaluation?

Benefit from the **willingness of farmers and population of rural areas to engage with biodiversity to increase data basis** for target species/ indicator organisms – and **rise the awareness for the relationship biodiversity ~ agricultural landscape.**

Challenges are to ensure data quality and enough staff to give feedback to volunteers

[Photo: Josephine Kulow]



Federal Ministry
of Food
and Agriculture



**Many thanks to all volunteers for their support
and to you for your attention.**

**Further information and questions to
petra.dieker@thuenen.de
Thünen Institute of Biodiversity**



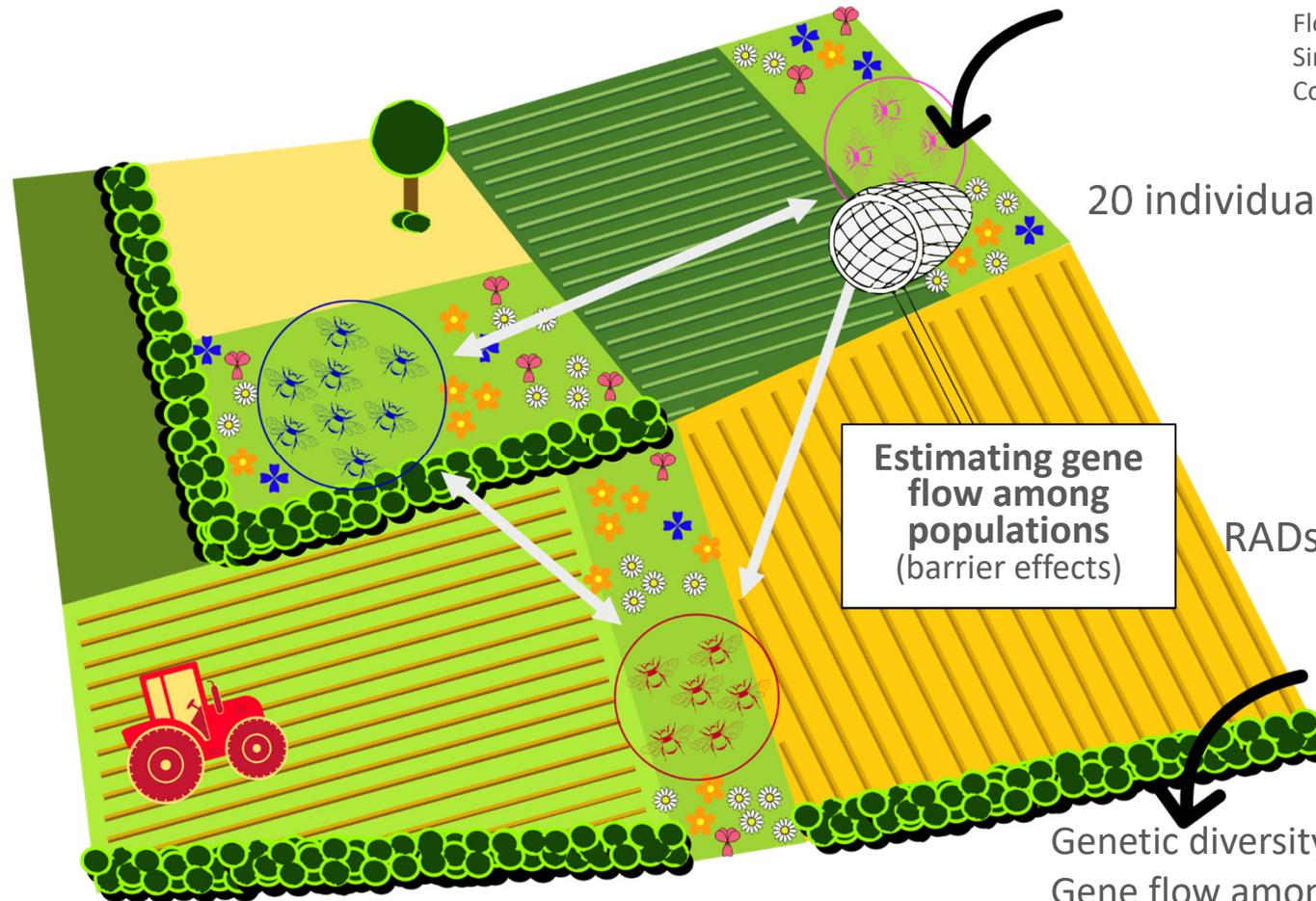


Evaluation of AEMs – example flower strips



22 locations in Saxony-Anhalt (2020)

Flower strip complexes
Single flower strips
Control areas without flower strips



20 individuals/site

Estimating gene flow among populations (barrier effects)

RADseq & SNP detection



Genetic diversity
Gene flow among populations
Effectiveness of flower strips (connectivity)