



*Lilium bulbiferum croceum*, a threatened arable weed species

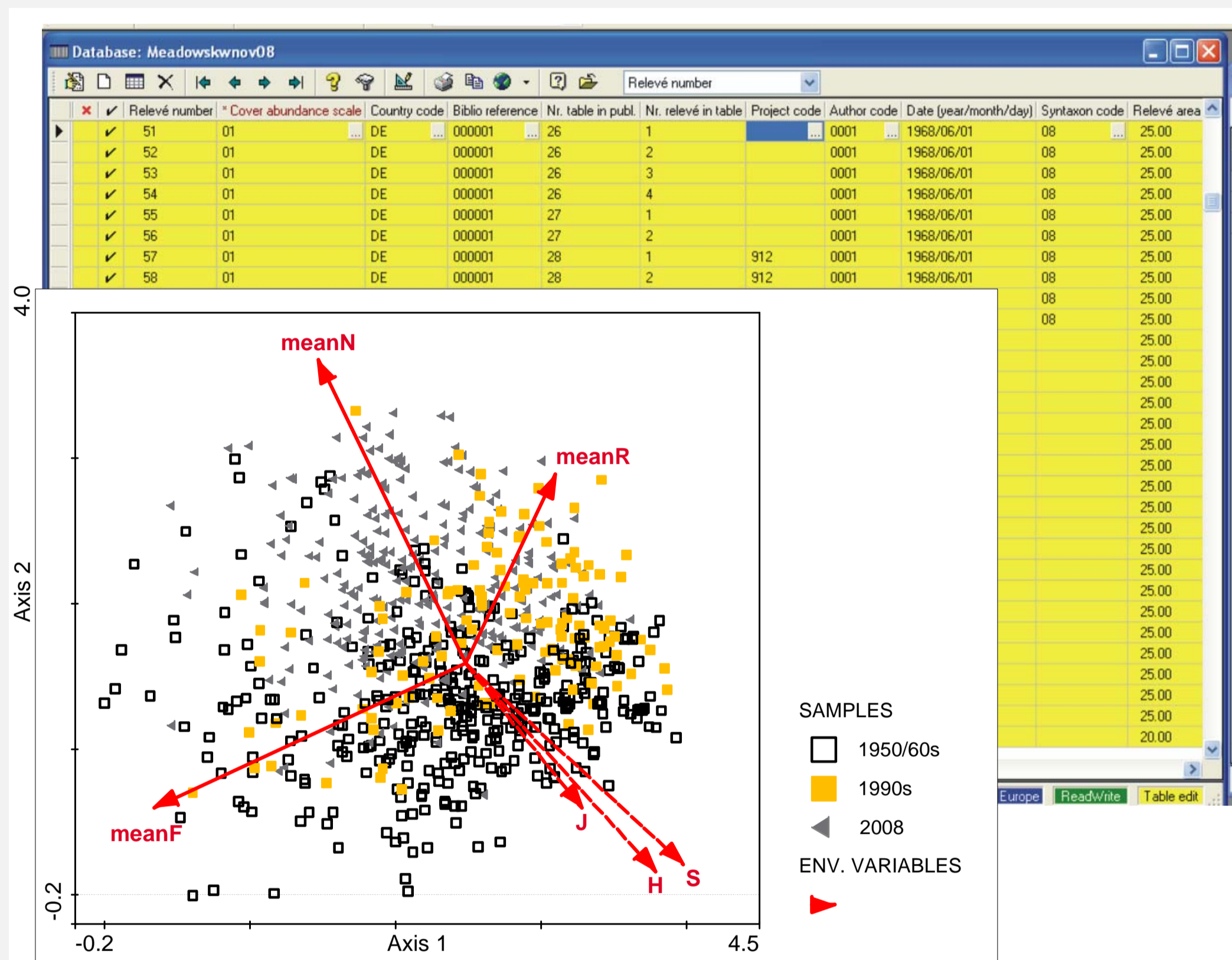
*Gargara genistae*, an oligophagous plantopper on legumes of dry grasslands (photo by G. Lunz)

*Cirsium oleraceum* meadow at the Kyffhäuser

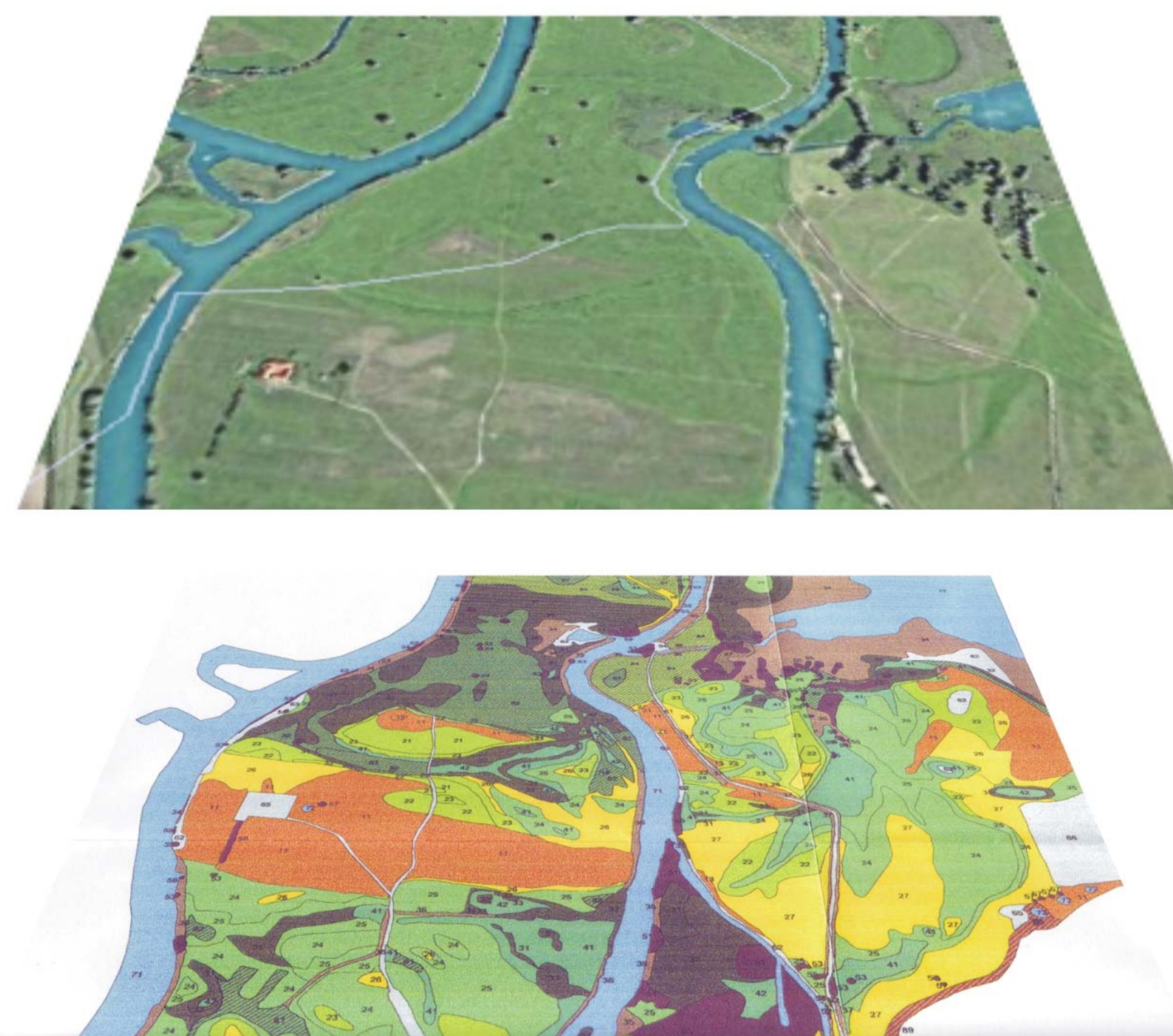
## Background

Land use changes in the cultural landscapes of Central Europe have resulted in unprecedented losses of biodiversity: over the last decades, a large number of plant and animal taxa, but also entire communities and habitats have become threatened or even extinct. Changes were particularly pronounced in the period 1950-70, when land reallocation schemes and industrialisation of agriculture became fully effective. Since 2008, we document changes in taxonomical, functional but also genetical diversity for a number of taxa and spatial scales. We also develop and implement conservation measures for arable weeds.

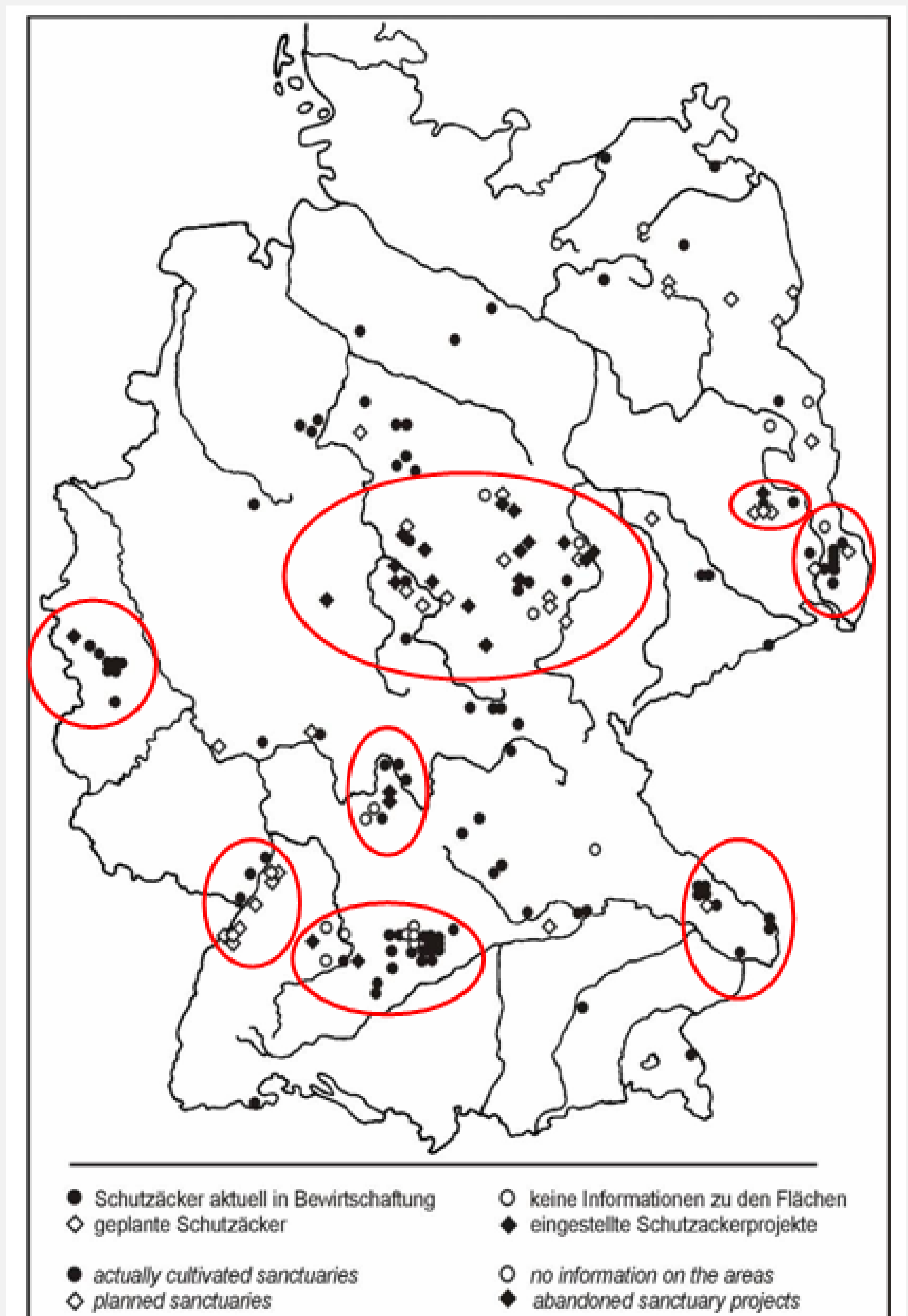
## Research



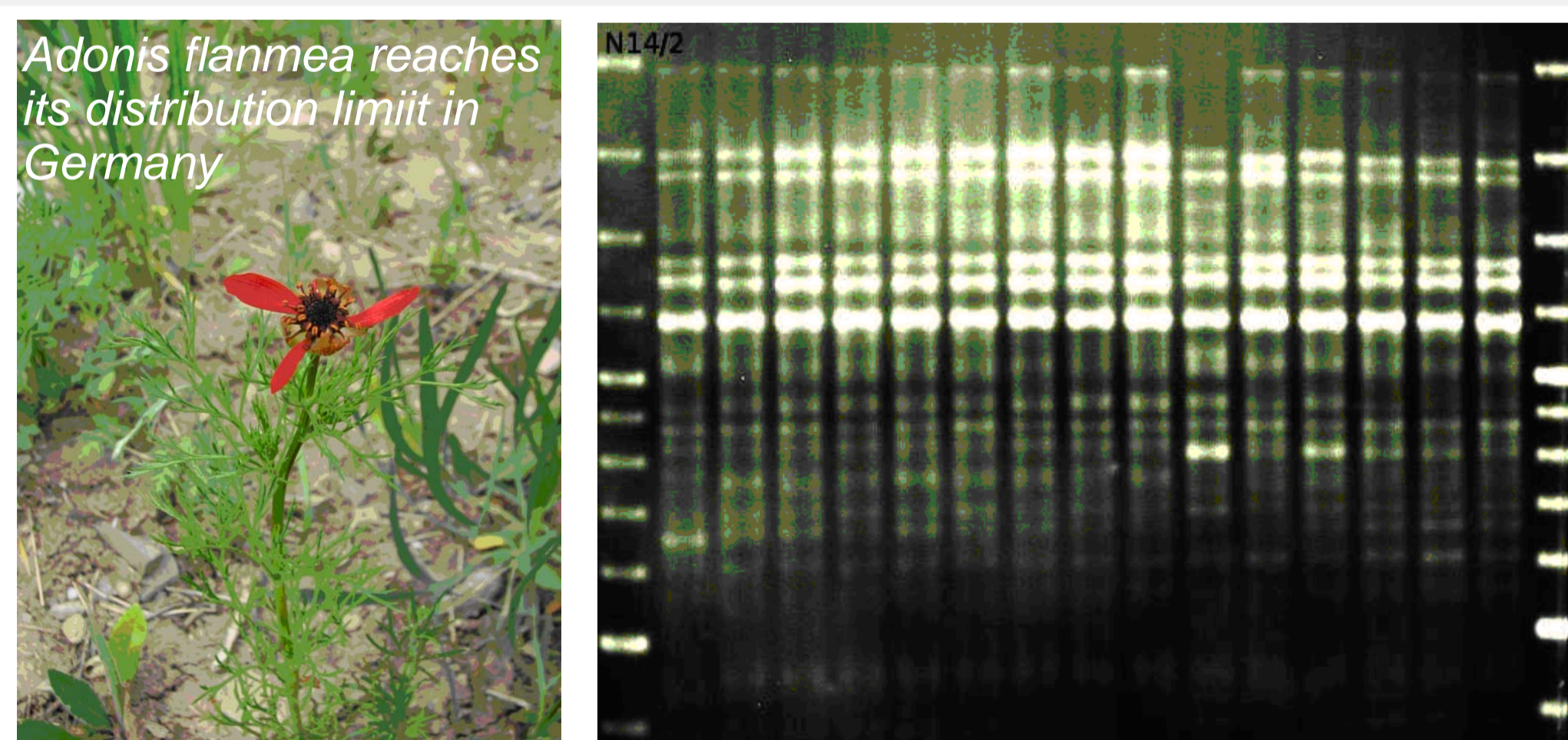
Historical and recent vegetation samples from moist meadows and agricultural fields are compiled in data bases, and change is analysed with uni- and multivariate statistics.



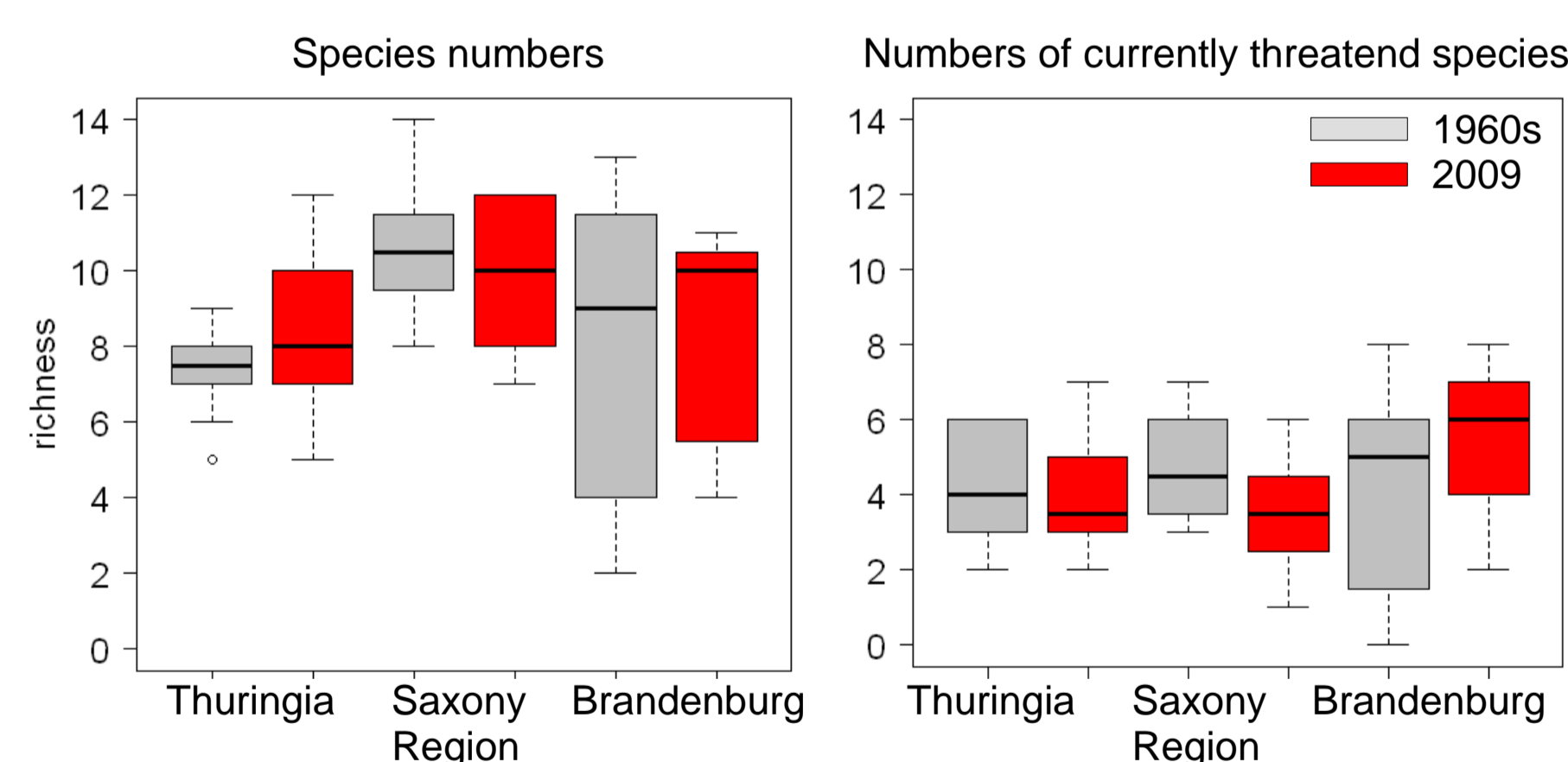
Resurveying historical vegetation maps and comparison of old and recent aerial imagery allows GIS-based change detection.



We aim at establishing a comprehensive reserve network for Germany's arable weeds. Conservation measures are supplemented by research on historical changes in arable weed communities, and biogeography and population biology of selected species.



DNA fingerprinting demonstrates whether land use affects genetic structure of selected species.



Grasshopper diversity remained relatively constant on dry grasslands of eastern Germany

Major projects: "BioChange-Germany" - Cluster of excellence "Functional Biodiversity Research" funded by Land Niedersachsen  
 "100 Fields for Diversity" - funded by Deutsche Bundesstiftung Umwelt ([www.schutzaecker.de](http://www.schutzaecker.de))

## Key results

- Landscape configuration has changed tremendously, the most valuable habitats have disappeared and patch size as well as shape became more uniform.
- Population losses in specialist species were much more severe than implied by standard raster maps or red-list assessments. In contrast, taxa with certain life history traits such as ruderals, nitrophytes and self-pollinated species have increased.
- Changes in arthropod communities (partner project Inst. of Zoology) differed between taxa. Grasshopper communities remained constant, while planthoppers and leafhoppers showed strong changes in community composition.