



BBIB
Berlin-Brandenburg Institute of
Advanced Biodiversity Research



Leibniz-Zentrum für
Agrarlandschaftsforschung
(ZALF) e.V.



Mitglied der

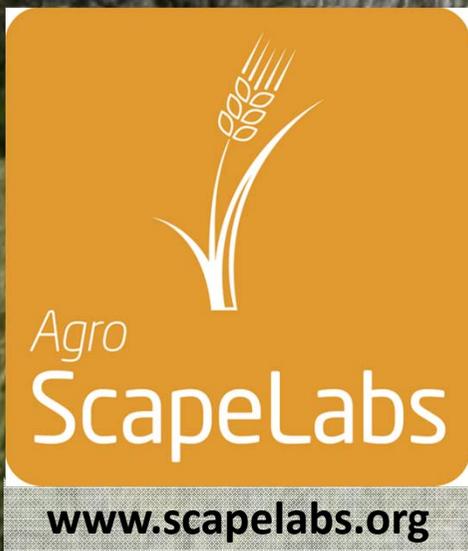
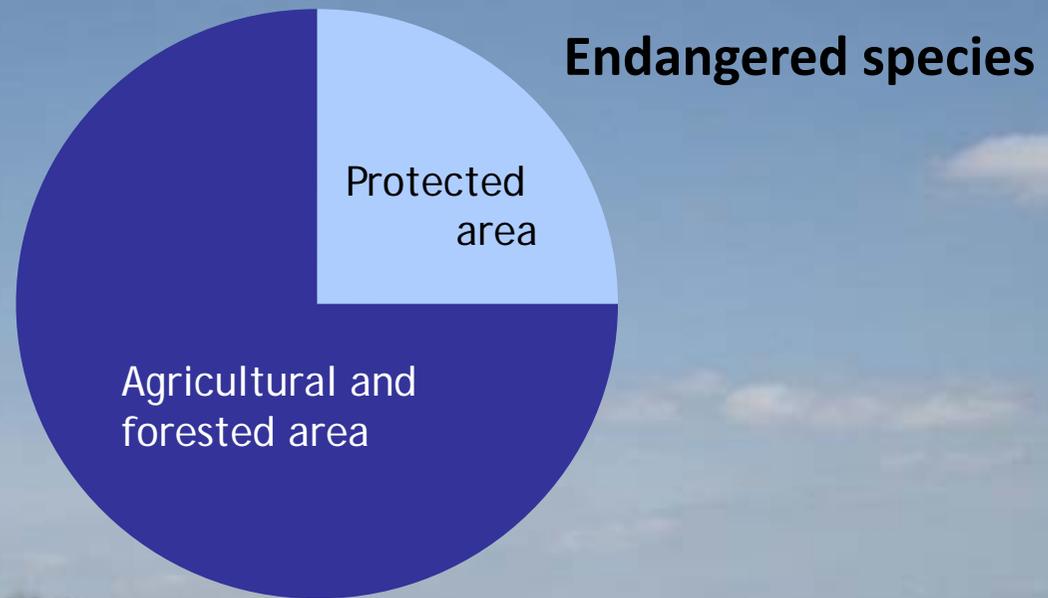


Leibniz Centre for Agricultural Landscape Research

The Agricultural Landscape Laboratories (AgroScapeLabs):

a research platform to study relationships between
biodiversity, ecosystem functions and land use at the
landscape scale

Pirhofer-Walzl K., Schröder-Esselbach B., Glemnitz M., Blaum N.,
Joshi J., Eccard J., Jeltsch F., Lischeid G.



GOAL: Linking type, intensity and spatiotemporal correlations of land use with biodiversity dynamics, ecosystem functions and services

- Research platform designed as a landscape laboratory
- Landscape manipulations
- Work across spatial and temporal scales

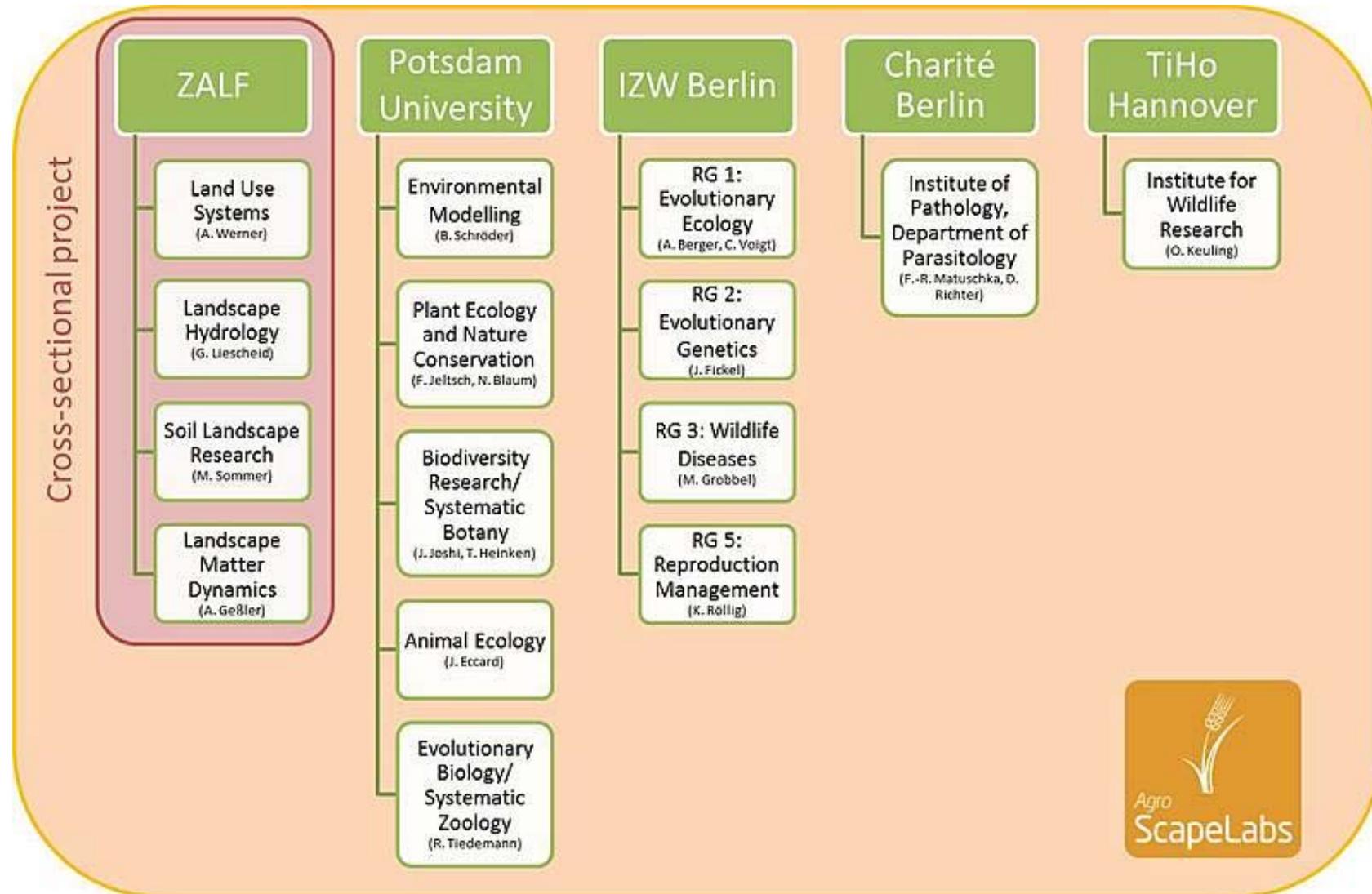
Main research questions:

- What are the impacts of land use on biodiversity at different levels?
- Which role play different processes, interactions and feedbacks?
- What are the influences of spatio-temporal landscape changes on trophic networks and biodiversity-related ecosystem functions and services?

3 Steps Approach in *AgroScapeLabs*, *LakeScapeLabs*, *ForestScapeLabs*, *CityScapeLabs*

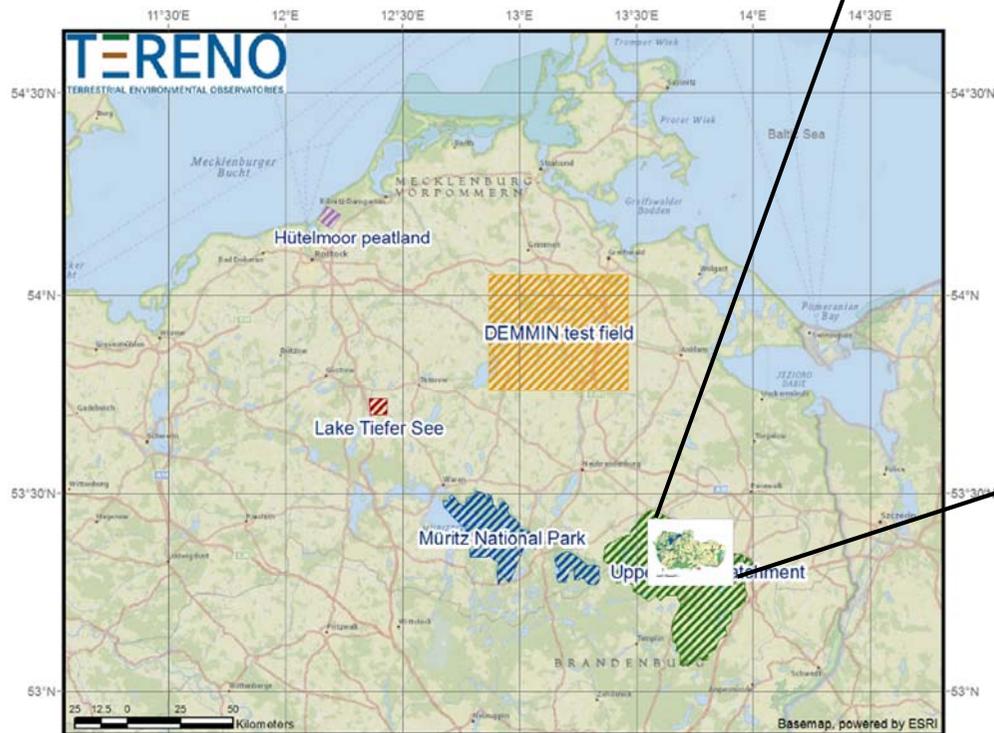
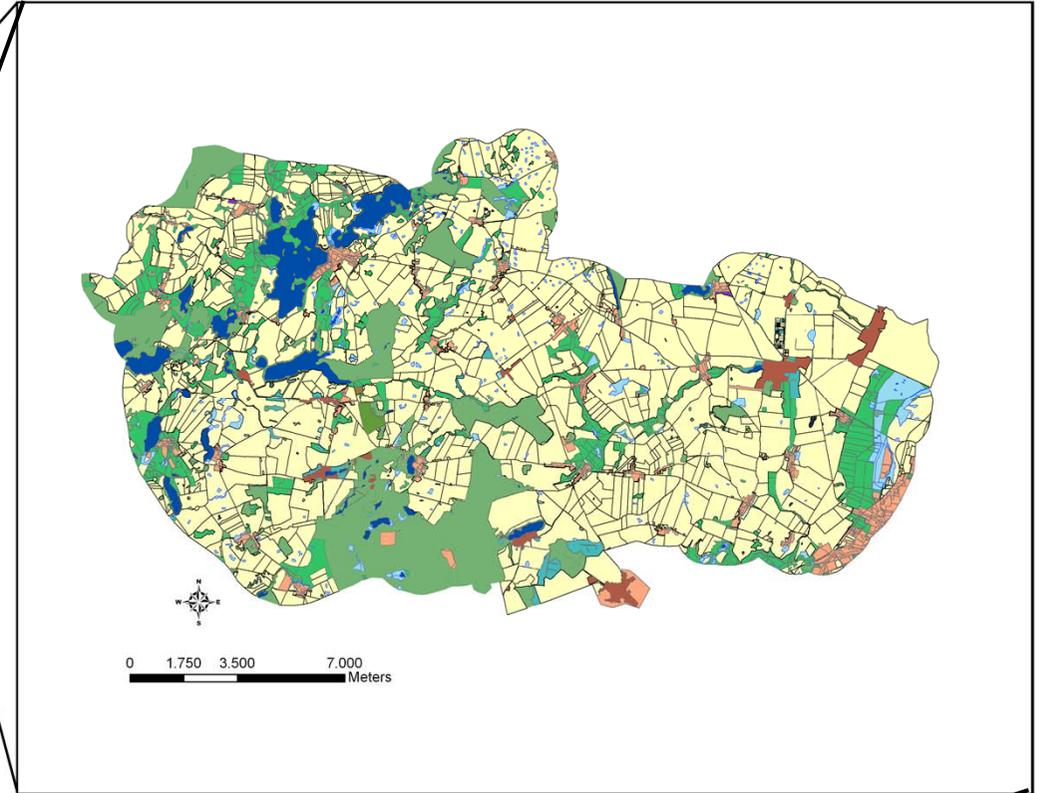
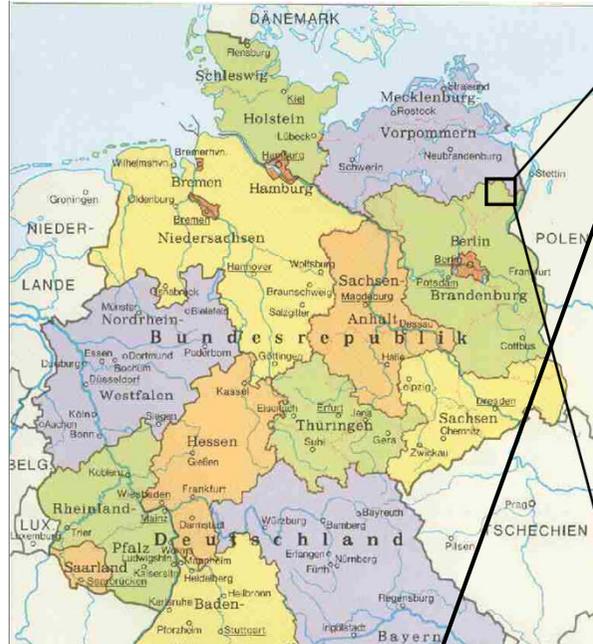
1. Studying movement of different mammal species.
 2. Studying relationships between landscape functions and biodiversity at different scales and for different organisms (mammals, birds, insects, vascular plants, microorganisms).
 3. Performing large scale experiments.
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AgroScapeLabs



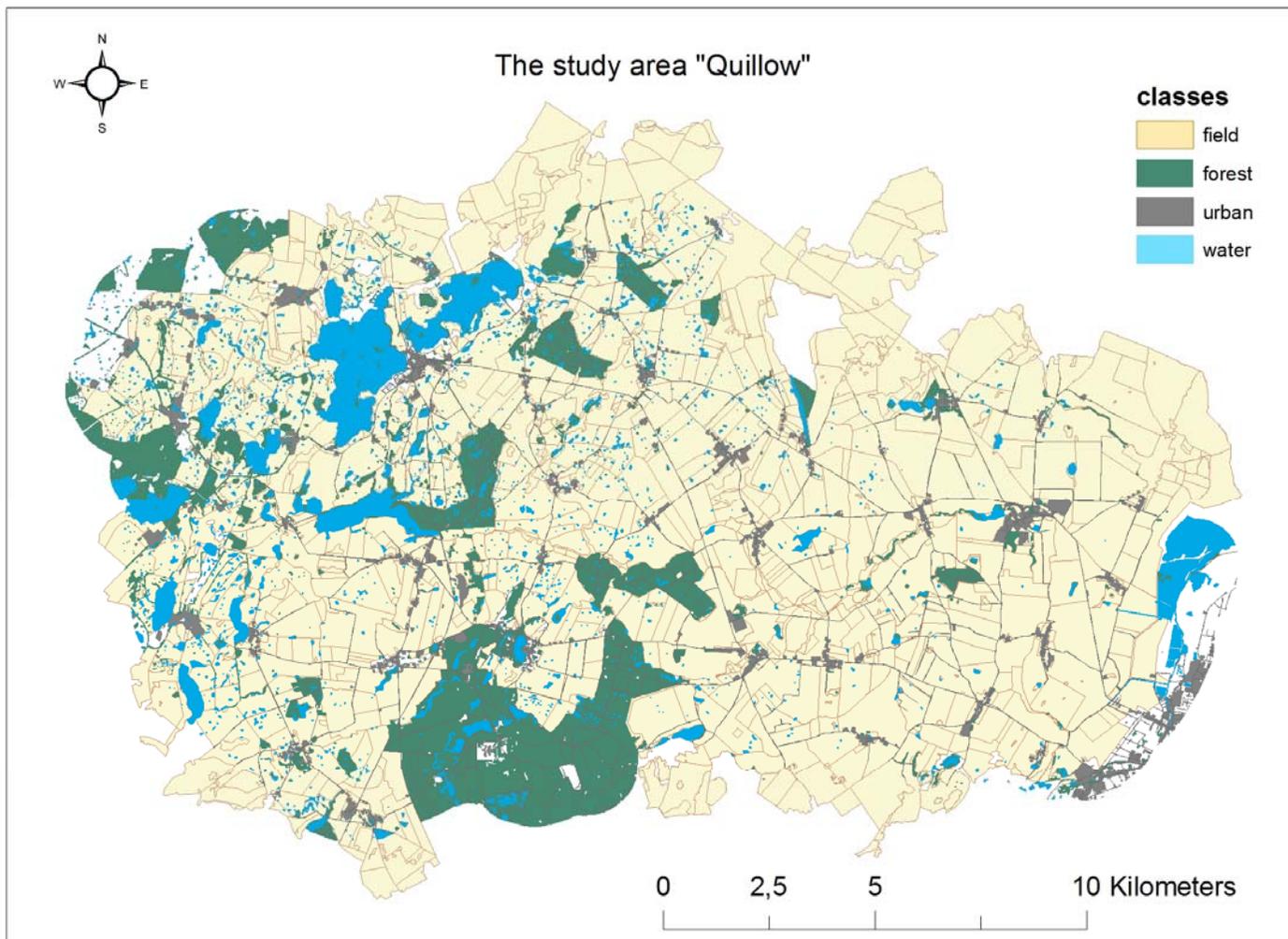


AgroScapeLab Quillow



▨ Gearchives
 ▨ Hydrology, Gearchives, Geopedology
 ▨ Remote Sensing, TEAM
 ▨ Geopedology
 ▨ TEAM, University of Rostock

- Total area ~ 291 km²
- Upper moraine landscape
- Subcontinental climate
- Precipitation < 600 mm
- Mean annual temperature 8° C
- Land use:
 - 66% arable fields (mostly winter cereals, rape, sugar beet and maize)
 - 10% grassland
 - 13% forest
 - 6% water
 - 5% urban



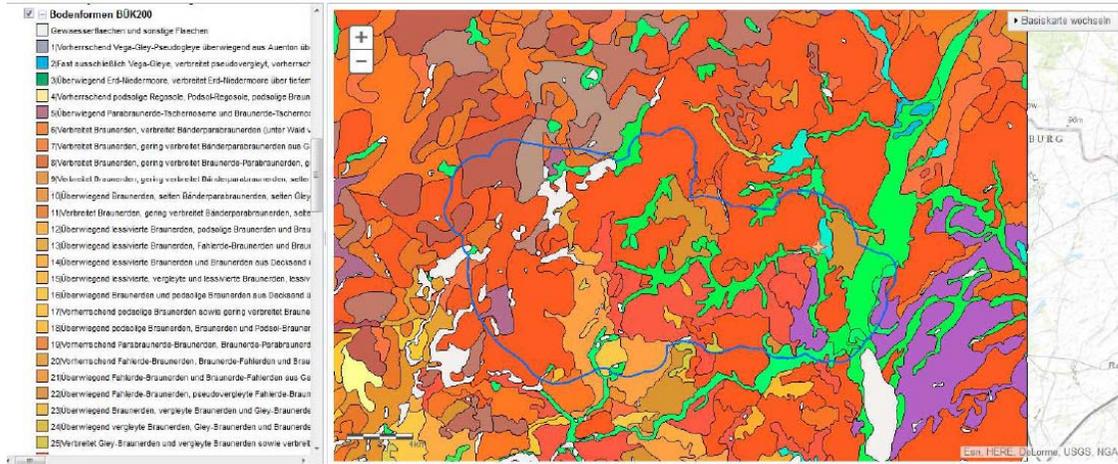
Monitoring (partly > 15 years):

- Field trials
- Monitoring of soil, surface and groundwater
- Lysimeters
- Landuse and agricultural management
- Flora, birds
- UAV
- ...

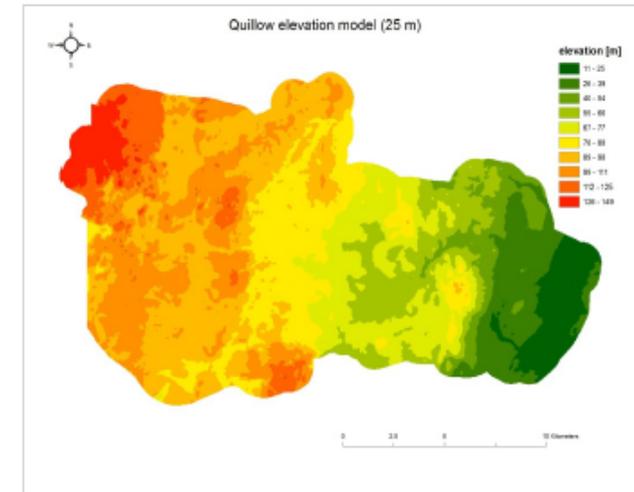
Programs and Projects:

- AgroScapeLabs
 - TERENO Northeast Germany
 - LTER-D
 - LandScales (kettle holes)
 - CarboZALF
 - ...
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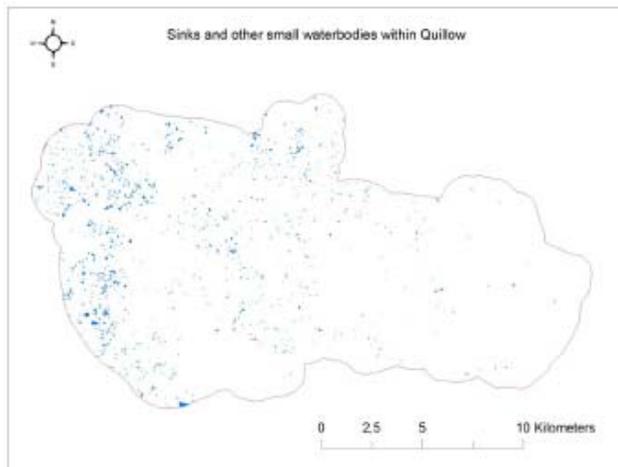
Soil types



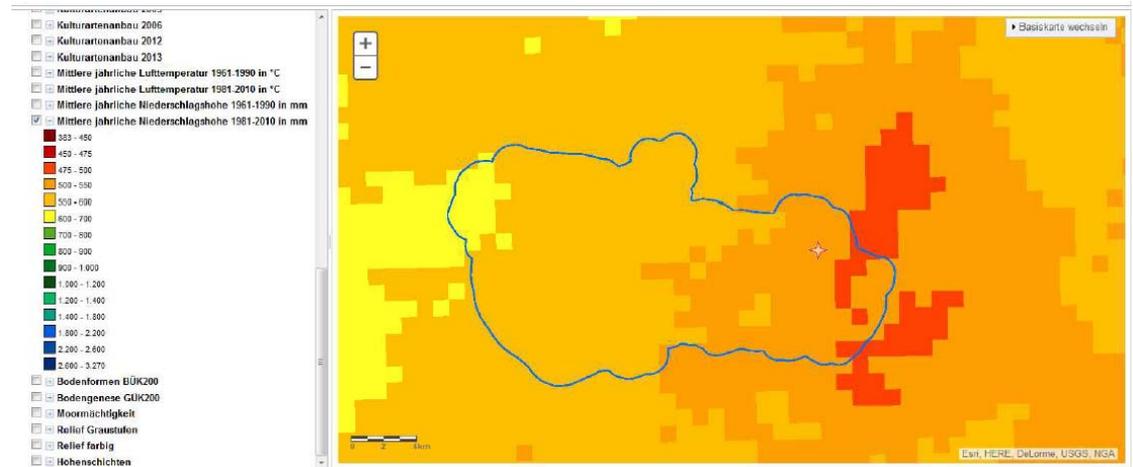
Digital elevation model



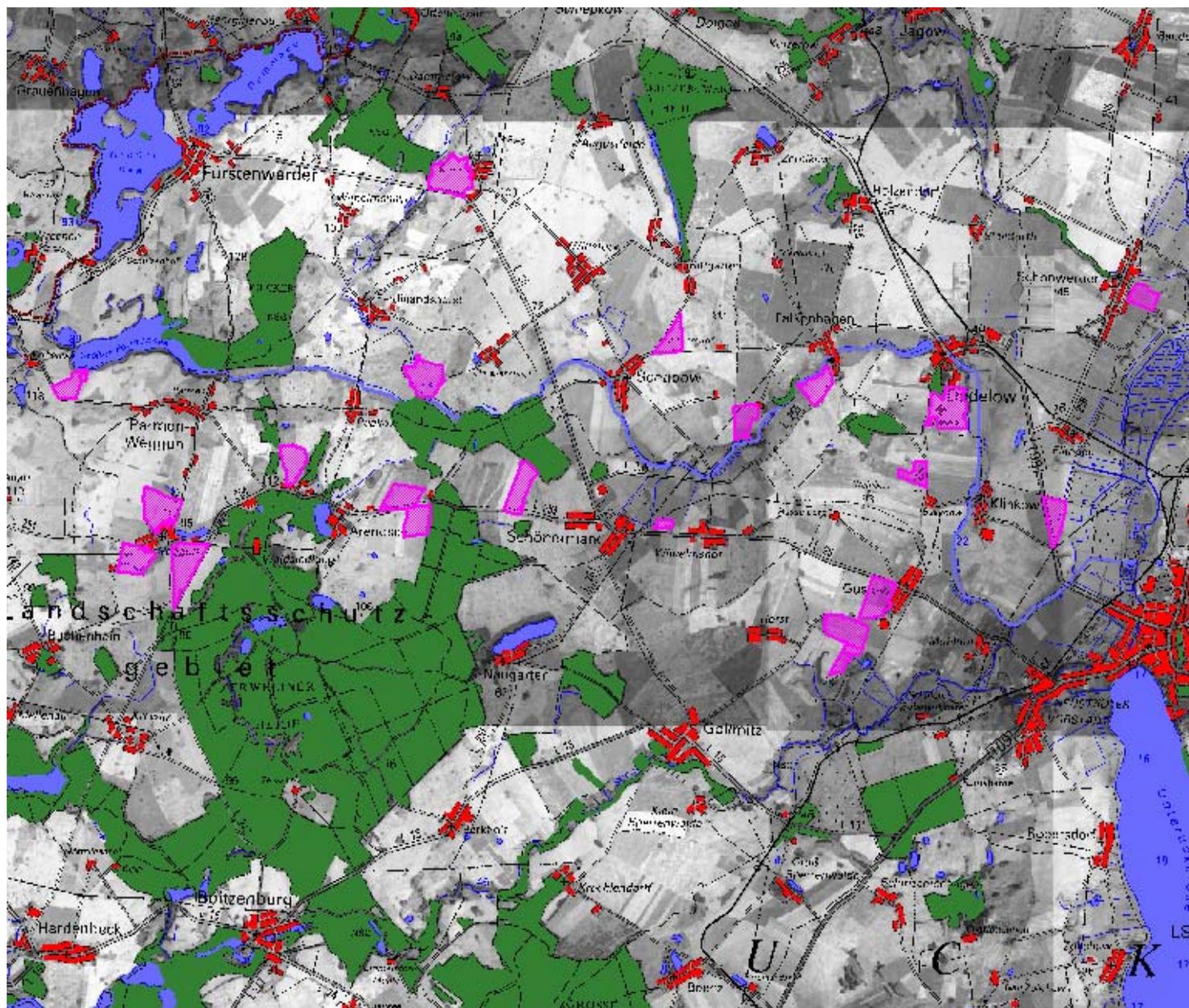
Distribution of small water bodies

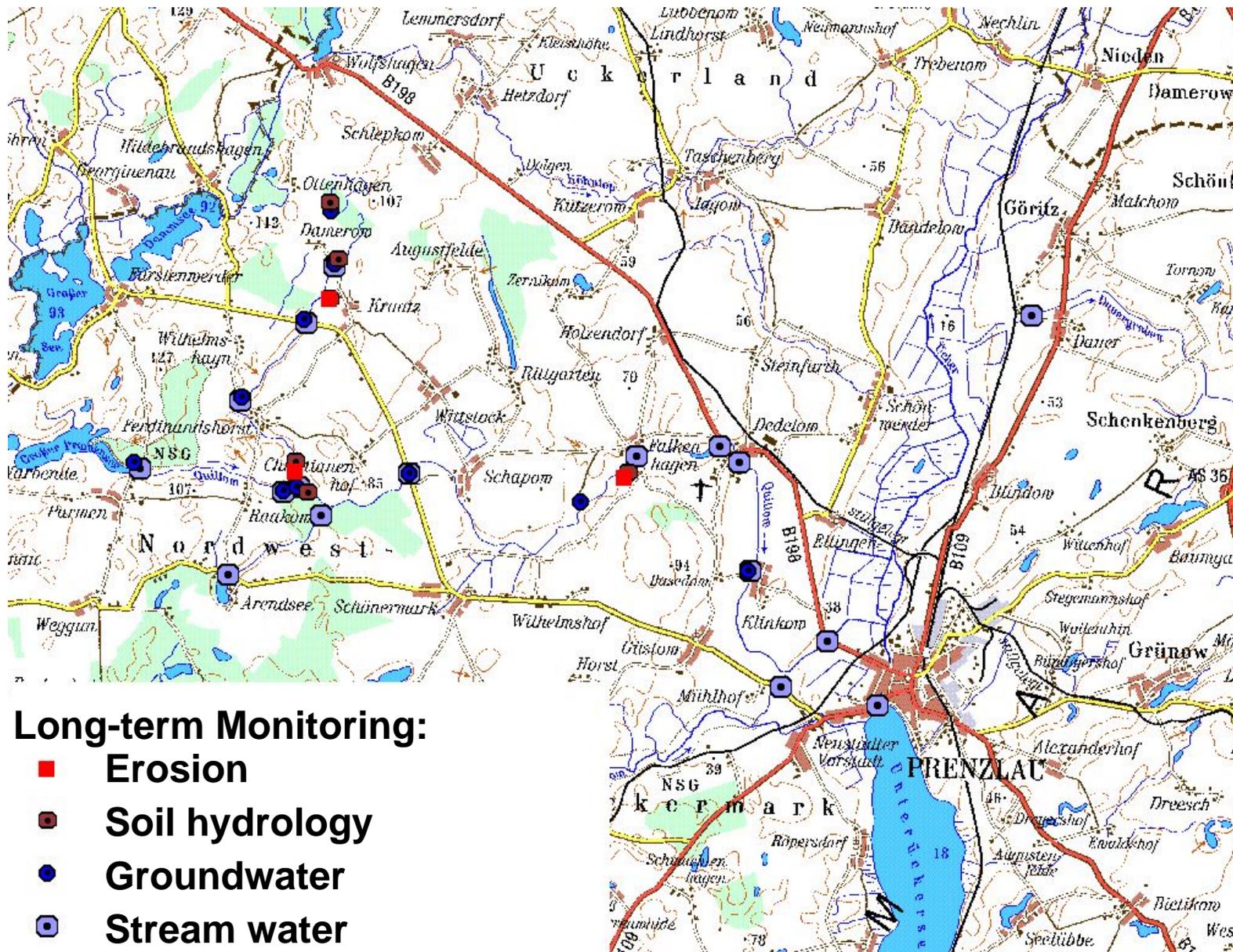


Average yearly precipitation between 1981 and 2010



Management
monitored at
22 sites

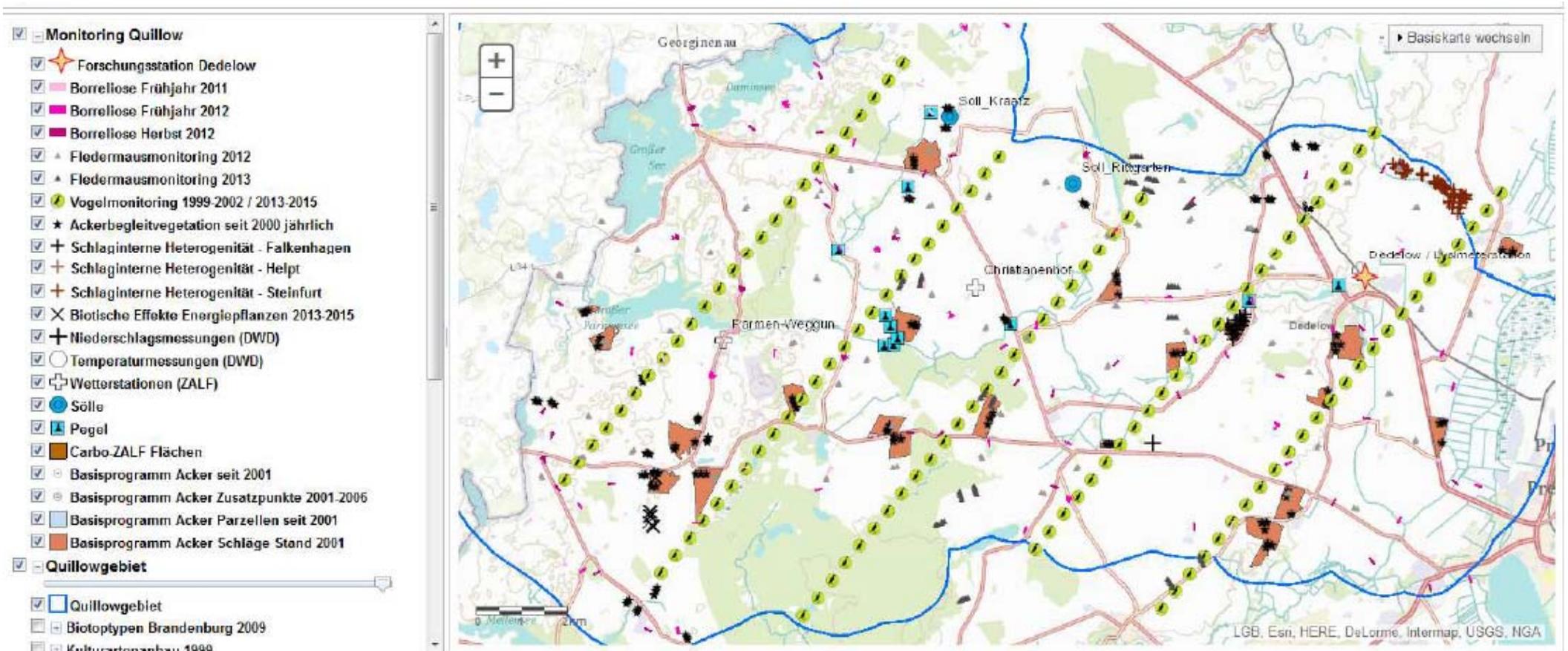




Long-term Monitoring:

- Erosion
- Soil hydrology
- Groundwater
- Stream water

(J. Steidl)



Ongoing research projects



Bats Impact of land use, landscape structure and insect abundance on bat diversity and bat activity



Plant-microorganism-interactions Landscape complexity, land use intensity and microclimate as multifactorial drivers of the diversity of plant-microbes-interactions



Rodents/ticks/Lyme-borreliosis Impact of land use and landscape structure on rodents, ticks and infection risks of Lyme-borreliosis



Distribution of small mammals Impact of land use, resource dynamics and habitat fragmentation on small mammals



Wildlife movements Impact of land use and landscape structure on wildlife movements and behaviour



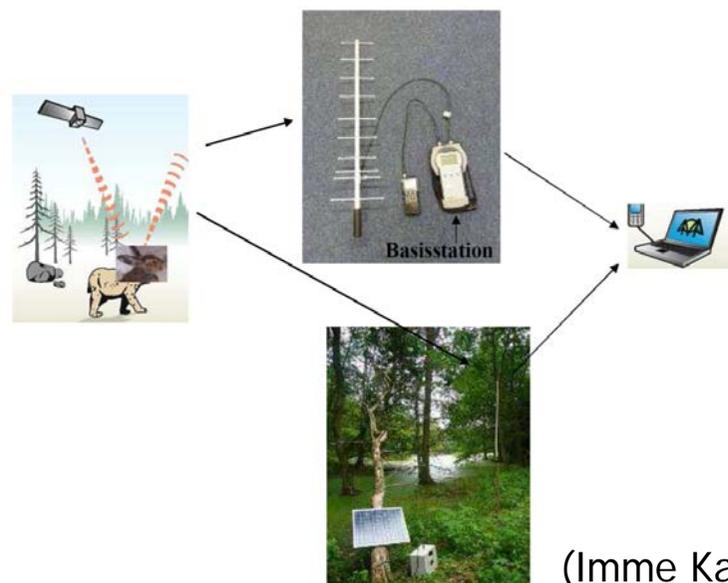
Land use change and bird diversity Relationships between long-term change of bird communities, land use change and habitat composition



Plant diversity-kettle holes Impact of land use and landscape structure on plant diversity and composition at kettle holes embedded in agroscares



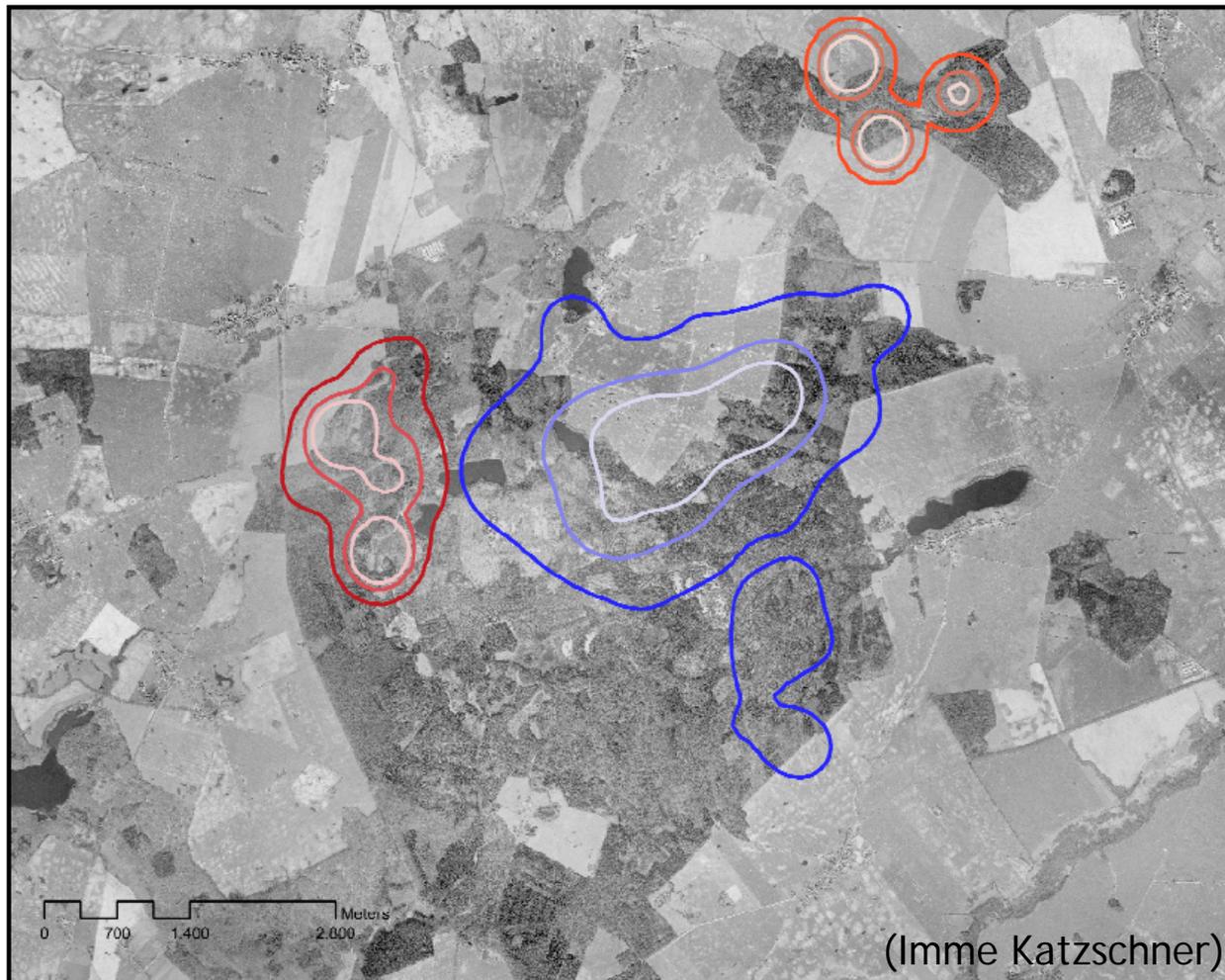
In-field heterogeneity and plant diversity Impact of land management on heterogeneity-driven biotic processes



(Imme Katzschner)

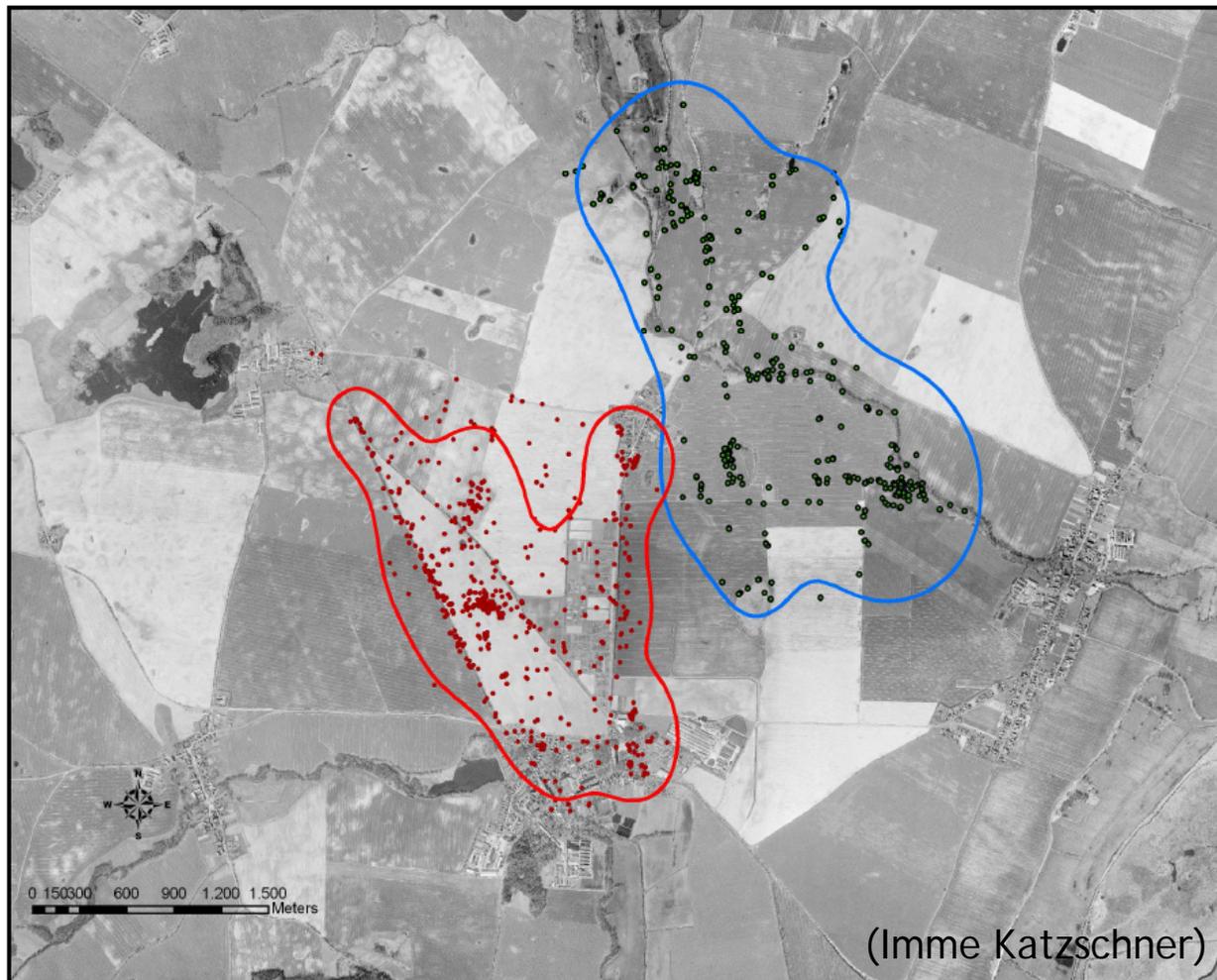
Movement records of a 14 days period

Female racoons „Lena“ and „Maria“, male racoon „Christian“.



Movement records of the first 10 days period

Female fox „Fine“ , male fox „Erni“ .



Key questions:

- What is the impact of intense land use on biodiversity?
- How can land use be organized in a sustainable way in regard to biodiversity?

Approach:

- Elucidating the complex interplay of multiple biotic and abiotic processes and factors.
 - Joint efforts of biologists, soil scientists, hydrologists, agronomists, modellers, economists, ... required.
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Agro
ScapeLabs

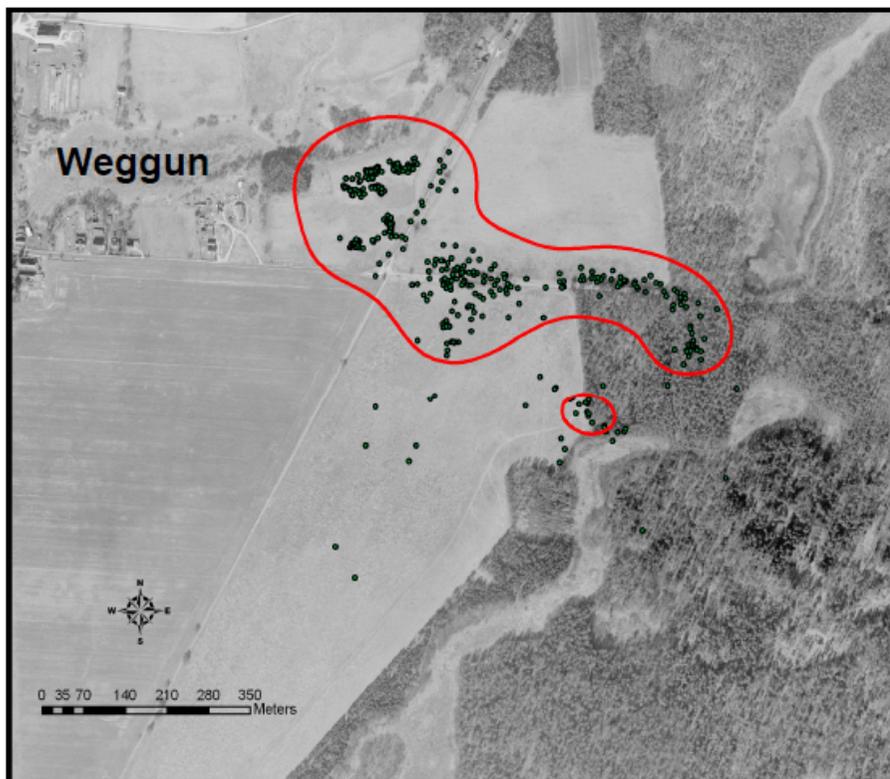
www.scapelabs.org



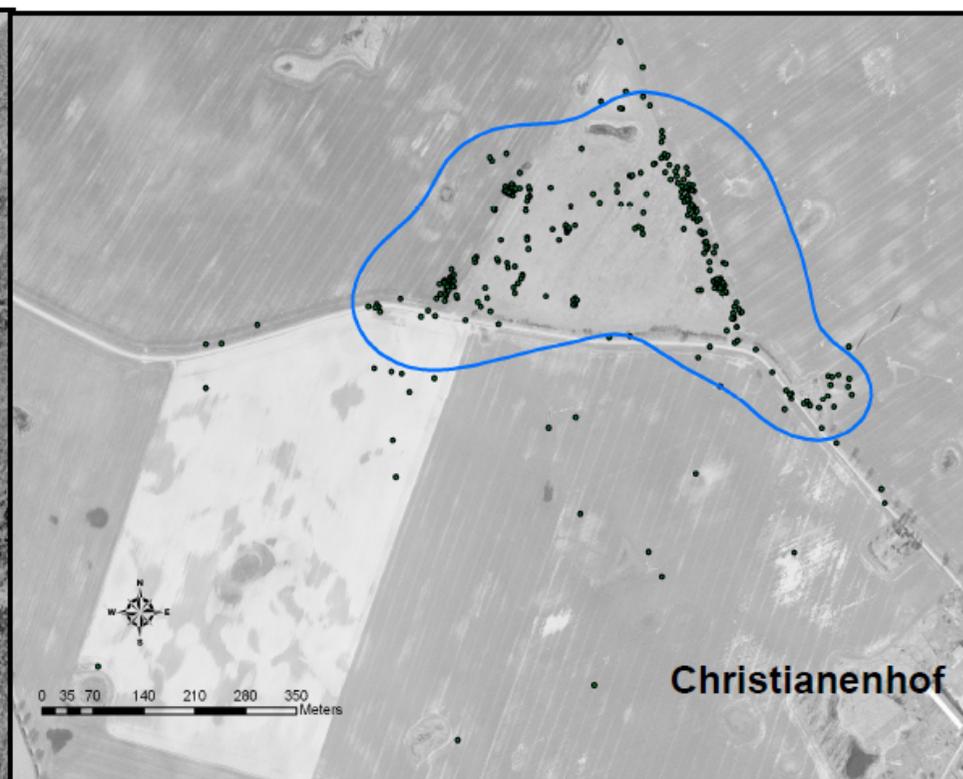
Thank you!

Movement records of the first 10 days after (ca. 300 positions each)

Female hare „Liese“



Male hare „Bernd“



(Imme Katzschner)