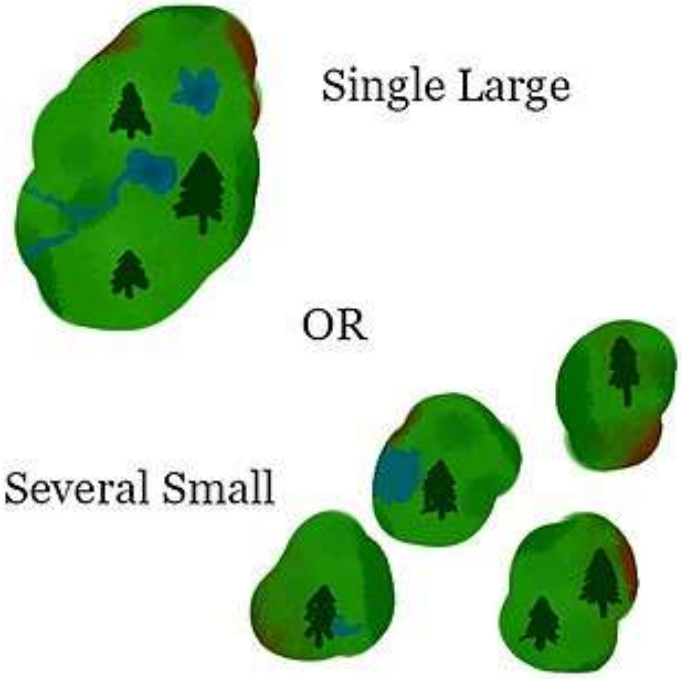
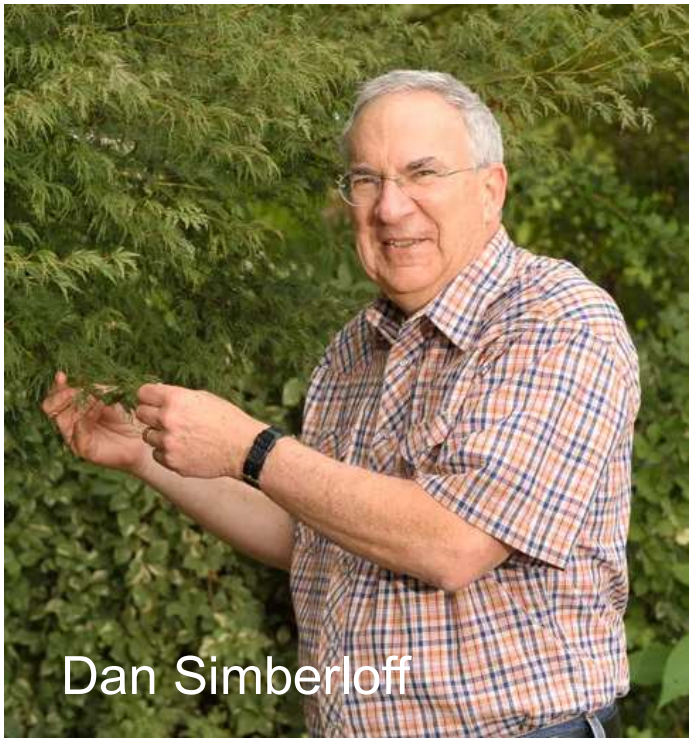
Do saproxylic species need connectivity, habitats or connected habitats?

Jörg Müller

Fieldstation Fabrikschleichach

The dispute over the best conservation strategy



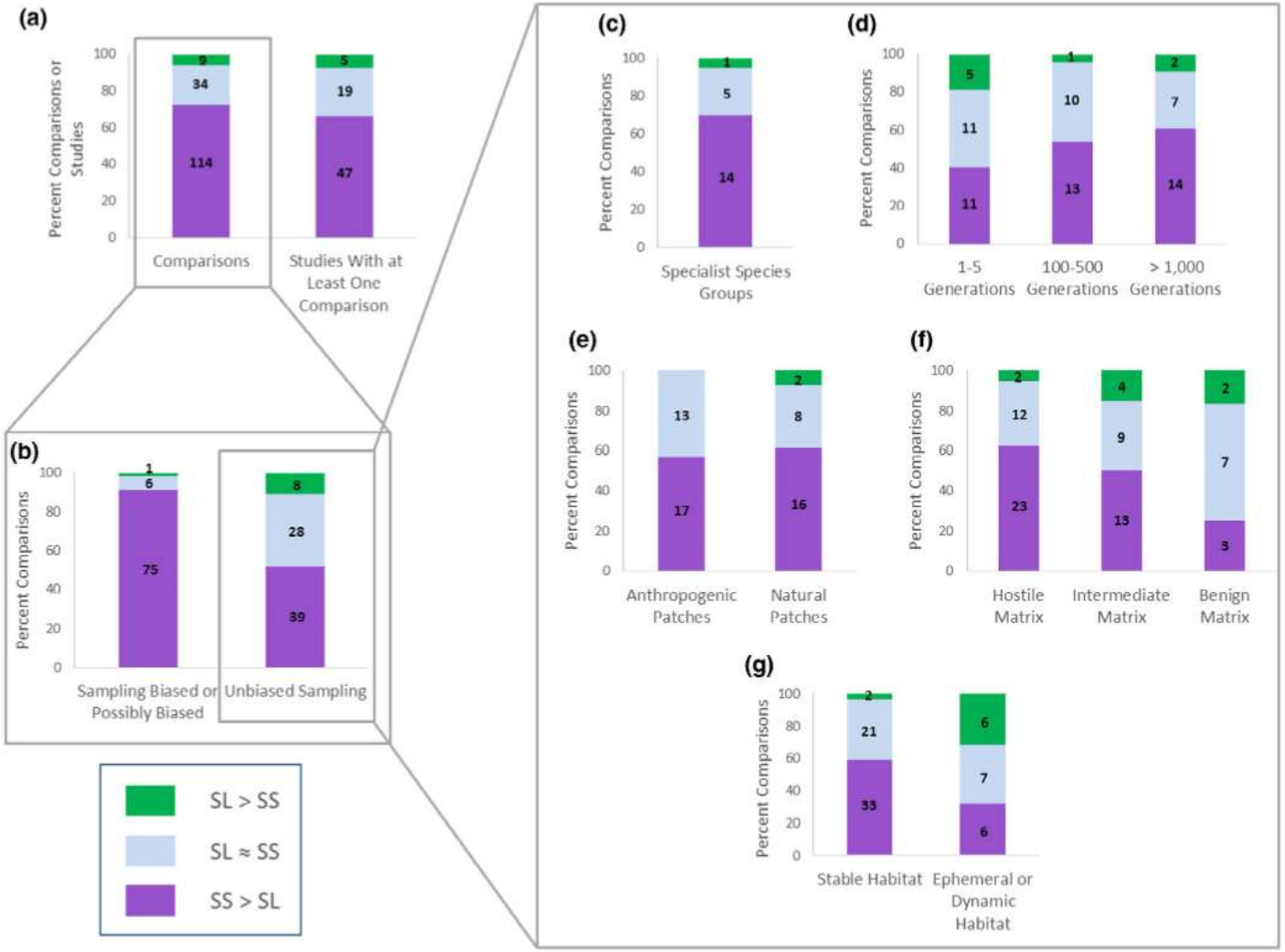


1975 **Diamond** „Rules" for concepts of large protected areas, based on MacArthur & Wilsons „The Theory of Island Biogeography“. *One single large protected area is better than several small areas*

Simberloff and Abele responded in American Naturalist: neither ecological theory, nor empirical data support the hypothesis, that fragmenting a protected area increase the extinction probability.

Nevertheless 1980 **IUCN** developed a global strategy for conservation using e.g. the figure by Diamond above.

Meta-Analyes by Lenore Fahrig

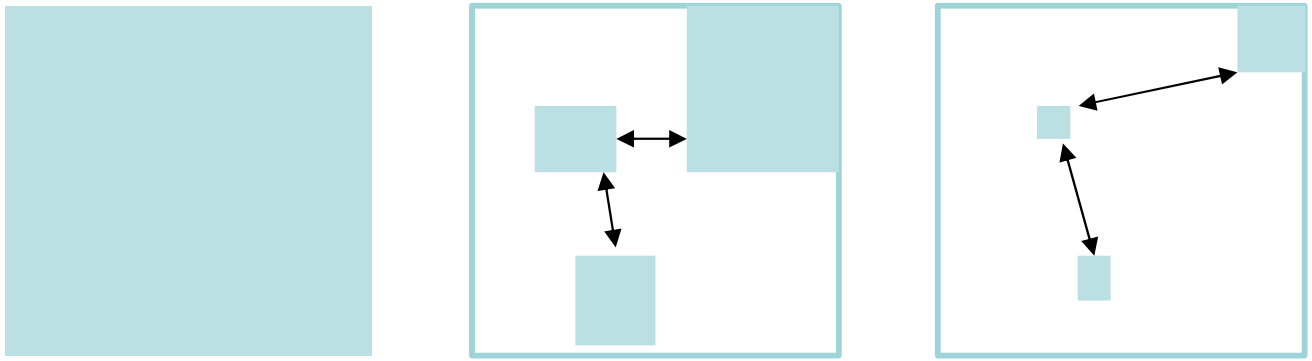


Fahrig 2020 Global Ecology and Biogeography

A semantic discussion?

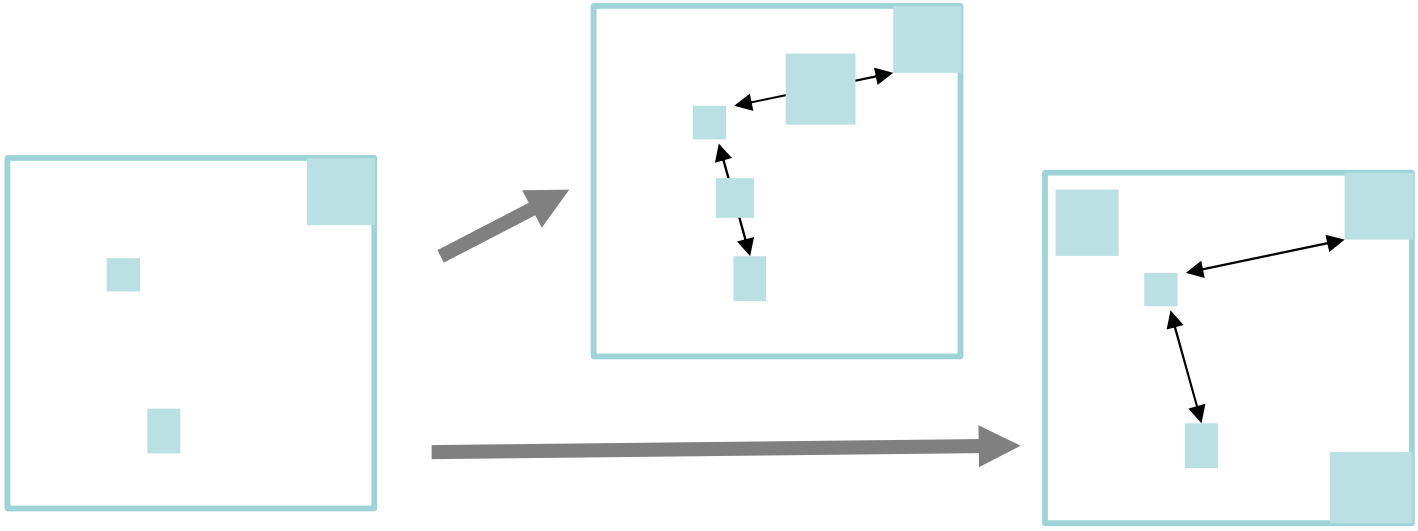
Otso Ovaskainen

Anthropogenic habitat fragmentation



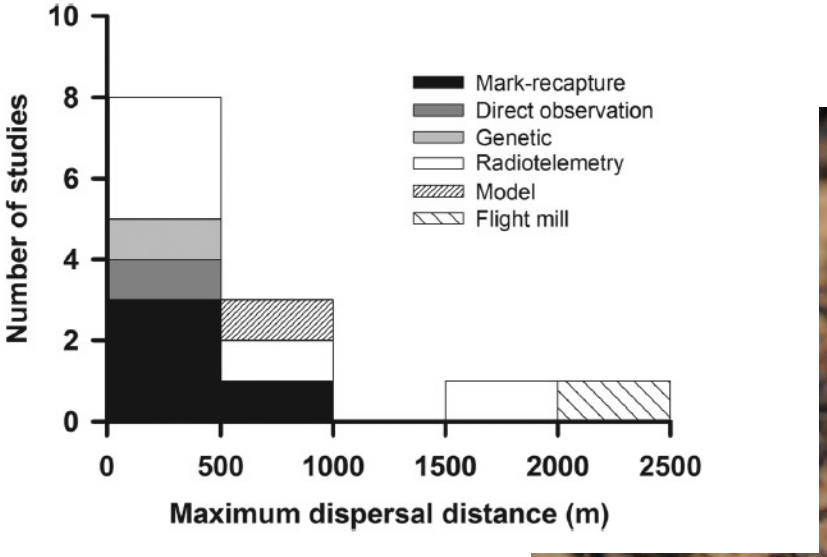
- Decrease in habitat amount
- Increase in distance between patches

Restoration



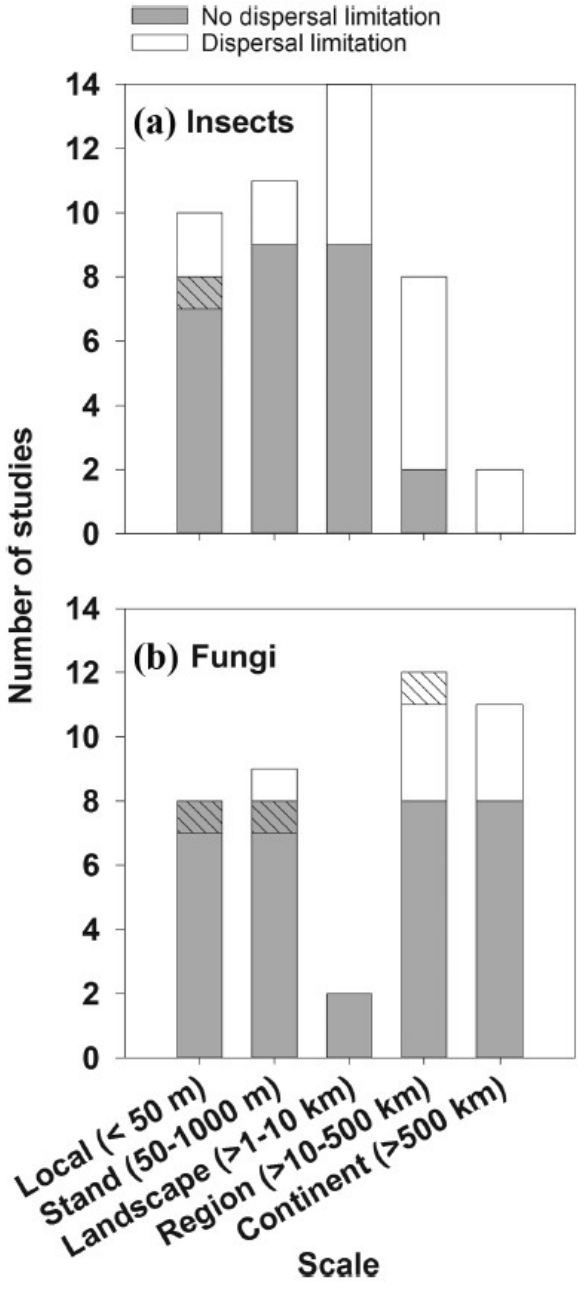
Saproxylic beetles live in ephemeral world

How far they disperse?



Komonen & Müller 2019 Conservation Biology

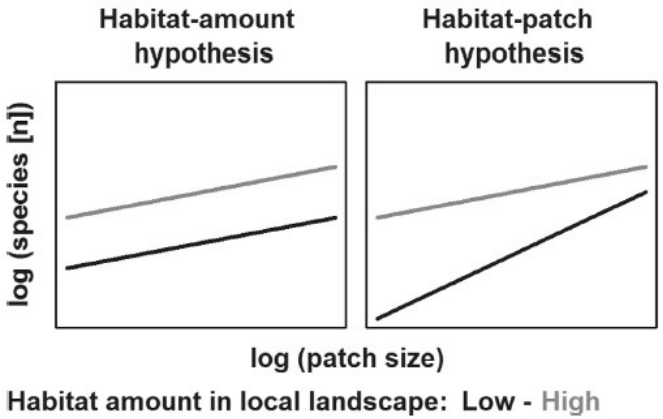
How far they disperse?



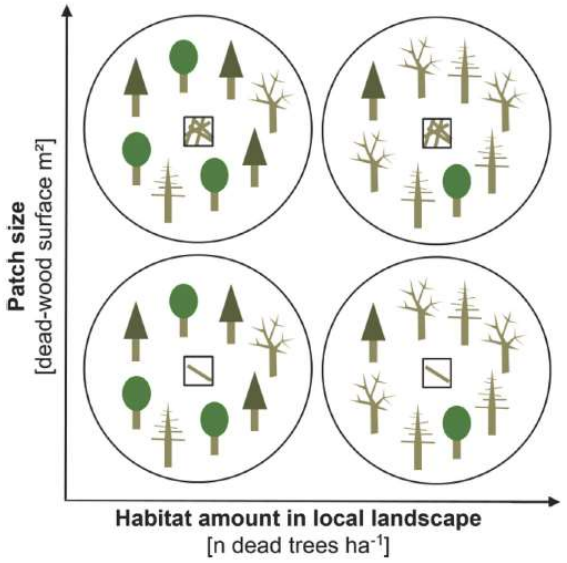
Komonen & Müller 2019 Conservation Biology

An experiment with saproxylic beetles

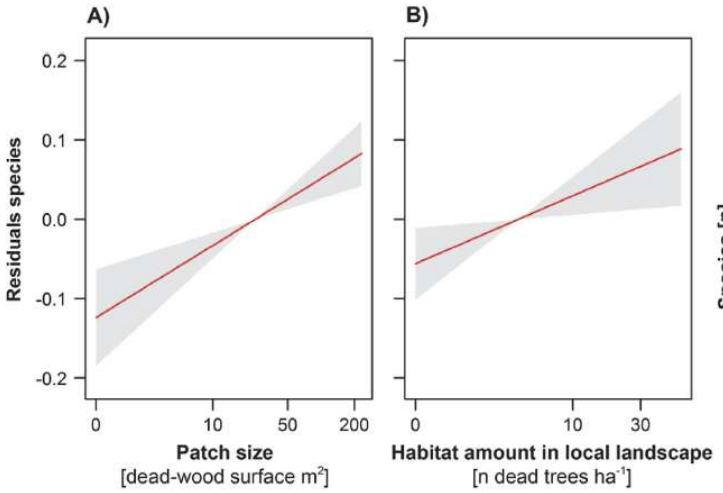
Theory

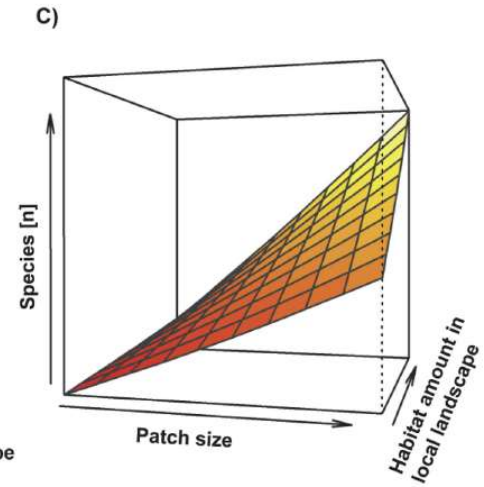


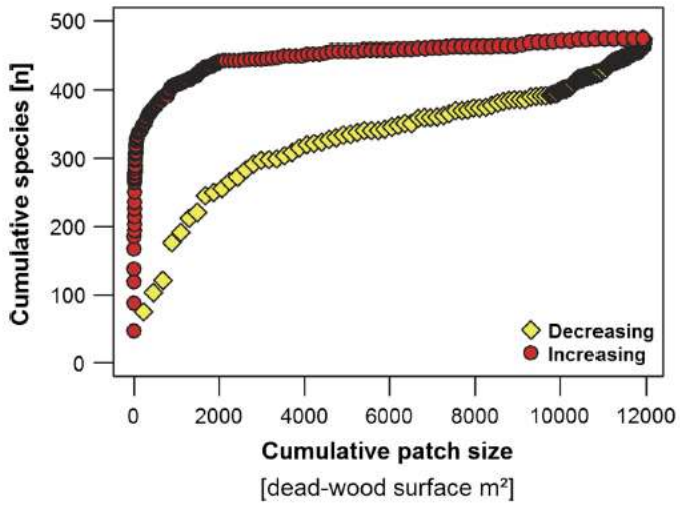
Design



Results

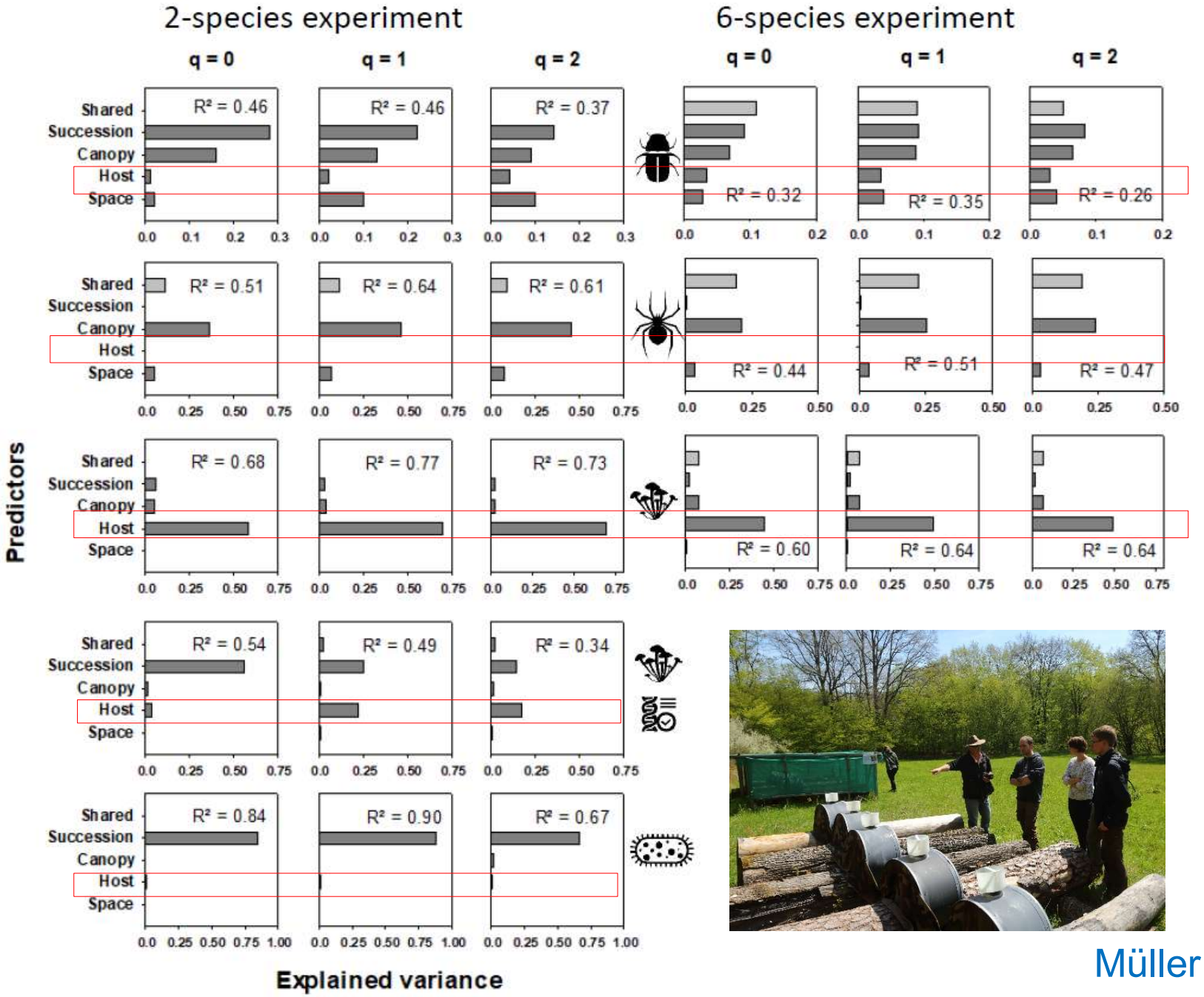






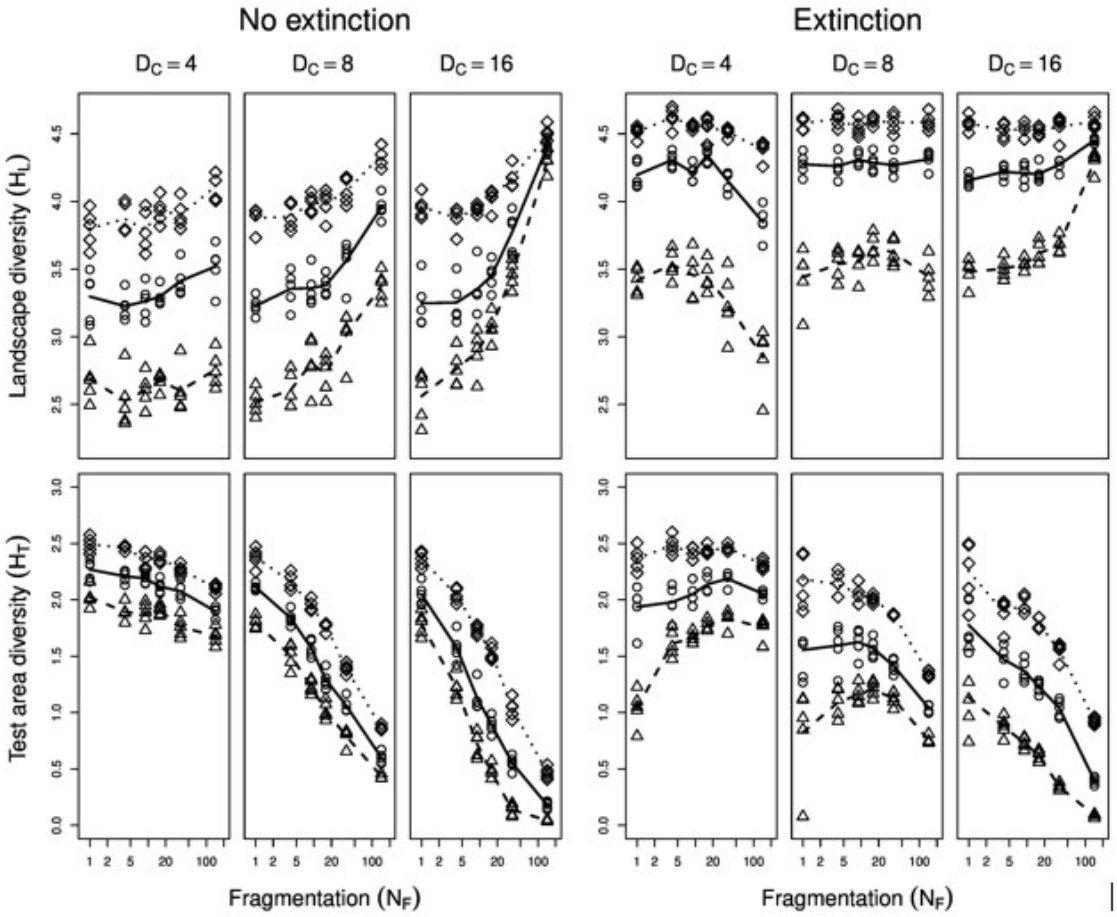
Seibold et al 2018 Ecology

Experiments in two forest landscapes?



Müller et al 2020 Oikos

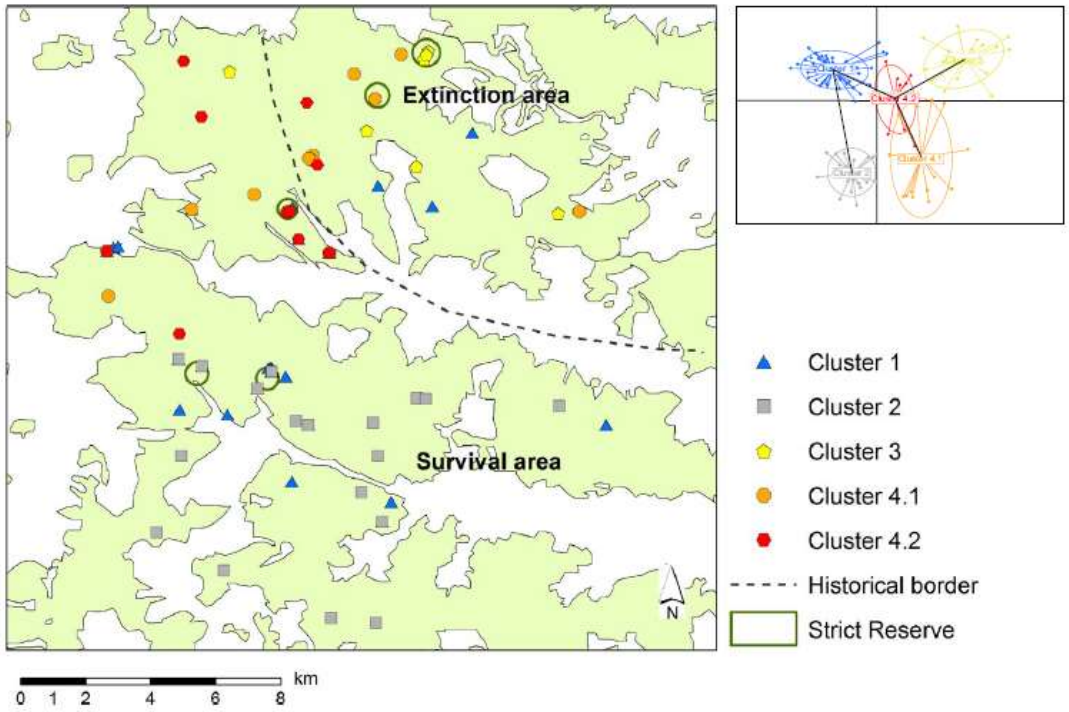
Simulation study on deadwood organism

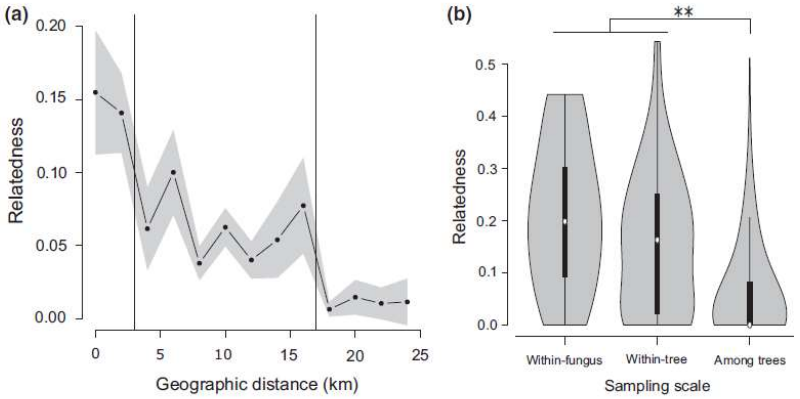


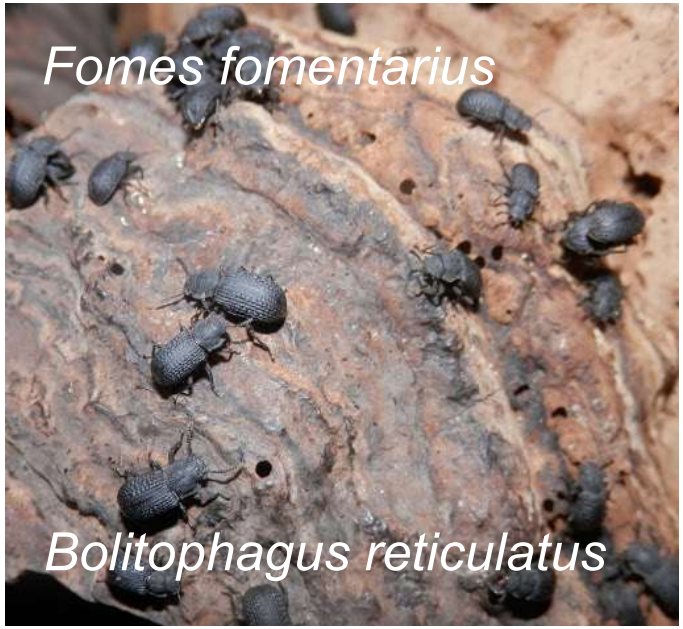
Landscape diversity increases in fragmented landscape due to ecological drift

Mitesser et al (under review) American Naturalist

Case study: The return of *Fomes fomentarius* and *Bolitophagus reticulatus*







Zytynska et al 2018 Journal of Applied Ecology

Case study: *Peltis grossa* (Urwaldrelikt)

Busse et al 2022 Forest dieback in a protected area triggers the return of the primeval forest specialist Peltis grossa (Coleoptera, Trogossitidae)

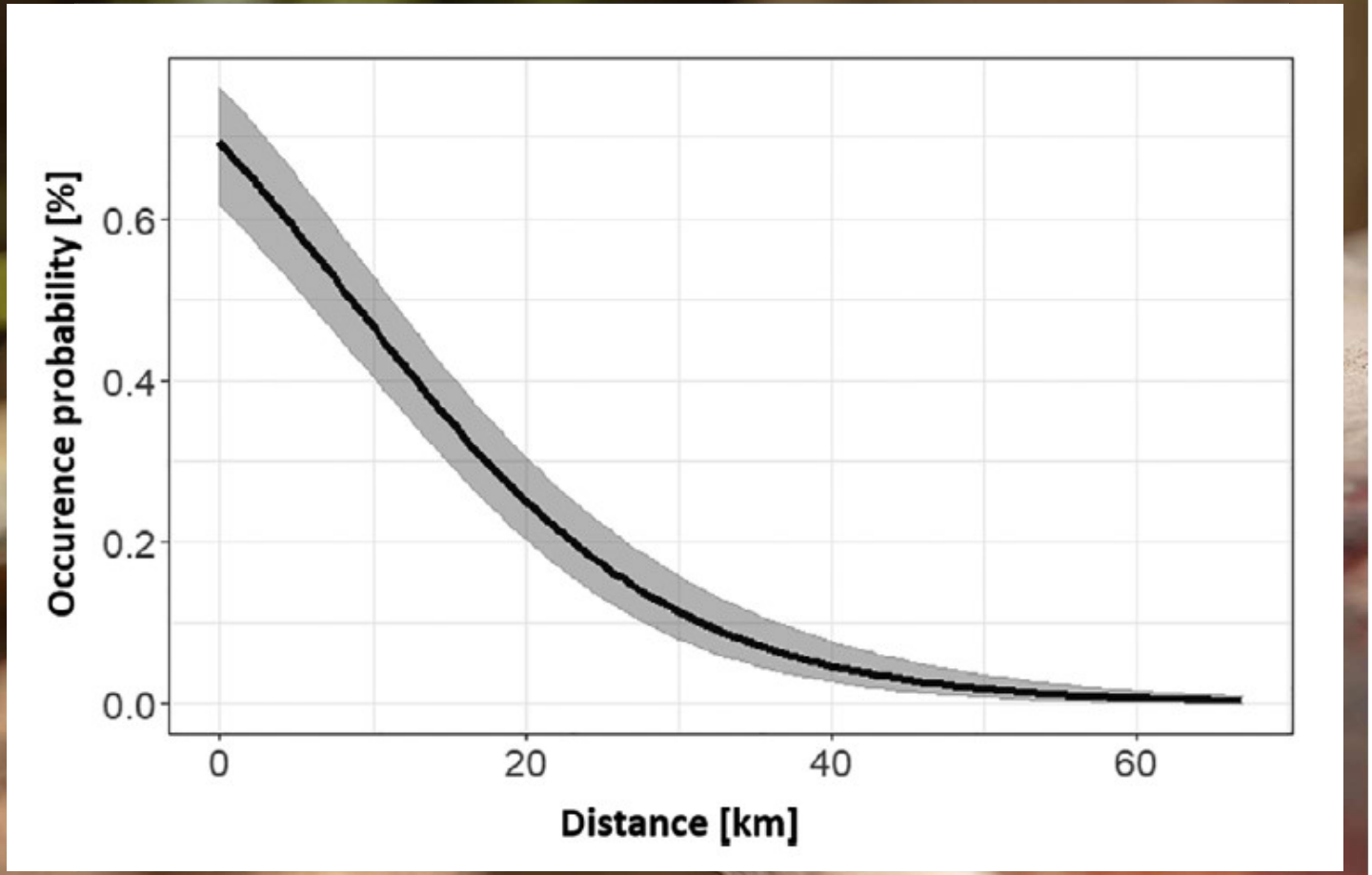
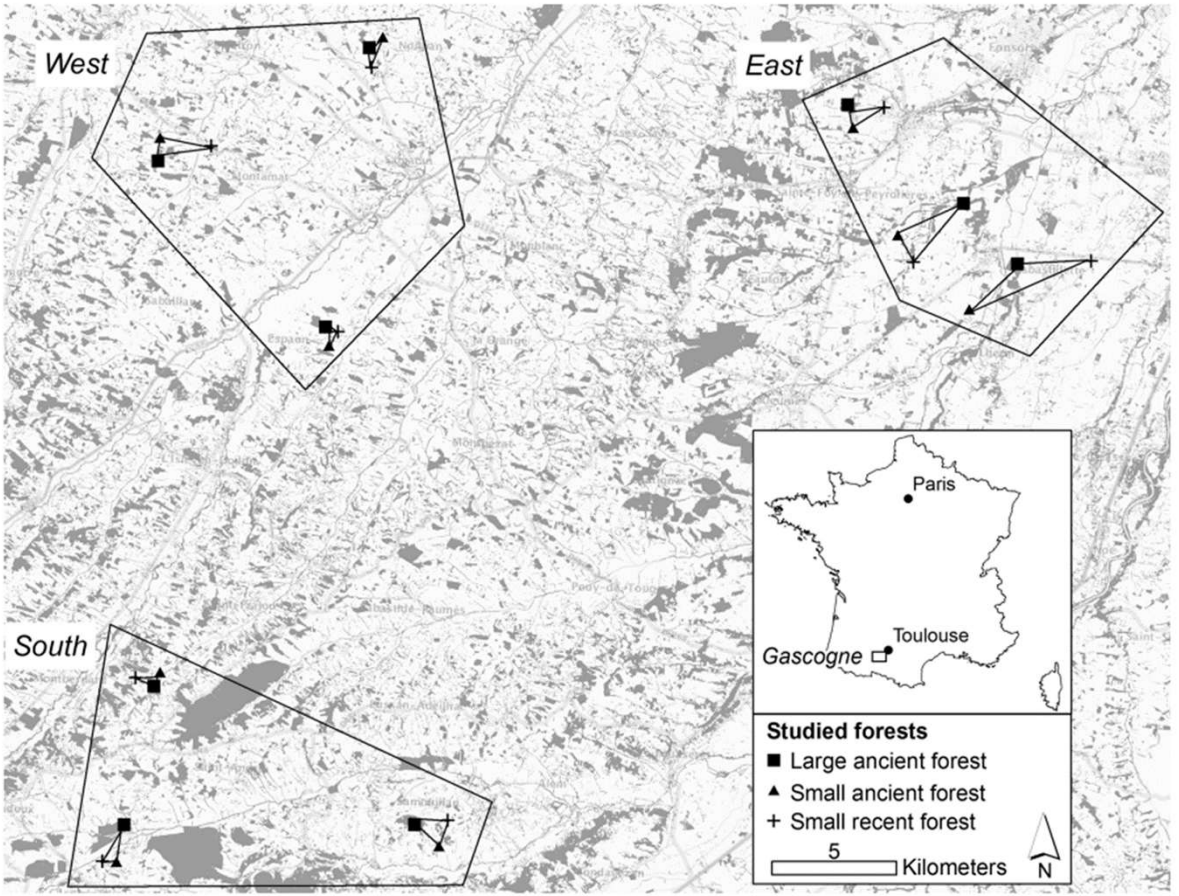


Foto Haselberger

Flightless species: The influence of spatial and temporal discontinuities of forest habitats

Dinerella clathrata



Only the past amount of forest in the landscape matters, but not temporal continuity

Cateau et al 2018 PlosOne

Conclusions

- Of course there are dispersal limitations in saproxylic organism, but rarely on a landscape scale
- Dispersal is regularly underestimated
- **Habitat amount** seems by far more important than **connectivity** even in saproxylic beetles
- We should focus in conservation on large populations of threatened species rather than on connectivity
- Politicians like the connectivity idea because it seems plausible and it is cheaper.
- To distinguish between space and habitat amount is important in restoration!