

ECO 
-OLIVES

Linking Biodiversity Conservation &
Ecosystem Service Management
in Olive Cultivation Landscapes

Cooperation
of:



**universität
wien**



Sant'Anna
Scuola Universitaria Superiore Pisa



Funded
by:

FWF

Biodiversity & Sustainability Science

Linking transdisciplinary perspectives into a bigger picture of biodiversity conservation & ecosystem service management



Biodiversity & Ecosystem Functions

Exploring species- and trait-specific responses to land use change to understand ecosystem service potential

(e.g., Maas et al.

2009/BiolCons; 2013/EcolLett; 2016/BiolRev; 2020/TREE)

Transfer & Application

Linking field research data, software applications and science communication to improve transferability

(e.g., Maas et al.

2015/JApplEcol; 2019/BAAE; 2019/BiolCons; www.didat.net)

Implementation of New Sustainability Standards

Promoting diversity, equity and inclusion across fields for better collaboration and evidence-implementation

(e.g., Maas et al.

2020/NatureEcolEvol; 2020/TREE; 2021/ConsLett)

A bigger picture of biodiversity conservation

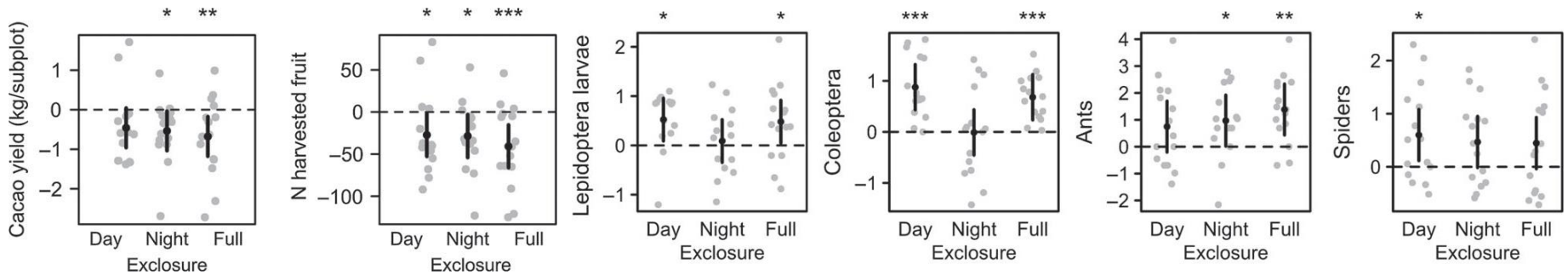


AgroEco DivGroup

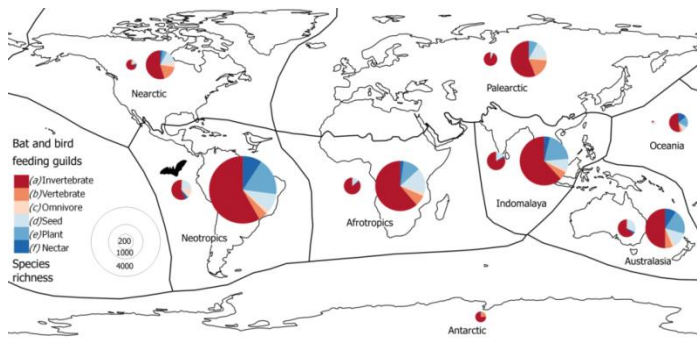
Linking biodiversity conservation and ecosystem services management in sustainable land use approaches of agroforestry landscapes



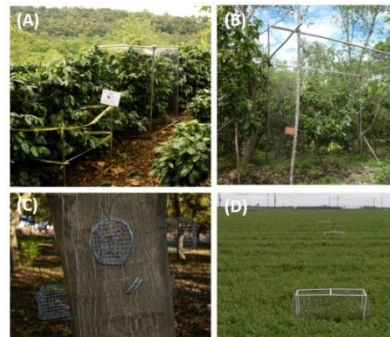
Birds, Bats & Farms with Trees



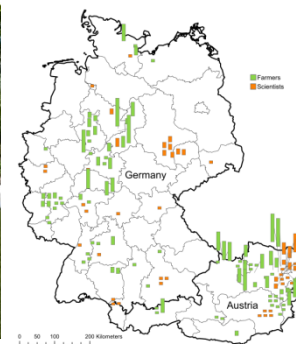
Maas et al. (2013) – Ecology Letters



Maas et al. (2016) – Biological Reviews



Maas et al. (2019) – BAAE



Maas et al. (2021) – Biol. Cons. & BAAE





Ecological management of European olive agroforestry: linking biodiversity conservation, ecosystem services and productivity

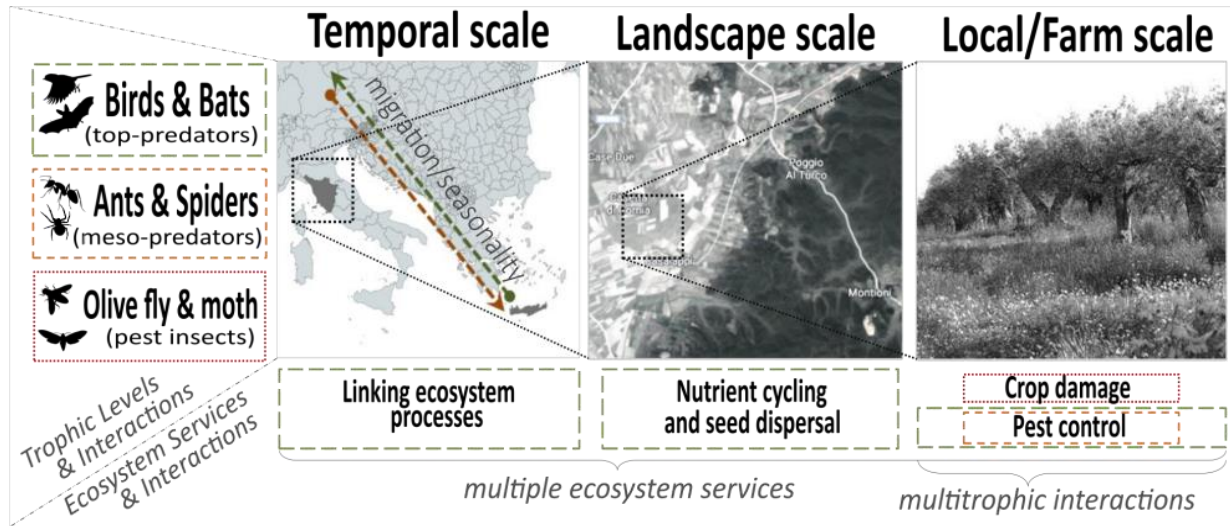


Three main objectives:

(O1) Assess taxonomic and functional diversity of birds, bats and arthropods

(O2) Identify environmental key factors and “flagship biodiversity”

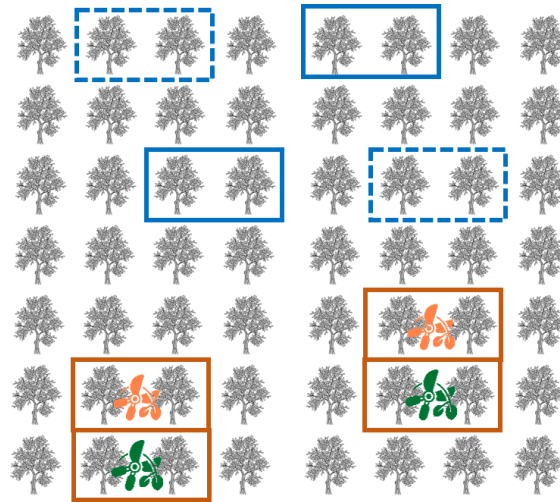
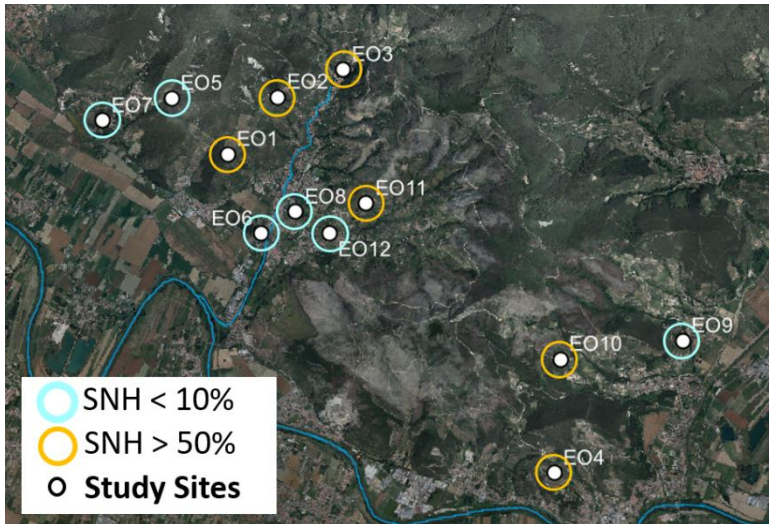
(O3) Develop and apply innovative management approaches and decision-support tools



Assessed Data:

- Birds, bats & arthropods
- Harvest quantity & quality
- Local management
- Landscape structure
- Pruning effects
- Stakeholder perceptions
- Practical potentials

Project Design



Interactions of biodiversity & productivity

- 12 organic olive farms (low vs. high SNH)
- 8 study trees/farm (controls vs. exclusions)



Effects of olive tree pruning on biodiversity & productivity

- 8 additional trees/farm (Feb. vs. Apr. pruning)
- Additional farm assessments (soil & microclimate)



Awareness and perceptions towards birds & bats

- Handbooks on bat diversity & ecosystem services (AT & IT)
- Workshops, Interviews & Art Competitions with Schools



Project Methods (2022-2023)



Exclosures



Harvest



Fogging & Metabarcoding



Pruning



Pitfall, Winkler & Honey Traps +
Visual Observations



Mist netting (DNA), Sound Recording,
Point Counts & (Micro-)habitat mapping



Field & Landscape mapping;
Canine bat monitoring; Predation experiments,
Outreach and Workshops

First observations & Expected Data

2022 (visit beamaas.com for the full report)

- 53 bird species observed (incl. 19 strict insectivores)
- 25 recorded species of bats (out of 27 species in Italy - all insectivores)
- Over 100.000 estimated individuals of arthropods (incl. 25-30 ant species and 50-55 spider species – as well as a new record for Italy!)
- 2025 DNA records (ID levels: 1105 family / 601 genus / 319 species)

Total expected data (2022-2023):

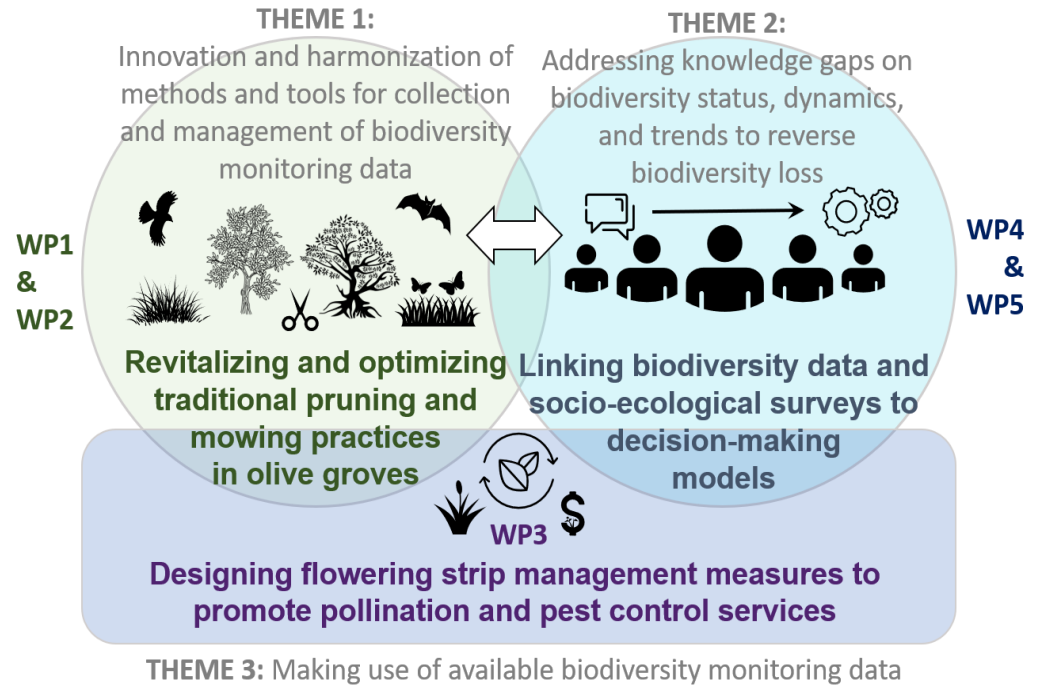
- 6-8 rounds of bird, bat & arthropod sampling / site / year
- Two complete harvest cycles (quantity & quality per tree)
- Complete local and landscape data maps
- Experimental data (e.g., dummy caterpillars & pruning)
- Interviews with stakeholders (n ~ 500) & schools (n ~ 3000)



*Phaeocedus
vankeeri*



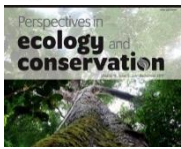
Co-producing management practices & sustainability strategies for olive agroforestry systems



Main stations



Societies:



Partners:



Open Questions?

→ Collaboration opportunities

(e.g., ant species identification & colony monitoring;
bird and bird recording on existing study sites;
linking related projects and stakeholder networks)

→ Funding opportunities

(e.g., BIODIVERSA+; ERC Consolidator Grant;
Network Fundings of University of Vienna & SSSA)

→ Training opportunities

(e.g., Field courses and supervision of students;
practical trainings and implementation trials;
links to pruning, mowing and enrichment approaches)



Thank you!



Acknowledgements:

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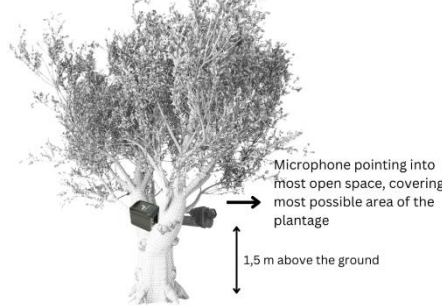
Twitter: @MaasBea & @AgroEcoDiv

Rediscovering Birds and Bats

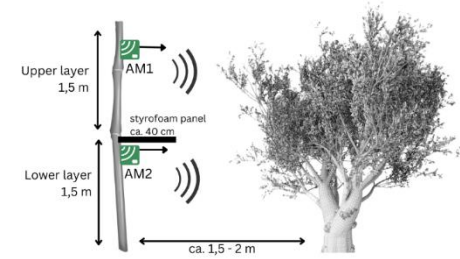
→ Bat research & handbooks based on ECO-OLIVES data



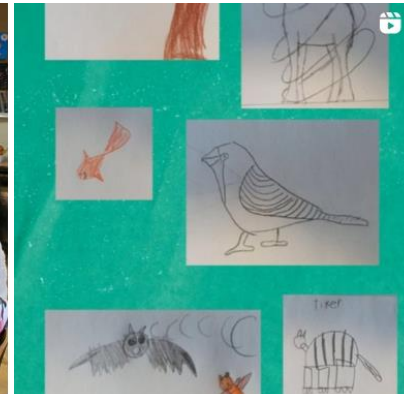
Wildboar safe Bat logger installation



foraging in different horizontal layers



→ Awareness research based on school workshops, interviews & creative art competitions during summer break

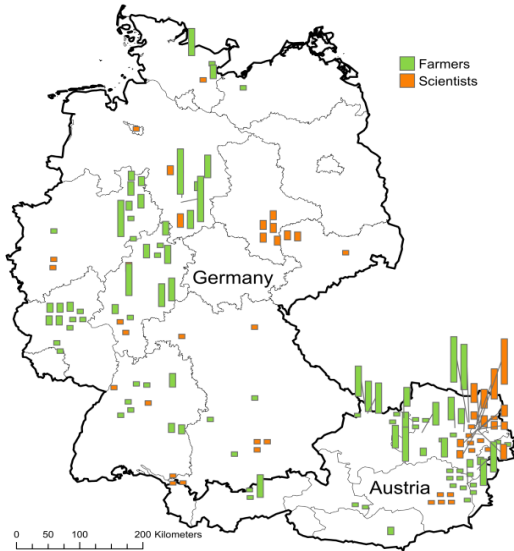


@sounds.wild



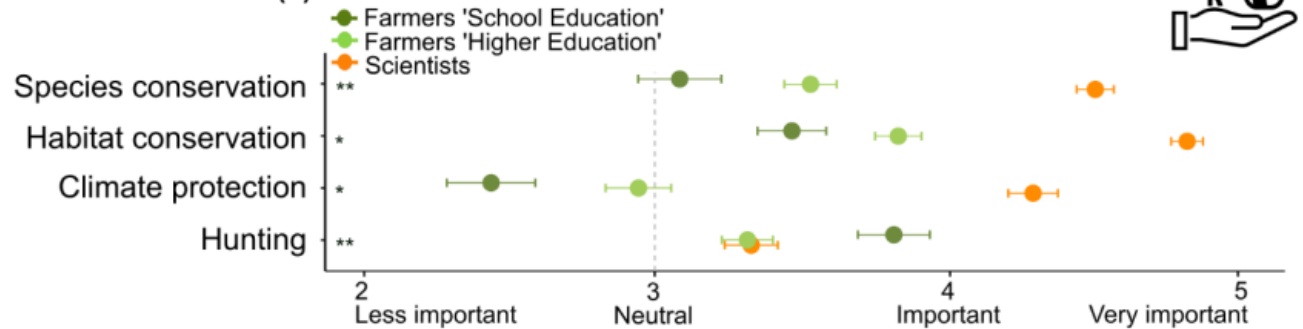
@soundswild

Upcoming surveys based on previous findings and local stakeholder networks

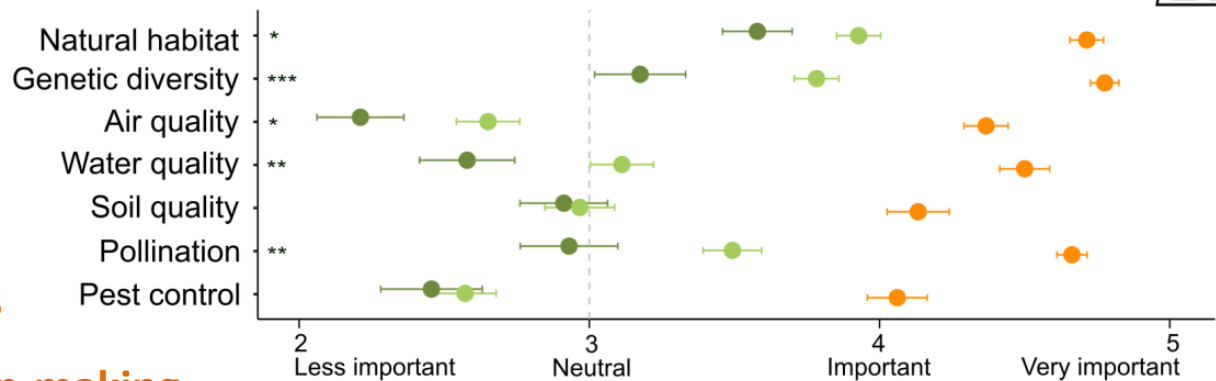


- Biodiversity
- Ecosystem Services
- Conservation measures
- Information for decision-making

(b) Effectiveness of conservation measures

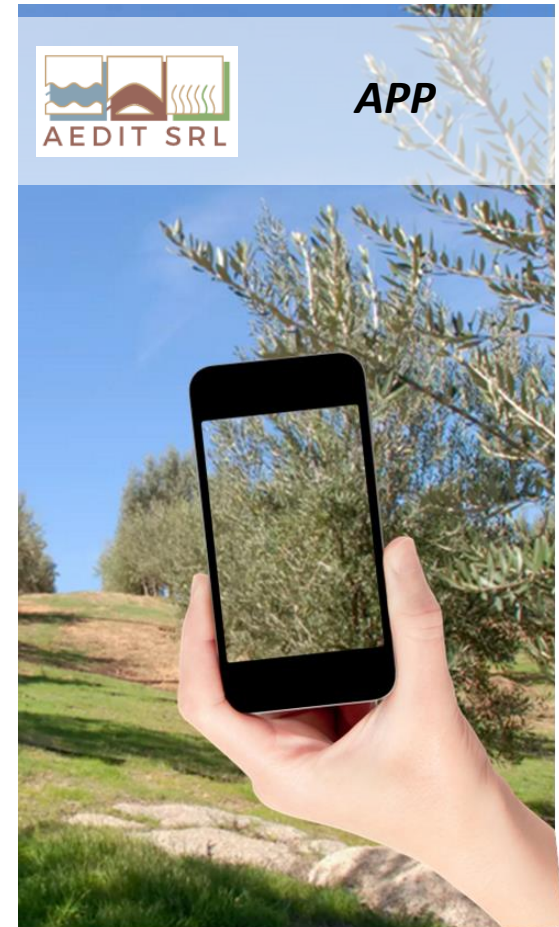
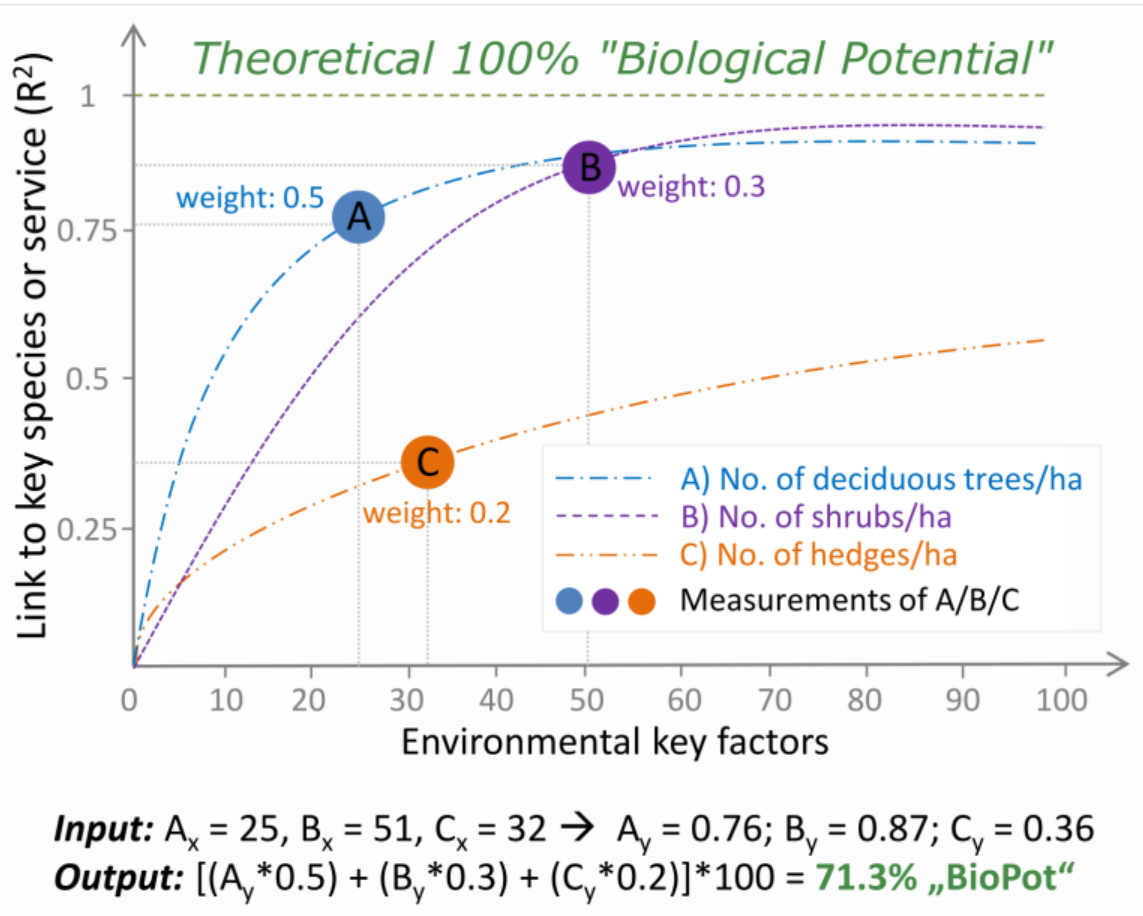


(c) Importance of ecosystem services for ecosystem resilience





Ecological management of European olive agroforestry: linking biodiversity conservation, ecosystem services and productivity

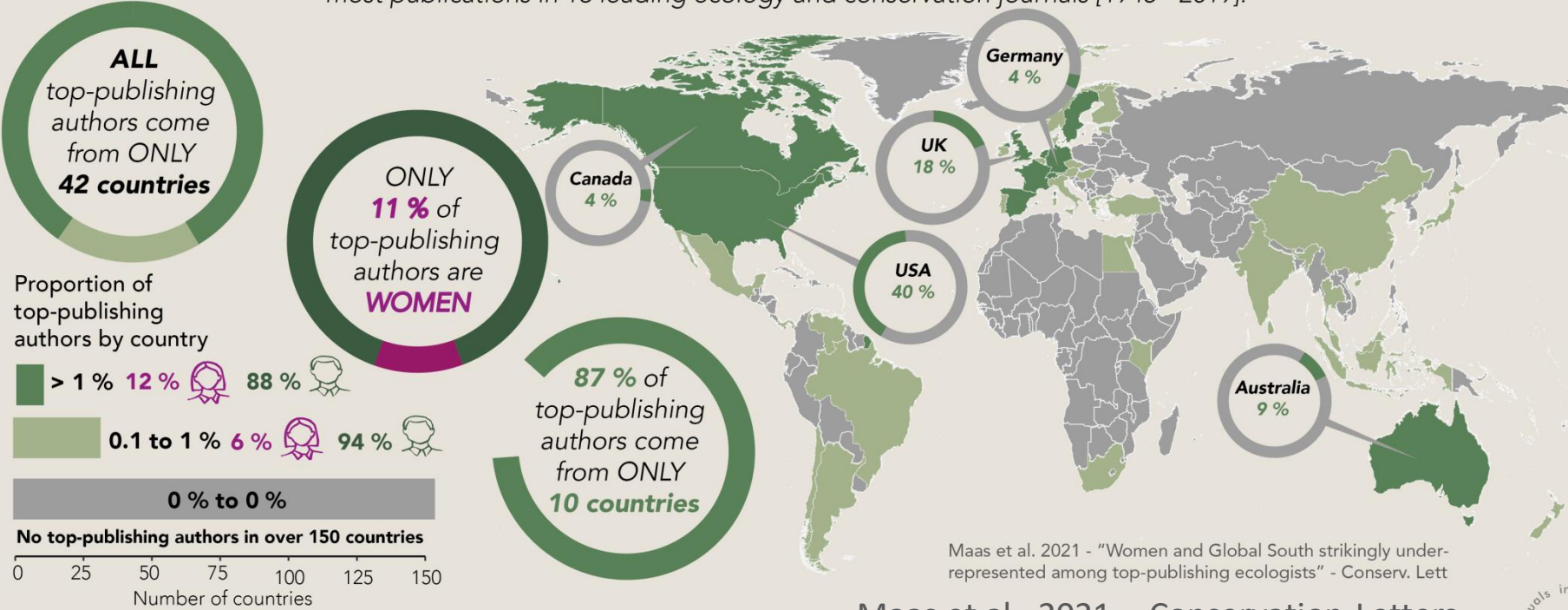


DIVERSITY IN ECOLOGY

Who are the top publishing authors?

Lack of diversity among top-publishing ecologists

The study examined the gender and affiliations of 1051 top-authors, those scientists with the most publications in 13 leading ecology and conservation journals [1945 - 2019].



Total list of top authors: 11% women; > 75% from only 5 countries!