

Effects of conservation zones on biodiversity and ecosystem services of Mediterranean oak woodlands

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Outline:

- Sustainable forest management;
- Forest certification as a tool to promote sustainable forest management;
- Conservation zones: effects on biodiversity and ecosystem services of cork oak woodlands;
- Conclusions.

Forest ecosystems

- host 50% of all vertebrate species
- generate essential ecosystem services...




*Sustainable forest management: Stewardship and use of forests (...) in a way (...) that maintains their (...) potential to fulfill (...) relevant **ecological**, economic and social functions(...)* FAO, 2016



Forest certification?

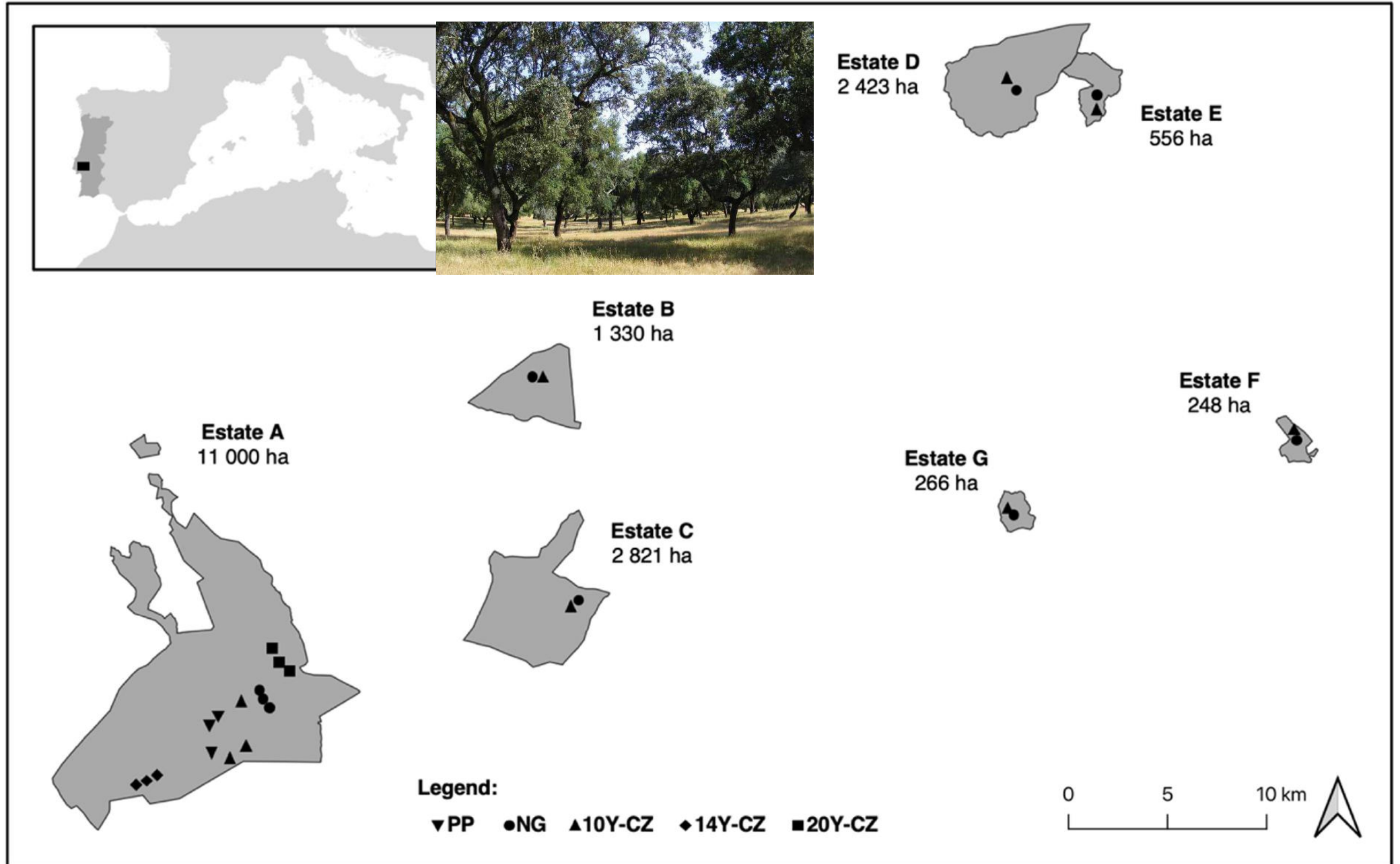
Forest certification, biodiversity and ecosystem services in cork oak woodlands



~ 100 thousand ha of cork oak woodlands are certified in Portugal (FSC)

Conservation zones ~ 10% of the area of forest management unit

Study area



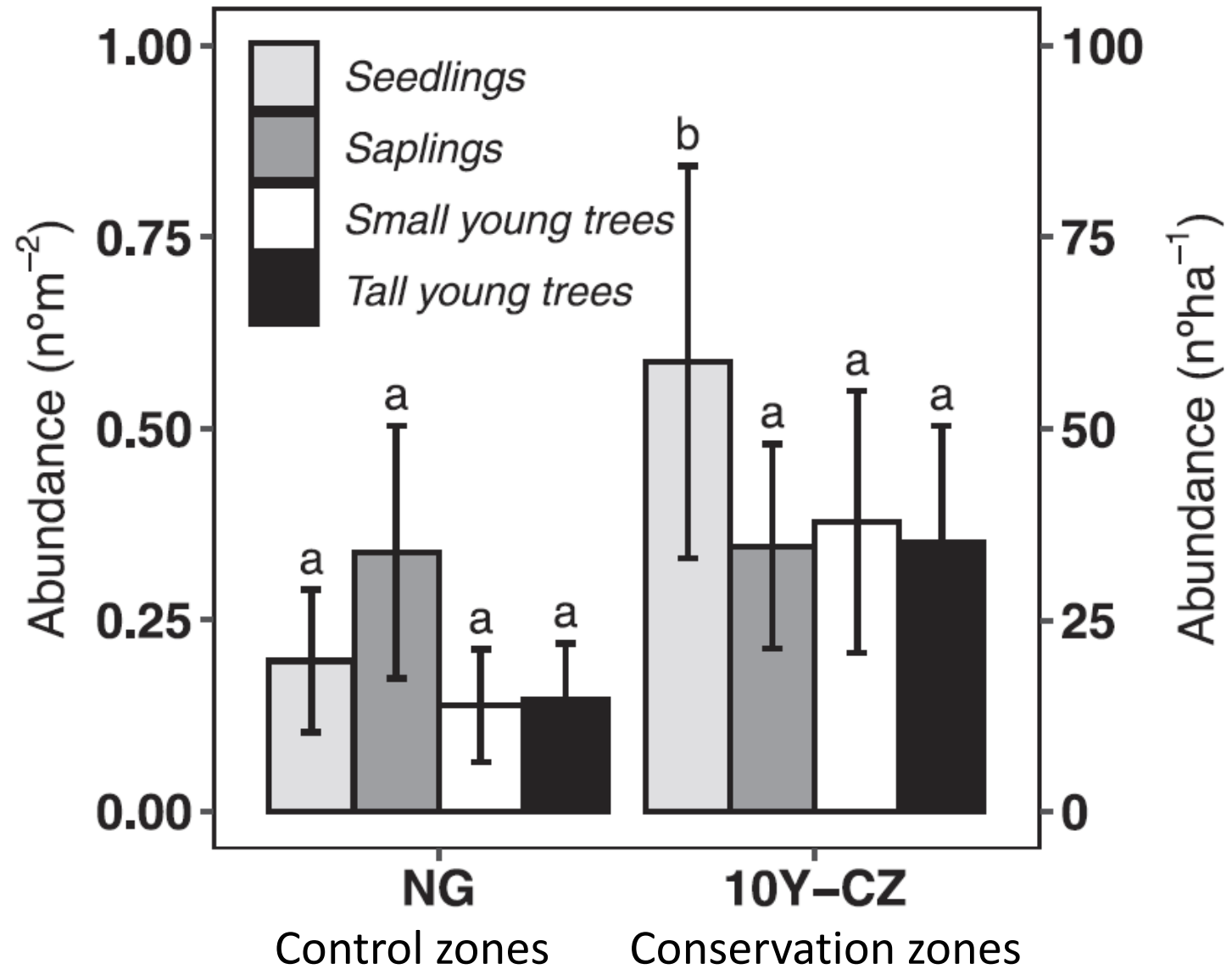
A photograph of a cork oak forest with a semi-transparent text overlay. The background shows a dense stand of cork oak trees with their characteristic thick, gnarled trunks and lush green foliage. The ground is covered in dry grass and fallen leaves. The text is presented in two semi-transparent boxes: a larger one at the top and a smaller one at the bottom.

Monitoring of conservation zones and control areas:

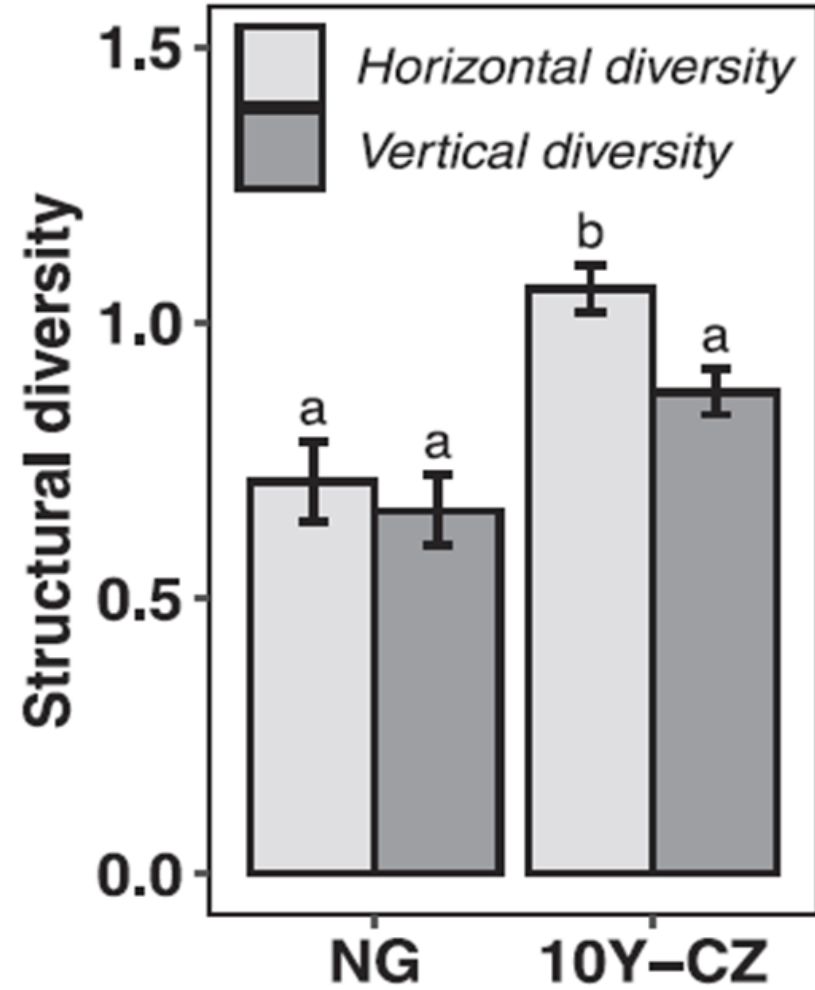
- Cork oak natural regeneration;
- Cover of the shrub understory;
- Bird diversity;
- Ecosystem services (carbon and fire hazard)?

- Monitoring of conservation zones 10, 14 e 20 years of implementation.

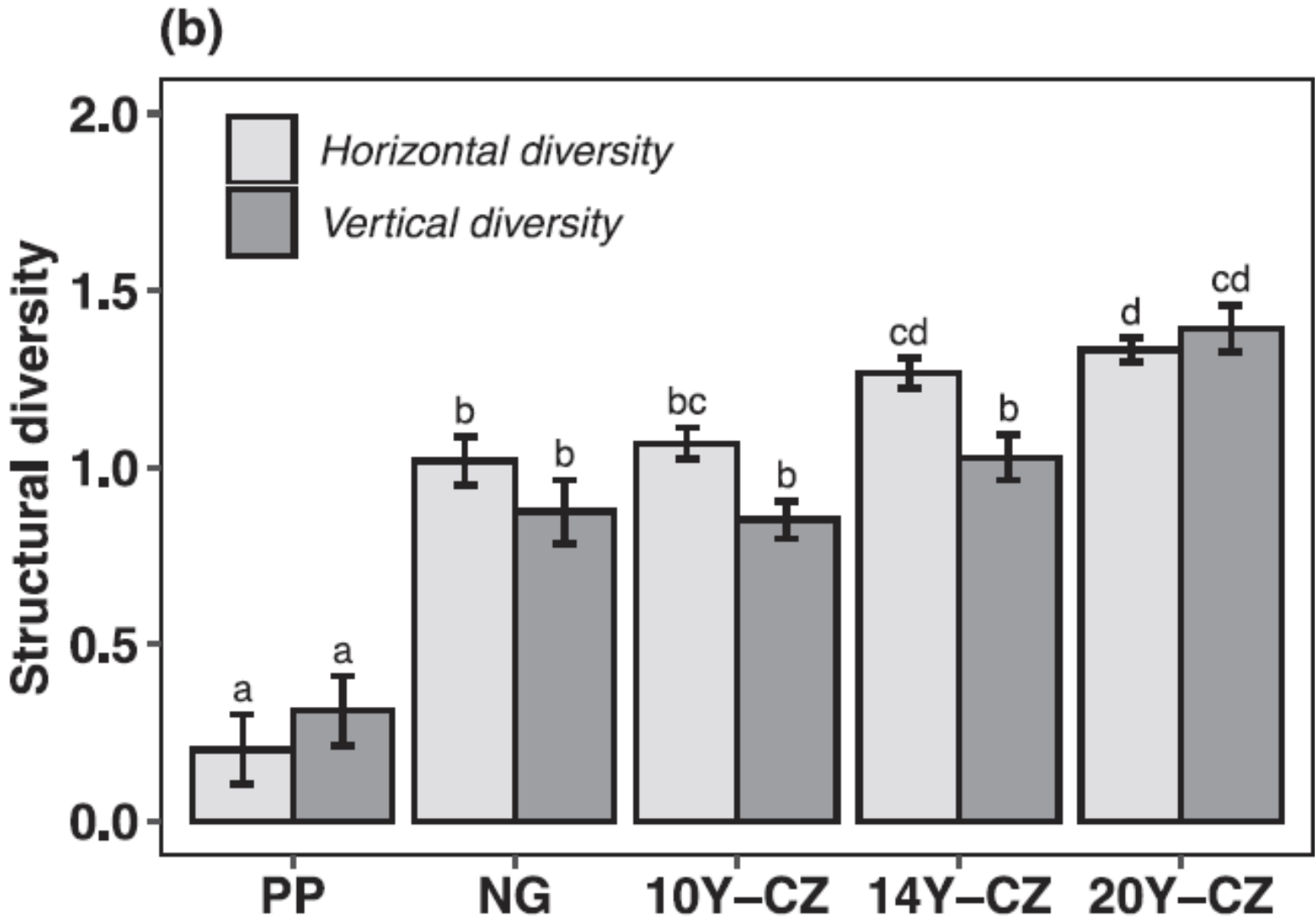
Oak natural regeneration



Shrub understory: structural diversity

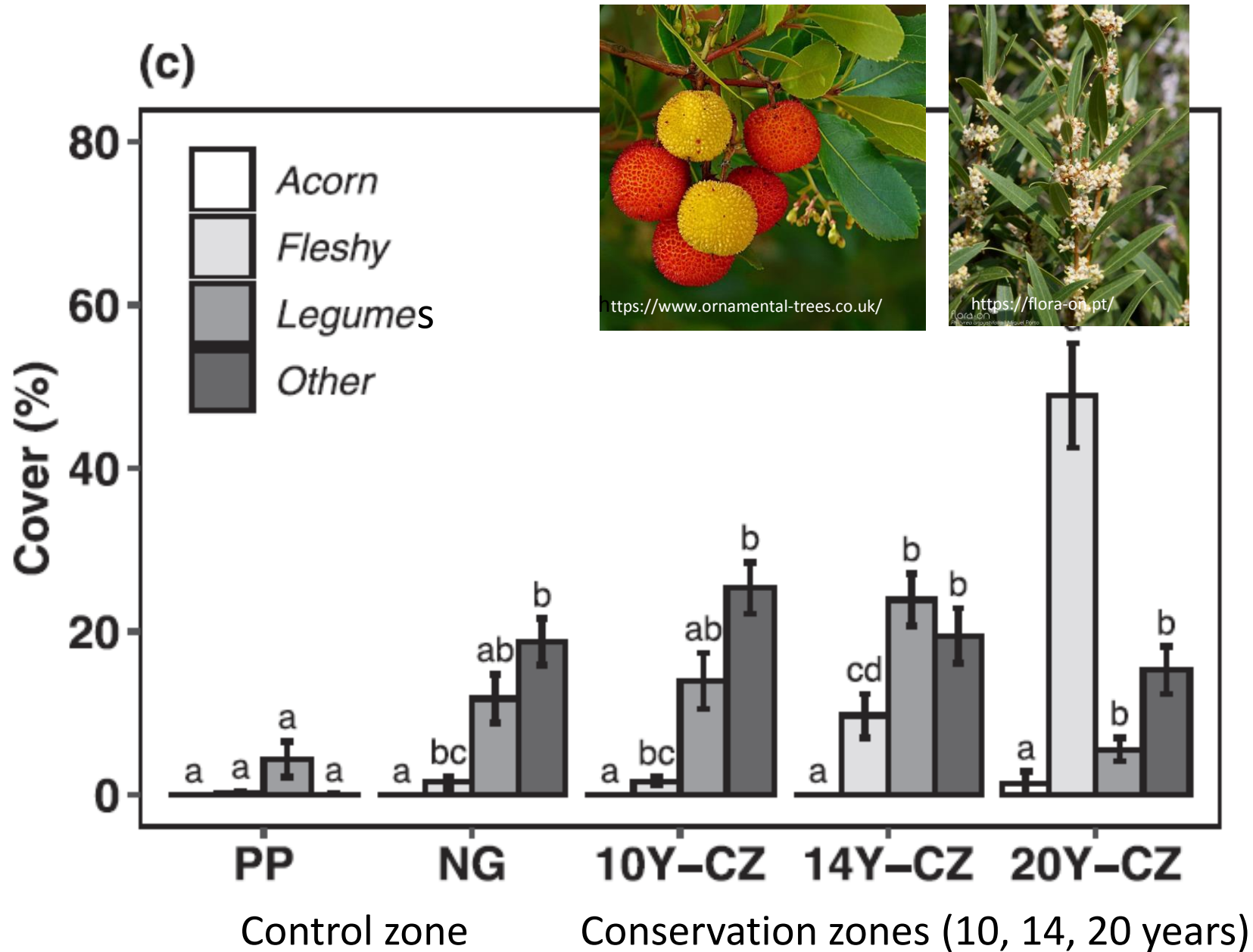


Shrub understory: structural diversity and age of conservation zone



Control zones Conservation zones (10, 14, 20 years)

Shrub understory: functional diversity



shrub species

PP: 5 species

NG: 12 species

ZC 10 years: 14 species

ZC 14 years: 17 species

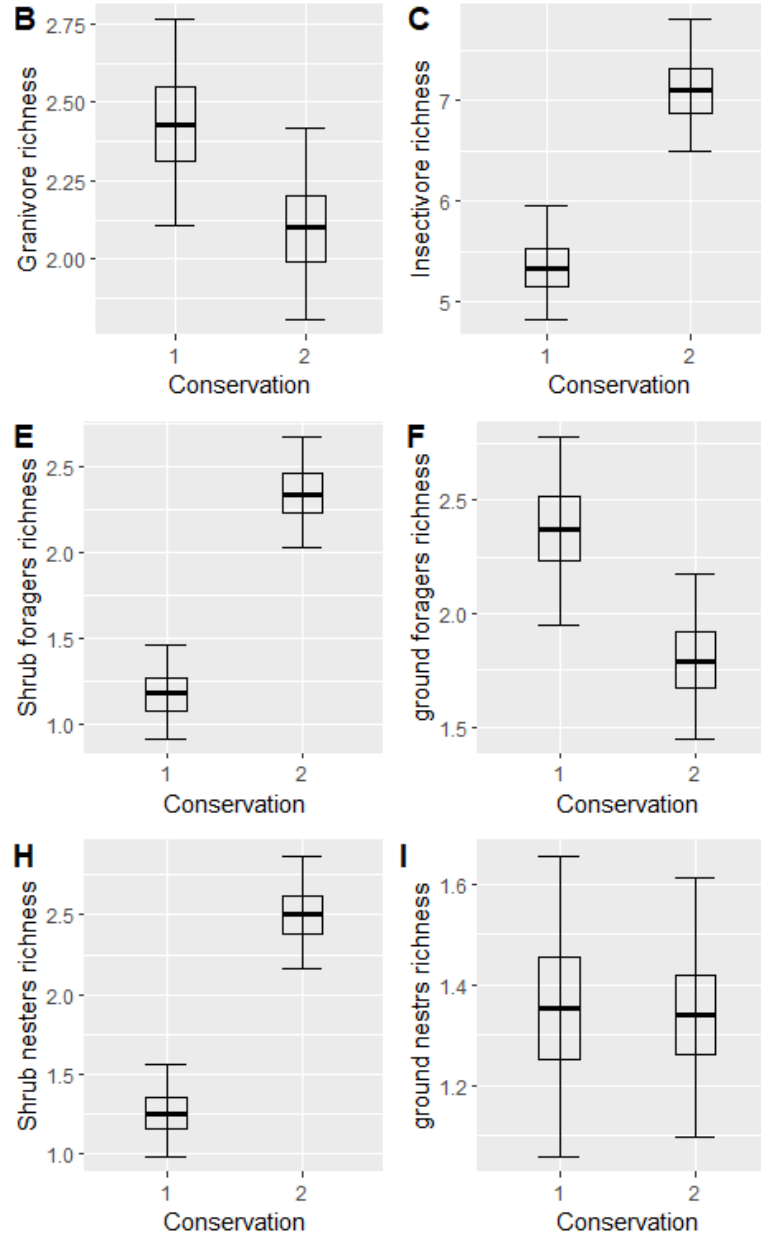
ZC 20 years: 19 species

Bird species: functional diversity

bird species:

Control zones: 50 species

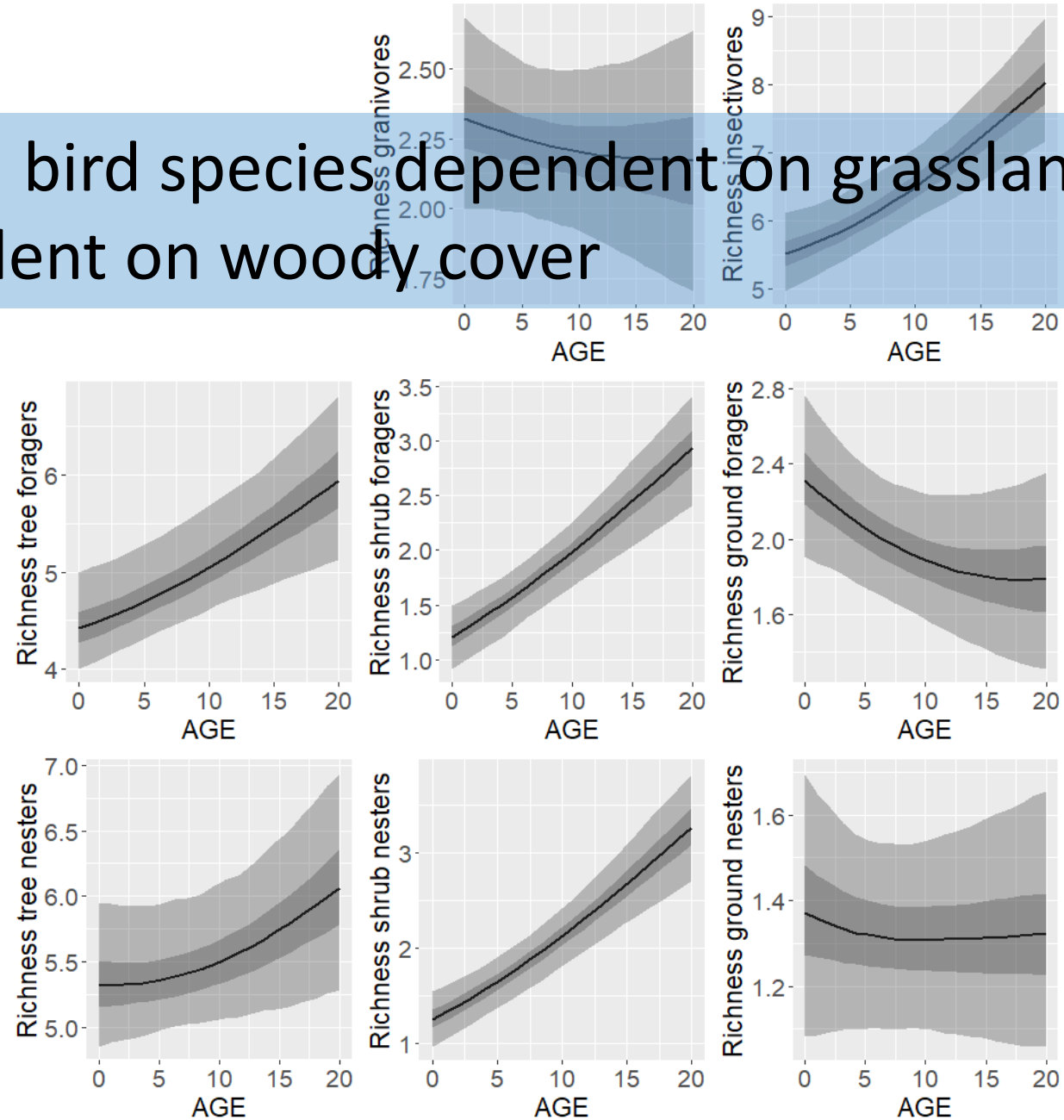
Conservation zones: 52 species



1- control zones
2- conservation zones

Bird species: functional diversity and age of conservation zones

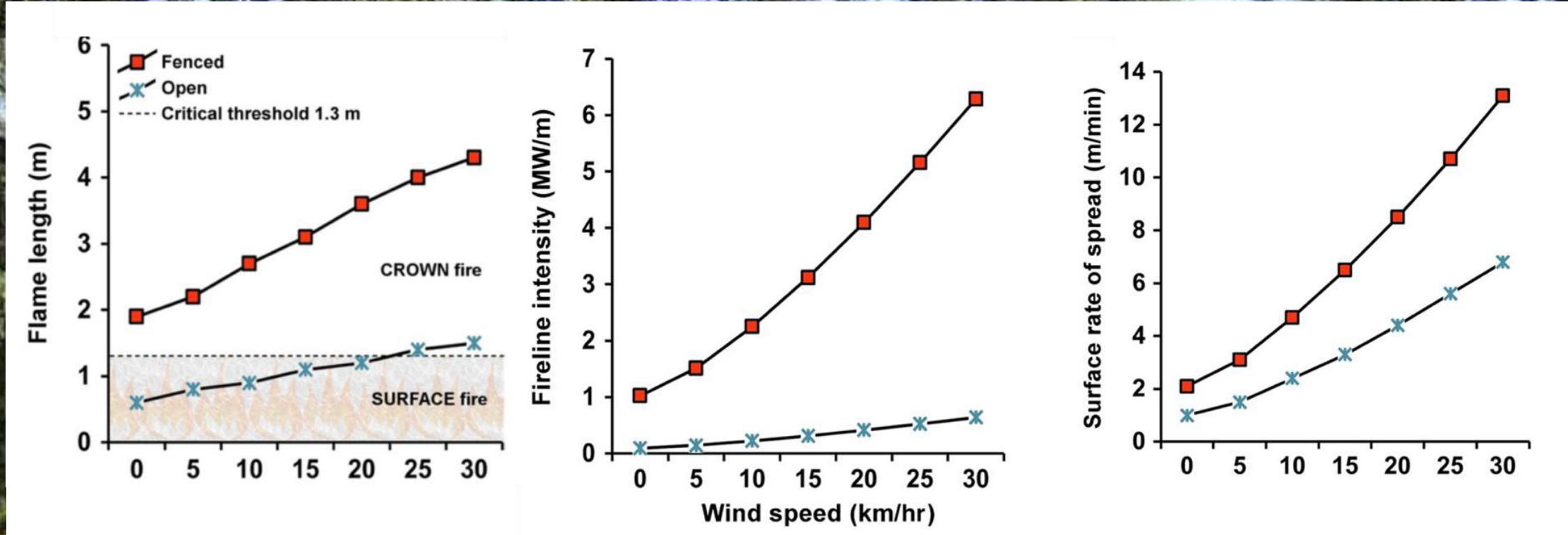
Trade-offs between bird species dependent on grassland patches and bird species dependent on woody cover



Conclusions:

- Number of species is similar between control zones and conservation zones;
- Structural diversity higher in conservation zones and increases with age of conservation zone;
- Functional diversity (bird and shrub species) differs between control zones and conservation zones;
- Bird and shrub diversity higher at the property scale.







Implications for Ecosystem services (carbon and fire hazard)?



RESEARCH ARTICLE

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Ungulates mediate trade-offs between carbon storage and wildfire hazard in Mediterranean oak woodlands

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Thanks for your attention!

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