Tree Microhabitats: A Potential Flagship for Nature Conservation in Turkish Forestry

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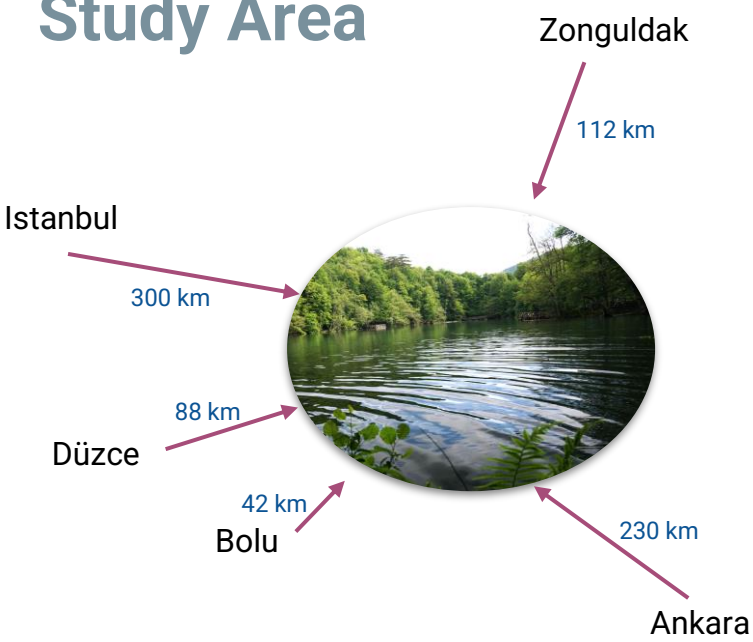
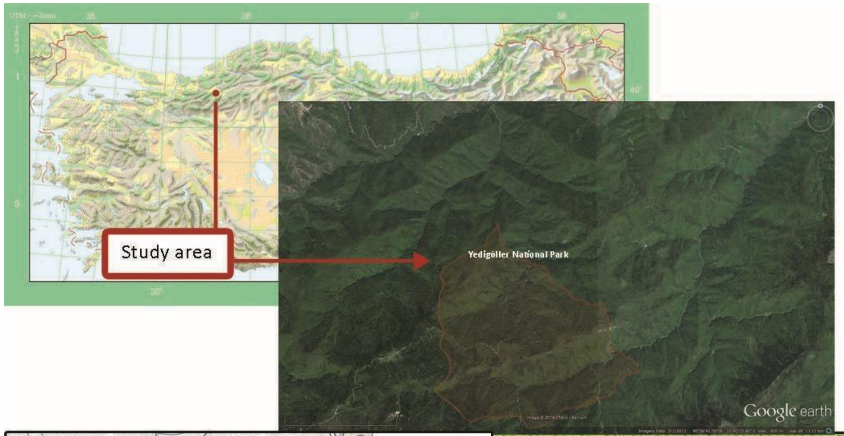
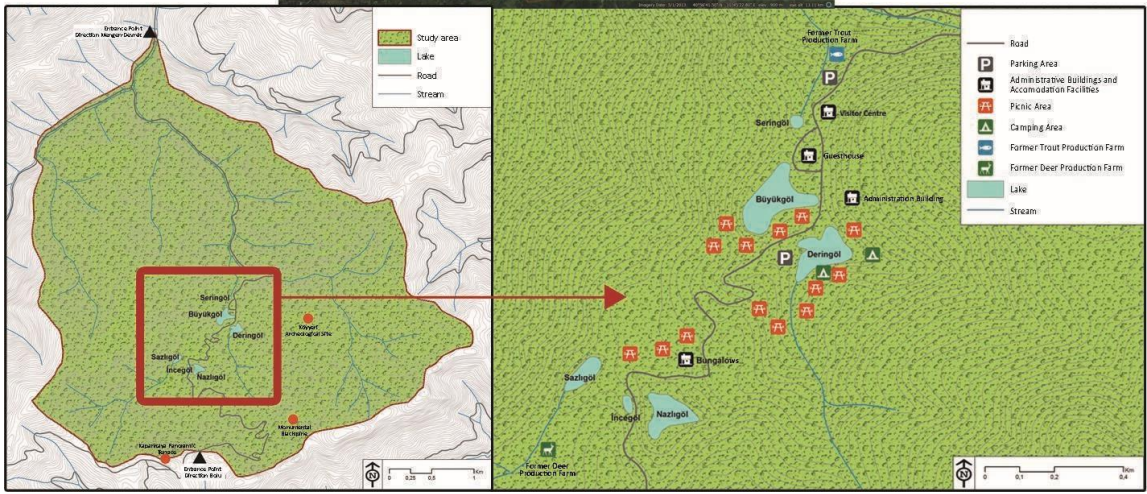
Study Area



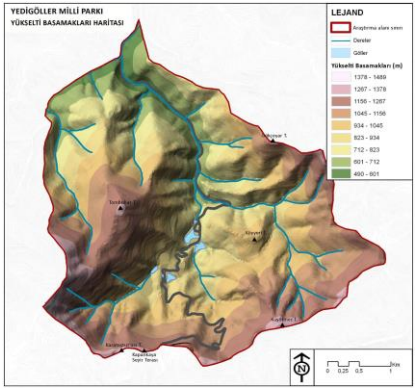


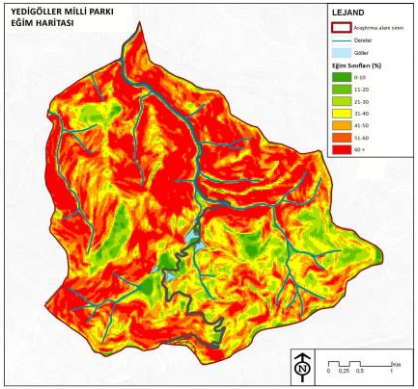


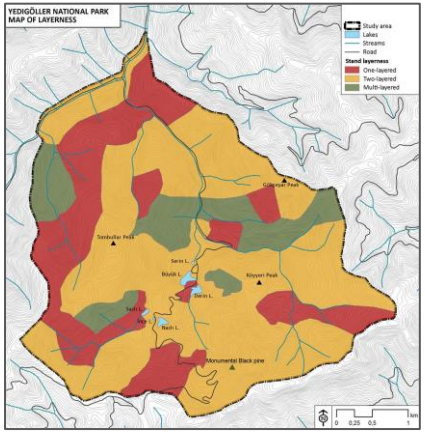
Yedigöller National Park covers an area of 1631 ha.

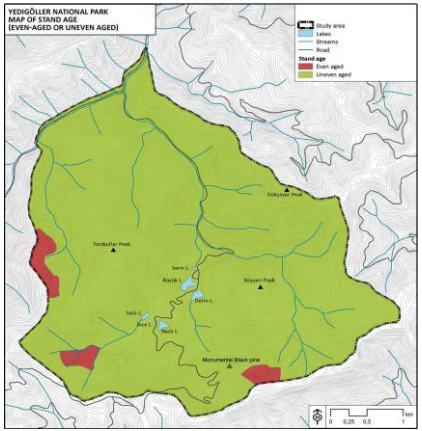
- One of the most popular protected areas in Turkey ~200.000 visitors a year (from April to mid-November).
- Recreational activities: Picnicking, camping, hiking, photography and line-fishing.
- Precipitation: ca. 550 mm/year, Avg. temperature: 10.4 ^{o}C.

- The elevation ranges from 490 m to 1298 m.
- Lies within the northeastern Euxin forest zone.
- **Forest structure:** Pure Oriental beech and a small amount of pure oak stands accompanied by mixed stands such as beech-fir, beech-oak, beech-oak-Black pine, beech-Black pine, beech-Black pine-Scots pine-fir, beech-Black pine-Scots pine, oak-beech, oak-Black pine and Blackpine-oak stands.
- There are a total of **236 plant taxa** consisting of 222 Angiospermae, 10 Pteridophyta and 4 Gymnospermae in the park.









Conservation Importance?

- Part of the **Yedigoller National Park Wildlife Conservation and Improvement Area**, which covers around 50.000 ha of area.
- Contains a **diverse vegetation structure** rich in trees, shrubs and herbaceous flora including endemic and rare taxa.
- Hosts a **wide variety of fauna** such as mammals (14 species), reptiles (5 species), birds (over 100 species) and fish (6 species).
- Contains **historical cultural layers of human settlements** from the Byzantine period.



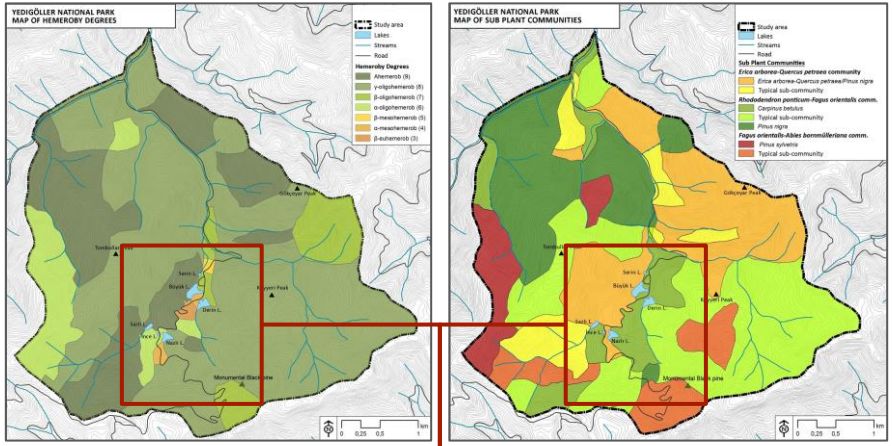


Problems?

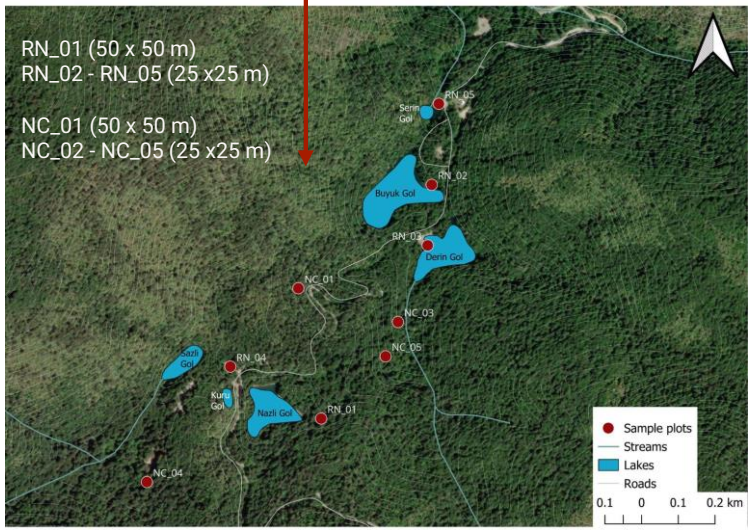
- **Anthropogenic pressure** because of the recreational activities (intensive use in and around the picnic and camping sites).
  - Decrease of naturalness
  - Poor ground flora
  - Low regeneration rates mainly threatening the sustainability of old-growth stands and biotope trees
  - Soil compaction
  - Disturbance of highly valuable ecotones between aquatic and continental conditions
  - Water and soil pollution
  - Uncontrolled and unlimited visitor policy (except camping sites)
- **No particular zoning plan** for the national park.


What Is Our Take?

- Threats are highly concentrated at a central location around the lakes, streams, roads and walking trails but not wide-spread throughout the park.
- Lack of knowledge on the habitat diversity in these problematic areas.

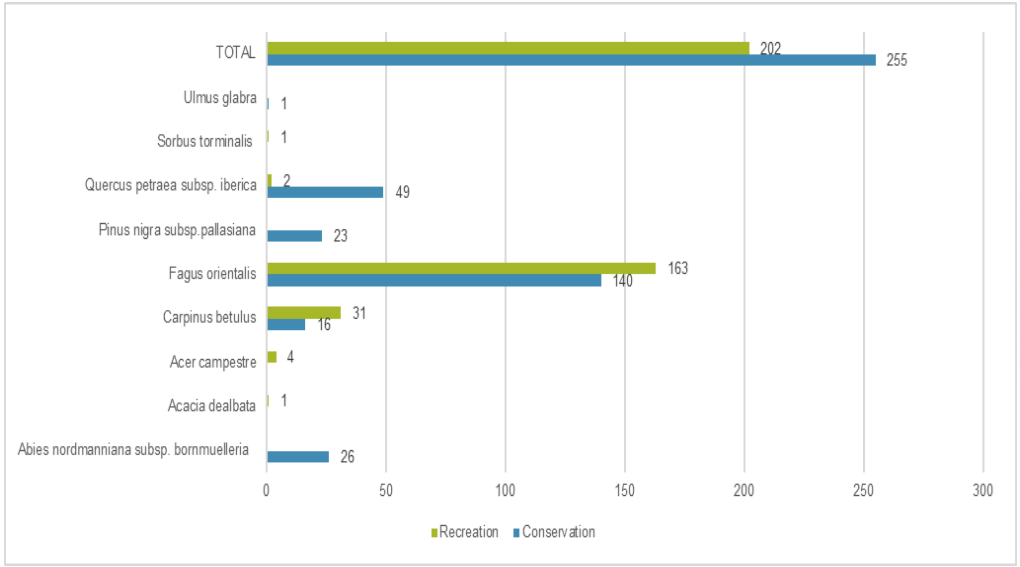


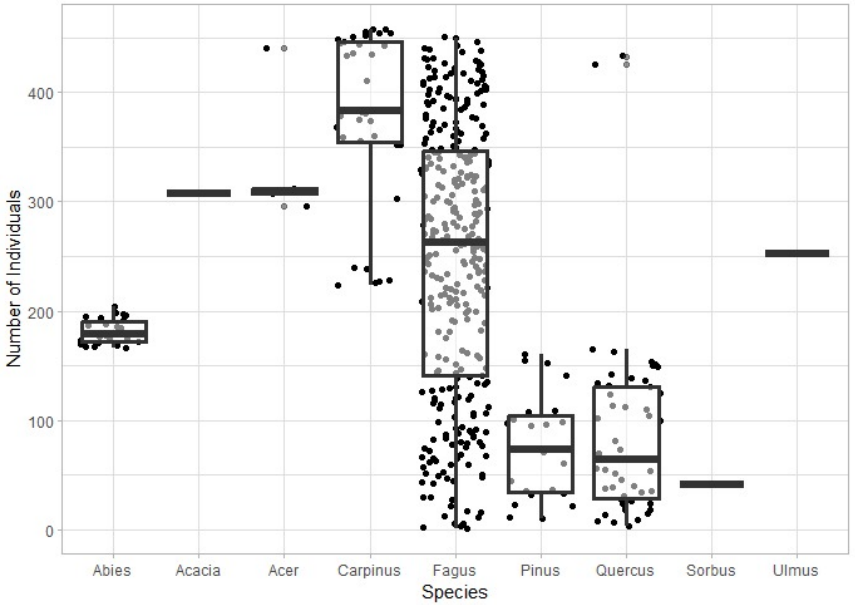
- 10 sample plots from 5 recreational areas (RN) & 5 nature conservation (NC) areas.
- Found in the following plant communities:
  - *Erica arborea-Quercus petraea*
  - *Rhododendron ponticum-Fagus orientalis*
  - *Fagus orientalis-Abies bornmulleriana*



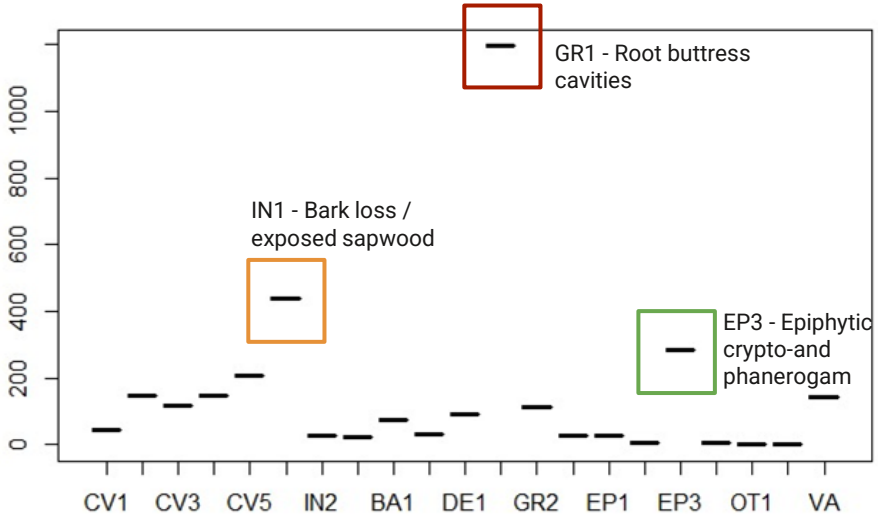
Preliminary Results

Distribution of Tree Species Due to Functional Use

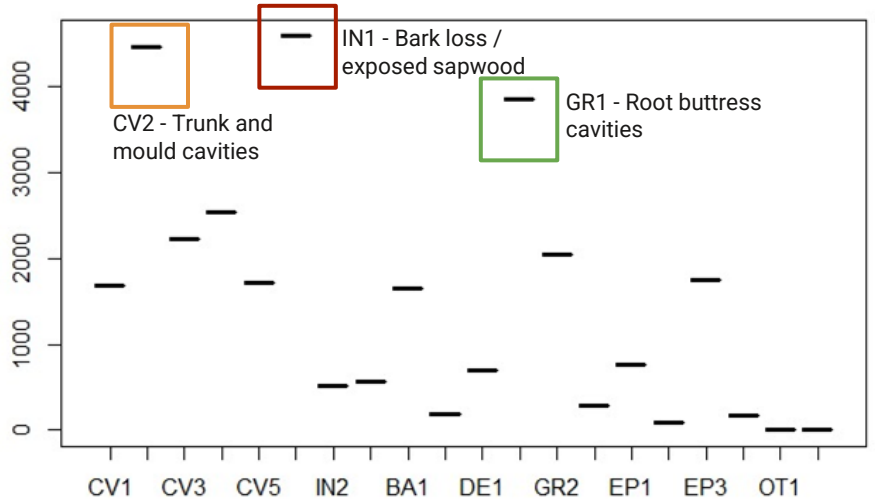




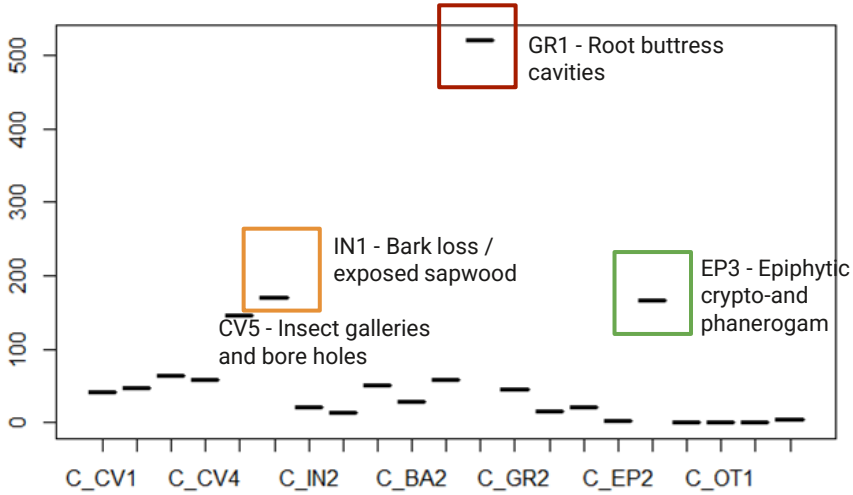
Frequency of Tree Microhabitats in All Sampled Trees



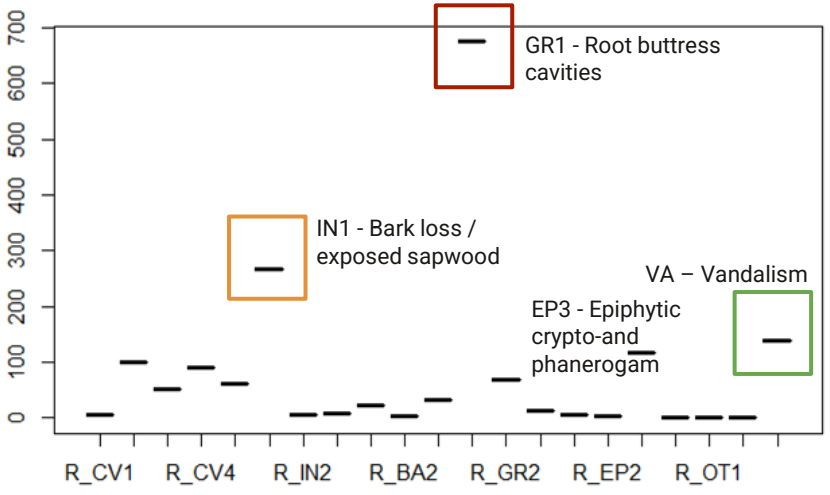
Frequency of Tree Microhabitats in All Sampled Trees Due to Their Ecological Value

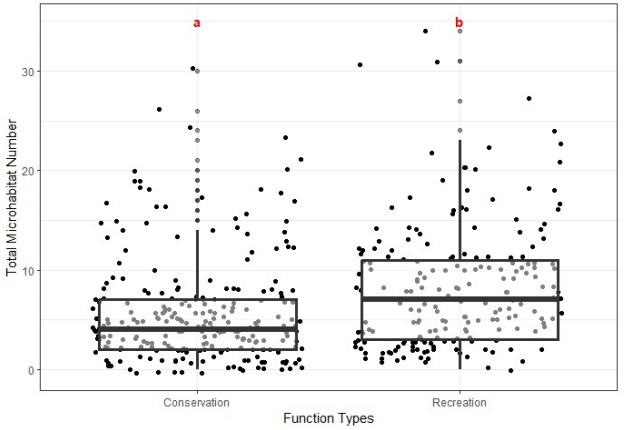


Frequency of Tree Microhabitats in the Sampled Trees under Conservation Function

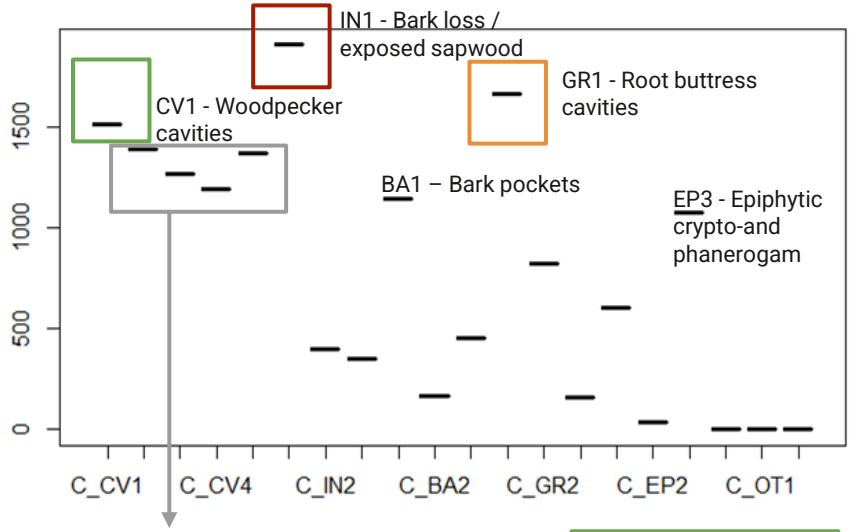


Frequency of Tree Microhabitats in the Sampled Trees under Recreation Function



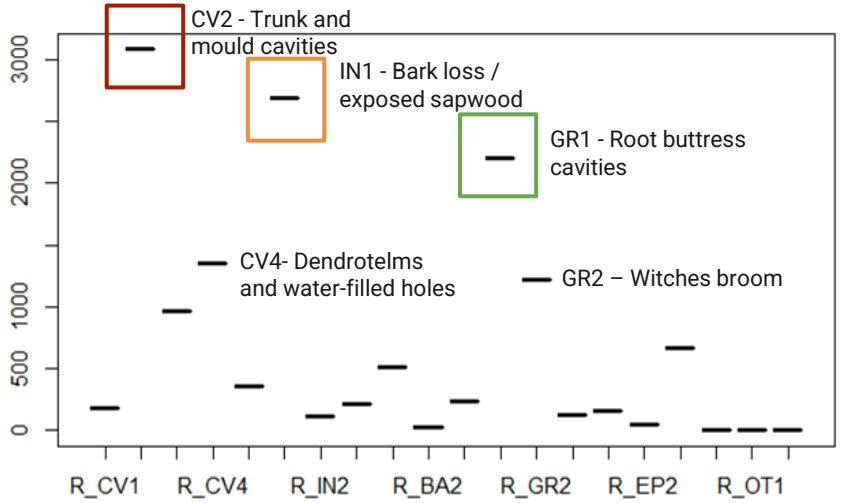


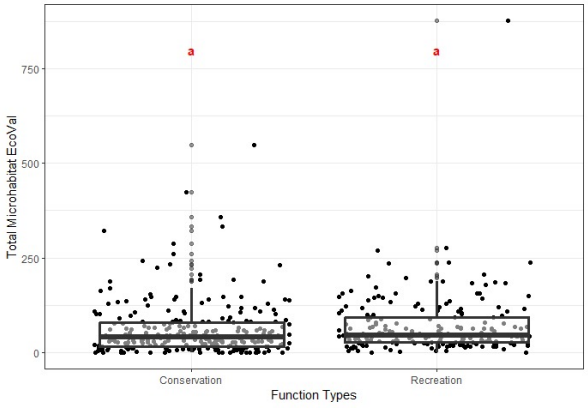
Frequency of the Ecological Value of Microhabitats in the Sampled Trees under Conservation Function



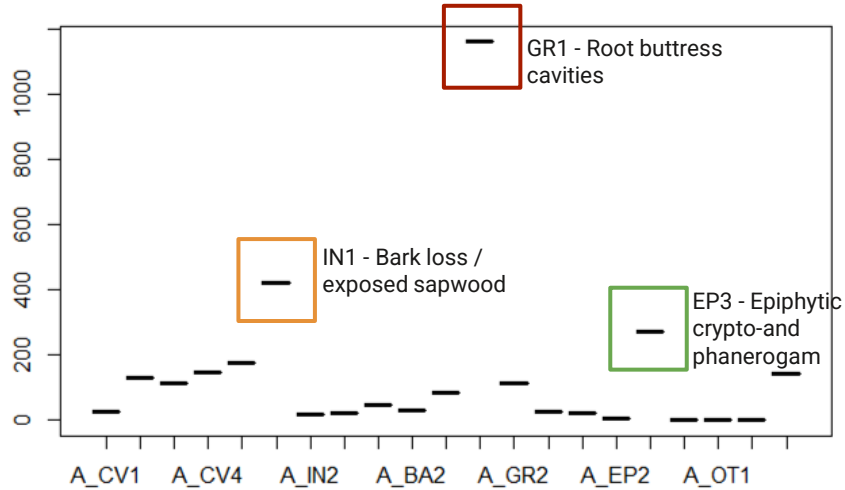
CV2 - Trunk and mould cavities
CV5 - Insect galleries and bore holes
CV3- Branch holes
CV4- Dendrotelms and water-filled holes

Frequency of the Ecological Value of Microhabitats in the Sampled Trees under Recreation Function

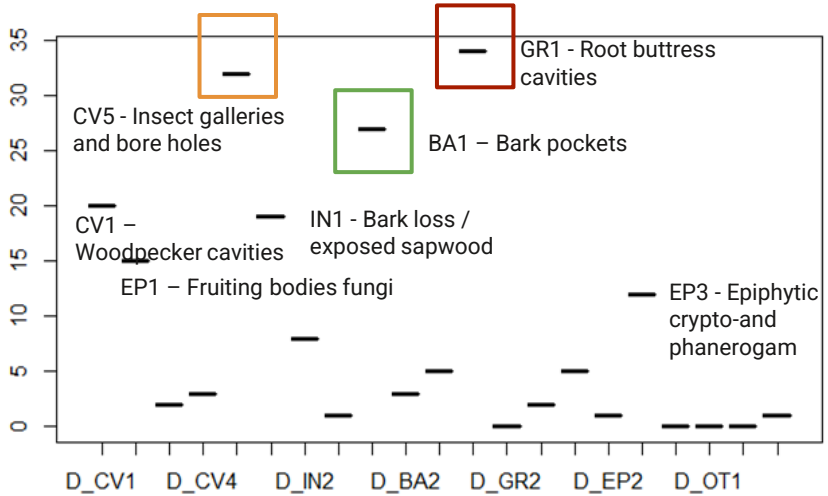


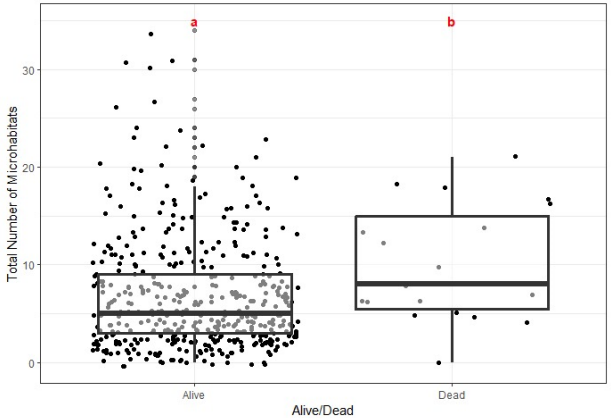


Frequency of Tree Microhabitats in the Healthy Trees

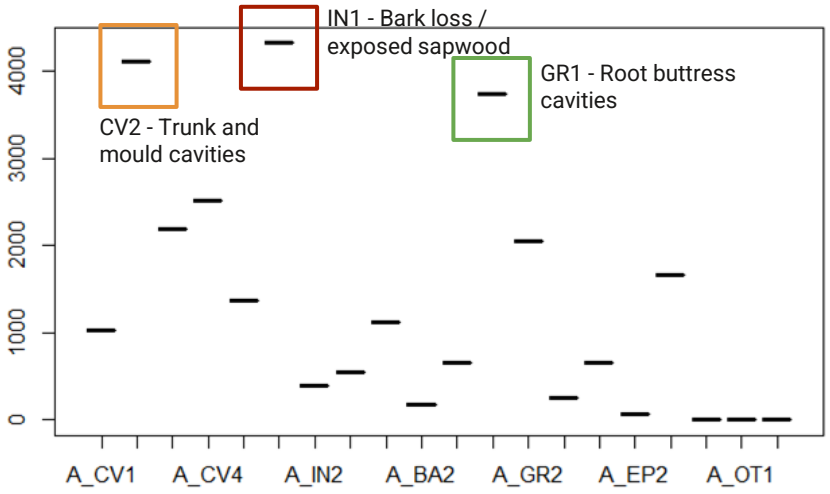


Frequency of Tree Microhabitats in the Dead Trees

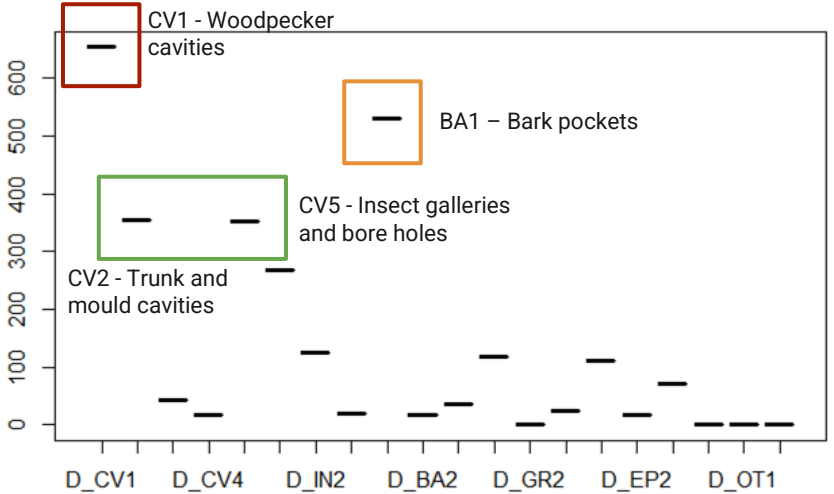


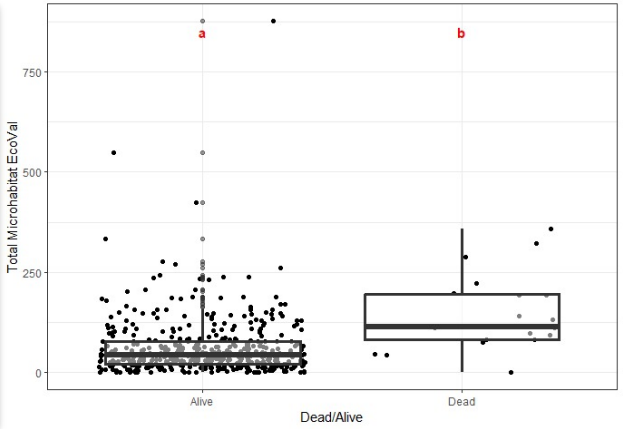


Frequency of the Ecological Value of Tree Microhabitats in the Healthy Trees

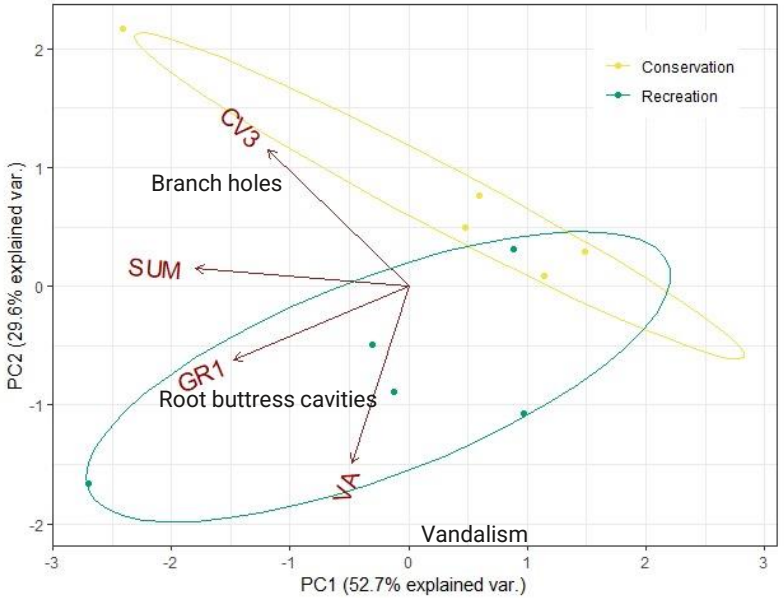


Frequency of the Ecological Value of Tree Microhabitats in the Dead Trees



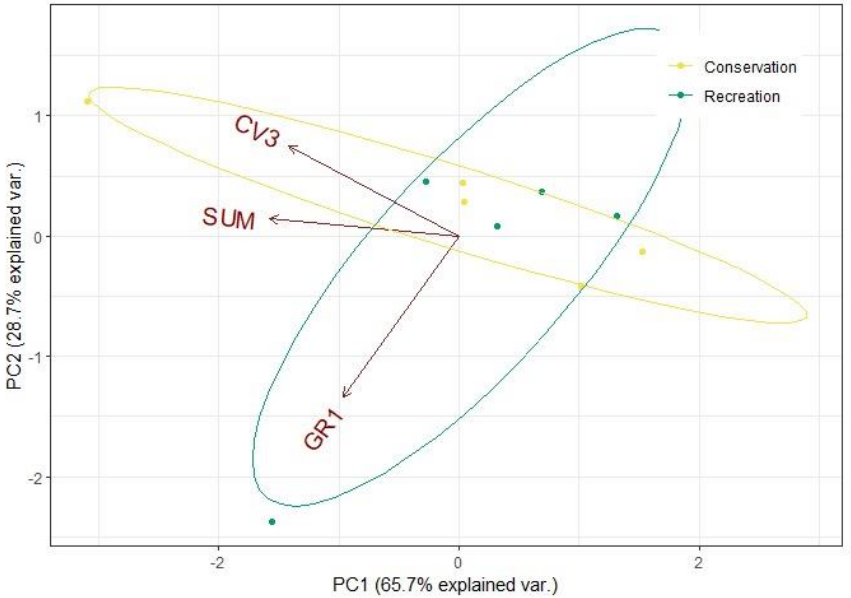


PCA of the Number of Tree Microhabitats in All Sampled Trees



Confidence rate: 82.3%
Variation in recreational areas is higher than the conservation areas. VA (Vandalism) is apparent in recreational areas, whereas CV3 (Branch holes) increases in conservation areas. Total value is central.

PCA of the Ecological Value of Tree Microhabitats in All Sampled Trees



Confidence rate: 94.4%
Variation in recreational areas is higher than the conservation areas. GR1 (Root buttress cavities) is apparent in recreational areas, whereas CV3 (Branch holes) increases in conservation areas. Total value is central.

What Are the Next Steps?

Horizontal diversity

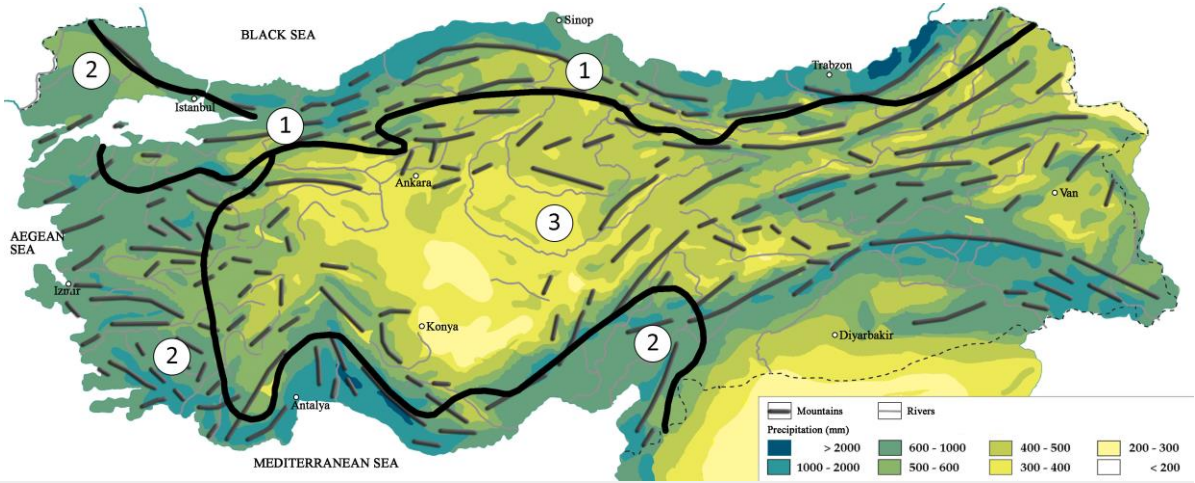
3 phytogeopraphical regions

I. Euro-Siberian Region
II. Mediterranean Region
III. Irano-Turanian Region

Nearly 12000 plant taxa with ~1/3 endemics

Climatic diversity

From arid to very humid climatic conditions



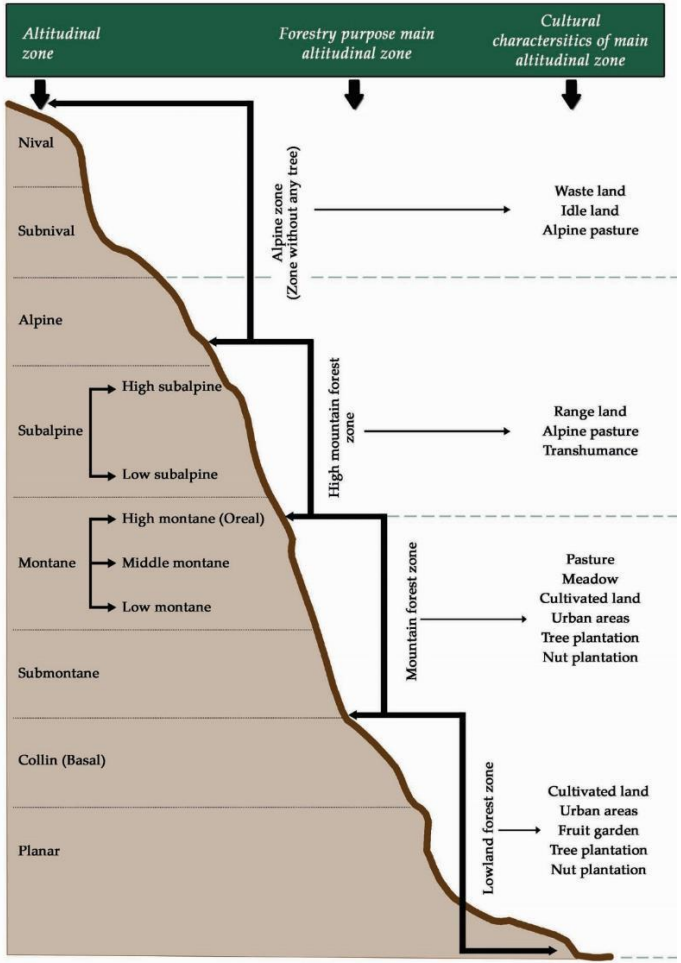
What Are the Next Steps?

Vertical diversity

I. Country rising from sea level to over 5000 m

II. Steep mountain ranges

III. Half the land is above 1000 m and 10% is over 2000 m



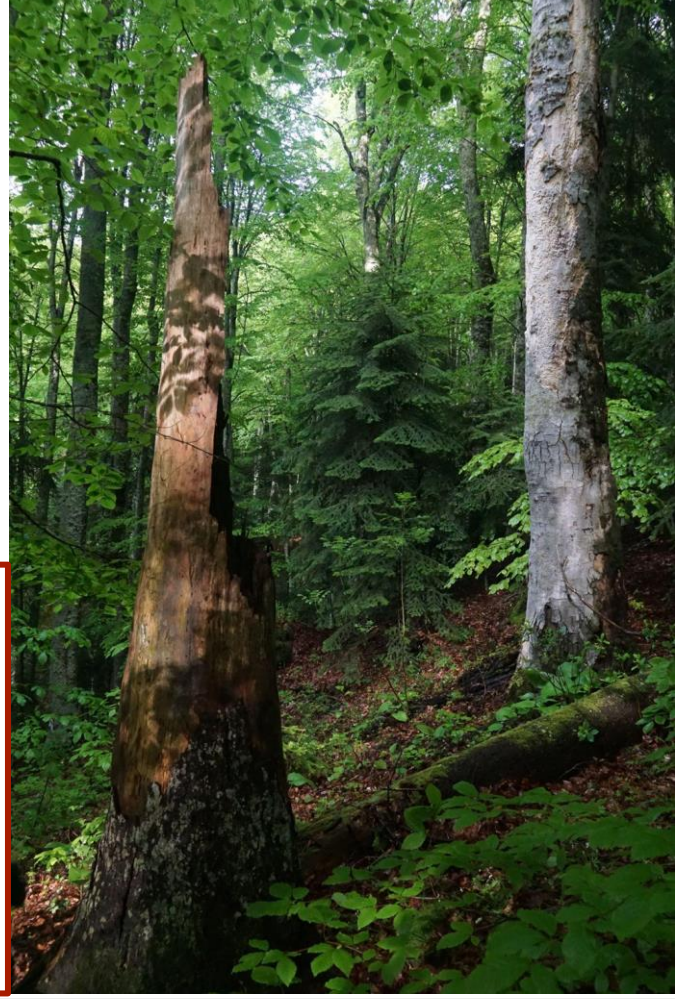
What Are the Next Steps?

- Turkish forestry nowadays is strongly focused on wood production and short-term benefits from the forests (i.e. recreation and allocation of forest land for other purposes such as mining), while policy on biodiversity conservation and climate mitigation mandate the opposite.
- Many of the protected areas do not secure the standards of widely accepted conservation planning, management and monitoring standards.
- The resources are scarce and the forest habitats are diverse.

➔Solid infrastructure for building capacity to ensure balance between contradicting uses with the contribution of academia, research and NGOs.

➔Practical and cost-effective approach that can be easily applied and repeated by the foresters and experts from different fields.

➔Opportunity to learn about and advocate for further tree species that are under threat, relict or undervalued.



A Useful Tool for Education and Research OR a Medium for Conservation Optimism?

Yes for both!

Special thanks to the students of Cukurova University, Vocational School of Aladag and Hacettepe University, Department of Ecology for their enthusiasm on learning about tree microhabitats and transferring their knowledge.

Thank you very much for your attention!