

Conservation of Lebanese Coastal Plants: Mission Impossible?

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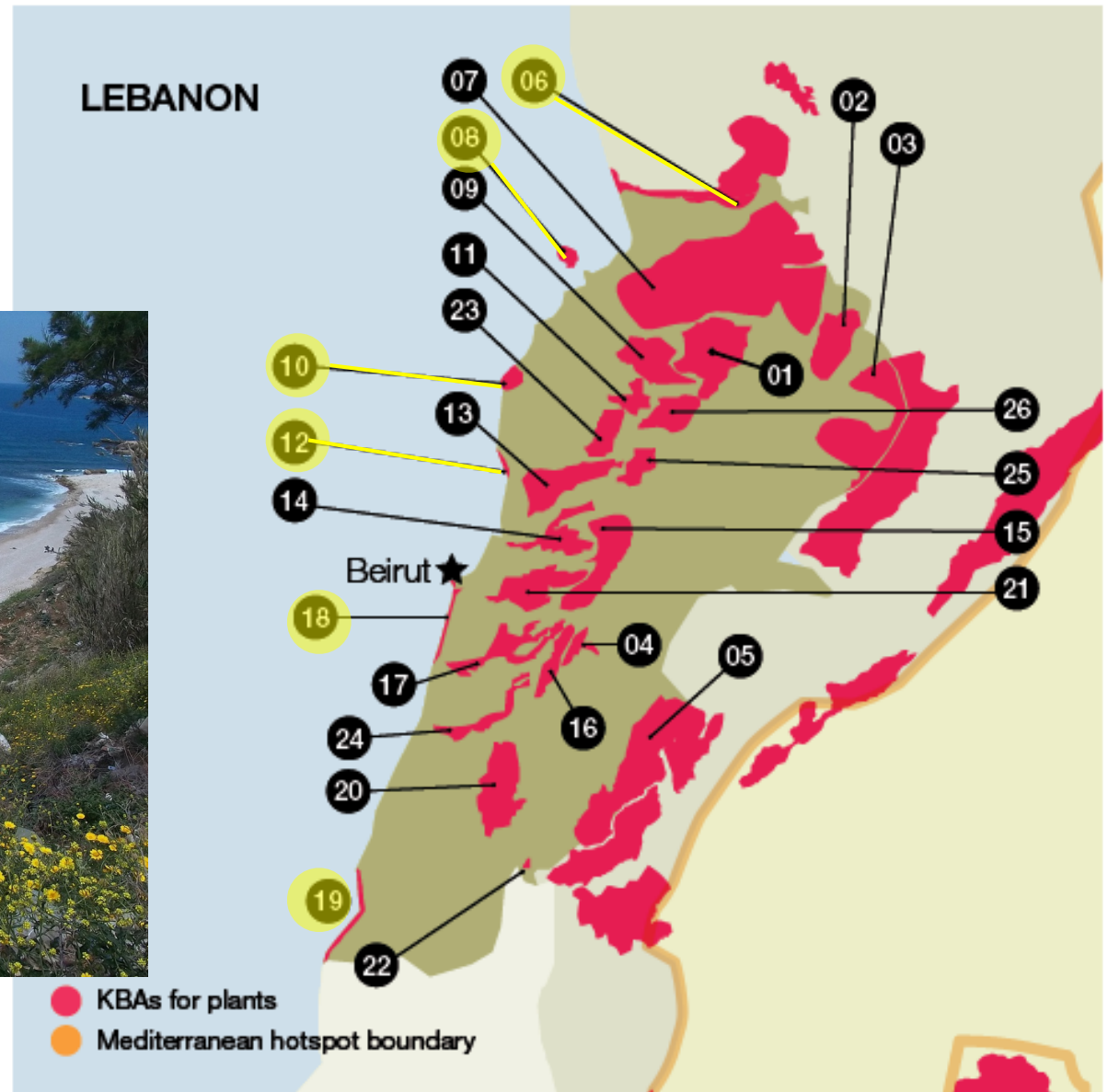


The Lebanese Coast

ca. 220 km

5 coastal KBAs

Only 2 protected areas!



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Why Coastal Plants and Habitats? Threatened by urbanization!!



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Lebanese Coastal Flora

- 550 coastal species/2600
- “strict concensus” of Post 1932; Mouterde 1966-1984; Hepper and Zahreddine 2000; Tohme and Tohme 2015; Itani and Al-Zein [unpublished]
- 3 coastal endemics: *Matthiola crassifolia* and two species of *Limonium*



Rationale of study:

- Rationale of study.
- No revised and updated checklist
- No red list of coastal (15 species assessed)
- No nationally accepted classification for habitats types

Aims of study:

- Characterize coastal habitats and assessing their conservation value
- Prioritize coastal habitat conservation and their species
- Switch from **species-based** to **ecosystem-based** *in situ* conservation



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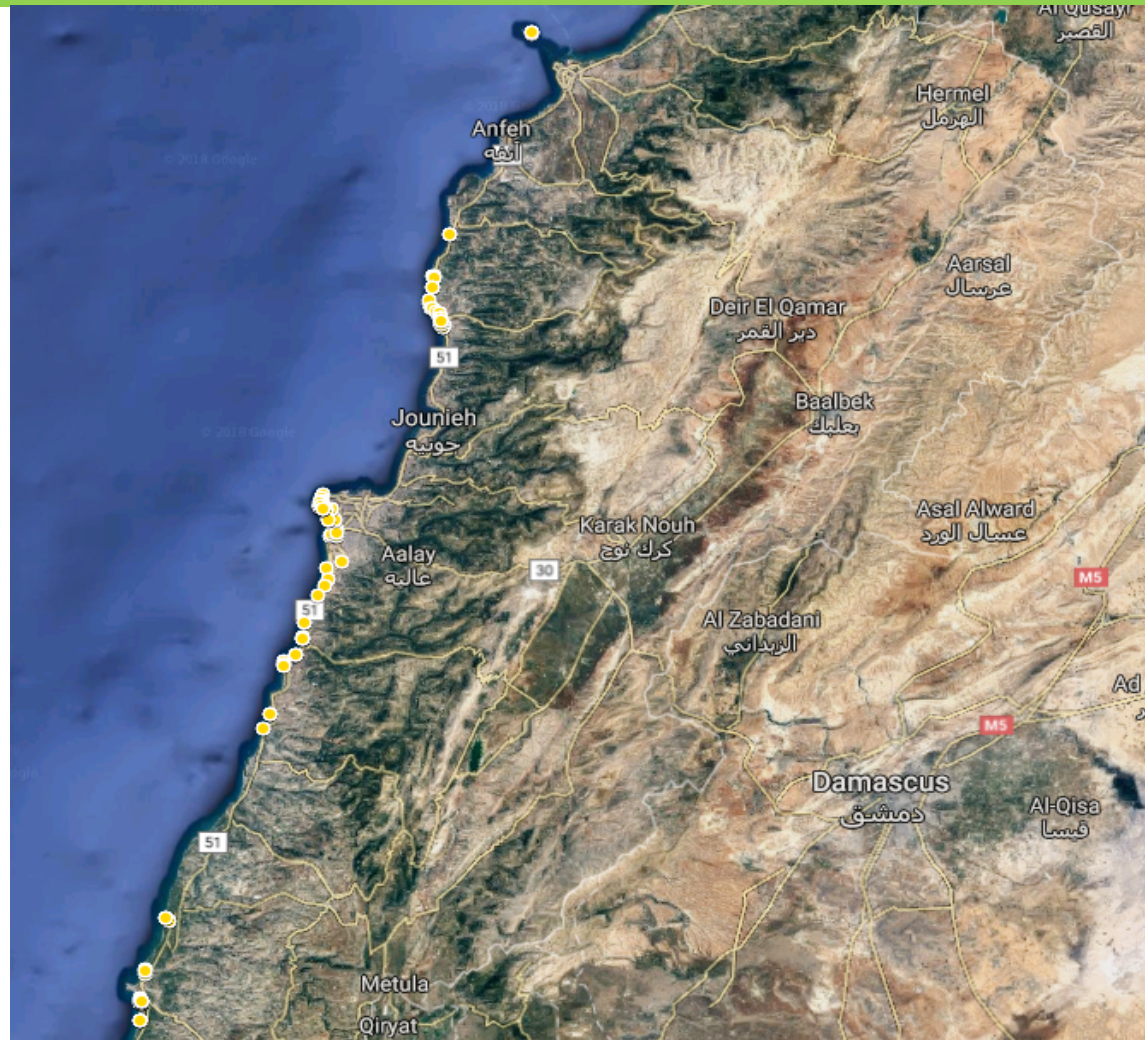
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Methodology

- 150 plots
- In undisturbed areas
- Report plant species abundance (Braun Blanquet scale)



2nd Mediterranean Plant Conservation Week

"Conservation of Mediterranean Plant Diversity: Complementary Approaches and New Perspectives"



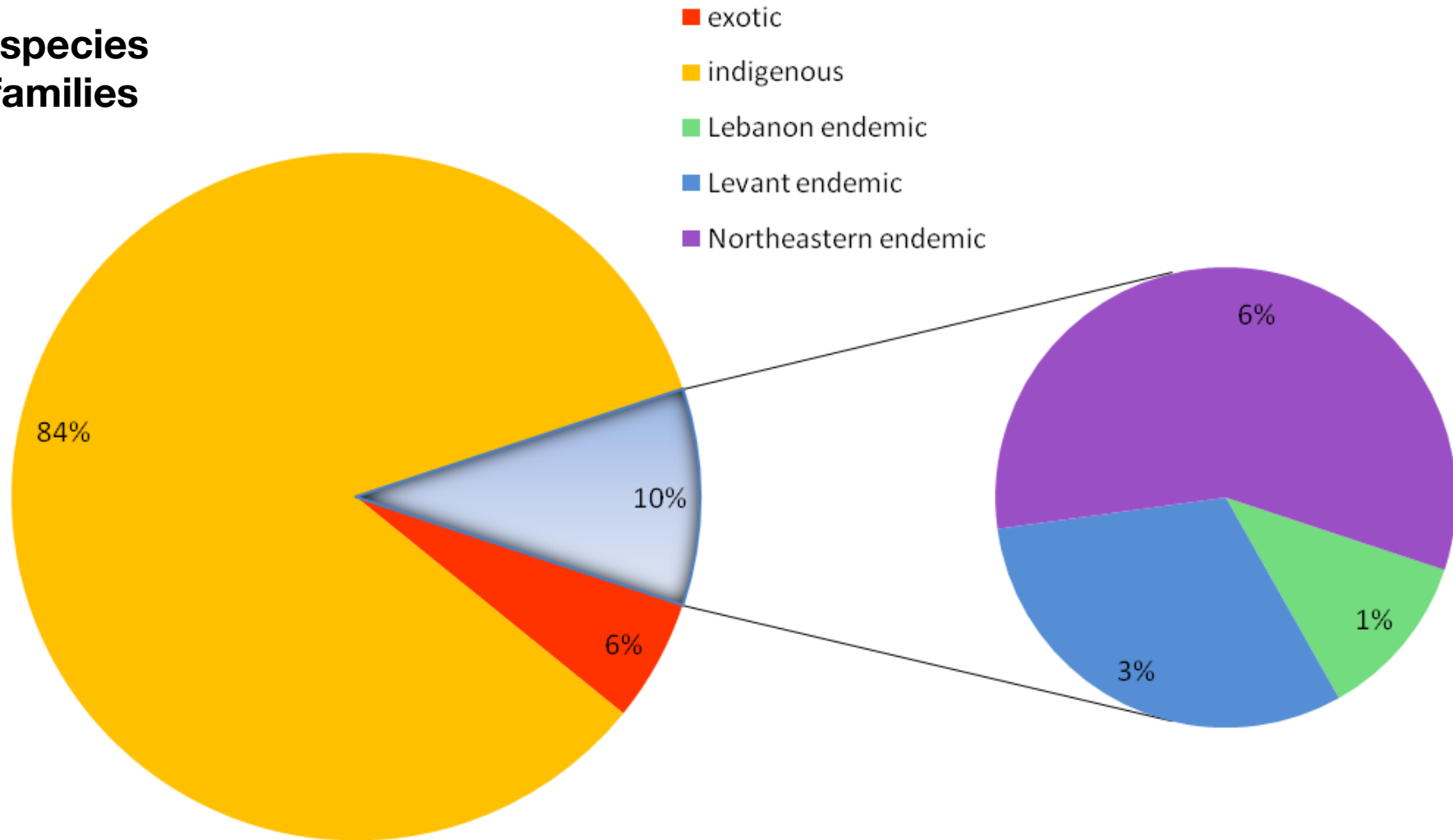
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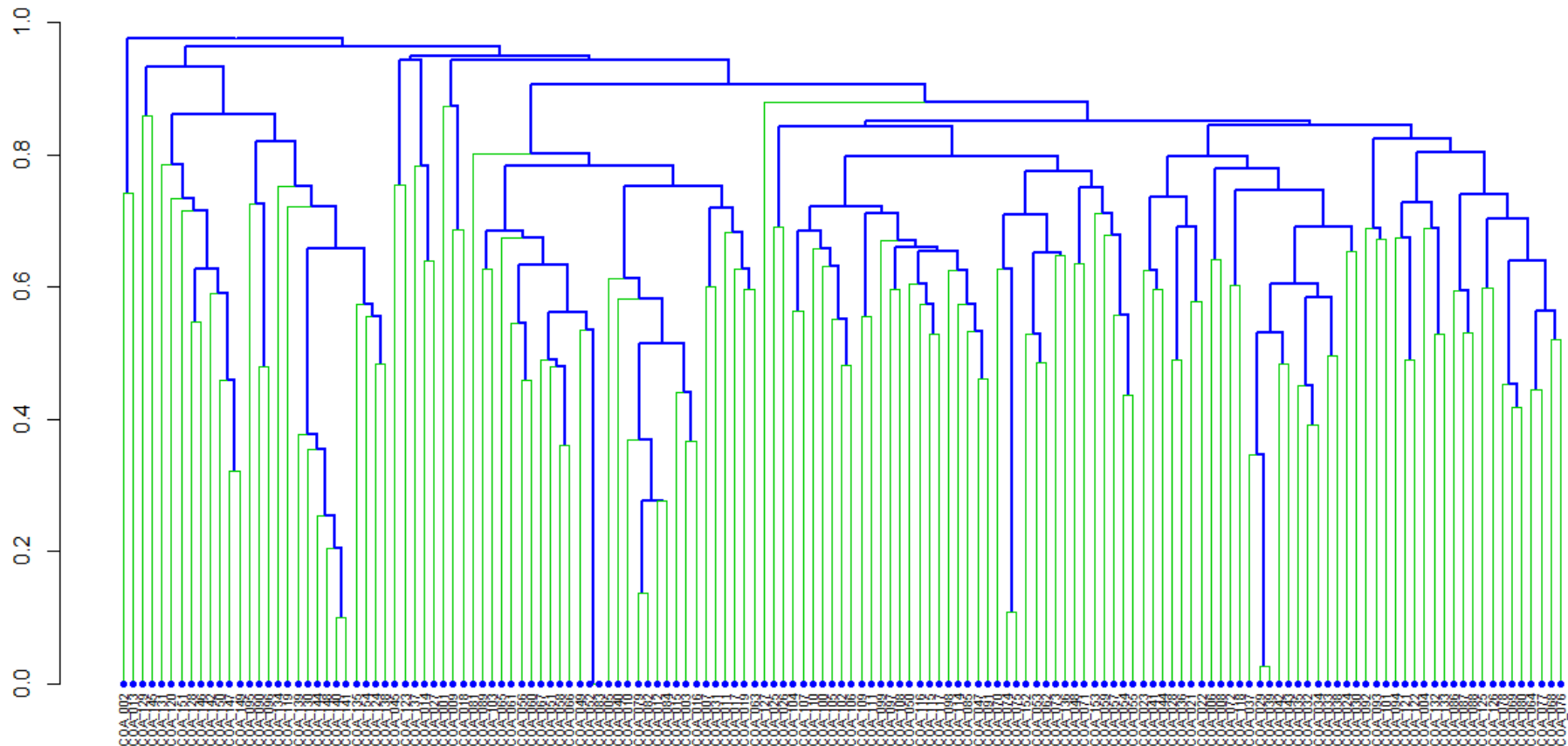
Coastal Flora

403 species
81 families



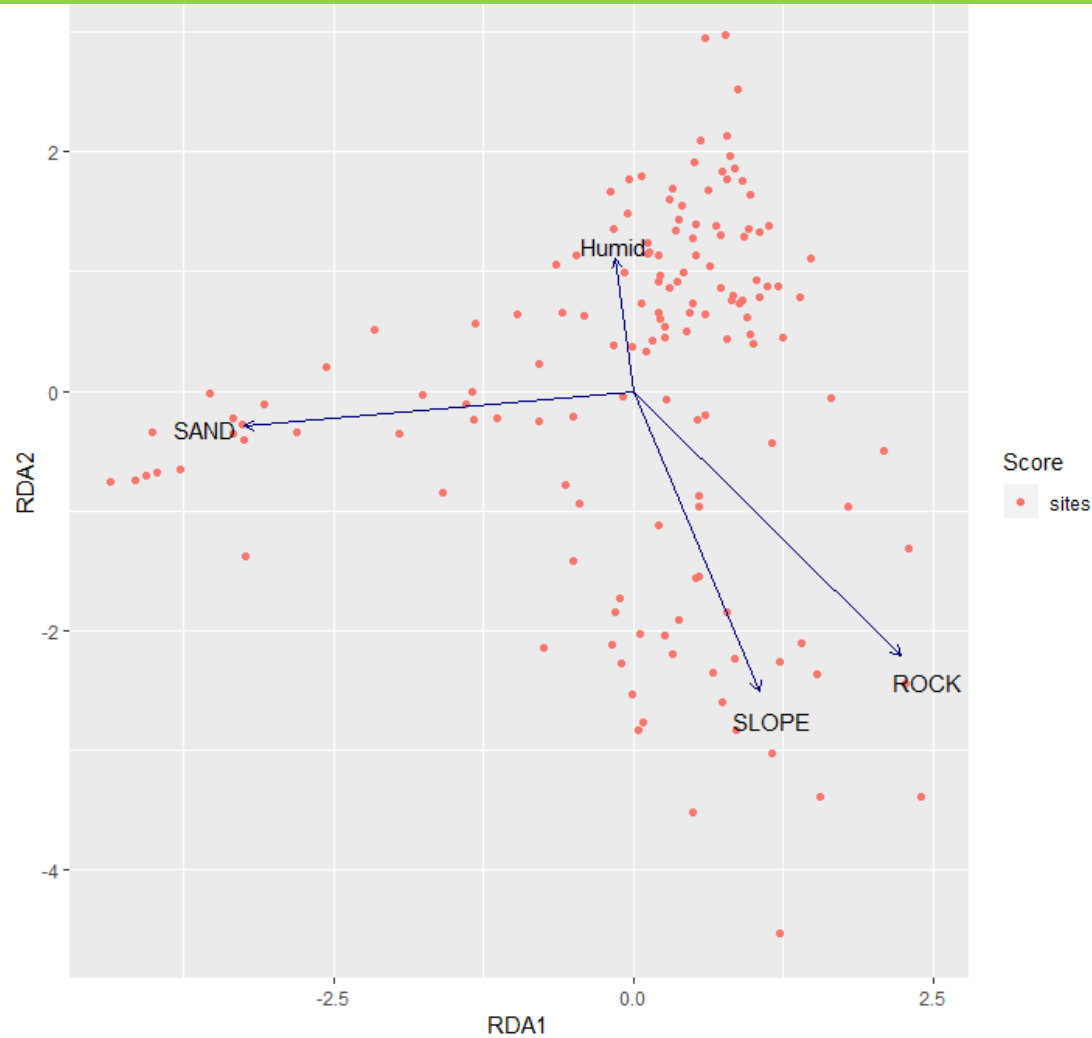
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Cluster Analysis of Plots



Height

Redundancy Analysis of Plots

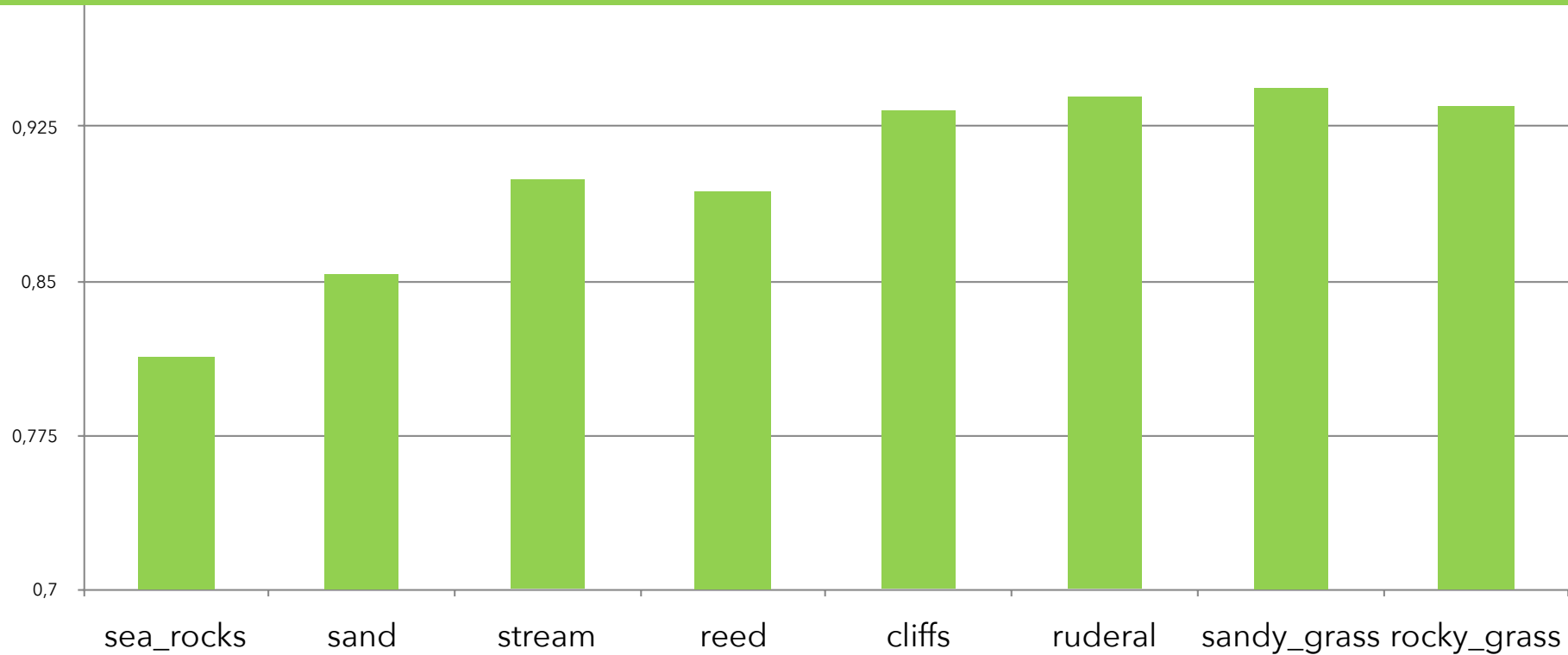


Coastal Habitats

Group number	Number of plots	Description of the sampling sites	Assigned habitat name
Group 1	17	Rocky sea cliffs	Rocky cliffs
Group 2	13	Rocky platforms nearby the sea	Sea rocks
Group 3	23	Grasslands and short shrublands by the coast with very rocky substrate	Rocky grasslands / shrublands
Group 4	19	Sparse grasslands of shrublands of the coastline on a sandy substrate	Sandy beaches
Group 5	15	Grasslands and short shrublands by the coast on a sandy substrate	Sandy grasslands / shrublands
Group 6	10	Thickets of giant reed (<i>Arundo donax</i>)	Reed stands
Group 7	49	Disturbed areas, rubbles, nearby sidewalks, ruins, dominated by pioneer species	Ruderal communities
Group 8	3	Sides of coastal streams	Coastal stream



Plant Diversity (Simpson Index) by Habitat

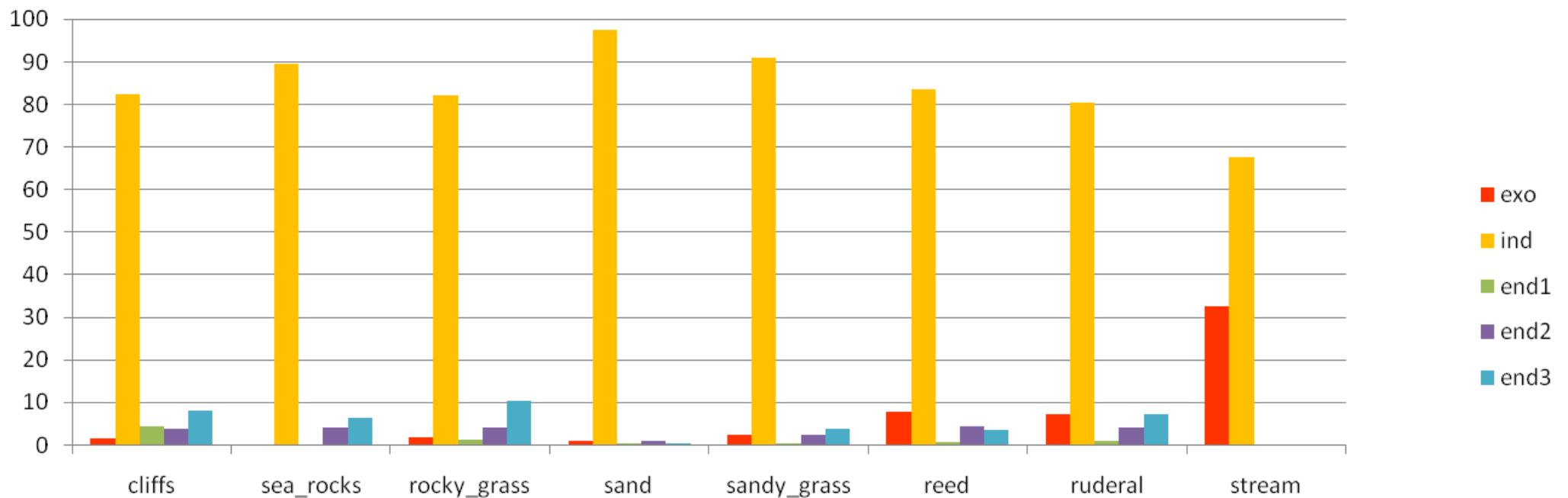


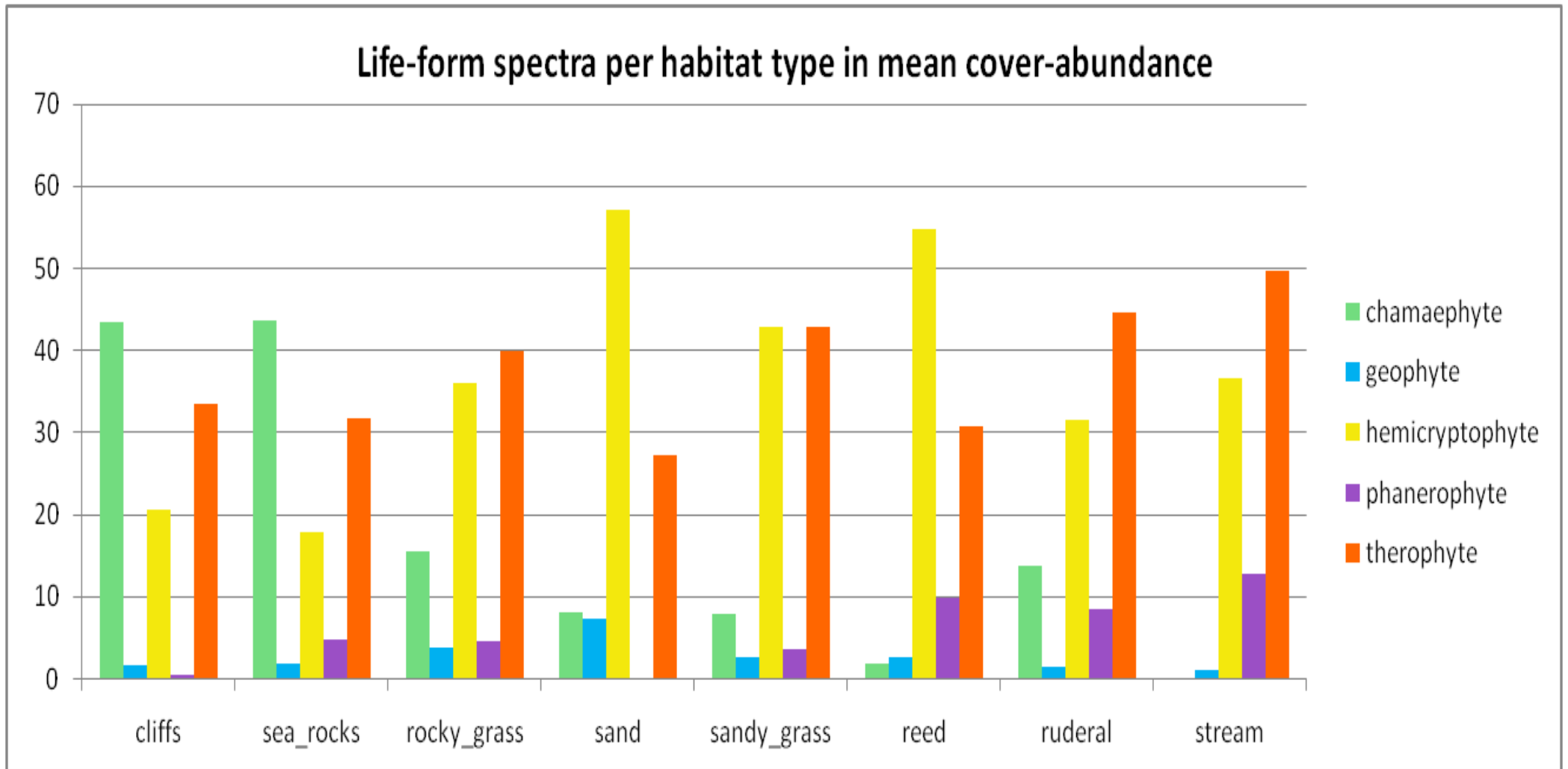
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Exotic, Indigenous, Endemic???





Coastal Cliffs

High Conservation Value

- Harsh environment
- **Variable** species richness
- **Highest** endemism
- Mostly **chasmophytes** with other biological types
- Indicator species: *Galium canum*, *Inula crithmoides*, *Crithmum maritimum*



Coastal Cliffs

High Conservation Value

- Dominance of **chamaephytes** (>45%) and **hemicryptophytes** (>20%)
- **Rare** habitats scattered along the coast
- **Limited** threats



Conservation Value

Group number	Number of plots	Description of the sampling sites	Assigned habitat name	
Group 1	17	Rocky sea cliffs	Rocky cliffs	High
Group 2	13	Rocky platforms nearby the sea	Sea rocks	
Group 3	23	Grasslands and short shrublands by the coast with very rocky substrate	Rocky grasslands / shrublands	Medium
Group 4	19	Sparse grasslands of shrublands of the coastline on a sandy substrate	Sandy beaches	High
Group 5	15	Grasslands and short shrublands by the coast on a sandy substrate	Sandy grasslands / shrublands	Medium
Group 6	10	Thickets of giant reed (<i>Arundo donax</i>)	Reed stands	
Group 7	49	Disturbed areas, rubbles, nearby sidewalks, ruins, dominated by pioneer species	Ruderal communities	Variable
Group 8	3	Sides of coastal streams	Coastal stream	



Conclusion

- From **red listing species** to **red listing ecosystems**
- Giving priority to ***in situ*** conservation
- Simultaneous planning for species and ecosystem targets

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Research



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Efficient expansion of global protected areas requires simultaneous planning for species and ecosystems

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