Effect of forest canopy density on water status and photosythesis of 14 herbaceous species in temperate forest

Marie Matoušková, Roman Plichta, Kateřina Houšková, Roman Vitásek, Radim Hédl, Josef Urban

This presentation participates in OSPP

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marie.matouskova@mendelu.cz

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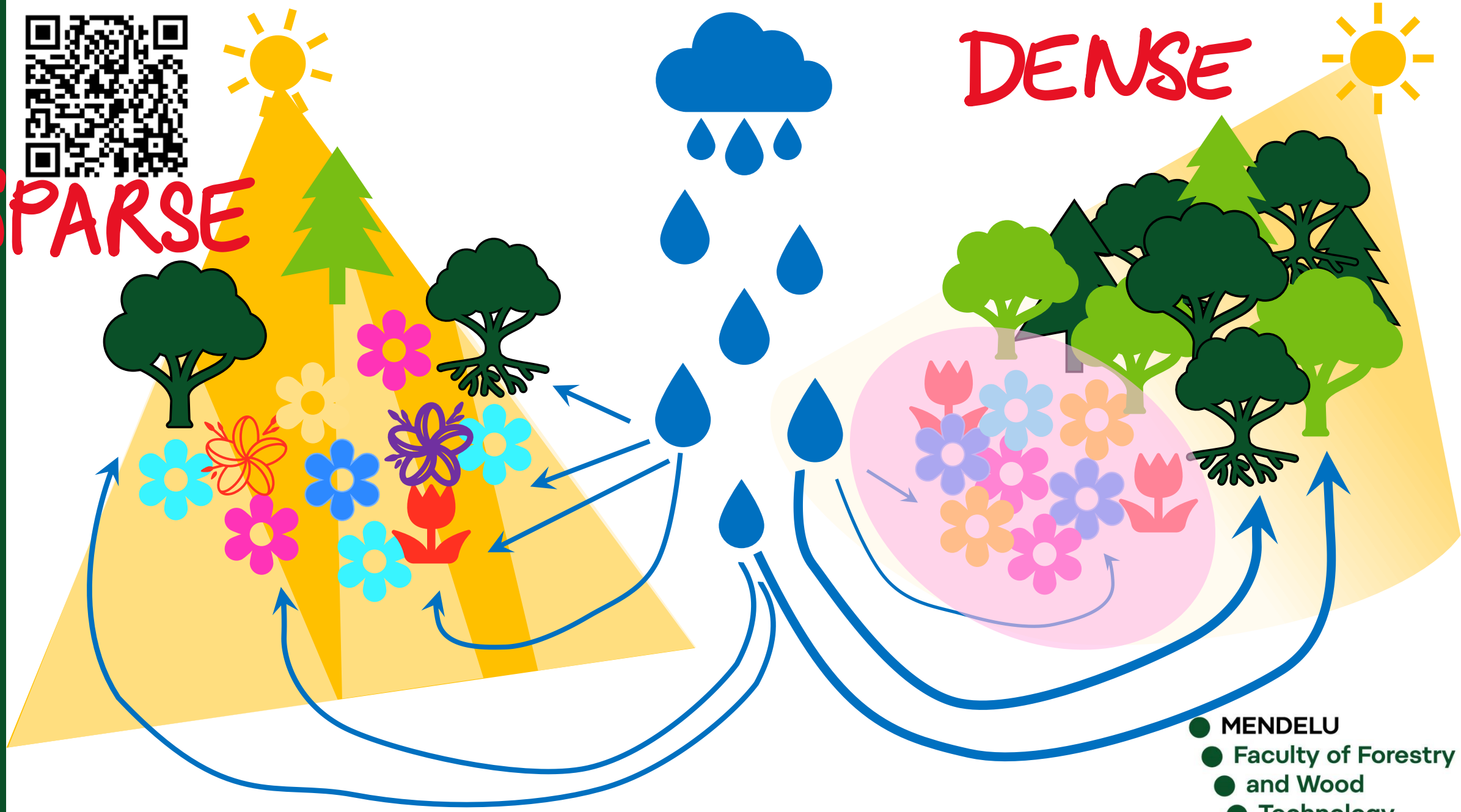

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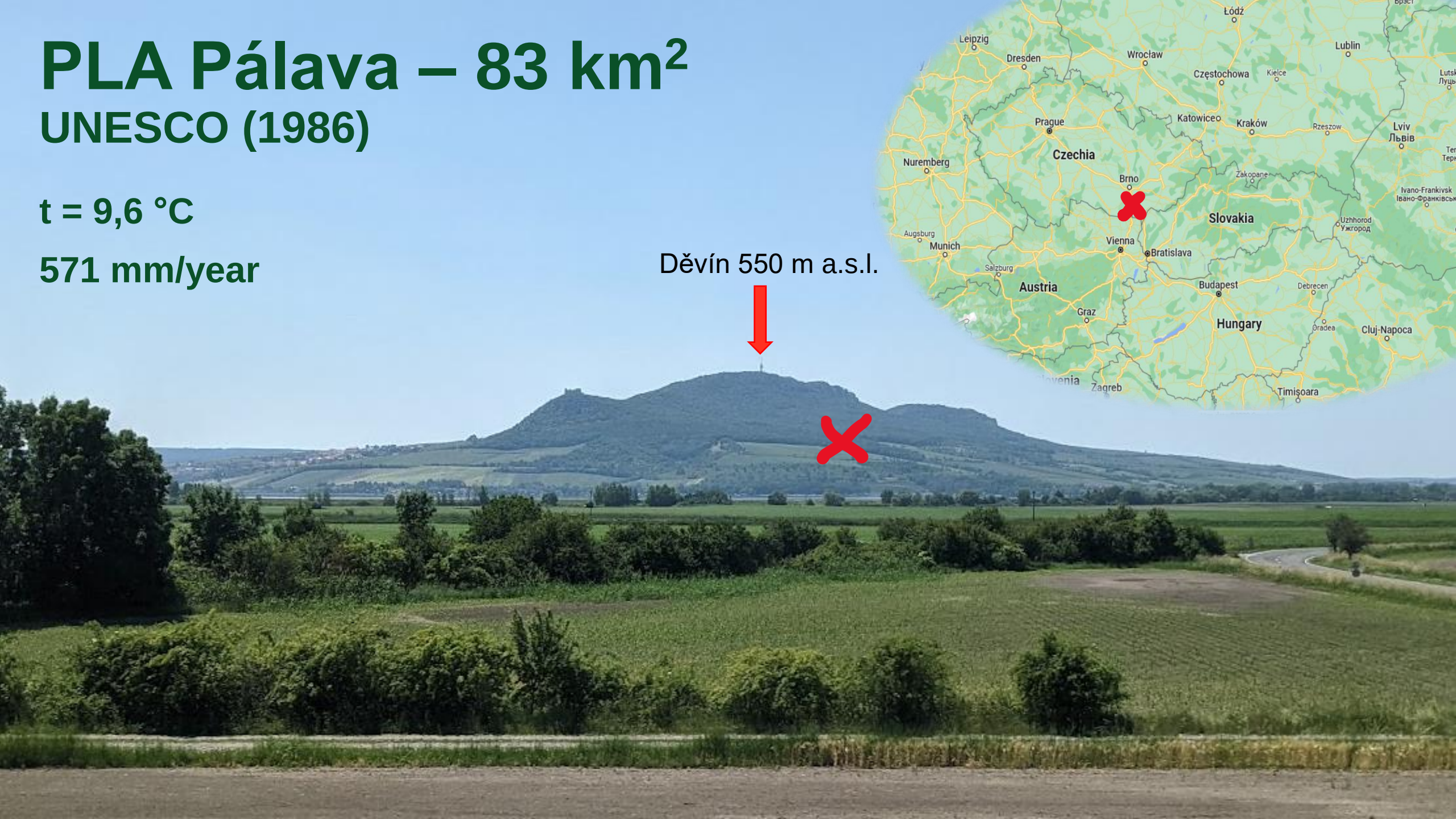
PLA Pálava – 83 km²

UNESCO (1986)

t = 9,6 °C

571 mm/year




LAI = 3.18
DENSE
SPARSE
LAI = 1.7


LI-COR

14 understorey herb species

- 1 perennial sedge: ***Carex digitata***
- 3 perennial grasses: ***Bromus benekenii, Melica nutans, Poa nemoralis***

14 understorey herb species

- 1 perennial sedge: ***Carex digitata***
- 3 perennial grasses: ***Bromus benekenii, Melica nutans, Poa nemoralis***
- 10 perennial forbs***: Asarum europaeum, Campanula rapunculoides, Convallaria majalis, Galium odoratum, Hepatica nobilis, Lamium maculatum, Lathyrus vernus, Polygonatum multiflorum, Viola mirabilis, Viola reichenbachiana***

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Viola reichenbachiana


Galium odoratum


Lamium maculatum


Campanula rapunculoides


Viola mirabilis


Polygonatum multiflorum

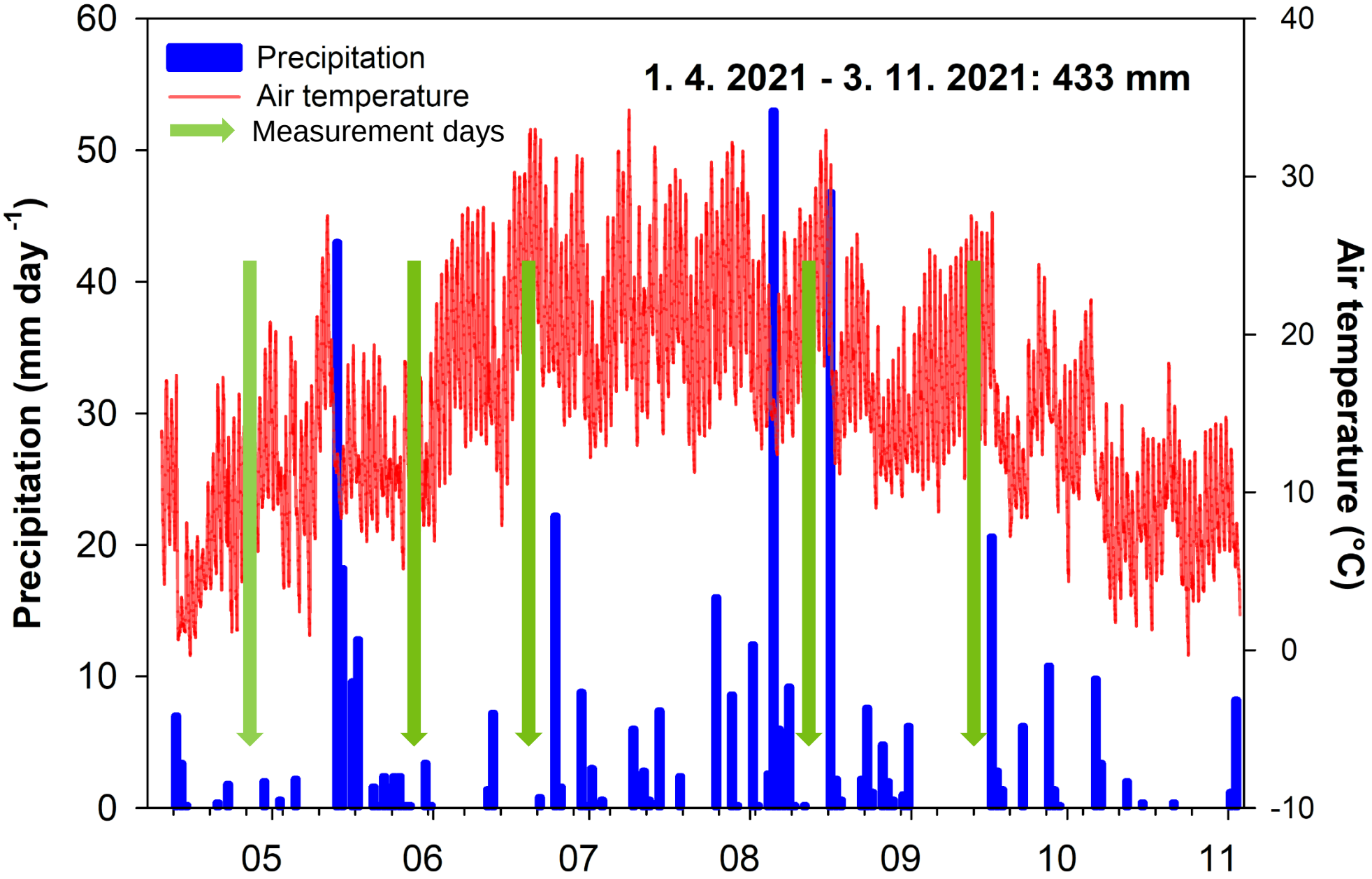

Convallaria majalis


Asarum europaeum


Hepatica nobilis


Lathyrus vernus

Weather



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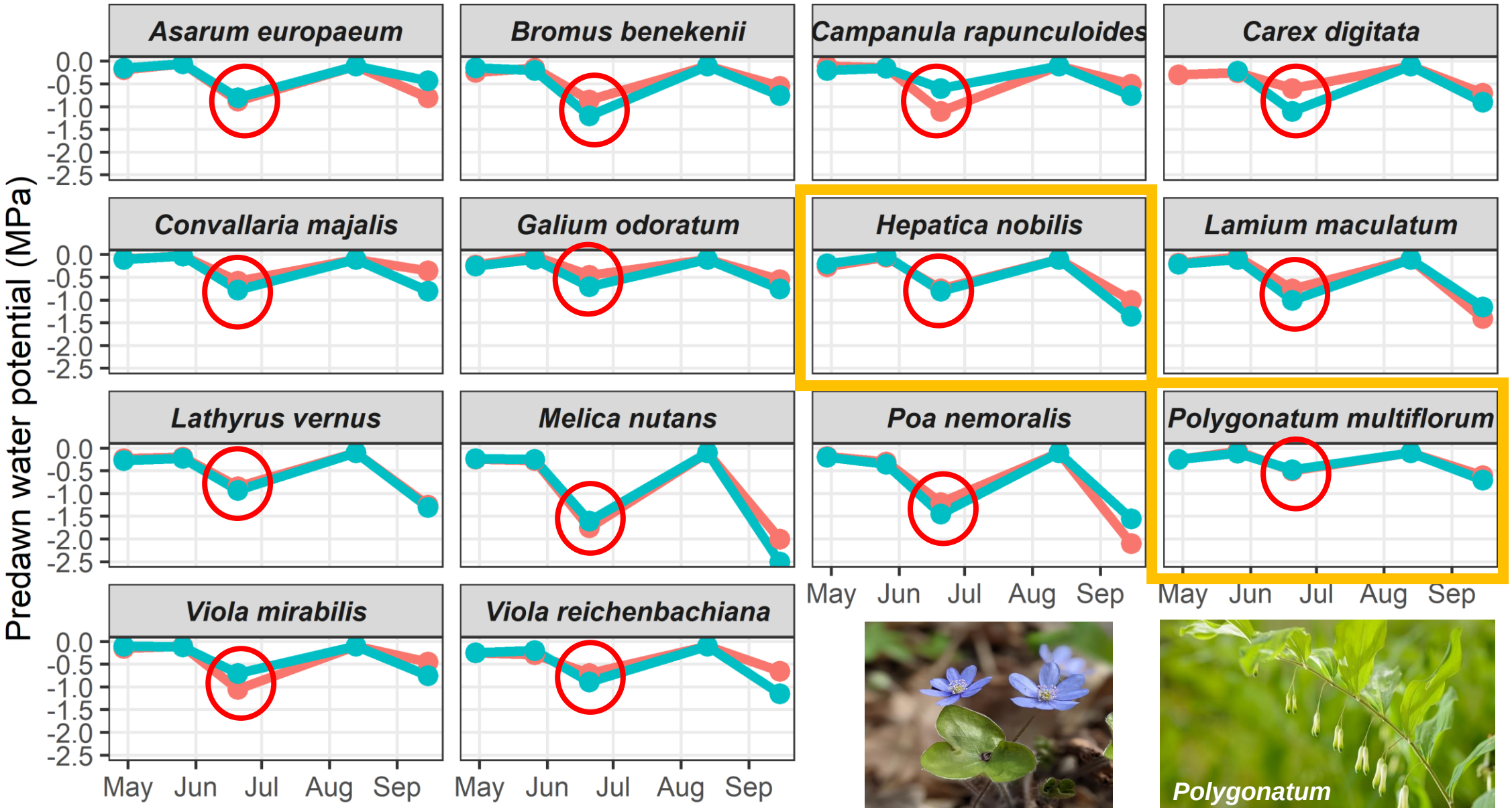
$\Psi_{predawn}$: similar water availability in both densities



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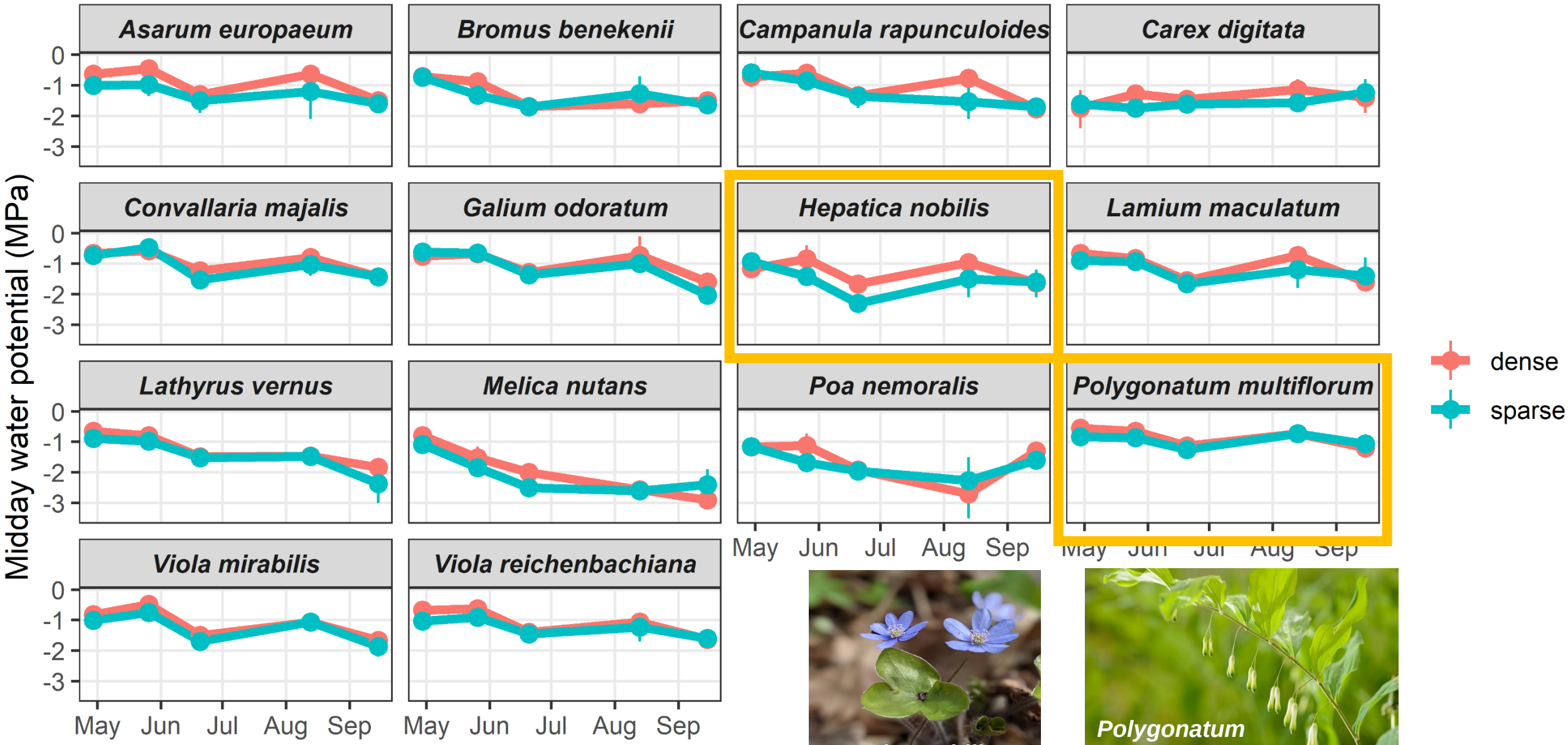
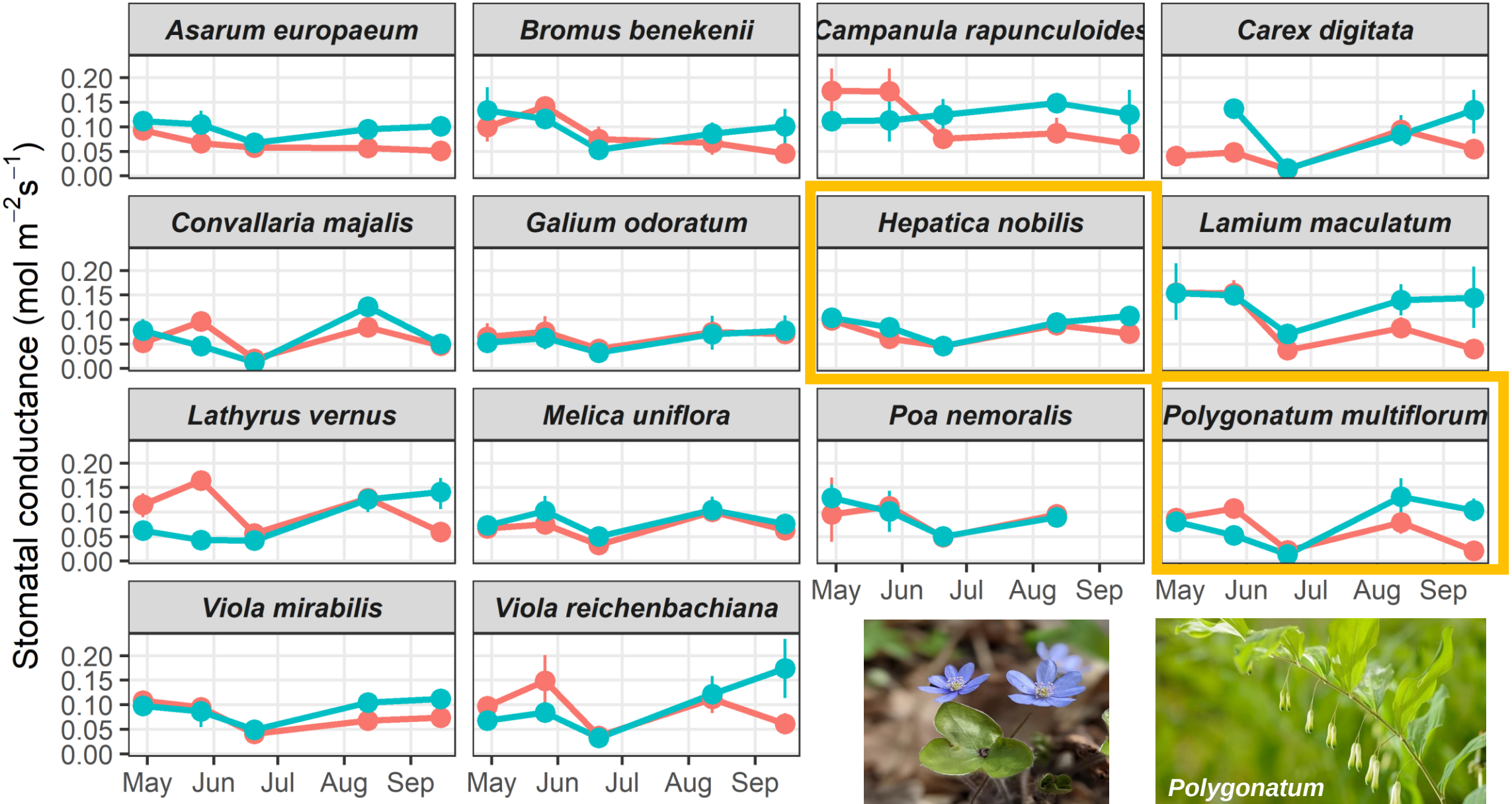
Ψ_{midday}: various behaviour across the species



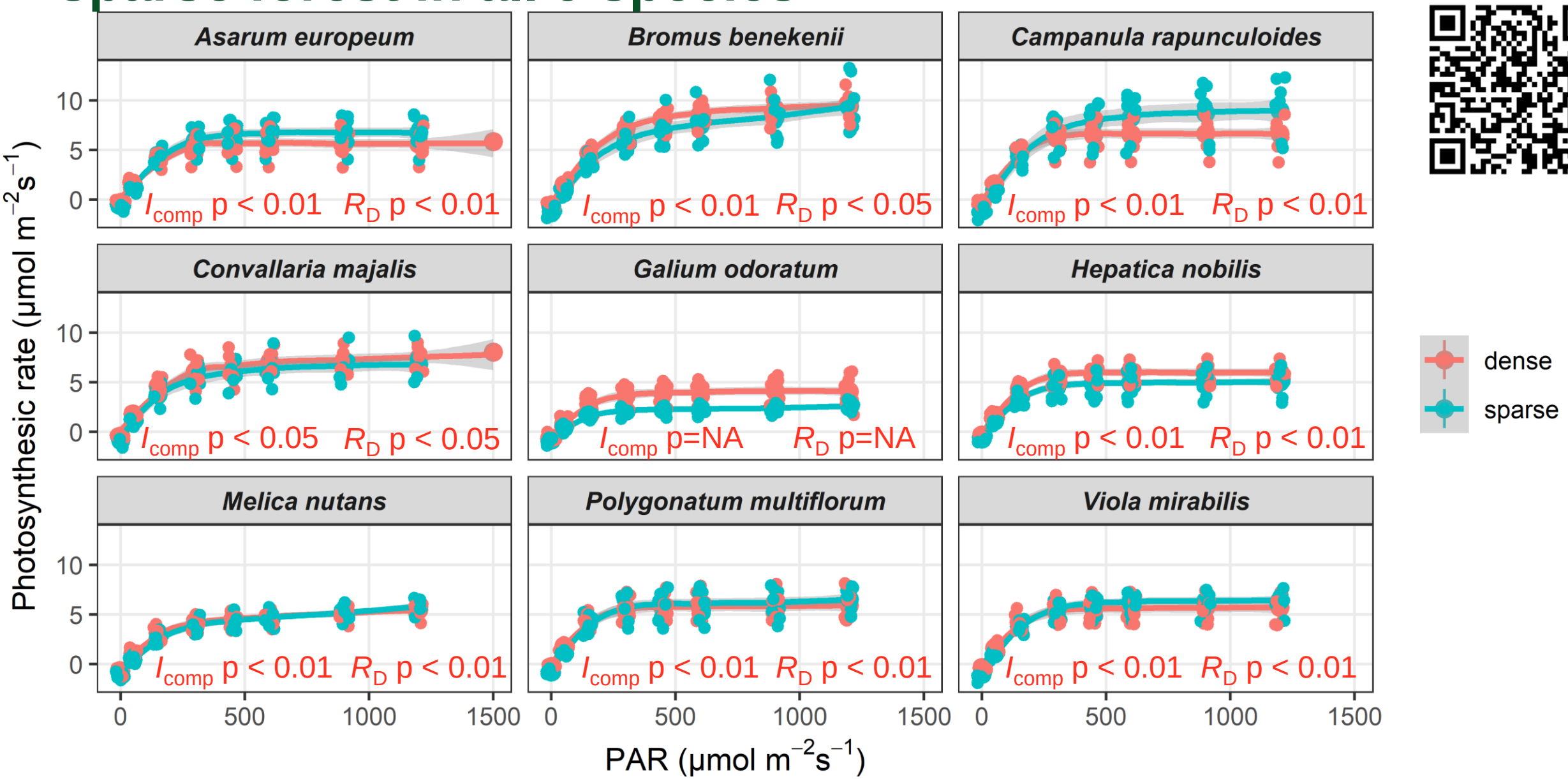
g_s: both isohydric and anisohydric behaviour



Hepatica nobilis

Polygonatum multiflorum

Light response curves: I_{comp} and R_D significantly higher in sparse forest in all 9 species



Summary

- Water availabitily is similar in both forest densities when there is enough precipitation

- Higher evapotranspiration demands under the sparse canopy, but every species has its own survival strategy: from isohydry to anisohydry

- All species can reach similar values of saturated *A*, but species under the sparse forest have higher I_{comp} and R_D

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