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***Thymbra capitata* decreases species diversity in shrublands**

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This study tested the hypothesis that the species diversity of perennial species in Maltese shrublands is partly controlled by the presence of dominant sprawling shrubs. The study was carried out using a hierarchically nested sampling design at four spatial scales (125m x 125m, 25m x 25m, 5m x 5m, and 1m x 1m) in six shrubland sites in the Maltese Islands. The design was balanced across scales meaning that the change in scale from a smaller unit to a larger one was consistently incremental. Each sampling plot comprised five subplots of the next lower scale. Amalgamated abundance data for all perennial plant species was collected from the study plots between October 2015 and August 2016. Seven site characteristics (aspect, slope, elevation, rock type, exposure, soil pH, and soil electrical conductivity) were measured for each site, but only the three that contributed most to the variation between sites (elevation, exposure, and slope) were included in the analyses. The data was analysed using multivariate techniques (RDA, DCA, CCA, and PCA) and the vegetation distribution patterns were related to the site characteristics and abundance of *Thymbra capitata*.

The three site characteristics together explained 61.9% of the variability in community composition across the six sites at the largest spatial scale. When the abundance of *Thymbra capitata* was added as an explanatory factor, the explained variation rose to 86%. The abundance of *Thymbra capitata* explained more of the variation in community composition at the largest scale compared to the smallest, ranging from 27.4% at the 125m x 125m scale to 2% at the 1m x 1m scale. This effect of *Thymbra capitata* was unexpected, as previous studies had suggested that the effect of woody shrubs was greater at smaller scales. At all four spatial scales, higher species richness and diversity were associated with lower abundance of *Thymbra capitata* and vice versa.

A similar pattern has been observed in the worldwide phenomenon of ‘shrub encroachment’ or ‘woody encroachment’, where the growth of shrublands is correlated with declines of species richness. Further studies are now attempting to explain the occurrence of this pattern in terms of resource gradients in shrublands.

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