

The effects of grazing management in montado fragmentation and heterogeneity

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Abstract The Portuguese silvo-pastoral system *montado* is broadly classified as a High Nature Value (HNV) system since it corresponds to farmland hosting high biodiversity levels, and such biodiversity depends on specific land use practices. However, in recent decades a decline both in the total *montado* area and in the tree cover density within the *montado* has been observed, driven mainly by management changes. This decline may result in biodiversity loss. Grazing is a central aspect determining the long-term sustainability of the *montado* system and it has implications also on the *montado* structural diversity, particularly on connectivity and heterogeneity, which is crucial for the maintenance of *montado* HNV. The aim of this paper is to demonstrate how variations in *montado* structural diversity are correlated with grazing management and its implications on the value of the system for conservation. The empirical data derives from a case study composed of 41 *montado* farms in two municipalities of the Alentejo region. Data on grazing management, biophysical and spatial factors were collected and several metrics were calculated to assess *montado* fragmentation and heterogeneity. A multivariate analysis was performed using generalized additive models. Results show that different grazing patterns, depending on stocking density and grazing animal type, are correlated with variations in *montado* fragmentation and heterogeneity. Particularly, cattle's grazing is shown to have adverse effects on the *montado* fragmentation, while sheep grazing is shown to have stronger impacts on the heterogeneity within the *montado* patches.