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Effect of livestock grazing on vegetation structure and properties: a pyospheric approach

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Livestock grazing is an important factor that shape the structural and functional components of natural vegetation. More specifically, floristic composition and diversity are susceptible to grazing pressure. Thus, the spatial arrangement of grazing into livestock husbandry production systems is an important element for retaining high environmental standards. The present research is aiming at the spatial organization of grazing intensity, as it is determined from the distance from the shed, on the benefit of vegetation characteristics into a silvopastoral livestock production system of Xyromero, central-western Greece. The pyospheric approach was applied into a valonia oak (Quercus ithaburensis subsp. macrolepis (Kotschy) Hedge and Yaltirik) silvopastoral woodland having five sheds as reference points (pyospheres). Patterns of changes of vegetation structure and diversity were explored and determined in May 2013, in distances of 0, 100, 200, 400, and 800 m away from the sheds, following the typical daily routes of herds. These distances were found on two lines having the shed as a starting point, and intersecting the routes of the herds. In each of these distances 5 metallic squared quadrats were placed on the ground and plant species richness and abundances were determined. Field data were further subjected to diversity analysis by the means of Species Diversity and Richness (ver. 4.0) of PISCES Conservation Ltd. A number of 162 plant taxa were recorded allocated in 36 botanical families. With the exception of pyoshepe (0 m), where leguminous, short and reptans-like crawlers, were dominant, Graminae were dominant in the other distances, followed by Leguminosae and Compositae. The pyospheric effect of shed on α-diversity was smoothed after the distance of 100 m. Indeed all tested α-diversity indices showed statistical significant differences when compared with those found in 0 and 100 m distances. The Renyi's diversity ordering revealed that communities in 100, 200, 400 and 800 m are not clearly compatible in terms of diversity and differences reflected the pyospheric effect of grazing as it is tuned by the sensitivity of diversity indices on species richness or abundance.