

A pastoral landscape for millennia: Investigating pastoral mobility in northeastern Jordan using quantitative spatial analyses

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Northeastern Jordan is one of the few remaining regions in the Middle East where pastoral nomadism is still practiced. In this desert region, pastoral mobility is an adapted land use—able to cope with low rainfall rates, great seasonal and annual rainfall variations and thus heterogeneous vegetation and water availability. During winter, herders and their livestock move into the desert; in summer they move to the desert margins to places with perennial water supply. The system of mobile pastoralism was introduced during the Early Late Neolithic.

Within the basaltic region of northeastern Jordan, there is a dense distribution of archeological remains; some of them can be linked to pastoral groups due to the herders' ancient practice of building agglomerations of sub-circular enclosures ('clustered enclosures') made of basalt boulders for corralling their flocks and domestic activities. The resulting features provide an excellent opportunity to investigate a pastoral landscape that has been frequently used by herders during the last eight to nine millennia.

In this study, 9118 clustered enclosures in the northeastern Jordanian basalt desert have been systematically recorded using satellite imagery. In order to investigate potential migration or communication routes, grazing lands and social interactions of former pastoralists, we examine their first- and second-order characteristics using distance and density based approaches of point pattern analyses by integrating geomorphometric and geomorphological site properties. The results of this spatial analysis are combined with available archaeological data and a review on traditional herding practices in northeastern Jordan. Overall, the results demonstrate that the observed spatial distribution of clustered enclosures is influenced locally by natural characteristics but regionally by cultural practices.