ABSTRACT SUBMISSION

Evaluating the Resilience of Steppe Grassland Ecosystems of the Southern Caucasus, Under Differing Social Mediated Land-Use Patterns

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Abstract

Grasslands constitute important biomes that human communities have utilized throughout the Holocene. Long-term resilience analysis of these ecosystems is rare. Here, we use an interdisciplinary approach spanning paleoecology and archaeology to examine the resilience of the mountain steppe grassland ecosystems of the Kasakh Valley, Armenia, under different land-use scenarios. We utilize two methods of investigation. First, we analyze a pollen record from a 5.5-meter sediment core retrieved from the Nigavan wetland that covers the last 8500 years to identify changes in vegetation over time. Utilizing PCA on this pollen record, we find two shifting subsistence strategies; strategy-1 is related to low amounts of anthropogenic pollen, while strategy-2 is related to increases in pollen related to crop weeds including various species of Polygonaceae. Secondly, we compare these results with the published settlement history, archaeobotanical, and zooarcheological records. These results reveal that pollen changes related to strategy-1 align with periods of low settlements with a limited agriculture and pastoral history, whereas strategy-2 aligns with increased settlement history, reduced movement, and a subsistence economy based on cereal agriculture and sheep and goat pastoralism. In addition, increases in aridity and declines in landscape fire also led to decreased resilience when combined with agro-pastoralism.

Keywords

southern Caucasus, vegetation, pollen, land use, land cover

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