Habitat relationships between wild and domestic ungulates in Nepalese trans-Himalaya

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Abstract
In the semi-arid ecosystems of Asia, where pastoralism is a main subsistence occupation, grazing competition from domestic stock is believed to displace the wild ungulates. We studied the habitat relationships among sympatric naur and domestic yak and smallstock in Phu valley in upper Manang district, Nepal, on the basis of their distribution on vegetation types, elevation and slope. To control for the disturbance effect by humans, we collected the data on naur from those ranges where domestic stock were not being attended by herders. We applied correspondence analysis to explore habitat associations among animal groups (n ¼ 1415) within and across-seasons. Within each association, interspecific habitat overlaps and species habitat preferences were calculated. Naur was strongly associated with free-ranging yak as they used similar altitudinal ranges in all seasons, except in spring. Their distributions on vegetation types and slopes were also quite similar, except for a stronger preference for alpine meadows by naur during summer and winter. Naur and smallstock did not form temporal associations as the latter consistently used lower elevations. In autumn and spring, however, naur spatially overlapped with the summer range of smallstock, and both preferred the alpine meadow habitat during these periods. Alpine meadow was the least abundant vegetation type but was consistently and preferentially used by all animal groups across seasons. At high stocking densities, all three animals groups are therefore likely to compete for this vegetation type. The role of spatio-temporal heterogeneity for interpreting the interspecific relationships among ungulates in the semi-arid rangelands of the trans-Himalaya is discussed.

Keywords: Blue sheep; Competition; Habitat partitioning; Naur; Pastoralism; Pseudois nayaur