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Can diverse herbivore communities increase landscape heterogeneity? Comparing wild and domestic herbivore assemblages in a South African savanna

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Can diverse herbivore communities increase landscape heterogeneity? Comparing wild and domestic herbivore assemblages in a South African savanna

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Abstract

The structure and composition of woody and grassy vegetation in savannas is strongly influenced by herbivores. In recent decades, the proportion of browsers has declined across African savannas in favour of more grazers, triggered by large-scale human-induced cattle grazing. This has led to overgrazing and an imbalance of woody and grassy vegetation. Our study investigated mono-specific and multi-species herbivore assemblages of varying density and assessed similarities in vegetation patterns under wildlife and livestock herbivory in and around Kruger National Park, South Africa. Under mono-specific herbivory, overall tree cover was more than twice as high compared to multi-species herbivory while the branching height of small and tall trees was lowest. Small tree and bush densities were strongly elevated at mono-specific compared to multi-species herbivore sites. Tall trees were dominated by *Acacia nigrescens* under multi-species herbivory at low wildlife density but not at high density sites. Grass leaf nitrogen contents were almost twice as high at multi compared to mono herbivory sites, particularly beneath tree canopies. Livestock and wildlife herbivore sites showed similar patterns in their woody plant structure and grass nutrients. We conclude that a characteristic herbaceous and woody vegetation structure as well as species composition can be matched with mammalian herbivore communities, which has implications for landscape heterogeneity and grazing management in savanna systems.

Keywords

Browser; Bush encroachment; Nutrients; Woody structure; Livestock; Wildlife