

## Ecological Modelling

### **Bulk feeder or selective grazer: African buffalo space use patterns based on fine-scale remotely sensed data on forage quality and quantity**

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### **Abstract**

The distribution and behaviour of African large grazers are regulated primarily from the bottom up, with some species showing clear preferences for certain vegetation types. While the African buffalo (*Syncerus caffer*) is sometimes considered a bulk grazer, other studies indicate that they can be selective and show seasonal variations in their home ranges. We used very high resolution satellite imagery to evaluate how the quality and quantity of the vegetation influence space use by buffalo herds in Kruger National Park, testing the bulk-selective hypotheses. Using telemetry data from six buffalo, we analyzed seasonal differences in home ranges and core areas. We investigated resource selection and preference at various spatial scales for a subset of three buffalo, comparing habitat use against vegetation biomass and nitrogen content, derived from a high resolution RapidEye image of the wet season. Overall buffalo preferred open vegetation types, with sparse trees and fertile soils, and had home ranges that partially overlapped between dry and wet seasons (average overlap 50%). Buffalo formed home ranges non-randomly within the study area, choosing vegetation of higher quality and quantity. Within home ranges, however, they selected for higher quality forage, and not for higher quantity. Our results showed that the dichotomy between unselective bulk grazers or selective feeders can be scale dependent, as buffalo behaved more like bulk feeders at the scale of home ranges but were more selective within their home range, preferring quality over quantity.