

Title: Remote sensing and the mobility of buffalo and cattle in Southern Africa: a review of the key environmental factors and their characterization from Earth Observation satellite imagery

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Abstract: Increasing interactions between protected and anthropised areas in southern Africa create challenges for biodiversity conservation and local development. An improved management of these areas is required to promote the coexistence between human activities, including livestock farming, and wildlife. Remote sensing may offer a means to characterize these interfaces across wide areas.

This bibliographic review which consist on searching, selecting and analyzing scientific papers related to the study aims to 1) identify the environmental factors impacting the mobility of buffalo (*Syncerus Caffer*) and cattle (*Bos Taurus*, *Bos Indicus*), two key species for conservation and local development in Southern Africa, 2) explore the contribution of remote sensing images to discriminate and characterize, in time and space, the identified factors.

The mobility of buffalo and cattle is mainly driven by the availability of water and grazing. These resources can be discriminated by optical and radar imagery, with a high spatial resolution (10 m) and a high temporal frequency (5 days). Secondary environmental factors such as savanna fires and variability of climatic conditions can also be characterized at medium-resolution satellite imagery (250-1000m).

Current remote sensing techniques are useful to map the main environmental factors identified in the literature. However, human practices and infrastructures (such as boreholes and fences) need also to be taken into account to describe the mobility of buffalo and cattle, which may not be easily achieved using remote sensing alone.