DETERMINING ANIMAL MOVEMENT UNDER DIFFERENT STOCKING RATES IN THE TROPICAL SAVANNAHS.

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The most important management factor determining the condition of resources and animal production in any grazing system is the stocking rate or utilisation rate of the available pasture (O'Reagain and Turner 1991). Consequently, a major challenge for animal production in the semi-arid tropical savannahs is the adoption of sustainable grazing practices. The location of water points has been identified as the primary determinant of landscape selection by grazing animals (O'Reagain 2001). The relationships between grazing and environmental drivers need to be identified to predict accurately the impact of alternative management regimes and grazing strategies across diverse and fragile landscapes. This study reports on the distances animals were prepared to travel under two different stocking rates, using Global Positioning System (GPS), and is part of a larger project investigating patch grazing in the sub-tropical savannahs.

The study was conducted on Wambiana Station, near Charters Towers Qld. Paddocks of approximately 100 ha were used, each containing similar areas of three distinct land types. Stocking rates were; light stocking (8 ha/ large stock unit [LSU equivalent to 450 kg Brahman cross steer]) and heavy stocking (4 ha/LSU). Treatments were replicated twice in a randomised block design. Three animals in each replicate were fitted with GPS units (BlueSky Telemetry Ltd) in October 2005. The GPS units were programmed to acquire a position every 30 min from a minimum of 4 satellites for 6 weeks to determine the distances that individual animals travelled daily and their associated grazing patterns. Paddock surveys, using BOTANAL technique, and Landsat imagery were used to identify dominant vegetation types (*Eucalyptus brownii, E. melanophloia and Acacia ssp*. communities).

Animals had distinct patterns in the distances they travelled over a 24 h period (Figure 1). Further, the data indicated that cattle would converge on water points in the morning and disperse during the late afternoon. Animals in the heavily stocked paddocks travelled about 7.0 km per day, up to 1.5 km further than lightly stocked animals.

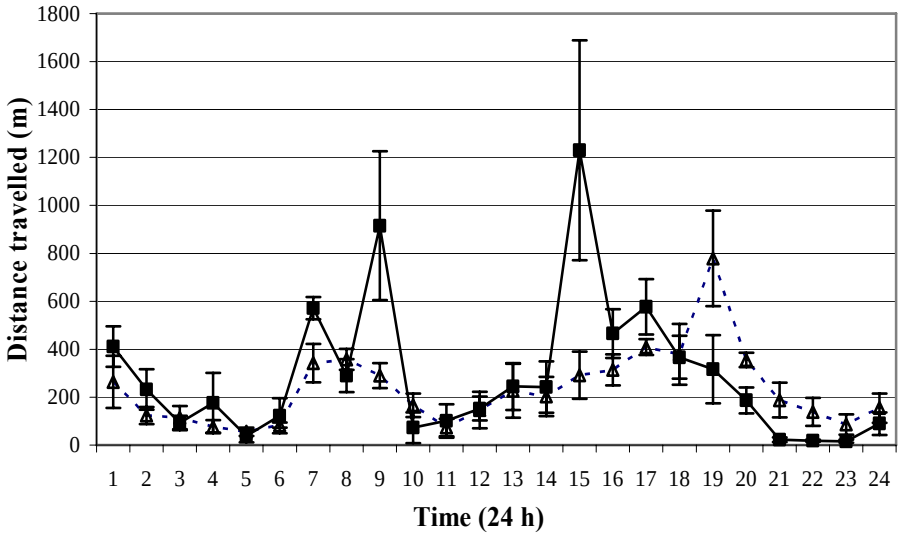

Figure 1. Mean (±sem) distance travelled over 24 h for light (Δ) and heavy (■) stocked animals

Animals in the heavy stocking groups also travelled, up to 1 km further each day from a water point than lighter stocked animals. In addition to the location of water, pasture availability and soil type across the experimental paddocks appeared to be important variables influencing cattle movement. Further analysis will determine spatial grazing patterns based on relationships between soil/dominant vegetation and availability of pasture. The quantitative understanding of animal movement across these heterogenous landscapes will help formulate alternative grazing management practices and the best location of additional water points to facilitate the use of sustainable pasture across the sub-tropical savannahs.

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