



Tropentag, September 16-18, 2026, hybrid conference

“Towards multi-functional agro-ecosystems
promoting climate resilient futures”

Reading the landscape, reading the herd: Local ecological knowledge and livestock mobility in the Himba pastoral system, Namibia

WILHELMINA NUULE, LILLI SCHEITERLE, BRIGITTE KAUFMANN

German Institute for Tropical and Subtropical Agriculture (DITSL), Germany

Abstract

Pastoralism in arid and semi-arid environments depends on livestock mobility to track highly variable rangeland resources. In northern Kunene, Namibia, Himba pastoralists sustain livestock production through strategic movements across heterogeneous landscapes, yet the factors shaping these movements – and the knowledge systems that guide them – remain poorly understood. This study examines what drives livestock mobility among Himba herders in northern Kunene, and how animal characteristics, landscape conditions, and local ecological knowledge jointly shape herding decisions across seasons. Data were collected through participatory mapping, GPS livestock tracking, and semi-structured interviews. Ten community mapping sessions were conducted using large-scale satellite imagery, and nine cows were fitted with GPS devices between February 2024 and January 2026. Fifteen semi-structured interviews were conducted with Himba herders about their seasonal grazing itineraries, complemented by interviews with the herders of the tracked livestock. The study investigates how herders distinguish grazing units by vegetation type and seasonal suitability, differentiating between wet and dry-season pastures governed by shared access rules. GPS movement data are interpreted alongside herders' accounts of seasonal decision-making to reveal the logic underlying observed mobility patterns. Findings show that herd movement is not purely reactive to forage availability, but structured by a combination of customary access rules, water availability, and animal-terrain interactions – particularly when using the mountainous dry and drought reserves that function as critical refuges. Alongside institutional and environmental factors, herders continuously read animal behaviour and condition to calibrate movement decisions e.g. grazing routes, and home return times. Body condition, milk yield, coat appearance, and dung condition all serve as real-time indicators of rangeland quality and herd welfare. The study demonstrates that livestock mobility in the Himba system is best understood as an adaptive, knowledge-intensive practice shaped by the ongoing integration of landscape signals, animal feedback, and community norms. Understanding livestock mobility in this context requires moving beyond spatial pattern analysis to engage with the local ecological knowledge and institutional norms that give those patterns their meaning and resilience.

Keywords: Adaptive decision-making, common-pool resource management, drought reserves, GPS livestock tracking, grazing itineraries, landscape heterogeneity, seasonal grazing systems