Title:
Conceptual framework: Determinants of biodiversity outcomes under grazing and pastoralism

Description:
This conceptual ecological framework illustrates how biodiversity outcomes of grazing and pastoralism are shaped by the interaction between two overarching drivers: (1) herbivore species and (2) grazing management, and their associated parameters, both embedded within site-specific environmental conditions. It highlights that biodiversity responses to grazing are not uniform but depend on multiple interacting factors and underlying ecological mechanisms, including herbivore functional traits and species mix, stocking density, grazing intensity, timing, spatial distribution, and pasture management. These interacting drivers shape vegetation structure, habitat heterogeneity, and ecological processes that determine habitat suitability for diverse plant and animal species, from microhabitat to landscape scale.

The framework emphasizes that not all grazing is the same: biodiversity outcomes depend on the type of herbivores, how grazing is managed, and the environmental context. Appropriately managed pastoral systems can maintain or enhance structural and functional ecosystem diversity, support high spatial structural heterogeneity and species richness under ecologically appropriate disturbance regimes and sustainable grazing management, thus sustaining diverse plant and animal communities and contributing to biodiversity conservation and ecosystem resilience.

By shaping vegetation dynamics and habitat structure across scales, pastoralism plays an active ecological role in maintaining biodiverse and functioning rangeland ecosystems. The framework provides an empirical and ecological basis for understanding grazing as a key ecological process and for recognizing pastoralists as active managers and stewards of biodiverse landscapes. It supports the recognition of pastoralism as an important component of biodiversity conservation and as a sustainable livelihood system that enables long-term coexistence between humans and biodiverse ecosystems.