

A comparative study on the floristic diversity of forest and grassland ecosystems of Kachchh, an arid region of western India

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Ecosystems sharing a macroclimate can exhibit markedly different floristic compositions due to structural, edaphic, and biotic factors. The present study compares floristic diversity between tropical thorn forests (Chavda Rakhal and Ler) and the Banni savannah grassland in Kachchh, Gujarat, using quadrat sampling along line transects. The forests supported 201 species ($H' = 2.19$), while the grassland had 29 species ($H' = 1.36$), reflecting expected structural differences. However, Banni's flora was dominated by a few widespread species, with reduced native herbaceous cover. Invasive *Prosopis juliflora*, overgrazing, and habitat alteration were also observed. These results highlight the need for conservation strategies focused on restoring native plant composition and ecological function in the increasingly stressed Banni grassland ecosystem.

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include protected and reserved forests, such as Ler forest, and historically preserved private forests like Chavda Rakhal, which have experienced varying degrees of human interference. Meanwhile, Banni, India's largest grassland (2496 km²) and the second-largest in Asia, is characterised by *Dicanthium-Cenchrus-Lasiurus* grass cover¹⁰. Unlike the forests, Banni is primarily composed of grasses and sedges, with fewer woody plants.

Despite these structural differences, both ecosystems face common threats, particularly from the invasive *Prosopis juliflora*. Initially introduced to Kachchh for afforestation and soil stabilisation, *P. juliflora* has rapidly spread, altering soil composition, suppressing native vegetation, and outcompeting indigenous tree and shrub species^{11,12}. In Banni, its spread has been compounded by overgrazing, agricultural expansion, and industrialisation. These changes have significantly impacted the floristic diversity of the region, with notable declines in native species.

While several floristic surveys have been conducted at national¹³⁻¹⁸ and state levels¹⁹⁻²⁵, comparative studies of Kachchh's distinct ecosystems remain sparse. Given the