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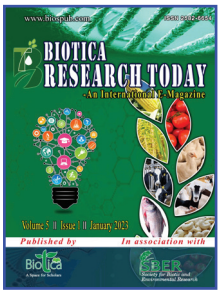

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Significance and Conservation of Grassland Ecosystem in Arid and Semi-Arid Regions of Rajasthan and Gujarat

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Abstract

Nearly 10% of India's landmass is made up of dry desert, mostly in Rajasthan and Gujarat. These dry regions cover arid and semi-arid grasslands which are home to a wide variety of flora and fauna, some which are already endemic and threatened. It provides food and fodder to livestock and livelihoods sustaining in these regions. Not only are these biomes important for the wildlife, but also for the vast bulk of the rural agro pastoralist people. Grasslands play a vital role in providing essential ecosystem services which in turn allows to conserve soil and water biodiversity. Continuous awareness and thorough conservation programmes are needed to protect the grassland biome from further habitat destruction and degradation of the grassland ecosystem.

Introduction

The most overlooked ecosystems are grasslands and deserts, which make up to 40% of the planet's area and are one of the planet's major biomes. Grasslands are incredibly diverse and challenging to explicate. Grasslands have a wide array of different plant life forms that contribute to their species richness and diversity, despite the fact that grasses and other grass-like plants are the predominant vegetation type in all grasslands. Grazing food webs with the highest species diversity on the globe may be found in many grasslands, which also support a diversified animal community. In contrast to forests, the vegetation on grasslands undergoes a complete yearly renewal. In tropical grasslands, the length of the growing season is influenced by the length of the monsoon season.

Types of Grasslands Covering Arid and Semi-Arid Regions

Major types of grasslands that cover the arid and semi-arid region of Rajasthan and Gujarat (Figure 1) are:

- Type- Dicanthium/ Cenchrus- Lasiurus: Covers the major portion of the region with annual rainfall of 250-400 mm.
- Cymbopogon type: According to Whyte (1957), *Cymbopogon* grass sp. classified as a distinct grassland type found in the piedmont zone where soil conservation method has been followed and receives annual rainfall between 500-700 mm.
- Type- Sehima/ Dicanthium: Receives annual rainfall between 550-700 mm and covers mostly the lower piedmont zone.

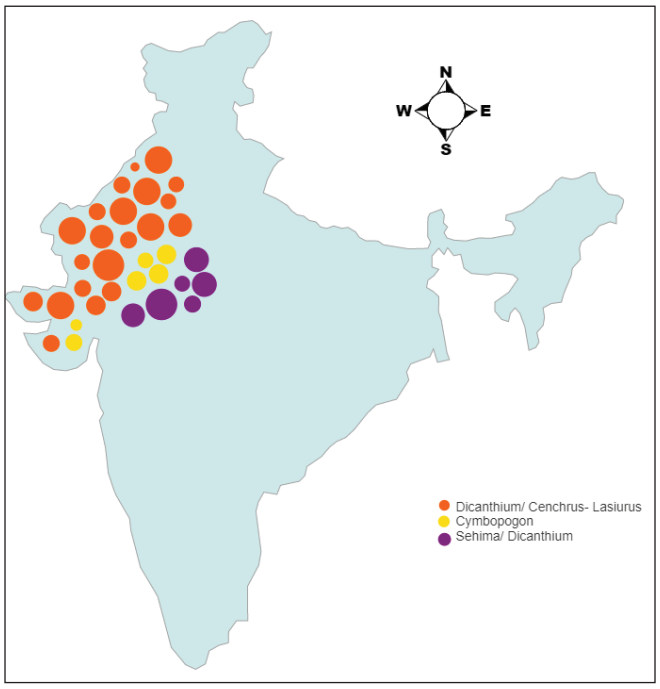

Figure 1: Arid and semi-arid grassland type in Rajasthan and Gujarat region

Significance of Arid and Semi-Arid Grasslands

Due to arid and semi arid grassland locations at the intersection of the Palaearctic and Oriental biogeographical regions, the Indian Thar desert, one of the smallest in the world, has a high level of bird diversity. Important desert bird species include the Great Indian Bustard, Houbara Bustard, Cream-colored Courser, Hoopoe Lark, various sandgrouse species, raptors, wheatears, larks, pipits, and munias. At Gujarat's Rann of Kutch, both Greater and Lesser minor flamingos breed when the circumstances are ideal. Indian Grey wolf, Golden Jackal, Indian Fox, Indian Gazelle, Blackbuck, Striped hyena, Desert Cat, Indian Hedgehog, and Caracal are among the mammals that are under danger (Mohan *et al.*, 2016). Important endemic reptiles to these grasslands, such as monitor lizards and spiny-tailed lizards, need serious conservation care. It supports fodder for domesticated animals, including cattle, sheep, horses, and buffalos, which provide people with meat, milk, wool, and leather products. In addition to supporting food production and having a high conservation value, grasslands may also play a significant role in providing ecosystem services such as carbon sequestration, water flow regulation and conservation, windbreak and sand fixation, and mitigation of greenhouse gas fluxes (Bengtsson *et al.*, 2019). Another distinguishing characteristic is a comparatively high allocation of plant biomass belowground (Blair *et al.*, 2014). A high root to shoot ratio and proportionally substantial inputs of plant root litter relative to surface litter are characteristics of grasslands. When there are periods of water scarcity, relatively high belowground plant inputs combined with relatively slow breakdown rates can result in significant nutrient and organic matter buildups in the soil. Additionally, because most grasslands receive little rainfall, there is less weathering and less loss of vital plant nutrients from the soil's rooting zone. One of the reasons grassland soils have been used so extensively for agricultural purposes is due to their high fertility as a result. Few grass species such as *Cymbopogon, Vetivera* and *Bothriochloa* species are used in extraction of essential aromatic oils obtained from steam distillation (Gupta and Sharma, 1971). *Aristida setacea, A. hystrix, A. adscensionis* and *Eremopogon foveolatus* are used in making brooms from their dried panicles. *Desmostachya bipinnata* is used for making fans and *E. munja* is the most common grass for thatching houses and in making handmade furniture. Other than these numerous grasses, there are other species of grasses with promise for pharmacological and therapeutic uses.

Conclusion

The goal of the current study is to provide information in an accessible manner while also serving as a reminder to maintain India's dry and semi-arid grassland ecosystem, which provides enormous advantages to both the human race and the environment. They contribute to reducing climate change, offer recreational opportunities that encourage tourism, and allow researchers to explore the potential of the area.

References

Bengtsson, J., Bullock, J.M., Egoh, B., Everson, C., Everson, T., Connor, T.O., Farrell, P.J.O., Smith, H.G., Lindborg, R., 2019. Grasslands - more important for ecosystem services than you might think. *Ecosphere* 10(19), 1-20.

Blair, J., Nippert, J., Briggs, J., 2014. Grassland Ecology. In: *Ecology and the Environment*. The Plant Sciences, (Ed.) Monson, R. Vol 8. Springer, New York. pp. 389-423. DOI: https://doi.org/10.1007/978-1-4614-7501-9_14.

Gupta, R.K., Sharma, S.K., 1971. Grasses of the Rangelands in Arid Rajasthan. *Journal d'agriculture traditionnelle et de botanique appliquée* 18(1-3), 50-99.

Mohan, A., Bhardwaj, G.S., Sen, S., Jhala, Y.V., Sivakumar, K., 2016. Ecology and Management of semi-arid grasslands in India with special reference to endangered Lesser Florican *Sypheotides indica* Miller. *ENVIS Bulletin, Ecology and Management of Grassland Habitats of India*, pp. 203-215.

Whyte, R.O., 1957. The Grassland and Fodder Resources of India. Indian Council of Agricultural Research, New Delhi. p. 400.