



REGENERATION STATUS AND SPECIES DIVERSITY OF A MIX DRY DECIDUOUS FOREST: A CASE OF BARAH FOREST, JABALPUR, MADHYA PRADESH, INDIA

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ABSTRACT: The nature of dry deciduous forest community's and species diversity greatly depends on its regeneration potential as well as the level of biotic pressure its faces. Species diversity and the regeneration status were studied based on an inventory method. Regeneration status of species was determined based on the availability and abundance of seedlings, saplings and trees species. Ten quadrats of 10^m x 10^m were laid randomly within the forest and all trees located within the sampled quadrats were identified both scientifically and locally. Diameter at breast Height (DBH) of all the individual trees > 5m height was recorded at breast height (1.3m) from the ground level. Quadrats of 3^m x 3^m and 1 x 1 m² were fitted in 10^m x 10^m quadrat to calculate the density of sapling and seedlings accordingly. The regeneration status of tree species was classified as saplings and seedlings; Seedling (height<20cm), sapling (20-150cm and DBH<10cm), and tree (DBH>10cm). The species Importance Value Index (IVI), Shannon Weiner Index, species richness, Simpson Diversity Index, species evenness, etc. were employed to assess the regeneration potential and diversity. Fabaceae was the most dominant family with 10 species followed by Combrataceae with 4 species. *Tectona grandis* had the highest IVI value (69.94), followed by *Pongamia pinnata* (57.87), *Embllica officinalis* (24.02), *Lagerstroemia parvifolia* (14.65) and *Lagerstroemia speciosa* (11.09). The Shannon diversity for the community was recorded to be (1.18). Simpson index of dominance (D) was (0.11) while Pielou Index of Evenness (J') was (0.35). The regeneration status of species was none with only four species having good potential of regenerating. The ratio of abundance and frequency (A/F) ranges from (0.05-0.28). It is concluded that climate change and disturbances such as animal grazing, fuel wood collection, poles or sapling harvesting has contributed immensely to the decline of plant diversity. Although the overall species diversity was discouraging, but if sound management and protection mechanism are instituted it will help restore and improve the regeneration potential of the study area.

Keywords: Abundance, deciduous forest species diversity, Simpson Diversity Index,

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Tropical dry deciduous forests around the world are not considered to be rich in terms of species as compared to tropical moist deciduous forest but have unique biodiversity with distinct features (Gentry, 1995; Medina, 1995). Over the past years in India, the dry deciduous forest have been suffering seriously from skyrocketed rates of change as they are degraded for farming, animal grazing, fuel wood collection and other biotic activities (Thakur and Khare 2006). Apparently, tropical dry forests form a major biome in India by covering around 38% of total forest area of the country with central India hosting most of the tropical deciduous forests in Indian subcontinent (Thakur and Khare, 2006). The structure and composition of deciduous forests change with the length of wet period, amount of rainfall, latitude, longitude and altitude of the locality.

Species Regeneration

Species or forest regeneration is the process by which a trees or forest renew itself through it seedlings in its natural environment in response to deforestation, wildfire outbreak, insects and pest outbreak, animal grazing etc. Species regeneration is a very important aspect in forestry and is achieved through two man approaches; natural regeneration that entails renewing of seedlings without any assistance or whatever in their natural habitat and artificial regeneration involves human intervention in supporting seedlings grow especially in degraded forests. According to Sukumar et al., (1992), regeneration status of forests trees or a tree species in any given forest ecosystem is considered "good" when seedling density > sapling density > adult tree density, "fair" when seedling density > sapling density ≤ adult density, "poor", when the species