

A COMPREHENSIVE ASSESSMENT OF INVASIVE AND ALIEN PLANT SPECIES ALONG ROADSIDE CORRIDORS IN THE VALLEY DISTRICTS OF MANIPUR, INDIA

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Biological invasions of alien plants present one of the most serious threats to long-term maintenance of ecosystem health, agricultural production, forest regeneration and biodiversity. Roadways have been identified as one of the major source-points for helping in spread of invasive species as they tend to create edge effect, degrade soils, and drag winds generated by vehicular movements provided added force on further spreading of the seeds. The present study provides the first systematic inventory and quantitative assessment of invasive alien species (IAS) along roadside habitats in the five valley districts of Manipur, India. Vegetation sampling was conducted using stratified quadrat methods across national, state, and district roads between 2022 and 2024. A total of 146 alien plant species were recorded, comprising 107 herbaceous and 39 shrub species originating from 39 countries. The herb layer was dominated by fast-growing ruderal species with high frequency and turnover, whereas the shrub layer showed structurally dominant perennial species with greater biomass and long-term persistence potential. Frequency distribution patterns deviated from Raunkiaer's normal distribution, indicating an actively spreading and non-equilibrium invasive community. Whitford's Index of distribution further revealed contrasting spatial strategies between short-lived herbs and stress-tolerant shrubs. The results demonstrate that roadside habitats in Manipur function as active invasion corridors and early establishment zones for both herbaceous and woody IAS. These findings provide a baseline for invasion monitoring and emphasize the urgent need for early detection and targeted roadside management to prevent further landscape-level spread into adjacent natural and agricultural ecosystems.

Keywords: IAS, roadside, biological invasion, Manipur, ecological threat

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