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## Analysis of Landscape Connectivity among the Habitats of Asian Elephants in Keonjhar Forest Division, India

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**摘要** Land development has impacted natural landforms extensively, causing a decline in resources and negative consequences to elephant populations, habitats, and gene flow. Often, elephants seek to fulfill basic needs by wandering into nearby human communities, which leads to human–elephant conflict (HEC), a serious threat to conserving this endangered species. Understanding elephant space use and connectivity among their habitats can offset barriers to ecological flow among fragmented populations. We focused on the Keonjhar Forest Division in Eastern India, where HEC has resulted in the deaths of ~300 people and several hundred elephants, and damaged ~4100 houses and ~12,700 acres of cropland between 2001 and 2018. Our objectives were to (1) analyze elephant space use based on their occupancy; (2) map connectivity by considering the land structure and HEC occurrences; (3) assess the quality of mapped connectivity and identify potential bottlenecks. We found that (1) the study area has the potential to sustain a significant elephant population by providing safe connectivity; (2) variables like forests, precipitation, rural built-up areas, cropland, and transportation networks were responsible for predicting elephant presence (0.407, SE = 0.098); (3) five habitat cores, interconnected by seven corridors were identified, of which three habitat cores were vital for maintaining connectivity; (4) landscape features, such as cropland, rural built-up, mining, and transportation networks created bottlenecks that could funnel elephant movement. Our findings also indicate that overlooking HEC in connectivity assessments could lead to overestimation of functionality. The study outcomes can be utilized as a preliminary tool for decision making and early planning during development projects.

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