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Conference Abstract

Impact of plant invasions on soils and seed banks in protected areas of the Central Himalayan foothills

Suneeta Bhatta[‡,§], Nisha Kharel[|], Martin Hejda[‡], Petr Pyšek[‡,§]

‡ Institute of Botany, Czech Academy of Sciences, Průhonice, Czech Republic
§ Department of Ecology, Charles University, Viničná 7, Prague, Czech Republic
| Queensland Alliance for Agriculture and Food Innovation, The University of Queensland, Gatton, Australia

Corresponding author: Suneeta Bhatta (suneetabhatta123@gmail.com)

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Abstract

We examined the impact of three invasive plant species namely, *Lantana camara, Mikania micrantha*, and *Parthenium hysterophorus* on soil chemical properties and soil seed banks in national parks of the Central Himalayas. We hypothesized that invasions have significant effects on soils, but that the magnitude of these impacts depends on the identity of the invasive species. Soil was collected from 10–20 paired 10 m × 10 m plots, located in invaded and adjacent uninvaded vegetation in each of the five national parks of Nepal, for a total of 90 plots. The soil was analysed for pH, nitrogen, phosphorus, potassium, and organic matter content. Impacts on soil seed banks were assessed using a three-month germination experiment. Differences in soil properties and seed banks between invaded and adjacent uninvaded plots were tested using mixed-effects models, and canonical correspondence analysis was used to relate differences in soils to the invasion-driven changes in species composition. Invasive plants significantly increased organic matter and potassium content and changed the species composition of the invaded community and the species richness of seedlings germinated from seed banks. *Lantana camara* had the strongest impact on seed germination of other species, whereas *Mikania micrantha* on seedling species richness, confirming that the impacts of invasive plants depend on species identity. Our research provides insights into plant invasions in

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an understudied region with high conservation value and offers a scientific basis for targeted restoration efforts in protected areas of Nepal.

Keywords

Himalayan foothills, protected areas, soil nutrients, invasion ecology, conservation management

Presenting author

Suneeta Bhatta

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Conflicts of interest

The authors have declared that no competing interests exist.