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PHENOLOGICAL SHIFTS OF INVASIVE ALIEN PLANTS IN THE EASTERN HIMALAYAS: A STUDY RESPONSE TO CLIMATE CHANGE AND FOREST TYPE

©2026 Huidrom Bablin Singh[1] (https://orcid.org/0009-0008-7143-6238), Bhupendra Singh Adhikari[1]* (https://orcid.org/0000-0001-5632-0044)

[1]Ecodevelopment Planning and Participatory Management Department, Wildlife Institute of India, Post Box # 18, Dehradun 248 002, Uttarakhand, India.

email: *adhikaribs@wii.gov.in*

*Corresponding author

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The shift of phenology played an important role in determining the proliferation of invasive alien plant species. Changes in climatic parameters, specifically precipitation, relative humidity, temperature (minimum and maximum) affects the phenophases of invasive alien plants species, resulting in vibrant expansion. In this present study, nine invasive species were selected for annual observation on leaf initiation, flowering, fruiting and leaf fall along with four climatic parameters in five forest types of Pakke Tiger Reserve, Arunachal Pradesh. Weekly monitoring, followed by statistical analysis using coefficient of variation (%), analysis of variance (ANOVA) followed by post hoc Tukey pairwise test (if significant), correlation, regression and canonical correspondence analysis (CCA) were performed to understand their association. The result revealed that *Bidens pilosa* L. had the longest duration in flowering, *Chromolaena odorata* (L.) R.M.King & H.Rob. in fruiting and *Urena lobata* L. in leaf initiation and fall, respectively. Moreover, majority of the species displayed asynchronous phenophases. Repeated measures of ANOVA indicated that *Ageratum conyzoides* L. in flowering and *Chromolaena odorata* (L.) R.M.King & H.Rob. in leaf initiation had significant variation in phenophases across the forest types. However, Pearson correlation and linear regression displayed that the climatic parameters had role in the proliferation of these species. Further, CCA revealed that precipitation was the major influenced in flowering and leaf fall while relative humidity and temperature, in combination were more associated in all phenophases. The present study revealed a hidden knowledge that invasive flora were influenced by the climatic parameters in expansion toward tropical semi evergreen forest of eastern Himalayan region.

Keywords: Climatic parameters, Eastern Himalaya, Forest Types, Invasive alien plant species, Phenology, Pakke Tiger Reserve

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