Researchers reveal traits of distribution and life-form spectra of alien species across China

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The role of invasve species in China has attracted wide attention because noxious alien invasive species significantly threaten biodiversity, environment, and economies of the country. Therefore, studying the regional distribution and life-form spectra of alien species is essential to understand the process of invasion and to develop measures to manage alien species.

ZHOU Quanlai and his colleagues from the Institute of Applied Ecology of the Chinese Academy of Sciences recently conducted a study to determine geographical distribution, life-form spectra of the alien species, and the relationship between the species density and climatic or social factors.

Their finding, published in *Science of The Total Environment*, was based on checklist of invasive plants in China, environmental and social data, and classifications of the alien species.

The researchers found that the species density of alien species increased from the northwest to the southeast regions of China. A boundary between low and high species density of the alien species was consistent with "Hu Line." This line was regarded as a boundary of Chinese population density, geographical structure, climate, and economic and social development in China.

Through the analysis of life-form spectrum of the alien species, they found that the invasive alien species had a high proportion of annual and biennial herbs, hence, promoting the invasion of disturbed land due to their short juvenile period, high number of seed production, and rapid population growth. Whereas, non-invasive alien species had a high proportion of shrubs and trees, thus, increasing their time-lags between introduction and invasion due to their low reproduction capacity and a long development time.

Besides, the researchers found that mean annual rainfall was the most important factor on species density for invasive alien species, such as malignant and serious invasive alien plants. However, social factors (Gross domestic product per square kilometer) and temperature (annual minimum temperature) were the most important factors for non-invasive alien species, such as cultivated alien plants.

The finding of this study is helpful for the policy makers to enact strict laws preventing introduction and controlling invasion of the alien invasive species.

  More information: Quanlai Zhou et al. Geographical distribution and determining factors of different invasive ranks of alien species across China, *Science of The Total Environment* (2020). DOI: 10.1016/j.scitotenv.2020.137929

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