兴安杜鹃在我国东北地区适生区预测

吴生海[4]，兰雪涵[2]，王玉莹[1]，马　玉[3]，于忠亮[4]，李黎明[1]，杜凤国[1]

北华大学林学院，吉林　吉林 132013；2.集贤县林业和草原局，黑龙江　双鸭山 155900；3.西北农林科技大学，陕西 杨凌 712100；4. 吉林省林业科学研究院，吉林　长春, 130000）

摘　要：【目的】研究兴安杜鹃在我国东北地区的适生区，为兴安杜鹃保育提供依据。【方法】基于兴安杜鹃 54 个自然地理分布信息和气候、地形、土壤三类 28 个环境变量，利用 MaxEnt 生态位模型和地理信息系统，对兴安杜鹃在我国黑龙江、吉林、辽宁三省的适生区进行预测，通过 ROC 曲线检验模型精度，采用刀切法筛选主导环境变量及其适宜值。【结果】基于主导环境变量，MaxEnt 模型构建的受训者工作曲线的 AUC 值为 0.963，表明预测结果与兴安杜鹃实际分布地拟合度很高。兴安杜鹃高、中、低适生区的面积分别是 22.3009×104km2、37.3498×104km2、34.3596×104km2，中适生区和低适生区以高适生区为中心向四周扩散。温度季节性变化标准差（bio4）、最暖季节降水量（bio18）、最干季节降水量（bio17）及土壤 pH（t-pH）是影响兴安杜鹃潜在分布区的主要环境变量，贡献率分别为 43.7%、24.4%、15.6%、4.3%。【结论】兴安杜鹃的适生兴安杜鹃的高适生区主要位于辽宁省东部、吉林省中部及南部、黑龙江省东南部及大兴安岭、小兴安岭地区，中适生区和低适生区以高适生区为中心扩散。

关键词：兴安杜鹃；MaxEnt 生态位模型；适生区预测

Prediction of potential suitable areas of *Rhododendron dauricum* in Northeast China based on MaxEnt model

WU Shenghai[1],LAN Xuehan[2],WANG Yuying[1],MA Yu[3],YU Zhongliang[4],LI Liming[1], DU Fengguo[1]

(1. Forestry College of Beihua University, Jilin 132013,China;2. Jixian County Forestry and Grassland Bureau，Shuangyashan 155900, China;3. Northwest A&F University, Yangling 712100, China;4. Jilin Provincial Academy of Forestry Sciences, Changchun 130000,China)

Abstract: 【Objective】To study the suitable area of *Rh. dauricum*n in Northeast China, and to provide a basis for the conservation of *Rh. dauricum* species. 【Methods】Based on the natural geographical distribution information of 54 natural geographic distribution information and 28 environmental variables in three categories: climate, topography and soil, MaxEnt ecological niche model and geographic information system were used to predict the suitable areas of *Rh. dauricum* in Heilongjiang, Jilin and Liaoning provinces in China, and the accuracy of the model was tested by ROC curve, and the dominant environmental variables and their suitable values were screened by knife cutting method. 【Results】 Based on the dominant environment variables, the AUC value of the trainee working curve constructed by MaxEnt model was 0.963, indicating that the prediction results were well matched with the actual distribution of *Rh. dauricum*. The areas of high, medium and low suitable areas of *Rh. dauricum* are 22.3009×104km2, 37.3498×104km2 and 34.3596×104km2, respectively, and the medium and low suitable areas spread to the surrounding areas with the high suitable area as the center. Standard deviation of seasonal variation in temperature (bio4), precipitation in the warmest season (bio18), precipitation in the driest season (bio17) and soil pH (t-pH) were the main environmental variables affecting the potential distribution of *Rh. dauricum*, with

contribution rates of 43.7%, 24.4%, 15.6% and 4.3%, respectively. 【Conclusion】 The high suitable areas of *Rh.*
dauricum are mainly located in the eastern part of Liaoning Province, the central and southern parts of Jilin Province,
the southeastern part of Heilongjiang Province, and the Daxing'anling and Xiaoxing'anling areas, and the middle
and low suitable areas are mainly spread in the high suitable area.

Key words: *Rhododendron dauricum*; MaxEnt niche model; Prediction of suitable areas