

腾格里沙漠东南缘公路对路域植被物种组成的影响

冯丽^{1**}, 李新荣¹, 郭群², 张景光¹, 张志山¹

1中国科学院寒区旱区环境与工程研究所沙坡头沙漠试验研究站, 兰州 730000; 2中国科学院地理科学与资源研究所, 北京 100101

Effects of highway | on the vegetation species composition along a distance gradient from road edge in southeastern margin of Tengger Desert.

FENG Li¹, LI Xin-rong¹, GUO Qun², ZHANG Jing-guang¹, ZHANG Zhi-shan¹

1Shapotou Desert Research and Experiment Station, Cold and Arid Regions Environmental and Engineering Research Institute, Chinese Academy of Sciences, Lanzhou 730000, China|2Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, Beijing 100101, China

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摘要

沿腾格里沙漠东南缘省道201线沙坡头-景泰段2侧设置48条垂直于公路的样线, 调查距路缘不同距离处植被的物种分布特征, 研究干旱荒漠区公路建设和运营对植被物种组成的影响. 结果表明: 随着距路缘距离的增加, 草本植物的种数、盖度、生物量和 α 多样性均逐渐减小, 5 m后与对照差异不显著, 高度在0~6 m处较大, 密度变化不显著. 0~2 m处草本植物的物种周转速率较低, 2~5 m处最高, 10 m后物种组成与对照相似. 路缘处的草本植物群落以禾本科植物占优势, 抗干扰能力较强的白草、虎尾草和冰草占草本植物总个体数的68.6%. 其中, 虎尾草在距路缘1 m后, 白草和冰草在距路缘2 m后数量和频度迅速减小, 而菊科植物茵陈蒿和冷蒿急剧增加, 距路缘2 m后占草本植物总个体数的70%. 路缘处灌木植物的盖度和密度显著小于对照, 物种组成与对照没有显著差异.

关键词: 干旱荒漠 道路建设 物种多样性 分布格局

Abstract:

Aimed to examine the effects of highway on the vegetation species composition in arid desert area, forty-eight transects perpendicular to the provincial highway 201 from Shapotou to Jingtai in the southeastern margin of Tengger Desert were installed, with the vegetation species distribution along a distance gradient from the road edge investigated. The results showed that with increasing distance from the road edge, the species number, coverage, biomass, and α -diversity of herbaceous plants declined, but had no significant differences with the control beyond 5 m. Within 0-6 m to the road edge, the herbaceous plant height was greater than that of the control, but their density had less change. Within 0-2 m to the road edge, the species turnover rate of herbaceous plants was lower; at 2-5 m, this rate was the highest; while beyond 10 m, the species composition of herbaceous plants was similar to that of the control. The herbaceous plant community at the road edge was dominated by gramineous plants, with the disturbance-tolerant species *Pennisetum centrasiticum*, *Chloris virgata*, and *Agropyron cristatum* accounting for 68.6% of the total. *C. virgata* beyond 1 m to the road edge had a rapid decrease in its individual number and presence frequency, *P. centrasiticum* and *A. cristatum* beyond 2 m also showed a similar trend, while the composite plants *Artemisia capillaris* and *A. frigida* beyond 2 m from the road edge had a rapid increase in its individual number, accounting for 70% of the herbaceous plants. At the road edge, the coverage and density of shrubs were significantly lower than those of the control, but the species composition had no significant difference.

Key words: arid desert highway construction species diversity distribution pattern

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