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石羊河上游退化草地植物功能群生态位分异特征——以阿尔泰狗哇花型草地为例

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摘要：

采用时空转换方式，以石羊河上游高山草地阿尔泰狗哇花Heteropappus altaicus型退化草地及其原生群落为研究对象，以其主要功能群结构特征调查为基础，研究各功能群生态位季节动态特征。结果表明：该区生态位季节动态变化趋势同功能群类别有关，与功能群所处的演替阶段无关；功能群生态位数量特征变化的绝对数量及相对数量受到其所处的演替阶段影响，表现为随季节的推移禾本科功能群生态位宽度上升，其上升相对值为退化样地（120.8%）高于原生群落（65.5%）；而杂类草下降，其下降相对值差异较小，依次为51.38%和66.34%。随季节的推移禾本科-杂类草生态位重叠度升高，且升高的幅度为退化样地(113.3%)略低于原生群落(119.4%)，就升高的绝对值而言，原生群落各观测时期均低于退化草地；杂类草-禾本科生态位重叠度则逐渐降低，其相对数量在退化样地与原生群落中依次下降53.0%和54.9%。其中退化草地禾本科、杂类草生态位重叠度在7月中旬存在一个拐点，其前期禾本科-杂类草组对低于杂类草-禾本科组对，而后期刚好相反。造成上述现象的原因可能与功能群生长特性和放牧干扰共同作用有关。返青较早的禾本科功能群早期生长受到放牧干扰的影响，为返青较迟的杂类草生长提供较大的资源空间，从而使得杂类草功能群在“植被空隙中进行季节更新”，进而改变了原群落的功能群结构。阿尔泰狗哇花型退化草地是植物群落退化演替过程中的关键阶段，如果加以适当的管理，草原退化将得到一定程度的改善；如果不加以保护，草地继续退化后的不可预知风险将提高。

关键词： 退化草地；生态位；植物功能群；石羊河上游

Niche differentiation characteristics of plant functional groups on degraded grassland in the upstream of Shiyang River——A case study of Heteropappus Altaicus type grassland

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Abstract:

The Heteropappus Altaicus type degraded grassland and its original community were studied through spatial temporal conversion method in the upstream of Shiyang River. Based on investigation of plant functional groups (PFTs) structures, the characteristics of seasonal dynamics were studied. The results indicated that the seasonal dynamics of niche breadth trends depended on the kind of the PFTs, and independent with successional stages which the PFTs belonged to, the niche quantity characteristics were affected by their succession period. During the observation period, gramineous functional group increased by 120.8% in degradation grassland, and 65.5% in non degraded grassland. The forbs functional groups were different from gramineous functional goups, the niche breadth indexes decreased by 51.38% in degradation grassland, and 66.34% in non degraded grassland. The niche overlap indexes also depended on the kind of the PFTs, independed on the successional stages. The niche overlap indexes of the Gramineous Forbs functional groups increased by 113.3% in degradation grassland, and 119.4% in non degraded grassland with seasonal process, and niche overlap indexes in degradation grassland were lower than non degraded grassland. The Forbs Gramineous functional groups contrary to the Gramineous Forbs functional groups, the indexes of niche overlap decreased by 53.0% and 54.9% according to degraded

grassland and non degraded grassland, and there was a inflection point in the mid of July, before that period, the indexes of niche overlap in Gramineous Forbs functional groups were higher than Forbs Gramineous functional groups. The causes of the phenomena may be associated with growth characteristics of the plant functional groups and grazing disturbing. The gramineous functional group regenerated early in the spring, it was just in the time that livestock graze, the continuous disturbance had an effect on the growth of gramineous functional groups, this effect could provide more resources and spaces to forbs functional groups, so that former functional groups structure changed in different seasons in different grassland. The Heteropappus Altaicus stage was the turning point in the plant community succession, if using the propriety grassland management measures, the degraded grassland could change to a new succession which have high yield and appropriate structure, while if the grassland kept the grazing form as before, the grassland would degraded aggravatingly, which will improve the unknown risk.

Keywords: degraded grassland niche plant functional groups upstream of Shiyang River

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