

研究论文

贵州波多洞和甲良洞内部分环境因子与动物群落结构的相关性

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收稿日期 2006-5-22 修回日期 2006-11-28 网络版发布日期: 2007-6-25

摘要 在2002~2005年的2月和7月多次赴荔波波多洞和甲良洞对肉眼能见到的软体动物、节肢动物和脊索动物进行了观察和采集。在波多洞共获标本1045号, 隶属3门6纲13目27科45种或类群, 在甲良洞共获标本469号, 隶属3门6纲9目24科52种或类群。根据上述两洞内各光带中动物种类和数量组成, 可划分为6个动物群落。经群落多样性分析, 物种丰富度、群落多样性、最大多样性、均匀度、优势度和相似性指数最高的分别是群落D(8.3223)、D(3.4677)、D(3.8286)、D(0.9057)、C(0.0404)和D-E(0.6611)。环境因子与群落多样性的相关分析结果显示: 土壤有机质的含量与物种数、物种丰富度、群落多样性和群落最大多样性指数都呈极显著正相关(相关系数分别为0.908、0.913、0.826和0.818), 与群落均匀度指数呈显著正相关(相关系数为0.674); 空气中CO₂的含量与物种数、物种丰富度、群落多样性、群落最大多样性和均匀度指数都呈负相关(相关系数分别为-0.324、-0.552、-0.573、-0.345和-0.742)。这些结果暗示土壤有机质的含量和空气中CO₂的含量是影响洞穴动物群落变化的重要因子。

关键词 [环境因子](#); [动物群落结构](#); [波多洞](#); [甲良洞](#); [贵州省](#)

分类号 [Q142](#), [Q958](#)

The correlation between the environmental factors and animal community structure in Boduo cave and Jialiang cave of Guizhou Province

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Abstract The mollusc, arthropod and chordate visible to naked eye in Boduo cave and Jialiang cave, Libo county, Guizhou, PR China were observed and collected several times on February and July of 2002-2005. 1045 samples collected in Boduo cave belong to 3 phyla, 6 classes, 13 orders, 27 families, 45 species or groups, including a new species (*Chamalycacus libonensis* sp. nov.). 469 samples collected in Jialiang cave are subordinated to 3 phyla, 6 classes, 9 orders, 24 families, 52 species or groups. According to the animal species and their numbers in the light area of the two caves, 6 animal communities were classified. According to the analysis of community diversity, community D(8.3223), D(3.4677), D(3.8286), D(0.9057), C(0.0404), and D-E(0.6611) have the highest species richness index, diversity, maximum diversity, evenness, dominance and similarity index, respectively. The results of correlation analysis between environmental factors and community diversity showed that the content of organic matter in soil has the much significant correlation ($r=0.908, 0.913, 0.826, \text{ and } 0.818$ respectively) with species, species richness index, community diversity and maximum diversity index of community and has the significant correlation ($r=0.674$) with the evenness index of community. The content of CO₂ in air has the negative correlation with species, the species richness index, and the diversity, maximum diversity and evenness index of community and their correlation coefficients are $-0.324, -0.552, -0.573, -0.345, \text{ and } -0.742$, respectively. The above results indicated that the content of organic matter in soil and the content of CO₂ in air are the important factors that influence the community change of cave animals.

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Key words [_ environmental factor](#) [_ animal community structure](#) [_ Boduo Cave](#) [_ Jialiang Cave](#) [_ Guizhou Province](#)

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