

## 昆崙山不同植被带线蚓群落结构特征

蒋万祥,陈静,王洪凯,卓丽玲,贺诗水,王明山,邓艳美,张营霞

枣庄学院生命科学学院

## Characteristics of Enchytraeid Community Structure Relative to Vegetation in Kunyu Mountain, Shandong, China

JIANG Wan-Xiang, CHEN Jing, WANG Hong-Kai, ZHUO Li-Ling, HE Shi-Shui, WANG Ming-Shan, DENG Yan-Mei, ZHANG Ying-Xia  
College of Life Sciences, Zaozhuang University

摘要

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摘要 为明确昆崙山不同植被带线蚓分布特征及影响因子,于2011年9月对位于山东省昆崙山不同植被带线蚓群落结构进行调查。共采集线蚓科环带动物351条,隶属4属10种,其中白线蚓属5种,半线蚓属2种,线蚓属2种,玛利安蚓属1种。叉肾半线蚓(*Hemienchytraeus bifurcatus*)、白线蚓属种5(*Fridericia sp5*)和滇池白线蚓(*Fridericia dianchiensis*)为优势种,平均密度分别为2 458、2 125、1 333 条 $m^{-2}$ ,相对丰度分别为16.5%、14.2%和8.9%。不同植被带线蚓密度和生物多样性整体表现为针阔叶混交林区最大,阔叶林区次之,针叶林区和农田区较小;其中线蚓密度均值为14 917 条 $m^{-2}$ ,Shannon-Wiener多样性指数均值为0.92,Margalef多样性指数均值为0.22,物种丰富度均值为4,Simpson优势度指数均值为0.52;应用非度量多维标度排序法研究群落结构相似性,发现S1与S2的站位相似性较高,S5与S6的站位相似性也较高,而S3、S4站位分别与其他站位群落结构存在较大差异。典范对应分析表明土壤水分、总氮和硝态氮含量为影响区域线蚓群落结构的主要因素。

关键词: 线蚓 昆崙山 生物多样性 群落相似性 典范对应分析

Abstract: To understand distribution of Enchytraeids in various vegetation zones and its affecting factors, field investigations were carried out of Enchytraeid community structure relative to vegetation in Kunyu Mountains in September 2011. A total of 351 individuals of clitellates belonging to 4 genera and 10 species were collected. Among them were five species of *Fridericia* sp., two species of *Hemienchytraeus* sp., two species of *Enchytraeus* sp. and one species of *Marionina* sp., and *Hemienchytraeus bifurcates*, *Fridericia* sp5 and *Fridericia dianchiensis* were dominate species, whose density was 2458, 2125 and 1333 ind.  $m^{-2}$  and relative abundance 16.5%, 14.2% and 8.9%, respectively. One-Way ANOVA analysis was used to compare different vegetation zones in earthworm density and biodiversity. Results show that mixed forest was the highest in both and followed by broadleaf forest, and coniferous forest and farmland areas were lower. Their means of density, Shannon-Wiener biodiversity, Margalef biodiversity, richness, and Simpson dominant index was 14 917 ind.  $m^{-2}$ , 0.92, 0.22, 4 and 0.52, respectively. Non-metric multidimensional scaling (NMS) ordination was used to explore similarity of Enchytraeid communities between different sites. Results show that Stations S1 and S2 were very similar, and Stations S5 and S6 were also very similar in community structure, while Stations S3 and S4 were quite different from each other and from the other stations. Canonical correspondence analysis (CCA) indicates that the correlation between species and environmental variables reached up to 96.2%, which suggests that soil water content, total nitrogen and nitrate nitrogen are the major factors affecting structure of the Enchytraeid community.

Keywords: Enchytraeid Kunyu Mountain biodiversity community similarity canonical correspondence analysis(CCA)

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Corresponding Authors: 陈静 枣庄学院生命科学学院 Email: chj218.2000@163.com

About author: 蒋万祥(1979-),男,山东平度人,讲师,硕士,主要从事无脊椎动物生态学研究。E-mail: uzzjiang@163.com

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