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中文题名	长江中下游典型湖泊底栖动物生态位分析及模拟研究
英文题名	Niche Analysis and Simulation of Zoobenthos in Typical Lakes in the Middle and Lower Reaches of the Yangtze River
中文关键词	底栖动物,生态位,栖息地模型,鄱阳湖
英文关键词	Zoobenthos,Ecological niche,Habitat model,Poyang Lake
中文文摘	底栖动物是河湖生态系统的重要组分，在食物网中充当承上启下的角色，对生态系统健康等具有重要的指示作用。近年来，受自然变化和人类活动等影响，水生态系统出现了不同程度的变化，也反映在底栖动物群落特征等的相应变化。分析底栖动物的生态位需求，研究变化环境下底栖动物的演变特征，对于认识水生态系统变化规律，进而开展水生态系统修复等，具有重要的参考意义。本文以长江中下游典型湖泊——鄱阳湖为例，开展了底栖动物生态位分析及模拟研究。基于鄱阳湖底栖动物与环境因子的野外观测数据，明确其时空分布特点；结合文献资料，统计分析底栖动物的关键影响因子，并得到其生态位曲线；针对不同底栖动物类群及其生命周期，分别构建底栖动物阶段性生长模型；利用实测底栖动物分布数据，对模型参数进行率定验证；开展工况计算，探讨鄱阳湖水动力条件变化对于底栖动物时空分布的潜在影响。结果表明：（1）底栖动物密度与生物量均具有明显的季节性变化特征，与底栖动物的生命周期密切相关；（2）水体富营养化程度（TLI）与床面稳定性（沙波高度）是影响底栖动物空间分布的重要环境因子组合变量，底栖动物的密度与生物量与之存在单峰曲线关系；（3）本文构建的底栖动物阶段性生长模型能够刻画不同底栖动物的生命周期特征及其对营养条件、床面特征的生态位需求。底栖动物阶段性生长模型能够较好地模拟不同底栖动物的空间分布及年内变化规律，可被应用于预测水环境条件变化后底栖动物的响应情况，为水生生态系统的健康评估提供指导。
外文文摘	As an important component of river and lake ecosystems, benthic fauna plays a top-down role in the food web and was commonly used as the indicator for ecosystem health evaluation. In recent years, aquatic ecosystems have been affected by natural changes and human activities, which are also reflected in the corresponding changes in benthic community characteristics. The analysis of the ecological niche requirements of zoobenthos and the study of the evolutionary characteristics of zoobenthos under the changing environment are important references for understanding the changing patterns of water ecosystems and then carrying out water ecosystem restoration, etc.Focusing on zoobenthos of Poyang Lake, which is in the middle and lower reaches of Yangtze River, the main content of this paper includes: compiled recent zoobenthos studies in freshwater lakes, and initially determined the main influencing factors of zoobenthos by integrating the main findings from them; analyzed sampling data of zoobenthos and environmental factors of Poyang Lake, summarized the spatial and temporal distribution characteristics of zoobenthos and environmental factors, and clarified key impact factors of zoobenthos; established a stage growth model for zoobenthos, and applied the model to explore the potential effects of water and sand conditions on zoobenthos. The main findings of this work are as follows: (1) The feature of seasonal changes of zoobenthos is related to their life cycles. (2) The main environmental factors affecting the spatial distribution of zoobenthos are: eutrophication level and bed stability. (3) Stage growth model we purposed can portray the life cycle characteristics of different benthic animals and their ecological niche requirements for nutrient conditions and bed characteristics. Being able to simulate the spatial and temporal distribution patterns of different types of zoobenthos with a promising performance, this model can be further applied to predict the response of benthic fauna after changes in aquatic environment

	al conditions and provide guidance for the health assessment of aquatic ecosystems.
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