

研究报告

牛山湖两种不同生境小型鱼类的种类组成、多样性和密度

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摘要 研究了2003年春季浅水草型湖泊牛山湖小型鱼类空间分布(种类组成、多样性和密度等)与生境异质性之间的关系. 根据水生植被状况、离岸距离和水深, 选择了两种差异较大且有代表性的生境类型, 即近岸沉水植物茂密的生境A和远岸沉水植物稀疏的生境B. 使用围网(180 m²)在这两种生境中进行小型鱼类的采样, 采用多次标志回捕法和Zippin去除法估算了围网内小型鱼类的密度. 结果表明, 两种不同生境中小型鱼类的种类组成、多样性度量值和密度估算值均存在一定程度的差异: 1) 生境A中的渔获物由5科14种小型鱼类组成, 优势种类为生活在中、下水层的高体鳊、彩副鳞和麦穗鱼; 生境B中的渔获物由3科9种小型鱼类组成, 优势种类为生活在湖底的子陵吻鰕虎鱼和小黄魮鱼. 2) 生境A和生境B小型鱼类群落间的Bray-Curtis指数为0.222, 结构相似性较低; 但二者的物种等级丰度分布则无显著差异, 均属于对数级数分布. 3) 生境A中高体鳊、彩副鳞、麦穗鱼等9种小型鱼类的总密度值为8.71 ind·m⁻², 生境B中子陵吻鰕虎鱼、小黄魮鱼等5种小型鱼类的总密度值只有3.54 ind·m⁻². 小型鱼类在这两种不同生境中的空间分布差异可能与其逃避捕食、觅食和繁殖等生态习性的生境需求有关, 因此, 水生植被生境对小型鱼类资源合理开发和多样性保护具有重要意义.

关键词 [浅水草型湖泊](#) [小型鱼类群落](#) [定量采样](#) [多次标志回捕法](#) [等级丰度分布](#)

分类号

Species composition, diversity and density of small fishes in two different habitats in Niushan Lake.

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Abstract

This paper studied the spatial distribution of small fishes in a shallow macrophytic lake, Niushan Lake in spring 2003, and its relations with habitat heterogeneity. Based on the macrophyte cover condition, distance from lake shore and water depth, two representative habitat types in the lake were selected. Habitat A was near the shore with dense submersed macrophyte, while habitat B was far from the shore with sparse submersed macrophyte. Small fishes were sampled quantitatively by block net (180 m²), and their densities within the net area were estimated by multiple mark-recapture or Zippin's removal method. The results showed that there were some differences in species composition, biodiversity measurement, and estimated density of small fishes between the two habitats: 1) the catches in habitat A consisted of 14 small fish species from 5 families, among which, benthopelagic species *Rhodeus ocellatus*, *Paracheilognathus imberbis* and *Pseudorasbora parva* were considered as dominant species, while those in habitat B consisted of 9 small fish species from 3 families, among which, bottom species *Rhinogobius giurinus* and *Micropercops swinhonis* were dominant; 2) the Bray-Curtis index between the two small fish communities was 0.222, reflecting their low structure similarity, and no significant difference was observed between their rank/abundance distributions, both of which belonged to log series distribution; 3) the total density of 9 major species in habitat A was 8.71 ind·m⁻², while that of 5 major species in habitat B was only 3.54 ind·m⁻². The fact that the spatial distribution of the small fishes differed with habitats might be related to their habitat needs for escaping predators, feeding, and breeding, and thus, aquatic macrophyte habitat should be of significance in the rational exploitation of small fish resources as well as the conservation of fish resource diversity.

Key words [shallow macrophytic lake](#) [small fish community](#) [quantitative sampling](#) [multiple mark-recapture method](#) [rank/abundance distribution](#)

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