

云南高原湖泊沿岸带底栖藻类群落的分布

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摘要: 对云南 6 个高原湖泊沿岸带底栖藻类的群落结构、现存量等进行了调查, 研究期间发现底栖藻类群落主要由绿藻门的刚毛藻 (*Cladophora* spp.) 和硅藻门的一些附植种类组成, 除硅藻群落在泸沽湖占优势外, 其它湖泊中绿藻群落的相对比率高于硅藻。底栖藻类现存量 (chl a) 以星云湖最高 ($24 \mu\text{g}\cdot\text{cm}^{-2}$); 底栖硅藻密度以泸沽湖的鸟岛最高, 为 $9.3 \times 10^6 \text{ cells}\cdot\text{cm}^{-2}$ 。分析不同湖泊底栖硅藻的群落结构发现: 底栖硅藻 *Epithemia sorex* 和 *Cocconeis klamathensis* 分别是泸沽湖和抚仙湖的绝对优势种, *Amphora pediculus* 是阳宗海和滇池金岛的绝对优势种, 洱海、星云湖和滇池又一村的优势种类较多, 其中相对丰富度较高的主要是一些附植性种类。结果表明沿岸带的光照、营养水平和基质类型可能是影响底栖藻类群落分布的主要环境因子。

关键词: 底栖藻类; 群落结构; 现存量; 优势种类; 沿岸带

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Benthic Algal Communities Distribution in the Littoral Zone of Yunnan Plateau Lakes

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Abstract: Communities structure, standing crops of benthic algae were investigated in the littoral zone of 6 Yunnan plateau lakes, and benthic algae communities were composed of *Cladophora* spp. of green algae and some epilithic species of diatom during the studying period, the diatom communities was dominated in the Lake Luguhu, the percent of green algae communities was higher than diatom communities in the other lakes. The standing crops (chl a) of benthic algae and the density of benthic diatom was highest in the Lake Xingyunhu ($24 \mu\text{g}\cdot\text{cm}^{-2}$) and in the Lake Luguhu-Niaodao respectively, reached maximum development in numbers of $9.3 \times 10^6 \text{ cells}\cdot\text{cm}^{-2}$. The study found the benthic diatom *Epithemia sorex* and *Cocconeis klamathensis* were the dominant indicator taxa separately in the Lake Luguhu and Fuxianhu, *Amphora pediculus* was the most abundant species in the Lake Yangzonghai and Dianchi-gingbao, There were a lot of the dominant taxon in the Lakes Erhai, Xingyunhu, Dianchi-youyicun, whereas the higher relative abundance taxon in these lakes were epilithic. The results pointed out that the environmental factors, such as nutrient enrichment, littoral zone sunlight and substrate types were very important in controlling community distribution.

Key words: Benthic algae; Community structure; Standing crops; Dominant species; Littoral zone

底栖藻类是淡水湖泊生态系统的重要初级生产者及水化学调节者, 其生境相对稳定, 可为其它水生生物提供重要的微生境空间; 由于处于生态系统食物链的始端, 对污染物反应灵敏, 所以被广泛用于环境污染和水质监测的生物指示种^[1]。云南高原湖泊分布在海拔 1200 ~ 3200 m 之间, 最高可达 4200 m, 主要集中在省内中部、西部和南部。所有湖泊均为

淡水湖, 其水源主要靠地表水和地下水补给, 水位变幅 1 ~ 2 m。湖泊平均水深大都在 15 m 以内, 但也有如抚仙湖深达 100 m 以上的深水湖泊^[2]。从湖泊成因而论, 云南高原湖泊均属高原石灰岩、砂岩的构造湖。从水化学性质上分, 所有的湖泊均属于钙型的硬水微碱性湖。湖水 pH 值普遍较高, 均值 8.5 ~ 9.2, 属微碱、弱碱性, 碱性化特征明显^[3]。由于人类

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