



## 上海城区小型河道生物组成特征及食物链结构分析

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## Analysis on biological composition and food-chain structure in the urban rivers of Shanghai

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- 摘要
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**摘要** 2007年11月-2008年10月对上海市城区4条小型河道(曹杨环浜、午潮港、横港和朝阳河)中的生物组成进行了调查分析. 结果共鉴定浮游植物268种, 浮游动物157种, 大型底栖动物21种, 高等植物10种, 鱼类13种. 浮游植物包括绿、裸、硅、蓝、黄、隐、甲和金藻8个类群, 其中以绿、裸、硅和蓝藻数量最多; 浮游动物中原生动物、轮虫、枝角类和桡足类分别为94种(不含植鞭虫)、44种、13种和6种; 底栖动物中软体动物14种, 环节动物3种, 甲壳动物和水生昆虫幼体各2种; 鱼类包括7科, 分别为鲤科、鳊科、塘鳢科、斗鱼科、鰕虎鱼科、鳢科和合鳃鱼科, 其中鲤科最为丰富, 占全部鱼种的53.8%; 高等植物包括沉水植物4种、挺水植物4种及浮叶植物2种. 曹杨环浜的浮游植物、浮游动物、底栖动物、鱼类和高等植物的种类均最为丰富, 且浮游植物和鱼类的组成较均一, 无明显优势种, 高等植被密度大, 以沉水植物为主; 横港浮游生物种类最少, 脊椎动物仅见外来小型鱼类食蚊鱼, 高等植物则以挺水植物为主, 分布区域较为集中; 午潮港和朝阳河的浮游植物以蓝绿藻为优势种, 高等植物分别仅1和2种, 且密度小、覆盖率低. 4条河道的生物食物链结构都趋于简单化, 且能量输出方式较为单一. 鉴于上述情况, 建议在今后的生态修复中要因河道而异, 适当改善底栖动物、鱼类和水生高等植物的组成结构, 增加物种丰富度, 促进食物链结构复杂化.

**关键词:** 收: 汊郊S画罐繩挂+類狃罐縮染?主浴并 收: 汊郊S画罐繩挂+類狃罐縮染?主浴并

**Abstract:** The community structure, biodiversity and dominant species of the four urban rivers in Shanghai (Caoyanghuanbang River, Henggang River, Wuchaogang River and Chaoyang River) were investigated during the period of Nov. 2007 to Oct. 2008. Totally, 268 species of phytoplankton, 157 species of zooplankton, 21 species of macrobenthos, 10 species of higher plants and 13 species of fish were identified. In phytoplankton, Chlorophyta, Euglenophyta, Bacillariophyta, Cyanophyta had the highest richness. There were 94 species of protozoan, 44 species of rotiferan, 13 species of cladoceran and 6 species of copepodan in the zooplankton group; the macrobenthos included 14 mollusks, 3 annelidans, 2 crustaceans and 2 insect larvae; fishes belonged to 7 families in which Cyprinidae was the most abundant species (53.8%). Higher plants included 4 species of submerged plants, 4 species of emerged plants and 2 species of floating plants. The biodiversity of phytoplankton, zooplankton, macrobenthos, fish and higher plants were much higher in Caoyanghuanbang River than the other three, and there was no dominant species for each group, and vegetation was of high density and mainly was emerged plants. While, in Henggang River, the biodiversity of phytoplankton was the lowest and mosquito-eating fish was the only vertebrate species, the most abundant plant was the submerged species. The biomass in Wuchaogang River and Chaoyang River was the lowest among the four rivers in which the dominant species of phytoplankton were Cyanophyta and Chlorophyta. The four rivers were all identified as having simplified food webs based on the analysis of the community composition and distribution of the dominant species. Further suggestions were made that the process of ecological restoration should be different due to the different biotic component types of rivers with the aim of enhancing the community structure and the food chain construction.

**Key words:** river biological composition food-chain construction Shanghai urban area river biological composition food-chain construction Shanghai

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