

利用沉水植物生长期收割进行富营养化水体生态管理的实地研究

Field study on effect of harvesting submerged plant during growing season for ecological management of eutrophicated water

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中文摘要:

在以再生水为补水水源的圆明园玉玲珑水域进行沉水植物收割实验, 自2011年4—12月间每隔半个月监测一次水质。结果表明, 通过在生长期收割沉水植物, 玉玲珑水体TP、SRP、TN、NH₄⁺-N、NO₃⁻-N和COD的平均浓度可维持在0.1、0.04、0.86、0.1、0.32和18 mg/L左右, 水质保持在III类至IV类地表水之间; 与之对照的不收割沉水植物的玉玲珑进水口水域, 9月沉水植物开始死亡腐烂, TP、SRP、TN、NH₄⁺-N最高分别可达0.5、0.1、2.4和0.60 mg/L; 作为对照的另一以挺水植物为主的水域, 水质普遍劣于有大量沉水植物生长的水域, TP、SRP、TN、NH₄⁺-N最高分别可达1.2、0.60、6.1和0.61 mg/L。圆明园的实地实验表明, 沉水植物有很强的净化水质作用, 通过生长期收割, 能够进一步强化其水质净化作用, 可以作为一项对富营养化水体进行生态管理的有效措施进行推广。

英文摘要:

Experiment of harvesting submerged plant as a method of ecological management was conducted at Yulinglong in the Yuanmingyuan Park where surface water was supplied with reclaimed water. Water quality was monitored semimonthly from April to December, 2011. Results showed that the average concentrations of TP, SRP, TN, NH₄⁺-N, NO₃⁻-N and COD were around 0.1, 0.04, 0.86, 0.1, 0.32 and 18 mg/L, respectively as a result of harvesting submerged plants during growing season, and the water quality was thus maintained between Grade III and Grade IV. Two control areas were selected. Control 1 was located at Yulinglong inlet where no harvesting was conducted, and the highest concentrations of TP, SRP, TN and NH₄⁺-N were recorded as 0.5, 0.1, 2.4 and 0.60 mg/L, respectively, when submerged plants started decaying in September. Aquatic plants in Control 2 were mainly emerged ones, and the water quality was pervasively worse than that of Yulinglong, and the highest concentrations of TP, SRP, TN and NH₄⁺-N reached 1.2, 0.6, 6.1 and 0.61 mg/L, respectively. The field experiment in Yuanmingyuan Park showed that submerged plants have strong capability of water purification, which can be enhanced through harvesting during growing season. Therefore, harvesting submerged plants during growing season can be applied as an effective measure for ecological management of eutrophicated water.

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