

廖静秋,曹晓峰,汪杰,黄艺.基于化学与生物复合指标的流域水生态系统健康评价——以滇池为例[J].环境科学学报,2014,34(7):1845-1852

基于化学与生物复合指标的流域水生态系统健康评价——以滇池为例

Basin-scale aquatic ecosystem health assessment with composite indices of chemistry and aquatic biota: A case study of Dianchi Lake

关键词: [水生态系统](#) [健康评价](#) [水生生物](#) [滇池流域](#)

基金项目: [国家水体污染控制与治理科技重大专项 \(No.2012ZX07501002-006\)](#)

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摘要: 水生态系统在人类社会的发展过程中发挥着至关重要的作用,由于人类活动的干扰,水生态系统的健康状况受到严重威胁.因此,本研究在对滇池流域水生态系统状况深入调查研究的基础上,根据水质状态和生态特性,利用层次分析法构建以化学完整性和生物完整性为标准的滇池流域水生态系统健康评估指标体系,计算各样点健康评价指标,综合评价滇池流域水生态系统健康状态.结果表明:滇池全流域水生态系统整体健康状态处于中下水平,流域上游区域健康等级多为良好,流域中游区域健康等级多为一般,流域下游区域健康等级多为一般和极差;滇池湖体健康等级则多为一般和差,尤以滇池北部(草海)健康状况较差;滇池流域河流和水库的健康状态整体比滇池湖泊的健康状态好,河流和水库的健康状态差异性不显著;生物状况是滇池流域水生态系统健康状态较差的主要限制性因素.

Abstract: Aquatic ecosystems play a crucial role in the process of human society development. Owing to the interference of human activities, health status of the most aquatic ecosystems was seriously threatened. On the basis of in-depth investigation of water quality and the ecological status of aquatic ecosystems in Dianchi Lake Basin, this study by using AHP method constructed a composite index system reflecting chemical integrity and aquatic biota integrity of the ecosystem. A composite health assessment indicator was calculated to assess comprehensively the aquatic ecosystem health status of Dianchi Lake Basin. The results showed that the health status of overall aquatic system was at a low level but varied among different parts of the watershed, i.e. the upper watersheds was good, the central part was moderate, while the lower part was moderate to very poor. The Dianchi Lake itself was at poor health condition, especially the north part (Caohai), while the health condition was better in rivers and reservoirs, but the differences between rivers and reservoirs was not significant. This study also indicated that the biological status was the major constraint contributing to the poor health status of the aquatic ecosystem of Dianchi Lake Basin.

Key words: [aquatic ecosystems](#) [health assessment](#) [aquatic biota](#) [Dianchi Lake Basin](#)

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