

On the evaluation of regional ecosystem health

RUIMIN HE^{1,2}, LANLAN SONG² & JIANYUN ZHANG¹

1 Nanjing Hydraulic Research Institute, Nanjing 210029, China
hrm0928@126.com

2 College of Water Resources and Environment, Hohai University, Nanjing, 210098, China

Abstract The ecological environment is essential to human society. Inappropriate human activities have caused great changes in hydrology and biological habitats. Quantitatively assessing the regional ecosystem and analysing variation trends of the ecological environment can support the construction and restoration of a healthy ecological environment. The principle of health indicator selection was studied initially in relation to the service functions of the ecosystem. Considering ecological issues related to runoff process, water quality, aquatic biology, soil and water loss and terrestrial biology, an indicator system for evaluating ecosystem health was established. Taking Guangdong province as a case, the health of each ecological zone was evaluated and compared using the multi-objective and multi-level fuzzy optimization methods and improved entropy weight coefficient method based on ecological regionalization. Finally, the situation of ecological health in Guangdong province was comprehensively appraised according to the optimal membership grade of each indicator.

Key words evaluation indicator system; landscape ecology; regional ecosystem health
