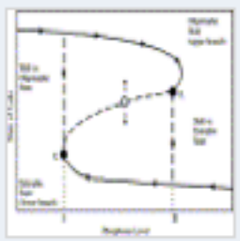

Abstract

In this exploratory paper, we first make a case for considering the scarcity value of ecosystem services in the analyses of jointly determined ecological–economic systems. Next, we point out that insight into the scarcity value of an ecosystem service can be gained generally by examining the manner in which the state of an ecosystem responds to changes in environmental conditions. Following this, we specialize our discussion to the case of eutrophication in lakes. This leads us to pose and analyze a stochastic control problem of lake management in which ecological thresholds are salient. Finally, we show that this stochastic control theoretic framework can be used to obtain a numerical value that is closely related to the scarcity value of an ecosystem service provided by lakes.

Keywords

Ecosystem service; Ecosystem management; Lake; Scarcity value; Stochastic control

Figures and tables from this article: