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Culture-based fisheries based on biomanipulation brings about better economic benefits and biodiversity recovery in lakes of China

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Lakes are important for stock enhancement fisheries in China. More than 10 species are stocked into lakes to increase production. The most common species stocked are planktivorous silver carp, bighead carp, and herbivorous grass carp. However, stocking of silver carp and bighead carp has resulted in eutrophication because of manure application. Stocking of grass carp has resulted in the disappearance of macrophytes. In this paper, two case studies in two lakes of the Yangtze River basin in China are introduced. One case is the replacement of low valued carps by high valued mandarin fish and Chinese mitten crab, resulting in better economic benefits and water quality in Wuhu Lake, Hubei Province. The stocking rate of mandarin fish is determined by food consumption rates, which is mainly related to water temperature and fish size, and prey fish productivity, which is mainly related to mean biomass of prey fish, production/biomass ratio and temperature. The bioenergetics model of mandarin fish is established to predict the growth and consumption of prey fish in stocked lakes. The stocking model of mitten crab in culture-based fisheries is also established based on biomass of macrophyte coverage, benthos biomass and ratio of Secchi depth to mean water depth in lakes. The other case is stock enhancement of combined piscivorous fishes based on fish community structure, resulting in better water quality and recovery of macrophyte biodiversity in Kuilei Lake, Jiangsu province.

Biography

Jiashou Liu is currently working as a Professor in State Key Laboratory of Freshwater Ecology and Biotechnology, Institute of Hydrobiology, Chinese Academy of Sciences, China.

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