

Public Abstract

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Graduation Term:FS 2010

Department:Fisheries & Wildlife

Degree:MS

Title:Temporal Patterns and Variability of Trophic State Parameters in Missouri Reservoirs

Natural lakes display predictable seasonal patterns of algal biomass that relate to nutrient levels. Low-nutrient lakes have a single peak in algal biomass in spring, while high-nutrient lakes display peaks in spring and fall. Most of Missouri's water bodies are man-made reservoirs, which differ morphologically and hydrologically from natural lakes. This research focused on determining if Missouri reservoirs follow the same seasonal patterns documented in natural lakes. Knowledge of seasonal variations in Missouri reservoirs is important in determining the timing and number of samples required to make accurate water quality assessments. This research project used volunteers to aid in collecting bi-weekly water samples from 13 Missouri reservoirs. Data were analyzed to determine if seasonal patterns of water quality existed in Missouri reservoirs, determine the number of samples required to assess water quality, and investigate how the relationship between algal biomass and nutrients changes seasonally.

Low-nutrient reservoirs in Missouri tended to match the seasonal pattern of algal biomass displayed by low-nutrient natural lakes, while high-nutrient reservoirs did not display any consistent seasonal patterns of algal biomass. Accurate estimations of nutrient levels in most Missouri reservoirs can be made with three samples collected during summer, while algal biomass required four samples for accurate estimation due to its more variable nature. The nutrient limiting algal biomass was not constant temporally, and the limitation of algal growth by a single nutrient was generally not acute.