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Analyzing and Comparing Water Quality in Three Local Ponds in Jackson, Tennessee

Tamia Curry, Destanee McClain, Farag Gaber, Mba Ude
Department of Chemistry, Lane College, Jackson, TN

Water is the most essential liquid on earth. The quality of water impacts all living thing organisms that call our rivers, streams, and ponds home. Water quality monitoring and assessment of freshwater resources are necessary to estimate trends and identify the health of an aquatic ecosystem. This research was conducted and designed to analyze and compare water quality in 3 local ponds in Jackson, TN, concerning physical, chemical, and biological parameters including pH, temperature, nitrate, low-range phosphate, dissolved oxygen (DO), total alkalinity (TA), and turbidity. Temperature, pH, low-range phosphate, DO, TA, and turbidity were found to vary between all the ponds. Water temperature was the most critical parameter measured because the chemical, biological, and physical characteristics determined whether the body of water is acceptable and sustainable for aquatic life in each pond. Nitrate and phosphate concentrations were observed to be 0.0 ppm (parts per million) in all cases. Prolonged refrigeration of samples collected caused a fluctuation in TA, DO, and pH compared to samples tested live after collection. Overall time, location, temperature, human activity, and aquatic life impacted the fluctuations of alkalinity and dissolved oxygen in all samples tested. Each parameter will be monitored and analyzed for one year starting May 2023 to June 2025.