Wetland Preservation and Mosquito Control: An Integrated Approach

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Mosquitoes on Florida’s east coast, including Aedes taeniorhynchus and Aedes sollicitans, are nuisance pests and competent disease vectors. Within the previous century, efforts have been made to reduce such populations, however most endeavors have caused deleterious effects on the surrounding environment. Rotational impoundment management has been recently established as a method that emphasizes periodic exchange and high water replication within impoundments. Culverts and pumps are used to artificially raise water levels, reducing exposed moist substrate available for oviposition. Yet, monitoring practices cease during the winter period of open exchange, allowing for a significant knowledge gap. To determine discrepancies in water quality between impounded and unimpounded waters, water quality analyses were conducted for seven parameters including pH, dissolved oxygen, salinity, and nutrient concentrations. Analyses were conducted at four locations, each with an impounded and unimpounded component, per individual impoundment structure. Two separate impoundment structures in St. Lucie County, Florida were utilized in the biweekly analyses over the course of eight weeks during the winter period of open exchange. Results from the analyses displayed no statistical significance for any parameter between impounded and unimpounded waters at Impoundment 14C (Harbor Branch), however hydrological differences and variability in dissolved oxygen across the impoundment were observed. Results from analyses displayed no statistical significance for any parameter except dissolved oxygen at Impoundment 1 (Bear Point). This suggests inadequate flushing and exchange between the impoundment and peripheral lagoon. The application of internal exchange culverts may help abate these issues.

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