



EcoSummary

Kings Lake, Walton Co.

September 5, 1995



Lake Condition Index: A developmental biological assessment tool used by FDEP biologists to indicate ecosystem health and identify impairment in Florida Lakes.

Purpose

As part of a statewide effort to assess the water quality and develop lake biocriteria, this lake was selected as a potential impaired waterbody. Over the years, numerous complaints of nuisance aquatic plant growth and algal blooms have been received. In an attempt to abate this problem, the lake has been dewatered to allow plant die off and decomposition. This



management strategy, to date, has proven ineffective in controlling plant growth. Thus, a number of impacts in this watershed provided an opportunity to test the degree of sensitivity of potential metrics to human perturbations.

Background

Kings Lake is one of a series of impoundments in Walton County, north of DeFuniak Springs. Most of these impoundments get their source water from springs. Extensive residential and campground development has occurred around the impoundment and those above. Kings Lake is below another impoundment, Holly Lake, and may receive water from it during times of heavy rainfall. The land near the lake shore quickly rises to an elevation of 200 ft resulting in steep slopes leading to the lake. Most all the lake shore is in turf grass management with no buffer of woody plants on the near uplands or the littoral zone. Homes are on individual septic systems.

Results

Various nutrient, physical and chemical parameters were sampled and measured from the water column. Total nitrogen was <0.496 mg/L, total Kjeldahl-nitrogen was 0.48 mg/L and total phosphorus

was 14 ug/L. Freshwater ambient conditions in the western panhandle typically have total phosphorus below the laboratory's detection limit of 4 ug/L. Conductivity was 17 umho/cm and pH was 5.01 standard units; these are typical values of waters in this region. Chlorophyll a measured 5.35 ug/L, while algal growth potential was low, 1.828 mg dry wt/L. The transparency of the water was limited; the Secchi measured 2.0 m and color was 10 PCU. Dissolved oxygen was good throughout the water column, ranging from 6.82 mg/L to 5.57 mg/L at the bottom (approximately 2.4 m). Total and fecal coliform analyses resulted in 300 colonies/100mL and 158 colonies/100mL, respectively. The benthos (organisms living on the lake bottom) were sampled using a petite ponar. The benthic macroinvertebrate community had 13 taxa. This community was primarily composed of pollution tolerant (nitrification) organisms. The pollution tolerant fly, *Chaoborus* spp., accounted for >50 % of the community composition.

Significance

Kings Lake is the attraction that lured most folks to this development. This lake provides boating, fishing, nature watching and other recreational opportunities. To control the rate of nitrification and loss of fishable, navigable water, land uses around the lake must change. Also, concerns about the effects on the biological community structure of the impoundment's water entering Gum Creek, a third order tributary of the Shoal River, exist.

Suggestions

The most prominent concern with this impoundment is nitrification. Two positive changes that would improve water quality are sewer taps for the residences and planting a buffer of native vegetation between the lake and lawns. Also, a low maintenance landscape of native grasses and other ornamentals would reduce or eliminate the need for lawn irrigation, fertilization and pesticide applications. Monitoring of water quality is encouraged.

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