# EcoSummary

Porter Lake, Washington County
August 28, 1995

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

## Purpose

Porter Lake was selected as a candidate reference lake due to the relative natural condition it was in. During the development of biocriteria, best attainable environments were selected for the development of metrics. These baseline data can then be used to compare and discern water quality and biological integrity to similar lakes in a given region.

## Background

Porter Lake is located in rural Washington County, approximately 6 mi east of Greenhead. This lake covers 943 surface acres and has two streams that flow into it; there is no outflow. Some of the lake is in state ownership with the balance in multiple party ownership. The topography in this region is characterized by hilly land that appears dissected due to relic sand dunes. The eroded stream valleys are 10 to 20 ft lower than surrounding land. Porter Lake is surrounded by a ridge of 100 ft elevation with a quick change in elevation (-20 ft) to the shore.

## Results

Various physical and chemical parameters were measured and assayed for water quality determination. Nutrient analyses data indicated low quantities of total nitrogen (<0.224 mg/L). Low levels of phosphorus were present, results of analysis found total phosphorus was 6 ug/L and orthophosphate was below detection of 4 ug/L. Chlorophyll a and algal growth potential assays were both low at 0.96 ug/L and 0.097 mg dry wt/L, respectively. The algal growth potential assay provides a good analysis of the presence of required nutrients for algal production. Transparency of the water column was good,

the Secchi was 5.9 m; this was equal to the deepest point found on the main body of the lake. Conductivity was 25 umho/cm and pH was 4.22 standard units. Alkalinity was below detection of 1.0 mg/L CaCO3. This soft, acid water was typical of ambient conditions in this region. Dissolved oxygen was good throughout the water column, >6.00 mg/L. Macrobenthos (those organisms that live on the lake bottom) were sampled with a petite ponar. Twelve ponar grabs, evenly spaced around the sublittoral zone (2 m to 4 m deep), were composited for enumeration and analyses. This community had a Shannon-Wiener diversity of 4.66, taxa richness of 42 and evenness was 0.86. Many of the taxa were pollution sensitive organisms. Riffle beetles of the genera Stenelmis and Microcylloepus were part of the benthic community and likely associated with stream inflow.

## Significance

Porter Lake is biologically diverse and relatively unaltered. The area not in state ownership has recently experienced development of residential housing. This is an ongoing trend in the rural, inland counties of the panhandle. These data provide a baseline assessment of this lake prior to any significant human impact. Data such as this is becoming increasingly difficult to obtain.

## Suggestions

As development is inevitable, stewardship of this ecosystem is imperative to the maintenance of good water quality and biological integrity of the lake. Leaving a 100 m buffer of natural upland vegetation and unaltered shore are perhaps the most significant land management practices that will lessen potential erosion, nutrient and bacterial impacts. The littoral zone has good stands of cypress and native herbaceous plants that filter both sediments and nutrients that may enter the lake. These plant communities should be left intact. Available suitable soils and proper maintenance of septic systems must be considered when choosing home sites. Periodic monitoring is encouraged.

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Published by the Florida Department of Environmental Protection, Tallahassee, FL.
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