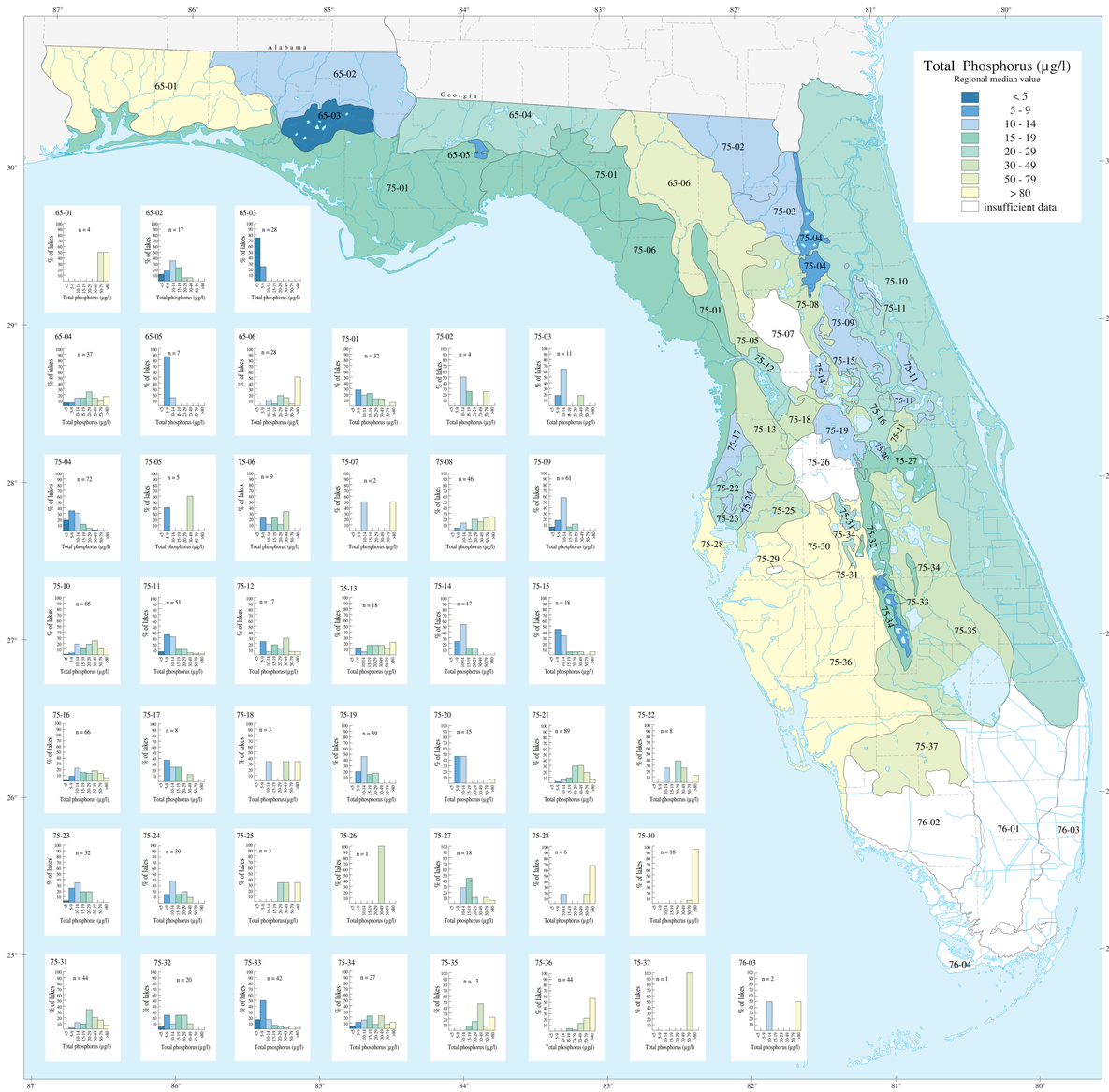
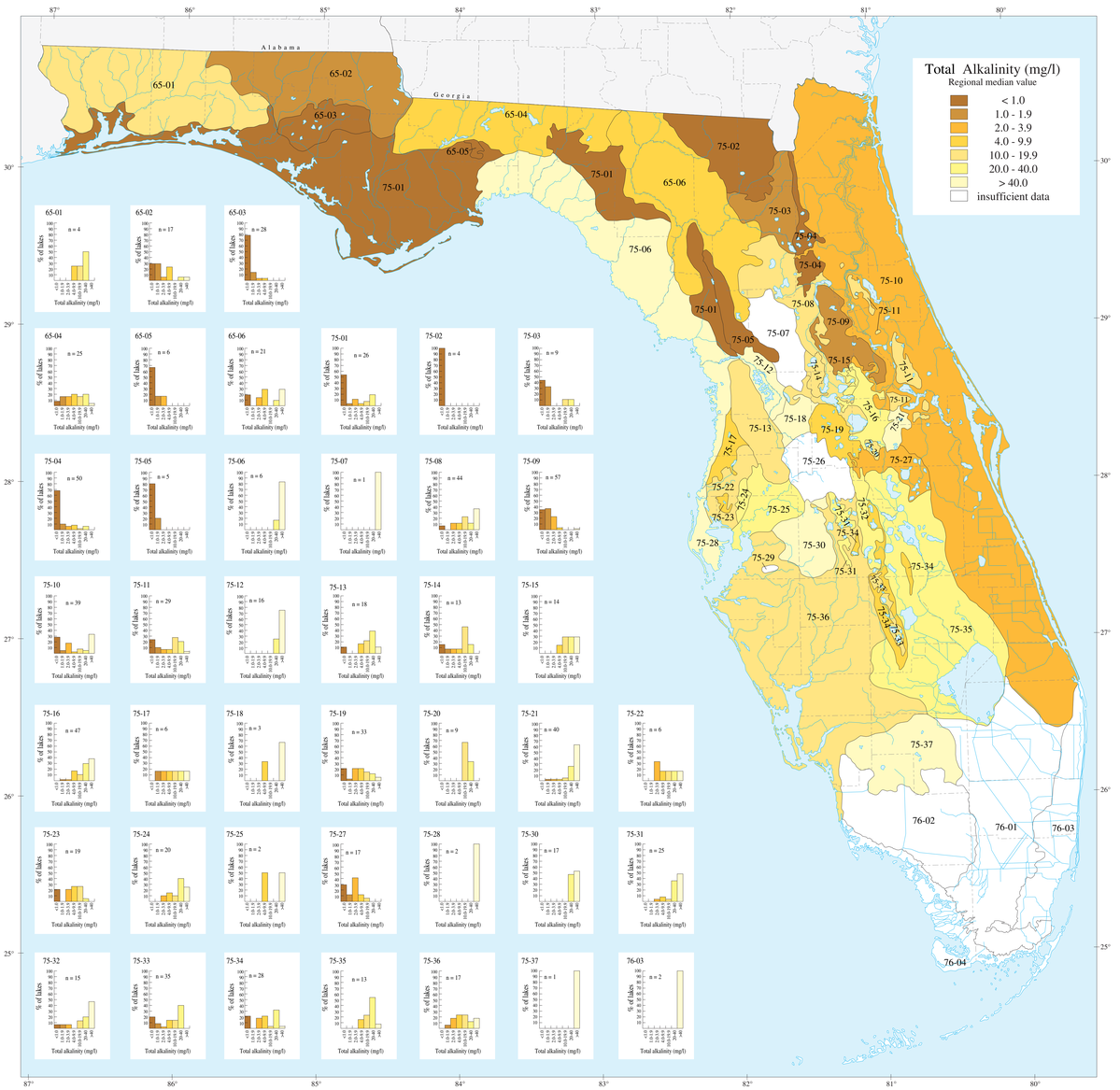
LAKE REGION CHARACTERISTICS

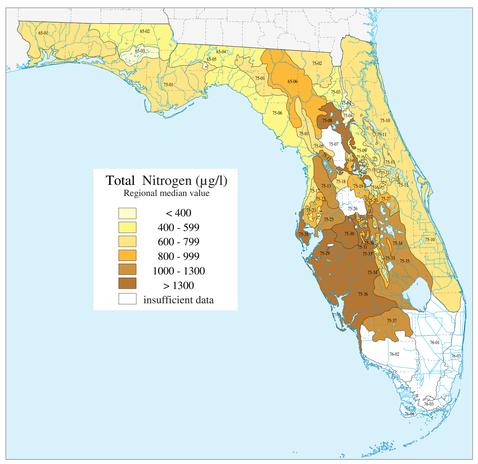
The maps below illustrate some of the regional differences in the characteristics of Florida lakes. An understanding of regional differences in the current status of lakes, as well as of potential or attainable conditions, is important for effective lake management. The maps are derived from mean lake data from 1133 lakes, sampled between 1979 and 1996. Most of the data (82%) are from lakes sampled between 1990 and 1996. The data are from the University of Florida (54%), the Lakewatch program (34%), the U.S. EPA's Eastern Lake Survey (8%), and from the U.S. Forest Service (4%). Lake data from the Florida Department of Environmental Protection, the Florida water management districts, and other sources were also assessed for the delineation of the lake region boundaries, but are not included in these chemistry maps or histograms due to differences in detection limits, sampling methods, duplication of lakes, or other quality control and comparison efforts. The maps are color-coded by the median value for each lake region. A median, or middle value, is used as a measure of the central tendency of a region's data because it is less skewed by extreme values than is the mean or average value. In regions where there were insufficient data (generally less than three lakes sampled), the regions were not color-coded unless there was confidence that the one or two lakes represented the region's total population of lakes or ponds. In some regions, the extrapolation of the median value to the entire region can give a misleading view of the spatial distribution of the actual lake values. However, the maps do help portray some of the statewide patterns and regional tendencies. The histograms on the phosphorus and alkalinity maps illustrate the frequency distribution, or range of variation, of the lake values in each region.



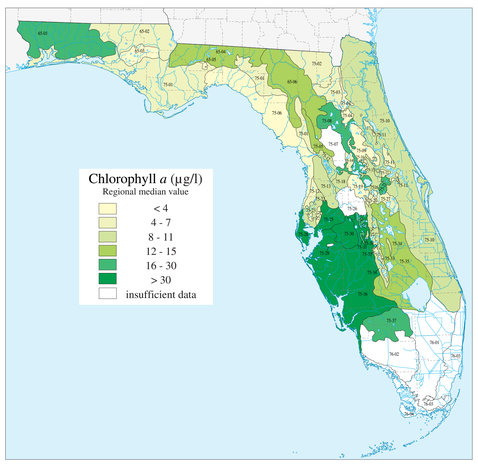
Total phosphorus is a measure of one of the primary nutrients that regulates algal and macrophyte growth in lakes. Phosphates can enter the aquatic system through atmospheric deposition, groundwater percolation, and terrestrial runoff. Phosphate loadings can be increased with inputs from sewage treatment plants, industrial sources, agricultural and residential runoff, or from phosphate mining and fertilizer processing activities. High phosphorus concentrations can accelerate the process of eutrophication. The highest regional phosphorus values are found in southwest Florida where phosphates are often naturally high (e.g., 75-30, 75-36), and the lowest regional values are found in some of the upland sandy ridges (65-03, 65-05, 75-04, and 75-33).



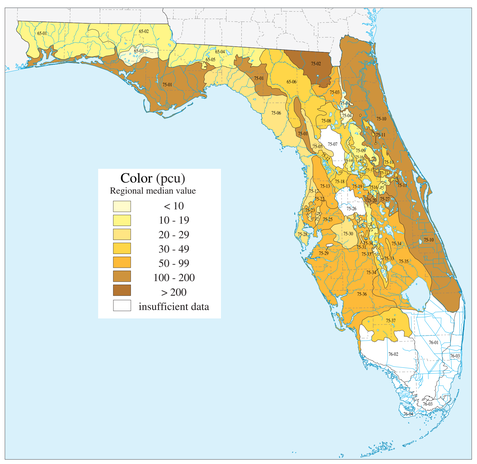
Total alkalinity measures the components in water, such as carbonates, bicarbonates, and hydroxyl bases that tend to elevate pH and buffer against increases in acidity. Although much of Florida is underlain by limestone, many lakes in the state are situated in overlying sands and are soft-water, acidic lakes with low alkalinity. Low alkalinity is found in many clear lakes of some of the sandy upland ridge regions (e.g., 65-03, 65-05, 75-04, and 75-09), as well as in some darkwater lakes in lowland regions (75-01, 75-02, 75-10). Higher alkalinity is generally found in central and southern Florida or in lakes with groundwater contacts. High alkalinity occurs in lake regions where limestone is near the surface (e.g., 75-06, 75-12), where lakes are limed for fish production (65-01), or in urbanized regions with a combination of groundwater influence and human disturbance (75-21, 75-28).



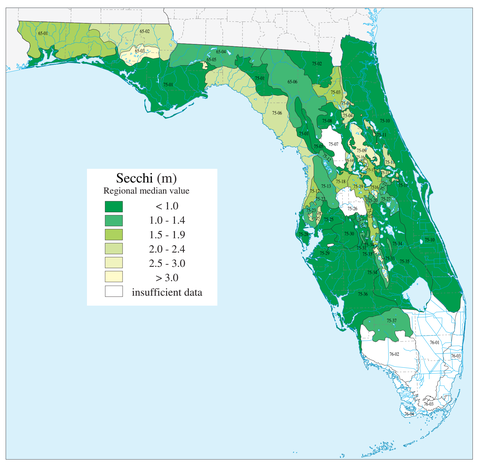
Total nitrogen is the combined measure of nitrate, nitrite, ammonia, and organic nitrogen found in a lake. Nitrogen is an important nutrient to many aquatic organisms, serving with phosphorus as the nutrient base for primary productivity. Nitrogen-to-phosphorus ratios are generally low for Florida lakes. Nitrogen levels of lakes are increased by inputs from sewage treatment plants, citrus and agricultural runoff, or other urban and residential sources. This can lead to algal blooms and subsequent reductions in dissolved oxygen.



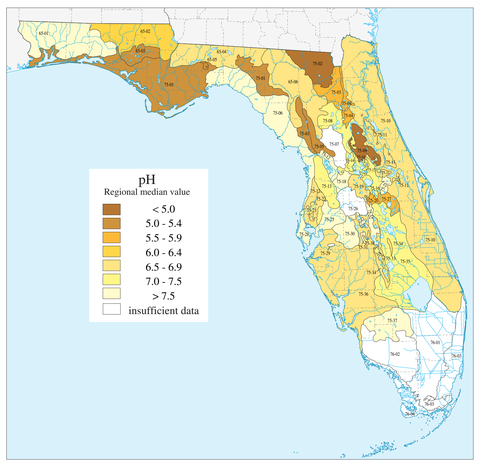
Chlorophyll *a* is the predominant form of photosynthetic green pigment found in plants. As an indicator of phytoplankton biomass, it is used to approximate algae levels in a lake. It is correlated with total phosphorus and secchi depth, and helps indicate the trophic condition of lakes. While many of Florida's shallow lakes have low chlorophyll *a* levels, a large part of the nutrient pool may be used by the larger aquatic plants called macrophytes.



Color or true color of a lake is a measure of the dissolved and colloidal substances in water that reduce light transmission. It is measured in comparison to a scaled series of platinum-cobalt unit (pcu) color standards. The decreased light penetration in high color or humic-stained darkwater lakes can reduce primary productivity and the extent of the littoral zone. The sandy upland ridges generally contain the lakes of lowest color, while most of the dark water lakes are found in lowland flatwoods regions or swampy areas that have peat and organic soils.



Secchi depth is a simple measure of water clarity or transparency. It is determined by the average of the depths at which a black and white disk disappears and reappears when viewed from the water's surface. The secchi depth is dependent upon the turbidity, color, and total suspended solids in the water, among other factors. The low-color lakes of the upland ridges (65-03, 75-04, 75-09, 75-15, 75-20, and 75-33) generally have the greatest secchi depths.



The pH of a lake is a measure of its hydrogen ion concentration or whether it is acidic or basic (alkaline). Many of Florida's lakes are acidic and have been acidic throughout their history, with the biological communities adapting to these conditions. Regions of high pH are mostly found in central and southern Florida, or in the north where limestone is near the surface (75-06) or the lakes are limed (65-01).