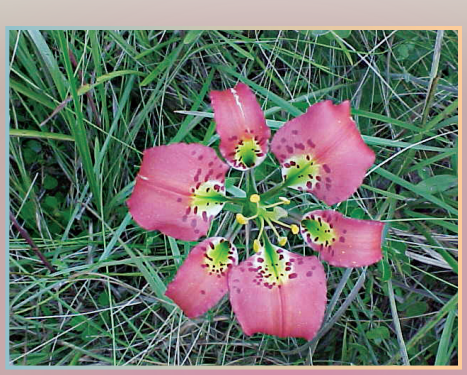
Prepared in cooperation with

Pinellas County, Southwest Florida Water Management District, and Tampa Bay Water

Flooding Frequency Alters Vegetation in Isolated Wetlands

Saw palmetto



Pine lily

Flooded-area frequency data combined with vegetation assessments improve our ability to assess the ecological status of wetlands

Introduction

Many **isolated wetlands**[1] in central Florida occur as small, shallow depressions scattered throughout the **karst topography** of the region. In these wetlands, the water table approaches land surface seasonally, and water levels and **flooding frequency** are largely determined by differences between precipitation and **evapotranspiration**. Because much of the region is flat with little topographic relief, small changes in wetland water levels can cause large changes in wetland surface area. Persistent changes in wetland flooding frequencies, as a result of changes in rainfall or human activity, can cause a substantial change in the vegetation of thousands of acres of land. Understanding the effect that flooding frequency has on wetland vegetation is important to assessing the overall ecological status of wetlands. Wetland **bathymetric mapping**, when combined with water-level data and vegetation assessments, can enable scientists to determine the frequency of flooding at different elevations in a wetland and describe the effects of flooding frequency on wetland vegetation at those elevations.

Five **cypress swamps** and five **marshes** were studied by the U.S. Geological Survey (USGS) during 2000-2004, as part of an interdisciplinary study of isolated wetlands in central Florida (Haag and others, 2005). Partial results from two of these marshes are described in this fact sheet.

Methods

Hillsborough River State Park (HRSP) Marsh has a maximum size of about 2 acres and a maximum depth of about 2.6 feet (fig. 1). This natural marsh is largely unaffected by human activities. W-29 Marsh has a maximum size of about 6.5 acres and a maximum depth of about 2.8 feet (fig. 1). This impaired marsh is located on a municipal **well field**. The effects of ground-water withdrawal in the well field and prolonged periods of less than average rainfall have lowered wetland water levels and reduced the frequency of flooding in this wetland.

The wetland perimeter was delineated at both marshes, and the perimeter elevation was determined (see Haag and others, 2005). Wetland stage (water level) was measured at staff gages, and bathymetric data were collected at many points throughout the interior of each wetland. Bathymetric contour maps were drawn, and wetland area and stored water volume were calculated.

Vegetation was assessed semiannually. At each wetland, a transect line was established from the perimeter to the deepest point in the wetland. Three vegetation zones were established along the transect line and were defined as **Transition**, **Intermediate**, or **Deep** based on their elevation relative to the elevation at the wetland perimeter. Vegetation was identified to species in fixed plots in each of the vegetation zones.

[1]Terms defined in the glossary are in **bold print** where first used in this fact sheet.