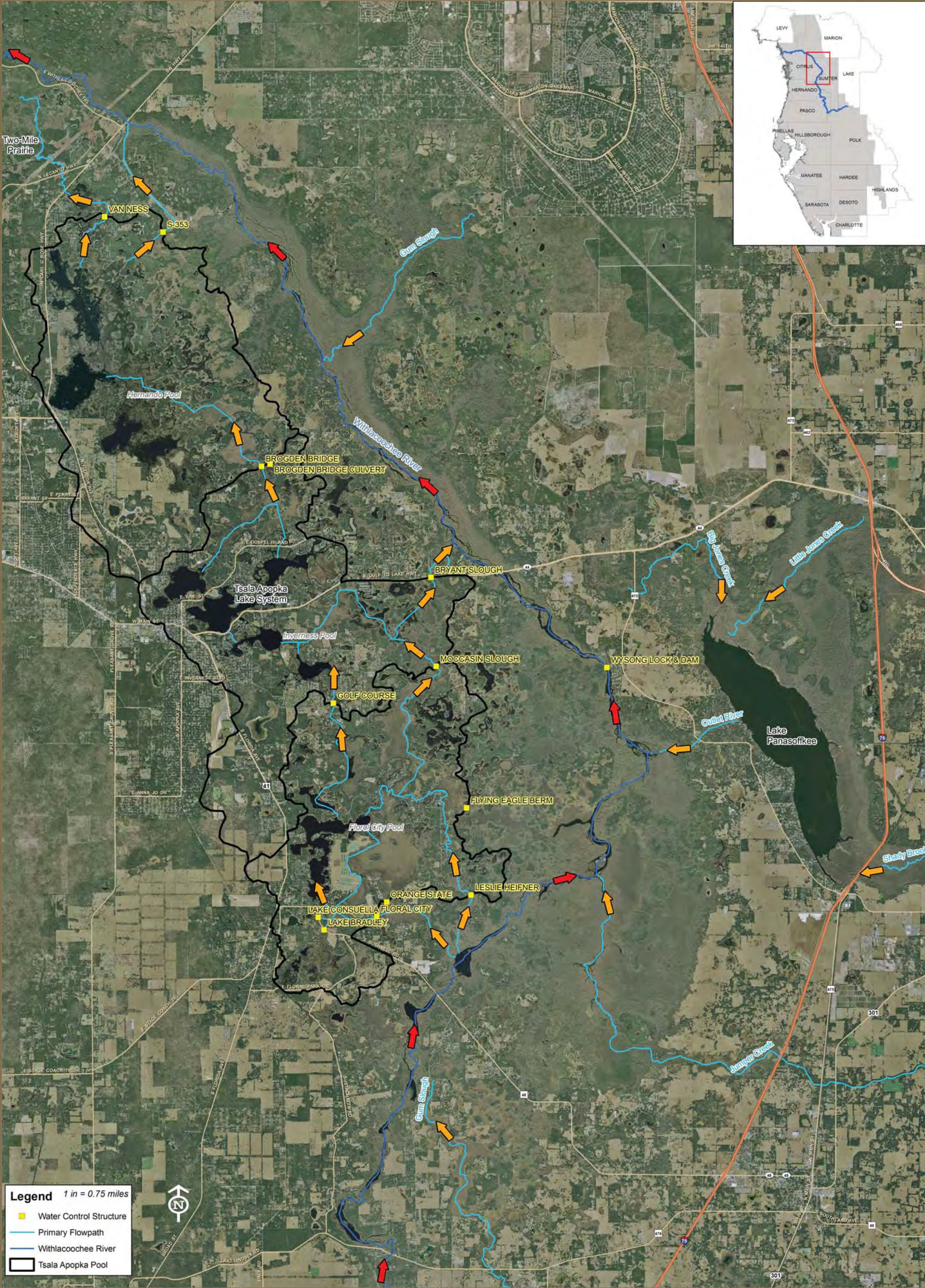


# WITHLACOOCHEE/TSALA APOPKA

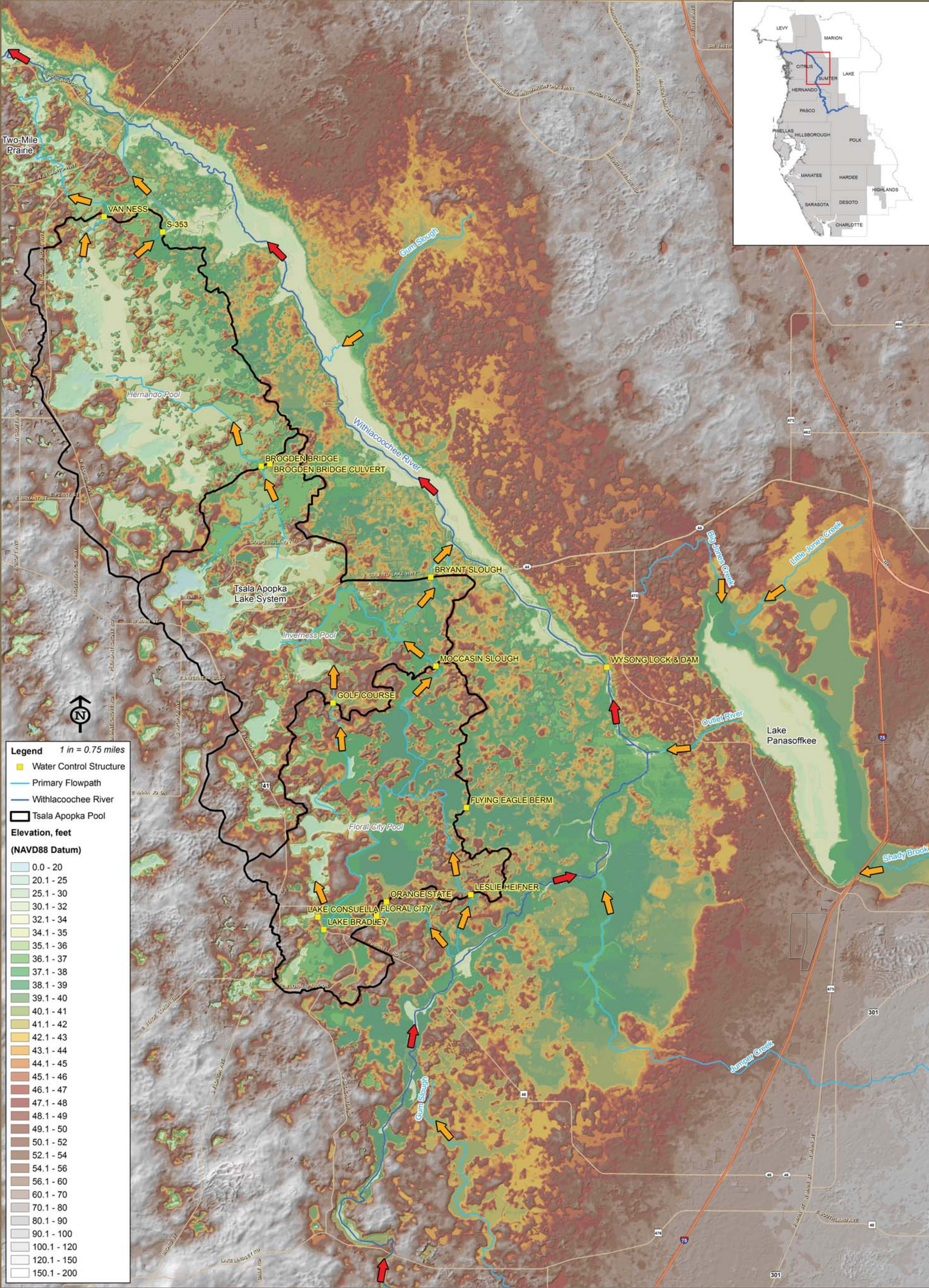
## Flowpaths/Structures/Pools





# WITHLACOOCHEE/TSALA APOPKA

## Digital Elevation Model

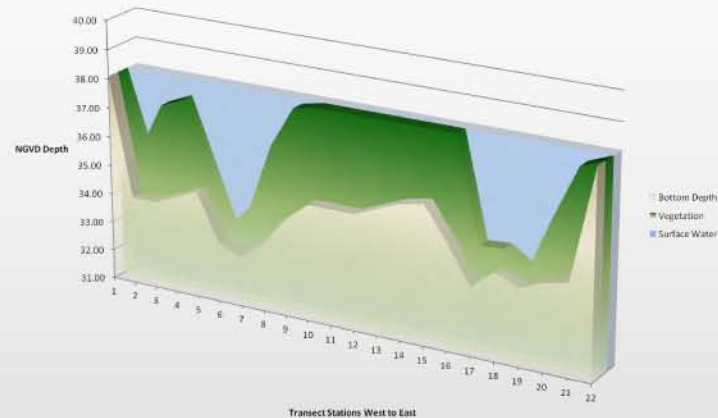




# Lake Panasoffkee Water Clarity, Water Quality and the Importance of Submerged Vegetation to Lake Health



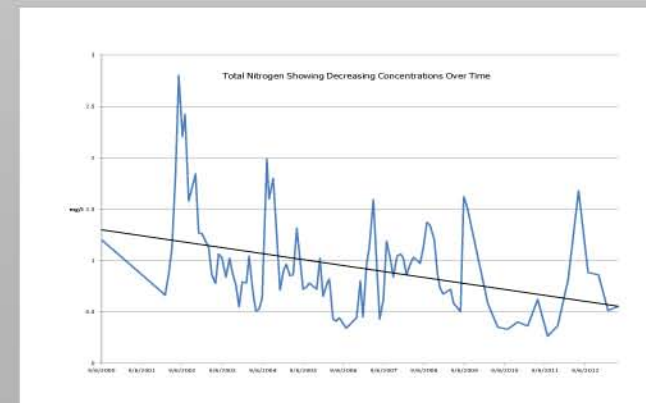
Lake Panasoffkee Aquatic Vegetation Distribution



Environmental Scientists and Chemists from the Southwest Florida Water Management District monitor water clarity and submerged vegetation and analyze water quality



Desirable aquatic vegetation is crucial to the health of Lake Panasoffkee, providing structure and cover for sportfish and forage fish as well as nutrient uptake for improved water quality and water clarity





# Native Submerged Aquatic Plants



Eel grass



Illinois pondweed

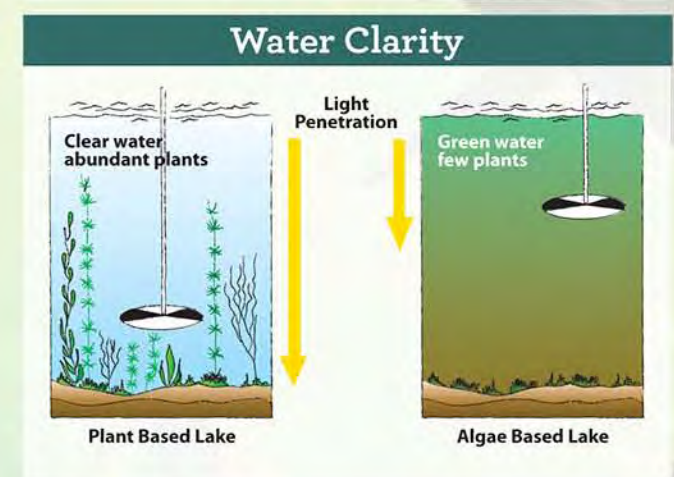
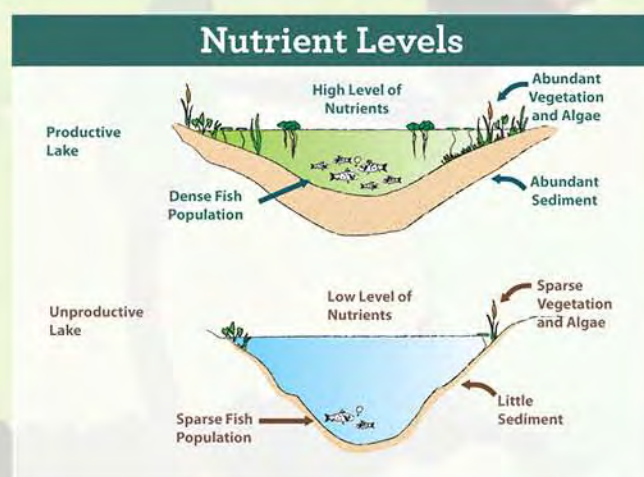
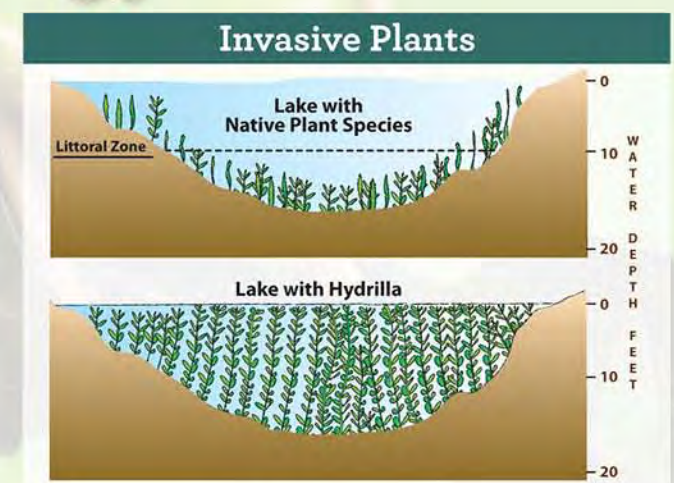
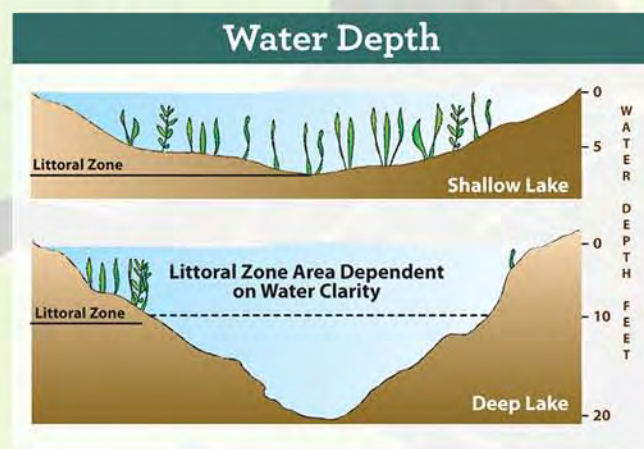


Southern Naiad

## Aquatic Plant Biology

### Factors Affecting the Growth of Aquatic Plants

- Lake morphology (depth)
- Water Chemistry  
(pH, alkalinity, salinity)
- Water clarity  
(color, turbidity, planktonic algae)
- Lake productivity  
(nutrient levels)
- Presence of invasive species
- Water level fluctuations



### Aquatic Plant Benefits

- Water Quality
  - Nutrient uptake
  - Reduce turbidity
  - Produce dissolved oxygen
- Shoreline stabilization
- Fish and wildlife habitat
  - Food
  - Shelter
- Aesthetics



Limpkin



Productive Lake Without Aquatic Plants



Productive Lake With Aquatic Plants



Fishing



# Invasive Aquatic Plants



Water hyacinth



Water lettuce



Hydrilla

## Aquatic Plant Problems

### Management Tools



Machines



Herbicides



Biological controls

### Unmanaged Invasive Plants Can Negatively Impact

- Boat Access/Navigation
- Water Quality
- Recreation & Associated Expenditures
- Flood Control
- Fish/Wildlife Habitat
- Native Plant Populations
- Property Values



Water Hyacinth – Lake Rousseau



Hydrilla – Myakka River



Water Hyacinth – Withlacoochee River



Hydrilla



Hydrilla – Withlacoochee River



Water lettuce – Shell Creek Reservoir



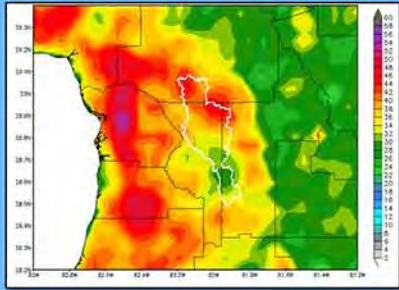


# Lake Panasoffkee Lake Levels & Area Rainfall Comparison

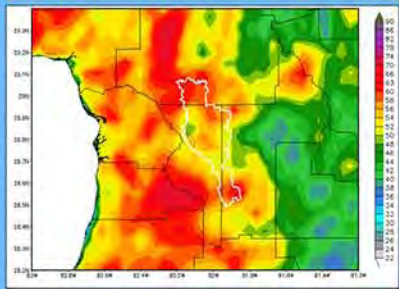
Mike Gittinger, National Weather Service, Tampa Bay Florida



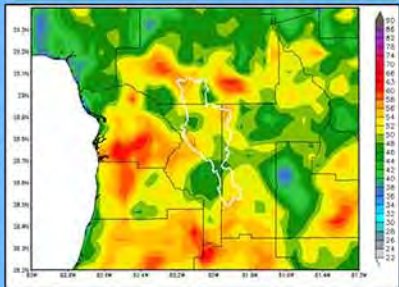
Rainfall Est. - Jun-Sep 2013



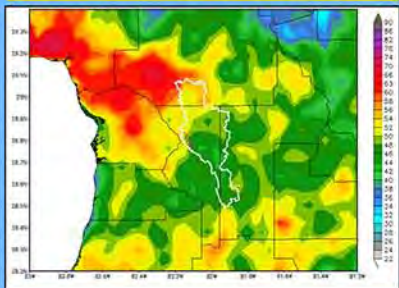
Rainfall Estimate - 2012



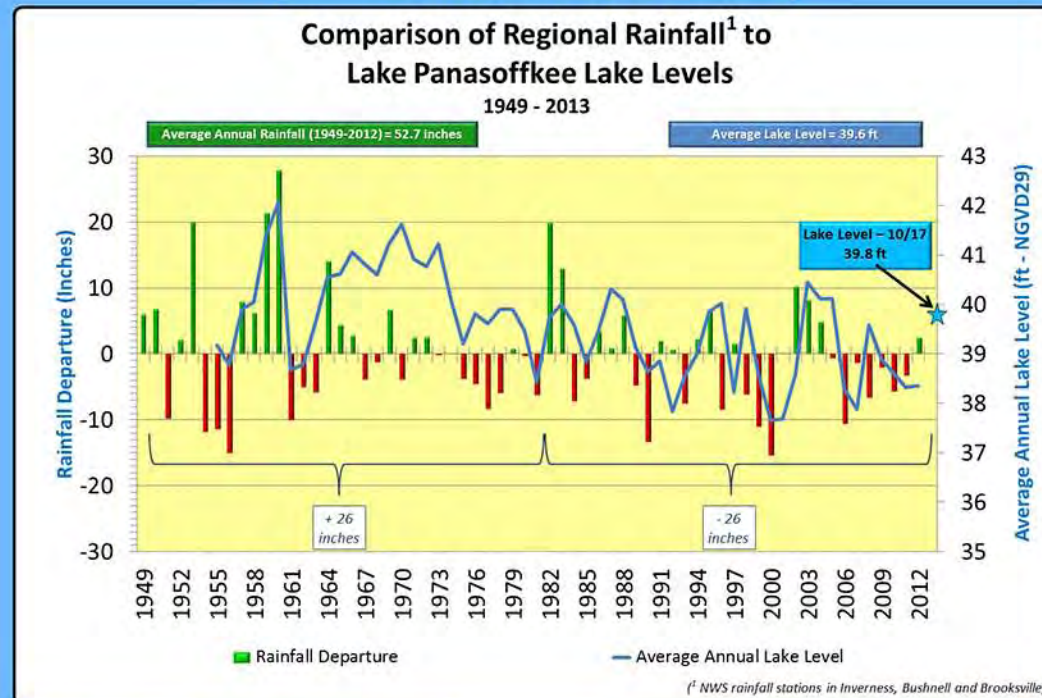
Rainfall Estimate - 2011



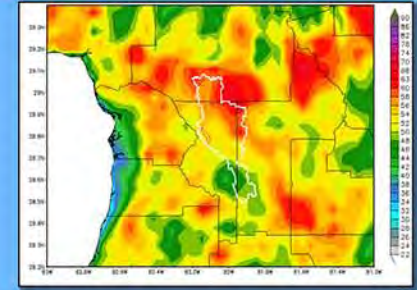
Rainfall Estimate - 2010



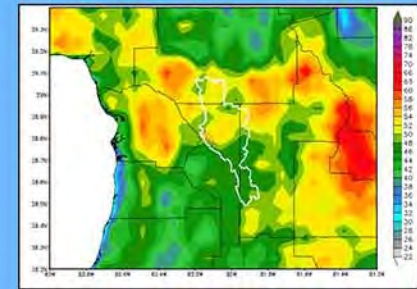
## Long Term Trends



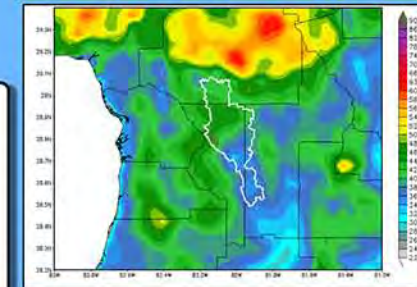
Rainfall Estimate - 2009



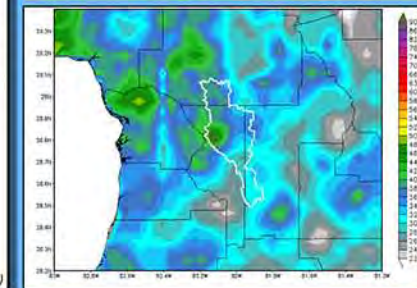
Rainfall Estimate - 2008



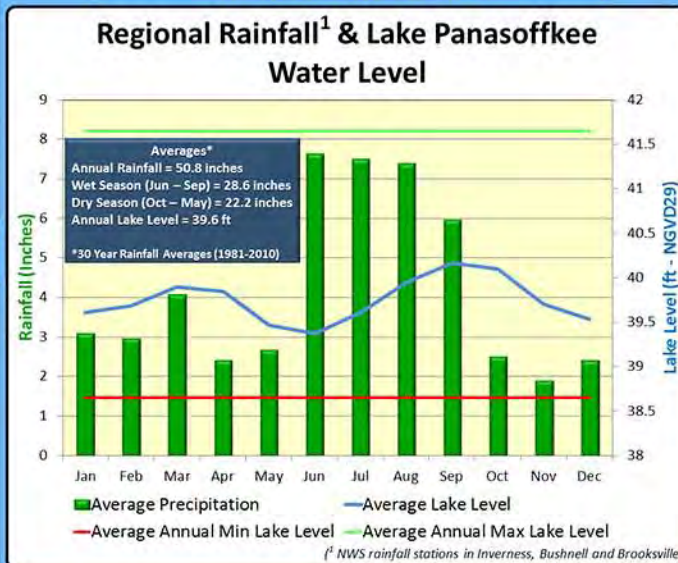
Rainfall Estimate - 2007



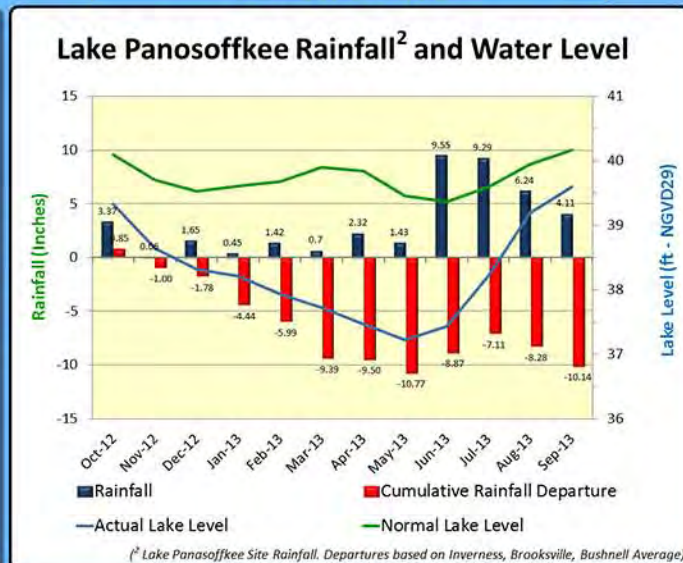
Rainfall Estimate - 2006



## Monthly Averages



## Recent Trends







# Lake Panasoffkee Fisheries

## Florida Fish and Wildlife Conservation Commission

### Division of Freshwater Fisheries Management Northeast Region



#### Introduction

Lake Panasoffkee has historically produced outstanding fisheries, particularly for redear sunfish or shellcrackers. Over time, Lake Panasoffkee experienced a decline in desirable native vegetation and fish spawning habitat, primarily due to the encroachment of tussocks (floating mats of vegetation, essentially floating islands). To restore the lake, the Florida Legislature appointed the Southwest Florida Water Management District (SWFWMD) as the agency responsible for overseeing restoration efforts. The Florida Legislature also created the Lake Panasoffkee Restoration Council to assist with restoration. The Council determined that the primary focus of restoration should be to restore historic fish spawning areas and open-water habitat by removing the tussocks. Another goal was to re-establish native submersed aquatic vegetation. The restoration was completed in 2008 at a cost of \$28,290,993.



Figure 1. Lake Panasoffkee before (left) and after (right) restoration.

#### The Role of DFFM

The Florida Fish and Wildlife Conservation Commission (FWC) has three divisions that are involved in freshwater fisheries: Habitat and Species Conservation (HSC), the Fish and Wildlife Research Institute (FWRI), and the Division of Freshwater Fisheries Management (DFFM). DFFM has been involved since the beginning of this project gathering information on the fisheries' response to restoration efforts. DFFM representatives have also served on the technical advisory group providing input to the Council. Since 1999, DFFM has conducted spring and fall night-time electrofishing surveys on Lake Panasoffkee. These data are used to make management decisions for the fishery (e.g., regulation changes, habitat improvements, access needs, etc.). The latest creel survey was conducted from November 2011 through May 2012 to estimate angler effort, catch, success, and harvest.



Figure 2. Electrofishing stuns fish so that FWC staff can gather critical fisheries data.

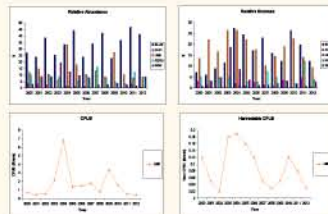


Figure 3. Summarized results of spring electrofishing data, from 1999 through 2012.

Species	Effort	SE	Catch	SE	Harvest	SE	Success	SE
Largemouth bass	7,611	324	4,391	410	631	104	0.53	0.05
Bluegill	1,372	214	1,114	248	934	236	0.62	0.15
Redear sunfish	1,129	194	1,129	308	960	393	1.04	0.41
Black crappie	1,031	138	576	68	154	51	0.30	0.06
TOTAL	12,146	217						

Figure 4. Summarized results of creel survey conducted November 2011 through May 2012.

#### For Further Information

Please contact the Division of Freshwater Fisheries Management, Northeast Regional Office.  
1239 SW 10<sup>th</sup> Street, Ocala, FL 34471  
(352)732-1225

#### Data Interpretation

The electrofishing data shows variable trends in several of the popular sportfish species (see Figure 6). The take home message from the electrofishing data is that sportfish consistently account for 30-60% of the total weight of fish sampled each year, and 50-80% of the total number of fish sampled. Largemouth bass catch rates (average number caught in a given amount of time) using electrofishing are variable but still provide important trend data. The electrofishing data indicates a robust sportfish population. The creel data (Figure 7) shows that Lake Panasoffkee received over 12,000 hours of angler effort in a six-month period in 2011-2012. Largemouth bass is the species most targeted, with bluegill, redear sunfish, and black crappie all receiving significant effort as well. Lake Panasoffkee produces good success rates, and the harvest of fish is not high enough to be problematic for the lake.



Figure 5. Anglers with a day's catch of shellcracker (reder sunfish) from Lake Panasoffkee.

#### Black Crappie

Black crappie (speckled perch) are a popular sportfish in Florida and account for the majority of angling effort on many lakes. Lake Panasoffkee was not historically known for having a notable black crappie fishery. Following the restoration project however, anglers began to report good catches of crappie in the winter months. In response to this improved fishery, DFFM evaluated the fishery to determine if a regulation was needed to protect this emerging fishery. Protective length limits can be beneficial if natural mortality is high, harvest is high, and if growth rates are slow. Some lakes in Florida have benefited from having a 10-inch minimum size limit placed on the black crappie fishery, so DFFM evaluated the Lake Panasoffkee crappie fishery to determine if this option would be beneficial.



Figure 6. Black crappie.



Figure 7. Length-at-age and length frequency for crappie collected on Lake Panasoffkee in winter 2011-2012

DFFM staff collected black crappie carcasses from anglers to determine length-at-age and growth rates. Based on the information gathered, a 10-inch minimum size limit would not be beneficial to the crappie fishery. Angling effort and harvest were not high enough to negatively impact the fishery. The survey found many fish over 10 inches in size, and these fish were reaching 10 inches in about 3 years. Because of the reasonably good growth rates and low effort, we believed that a 10-inch minimum size limit would not improve the crappie fishery. DFFM staff therefore elected not to enact a minimum size limit. It is the policy of DFFM to use the least restrictive regulations possible when managing fisheries.