

MY COMMUNITY, OUR EARTH

MIAMI

Investigating the Impact of the Canal System on South Florida

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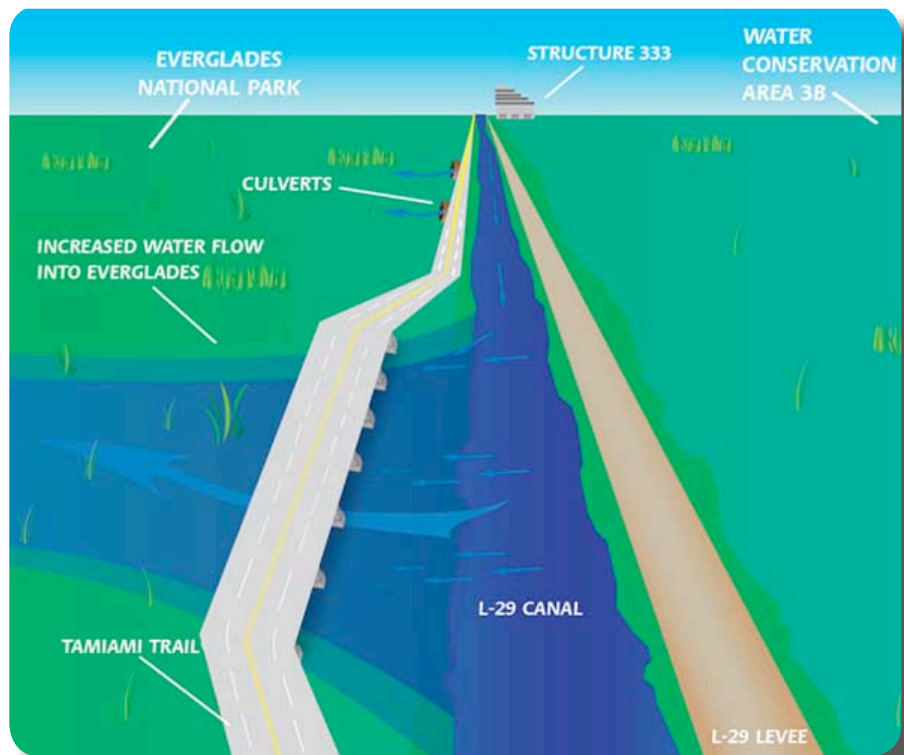
Problem Statement:

What effect has the canal system had on South Florida's ecosystems and what is being done to reverse these effects?

Abstract

The canal system was designed to prevent flooding and allow control of water distribution for South Florida, but it has had unforeseen ecological effects as well. In 1907, the Florida Legislature formed the Everglades Drainage District. By 1917, four major canals, had been dug from Lake Okeechobee to the Atlantic Ocean, which included the West Palm Beach Canal, Hillsboro Canal, North New River Canal, and the Miami Canal. Even with these canals in place, water related disasters were still unavoidable. In the 1930's and 1940's Florida experienced a severe drought and also multiple major hurricanes, which resulted in

massive flooding. It was obvious that the canals were not effective enough and the State of Florida proposed to surround Lake Okeechobee with a high levee and created a system that allowed better water management. Between the 1950's to the 1970's the system was created to control floods and water supply. This regional system contained 160 drainage basins, gates, pump stations and almost 2000 miles worth of canals and levees. This new and improved flood control system was a success and humans were able to control when and water the water was being released. Unfortunately, the canal system had unpredicted ecological effects on South Florida and primarily on the Everglades. The littoral marsh area around Lake Okeechobee was significantly reduced, discharge to the Everglades was significantly reduced, and discharge to coastal estuaries significantly increased. Since the Everglades,



Taken from www.evergladesplan.org

commonly known as the River of Grass, completely depends on the natural flow of water from the North, the Everglades faced a new set of issues, such as increased salt water intrusion from lack of water supply, degradation of water quality, and significant loss of Everglades habitat. Years later, it was concluded that the canal system is needed, but we must alter the plan for sustainability before we destroy the Everglades completely. In 1989, Congress approved the authority for the Modified Water Deliveries to Everglades National Park project. This would address the barrier made by Tamiami Trail and the unnatural water flow into the Shark River Valley Slough. The Tamiami Trail was originally built in the 1920's to connect Tampa to Miami, but it creates a few problems to the Everglades. First of all, it creates a barrier by blocking water flow from the North into the Everglades and also water levels must be kept significantly lower on both the north and south side of the road, to keep the road from being regularly inundated with water. In the 1990's the plan began for ecosystem restoration. The first

phase would create a mile long, elevated bridge, to increase water flow under Tamiami Trail, into Everglades National Park and Florida Bay.. The bridge was under construction for four years, before opening to motorists on April 16, 2013. Miles of road on either side of the bridge are also being reinforced to be able allow higher water levels in the area.

The map above is taken from the Everglades Plan page (www.evergladesplan.org) and shows the elevated bridge along Tamiami Trail and the effects on the water flow.

The Friends to the Environment group saw the effects of these canals everywhere we visited. We visited Biscayne National Park, Everglades National Park-main campus, Everglades National Park-Shark Valley, The Deering Estate at Cutler, Ron Ehaman Park and Miami Dade College Environmental Preserve. It is obvious that all of the South Florida ecosystems have been affected by this change to the natural hydrology. The hardwood hammocks,

Canal adjacent to U-Pick vegetable field



Water control structure used to pump return freshwater flow under Old Cutler Road as part of the Cutler Slough Rehydration Project at the Deering Estate



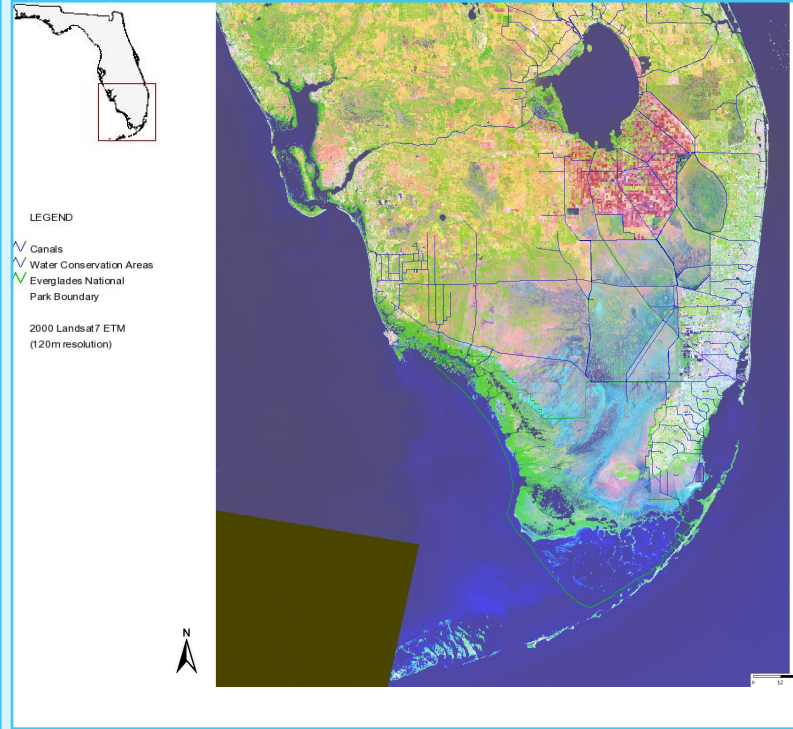
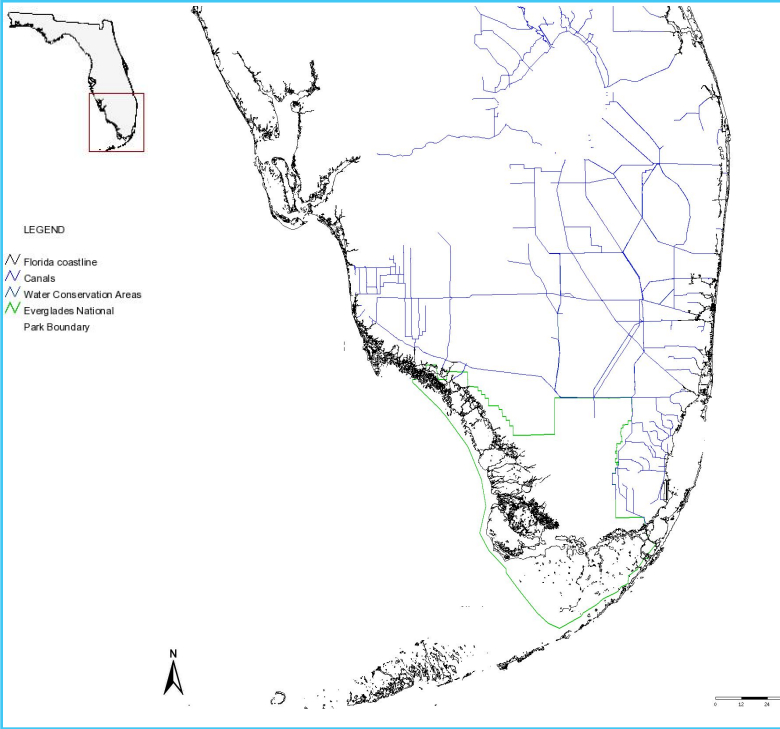
Cutler Slough rehydration canal adjacent to water control structure



wet prairies, sea grass beds, and dwarf mangroves have all been affected by the loss of natural freshwater flow due to the canal system. The natural flow to these ecosystems was changed many, many years ago and the historic natural flow of freshwater no longer exists in most cases. Instead each of these ecosystems is at the mercy of when the canals are discharged. In a few cases, the canals are discharged at one point source into the bay and this has its own disastrous effects. Although most of the ecosystems we visited looked healthy to us, they have all been altered by the lack of freshwater flow and have experienced negative changes. The Friends of the Environment Group talked about how the natural flow of water has been changed and the negative effects it has had. We also talked about how the new plan would allow the water to flow freely into the Everglades and how this will hopefully help to reverse the negative effects of the canal system over the last 50 years.

Map of canal system in South Florida

Source: http://fcelter.fiu.edu/data/GIS/interactive_map/



Water Control Structure for Cutler Slough Rehydration Project.



Overview of Cutler Slough Rehydration Project



Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo and the GIS User Community

