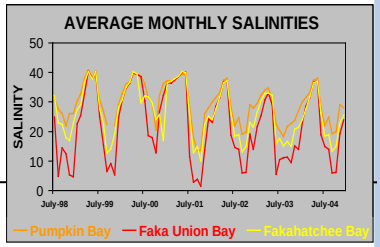
March 2009

Rookery Bay Reserve
Finding Solutions

Restoration Effects on Fisheries in the 10,000 Islands

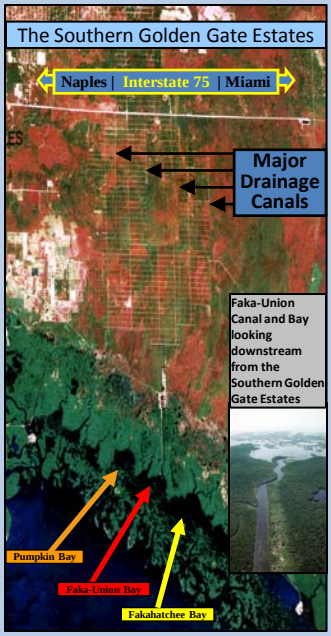
In the 1960's, construction of a large residential development called Golden Gate Estates began in southeast Collier County. The southern portion of this enormous housing project on the western edge of the Everglades ultimately failed, but not before a network of roads and 58 miles of canals were constructed. The new canal system altered the natural pattern of freshwater sheetflow to the bays and estuaries downstream by directing freshwater runoff through the Faka Union Canal to the Faka Union Bay and out to sea. This resulted in a distinct decrease in salinity values in the Faka Union Bay and higher prolonged salinities in adjacent estuaries such as Pumpkin Bay , Button-wood Bay and the Black-water River. The altered salinity levels have changed these estuaries which provide a nursery habitat for many fish, shellfish, and other marine life with significant commercial and natural value. Additionally, the wetlands in the region no longer serve as a filter for freshwater discharges and provide less of a year-round source for recharging the groundwater that supplies our municipal drinking water.



Project Leader:
Patrick O'Donnell

Funding:
FDEP/RBNERR, FORB, Volunteer staff

Project Dates:
July 1998 – 2020



Fisheries Research

In order to improve the distribution of water to the bays and the aquifer, affected lands were purchased by the State. The South Florida Water Management District started removing roads and plugging canals in 2006. Culverts are being constructed under the remaining roads that interfere with surface water flow. Ideally, freshwater will reach the estuary evenly across the entire region causing less stress on the fisheries.

The Research:
Water chemistry data, including salinity, dissolved oxygen levels, and water temperature, are being collected with specialized data loggers. Fisheries data obtained through monthly trawls in each of the three bays document the population dynamics in a variety of fish species, as well as commercially important invertebrates such as stone crabs, blue crabs and pink shrimp. This baseline data will continue to be monitored throughout the restoration project to enable scientists to measure the changes resulting from restoration efforts.

Regional Application:
Post-restoration data will be compared and contrasted with the baseline data. Documenting the effects of salinity changes on estuarine habitats will help set standards for future restoration efforts.

Rookery Bay, located in southwest Florida, is recognized as one of the few remaining pristine, mangrove-forested estuaries in the U.S. As part of the National Estuarine Research Reserve System, it serves as an outdoor classroom and laboratory for students and scientists. For more information, visit www.rookerybay.org.