

## FISH COMMUNITY RESPONSE TO INFLOW VARIATIONS IN TWO IMPOUNDED AND ONE UNIMPOUNDED TIDAL TRIBUTARY TO TAMPA BAY, FLORIDA

Freshwater inflow has a pronounced influence on the environment of tidal rivers, directly affecting the riverine environment in terms of velocity and also influencing habitat availability, salinity distributions, nutrient supply, dissolved oxygen levels, sedimentation and more. A number of studies have examined the spatial and temporal variations in fish community structure associated with inflow variations in tidal and estuarine systems (Dayton et al., 1992; Livingston, 1997; Livingston, 1987, Araujo et al. 1999); however, little research has been published on fish community response to inflow variations in Southwest Florida tidal rivers. The main objective of this paper was to examine the effects of inflow deficits on the fish community in three tributaries of the Tampa Bay Estuary and compare the responses of inflow deficits in an unimpounded and two impounded tributaries to Tampa Bay. Fisheries samples collected with small mesh seines set along river banks in three tidal tributaries of Tampa Bay, Florida were analyzed to assess variations in community structure associated with variations in freshwater inflows. An inflow metric was developed to characterize inflows based on historic monthly averages resulting in a derived index describing differences from “expected” monthly inflow conditions. Multivariate analyses were used to describe changes in community structure associated with inflow deficits. Results suggest that changes in community structure were constrained to the upper reaches of the tidal portions of these systems with estuarine resident species driving differences between samples collected during times of inflow deficit from other samples. Increased abundances of *Menidia* spp. (silversides), which are classified by genus since hybridization is common (Tsou and Matheson 2002), and *Anchoa mitchilli* (Bay Anchovy) and decreased abundances of *Trinectes maculatus* (Hogchoker) and the stenohaline freshwater *Notropis petersoni* (Coastal Shiner) and in the Hillsborough River, *Labidesthes sicculus* (Brook Silverside). The Tampa Bypass Canal did not respond like the other systems and showed no separation of community structure based on inflow deficit. The results in the Alafia and Hillsborough Rivers did not suggest deleterious effects of inflow deficits on fish community structure but rather opportunistic resource utilization of the areas of these rivers associated with the freshwater interface. As salinities increased, estuarine species increased their abundances in these reaches and when inflows returned to normal, freshwater species returned to the habitat. Understanding the response to inflow variation is an important aspect of managing these tidal tributaries as demand increases for potable freshwater supply in Southwest Florida.