GOAL OF RESEARCH:

- Began study in 2008 to map distribution of Polymesoda caroliniana among mangroves at low tide
- Dr. Lynn Wingard conducting live counts of Polymesoda caroliniana

A habitat association between Polymesoda caroliniana and several plant species including: Cladium jamaicense, Acrostichum sp., Rhizophora mangle, Laguncularia racemosa, and Avicennia germinans is being observed in the Shark River and Harney River Basins along the Southwest Coast of the South Florida estuaries. Site surveys conducted in the spring of 2008 within the Shark River system of southwest Florida found “nests” of Polymesoda caroliniana closely associated with the prop root structures of Rhizophora mangle and Laguncularia racemosa. The mangrove forests are under-storied by Acrostichum sp., C. jamaicense, and Rhizophora mangle. The mangrove

cores taken at the mouth of the Harney River and the north leg of the Shark River in the summer of 2005 were found to have P. caroliniana debris in abundance at a depth of 114-165cm, and 19-84cm respectively, which is an indicator of freshwater to upper estuarine environment based on modern observations. Debris was also found in core samples in the Lostman’s River Second Bay area at a depth of 72-76cm. The depositional rates are currently being determined for these cores (Wingard, et al., “Descriptions and Preliminary Report on Sediment Cores from the Shark River Coastal Area, Part II: Collected July 2005, Everglades National Park, Florida,” OFR 2006-1271). Evidence of a substantial change in the outflow regime was seen in the mid-system cores from the Harney and Shark Rivers. The lower portions of both cores were deposited in freshwater environments, with no indicators of estuarine influence; however, with a loss of the larger freshwater fauna in the upper portions of the cores, a shift toward more estuarine conditions is evident.

RESEARCH ACTIVITIES:

- Map the distribution of the plant and animal species documented the local associations between animal and plant species and begin to quantify population size at individual sites
- Conduct experiments to determine the salinity tolerances of P. caroliniana

We are currently conducting salinity tolerance experiments on Polymesoda caroliniana in our experimental marine systems in Resion VA. P. caroliniana is a resident salt marsh species as they are opportunistic feeders, as well as being saprophytic and tolerant of a broad range of water conditions. To date a definitive salinity tolerance range has not been determined. The environment in which we are conducting tests closely mimics the native environment including most of the plant species found in the native environment.

The observed associations between P. caroliniana and plant species such as C. jamaicense, Acrostichum sp., and Myrica cerifera, may provide both short term indications, and longer term indications of changes in the salinity regimes within these wetland environments. The plant assemblages will respond quickly to environmental changes where P. caroliniana populations will be able to withstand slightly broader ranges of salinity regimes. These assemblages and the apparent associations are an indicator of the overall salinity changes due to sea level changes as tidal exchanges move higher into the estuaries and freshwater wetlands.

For additional information on south FL research refer to: http://sofia.usgs.gov