Introduction: The Ecosystem History of South Florida's Estuaries Database (developed in Microsoft Access) contains Greater Everglades Ecosystem field data from 1995-2011. This database was started as a way to compile information in order to monitor change over time in South Florida's estuaries. By observing change in the modern environment and analyzing patterns in sediment cores, a baseline for restoration efforts can be established.

Data Collection: Modern field data and core data are collected from site locations including areas in Florida Bay, Biscayne Bay, and the Southwest Coast of Florida. Site surveys are performed and physical samples such as petrograms, grid samples, plankton tow, grab samples, and/or sediment piston cores are collected. From the physical sample, live and debris molluscan species, vegetation, and sediment descriptions are noted.

Data Entry: Recently, the focus shifted from noting the presence of live species to counting the number of live individuals in a fixed sample to provide an estimate of the density of live species at different sites. In order to make these live counts easier to access, the Modern Field Information form in the database was modified. In the original database the presence or absence of live and debris species was recorded with a checkbox system, which means any live counts were typed out in a memo box in the subsample form. The revised form, featured below, has a count table. General site information and water chemistry data is entered on the Modern Field Information form.

Live and debris molluscan species and counts are entered along with the corresponding sample they came from and additional comments. There are also tabs for sub-aquatic and terrestrial vegetation data.

Query Design: The query function in Microsoft Access allows the user to pull out the information they are interested in from multiple linked tables in the database. Specific and complex questions can easily be answered with queries.

A simple question might be: What and how many live species were collected in plankton tow samples?

A more complicated question might be: How does the density of observed live Centium spp. compare to the salinity measured at the time of collection?

From the table, a density estimate for live Centium spp. can be calculated for each sample. These graphs display the density estimate (per m$^2$) compared to the salinity (ppt) at the time of collection for each observation.

Here is another example, using Anomalocardia auribana:

Why is this useful? The Ecosystem History of South Florida's Estuaries Database provides a record of living mollusks and the conditions in which they are found. This modern mollusk dataset is used to estimate salinity in sediment cores by applying the cumulative weighted percent (CWP) method detailed in Wingard and Hudley (2011). These paleosalinity estimates are coupled with linear regression models to estimate the flow, stage, and salinity conditions before anthropogenic influences in South Florida estuaries (Marshall and Wingard, 2012). These results help agencies responsible for implementing the Comprehensive Everglades Restoration Plan (CERP) to develop restoration performance measures and salinity targets.

What's next? We will continue our collection of modern field samples and focus on the number of live collected individuals in a known sample size. Using this modern density and salinity information in the interpretation of cores, we can better reconstruct the paleoenvironment knowing the salinity preference of specific mollusk species.

Acknowledgements: This research was funded by the U.S. Geological Survey Everglades Priority Ecosystems Science (EPS$^2$) effort, coordinated by G. Ronnie Best, USGS. We would like to thank Everglades National Park and Biscayne National Park for their cooperation in this study; the work described here was conducted under NPS Study numbers EVEN-00542 and Bisc-02027. Special thanks to Dr. Lynn Wingard and Jim Mularz. For project information, and publications go to: http://sofia.usgs.gov/

*The original and new version of this project, the Ecosystem History of South Florida's Estuaries Database can be found at http://sofia.usgs.gov/exchange/flowehist/*.