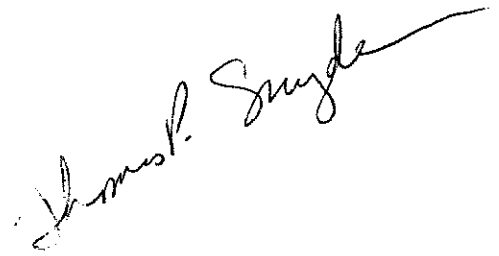


Sabbatical Leave Report
Thomas P. Snyder
Biological Sciences
Fall Semester 2004
January 21, 2005



The goals of my sabbatical leave were the following:

1. Learn the techniques of pollen analysis for use in a paleoecological study of the vegetative history of San Salvador, Bahamas.
2. Collect pollen from as many species of plants as possible from San Salvador and prepare digitized photomicrographs of the pollen for a standard Bahamas Pollen Reference Collection.
3. Take sediment cores from several lakes on San Salvador for pollen analysis.
4. Begin analysis of the cores.

The month of September was spent at Michigan Tech reading about the techniques used in paleoecological pollen analysis and collecting and building equipment to be used on San Salvador for core sampling and pollen collection. I then spent five weeks in the laboratory of Dr. Phil Camill at Carleton College in Northfield, MN. Dr. Camill is a well recognized paleoecologist. While at Carleton I learned the techniques used in opening sediment cores that I had previously collected on San Salvador, sampled the cores for pollen analysis and charcoal analysis, learned the techniques used to prepare fossil pollen from cores and prepped pollen samples from the cores, learned the techniques for charcoal analysis and did charcoal analysis of two cores. I was fortunate in receiving from a colleague at Florida Southern College, Dr. Eric Kjellmark, microscope slides with identified pollen from 125 species of Bahamian plants. Using these slides I became familiar with the characters used to identify plants to species from pollen and I prepared about 650 digitized photomicrographs of the pollen reference slides to use in a digitized Bahamas Pollen Reference Collection. These images are now available on CD.

The middle two weeks of November were spent at Michigan Tech organizing and preparing for three weeks of field work on San Salvador. I was on San Salvador from November 21 until December 11 doing field work. The field work was highly successful. With assistance I took multiple cores in three lakes on San Salvador, Stout's Lake, Storr's Lake and Triangle Pond. Both the Stout's and Storr's Lake cores reveal an interesting history of increasing water level and major geochemical changes from marine salinities and ocean connections to the current lacustrine, hypersaline condition. While on San Salvador I made contact with archeologists who are studying the pre-Columbian Lucayans and was able to coordinate my sampling with their programs to obtain dates on the marine to lacustrine transition in lakes on the island. The equipment I took to San Salvador allowed for deep water coring and the cores from Stout's Lake contain sediments of at least 3,000 years. The archeologists and I hope to

collaborate in a multidisciplinary, funded study of the paleoecology of the island and the effects of both Lucayan and colonial era settlement on the vegetation.

Pollen collection on San Salvador was done both by taking polliniferous material from identified specimens in the Herbarium of the Gerace Research Center and by field collection of fresh material. Despite the island being very dry, it had not rained since hurricane Frances hit the island with 140 mph sustained winds on September 2 which severely damaged the vegetation, by concerted effort in the field I was able to collect and identify flowers from 92 additional species that were not represented in the pollen slides I received from Dr. Kjellmark. My collections combined with Dr. Kjellmark's represent about one half of the species of flowering plants on the island but about 90+ percent of the species whose pollen is likely to occur in sediment cores, and represent an excellent start for the digitized Bahamas Pollen Reference Collection. Slide preparation from the material I collected is currently underway in my laboratory.

The time spent in the field on San Salvador allowed me to visit many sites and habitats I had not had the opportunity to visit on previous trips to the island with students. I discovered several sites to which I will take students during my BL4090 field trip in March that will significantly improve that trip for students. The weeks I spent collecting and identifying plants also improved my field botany knowledge which will aid my course as will the general knowledge I gained concerning the history and geology of the island. This March I will involve my class directly in my paleoecological research on the island by having the class ground truth the vegetation surrounding Stout's Lake.

I consider my sabbatical as highly successful and look forward to applying what I learned in my paleoecological studies and my teaching.