The Gerace Research Center, San Salvador, Bahamas, 1971-2007

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ABSTRACT

The Gerace Research Center on San Salvador is the College of The Bahamas's center for the study of archaeology, biology, geology and the marine sciences. Founded on an abandoned United States naval base in 1971, the field station served as a point of convergence for scientists from a number of academic institutions, and became an institute of COB in 2001. The Center offers courses in archaeology, tropical botany, ornithology, oceanography, marine biology, and geology at the undergraduate, graduate, and post-doctorate levels and has produced well respected research that has been shared with fellow scientists, government agencies, and the Bahamian community through publications in scholarly journals; participation in and hosting of research conferences and symposia; and the production of field guides, as well as local and regional resources. Through the facilitation of field research for students and scientists from around the world, the Gerace Research Center continues to make a substantial contribution to the ecological, archaeological, and geological sciences and to the preservation of Bahamian ecosystems.

INTRODUCTION

The Gerace Research Center (GRC), formerly the Bahamian Field Station, on San Salvador is a center for the study of archaeology, biology, geology and the marine sciences, and is the largest such institution in the Caribbean. Founded in 1971 by a consortium of colleges in universities in New York State known as the College Center of the Finger Lakes (CCFL), it operates under a joint venture relationship with the Ministry of Education. The Gerace Research Center leases facilities of an old United States naval base on the north shore of San Salvador from the Ministry of Education, providing tuition scholarships for Bahamian students to attend colleges and universities in the United States. Over the years the number of such scholarships has increased, supporting a present total of 29 undergraduate and three graduate-level students, an allotment worth about $750,000 dollars.

In 1988, the College Center of the Finger Lakes divested itself of the business on San Salvador for liability reasons, and a new, non-profit Bahamian association, the Bahamian Field Station (BFS), was formed to continue the operation. While maintaining its joint-venture relationship with the Ministry of Education, during the 1990's the supervision of the Bahamian Field Station was placed more directly under the auspices of the College of The Bahamas (COB), with several

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administrators from the COB sitting on the board of the BFS. Finally, in the Fall of 2001, COB became the sole owner of the company and the name was changed to the Gerace Research Center.

Since the GRC first came to the abandoned naval base at Graham's Harbor, San Salvador in 1971, extensive changes and improvements have been undertaken to transform these facilities into an educational and scientific research institution. Today the GRC can house over 100 students in its dormitories, and nearly 80 professors, scientists, and researchers in its motel-type rooms. A full service cafeteria feeds residents three meals per day, and academic and scientific activities make use of 10 laboratory classrooms, an auditorium, a conference room, a sea-water wet lab, a library, a comparative specimen repository, and a molecular lab is in the process of being equipped.

Since its founding in 1971, the objectives of the Gerace Research Center have been three-fold: education, research, and the dissemination of scientific information.

Figure 1: Dr. Keva Bethel, President of COB, Dr. Donald T. Gerace and Kathy Gerace.

EDUCATION

Over the years the GRC has offered courses in archaeology, tropical botany, ornithology, oceanography, marine biology, and geology at the undergraduate, graduate, and post-doctorate levels. The GRC's educational objective has been met in two ways: through GRC sponsored courses and through courses offered by specific colleges and universities. During the 1990's the Center's curriculum was expanded to include a number of educational programs for non-traditional students. These include Elderhostel programs for persons over the age of 55 years; museum-sponsored field

trips that would fall under the philosophy of ecotourism; and teacher training programs for both high school science teachers and college and university professors. In addition, the GRC attracts professors from nearly 150 colleges and universities in the United States, who bring their own students to San Salvador to provide academically approved field studies courses.

The vast majority of courses taught at the GRC are in the disciplines of marine and terrestrial biology and carbonate geology. San Salvador offers the perfect location for the teaching of such field courses. Its unspoiled and easily accessible marine environments—on an island which is large enough to provide biological diversity and yet isolated enough to have developed endemic plants and animals—makes it ideal for biologists. The geologists are attracted to San Salvador because it has all of the carbonate environments relative to the Bahamian formations, yet it is small enough that all of these environments can be studied as a geologic whole.

The archaeology courses at the GRC are provided by those researchers who have full permission from the Antiquities, Monuments and Museums Corporation to undertake the excavation of specific sites on San Salvador. Unlike the disciplines of biology and geology, archaeology is a science that, by its very nature, destroys the site for future studies while uncovering data from the past. Thus, to teach these courses, the GRC only permits professors who have full permission for their archaeological research.

To assist with the courses taught at the Gerace Research Center and also to disseminate information, the GRC publishes field guides. These guides are utilized by the students as textbooks as well as by tourists interested in San Salvador's environments. In order to further assist teachers involved in bringing students to the GRC, a teacher's guide is being developed by experienced, professional educators.

In recent years the Gerace Research Center has attracted a number of high school age groups from Nassau. While these groups often visit San Salvador because of its historical importance, there is a growing interest in the island's unique, pristine environments.

RESEARCH AND DISSEMINATION OF INFORMATION

Research and dissemination of scientific information have been objectives of the Gerace Research Center since its beginnings in 1971. Initial research consisted of a survey of the fauna and flora of the island, but soon more specialized studies were undertaken as the scientists utilizing the GRC became more knowledgeable of San Salvador's environments. As more and larger universities were attracted to San Salvador, the number and quality of the scientists involved in research on the island expanded. The resultant increase in research being undertaken at all levels—undergraduate, masters, doctoral and post-doctoral—warranted organizing a research numbering system to avoid incursion on each other's work and as a means of listing ongoing research as well as publications generated. The GRC obtains full Bahamas government permission for all research projects, prior to their undertaking.

Growing out of the need to keep the scientific community and the Bahamas informed of the research being accomplished, the GRC has published a series of occasional papers on specific research projects, and has also instituted a series of conferences and symposia in various academic disciplines. These conferences have provided a forum for the scientists to present their research results and to discuss their findings and ideas. The proceedings from these conferences are published by the GRC and a wide distribution,

which in turn has interested other scientists from around the world in working in the Bahamas and on San Salvador. The result is that in our most recent conferences, as many as one third of the participants were from countries other than the United States. From these endeavors, the worldwide academic community has come to recognize the GRC as a major research institution.

Archaeology

Since its initial project in 1971, the GRC has been involved in both prehistoric and historic archaeological research on San Salvador. It is for this archaeological work that the GRC is best known in the Bahamas, even though it is only a small part of the Center's research program.

Over the years the GRC has worked closely with the Department of Archives and the Antiquities, Monuments and Museums Corporation to determine which sites on the island should be excavated, and by whom. As stated above, the very nature of archaeology requires that it be closely controlled. Archaeological sites are not a renewable resource, and to obtain as much information as possible from them, careful and expert excavation is required. The GRC has therefore always limited the number of archaeologists who can work on the island, closely monitored their work, and kept the Department of Archives and the Antiquities, Monuments and Museums Corporation fully informed of the research undertaken. The GRC has also developed a repository for the safe keeping and curation of all the archaeological materials recovered.

To assist the archaeologists working through the Gerace Research Center in their study of the prehistory of the Bahamas, the Bahamas Archaeology Project was initiated in 1980. Besides trying to bring together all of the archaeologists working in the Bahamas, the GRC arranged for a conference, held in 1982, and two ceramic workshops, held in 1985 and 1995. Representatives from the Department of Archives and the College of The Bahamas attended all of these meetings.

To disseminate the results of its archaeological research, the GRC published annual *Bahamas Archaeology Project Reports and Papers* in each year from 1980 through 1985. They also jointly published with the Florida Anthropological Society the proceedings of the archaeology conference held in 1982. Besides these publications, each archaeologist has presented papers on their research at various academic conferences, such as the Association of Caribbean Historians and the Association of Caribbean Archaeologists; additionally, they have published papers on their research in appropriate scholarly journals.

In 1986 the GRC sponsored the First San Salvador Conference: Columbus and His World. This conference was initiated when it was learned that, at the time, no other academic institution in the United States or elsewhere was involved in bringing together historians and archaeologists interested in Columbus and the controversies surrounding his life and first landfall. Representatives from the Department of Archives and the College of The Bahamas were involved with the GRC, Ohio State University, and the University of Florida in planning this conference. The conference brought historians and archaeologists from Italy, Spain, the Caribbean, Canada, and the United States, as well as those from The Bahamas, together on San Salvador for what is still recognized as not only the first but a most important conference focused on the Columbus Quincentennial. The proceedings of this conference were published by the GRC and have been distributed worldwide.

The summer of 1997 found the GRC hosting the 17th Congress of the International

Association for Caribbean Archaeology. Due to the size of this conference, and the limited accommodations available on San Salvador, this symposium was held in Nassau, where the Department of Archives and the College of The Bahamas greatly assisted in planning and organizing the events. Attended by archaeologists and interested persons from throughout the Caribbean, it provided not only a forum for these researchers, but an avenue by which the Bahamian people learned more about their own prehistoric and historic past.

Presently GRC archaeologists are involved in salvage archaeology on four San Salvador sites. These are being investigated because they are either being developed or there are plans for their development in the near future.

Biology

Terrestrially-oriented biological research is an important arm of the GRC. Biologists involved in tropical botany, entomology, and ornithology have undertaken a large number of studies on San Salvador, resulting in numerous publications. The botanists have collected and identified all of the plants of the island and drawn extensive vegetation maps. The entomologists have collected and identified numerous insects and have classified several new species and sub-species of wasps, flies and isopods. And the ornithologists have identified and studied the behavior of the birds of the island.

To assist students and other scientists with the identification of many of these species, the GRC maintains a herbarium, an insect collection, and a comparative specimen repository, and has published field guides to the vegetation, birds, and insects of San Salvador. It has also published occasional papers on specific biological studies and jointly published with the Bahamas National Trust an issue of the *Bahamas Naturalist*.

In 1985, the GRC sponsored the First Symposium on the Marine and Terrestrial Botany of the Bahamas, and held a second in 1987 and a third in 1989. During the third botany symposium it was realized that many of the papers being presented focused on the interaction between the fauna and flora of the island and it was decided that the next conference, which was held in June 1991, should be entitled the Fourth Symposium on the Natural History of the Bahamas. Additional symposia on the natural history of the Bahamas have been held every two years, with the twelfth symposium being held in June 2007. Scientists from around the world who have interest in the natural history of The Bahamas attend these conferences, as do naturalists from the Bahamas National Trust and the College of The Bahamas. The proceedings of all of these conferences have been published by the GRC and widely disseminated.

Over the past few years, several workshops have been held at the GRC concerning national endangered species, especially the iguanas of the Bahamas and the many nesting seabirds that inhabit these islands. Since San Salvador has many of these species, it is the ideal location for researchers and conservationists to come together to pursue plans for the future study and protection of these species.

The GRC has also been a strong background supporter of the establishment of both terrestrial and marine conservation areas and parks for the islanders of San Salvador.

Geology

The GRC is most highly recognized in the scholarly world for its research in the field of carbonate geology. The Bahamas is one of only two places in the world (the other being the Red Sea) where calcium carbonate deposition is taking place at an astonishing rate. Deposits such as those being formed in the Bahamas today are the same types as those ancient ones in which fossil fuels such as oil

are found. Studies of the modern sediments of the Bahamas can reveal the mysteries found in their ancient counterparts, and it is the Gerace Research Center that is in the forefront of this research.

During the 1970's, a number of scientists were involved in teaching courses in carbonate geology at the GRC, and by 1980 they had collected such a volume of data that a *Field Guide to the Geology of San Salvador* was published. By 1982, the number of geologists undertaking research on the island had grown to the point that the First Symposium on the Geology of the Bahamas was held to provide a forum for the presentation and discussion of their various findings. The publishing and dissemination of the proceedings from this conference became the catalyst for added research endeavors and for future geology symposia. The 13th such conference was held in June of 2006.

These symposia have been attended by not only geologists working at the GRC, but by those who are working in other parts of the Bahamas as well. Geographers from the College of The Bahamas and geologists and hydrologists from the Ministry of Works and staff from the Department of Lands and Surveys have also attended these conferences.

In addition to symposia in geology, the GRC has sponsored several professional field trips to San Salvador including: one for the Geological Society of America; one for the Society for Exploration, Petroleum and Mining; one for the International Geological Congress; two for the Karst Waters Institute; and one for the International Ichnofabric Workshop.

Marine Sciences

The pristine marine environment of San Salvador has attracted scientists interested in the numerous species that can be studied here. Education has been the major thrust of the Research Center's marine studies, and in this regard a *Field Guide to the Invertebrates of San Salvador* (1988) was published. Research has also been initiated on species of the inner-tidal zone, mangroves, grass beds, and coral reefs. Several species new to science have been collected and classified, and numerous transects across many of our grass beds and coral reefs have been made. Of major note is the fact that scientists working on the reefs around San Salvador are not only monitoring the health of the hard and soft corals, but they are also the scientists who are currently isolating the pathogens causing various diseases in these organisms. The GRC has become one of the primary centers for the study of coral reefs and of the diseases that affect them. Numerous papers resulting from these studies have been presented at scientific meetings in the United States, and at the annual meetings of the Association of Marine Laboratories of the Caribbean. Results of this marine research have been published in scientific journals, and in occasional papers of the GRC.

Of particular note are two major, ongoing marine projects of the GRC. One of the longest continuously monitored coral reef projects in the Caribbean has been on various reefs around San Salvador. Earthwatch, a major scientific funding agency that advertises worldwide for volunteers to support ecologically important research projects, has sponsored this project at least three times a year since 1991. Results of this project have been published annually, and the numerous changes in the coral reefs have been visually monitored through various photographic techniques.

The GRC is one of 20 marine laboratories or parks in the Caribbean, and the only one in The Bahamas chosen to be part of the ongoing Caribbean Coastal Marine Productivity (CARICOMP) monitoring project. Each of these institutions annually monitors specific mangrove stands, seagrass beds, and coral reef

transects; with the results stored in a data bank at the University of the West Indies, Jamaica. Scientists from the United States as well as from the College of The Bahamas are involved in this project on San Salvador, the results of which have been presented at international symposia and widely published.

SUMMARY

The personnel of the Ministry of Works, Ministry of Agriculture and Fisheries, Department of Forestry, the Department of Archives, and the Bahamas Education, Science, and Technology Commission use the vast amount of scientific information that has been generated from the research at the GRC as resource material. GRC publications are located in the libraries of the College of The Bahamas, St. John's College, Bahamas Environmental, Science and Technology Commission, and the Department of Archives. In addition, some of the GRC books more suitable for the general public are sold in the bookstores of Nassau.

Much of the extensive scientific data collected by the GRC over the past 36 years has been digitized into an electronic map of San Salvador and turned over to the GIS Unit of The Bahamas. This map includes detailed information on local vegetation (including the location of protected plants), hydrogeology (including fresh-water wetlands), prehistoric and historic archaeological sites, unique ecological areas, geological features, seagrass beds, and coral reefs. As the GRC is continually updating this map, it is hoped that it will provide the Bahamas government with data it can use to make informed decisions about future sustainable development for San Salvador. In this small way, the Gerace Research Center, and the numerous scientists and students who utilize it, can perhaps partially repay the Bahamas and the people of San Salvador for its 36 years of learning and research.

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All Gerace Research Centre publications are listed at this link: http://www.geraceresearchcentre.com/publications.html