

Can Coastal Resources Survive Development? ¹

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The people of Florida have struggled for more than a decade to formulate sound coastal resource management policies. Stated simply, the problem is to maintain highly productive and attractive bays and estuarine systems in the face of urban, industrial and agricultural development in adjacent uplands.

Development projects involving large tracts of bay bottom and estuarine and coastal marshland proceeded virtually unchecked in the years following World War II. The mangrove and grass marshes were regarded as waste land easily converted to valuable real estate by filling them with sediments from the adjacent bays. These activities were regarded as beneficial to society and were actively encouraged by policies and the approval of local and state agencies. Gradually, as an understanding of the ecological role of these coastal systems became known and the magnitude and implications of the estuarine loss became clear, there arose a demand for controls.

Recently a complex permit system requiring local, state and federal authorization has evolved, significantly slowing coastal development and preventing many destructive projects. This system tends to minimize damage, but it does not solve the more basic problems of preserving the inherent natural productivity and aesthetic features of coastal areas and providing for community growth and increased use of coastal areas. Meanwhile, development proceeds, albeit more slowly, but with many of the destructive results of former years.

Florida can no longer afford simply to take inventory of the growing number of disastrous projects and make dire predictions of environmental calamity. Positive, realistic programs are required which look beyond total preservation as the only solution. Total preservation implies public ownership and large portions of many very valuable coastal systems are in private ownership. Clearly, it is not possible to purchase all of these private holdings. For undeveloped coastal areas subject to development, we must have a workable generalized plan which may be applied to most, if not all, coastal areas. Such a plan should protect the valuable and productive biological systems while providing for sound upland development. The Coastal Coordinating Council of the Florida Department of Natural Resources is currently developing a statewide coastal management plan.

Before the State program, a movement by private citizens in Naples was started to preserve a unique coastal area of Collier County. This Florida county is among the fastest growing in the United States. In 1964 many residents were apprehensive that the rapid growth of their community and the proposed development of Marco Island represented a threat to the undeveloped mangrove wilderness lying between Naples and Marco Island.

This same year formal application was made to construct a road from East Naples into the Rookery Bay area, thus providing easy access to the region and opening it to large scale development. A small group of farsighted citizens started a publicity campaign which convinced a large number of residents,

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including the Collier County Commission, that the road was not in the best interests of Collier County and the application was denied. Subsequently this group organized and became the Collier County Conservancy. Taking the initiative to thwart new road proposals and other threats to the environment, the Conservancy set out to permanently protect a portion of the mangrove wilderness south of Naples. After a period of review and consultation it became clear that the only permanent protection was ownership.

Contributions from more than 1,500 individuals and a matching grant from the National Audubon Society raised \$450,000 by the end of 1967. These funds were used to purchase 2,600 acres of privately owned uplands adjacent to Rookery Bay. In addition, State owned tidelands were included creating the 4,000-acre Rookery Bay Sanctuary (Fig. 1). With cooperation and assistance of

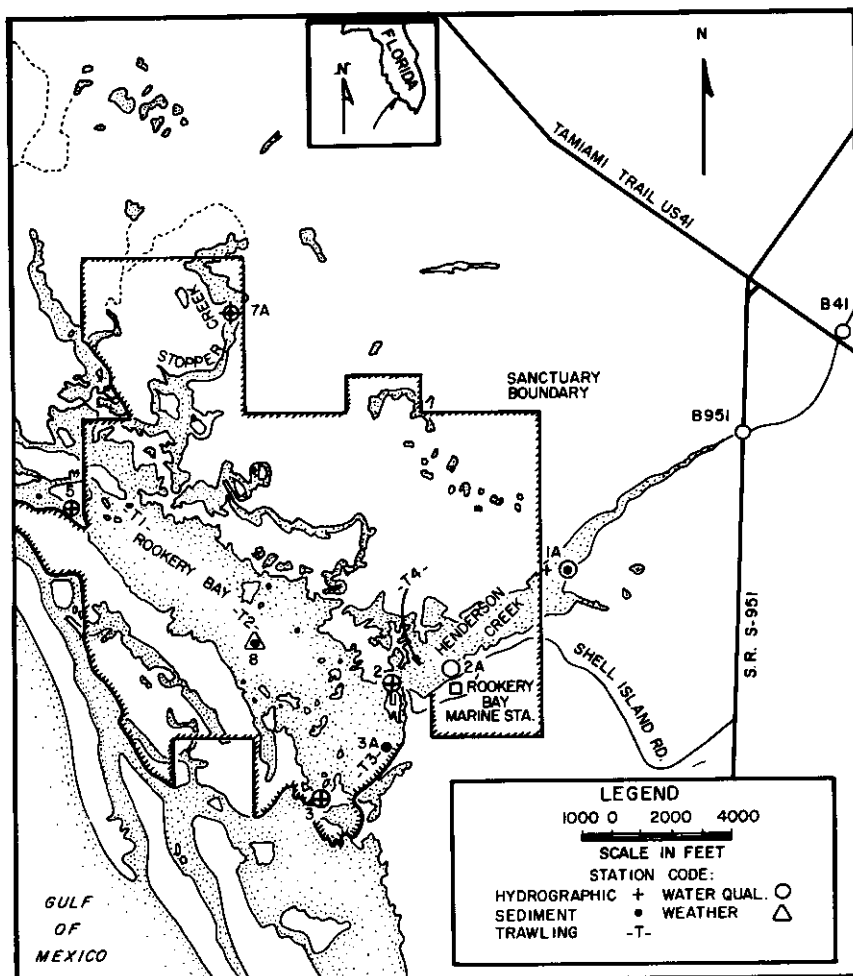


Fig. 1. Rookery Bay Sanctuary showing sampling locations.

the Nature Conservancy of Washington, D.C. the tract was deeded to the National Audubon Society as part of their extensive sanctuary holdings and a permanent warden was assigned to supervise it.

At this point, the Conservancy, having made a very considerable achievement, could have turned over the responsibilities for the protection of the Sanctuary to the National Audubon Society and the County. Instead they continued to participate actively in a complex and difficult management problem. The Conservancy realized that ownership was insufficient to ensure the complete protection of the Sanctuary. It was not a self-contained ecological unit. The Sanctuary was susceptible to damage by activities on adjacent private land. Furthermore, because the region is primarily a water environment, some of the major threats to its health are water related. A decline in the quality or change in the quantity of fresh water supply to the Sanctuary could seriously damage it. Thus, the long range health of the Sanctuary was dependent on protection from ongoing and increasing development in nearby areas.

One possible solution was the purchase of additional land, but the very presence of the Sanctuary had already increased land values prohibiting large scale additions. Furthermore, additional acquisition would still leave a boundary, with Sanctuary land on one side and privately-owned property on the other. The threat of damage from the outside would remain. The most reasonable approach was to acknowledge that development was inevitable in the privately held lands around the Sanctuary and to develop a plan whereby man could live near a valuable natural system without appreciably changing it.

The Conservation Foundation of Washington, D.C. was invited to participate in a feasibility study to determine if such an idea was workable. The Foundation agreed to participate and funded a 6-month study to examine the possibilities and determine if further research was justified. Work began in the fall of 1967 and the major objectives were: (1) to determine if conservation and development could be compatible in the area surrounding and ecologically related to the Sanctuary; (2) if so, to recommend a development program for this area and to suggest methods of implementing the program; and (3) to identify some general principles which might be applicable in other areas to help bring together conservation and urban development.

The study was a multi-discipline approach which brought together a team of experts from fields such as land planning, real estate, engineering, upland and estuarine ecology and law. The team effort resulted in a report in 1968 entitled the Rookery Bay Area Project.

The conclusions were encouraging. In answer to the pressing question of whether conservation could co-exist with development, the report suggested that "with careful coordinated planning and development, the area can be profitably developed by private owners and at the same time the Sanctuary can be safeguarded. In fact, protection and enhancement of the Sanctuary is basic to profitable, quality development of the surrounding area and will advance the economic interest of the developers."

These favorable results encouraged further study and the Conservation Foundation and the University of Miami, working in association with the Collier County Conservancy, applied for and received a grant from the Office of Water Resources Research, of the United States Department of Interior. The purposes of this grant were (1) to determine whether man can manage water and related resources in such a way as to maintain and improve the quality of the human environment in an area such as Rookery Bay, and (2) to determine if the principles and concepts emerging from the study could be applied to other

regions with similar problems. The Office of Water Resources Research grant approved in 1969 enabled the research by the University of Miami to begin at the newly established Rookery Bay Marine Station in early 1970.

Following the establishment of the Sanctuary, the Collier County Conservancy raised funds to buy crucial parts of the shoreline of the Rookery Bay system still in private ownership. In 1969 a 40 acre private home site within the Sanctuary was purchased and made available as a field research station. The Conservancy continued to press for control of the shoreline and by 1971 succeeded in obtaining by purchase or gift all of the shoreline within the original boundaries of the Sanctuary. Gifts of highly strategic property were made by the Collier Development Corporation and the Deltona Corporation, two land developers in the county. This was tangible evidence of the interest of the developers and their willingness to cooperate.

The overall objective of the research program was to provide base-line information on the hydrography, water quality and the abundance and distribution of animals and plants in and near the Sanctuary before alterations in nearby areas obscured the natural values, and to study, analyze and provide planning guidance in all decisions related to use and development of the lands adjacent to the Sanctuary.

The results of the ecological base-line research will be directly applicable to environmental management of the Rookery Bay Sanctuary. The water quality studies will be used to formulate water quality standards for the Sanctuary and adjacent areas. These data will be especially useful since they will reflect conditions existing in the predevelopment period when the Sanctuary was apparently "healthy". The hydrographic study will produce data on rates of exchange between Rookery Bay and outside waters, circulation patterns within the Sanctuary and tidal amplitude levels at critical locations. These data will be instrumental in water management decisions relevant to proposed artificial waterways, changes in the shoreline of natural streams, such as Henderson Creek, and in the disposition of excess fresh water runoff and sewage effluents. With knowledge of the tidal amplitude and water head pressures at critical locations in the Sanctuary and the changes produced in both of these by the wind, it will be possible to predict the rate of exchange and the direction of water flow and thus anticipate effects on the Sanctuary environment.

Quantitative information on the abundance and distribution of animals in the Sanctuary is being obtained from monthly samples in four typical habitats using an otter trawl. These data will provide a predevelopment picture of the species, numbers and distribution of animals in the Sanctuary. Subsequent samples made by trawl during and after the development of the outside areas will provide a measure of the relative health of the Sanctuary. Such comparisons make use of the animals themselves as sensitive detectors of environmental change.

Thus the ultimate objective of the project is a comprehensive quantitative description of the Rookery Bay Sanctuary during the predevelopment period which, when compared with subsequent environmental monitoring, will permit the detection and control of changes in the basic environment of the Sanctuary. This will enable the effects of development to be identified and measured. Finally, the information will be used to establish planning criteria which will permit development but at the same time maintain and safeguard the Sanctuary.

In summary, we believe that this project is an example of the impact a small group of dedicated individuals in a concerned community can have in aiding in the solution of the environmental crisis in Florida. Also it is an illustration of the benefit derived from a unified multidiscipline approach to a complex problem.