

# Florida Bay Science

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Florida Bay lies between the southern tip of the Florida mainland and the island chain known as the Florida Keys. Over 85 percent of the Bay's 2200 km<sup>2</sup> area lies within Everglades National Park (see the enclosed brochure from Everglades National Park), and the Florida Keys National Marine Sanctuary contains much of the rest. The Bay includes over 200 small islands, many of which are rimmed with mangroves. Florida Bay supports numerous protected species including the roseate spoonbill, the bottle-nosed dolphin, the American crocodile, the West Indian manatee, and several species of sea turtles. Moreover, Florida Bay provides critical habitat for commercially important species, such as spiny lobsters, stone crabs, and many important finfish species, and it serves as the principal nursery for the offshore Tortugas pink shrimp fishery.

Florida Bay comprises an important component of the much larger South Florida region that is the focus of the Comprehensive Everglades Restoration Plan (CERP). The Bay receives freshwater runoff from the Everglades, a large portion of which is managed discharge from canals in the region. Decisions guiding the restoration of the Everglades carry implications for future conditions in Florida Bay, just as the development of the regional water management system over the past fifty years or so influences present conditions. Although a specific restoration target has not yet been defined for Florida Bay per se, many expect that restoration of more natural hydrologic conditions in the Everglades will move the Bay toward an ecological state more typical of the period prior to the time of engineered changes imposed on the regional South Florida system.

Rapid ecological changes occurred in Florida Bay between 1987 and 1991. These came at the end of a multiyear drought that had elevated salinity values in the central portion of the Bay to nearly 70 parts per thousand, almost double the typical salinity of seawater. Large areas of seagrasses began to die late in 1987. Concurrently, the shrimp harvest on the Tortugas Grounds, which depend on Florida Bay as a nursery area, declined to record lows. In 1991, turbidity and plankton concentrations increased dramatically, reducing the supply of light to the remaining seagrass beds through the previously "gin-clear" Bay waters. Mass mortality of sponges, which help to filter the Bay's waters and provide habitat for juvenile lobster, followed in the path of the plankton blooms. By the end of 1991, there was widespread concern among the public for the health of the Florida Bay ecosystem, yet very little scientific information existed that resource managers could use in response to this concern.

The Florida Bay Science Program emerged in 1994 as the coordinated effort by state and federal agencies to identify the mechanisms and underlying causes responsible for the recent ecological changes. Its objectives are implement an interagency program of research aimed at developing the knowledge needed to guide ecosystem restoration and to communicate this scientific knowledge to restoration managers, scientists, policy makers, and the informed public. Currently, eleven state and federal agencies participate in the Program through representatives on the Program Management Committee. This committee formulated a Strategic Plan, revised in 1997, to coordinate the research supported independently by the separate agencies, and this plan remains in force. The committee also provides for occasional review of the Program by the

independent Science Oversight Panel and for dissemination of its findings through a series of science conferences. This report is part of that effort.

The Comprehensive Everglades Restoration Plan was established in 2000 with the overarching goal to restore and preserve the ecosystems of South Florida, including Florida Bay. CERP relies on scientific information to document the condition of South Florida's ecosystems and evaluate the effects of human activities on them. Human activities influence the structure and function of ecosystems both directly, by altering the ecosystems themselves, and indirectly by altering the climatic, hydrologic and geologic processes that drive the ecosystem's processes and maintain its structure. Probably this has occurred throughout history. However the extent and intensity of human activities and their influence on ecosystems has increased greatly with expansion of agriculture and urban development in the last 100 years. In order to guide restoration efforts resource managers now require scientific information on the Bay's ecosystem, how it has changed during the last 100 years or so, how it works, and how it likely will respond to planned restoration activities. Since its inception, the Florida Bay Science Program has pursued the goal of developing this information and providing it to resource managers.

(insert Everglades National Park brochure here)