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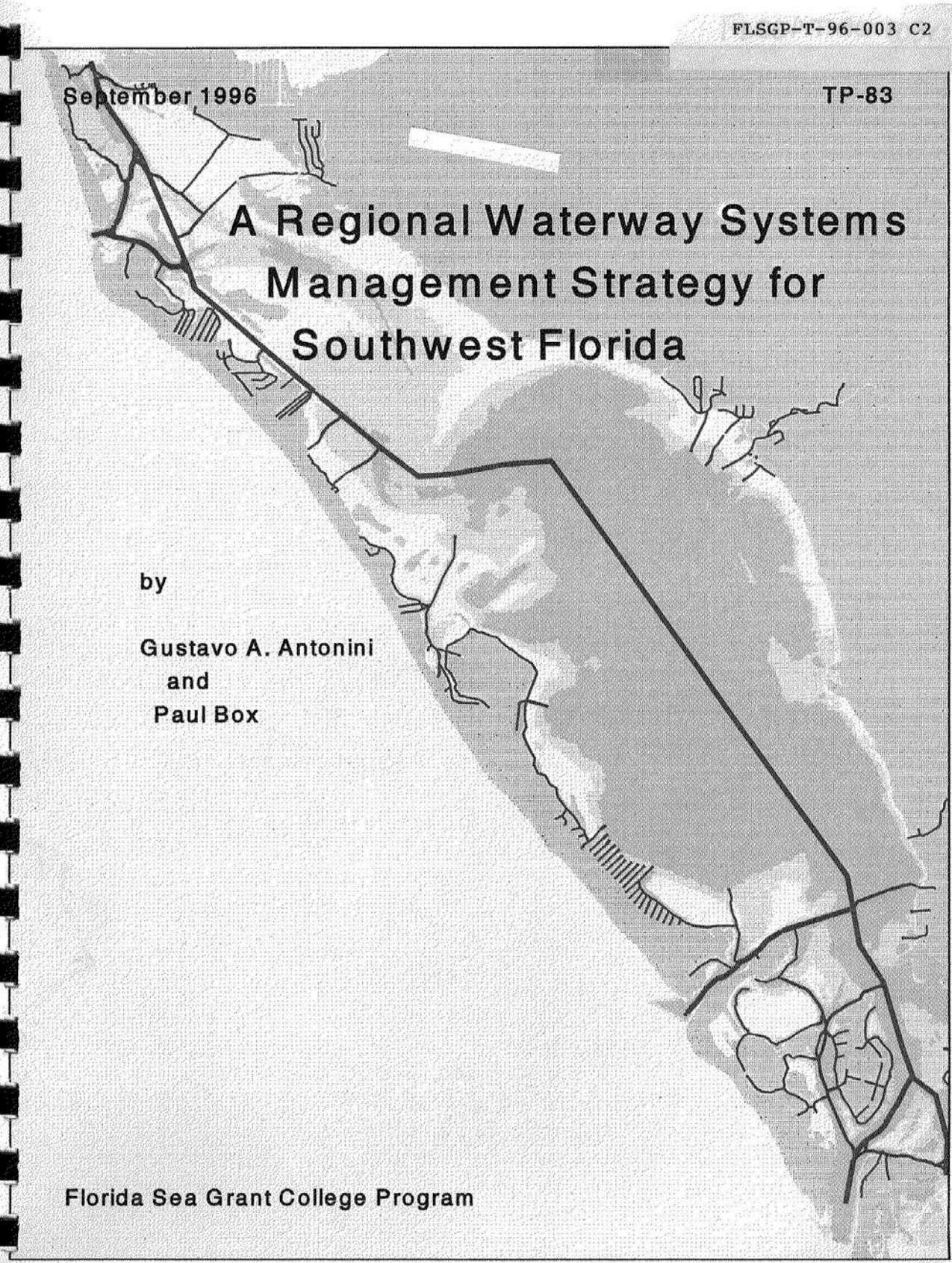
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A Regional Waterway Systems Management Strategy for Southwest Florida

by

Gustavo A. Antonini
and
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Florida Sea Grant College Program



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A REGIONAL WATERWAY SYSTEMS MANAGEMENT STRATEGY FOR SOUTHWEST FLORIDA

by

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ACRONYMS

ACD	access channel depth
ARC/INFO	vector GIS software by Environmental Systems Research Institute
COE	U. S, Army Corps of Engineers
FCES	Florida Cooperative Extension Service
FDEP	Florida Department of Environmental Protection
FSG	Florida Sea Grant
GIS	geographic information system
GPS	global positioning system
LULC	land use/land cover
NOAA	National Oceanographic and Atmospheric Administration
NOS	National Ocean Service
NWSC	National Waterway Safety Congress
UF	University of Florida
VD	vessel draft
WCIND	West Coast Inland Navigation District
WMD	Southwest Florida Water Management District

ABSTRACT

This report presents a geographic information system (GIS)-based method for planning and managing coastal waterways for sustainable recreational use. A pilot application of the methodology, carried out in Sarasota Bay, provides an example of how boat traffic can be managed in ways that reduce stress on surrounding natural habitats and waterfront communities. The methodology is consistent with prevailing state and federal coastal policy initiatives and offers an integrated, place-based approach to boat traffic management which may be applicable in other coastal areas.

The GIS analysis is undertaken at large-scale, small-area and high-resolution in order to provide detailed results for regional analysis and local applications. Section aeriels are used as the compilation base. Aerial photo interpretation is used to update habitat and shoreline information from public GIS archives. Bathymetry includes public record digital files and boat channel centerline field surveys. Boat, facility and signage information is from on-the-water census. Field record-gathering includes GPS methods.

The geographic analysis evaluates the relationship between boat draft and channel depth for each vessel in order to measure boat accessibility and channel restriction. Results provide a strategy for evaluating the functionality of a regional waterway system and prioritizing maintenance and remediation of system channel components. Alternate scenario methods are used to assess a range of decision options influencing waterway management. One method uses an accessibility index to evaluate the ratio of boat draft to channel depth. Another method determines the effects of normal versus below normal tidal conditions on boat accessibility. Boats are grouped into trafficsheds which are source areas of boats having a common channel to gain access to open water. Trafficsheds are used as segmentation units and the trafficshed is the common denominator for waterway management. There are 51 trafficsheds in the pilot study area. Segmentation into trafficshed-delimited areas permits data generalization and reduction for geographic (GIS) analysis.

Mapped results are presented in four ways: regional characterization, 1:24,000 scale, showing color-shaded bathymetry as 15 zones at 1 ft. resolution, seagrass, mangrove, boats, facilities, and signage; detailed inventory, 1:4,800 scale, showing color-shaded bathymetry at 1 ft. resolution, supplemental 3 ft. contours, centerline channel controlling depth, boats, facilities, signage, seagrass, and mangrove; neighborhood boat accessibility, 1:4,800 scale, showing levels of boat accessibility to open bay at 1 ft. draft levels; and neighborhood channel restrictions, 1:4,800 scale, showing the location and extent of channel

depth restrictions at 1 ft. intervals.

A community trafficshed application illustrates how results can be transformed into action projects at the local level, to address habitat restoration, channel maintenance, boat traffic management and public education.

The report concludes with the outline of a regional waterway management system to preserve the ecological and recreational values of southwest Florida waterways, based on: fitting channel maintenance to boat draft requirements; minimizing impacts on surrounding bay habitats; prioritizing and evaluating management alternatives on a regional basis; developing map and other information products for boaters and shore residents to encourage environmental awareness and stewardship by users of the neighborhood waters and boat access channels; and empowering waterway communities and boating organizations to take an active role in managing their waterways. These proposed actions are pursued through a combination of management tools, with a focus on: acquiring the necessary information on waterway and user characteristics in order to map and evaluate boat access needs; providing waterway communities with technical support to develop local management implementation strategies; and disseminating map and guide products to waterway residents which foster stewardship and environmentally responsible boating practices.

PREFACE

The authors wish to acknowledge the contributions of colleagues, elected and appointed officials, local staff, shore residents and boaters, who provided valuable assistance throughout the research and extension phases of this project. Leonard Zabler, Professor Emeritus, Columbia University, participated in the early stages of the study and the conceptualization of the trafficshed methodology. Florida Sea Grant (FSG) extension agents John Stevely and Will Sheftall provided advice throughout the project, and John Stevely was a key outreach team member with local neighborhood associations and boating groups.

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