

A BIBLIOGRAPHY
on Sarasota Bay, Florida
--Its Resources and Surrounding Areas--

REPORT
to the
U.S. ENVIRONMENTAL PROTECTION AGENCY
Region IV, Atlanta, Georgia

April 15, 1988

by the
MOTE MARINE LABORATORY
Coastal Resources Program
Sarasota, Florida

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MML Technical Report Number 117a, 46 pages.

Suggested reference Estevez ED. 1988. A Bibliography on Sarasota Bay, Florida: Its resources and surrounding areas. United States Environmental Protection Agency. Mote Marine Laboratory Technical Report no 117a. 46 p. Available from: Mote Marine Laboratory Library.

INTRODUCTION

This bibliography contains 348 citations of direct relevance to Sarasota Bay, Florida, its resources, and surrounding areas. In addition, 40 of the most important references --shown in bold type-- have been annotated, either by quoting their respective abstracts or summaries, or by original synopses (prepared by Greg Blanchard).

This document accompanies a report, "Sarasota Bay, Florida: Identification of Resource Management Problems and Issues", prepared by Mote Marine Laboratory for the U.S. Environmental Protection Agency, Region IV, in fulfillment of a cooperative agreement to evaluate Sarasota Bay in the context of estuary research and management needs. Individual references have been sequentially numbered to facilitate their citation in the Issues Report, but the bibliography has been produced under separated cover to facilitate its distribution and use.

We are very grateful for the assistance provided by staff of the Mote Marine Laboratory, particularly Judy Jones and Laurie Fraser. We also acknowledge and thank Linda Idelberger (Environmental Library), Jeff Lincer (Science Advisor), and Belinda Perry (Natural Resources) in Sarasota County government; Doug Taylor (City of Sarasota); the staffs of Selby, Manatee Public, and Manatee Community College libraries; and Frank Courtney (Florida Department of Natural Resources).

1. AC Nielsen Co. (Developmental Syndicated Surveys Marketing Research Services USA). 1979. Save Our Bays Association, Inc. Survey. April-May.
2. Adley and Assoc., Inc. 1978. Town of Longboat Key Comprehensive Plan. 2 vols.
3. Adley and Assoc., Inc. 1983a. City of Sarasota Urban Waterfront, Rept. to the City of Sarasota. 114 p.
4. Adley and Assoc., Inc. 1983b. Hurricane evacuation plan 1983. Rept. to Town of Longboat Key, FL.
5. Armentano, T.V., R.A. Park and C.L. Cloonan. 1988. Impacts on coastal wetlands throughout the United States, Ch. 4, In: U.S. EPA, Impact of Sea Level Rise on Coastal Wetlands in the United States. (in press).
6. Associated Water and Air Resources Engineers. 1974. An environmental assessment of an oil refining and offshore tanker terminal. Rept. to Manatee Co. Health Dept. 62 p.
7. Baldrige, H.D. 1977. Red tide research at the Mote Marine Laboratory: a five year status report. Mote Marine Laboratory Contr. 201.
8. Banks, R.S. 1975. Beach erosion along the lower west coast of peninsular Florida. Trans. Gulf Coast Assoc. Geol. Soc. 25:391-392.
9. Barile, D.D. 1988. The Sarasota Bay system. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).
10. Barnhard, E.A. 1969. BIO II Bay report. New College of USF, Sarasota, FL.
11. Barraclough, J.T. and O.T. Marsh. 1962. Aquifers and quality of ground water along the Gulf coast of western Florida. Fla. Geol. Survey Rept. of Investigations No. 29.
12. Beaman, B. 1971. Vegetational succession of spoil islands of Sarasota Bay. New College of USF, Sarasota, FL.
13. Beaman, B. 1973. Patterns of plant community structure and vegetational zones on spoil islands in Sarasota Bay and Charlotte Harbor, Florida. New College of USF, Div. of Nat. Sci. June.
14. Betz, J.V. 1988. Sewage and STP Effluents. In: E.D. Estevez (ed.), Proceedings of an Estuarine Seminar on Tampa and Sarasota Bays: Issues, Resources, Status and Management. U.S. Dept. of Commerce, NOAA, Estuarine Programs Office, Washington (in preparation).

15. Bird, P.M. 1980. Ecological study and environmental evaluation of the fishes of Sarasota Bay, Florida. In: W.J. Tiffany (ed.). Environmental status of Sarasota Bay: selected studies. Selby Foundation & Mote Marine Laboratory, Sarasota, various pages.
16. Bland, M.J. 1985. Holocene geologic history of Little Sarasota Bay, Florida. Unpubl. Masters Thesis, Univ. of So. Fla., Tampa. 101 p.
17. Bradenton, City of, Florida. 1979. The City of Bradenton Comprehensive Plan. Bradenton Dept. Plan. Dev.
18. Brown, D.P. 1982. Water resources and data-network assessment of the Manasota basin, Manatee and Sarasota Counties, Florida. U.S. Geol. Surv. Water-Resources Invest. 82-37. 80 p.
19. Brown, D.P. 1983. Water resources of Manatee County, Florida. U.S. Geol. Surv. Water-Resources Invest. 81-74. 112 p.
20. Bruns, M.T. 1980. The Collembola of Caples Bayfront. Unpubl. Sr. Thesis, New College of USF, Sarasota. 60 p.
21. Buck, J.D. 1983. Occurrence of Candida albicans in fresh gull feces in temperate and subtropical areas. Microb. Ecol. 9:171-176.
22. Buck, J.D. 1984. Quantitative and qualitative bacteriology of elasmobranch fish from the Gulf of Mexico. Fish. Bull. 82(2):375-381.
23. Bureau of Laboratories. 1970. Manatee County, Sarasota County: water pollution survey bacteriological (Big Sarasota Bay). Sarasota, FL.
24. Butts, J. 1983. Sea level variations in Sarasota Bay and relations to local short period atmospheric forcing. Unpubl. Senior Thesis New College of USF, Sarasota, Fla.
25. Calinski, M.D. 1982. The future of lobster farming in Florida. Fla. Sci. 45 (Suppl. 1):31.
26. Calinski, M.D. 1985. Sarasota Bay habitat enhancement program. Marine Nursery Ecosystems, Inc., Sarasota. 23 p.
27. Camp, Dresser & McKee, Inc. 1982. Lake Manatee Reservoir Regulation Manual. Draft Rept. to Manatee Co. Utilities Dept., Bradenton.
28. Camp, Dresser and McKee, Inc. 1984a. Tributary streamflows and pollutant loadings delivered to Tampa Bay, for Dept. of Environmental Regulation, FL.
29. Camp, Dresser & McKee, Inc. 1984b. Manatee County water supply master plan (1983-2013). Rept. to Public Utilities Dept., Bradenton, FL. 1 Vol.

30. Camp, Dresser and McKee, Inc. 1985. Southeast area stormwater management study: final report. Manatee Co. Plan. & Dev., Bradenton. (various pages).
31. Camp, Dresser & McKee, Inc. 1987. Sarasota County Stormwater Master Plan, Final Rept., Sarasota Co. Transportation Dept., Sarasota Co., Fla.
32. Candaub, Fleissig and Assoc. 1968. Regional design study--the forms and appearances of the Tampa Bay region. Rept. to Tampa Bay Reg. Planning Council. Av. from Fla. Dev. Comm., Tallahassee. 122 p.
33. Canonico, C. 1985. Phytoplankton, light and nutrients in tidal waters of Manatee and Sarasota Counties. Fla. Sci. 48(Suppl. 1):26.
34. Caraccia, K.S. 1980. A preliminary assessment of the effects of treated sewer discharge on the phytoplankton communities of Whitaker Bayou and adjoining Sarasota Bay. Mote Marine Laboratory Tech. Rept. 17.
35. Carlson, P.R. 1972. Patterns of succession on spoil islands. A summary report. New College of USF, Sarasota, FL.
36. Cato, J.C. 1974. A review of commercial fisheries in Sarasota and Manatee Counties -- past twenty years. Fla. Sea Grant Coll. (unpubl. mimeo), Gainesville.
37. Causseaux, K.W. and J.D. Fretwell. 1983. Chloride concentrations in the coastal margin of the Floridan Aquifer, Southwest Florida. U.S. Geol. Surv., Tallahassee, FL. Water-Resources Investigations, 37 p.
38. CH₂M-Hill and Larsen Engineering, Inc. 1982. Manatee County wastewater master plan. Bradenton, FL. 1 Vol. (looseleaf).
39. Chiu, T.Y. 1979. A study of the north end of Casey Key and Midnight Pass, Sarasota County, Florida. Dept. of Coast. & Oceanogr. Eng., Univ. of Fla., Gainesville.
40. Chiu, T.Y., J. van de Kreeke and R.G. Dean. 1970. Residence times of water behind barrier islands. Dept. Coast. and Oceanogr. Eng., Univ. of Fla., Gainesville. 112 p.
41. Clark, E. 1960. Four shark attacks on the west coast of Florida, summer 1958. Copeia 1:63-67.
42. Clark, E. 1963. Massive aggregations of large rays and sharks in and near Sarasota, Florida. Zoologica 48(2):61-66.
43. Clark, W.E. 1964. Possibility of salt-water leakage from proposed intracoastal waterway near Venice, Florida well field. Fla. Geol. Surv. Rept. of Invest. no. 38. 33 p.

44. Clark, P.A. and R.W. MacAulay 1988. Geography and Economy of Tampa Bay and Sarasota Bay. In: Estevez, E.D. (ed.), Proceedings of an Estuarine Seminar on Tampa and Sarasota Bays: Issues, Resources, Status and Management. U.S. Dept. of Commerce, NOAA, Estuarine Programs Office, Washington (in preparation).
45. Clarke, A.R. 1980. Contributions to the life histories of several shrimps from two stations in Sarasota Bay. In: W.J. Tiffany (ed.). Environmental status of Sarasota Bay: selected studies. Selby Foundation & Mote Marine Laboratory, Sarasota, various pages.
46. Coastal Engineering Laboratory. 1956. Report on coastal engineering study at Longboat Pass. Univ. of Fla., Gainesville.
47. Coastal Engineering Laboratory. 1960. Beach erosion conditions along the northern tip of Longboat Key. Univ. of Fla., Gainesville.
48. Coastal Engineering Laboratory. 1961. Sarasota Bay Model. Final rept. for the Arvida Realty Co., Sarasota. Univ. of Fla., Gainesville. 51 p.
49. Coastal Planning and Engineering, Inc. 1985. Preliminary design report: Midnight Pass dredging. Final Rept. to Sarasota Co. Bd. Commissioners, Boca Raton.
50. Collins, K.M. 1988. Growth and land use around Sarasota Bay: 1860-1987. In: E.D. Estevez (ed.). Proceedings, Sarasota Bay Scientific Information Symposium (in preparation).
51. Conmy, B. 1982. Effects of mosquito control ditching on a southwest Florida mangrove system. Unpubl. Senior Thesis, New College, Sarasota.
52. Conners, E. 1974. The effects of a domestic sewage outfall on the distribution and abundance of marine benthic Polychaeta and mollusca, with comments on continua and community structure. New College of USF, Sr. Thesis. 58 p.
53. Conservation Consultants, Inc. 1974. A survey of the ecology of a portion of southern Perico Island, Manatee Co., FL. Conserv. Con., Inc., Palmetto, FL. Rept.
54. Conservation Consultants, Inc. 1982. A diel water quality study, Manatee Gateway project on the Manatee River. Palmetto, FL.
55. Conservation Consultants, Inc. 1983. Bradenton reservoir improvements, pre-construction water quality monitoring and water quality impact assessment report for Smith & Gillespie Engineers, Inc. Palmetto, FL.
56. Continental Shelf Assoc., Inc. 1985. Mitigation options selected

to port development for fish and wildlife resources of Tampa Bay. Final Rept. to USFWS National Coastal Ecosystem Teams, Slidell, LA. 215 p.

57. Culter, J.K. and S. Mahadevan. 1982. Benthic studies of the lower Manatee River. Tech. Rept. submitted to Manatee Co. Mat. & Serv. Dept. 46 p. Mote Marine Lab., Sarasota, FL.

58. Daltry, W.E. 1988. Economy of Sarasota Bay. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).

59. Darovec, J.E., Jr., J.M. Carlton, T.R. Pulver, M.D. Moffler, G.B. Smith, W.K. Whitfield, Jr., S.A. Willis, K.A. Steidinger and E.A. Joyce, Jr. 1975. Techniques for coastal restoration and fishery enhancement in Florida. Fla. Dept. Nat. Resour. Mar. Res. Lab. Publ. No. 15. 27 p.

60. Davis, R.A., Jr. and A.C. Hine. 1983. A geological assessment of Midnight Pass, Sarasota County, Florida. Rept. to Sarasota Co. Bd. of Co. Commissioners, Oct. 4. 18 p.

61. DeGrove, B.D. 1984. Manatee River intensive survey documentation. Fla. Dept. Environ. Reg. Water Quality Tech. Ser. Vol. 1, No. 84.

62. DeGrove, B.D. 1985. Manatee River wasteload allocation. Fla. Dept. Envir. Reg., Water Qual. Tech. Ser. Vol. 2, No. 100. Tallahassee.

63. DeGrove, B.D. and J. Mandup-Poulsen. 1984. City of Sarasota wasteload allocation documentation. Fla. Dept. Environ. Reg. Water Qual. Tech. Ser.

64. Dendrou, S. and C. Moore. 1983. Hydrological assessment regarding proposed relocation of channel at Midnight Pass. Rept. to Sarasota Co. Bd. of Co. Commissioners, Camp, Dresser & McKee, Oct. 4. 5 p.

65. Dendrou, S.A., C.I. Moore and R. Walton. 1983. Final Report, Little Sarasota Bay circulation study, prepared for County of Sarasota Coastal Zone Management Division and Environmental Services Dept. by Camp, Dresser & McKee.

66. DeQuine, J.F. 1969. Ecological studies in Sarasota Bay, Florida, August 1968 - February 1969, with special reference to Arvida Corporation submerged lands on Longboat Key. Southern Fish Culturists, Inc., Leesburg, FL.

67. Dewitt, T. 1977. Spatial and temporal variation in the structure of a mangrove swamp benthic community. Bachelors Thesis, New College of USF.

68. Dickinson, K.D. and W.J. Tiffany. 1980. Analysis of heavy metals in Sarasota Bay biota. In: W.J. Tiffany (ed.). Environmental status of Sarasota Bay: selected . Selby Foundation & Mote Marine Laboratory, Sarasota, various pages.

69. Dragovich, A., J.A. Kelley, Jr. and H.G. Goodell. 1968. Hydrological and biological characteristics of Florida's west coast tributaries. Fish. Bull. 66(3):463-477.
70. Eckenrod, R.M. 1988. Management of Tampa Bay: the process and its lesson. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).
71. Edwards, R.E. 1988. Fishes and fisheries of Sarasota Bay. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).
72. Eiseman, N.J. 1974. Marine algae of Point-o-Rocks, Florida west coast. Ph.D. Dissertation, Biol. Dept., Univ. of So. Fla., Tampa.
73. Elsaesser, J. 1981. A design proposal for Sarasota's new marine park. Unpubl. Sr. Thesis, New College of USF, Sarasota. 75 p.
74. Emanuelsen, M., J.L. Lincer and E. Rifkin. 1978. The residue uptake and histology of American oysters (Crassostrea virginica Gmelin) exposed to Dieldrin. Env. Contam. & Tox., January. 19(N1): p. 121.
75. Entsminger, L.D. 1975. Directions of sand transport, Anna Maria Key to Casey Key, Florida. Geol. Soc. Am. Prog. Issue 7(4):487.
76. Environmental Science and Engineering, Inc. 1977a. Final water quality report for the Phillippi Creek study area. Submitted to: SW Fla. Reg. Plann. Council. October.
77. Environmental Science and Engineering, Inc. 1977b. Wasteloads and wasteload allocations for priority and non-priority areas of the Tampa Bay region. Rept. to Tampa Bay Reg. Plann. Council, September.
78. Environmental Science and Engineering, Inc. 1977c. Presentation of water quality data, July through December 1976. Submitted to: SW Fla. Reg. Plann. Council, Ft. Myers, FL. February.
79. Environmental Science and Engineering, Inc. 1978. Technical appendix of the productivity study for the Phillippi Creek study area. Submitted to SW Fla. Reg. Plann. Council. February.
80. Estevez, E.D. 1983. An ecological reconnaissance of the Grand Canal, Siesta Key, Florida. Prepared for Off. Coast. Zone Mgt., Sarasota Co. by Mote Marine Lab., Sarasota, FL. 19 p.
81. Estevez, E.D. 1987. Sarasota Bay management needs and opportunities. A white paper prepared on behalf of the Sarasota Bay Workshop. Mote Marine Laboratory Tech. Rept. 104.
82. Estevez, E.D. 1988a. Implications of sea level rise for wetland creation and management in Florida. In: Proceedings 14th Ann. Conf.

Wetland Creation and Management, Hillsborough Community College, FL. (in press)

83. Estevez, E.D. 1988b. Water quality. In: E.D. Estevez (ed.), Proceedings of an estuarine seminar on Tampa and Sarasota Bays: Issues, resources, status and management. U.S. Dept. of Commerce, NOAA, Estuarine Programs Office, Washington (in prep.).
84. Estevez, E.D. 1988c. A fish eye view of the future of Sarasota Bay. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).
85. Estevez, E.D. 1988d. Sarasota Bay, Florida. Identification of resource management problems and issues. Final Report to U.S. EPA (Region IV). Mote Marine Laboratory Tech. Rept. No. 117A.
86. Estevez, E.D. and J. Merriam. 1988. Resource Status and Management Issues of Sarasota Bay. In: E.D. Estevez (ed.), Proceedings of an Estuarine Seminar on Tampa and Sarasota Bays: Issues, Resources, Status and Management. U.S. Dept. of Commerce, NOAA, Estuarine Programs Office, Washington (in preparation).
87. Estevez, E.D. and R. Evans. 1978. Effects of pruning on reproduction by the red mangrove, Rhizophora mangle. p. 26-42, In: D.P. Cole (ed.), Proceedings 5th Ann. Conf. Rest. Coast. Veg. in Fla., Hillsborough Community College, Tampa, FL.
88. Estevez, E.D. and D.A. Bruzek. 1986. Survey of mollusks in southern Sarasota Bay, Florida, emphasizing edible species. Mote Marine Laboratory Tech. Rept. 102.
89. Evans, M.W. 1988. Geological evolution of Sarasota Bay. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).
90. Evans, M.W. and T. Brungardt. 1978. Homeowners guide to shoreline management. Rept. to Sarasota Co. Bd. Comm. 63 p.
91. Evans, M.W., T. Brungardt and R.K. Evans. 1978. Shoreline analysis of Sarasota County Bay systems with regard to revegetation activities. New College of USF, Fla. Envir. Stud. Prog., Sarasota Co., C.E.T.A. Prog. 2nd Sarasota Bd. Co. Comm. 71 p.
92. Evans, H.W. and R.K. Evans. 1988. Sarasota County estuarine inventory. Mote Marine Laboratory Tech. Rept. No. 120.
93. Evans, R.K. 1977. Techniques and seasonal growth rate of transplanted white mangroves. In: Proc. 4th Ann. Conf. on Restoration of Coast. Veg. in Fla. p. 77-105.
94. Evans, R.K. 1980. Environmental information for Sarasota County: a

- bibliography with annotations. Sarasota Co. Pollution Control Dept., Sarasota.
95. Evans, R.K. 1988. Shoreline vegetation of Sarasota Bay: a review. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).
 96. Federal Emergency Management Agency. 1983. Manatee County flood insurance study. Washington, DC. 40 p.
 97. Fehring, W.K. and R.S. Wells. 1976. A series of strandings by a single herd of pilot whales on the west coast of Florida. J. Mammal. 57(1):191-194.
 98. Fishkind, H.H. and J.W. Milliman. 1978. An econometric assessment of growth management for Sarasota County. Univ. of Fla.
 99. Flannery, H.S. 1988 Watershed and Tributaries. In: E.D. Estevez (ed.), Proceedings of an Estuarine Seminar on Tampa and Sarasota Bays: Issues, Resources, Status and Management. U.S. Dept. of Commerce, NOAA, Estuarine Programs Office, Washington (in preparation).
 100. Florida Coastal Coordinating Council. 1972. Florida Coastal Zone Management Atlas: A preliminary survey and analysis. December.
 101. Florida Coastal Coordinating Council. 1973. Statistical inventory of key biophysical elements in Florida's coastal zone.
 102. Florida Department of Environmental Regulation. 1976. Tampa Bay Area Water Quality Management Plan. March.
 103. Florida Department of Environmental Regulation. 1979. Manatee River intensive survey documentation. Water Quality Tech. Ser. Vol. 1, No. 5.
 104. Florida Department of Environmental Regulation. 1981. Final report to the Environmental Regional Commission on Proposed Reclassification of the Manatee River from Class III to Class I-A. Tallahassee, FL.
 105. Florida Department of Environmental Regulation. 1982a. Algal assays of Sarasota Bay and Lake Myakka, June 1982.
 106. Florida Department of Environmental Regulation. 1982b. Algal assay, Lake Myakka-Sarasota Bay, October 1982.
 107. Florida Department of Environmental Regulation. 1983. Limiting nutrient and growth potential. Algal assays of the Manatee River, February-March and October 1983. Biol. Sect., Tallahassee.
 108. Florida Department of Environmental Regulation. 1986. Proposed

designation of Sarasota Bay and Lemon Bay as Outstanding Florida Waters. Rept. to Envir. Reg. Comm.

109. Florida Department of Natural Resources. 1959-1980. Summary of Florida commercial marine landings, Tallahassee, FL. Fla. Bd. Conserv., with data before 1964 from University of Miami Mar. Lab.

110. Florida Department of Natural Resources. 1984. Shellfish harvest area map for Sarasota Bay. FDNR Bur. Mar. Res., St. Petersburg.

111. Florida Department of Natural Resources. 1985. Manatee County marine habitat restoration plan. Bur. Mar. Res. Mar. Lab., St. Petersburg. 112 p.

112. Florida Department of Natural Resources. 1987. Terra Ceia aquatic preserve management plan. FDNR Bur. Land Aq. Resour. Mgt., Tallahassee. 129 p.

113. Florida State Board of Health, Bureau of Sanitary Engineering. 1967. Survey of Phillippi Creek drainage basin - Sarasota Co. (Sep. 19, 1966-March 13, 1967).

114. Fortune, B. 1985. Drogue studies in Sarasota Bay. Letter rept. to Dr. J. Wang of Univ. of Miami by Mote Marine Laboratory, Sarasota, FL.

115. French, C.O. and J.W. Parsons (eds.). 1983. Florida coastal ecological characterization: a socioeconomic study of the southwestern region. U.S. Dept. of Interior Fish & Wildl. Serv. FWS/OBS-83/14. 333 p. + app.

116. Gasser, R.D. 1975. Nutrient content of rainwater in northern Sarasota County, Florida - a preliminary report. A cooperative project sponsored by Sarasota County Pollution Control Division and New College (Now of USF).

117. Getter, C.D., J. Michel and T.G. Ballou. 1983. Sensitivity of coastal environments and wildlife to spilled oil in west peninsular Florida, Parts 1 and 2, Atlas. Res. Plan. Inst. R/82/7/7-15 report to Fla. Dept. Vet. and Comm. Affairs, Tallahassee, FL.

118. Giovannelli, R.F. 1988. Stormwater Inputs to Tampa and Sarasota Bays. In: E.D. Estevez (ed.), Proceedings of an Estuarine Seminar on Tampa and Sarasota Bays: Issues, Resources, Status and Management. U.S. Dept. of Commerce, NOAA, Estuarine Programs Office, Washington (in preparation).

119. Glinka, C. 1980. Survey of blue crab and stone crab distribution in Sarasota Bay, p. D1 through D57, In: W.J. Tiffany, III (ed.), Envir. status of Sarasota Bay: selected studies. Publ. by Mote Marine Lab.

120. Godcharles, M.F. and W.C. Jaap. 1973a. Fauna and flora in

hydraulic clam dredge collections from Florida west and southeast coasts. Fla. Dept. Nat. Resour. Spec. Sci. Rept. 40.

121. Godcharles, M.F. and W.C. Jaap. 1973b. Exploratory clam survey of Florida nearshore and estuarine waters with commercial hydraulic dredging gear. Fla. Dept. Nat. Resour. Prof. Pap. Ser. 21.

122. Goodwin, R. 1988. Tampa and Sarasota Bays Circulation. In: E.D. Estevez (ed.), Proceedings of an Estuarine Seminar on Tampa and Sarasota Bays: Issues, Resources, Status and Management. U.S. Dept. of Commerce, NOAA, Estuarine Programs Office, Washington (in preparation).

123. Gorelick, S. 1975. Southwest Florida regional hydrogeology and water supply, New College Environmental Studies Prog., June.

124. Gorzelany, J.F. and G.W. Patton. 1987. Recent strandings of Atlantic bottlenose dolphins along the Central Florida West Coast. Fla. Sci. 51(1).

125. Gorzelany, J.F., G.W. Patton, S. Hofmann and V.L. Wiese. 1988. Summary activities of Mote Marine Laboratory's Marine Mammal Stranding Program. 1987 Final Rept. submitted to Sarasota Co. Natural Resources Mgt. Dept.

126. Gourdie/Fraser & Assoc., Inc. 1985. Recommended twenty year hazard zones along the unincorporated shorelines of Big Sarasota Pass and Midnight Pass. Final Rept. to Sarasota Co., FL. 18 p.

127. Green, B. 1988. Can Sarasota Bay's cultural history survive? In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).

128. Grismer, K.H. 1946. The story of Sarasota: the history of the city and county of Sarasota. M.E. Russell. 376 p.

129. Grossman, M. 1974. Baysphere: the ecology of the bay communities in Sarasota. Senior Thesis, New College of USF, Sarasota, FL.

130. Guira, J.M. 1980. Acid rain study spring-summer 1979. Sarasota County Pollution Control Division.

131. Guira, J.M. et al. (Annual). Ambient water quality, Sarasota County, Florida, prepared for Sarasota Board of County Commissioners by Environmental Services Laboratory.

132. Habas, E. J. and C.K. Gilbert. 1974. Economic effects of the 1971 Florida red tide and the damage it presages for future occurrences. Environ. Letters 6(2):139-147.

133. Haddad, K. 1988. Habitat Trends and Fisheries in Tampa and Sarasota Bays. In: E.D. Estevez (ed.), Proceedings of an Estuarine Seminar on Tampa and Sarasota Bays: Issues, Resources, Status and

Management. U.S. Dept. of Commerce, NOAA, Estuarine Programs Office, Washington (in preparation).

134. Haeger, S. 1983. Simulating tide and wind-driven circulation in a shallow coastal bay with the dynamic estuary model. Doc. Rept., U.S. Naval Oceanographic Office. 33 p.

135. Hand, J., V. Tauxe and J. Watts. 1986. Sarasota Bay basin technical report. An appendix of the 305(b) water quality inventory for the State of Florida, June 1986. Water Quality Monitoring Technical Rept. #79. Fla. Dept. Envir. Reg., June.

136. Harris, J. and M. Kuhling. 1969. A study of the fishes found in the vicinity of Sarasota Bay, Florida. New College of USF, Sarasota, FL.

137. Hartigan, J.P. and S.A. Hanson-Walton. 1984. Tributary streamflows and pollutant loadings delivered to Tampa Bay. Fla. Dept. Envir. Reg., Tampa, FL.

138. Harvey, J. 1982. An assessment of beach erosion and outline of management alternatives, Longboat Key, Florida. Final Rept. to Longboat Key Town Commission. 154 p.

139. Heilprin, A. 1887. Explorations on the west coast of Florida and in the Okeechobee wilderness. Wagner Free Inst. Sci. (reprinted by Paleontol. Res. Inst., 1964).

140. Heyl, M.G. 1982. Manatee River ecological study: a technical basis for best management practices. OCM Contract CM-51 Final Rept. to Fla. Dept. of Envir. Reg.

141. Heyl, M.G. 1984. Downstream effects of permitted and proposed withdrawals from the Lake Manatee Reservoir. Manatee Co. Public Utilities. Dept., Bradenton, FL.

142. Heyl, M.G. and L.K. Dixon. 1988. Water quality status and trends (1966-1986) in Sarasota Bay. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).

143. Heyl, M.G., L.R. Freeberg and K.D. Dickinson. 1978. Dissolved oxygen during *G. breve* blooms along the Florida west coast, 1976-1978. J. Env. Sci. Health A13(10:725-731).

144. Hine, A.C., R.A. Davis, D.L. Means, M. Bland. (undated). Impact of Florida's Gulf coast inlets on the coastal sand budget. Final Rept. to FDNR, Univ. of So. Fl.

145. Hoban, R. 1975. Three groups of fish from Sarasota Bay. New College of USF, Sarasota, FL.

146. Honnick, K.R. 1970. Epiphytes of two seagrasses in Sarasota Bay. Independent study project rept., New College of USF, Sarasota.

147. Hopkins, R.W. 1976. Hurricane evacuation model: case study of Sarasota Keys. Masters Thesis, Univ. of Florida, Gainesville. 69 p.
148. Huggins, A., R.J. Orth and D. Heller. 1986. Factors affecting seagrass distribution in Sarasota Bay: an historical evaluation. Final Rept. to the City of Sarasota, by ERM Group, Inc. 30 p.
149. Irvine, A.B., M.D. Scott, R.S. Wells and J.H. Kaufmann. 1981. Movement and activities of the Atlantic bottlenose dolphin, Tursiops truncatus, near Sarasota, Florida. Fish. Bull. 79(4):671-688.
150. Hydrosience Research Group. 1980. Preliminary evaluation of the surface-water supplies in the Cow Pen Slough area. January.
151. Johansson, J.O.R. and A.P. Squires. 1988. Surface sediments and their relationship to water quality in Hillsborough Bay, a highly impacted subdivision of Tampa Bay, Florida. In: E.D. Estevez (ed.), Proceedings of an Estuarine Seminar on Tampa and Sarasota Bays: Issues, Resources, Status and Management. U.S. Dept. of Commerce, NOAA, Estuarine Programs Office, Washington (in preparation).
152. John L. Douglas and Assoc. 1968. Manatee County, Florida economic data. Rept. to Manatee County Chamber of Commerce, Bradenton.
153. Kaufman, R.F. and J.D. Bliss. 1978. Radium-226 in ground water of west central Florida. U.S. EPA, Water Resour. Bull. (Urbana). 14(6):1314-1330.
154. Keeler, K. 1973. Sarasota Bay, a paradise in peril. Image (Feb.: 3-6) (March: 3-5) (April: 2-6) (May: 8-10).
155. Kehl, M.J. and G.F. Gorzelany. 1987. Aerial surveys of coastal bottlenosed dolphin populations along the central Florida west coast. Fla. Sci. 51(1).
156. Kendall, W.H. 1966. Feasibility study and report for use of Payne Terminal as a facility for commercial boats and as a limited barge facility. Rept. to City of Sarasota Planning Dept., 45 p.
157. Kennedy, K.I. 1975. Worms and dirt: benthic animals and sediments of a spoil island. New College of USF. 29 p.
158. Kimball, A. and B. Fortune. 1987. 1987 shoreline survey of Sarasota Bay, Roberts Bay, and Little Sarasota Bay. Rept. to Sarasota Co. Natural Resources Dept. 49 p. + app.
159. Knowles, S.C. 1983. Holocene geologic history of Sarasota Bay, Florida. Unpubl. Masters Thesis, Univ. of So. Fla., Tampa. 128 p.
160. Knowles, S.C. and R.A. Davis, Jr. 1983. Hurricane influence on

Holocene sediment accumulation in Sarasota Bay, Florida. AAPG Bull. 67:3, 496 p.

161. Knowles, S.C. and R.A. Davis, Jr. 1986. Hurricane-induced carbonate concentration in a coastal bay sequence. 36th Ann. Meet. Gulf Coast Asso. Geol. Soc. & Soc. of Econ. Paleon. & Mineral., Baton Rouge, LA (abstract). In: AAPG Bull. 70:9, 1184 p.

162. Kunneke, J.T. and T.F. Palik. 1984. Tampa Bay environmental atlas. U.S. Fish. Wildl. Serv. Biol. Rept. 85(15).

163. Larkin, T.B. and W.J. Tiffany, III. 1984. Water quality trends of selected parameters for coastal Manatee County, Florida (1969-1983): Fla. Sci. 47:26 (abstract).

164. Leggette, Brashears and Graham. 1978. Manasota Basin Comprehensive Water Management Plan, Preliminary Hydrogeologic Evaluation of Selected Sites. March.

165. Levy, C.C. and J.K. Smith. 1978. Apathy and inexperience: a study of hurricane hazard perception in Sarasota County. New College of USF, Sarasota. 67 p.

166. Lewis, R.R. III. 1988a. Seagrass meadows of Sarasota Bay: a review. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).

167. Lewis, R.R., III. 1988b. Biology and Eutrophication. In: E.D. Estevez (ed.), Proceedings of an Estuarine Seminar on Tampa and Sarasota Bays: Issues, Resources, Status and Management. U.S. Dept. of Commerce, NOAA, Estuarine Programs Office, Washington (in preparation).

168. Lincer, J.L. 1975. The ecological status of Dona and Robert's Bays and its relationship to Cow Pen Slough and other possible perturbations. Final Rept. to Bd. Co. Commissioners, Sarasota Co., by Mote Marine Lab.

169. Lincer, J.L. and D. Zalkind. 1973. A preliminary note on organochlorine residues in the eggs of fish-eating birds of the west coast of Florida. Fla. Field Naturalist 1 (fall):1-4.

170. Lincer, J.L., O. Krivit and J.E. Shaw. 1979. People and pan-handling pelicans. Fla. Field Nat. 7(2):13-18.

171. Lopez, M.A. and W.M. Woodham. 1983. Magnitude and frequency of flooding in small urban watersheds in the Tampa Bay area, west-central FL. U.S. Geol. Surv. Water-Resources Invest. 82-42. Tallahassee, FL.

172. Lopez, M.A. and R.F. Giovannelli. 1984. Water-quality characteristics of urban runoff and estimates of annual loads in the Tampa Bay area, Florida, 1975-80. U.S. Geol. Surv., Tallahassee, FL. Water-Resources Investigations, 76 p.

173. Luer, C.A. and P.W. Gilbert. 1985. Mating behavior, egg deposition, incubation period and hatching in the clearnose skate, Raja eglanteria. Env. Biol. Fishes 13(3):161-171.
174. Lugo, A. and S.C. Snedaker. 1970. The ecology of the Oscar Scherer State Park: the effects of man on its structure and function. Rept. to Save Our Bays Assoc., Sarasota. 28 p.
175. Lyles, R. 1968. A preliminary study of microzoan plankton in Sarasota Bay. New College of USF, Sarasota, FL.
176. Mahadevan, S. and J.K. Culter. 1978. An ecological survey of a waterfront canal in Palma Sola Bay, Manatee Co., FL. Rept. submitted to J. Pratt by Conserv. Con., Palmetto, FL. 35 p.
177. Mahadevan, S., J.K. Culter, R.H. Blanchet, R.E. Yarbrough, G. McCallum, M.L. Gallo, A. Rule, J. Leverone, D.W. Famiglietti and S. Hofmann. 1981. A preliminary assessment of the effects of treated sewage discharge on the benthic infaunal communities of Whitaker Bayou and adjoining Sarasota Bay. Rept. submitted by Mote Marine Lab., Sarasota FL to Coastal Zone Mgt. Dept., Sarasota Co., FL.
178. Malcolm Pirnie Engineers. 1958. Report on the engineering and economic feasibility of the Manatee River water supply and conservation project. Submitted to Manatee Co. Bd. Comm., Bradenton, FL. 71 p.
179. Manatee County, Florida. 1966. Island "A" Aqua-Park Master Plan. Manatee Co. Plann. Comm., Bradenton. 13 p.
180. Manatee County, Florida. 1967. Manatee County recreational facilities. Bradenton.
181. Manatee County, Florida. 1979. The Manatee Plan, a management system for Manatee County. 4 Vol., Bradenton.
182. Manatee County, Florida. 1981a. Comprehensive zoning and land development code for Manatee County. Bradenton. 1 Vol. (looseleaf).
183. Manatee County, Florida. 1981b. Atlas of public properties. Highway and Engineering Department, Bradenton, FL. 172 p.
184. Manatee County, Florida. 1987. Report of findings and recommendations from the Technical Advisory Committee for the Acquisition of Emerson Point, Riverbay Area, and Perico Island, Manatee Co. Parks and Recreation Department, FL.
185. Mann, J.A. 1981. Cow Pen Slough water management investigation, Phase I. Sarasota and Manatee Counties, Florida. Submitted to SW Fla. Water Mgt. Dist. March.
186. Mapes, J.L. 1983-1986. Sea Turtle Conservation Program. Mote Marine Lab. Tech. Repts. 74(1983), 88 (1984), 96 (1985) and 1986.

187. Mapes, J.L. 1984. Loggerhead sea turtle conservation program. Fla. Sci. 47(Suppl. 1):19.
188. Marsh, W.T. 1976. Phytoplankton characteristics of selected Florida real estate canals. M.S. Thesis, Dept. Envir. Eng. Sci., Univ. of Fla., Gainesville. 135 p.
189. Marth, D. 1973. Yesterday's Sarasota: including Sarasota County. Miami: EA Seemann Publ., Inc. & Sarasota Co. Historical Commission.
190. Mathis, K. 1979. Commercial fishing activity and facility needs in Florida: Pasco to Sarasota Counties. Univ. Fla. Inst. Food Agricultural Sci., Gainesville.
191. McCarthy, J.F. 1988. History of Sarasota Bay. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).
192. McNulty, J.K., W.N. Lindall, Jr. and J.E. Sykes. 1972. Cooperative Gulf of Mexico estuarine inventory and study, Florida. Phase 1: area description. NOAA Tech. Rept. NMFS Circ. 368. 126 p.
193. Miller, J. 1988. Channels, edges, glimpses, and spots: the public's recreational relationship with Sarasota Bay. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).
194. Miller, R.L. and H. Sutcliffe, Jr. 1985. Occurrence of natural radium-226 radioactivity in ground water of Sarasota County, Florida. U.S. Geol. Surv. Water-Resources Invest. Rept. 84-4237. 34 p.
195. Morrill, J.B. 1968a. Report on a biological survey of the tidal flats and shoreline of the Bay Point area. New College of USF.
196. Morrill, J.B. 1968b. Report on a biological survey of the tidal flats and shoreline of Icard Island, Emerald Isles area, Bowless Creek, Sarasota Bay, FL. New College of USF.
197. Morrill, J.B. 1969. Biological survey of a proposed dredge and fill area in the vicinity of Marina Isle subdivision, Holmes Beach, FL. New College of USF.
198. Morrill, J.B. 1970a. Biological survey of submerged lands in the vicinity of the proposed Watergate Center boatel, Sarasota Bay, City of Sarasota, Co. of Sarasota, FL. New College of USF.
199. Morrill, J.B. 1970b. Biological survey of a proposed dredge and fill area "Sleepy Lagoon Addition", bordering Bishop's Bayou and Sarasota Bay, Town of Longboat Key, Manatee Co., FL. New College of USF.

200. Morrill, J.B. 1974. Hydrography of the Grand Canal and Heron Lagoon Waterways, Siesta Key, FL.
201. Morrill, J.B. 1978(79). South Lido Key studies. New College of USF.
202. Morrill, J. and C. Blair. 1969. A biological and ecological survey of the submerged lands in the proposed Bay Harbor development - Siesta Key, Florida. New College of USF, Sarasota, FL.
203. Morrill, J.B., D. deNarvaez, R. Foster, F.B. Ayer, II and E. Connor. 1974. A report on the hydrography and biology of two man-made canal systems -- Heron Lagoon and Grand Canal -- on Siesta Key Sarasota County, Florida. New College of USF, Div. of Nat. Sci.
204. Morrill, J.B. and J.F. Dequine. 1971. Findings and conclusions of a biological survey and ecological study of South Perico Island, Manatee co., FL. Feb.-May 1969. A revised rept. to Curtiss-Wright Corp. New College of USF.
205. Morrill, J.B. and S. Donaldson. 1968. Observations of a seawall community. New College of USF.
206. Morrill, J.B., C.B. Morrill, S. Baker, T. Hayes and R. Gasser. 1977. Lemon Bay 208 water quality study, part I and II. Final Rept. to SW Fla. Reg. Plann. Council.
207. Morris. J.K. 1988. SARABASIS discussion, group summary and evaluation. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).
208. Mote Marine Laboratory and Sarasota Co. Div. of Pollution Control. 1982. Phillippi Creek water quality study. Submitted to SW Fla. Reg. Plann. Council, Ft. Myers, FL. March.
209. Murdock, J.F. 1957. Report on the sport and commercial fisheries of the Braden and Manatee Rivers. Fla. St. Bd. Conserv. Rept. 57-23, Tallahassee.
210. New College, USF. 1978. Environmental biology of South Lido Park. Vol. I. Ecology of wetlands and grassflats. Vol. II. Fringe mangrove communities. Vol. III. Grassflat and benthic communities. Vol. IV. Plankton survey. New College biology class report, Sarasota.
211. Odum, W.E. 1970. Insidious alteration of the estuarine environment. Trans. Am. Fish. Soc. 99:836-847.
212. Ott, H.W. 1971. Observations on the composition of marine plankton at Whitaker Bayou, Sarasota, Florida. New College of USF, Sarasota, FL.
213. Patton, G.W. 1987a. Studies of the West Indian manatee: Anna Maria to Venice, Florida. Mote Marine Laboratory Tech. Rept. 105.

214. Patton, G.W. 1987b. Marine mammals of Florida's west coast inland navigation district, a guide for boaters in Manatee, Sarasota, Charlotte and Lee Counties. Mote Marine Laboratory Tech. Rept. 112.
215. Paul, R.T. 1988. Birds of the Sarasota Bay system: numbers, distribution and feeding ecology. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).
216. Perry, M.J. 1988. Local and State Management Initiatives. In: E.D. Estevez (ed.), Proceedings of an Estuarine Seminar on Tampa and Sarasota Bays: Issues, Resources, Status and Management. U.S. Dept. of Commerce, NOAA, Estuarine Programs Office, Washington (in preparation).
217. Phillips, T.D., K. Mahadevan and R.D. Garrity. 1988. Heavy Industry. In: E.D. Estevez (ed.), Proceedings of an Estuarine Seminar on Tampa and Sarasota Bays: Issues, Resources, Status and Management. U.S. Dept. of Commerce, NOAA, Estuarine Programs Office, Washington (in preparation).
218. Pierce, R.H. 1982. Analysis and characterization of tar collected in New Pass, Sarasota, Florida. Mote Marine Laboratory Tech. Rept. 51.
219. Pierce, R.H. and R.C. Brown. 1984. Coprostanol distribution from sewage discharge into Sarasota Bay, FL. Bull. Environ. Contam. Toxicol. 32:75-79.
220. Pierce, R.H. and R.C. Brown. 1986. Naled toxicity to intertidal estuarine organisms. Final Rept. to Sarasota Co. Mosquito Control Off., Sarasota, FL.
221. Pikley, O.J., Jr. et al. 1984. Living with the West Florida shore. Duke University Press, Durham, NC.
222. Piller, S. 1970. Effects of pollution on the growth of diatoms. Unpubl. Sr. Thesis, New College of USF, Sarasota. 35 p.
223. Post, Buckley, Schuh & Jernigan, Inc. 1978. Recommended control techniques for Phillippi Creek, Sarasota County, Final Rept. to Fla. Dept. Poll. Ctrl., Tallahassee, FL.
224. Post, Buckley, Schuh & Jernigan, Inc. 1987. City wide master drainage plan, City of Sarasota, FL.
225. Price, G. 1975. Introduction to the marine flora and fauna of the Sarasota area. Unpubl. Sr. Thesis, New College of USF, Sarasota. 35 p.
226. Priede-Sedgwick, Inc. 1983. Sarasota Bay Water Quality Study. Prepared for Fla. Dept. Envir. Reg., January 1983.
227. Pumphrey, D. 1988. A sense of bay community. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).

228. Ravan, J.E. 1988. The national estuary program and the resources of the gulf. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).
229. Reeve, M.R. 1975. The ecological significance of the zooplankton in the shallow subtropical waters of South Florida. Estuarine Research, Vol. I. Martin Wiley (ed.). Academic Press, Inc., London. 738 p.
230. Reid, B. and J. Baenziger. (undated) The saltmarsh of Sarasota Bay. New College of USF, Sarasota, FL.
231. Reynolds, Smith and Hills, Inc. 1982. Floodplain study for the lower Manatee River, Manatee Co., FL.
232. Rice, S.A., G.W. Patton and S. Mahadevan. 1981. An ecological study of the effects of offshore dredged material disposal with special reference to hard-bottom habitats in the eastern Gulf of Mexico. Rept. submitted by Mote Marine Lab. to Manatee Co. Chamber of Commerce, Bradenton, FL. 45 p.
233. Rickert, D.A. and A.M. Spieker. 1971. Real-estate lakes. Geological Survey Circular 601-G. U.S. Dept. of Interior.
234. Ross, B.E. 1973. Dona Bay Study. Rept. to Sarasota Co. Bd. Comm., Sarasota. August.
235. Ross, B.E. and M.W. Anderson. 1972. Hurricanes. Univ. of South Florida. 87 p.
236. Ross, BE., M.W. Anderson and P. Jenkins. 1976. Hurricane tide heights at Longboat Key. College of Engineering, Univ. of So. Florida. 110 p.
237. Rushton, B. and J. Tullai. 1977. A case study of an altered neutral estuary: North Siesta Key. New College of USF. Sr. Thesis, Sarasota.
238. Russell & Avon, Inc. 1978. Manatee County North 201 Facilities Plan. Rep. to Manatee Co. Bd. Comm. produced in Daytona Beach, FL. (var. pgs.)
239. Russell & Axon and Smith & Gillespie. 1976. South County 201 Facilities Plan for Manatee County, Florida. EPA Proj. Rept. No. C-120540010, Washington, DC.
240. Sarasota, City of. 1979. Sarasota comprehensive city plan. Sarasota Planning Department.
241. Sarasota Soil Conservation District. 1961. Watershed Work Plan Sarasota West Coast Watershed, March. 64 p.

242. Sarasota County, Florida. 1961. Sarasota County Coastal Basins Flood Control Study.
243. Sarasota County, Florida. 1975. Critical estuarine and coastal resources map series. Div. of Long Range Plan., Sarasota Co.
244. Sarasota County, Florida. 1977a. Sarasota County 201 Facilities Plan.
245. Sarasota County, Florida. 1977b. The gulf shoreline of Sarasota County and recommended techniques for its future management. Sarasota Co. Plann. Dept., Sarasota. 82 p.
246. Sarasota County, Florida. 1979a. Sarasota County Natural Disaster Plan.
247. Sarasota County, Florida. 1979b. Ambient Water Quality Report.
248. Sarasota County, Florida. 1979c. The City of Venice Comprehensive Plan. March.
249. Sarasota County, Florida. 1980. "Apoxsee", Sarasota County's Comprehensive Framework for the Future, Sarasota County, FL.
250. Sarasota County, Florida. 1983. Hurricane evacuation plan. Dept. of Civil Defense, Sarasota.
251. Sarasota County, Florida. 1984. Blue Ribbon Panel for Midnight Pass, Summary Rept., April 24. 6 p.
252. Sarasota, City of. 1978. The conservation and coastal zone management plan for the City of Sarasota. Planning Dept., Sarasota. 123 p.
253. Sarasota 2000. 1978. Sarasota 2000: Focus on the future -- final statement. November.
254. Sauers, S.C. 1980. Seasonal growth cycles and natural history of two seagrasses (Halodule wrightii Aschers, and Thalassia testudinum Konig) in Sarasota Bay, Florida. In: W.J. Tiffany, III (ed.), Environmental status of Sarasota Bay: selected studies. Selby Foundation and Mote Marine Lab., Sarasota, FL.
255. Sauers, S.C. 1981a. Seasonal growth of seagrasses in Sarasota Bay, Florida with notes on historical changes and considerations for restoration, In: R.H. Stoval (ed.), Proceedings of the 8th Annu. Conf. on Wetlands Restoration and Creation, 200 p. Tampa, Fla., May 8-9, 1981.
256. Sauers, S.C. 1981b. Ecological studies of seagrass communities in Sarasota Bay. Proc. 1981 Conference on Wetlands Restoration, Tampa, FL.

257. Sauers, S.C. 1985. Ecological status of Little Sarasota Bay with reference to Midnight Pass. Submitted to Co. of Sarasota County, Coastal Zone Mgt. Div., Nat. Resour. Mgt.
258. Sauers, S.C. 1988. Present management of Sarasota Bay: is there a method to the madness? In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).
259. Sauers, S.C. and R. Patten. 1981. A comparison of 1948 and 1979 seagrass bed distribution in the vicinity of Whitaker Bayou, Sarasota Bay, Florida. Office of Coastal Zone Management, Sarasota County, Sarasota, Florida, February 1981, as reviewed in Wang et al., 1985.
260. Scarbrough, L. and C.F. Hains. 1980. Preliminary evaluation of the surface-water supplies in the Cow Pen slough area. Submitted to: Manasota Basin Bd. of SW Fla. Water Mgt. Dist., by Hydroscience Res. Group, Lakeland, FL. January.
261. Scheb, J.M. 1965. Review of "Bird Key Agreement" March 27, 1953. Memorandum to Mayor D. Cohen and Sarasota City Commission. 53 p.
262. Seaman, W., Jr. 1988a. Planning Florida estuaries: bridging the gap between science and management. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).
263. Seaman, W. Jr. 1988b. Federal Programs. In: E.D. Estevez (ed.), Proceedings of an Estuarine Seminar on Tampa and Sarasota Bays: Issues, Resources, Status and Management. U.S. Dept. of Commerce, NOAA, Estuarine Programs Office, Washington (in preparation).
264. Seijo, M.A., R.F. Giovannelli and J.F. Turner, Jr. 1979. Regional flood - frequency relations for west-central Florida. Water-Resources Investigations, Open-File Rept. 79-1293, U.S. Geol. Surv.
265. Sipe, N.G. 1978. An energy overview analysis of Sarasota County, Florida.
266. Sipe, N. and M. Snow. 1975. A Homeowners Guide to lake Management. New College Environ. Stud. Prog., Sarasota, FL.
267. Smally, Wellford and Nalven, Inc. 1958. Report on the engineering and economic feasibility of the proposed lower Phillippi Creek Utility District for water supply and sanitary sewerage. Rept. to Phillippi Creek Utility Dist., Sarasota. 93 p.
268. Smally, Wellford and Nalven, Inc. 1961. Phillippi Creek flood control report. Rept. to Sarasota Co. 63 p.
269. Smally, Wellford and Nalven, Inc. 1967. Report on the engineering and economic feasibility of water and sanitary sewerage systems for the County of Sarasota. Rept. to Sarasota Co. 123 p.

270. Smally, Wellford and Nalven, Inc. 1970. Shoreline analysis of the City of Sarasota. Rept. to Tampa Bay Regional Planning Council, St. Petersburg. 152 p.
271. Smally, Wellford and Nalven, Inc. and Russell and Axon. 1975. 1971. Water and Wastewater Master Plan. Rept. to Sarasota Co.
272. Smally, Wellford and Nalven, Inc. and Russell and Axon. 1977a. Sarasota County 201 Facilities Plan. Rept. to Sarasota Co. Utilities. Sarasota.
273. Smally, Wellford and Nalven, Inc. and Russell and Axon. 1977b. Manasota literature assessment study, 1977. Rept. to SWFWMD, Manasota Basin Board, on behalf of Sarasota Co.
274. Smith, G.B. 1975. Red tide and its impact on certain reef communities in the mid-eastern Gulf of Mexico. Environ. Lett. 9(2):141-152.
275. Smith, N.P. 1982. Tidal flushing of intracoastal bays. Contr. Mar. Sci. 25:1-12.
276. Smith and Gillespie Engineers, Inc. 1981a. Important aspects of the design of the Bradenton reservoir enlargement and upgrading improvements. Final Rept. to City of Bradenton.
277. Smith and Gillespie Engineers, Inc. 1981b. Comprehensive storm water management study for the city of Bradenton, Florida: Tech. Suppl. File No. 7109-53. City of Bradenton, Public Works Dept. 58 p. plus figures.
278. Smith and Gillespie Engineers, Inc. 1983. Engineers report on the Evers River watershed management study - city of Bradenton. S&G Proj. No. 7109-71-05, Jacksonville.
279. Smolker, D., T. Hayes and C.S. Baker. 1977. Tidal creeks of Southwest Florida: an environmental and aesthetic assessment. Unpubl. Sr. Thesis, New College of USF, Sarasota.
280. Southeast Area Task Force. 1984. Southeast area study: final report on land use, public improvements, and funding. Final Rept. to Manatee Co. Bd. of Comm., Bradenton.
281. Southwest Florida Regional Planning Council. 1977a. Final Water Quality Report of the Lemon Bay Study Area.
282. Southwest Florida Regional Planning Council. 1977b. Housing Report.
283. Southwest Florida Regional Planning Council. 1978a. Land Use Policy Plan. April.

284. Southwest Florida Regional Planning Council. 1978b. Housing and Community Development Workshop.
285. Southwest Florida Regional Planning Council. 1979. Area wide Housing Opportunity Plan (draft). Ft. Myers, FL.
286. Southwest Florida Water Management District. 1985. Resource evaluation of the proposed Braden River Water Management Land Acquisition. Brooksville, FL.
287. Stabin, B. 1979. The perception of natural disaster. Unpubl. Sr. Thesis, New College of USF, Sarasota. 160 p.
288. Steidinger, K.A. and T.D. Phillips. 1988. Plankton of Sarasota Bay. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).
289. Stern, T.A. and E.D. Estevez. 1985. Macroalgae cover in a Florida west coast tidal lagoon. Fla. Sci. 48(Suppl. 1):25.
290. Stevely, J.M., E.D. Estevez and J.K. Culter. 1988. Bottom dwelling animals of Sarasota Bay, In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).
291. Stuart, M. and P. Taddio (eds.). 1979. Hydrologic and biological monitoring of lower Sarasota Bay, 1975-1978. Sarasota High School, Sarasota, FL. Advanced Mar. Sci. Rept. 1. 134 p.
292. Stuart, M.E., R. Chamberlain and M. Brethauer. 1980. Hydraulic and plankton studies of lower Sarasota Bay. In: W.J. Tiffany (ed.). Environmental status of Sarasota Bay: selected studies. Selby Foundation & Mote Marine Laboratory, Sarasota, various pages.
293. Stubensky, E.D. 1974. An exploratory investigation of the estuarine system of South Creek. Unpubl. Sr. Thesis, New College of USF, Sarasota.
294. Sutton Manatee Assoc. 1974. Spoonbill Bay, Bradenton, Florida. DRI Application. Edison, NJ.
295. Tabb, D.C. 1974. Vegetational analysis and zoological study of the Oaks property. Bioindustries Dev. Co., Miami. 40 p.
296. Taft, W.H. and F. Goldstein. 1980. Sediment size analysis from Sarasota Bay. In: W.J. Tiffany (ed.). Environmental status of Sarasota Bay: selected studies. Selby Foundation & Mote Marine Laboratory, Sarasota, various pages.
297. Tampa Bay Management Study Commission. 1985. The Future of Tampa Bay. Rept. to Fla. Legislature.

298. Tampa Bay Regional Planning Council. 1967. Inventory and analysis of existing water, sewer, and solid waste systems in the Tampa Bay region (includes Manatee and Sarasota Counties). St. Petersburg, FL.
299. Tampa Bay Regional Planning Council. 1978. Area wide water quality management plan for the Tampa Bay region. June.
300. Tampa Bay Regional Planning Council. 1986a. Water quality studies of the Anclote and Braden Rivers. St. Petersburg, FL. 125 p.
301. Tampa Bay Regional Planning Council. 1986b. Ecological assessment, classification and management of Tampa Bay tidal creeks. St. Petersburg, FL.
302. Tampa Bay Regional Planning Council. 1987. Future of the region: a comprehensive regional policy plan for the Tampa Bay region. St. Petersburg. 154 p.
303. Tiffany, W.J., III. 1974a. Brushy Bayou and Lido Key study for City of Sarasota. New College of USF.
304. Tiffany, W.J., III. 1974b. Checklist of benthic invertebrate communities in Sarasota Bay with special reference to water quality indicator species. Contr. #2, Flower Gardens Ocean Res. Ctr., Mar. Biomed. Inst., Galveston, TX. 123 p.
305. Tiffany, W.J., III. 1980. Environmental status of Sarasota Bay: selected studies, Sarasota, FL: Mote Marine Laboratory.
306. Tiffany, W.J., III and D.E. Wilkinson. 1988. Ports and Port Impacts. In: E.D. Estevez (ed.), Proceedings of an Estuarine Seminar on Tampa and Sarasota Bays: Issues, Resources, Status and Management. U.S. Dept. of Commerce, NOAA, Estuarine Programs Office, Washington (in preparation).
307. Tiffany, W.J., III and M.G. Heyl. 1978. Invertebrate mass mortality induced by a Gymnodinium breve red tide in Gulf of Mexico waters at Sarasota, FL. J. Envir. Sci. Health A13(9):653-662.
308. Treat, S.F., J.L. Simon, R.R. Lewis, III and R.L. Whitman, Jr. 1985. Proceedings Tampa Bay Area Scientific Information Symposium. Fla. Sea Grant College. Rept. No. 65.
309. Tropical Bioindustries Development Co. 1974. Survey of natural resources of the Oaks Development Tract with comments on adjacent estuarine and upland areas pertinent to the development. Miami. 56 p.
310. Twitchell, Allen and Gulak, Inc. 1969. Payne terminal report. Sarasota Co. Plan. Dept. 23 p.
311. U.S. Army Corps of Engineers. 1948. Anna Maria and Longboat Keys, Florida, beach erosion study. Army Beach Erosion Bd., Washington, DC.

312. U.S. Army Corps of Engineers. 1959. General and detail design memorandum: Intracoastal Waterway - Caloosahatchee River to Anclote River, Florida.
313. U.S. Army Corps of Engineers. 1962. Detailed project report on Sarasota passes, Sarasota, FL. Jacksonville.
314. U.S. Army Corps of Engineers. 1963. Survey Report: Phillippi Creek Basin, Florida.
315. U.S. Army Corps of Engineers. 1969. Beach erosion control study for Sarasota County. Jacksonville.
316. U.S. Army Corps of Engineers. 1971. Survey report on Manatee and Braden Rivers, Florida. Jacksonville, various pages.
317. U.S. Army Corps of Engineers. 1972. Beach erosion control study in Manatee County, Florida. Jacksonville.
318. U.S. Army Corps of Engineers. 1973. Flood plain information South Creek, North Creek, Catfish Creek, Clower Creek, Elligrew Bayou and Matheny Creek, Sarasota County, Florida. Jacksonville District, FL.
319. U.S. Army Corps of Engineers. 1975. Detailed project report on Longboat Pass, Florida. Jacksonville.
320. U.S. Army Corps of Engineers. 1976. Final environmental impact statement. Maintenance dredging west coast inland waterway, Caloosahatchee River to Anclote River, FL. Jacksonville, FL.
321. U.S. Army Corps of Engineers. 1978. Ecological comparison of beaches, offshore borrow sites and adjacent bottom at Anna Maria Island and Treasure Island, FL. In: Phase I. General design memorandum on Manatee County Beach Erosion Control Proj. Corps of Eng., Jacksonville, Dist.
322. U.S. Army Corps of Engineers. 1981. The geometry of selected U.S. tidal inlets. GITI Rept. No. 3. 163 p.
323. U.S. Army Corps of Engineers. 1984. Beach erosion control and hurricane protection study for Sarasota County, Florida, with environmental impact statement. Jacksonville District (various pages).
324. U.S. Soil Conservation Service. 1959. Soil survey of Sarasota County, Florida. Series 1954, No. 6.
325. U.S. Soil Conservation Service. 1961. Work Plan for Sarasota West Coast Watershed: U.S. Dept. of Agriculture.
326. U.S. Soil Conservation Service. 1981. Soil surveys in Florida - a status report. Rept. FY-73-80, Gainesville, Florida.

327. Valentine, R.H. 1984. Artificial nursery habitat development for stone crabs. Unpubl. Sr. Thesis, New College of USF, Sarasota. 89 p.
328. Walton, R. 1988. Meteorology and hydrology of Sarasota Bay. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).
329. Walton, R.W. (no date). Ecology of benthic foraminifera in the Tampa-Sarasota Bay area, Florida, In: R.L. Miller (ed.) Papers in Marine Geology. The MacMillan Co., NY.
330. Wang, J., N. de Rooij, J. Ryther and A. Huggins. 1985. Effects of point and non-point sources on Sarasota Bay. Prepared for City of Sarasota, Florida. February 1985. ERM, Inc.
331. Wells, R.S. 1978. Home range characteristics and group composition of Atlantic bottlenose dolphins, *Tursiops truncatus*, on the west coast of Florida. M.S. Thesis, Univ. Fla., Gainesville, 91 p.
332. Wells, R.S. 1988. The marine mammals of Sarasota Bay. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).
333. Wells, R.S., A.B. Irvine and M.D. Scott. 1980. Social ecology of inshore odontocetes. Chpt. 6 in L.M. Herman (ed.), Cetacean Behavior: Mechanisms and Processes. John Wiley & Sons.
334. Wells, R.S., M.D. Scott and A.B. Irvine. 1987. Social structure of free-ranging bottlenose dolphins. Chpt. 7 in H.H. Genoways (ed.) Current Mammalogy, Vol. 1, Plenum Press.
335. West Coast Inland Navigation District. 1980. Location of dredge and fill sites for special study project concerning long and short term ecological effects of placement of dredge materials upon submerged land. Memo in a collection of papers (Sarasota Bay reports and studies). Planning Dept., Sarasota Co., FL.
336. Wiese, V.L., J.L. Mapes and S. Hofmann. 1987. Loggerhead sea turtle nesting activities on the central Florida west coast with emphasis on the tagging program. Fla. Sci. 50 (Suppl. 1):17.
337. Wilkison, D. 1977. A geography of human settlement in Sarasota County, Florida. M.S. Thesis, Univ. of So. Florida.
338. Windsor, J.G., Jr. 1985. Nationwide review of oxygen depletion and eutrophication in estuarine and coastal waters. Final Rept. to Brookhaven Nat. Lab. (New York). Fla. Int. Technol., Melbourne.
339. Wolansky, R.M. 1983. Hydrogeology of the Sarasota-Port Charlotte area, Florida. U.S. Geol. Surv. Water Resour. Investigations Rept. 82-4089, 48 p.

340. Woodburn, K.D. 1959a. Arvida-Bird Key fill. Fla. St. Bd. Conservation Marine Laboratory. FSBCML No. 59-46.
341. Woodburn, K.D. 1959b. Survey of two proposed dredge and fill sites in Manatee County, Florida. Fla. St. Bd. Conserv. Mar. Lab. (unpubl. mimeo).
342. Woodburn, K.D. 1960. Sarasota County Marine Survey. Fla. St. Bd. Conser. Mar. Lab. FSBCML No. 60-15, CS No. 60-1.
343. Woodburn, K.D. 1969. Conservation survey report: proposed bulkhead line revision, Sarasota Bay, Town of Longboat Key, Sarasota and Manatee Counties. Fla. St. Bd. Conser., Tallahassee. 10 p.
344. Woolever, J.D. and O.L. Verizzo. 1967. Handbook for field trips in marine biology: a study of living things along the coast of Sarasota, Florida. Sarasota Bd. Publ. Instruction Pilot Prog. in Sci., Sarasota. 55 p.
345. Woolfenden, G.E. 1983. Rare, threatened and endangered vertebrates of southwest Florida and potential OCS activity impact. U.S. Fish Wildl. Serv., Washington. FWS/OBS-82103. 64 p.
346. Yokel, B.J. 1988. Review and assessment of SARABASIS. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).
347. Ziene, D. 1969. Molluscan fauna in Sarasota Bay intertidal grass flat. New College of USF, Sarasota, FL.
348. Zube, D. 1968. The effects of "progress on commercial fishing in the Sarasota-Manatee area". New College, USF, Sarasota.

Revised March 31, 1988

Annotated References

by

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Armentano, T.V., R.A. Park and C.L. Cloonan. 1988. Impacts on coastal wetlands throughout the United States, Ch. 4, In: U.S. EPA, Impact of sea level rise on coastal wetlands in the U.S. (in press).

Increasing atmospheric concentrations of carbon dioxide and other gases released by human activities are generally expected to cause a warming of the earth and elevation of sea level by expanding ocean water, melting glaciers, and affecting the polar ice sheets. Coastal marshes and swamps are generally within a few feet of sea level and would be lost if sea level rises significantly. Although new wetlands could form where new areas are flooded, this could not happen where the land adjacent to today's wetlands is developed and protected from the rising sea. The impact of sea level rise on coastal wetlands will depend in large measure whether developed areas immediately inland of the marsh are protected from rising sea level by levees and bulkheads. The projected rise in sea level can be expected to result in a net loss of wetlands in most areas. Factors not considered in this report could increase or decrease the vulnerability of wetlands to a rise in sea level. However, the coastal wetlands of Louisiana appear to be the most vulnerable to a rise in sea level.

Bird, P.M. 1980. Ecological study and environmental evaluation of the fishes of Sarasota Bay, Florida. In: W.J. Tiffany (ed.). Environmental status of Sarasota Bay: selected studies. Selby Foundation & Mote Marine Laboratory, Sarasota, various pages,

Sarasota Bay's fish population composition is comparatively homogeneous and shows considerable overlap of fish species between habitats. Habitats within the Bay, particularly the grass beds, were found to still function as viable ecological niches, affording food and protection to fish species of differing lifestyles. The Sarasota Bay fish population was dominated by the pinfish, Lagodon rhomboides, throughout the year. But peaks in the numbers of individuals and numbers of species occurred in June and October over all individuals and species.

Diversity indices indicated that Sarasota Bay is moderately stressed on an annual basis. The dramatic dominance of a single species, the pinfish Lagodon rhomboides, is also a sign of stress in the ecosystem. Gill anomalies that have been associated with polluted environments were very prevalent in Bay fishes. The high incidence of seriously parasitized fishes at the Phillippi Creek station may also be significant. Estuaries are historically subject to extremes of environmental conditions which vary from year to year as well as other natural and accumulative stresses so a single year of investigation is not sufficient to discern significant biological cycles.

Camp, Dresser & McKee, Inc. 1987. Sarasota County Stormwater Master Plan, Final Rept., Sarasota Co. Transportation Dept., Sarasota Co., Fla.

Inadequacies of the existing stormwater management system motivated preparation of a Stormwater Master Plan with the purpose of

assessing the need for improvement of major drainage systems in developed areas of Sarasota County. Analysis was limited to portions of 2 major basins, Alligator and Phillippi Creeks, and extrapolated to the 14 remaining non-coastal basins. Objectives of the detailed hydraulic and hydrologic analyses were for developed or developing areas to: 1) assess the adequacy of primary stormwater conveyance systems; 2) estimate improvement costs; 3) prioritize the management needs of individual basins; 4) develop a plan or identify options available for financing operation and improvement.

The analysis focused on improvements to the primary conveyance and outfall system. Local systems were treated only in enough detail to establish their impact on the primary system. Major tasks of the analysis were: 1) data collection; 2) drainage facility mapping; 3) land use mapping; 4) design storm development; 5) level of service determination; 6) Alligator and Phillippi Creek study; 7) assessment of the remaining basins; 8) ranking system development and application; 9) finance plan development. Consideration was given to the effects of flood control such as degradation of downstream water quality, floodway inundation, and outfall environmental impacts. 'Soft' drainage features including natural drainageways, artificial lakes, canals, and grass-lined open channels were focused on during development of the Master Plan due to the benefits they may give. Expected benefits included stormwater treatment, surficial aquifer recharging, and saltwater intrusion barriers.

CH₂M-Hill and Larsen Engineering, Inc. 1982. Manatee County wastewater master plan. Bradenton, FL. 1 Vol. (looseleaf).

Manatee County's Wastewater Master Plan is the result of a program to provide coordinated planning of wastewater management methods and facilities for the period 1985 to 2005. The planning area excludes the cities of Bradenton and Palmetto and subdivides the southern county to accommodate the expected rapid growth. Planning efforts are consistent with the results of an environmental inventory made for the original Section 201 facilities planning program. Additional design considerations include influent characteristics, regulatory requirements, effluent limitations, and evaluation criteria for wastewater disposal and treatment options. Most criteria are subjective, including such criteria as environmental impact, resource recovery, and implementability.

North Manatee County, currently served by numerous on-site and local systems, is proposed for development of a centralized wastewater service. Disposal options for the central treatment facility in this area include surface discharge into the Manatee River, deep well injection, limited access irrigation, urban refuse, and evaporation/percolation ponds. Surface discharge into the Manatee River after secondary treatment was recommended after analysis of alternatives. Increases in facility capacity serving southwest Manatee County will be required as the area develops. Expansion of the existing facility and reevaluation of discharge alternatives was recommended. Analysis of alternatives showed that surface discharge into the Manatee River of secondarily treated effluent was the preferred disposal alternative.

Southeast Manatee County is currently served by on-site and local systems in areas not concentrated enough to be served by the existing Southwest sewage treatment facility. A separate centralized sewage treatment service for the Southeast county is proposed. The discharge of secondarily treated effluent into the Manatee River is recommended as the best disposal alternative.

Collins, K.M. (1988). Growth and land use around Sarasota Bay: 1860-1987. In: E.D. Estevez (ed.). Proceedings, Sarasota Bay Scientific Information Symposium (in preparation).

The health of the Bay's natural resources was important to Sarasota Bay area residents, mostly fishermen and farmers, until recognition of the area's potential as a tourist destination in the 1920's subjugated concern for the protection of the natural environment to the profit motive. Development was particularly intense during the 1960's, and many of the Bay's natural features were altered or destroyed. Public and legislative knowledge of the experiences of Florida East coast communities motivated growth management efforts to protect the Bay's natural resources but intense development pressures rendered early attempts at comprehensive plans and zoning of coastal communities inadequate. The Local Government Comprehensive Planning and Land Development Act significantly improves growth management of coastal Florida communities. Comprehensive plans that will be adopted are now tied to the availability of natural resources as well as the ability of local governments to provide essential services.

Daltry, W.E. 1988. Economy of Sarasota Bay. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).

Sarasota Bay's conventional economic impact of \$20 million dollars annually is small, less than 1% of the total economic activity of Sarasota and Manatee counties bordering it. But, its contribution to the overall value of the community is much larger. Usage of the Bay as a sewage disposal and stormwater runoff pond are significant non-expenses to local governments. This environmental neglect increases the dollar value of the Bay by about 40%. The scenic value of Sarasota Bay is estimated using the conventional economic impact of waterfront residential properties. The annual dollar value of waterfront residential properties worth approximately \$1.9 billion are four times the Bay's conventional economic value, or \$87.5 million. About \$115 million dollars of annual economic activity is provided by Sarasota Bay when the factors above are summed.

Edwards, R.E. 1988. Fishes and fisheries of Sarasota Bay. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).

Based on limited ichthyological surveys of Sarasota Bay and extensive surveys of adjacent Tampa Bay and Charlotte Harbor, probably over 200 species of marine and estuarine fishes regularly occur in Sarasota Bay. Many important species are known to move between Bay waters and coastal Gulf waters due to seasonal changes in water temperature, food abundance, and/or life history patterns. Freshwater inflow to Sarasota Bay is low, and it does not have extensive areas with estuarine conditions, intertidal mangroves, or salt marshes. Movements of species requiring estuarine areas as nursery habitat to and from Tampa Bay may also be significant.

Sarasota Bay's recreational fishery is undoubtedly large and economically important, but it has not been quantified. Striped Mullet (Mugil cephalus), Spotted Seatrout (Cynoscion nebulosus), and Red Drum (Sciaenops ocellatus) are the most important species in the commercial fishery. Landings during 1985 from Sarasota and Manatee counties were 2,440,000, 70,000, and 45,000 pounds respectively. Spotted Seatrout landings have been in an almost continuous decline since 1951. The Bay is similar to other Florida systems in that the greatest previous impacts and the most serious future threats to fish and fisheries are probably those arising from changes that accompany regional population increase and urbanization. An inventory and characterization of important fisheries habitats is recommended in order to understand past and future changes of Bay fisheries.

Environmental Science and Engineering, Inc. 1977a. Final water quality report for the Phillippi Creek study area. Submitted to: SW Fla. Reg. Plann. Council. October.

Results of the Southwest Florida Section 208 Program study of the Phillippi creek area of coastal Sarasota County are presented. The water resources of the Phillippi Creek area are described and historical water quality data are examined. A sampling program was designed to obtain storm-event samples oriented toward quantifying nonpoint pollution loads and productivity samples incorporating chemical, physical, and biological data. Analysis of an energy flow model of an estuary was used to design the productivity sampling study.

A limited number of suitable storms restricted the storm-event sampling but enough data were obtained to show marked differences in the quality of the runoff water between stations. Pollutant loads from point sources, nonpoint sources, and background pollution levels were calculated for present conditions and estimated for future conditions. Regression models relating the concentration of a pollutant in runoff water to the percent imperviousness of the watershed were developed. Total wet season pollutant loads are approximately 1.5 times the dry season pollutant loads. Predictions of future total pollutant loads assuming no nonpoint controls were made.

The productivity sampling results showed that total community metabolism exceeded total respiration at all stations which is concluded to be indicative of a productive estuary. Diversity of planktonic and benthic invertebrate communities was not found to be indicative of a stressed environment, either. Total community metabolism is proposed as

a good indicator of water quality. Recommended and maximum allowable pollutant loads are presented. In order to meet recommended pollutant loads, nitrogen should be reduced 71% and phosphorous 91%. Lead loads are currently acceptable.

Estevez, E.D. and D.A. Bruzek. 1986. Survey of mollusks in southern Sarasota Bay, Florida, emphasizing edible species. Mote Marine Laboratory Tech. Rept. 102.

A literature review and field collections were made to assess the historical and present distribution of mollusks in Sarasota Bay south of Manatee County. Most traditional, commercial mollusk species occur or have occurred in the bay. Scallops have not been landed since 1964 and oysters have not been landed until 1967. Landings of hard clams, the largest shellfish resource of the bay, ended in 1971. Hard clams were present at many stations during the field collections, including waters which are closed by testing or because the waters are unclassified. Scallops and oysters are too rare to support a commercial fishery but hard clams may be capable of managed harvest. Quantitative distribution data and life history information on hard clams should be a research priority in the bay, especially if new areas can be opened to shellfishing.

Evans, M.W., T. Brungardt and R.K. Evans. 1978. Shoreline analysis of Sarasota County Bay systems with regard to revegetation activities. New College of USF, Fla. Envir. Stud. Prog., Sarasota Co., C.E.T.A. Prog. 2nd Sarasota Bd. Co. Comm. 71 p.

Study goals were: 1) to inventory and evaluate the estuarine resources of Sarasota County, 2) to develop techniques for managing and protecting those resources, and, 3) to make this information available to the residents of Sarasota County. Resource mapping showed an increase in seawalls, rip-rap, and Australian Pine/Brazilian pepper shorelines with associated decreases in mangrove, beach, and other vegetation. Total shoreline length was found to have increased 16% due to the creation of extensive canal systems. There was a 20% loss of seagrass coverage county-wide which was attributed to poor water quality and dredge and fill activities.

Two pilot projects undertaken to observe the effectiveness of different methods of shoreline stabilization and to obtain information on nursery cultivation of shoreline vegetation. A shoreline preference survey of the general public showed that public shorelines should be maintained in the natural state and that the process of estuarine erosion is poorly understood by local residents. Recommendations were made concerning shoreline revegetation, management plans for Geographical Areas of Particular Concern, County regulations, comprehensive plans for the 3 County passes, drainage, marine grassbeds, and coastal zone management staffing.

Evans, M.W. 1988. Geological evolution of Sarasota Bay. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).

Studies near Sarasota Bay and knowledge of the Florida carbonate platform suggest that the location and morphology of the Bay are controlled by dissolution and collapse of the underlying limestones. In-filling of Sarasota Bay and similar West Florida lagoons is controlled by the interaction of tidal inlets, waves, wind, and biologic production of sediments. These processes in Sarasota Bay create 5 depositional environments: 1) protected bay; 2) open bay; 3) tidal delta; 4) mangrove forest; 5) tidal channel. The geologic response of the Bay to alterations in Bay processes and environments is unknown due to the lack of investigation. Research recommended to generate data for effective management is in the areas of: 1) basic geologic history and stratigraphy; 2) the composition, source and fate of fine grained suspended load; 3) sediment transport and accumulation in intertidal areas with respect to the rate of sea level rise.

Evans, R.K. 1988. Shoreline vegetation of Sarasota Bay: a review. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).

Natural vegetation associated with Sarasota Bay shorelines includes three species of mangroves (Rhizophora mangle, Avicennia germinans, and Laguncularia racemosa), tidal marsh species (predominantly Spartina alterniflora), and other associated species such as leather fern (Acrostichum spp.) and buttonwood (Conocarpus erecta). In high energy areas of the bay, beaches along the intertidal areas with upland vegetation near the shoreline are common natural features. Approximately 22% of Sarasota Bay shorelines remain in a relatively natural state.

Of the altered shorelines, 45% are bulkheaded, 10% have been rip-rapped, and 23% have been artificially filled. In most of these instances, the intertidal areas have been eliminated or significantly reduced and space for native vegetation eliminated. Intertidal species have been replaced with upland plant species, usually ornamental lawns. Exotic plant species, primarily Brazilian pepper (Schinus terebinthifolius) and Australian pine (Casuarina equisetifolia) also invade in these instances and often shade any remaining shoreline fringe vegetation. Management considerations addressed in the paper include preservation, restoration options, mitigation, mechanisms for recovering the function of a natural intertidal community, and an analysis of existing regulatory programs.

Flannery, M.S. 1988. Watershed and Tributaries. In: Estevez, E.D. (ed.), Proceedings of an Estuarine Seminar on Tampa and Sarasota Bays: Issues, Resources, Status and Management. U.S. Dept. of Commerce, NOAA, Estuarine Programs Office, Washington (in preparation).

A low-lying coastal area drained by small streams, canals, conduits, and tidal creeks comprises the entire drainage basin of Sarasota Bay. The freshwater tributaries and their associated brackish zones are important elements of the Bay's biological structure and productivity. Six tributaries have been identified to supply runoff into Sarasota Bay. The low salinity habitat they create is utilized as nursery areas by a wide variety of marine fishes and invertebrates.

The distribution of rainfall is the most important meteorologic variable in the delivery of fresh water to Sarasota Bay. Streamflow is highest in the late summer with a smaller peak in February and March. All tributaries to Sarasota Bay have been channelized or otherwise modified to facilitate stormwater drainage. Water quality data are available for three of them. Nutrient concentrations in Whitiker Bayou are high due to the discharges from the City of Sarasota's Sewage Treatment Plant. Phillippi Creek receives both stormwater runoff and domestic wastewater discharges. The main conclusion reached was that tributaries should be managed for their own values, the low salinity habitats upstream of their mouths.

Florida Department of Natural Resources. 1985. Manatee County marine habitat restoration plan. Bur. Mar. Res. Mar. Lab., St. Petersburg. 112 p.

An assessment of potential techniques and sites for creation and restoration of marine fisheries habitats in Manatee County was made to direct the usage of a fund created by legislation for marine habitat research and restoration. The marine fisheries habitat is defined to be the coastal resource area of the Manatee County Comprehensive Plan for the purpose of this plan. It includes areas such as tidal marshes, mangrove forests, mud flats, oyster reefs, seagrass beds, and the water column.

Restoration techniques suggested for trial application in Manatee County are: 1) seagrass planting; 2) mangrove planting; 3) marsh planting; 4) littoral habitat creation along seawalled shorelines. Widespread implementation of a particular technique is not recommended until cost and efficacy is evaluated. Restoration sites were evaluated using the following criteria: 1) potential for creating functional marine fisheries habitat; 2) potential for eliminating or reducing a source of pollution; 3) availability of authorized access to the site; 4) suitable environmental conditions for an applicable restoration technique. Initial restoration projects, a site plus a suite of restoration techniques, were recommended at the Hendry fill and Port Manatee area (dredging, seagrass planting), any bulkheaded waterfront (littoral habitat), Bayshore Gardens/Trailer Estates Marina (aeration), and the Tidy Island area (spreader ditches).

Florida Department of Environmental Regulation. 1986. Proposed designation of Sarasota Bay and Lemon Bay as Outstanding Florida Waters. Rept. to Envir. Reg. Comm.

The Sarasota and Lemon Bay estuarine systems are recommended for designation as Outstanding Florida Waters (OFWs) with the exception of most tributaries, the areas near the mouths of Phillippi Creek and Whitaker Bayou, and artificial bodies of water. Alternatives designating no portion of Sarasota and Lemon Bays as OFWs or all of Sarasota and Lemon Bays as OFWs were rejected. Analysis showed that most of the waters in these two estuarine systems met the criteria of exceptional ecological and recreational significance for a "Special Water" designation. Water quality is generally good and there are considerable acreages of mangroves and marine grassbeds. The recreational significance of Sarasota and Lemon Bays probably exceeds the ecological significance already, and recreational use of the Bays is rapidly increasing.

The OFW designation enables the Department of Environmental Regulation and the regional water management district to apply more stringent criteria for permitting activities in the designated waters. Existing ambient water quality on the date of the designation may not be further degraded. Water quality behind Midnight Pass poses a problem since it has decreased after the pass closed. If Midnight Pass is reopened as expected, an amendment to the OFW rule may be required to increase the water quality standard to a level appropriate for a open Pass situation.

Giovannelli, R.F. 1988. Stormwater. In: Estevez, E.D. (ed.), Proceedings of an Estuarine Seminar on Tampa and Sarasota Bays: Issues, Resources, Status and Management. U.S. Dept. of Commerce, NOAA, Estuarine Programs Office, Washington (in preparation).

The water surface area of the Sarasota Bay system is approximately 40 square miles. There are another 30 square miles in the watersheds of minor tributaries and 50 square miles in the Phillippi Creek watershed. A sub-tropical pattern of rainfall produces unique seasonal characteristics affecting the quality and quantity of urban runoff. The summer rainy season produces the most significant portion of the runoff volume into the Bay system. Only about 10% of the Sarasota Bay watershed is undeveloped. The degree of development is directly related to the volume of runoff and is inversely related to the runoff water quality.

Separate stormwater and sanitary sewer systems serve the Sarasota Bay area so sanitary sewerage is collected and treated on a continuous basis by dedicated facilities while stormwater is untreated. The volume of runoff from the Tampa and Sarasota Bay areas is the highest among any large metropolitan area tributary to the Gulf. In the current regulatory environment, most local government attention is focused on flooding and runoff quantity problems. Results of a wasteload allocation showed that Sarasota Bay is sensitive to urban runoff due to the relative area of the Bay to the area of tributary watersheds.

Goodwin, C. 1988. Circulation. In: Estevez, E.D. (ed.), Proceedings of an Estuarine Seminar on Tampa and Sarasota Bays: Issues, Resources,

Status and Management. U.S. Dept. of Commerce, NOAA, Estuarine Programs Office, Washington (in preparation).

Physical characteristics giving the most insight into a system's circulation pattern are the tidal prism and the average annual freshwater inflow volume. An index of the degree of vertical density stratification in bays and estuaries, the estuary number, is computed using those characteristics. Values greater than 100 indicate a well-mixed system. Sarasota Bay has an estuary number of 1000. In such well-mixed systems, tidally-averaged horizontal circulation patterns caused by the interaction of tidal water motion and the bottom configuration predominate. Relatively little is known about the overall circulation pattern in Sarasota Bay while numerous circulation studies have been conducted in Tampa Bay. Questions which remain unanswered for both Tampa and Sarasota Bays are: 1) does wind dominate tide-induced circulation or is it a short-term perturbation, 2) what percentage of the water exiting the bays on an ebb tide returns during the next flood tide.

Haddad, K. 1988. Fisheries and Habitat. In: Estevez, E.D. (ed.), Proceedings of an Estuarine Seminar on Tampa and Sarasota Bays: Issues, Resources, Status and Management. U.S. Dept. of Commerce, NOAA, Estuarine Programs Office, Washington (in preparation).

Components of local estuaries important to juveniles of commercial and recreational fish species: mangroves, saltmarshes, seagrass meadows, mudflats, unvegetated bottom, and the water column are reviewed. Mangroves cover approximately 7% of the area of Sarasota and Tampa Bays. The aerial root systems provide a substrate for algae and invertebrates and provide protective structure to juvenile fishes. Saltmarshes, about 1% of the total estuarine area, serve mainly as transitional areas between the mangroves and freshwater marshes. About 10% of Tampa and Sarasota Bays are covered by seagrass meadows which are critically important to the productivity of the Bay systems. Seagrass meadows are the dominant subtidal vegetation in these systems. The complex food web of the seagrass meadows, which has high organism diversity and abundance, is a major food source for all stages of fish in the local Bays.

An overview of the current fish industry and some new programs which will influence fisheries management in Sarasota Bay is also presented. The bay has historically been a productive source of fish and shellfish. New approaches to fisheries management, habitat restoration, and fish stock enhancement will help in understanding Bay fisheries and increase the quality of fishery production.

Hand, J., V. Tauxe and J. Watts. 1986. Sarasota Bay basin technical report. An appendix of the 305(b) water quality inventory for the State of Florida, June 1986. Water Quality Monitoring Technical Rept. #79. Fla. Dept. Envir. Reg., June.

STORET water quality data from over 5000 Florida STORET stations during the 1970-1985 time period were assigned to 926 respective EPA

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reaches. About 70% of these reaches are stream reaches, 20% are estuarine or ocean reaches and 10% are lake reaches. The water quality of these reaches was classified according to an EPA stream water quality index and a DER lake and estuary trophic state index. The majority (60-70%) of Florida reach miles which were assessed exhibited good water quality and met their designated use, 25-30% partially met their designated use and 7-8% of Florida reach miles exhibited poor water quality and did not meet their designated use.

The distribution of water quality problem areas closely followed the distribution of Florida's population. Most water quality problems (55%) in the state were caused by point sources of pollution, including both domestic (33%) and industrial (22%) sources. Nonpoint sources of pollution accounted for about 44% of the water quality problems. Trend analyses performed on problem reaches where there was sufficient data indicated there were no significant trends in most cases.

Heyl, M.G. and L.K. Dixon. 1988. Water quality status and trends (1966-1986) in Sarasota Bay. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).

A review of the water quality status and trends of Sarasota Bay was conducted to establish the state of knowledge regarding the water quality of the Bay. Specific goals were: 1) establish the current water quality; 2) review previously reported trends for Sarasota Bay and compare those trends with surrounding areas; 3) document the existence of unreported trends; 4) identify areas requiring additional research. The 1986 Florida Water Quality Assessment 305(b) Technical Report listed Sarasota Bay's water quality as 'good' using the WQI index and as 'poor' using the TSI index. The TSI index, designed for Florida estuaries, is probably the most appropriate measure. Analysis of previously published data showed that water quality in Sarasota Bay is improving and that the Bay is becoming less saline. But, the Sarasota Bay system was found to be relatively understudied compared to the adjacent Tampa Bay. A 6-point plan of recommended research is proposed which includes: 1) describe the Bay's productivity at all trophic levels; 2) establish the trend and status of seagrass communities and the relationship of water quality parameters to the health of the seagrass communities; 3) establish the role of chemical precipitation in the Bay; 4) establish the cause of decreasing salinity in the Bay; 5) define the role of sediments in Bay nutrient fluxes; 6) establish and maintain a central database of Bay water quality data.

Lewis, R.R. III. 1988a. Seagrass meadows of Sarasota Bay: a review. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).

Four of the seven species of seagrasses occurring in Florida (*Thalassia testudinum*, *Syringodium filiforme*, *Halodule wrightii*, and *Ruppia Maritima*) are represented on the shallow shelf areas and shoals of Sarasota Bay. The Bay's seagrass coverage as of 1987 is estimated to

be 3,062 hectares, a 25% decline from the post-World War II value of 4,047 hectares. Definitive data on the causes of the decline do not exist. Theorized causes include: 1) reduced light penetration due increased turbidity from dredging; 2) competition from algae due to eutrophication; 3) physical removal or damage due to boat propellers. Seagrass meadows are important as fisheries habitat and as sources of reduced carbon. Bay management programs should include better seagrass protection and active restoration efforts.

Lincer, J.L. 1975. The ecological status of Dona and Robert's Bays and its relationship to Cow Pen Slough and other possible perturbations. Final Rept. to Bd. Co. Commissioners, Sarasota Co., by Mote Marine Lab.

A study of the ecological status of Dona and Robert's Bays was initiated due to observed decreases in water quality which accompanied channelization of Cow Pen Slough. Hydrographic tidal models for the study region were produced and showed a dramatic difference in the hydrology of the wet season versus the dry season. The Cow Pen Slough/Shakett Creek basin outfall dominates the Dons/Roberts Bay salinity profile during the wet season. Rainy season activity generates low dissolved oxygen levels and significantly lower pH levels. Limited sedimentological analyses found fine-grained sands, organic matter and clay accumulated in Dona Bay after maximum runoff had occurred.

Cow Pen Slough contained generally lower amounts of nutrients than other creeks entering the study area. The effect of high rainfall on suspended solids levels in Cow Pen Slough/Shakett Creek is much greater than other creeks which was attributed to the lack of naturally vegetated banks and meanders. Chemical oxygen demand in Cow Pen Slough/Shakett Creek becomes very high after the first rainfall of the season due probably to the resuspension of bottom sediment. Chlorophyll, plankton, bacterial, benthic invertebrates, marine algae, and fishes were also sampled. A direct correlation was observed between salinity and benthic community species diversity. Widely fluctuating salinity causes the absence of bottom-stabilizing seagrasses and is considered to be partially responsible for increased turbidity in the bay.

Conclusions of the study may be summarized as: 1) the freshwater influx from Cow Pen Slough disrupts the normal dynamics of the estuary and results in freshwater weed and sediment accumulation in the estuary; 2) channelization has removed the buffering effect of a meandering creek bed while urbanization has disrupted the buffering effect of slow sheet-flow and rivulets ; 3) the effects of urbanization are reflected in the water quality program; 4) during the dry season Dona Bay functions as well as any Florida estuary; 5) bay water quality rapidly deteriorates at the beginning of the wet season due to runoff from Cow Pen Slough; 6) tidal flushing somewhat improves water quality later in the wet season; 7) Robert's bay is less affected than Dona bay to runoff due to better tidal flushing. Suggested management objectives and remedies are presented and discussed.

Manatee County, Florida. 1979. The Manatee Plan, a management system for Manatee County. 4 Vol., Bradenton.

The Manatee County Comprehensive Plan includes fifteen elements establishing the standards and criteria for future development in unincorporated Manatee County. Each element specifies the goals, objectives, and policies relevant to it as well as implementation statements identifying agencies, regulations, procedures, and resources required to execute the plan element. The Manatee Plan enacting ordinance addresses Plan adoption, applicability and effect, descriptive provisions, prescriptive provisions, and applicability to projects in the permitting process.

Conservation and coastal zone protection elements are separate elements of the Manatee Plan. The conservation element presents a detailed analysis of existing and potential problems and existing natural resources. Various alternative management strategies are examined. Principal matters addressed by this element's policy document are land use considerations, protection of agricultural lands, wetlands and drainage, woodlands, public safety, extraction (mining) processes, wildlife, and scenic areas and community design. The coastal zone element of the Manatee Plan analyzes existing conditions in the marine, estuarine and general coastal environment. The Policy document for this element addresses management boundaries, water resource protection, vegetative resources, natural landforms, activities impacting natural resources, and structures and activities. Other elements of the Plan which are significant from the perspective of coastal zone protection are the port and drainage elements.

Morrill, J.B. 1974. Hydrography of the Grand Canal and Heron Lagoon Waterways, Siesta Key, FL.

Water quality and marine life in two dead end canal systems on Siesta Key, Florida was compared to determine the effects of canal aging, whether or not such canals represent a public health risk, whether or not there is a 'good' canal system design and why it is good, and whether an old canal system be improved. Data were collected on hydrography, benthos, sedimentation, and phytoplankton in a seawalled and a 'naturally' banked canal system.

Study results did not directly answer the original questions but indicate the complex nature of the dead end canal system. The overall water quality and diversity of marine life was greater in the naturally banked canal system than the seawalled canal system, but poor circulation and a sewage outfall in the studied seawalled canal system appeared to be the primary cause of its poor water quality. General recommendations for water quality management and improvement in a dead end canal system include: 1) increasing the rate of tidal flushing; 2) pruning the shoreline vegetation to reduce the amount of leaf fall entering the canals; 3) restricting application of biocides and fertilizers to the uplands bordering the canals to periods of low rainfall to reduce the amount of runoff of; 4) employment of artificial methods to increase

dissolved oxygen above 2.0 ppm; 5) periodic monitoring of water quality and marine life; 6) reduction in storm sewer runoff.

Morris. J.K. 1988. SARABASIS discussion, group summary and evaluation. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).

A participatory exercise asking symposium attendees to identify issues, problems, and benefits of Sarasota Bay was conducted using the Nominal Group Technique. The Nominal Group Technique emphasizes individual thinking and ranking of ideas in response to a specific question and includes a technique for compiling these individual rankings into group ranking. The group ranking of an idea is a measure of how strongly the members of a group felt about a particular idea. The ideas on the benefits of Sarasota Bay fell into several broad categories: 1) Habitat; 2) Recreation; 3) Aesthetics; 4) Economics; 5) Education and Research; 6) Interaction with Nature; 7) Water Conditioning; 8) Miscellaneous. Ideas collected on the issues and problems of Sarasota Bay also fell into several groups: 1) Education and Research Lacking; 2) No Management Plan; 3) Water Issues; 4) Habitat Destruction; 5) Lack of Coordinated Government; 6) No Forum for the Bay. The parts of a management plan can be formed by equating the benefits as the things to protect and the issues and problems as the things the plan should try to resolve.

Patton, G.W. 1987a. Studies of the West Indian manatee: Anna Maria to Venice, Florida. Mote Marine Laboratory Tech. Rept. 105.

Almost no Manatees were believed to exist in the Bradenton to Venice portion of Florida's west coast during the first half of this century. Three aerial survey programs conducted in the study area during the 1970's reported non-winter sightings of only twenty animals. A study was undertaken to provide data for determination of the regional status of manatees and important sites of concentration and ran from January to December 1985. Twenty-five flights (a total of 81 hours) resulted in 138 sightings totaling 314 manatees in herds of 1-12 animals; 8% were calves. A distinct southward migration trend was evident for December. Five areas of regular or recurring non-winter aggregation were identified: the southeast corner of Anna Maria sound; a large area "inside" Longboat Pass; the area between Coon Key and City Island; "inside" Midnight Pass; and the portion of Roberts Bay situated east of Siesta Key.

Pierce, R.H. and R.C. Brown. 1984. Coprostanol distribution from sewage discharge into Sarasota Bay, FL. Bull. Environ. Contam. Toxicol. 32:75-79.

Distribution of the fecal sterol, coprostanol, was determined in sediment from forty-one sites throughout Sarasota Bay, Florida to

estimate the impact of sewage effluent discharged from the City of Sarasota's wastewater treatment plant into Sarasota Bay. Coprostanol is one of the principle sterols found in the feces of man and other mammals, and has been shown to be a reliable marker of fecal pollution.

The results show very high coprostanol levels (2,500 ng/g sediment) in Whitaker Bayou (site of a sewage treatment plant outfall), indicating short range deposition of sewage-derived particulate matter. Concentrations decreased with distance into the Bay. Concentrations within Sarasota Bay exhibited a skewed distribution with the contours extending much farther from Whitaker Bayou in a north-south direction along the eastern shoreline than in a westward direction out into the Bay. The area containing coprostanol that may be considered to originate from the City of Sarasota wastewater discharge into Whitaker Bayou was approximately 7 km (N-S) by 2.2 km (E-W) or about 15.4 km². Since Sarasota Bay encompasses about 80 km², this study shows that approximately 20% of the Bay sediments has been impacted by sewage-derived particulates emanating from the Sarasota wastewater effluent.

Sarasota County, Florida. 1980. "Apoxsee", Sarasota County's Comprehensive Framework for the Future, Sarasota County, FL.

Conservation and Coastal Zone protection elements of Sarasota County's Comprehensive Plan are combined into one "Environmental" element rationalizing that coastal zone protection is a logical subset of conservation. Analysis reveals 23 primary concerns, real problems, or potential environmental problems. The basis of the Sarasota County's environmental goal is the solution of these problems considering the needs and wants of County residents. Eight objectives are required to be met to satisfy the environmental goal: 1) protect bays and estuaries; 2) protect beaches and dunes; 3) protect wetlands; 4) protect wildlife and wildlife habitats; 5) conserve soil and mineral resources; 6) maintain or improve existing air quality; 7) protect quantity and quality of surface ground waters; 8) protect and restore natural vegetation. Five alternative methods for meeting the objectives are presented and discussed in relation to the individual objectives. These methods are: 1) public acquisition; 2) incentives; 3) regulation; 4) improvement programs and technological innovations; 5) environmental education programs. Twenty-two policies were adopted on the basis of the discussion concerning the application of the methods to the objectives. Each policy is presented with a statement of its importance.

Sarasota, City of. 1979. Sarasota comprehensive city plan. Sarasota Planning Department.

The city Comprehensive Plan provides for an environmental inventory of the City of Sarasota, analysis of factors impacting the environment, and development of a plan for effective environmental protection, enhancement, and restoration. The Conservation and Coastal Zone Protection elements are combined into one common study element in consideration of the study area, coastal setting, similarity, and

administrative efficiency. A four phase Plan was developed consisting of research and analysis, the Conservation and Coastal Zone Management Plan, alternate management techniques, and the implementation program.

Research and analysis establishes the City's environmental base by identifying and inventorying specific resources critical to planning purposes. A composite problems and opportunities statement summarizes the primary research and analysis actions. The Conservation and Coastal Zone Protection Plan specifies the intent, goals, and policy of the Plan and the application of management strategies to particular geographic area and/or environmental issues. Examination of the various natural resource management techniques and their applicability to the City of Sarasota are determined in the alternate management techniques phase and specific recommendations as to the best techniques are made. The implementation program recommends mechanisms to implement the Plan.

Sarasota County, Florida. 1984. Blue Ribbon Panel for Midnight Pass, Summary Rept., April 24. 6 p.

Findings of the 'Blue Ribbon Committee for the study of Midnight Pass' which was appointed by the Sarasota County Board of County Commissioners are presented to the County Commissioners. The Committee divided its findings into 3 sections: 1) findings of fact; 2) the committee's vision of the most desirable conditions in the Midnight Pass Area by 2004; 3) conclusions and recommendations.

The Committee found that natural changes and catastrophic natural events have altered the configuration and biota of the Midnight Pass area. Human efforts have altered the natural dynamics of the pass and bay systems, contributing to the reduced stability of Midnight Pass and altering the extent of natural communities in Sarasota Bay. The Committee concluded that Midnight Pass is a mediating factor in diluting pollutants in Little Sarasota Bay and that pollution impact on Little Sarasota Bay will be exacerbated by the lack of exchange with the Gulf of Mexico. It was also concluded that the Midnight Pass/Little Sarasota Bay area is an altered system in a semi-natural state. Finally, a natural open Pass was agreed to provide more environmental benefits than a closed Pass. Midnight Pass in 2004 was envisioned to be as it was in 1965.

Sauers, S.C. 1988. Present management of Sarasota Bay: is there a method to the madness? In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in Preparation)

Formal allocation of natural resources to human activities is the basis of a conceptual approach to Sarasota Bay management which exploits opportunities for developing a formal management plan: a wealth of local technical expertise; a concerned citizenry; and the advent of the "National Estuary Program". It was concluded following review of current management efforts by federal state, and local agencies that Sarasota Bay is unmanaged rather than mismanaged. Symptoms identified are: lack of comprehension of the bay as an ecosystem; crisis decision making; lack of an institutional advocate for the bay; and lack of practical and

verifiable goals. A consolidation of agency function and responsibility is suggested to address the problem of shortcomings in the existing Sarasota Bay management efforts.

Sauers, SC. 1985. Ecological status of Little Sarasota Bay with reference to Midnight Pass. Submitted to Co. of Sarasota County, Coastal Zone Mgt. Div., Nat. Resour. Mgt.

An ecological monitoring program of the Little Sarasota Bay/Midnight Pass area to follow the response of Little Sarasota Bay to the closure of Midnight Pass was initiated in 1984 to provide local government leadership with detailed information to support future management efforts. The results of this ecological monitoring program support the findings of the Blue Ribbon Panel which commissioned it.

Based on limited historical information, the ecological character of Little Sarasota Bay as a whole and the Gulf of Mexico in the vicinity of the former inlet has not changed significantly over the past decade. Little Sarasota Bay as a whole did not deteriorate significantly during 1984 as a result of the closure of Midnight Pass, but the immediate bay-side vicinity of Midnight Pass has been affected by the inlet closure. It is recommended that Midnight Pass be reopened in view of the fact that ecological, navigational and recreational benefits of Little Sarasota Bay are maximized. Modeling of potential circulation improvements and a variety of environmental safeguards are also proposed.

Seaman, W., Jr. 1988a. Planning Florida estuaries: bridging the gap between science and management. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).

A successful and unique approach to reconcile divergent coastal interests has been implemented in Florida by integrating resource management, applied science, education, and inter-organization coordination. A uniform effort has been made for individual major estuarine systems to: locate scientific coastal data sources; present them to technical and lay audiences; and assist follow-up and continuity. Since 1976, over 50% of Florida's population have been affected by local and regional coastal resource decisions that have been assisted by scientific and policy-oriented conferences, publications, and resultant actions. Cooperative actions among public and private interests have developed for Apalachicola, Biscayne, Choctawhatchee, and Tampa Bays, the lower St. Johns River, and the Indian River Lagoon. The information assembly process helped in each situation to bring the various public and private interests together and increased the understanding of the application of scientific data to management decisions.

Tampa Bay Regional Planning Council. 1987. Future of the region: a comprehensive regional policy plan for the Tampa Bay region. St. Petersburg. 154 p.

The Comprehensive Regional Policy Plan (CRPP) of the Tampa Bay Regional Planning Council is based upon the policy document used by the Council to ensure consistent reviews of Development of Regional Impact, Local Government Comprehensive Plans, applications for federal assistance, and other activities of regional importance. The Tampa Bay Region CRPP contains the following sections: regional description, regional issues, regional goals and policies, and regional performance standards and measures.

The CRPP does not create regulatory authority or authorize the adoption of agency rules, criteria or standards not otherwise authorized by law. The goals and policies of the CRPP provide a framework for directing the human, natural, community and economic resources of the Tampa Bay Region. An implementation strategy consisting of growth management, intergovernmental coordination, and ongoing planning elements is developed. Determination of whether or not a project or activity is contrary to the public interest by the Tampa Bay Regional Planning Council involves consideration and balancing several criteria. If the proposed project or activity is unable to meet these criteria, the Council may consider measures to mitigate adverse effects in granting or denying an application.

Tampa Bay Management Study Commission. 1985. The Future of Tampa Bay. Rept. to Fla. Legislature.

The Tampa Bay Management Study Commission was created by a special legislative act in 1984 to examine opportunities for and the constraints against developing a unified, comprehensive management strategy for Tampa Bay. It was composed of 20 members representing a wide range of Tampa Bay's business, recreational, environmental, industrial, and academic interests.

The Commission reviewed 42 previously identified bay management issues and developed program objectives and recommended solutions for each issue. Recommendations included local government actions; state agency directives; research studies and monitoring programs; and legislative initiatives, amendments and funding allocations. The Commission proposed a total of \$5,792,000 worth of needed studies, programs and various allocations.

Establishment of a coordinating, overview agency within the Tampa Bay Regional Planning Council with planning and advisory capacities for other agencies involved in management of the Bay was recommended. In the absence of significant strengthening of state and regional planning legislation the Commission recommended that a Bay Management Authority, with regulatory powers, be created to more comprehensively manage Tampa Bay.

Tiffany, W.J., III. 1980. Environmental status of Sarasota Bay: selected studies, Sarasota, FL: Mote Marine Laboratory.

A collection of marine studies conducted with the intention of providing baseline information to aid long-range planning and resource

management in and adjacent to Sarasota Bay are presented. These are individual, independent studies involving Mote Marine Laboratory and other local institutions of seagrasses, fishes, crabs, shrimp, heavy metals, sediments, plus hydrology and plankton. The study area encompassed Sarasota Bay system between the Bradenton Beach Bridge in the north and Phillippi Creek in the south.

The seagrass study defined the seasonal growth cycles of the two dominant species of seagrasses in Sarasota Bay. Habitats within the Bay were concluded to still be functioning as viable ecological niches in the fisheries study, but the Bay as a whole was found to be moderately stressed on an annual basis. Commercial catches of blue crabs and stone crabs from Sarasota and Manatee Counties are declining, as was the amount of nursery area in the Bay for these species. Copper, iron, and cadmium concentrations found in Bay organisms varied with species and tissue tested. The origin of the heavy metals are unknown, but probably enter the Bay via urban runoff.

U.S. Army Corps of Engineers. 1976. Final environmental impact statement. Maintenance dredging west coast inland waterway, Caloosahatchee River to Anclote River, FL. Jacksonville, FL.

An environmental impact statement prepared as background material for maintenance dredging on the Intracoastal Waterway from the Caloosahatchee River to the Anclote River is presented. The Sarasota Bay subarea encompasses approximately 22 nautical miles of the approximately 150 nautical miles of the entire project. Historical data summarized for the Sarasota Bay subarea cover regional geography, geology, sediments, meteorology, streamflow, tides, water quality, mangroves and seagrasses, plankton and invertebrates, and fishes. The least stable environment within the subarea was identified as the narrows between Little Sarasota and Sarasota Bays and attributed to freshwater input from Phillippi Creek. Studies cited consider the Sarasota Bay subarea as the richest estuarine community on the Florida West Coast.

The adjoining Lemon Bay subarea to the south is approximately 20 miles in extent but is about half the area of the Sarasota Bay subarea. Similar historical data are summarized. Limited chemical data suggests that the Lemon Bay subarea is a sump for fine sediments and toxic materials. There is a relatively limited amount of intertidal habitat available, however, tidal marsh and mangrove communities dominate the shoreline. Two Brown Pelican nesting areas were observed in this subarea.

Walton, R. 1988. Meteorology and hydrology of Sarasota Bay. In: E.D. Estevez (ed.), Proceedings Sarasota Bay Scientific Information Symposium (in preparation).

Sarasota Bay is a shallow embayment with weak tidal currents and other than at the mouths of tributaries, temperature and salinity effects are generally small. But, the Bay is strongly affected by storm events. Collection and analysis of field data enables estimation of transport