ACCESS NUMBER: 30036

STUDY TITLE: Southwest Florida Shelf Coastal Ecological Characterization

REPORT TITLE: An Ecological Characterization of the Lower Everglades, Florida Bay, and the Florida Keys

CONTRACT NUMBERS: BLM: MU0-48; MMS: 14-12-0001-30036

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KEY WORDS: Straits of Florida; Eastern Gulf; Southwest Florida Shelf; Florida; baseline; biology; characterization; Lower Everglades; Florida Keys; Florida Bay; geology; watershed; impacts; hydrology; habitat; faunal zones; marine; freshwater; wetlands; terrestrial; estuarine; mangroves; coastal zone; literature review; synthesis

BACKGROUND: This report is one in a series that provides an ecological description of Florida's Gulf coast. Maintenance of highly productive ecological systems through enlightened resource management is a major goal of the series.

OBJECTIVES: (1) To use existing published and unpublished literature to construct a description of the lower Everglades, Florida Bay, and Florida Keys watershed as an integrated ecological system.

DESCRIPTION: The study area includes three major subunits: (1) the lower Everglades (including Shark River Slough); (2) Taylor Slough and Florida Bay; and (3) the Florida Keys. The document is divided into two parts, one on physical/chemical background conditions, and the other on structural and functional ecological patterns and energy utilization. The first part identifies spatial and temporal patterns in the distribution of physical/chemical forces which drive the study area's metabolism. Chapters 2 through 5 cover the study area's physiography including climate, geology, hydrological characteristics, and water quality. The second part describes habitat

zonations that develop in response to physical/chemical controls as well as pertinent resource partitioning patterns (e.g., productivity, species utilization and dependence, succession, etc.) between and within individual habitats. These patterns are divided into four chapters (6 through 9), corresponding to four major ecological zones.

SIGNIFICANT CONCLUSIONS: The productivity of the communities present within the four major ecological zones (with regard to fish and wildlife) reflects: (1) the diversity and type of habitats available to species that are potentially capable of exploiting them; (2) the degree of alteration of these habitats by man and natural forces; and (3) historical, biogeographic, and random factors that restrict organisms to specific environments or prohibit them from exploiting a potential habitat.

STUDY RESULTS: A conceptual model of the study area identifies four major ecological zones: (1) terrestrial and freshwater wetlands; (2) estuarine and saltwater wetlands; (3) Florida Bay and mangrove islands; and (4) the Florida Keys. These are geographically delineated from one another by a combination of elevation gradient and positioning relative to one another and to major outside influences such as upstream watersheds, the continental shelf, and major ocean systems. These zones are delineated by differences in physical/chemical background factors such as substrate, climate, hydrology, and water chemistry which in turn promote characteristic ecological communities. Many of the communities are similar between zones but localized differences do exist, as do significant shifts in relative abundance of community types. The terrestrial and freshwater wetlands support pinelands, sawgrass marshes, wet prairies, sloughs, and occasional tree islands on freshwater peat, marl, and limestone soils. The estuarine and saltwater wetlands support mangrove forests, salt marshes, and oscillating salinity systems on mangrove peat, marine marl, sand, or "liver mud" substrates. Florida Bay exhibits oscillating mesosaline to hypersaline waters over grassbeds on marine lime mud sediments. These mud banks form an anastomosing pattern surrounding deeper "lake" areas having only a thin veneer of sediment. Exposed tips of the mud banks frequently support mangrove or salt prairie vegetation. The Florida Keys support almost all of the above communities to some small degree but are more predominately characterized by extensive offshore coral reefs. The upper keys are themselves a relict reef exposed by global lowering of sea level. The lower keys are composed of rock hardened Miami oolite, a limestone formed via chemical precipitation rather than biological deposition.

STUDY PRODUCT: Schomer, N. S. and R. D. Drew. 1982. An Ecological Characterization of the Lower Everglades, Florida Bay, and the Florida Keys. A final report by the U.S. Fish and Wildlife Service for the U.S. Department of the Interior, Minerals Management Service Gulf of Mexico OCS Office, Metairie, LA. NTIS No. PB83-141978. FWS/OBS-82/58.1. Contract No. 14-12-0001-30036. 246 pp.

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