

Mississippi Deltaic Plain Region Characterization Study

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ECOLOGICAL CHARACTERIZATION

The Coastal Ecosystems Concept

An ecological characterization is a description of the important components and processes that make up an ecosystem. The description stresses functional relationships and is a synthesis of existing information from the biological, physical, and social sciences. An ecological characterization serves to identify what is known about the natural resources of an area, to describe environmental impacts, to aid in development of mitigation procedures and alternatives for minimizing environmental damage, and to help identify research needs.

**MISSISSIPPI DELTAIC PLAIN REGION
CHARACTERIZATION STUDY**

The U.S. Fish and Wildlife Service, in cooperation with the Bureau of Land Management, is presently conducting an ecological characterization study of the Mississippi Deltaic Plain Region. The study was begun in July 1978 and will be completed in 1981.

This ecological characterization study will collect, organize, and analyze available information from various areas (geology, biology, hydrology, socioeconomics, etc.) in a manner that will describe each part of the system in terms of its relation to other parts and to the Mississippi Deltaic Plain regional ecosystem as a whole.

STUDY AREA

For this study, the Mississippi Deltaic Plain Regional Ecosystem is defined as that area extending along the coast of Louisiana from the western side of Vermilion Bay to the Mississippi-Alabama boundary line.

The inland boundaries of the ecosystem are those defined by Louisiana Act 361 for the Louisiana Coastal Zone and the +15-foot land elevation contour in Mississippi. The Gulfward extent of the study area is the legal boundary separating State and Federal waters, which is three miles offshore.

ORGANIZATION

The characterization approach treats the study area as a stratified hierarchy, as follows:

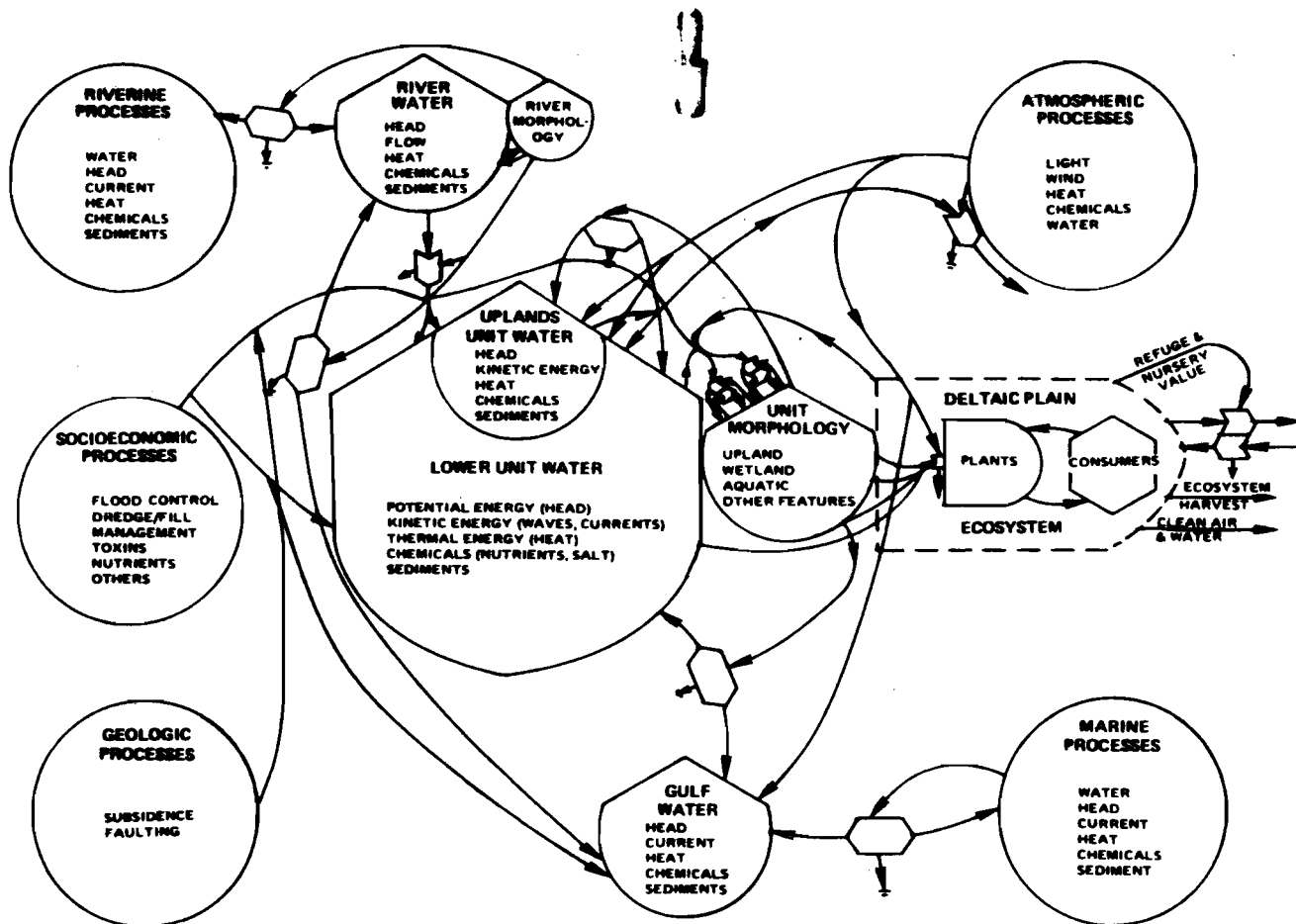
1. Regional Ecosystem. A description of the meteorological and geological processes that formed the Mississippi Deltaic Plain will be presented and will include major human influences such as controlling flow and sediments of the Mississippi River.

2. Hydrological Units (see model, pp. 4-5). Individual descriptions of each of the seven distinct hydrological units (Vermilion, Atchafalaya, Timbalier, Barataria, Active Delta, Chandeleur-Breton, and Mississippi Sound) of the Mississippi Deltaic Plain will include the important processes that operate at this level of ecological organization, such as hydro-

logical and socioeconomic. Most of the significant and cumulative impacts of human activities will be identified within specific units.

3. Habitats. Descriptions of the various types of habitats, such as marshes, forests, swamps, lakes, and estuarine waterbodies in the Deltaic Plain and the processes that operate at this scale of ecological resolution will be elaborated. Although boundaries are not always distinct, the habitat is the basic landscape unit in which species occur. Each habitat supports communities of plants and animals. Most natural or man-made changes are viewed with respect to habitats.

4. Populations. Species or combinations of species that function within the habitat or hydrological unit and are subject to the same dynamic processes will be described. Emphasis is placed upon the natural history, growth characteristics, use of various habitats, and environmental limits of indicator, commercial, recreational, threatened, and endangered species.



An energeese model for a typical hydrological unit in the Mississippi Deltaic Plain (J. L. van Beek and T. Gayle, unpublished, Coastal Environments Inc. Baton Rouge, Louisiana).

PRODUCTS

The products of the Mississippi Deltaic Plain Region Characterization Study will be a Planning Model, Habitat Maps, an Environmental Literature Search and Synthesis Report, Socioeconomic Maps and Report, an Ecological Atlas and an Ecosystem Model and Narrative.

The **Planning Model** (to be completed in late summer of 1979) outlines the most important processes, components, and functional relationships to be considered in the Characterization Study.

The **Habitat Maps** (to be completed in the fall of 1979) are a collection of 548 mylar overlay maps (scale 1:24,000) depicting approximately 70 habitats of the study area for the periods 1955 and 1978. The area of each habitat will be measured for the two time periods by topographic sheet, State, hydrological unit and parish or county and changes in habitats will be tabulated.

The **Environmental Literature Search** (to be completed in the fall of 1979) consists of a bibliography of over 5,000 references pertinent to the Mississippi Deltaic Plain Region and a Users' Manual for the computer storage-retrieval system. For the convenience of the user, the references will be retrievable by category, such as geology, hydrology, meteorology, botany, zoology, ecology, and man's influence on plants and animals. The **Synthesis Report** summarizes the literature for selected topics, such as

oil and gas impacts, and the geology, hydrology, meteorology, biology, and ecology of the study area.

The **Socioeconomic Maps** (to be completed in the fall of 1979) consist of a series of 70 maps (scale 1:125,000) depicting features such as oil and gas pipeline routes, transportation, point source discharges, recreation, and tourism. Each map will be accompanied by a narrative. The **Report** will contain synthesis papers on various socioeconomic activities of the study area, such as oil and gas production, demography, land use, agriculture, commercial fisheries and trapping, recreation and tourism.

The **Ecological Atlas** (to begin in the fall of 1979) will contain 88 maps (scale 1:100,000) and accompanying narratives. These maps will show oystering grounds, fish spawning areas, sea turtle nesting areas, waterfowl and furbearer concentration areas, shoreline changes from 1955 to 1978, boundaries of marsh types; socioeconomic activities such as conservation and recreation areas, major dredge spoil disposal areas, point sources of pollutants, oil and gas infrastructure, location of pertinent coastal studies; and physical properties, such as soil types, geologic features, rainfall, and surface salinities.

The **Ecosystem Model** (to begin in the winter of 1979) will consist of detailed energese and pictorial models of the ecosystem, as well as a **Narrative** that will

compile and analyze all of the data collected in the component parts (listed above) of the Mississippi Deltaic Plain Region Characterization Study, and will be accompanied by a Users' Guide. The Narrative supplements the Ecosystem Model by fully explaining causes and effects of human activities, natural changes and controlling influences upon the ecosystem and its hydrological units, habitats, and populations.

CHARACTERIZATION STUDIES ONGOING AND PROPOSED

Chenier Plain (Louisiana and Texas)
Pacific Northwest
Sea Islands, Georgia and South Carolina
Rocky Coast of Maine
Mississippi Deltaic Plain Region
Northern and Central California
Texas Barrier Islands
Eastern Gulf of Mexico
Lower Cook Inlet and Shelikof Strait (Alaska)

AVAILABLE PUBLICATIONS

Contributed Papers on Coastal Ecological Characterization Studies. J. B. Johnston and L. A. Barclay, Editors. Fourth Biennial International Estuarine Research Conference, Mt. Pocono, Pa., October 2-5, 1977. June 1978. FWS/OBS-77/37. 66 pages.

Ecological Characterization—An Overview. J. B. Johnston. Paper presented at the Coastal Zone

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78 Symposium, San Francisco, CA, March 14-16, 1978. Pages 692-710.

Coastal Ecosystems Characterizations—A Summary of Activities FY 75 through FY 79. January 1979. FWS/OBS-79/01. 20 pages.

Physical Reclamation of Coastal Ecosystems of the United States and Its Territories. T. T. Terrell, MA. 1979. FWS/OBS-78/80. 40 pages.

FOR YOUR INFORMATION

Any questions or inquiries concerning the characterization studies should be directed to:

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