

STUDY TITLE: Texas Barrier Islands Ecological Characterization

REPORT TITLE: Texas Barrier Islands Region Ecological Characterization: A Socioeconomic Study, Volume 1: Synthesis Papers and Volume 2: Data Appendix

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APPLICABLE PLANNING AREAS: Western Gulf of Mexico

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CUMULATIVE PROJECT COST: \$827,270

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KEY WORDS: Western Gulf; Texas; biology; characterization; barrier islands; socioeconomics; socioeconomic characterization; recreation; tourism; commercial fishing; transportation; agriculture; exploratory drilling; development

BACKGROUND: The area considered within the Texas Barrier Islands Ecosystems (TBIE) Characterization Study comprises some of the nation's more pristine coastal landscape and some of the more intensely developed urban industrial areas found in the United States. Rapid development and public interests must be balanced to manage coastal area resources and establish effective resource management policies for the future. Socioeconomic data collection and synthesis will be important tools to identify what is known about the TBIE study area and the range of consequences attributable to alternative resource management practices in the area.

OBJECTIVE: To compile and synthesize information from existing sources concerning the natural, physical, and social components of the ecosystems within the 24-county study area along the coast of Texas.

DESCRIPTION: The 24-county study area contained approximately 22,500 mi², encompassing several distinct resource zones and many overlapping governmental jurisdictions. It was divided into four subregions, corresponding to the regional council

of government jurisdictions in the area. The subregions from northeast to southwest included the Gulf Coast, Golden Crescent, Coastal Bend, and Lower Rio Grande Valley.

Four general tasks were completed in the course of the study. The first task involved a series of meetings with Federal, State, regional, and local agency representatives to identify specific data requirements and to specify the form in which study results would be presented. The second task involved data collection and evaluation. The third and fourth tasks involved the data synthesis and final report production. The topics of the socioeconomic papers included oil and gas production, recreation/tourism industry, commercial fishing, transportation, industrial and residential development, and agricultural production.

SIGNIFICANT CONCLUSIONS: Concentration of oil and gas operations in the form of refineries, petrochemical plants, transport facilities, and petroleum service industries within the TBIE area is attributable to the long standing productivity of oil and gas reservoirs in the immediate area. The finding rate of new petroleum per meter of well drilled has declined over the years; this could result in unprecedented investments in exploration over the next 20 years if the region is to retain its stature as a viable and major producing area. Accelerated future activity may pose even more severe hazards for the environment and other sectors of the economy. Overlapping State and Federal policies and programs in Texas could be significantly improved with more coordination.

Those parts of the TBIE area that are experiencing rapid economic growth are also growing rapidly in terms of recreation/tourism activities. Ongoing industrial, commercial, and residential development may not necessarily be in conflict with growth in the recreation/tourism industry. As the demand for space in the TBIE area increases, so does the probability of further degradation of some environmentally sensitive areas. It appears that, on the whole, attempts have been to achieve a relative balance between the environment, development, and recreation/tourism demands. Commercial fishing within the TBIE area involves species that are estuarine dependent during some stage of their life cycle. Human activities place diverse demands on the Texas coast which directly and indirectly affect yields. All of the major coastal areas are used by commercial fishermen. Natural factors, resource management, costs, and human habitat modification all influence commercial fish production and harvests in Texas coastal waters.

Transportation is probably the most important support industry in the study area. Petroleum refining, petroleum production, and agriculture, three of the four leading economic sectors of the area, are heavily dependent on transportation for their value.

Much of the recent growth in the study area is due to rapid expansion in the energy related sectors (upper coastal areas) and the location and expansion of low wage industries in the Lower Rio Grande Valley. Industrial and residential developments have had significant environmental impacts in the study area.

The future of agricultural production in the study area is likely to be determined by three factors: (1) the degree to which urbanization contributes to an agricultural land shortage;

(2) the extent of government support for productions in the form of price supports, loan guarantees, and international cooperative agreements; and (3) the institution arrangements around which water uses are organized.

STUDY RESULTS: Oil and gas production activities in Texas have created an industry of national and global significance during the past eight decades. In 1978, crude oil production in the TBIE area accounted for 16% of the statewide total, with natural gas production having a similar magnitude. In addition to the development and production concerns, the TBIE petroleum industry complex includes refineries, petrochemical plants, and a vast array of logistic support facilities. There is a greater exploration activity for natural gas compared to crude oil in the TBIE area. Well drilling is the most important exploratory activity, as indicated by the very sizeable investments involved. The highest concentrations of crude oil production are found in the Gulf Coast (northeast) planning region, whereas natural gas production is highest in the Gulf Coast and Coastal Bend regions. Literally every oil and gas related activity has the potential to cause adverse environmental impacts.

The recreation/tourism industry was studied in its context with the area. The TBIE area population is growing at a faster rate than the State as a whole, with higher corresponding recreation/tourism industry. The activities offered are fishing, hunting, boating, swimming, sunbathing, camping, hiking, amusement parks, convention facilities, and participation sports. The question of recreation access versus environmental protection, regulatory practice within issues such as park facilities, commercial versus recreation fishing, and land use were discussed. Socioeconomic considerations of commercial fishing in the TBIE area were investigated. Species of major economic importance included shrimp, oysters, blue crab, red drum, spotted seatrout, black drum, flounder, and Gulf menhaden. Factors influencing commercial fishing harvests were discussed, as well as the fishing industry perceptions of management issues.

Demand for different types of transportation services in the TBIE area was found to vary with the mix of industrial activity and urban concentrations. The major types of transportation include waterways (both ocean and inshore modes), pipelines, railborne commerce, highway and motor freight, and air transportation.

Industrial and residential development of the TBIE area was discussed as it related to changes in economic structure, manufacturing, petroleum refining development, age structure of the general population, and housing construction. Environmental effects of the upward growth of development include loss of rural lands and activities, increased human susceptibility to natural hazards, loss of water sources, air pollution, and waste disposal.

The contribution of agriculture to the region and local economy was presented, along with a discussion of local agricultural products and farmland quantity and value. Farms have decreased in number, increased in size and specialization, and have become more productive albeit more expensive to operate. The Federal government has

increased its role in agricultural production whereas the political influence of agriculture has declined with urbanization.

STUDY PRODUCTS: Liebow, E. B., K. S. Butler, T. R. Plaut, V. L. Arnold, G. H. Ford, T. D. Kahn, M. A. Klein, C. Allday-Bondy, and V. Parker. 1980. Texas Barrier Islands Region Ecological Characterization: A Socioeconomic Study. Vol. 1, Synthesis Papers. A final report by the U.S. Fish and Wildlife Service for the U.S. Department of the Interior, Bureau of Land Management Gulf of Mexico OCS Office, New Orleans, LA. FWS/OBS-80/19. Contract No. 14-12-0001-29011. 277 pp.

Liebow, E. B., K. S. Butler, T. R. Plaut, V. L. Arnold, G. H. Ford, T. D. Kahn, M. A. Klein, C. Allday-Bondy, and V. Parker. 1980. Texas Barrier Islands Region Ecological Characterization: A Socioeconomic Study. Vol. 2, Data Appendix. A final report by the U.S. Fish and Wildlife Service for the U.S. Department of the Interior, Bureau of Land Management Gulf of Mexico OCS Office, New Orleans, LA. FWS/OBS-80/20. Contract No. 14-12-0001-29011. 548 pp.