

IMPROVING COASTAL LAND-USE PLANNING THROUGH THE APPLICATION OF DECISION SUPPORT TOOLS IN THE MISSION-ARANSAS NATIONAL ESTUARINE RESEARCH RESERVE

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Understanding the linkages between land use strategies and their effect on coastal-marine ecosystems is critical to the development of sound policies that can maintain the social, economic, and ecological values of coastal communities. Decision support tools integrate land use objectives, socioeconomic indicators, ecological values, and physical characteristics to define outcomes resulting from different land use scenarios and enable decision makers to make more informed land-use decisions. The objectives of this project were to use decision support tools to: (1) evaluate the current condition and sustainability of an ecosystem, including socioeconomic indicators, (2) evaluate trends based on current policies and socioeconomic forces, and (3) develop alternative land-use strategies to meet sustainability objectives for ecological, social, and economic indicators.

To accomplish these objectives, three decision support tools are being applied in an integrated manner to a watershed of the Mission-Aransas National Estuarine Research Reserve (NERR). CommunityViz, provided by Placeways, supports the development and analysis of land-use scenarios and socioeconomic indicators. Vista, provided by NatureServe, provides the ability to depict ecological values, evaluate impacts from land-use scenarios, and develop alternative land-use scenarios. Finally, the Non-point Source Erosion and Comparison Tool, provided by the NOAA Coastal Services Center, is used to predict sedimentation and pollution changes from different land-use scenarios and identify areas that are key contributors to these inputs.

The Mission-Aransas NERR is located within relatively undisturbed watersheds that support healthy estuaries with highly diverse habitats. Recreation, tourism, and estuarine-dependent commercial and recreational fisheries play a key role in the region's economy and are important contributors to the high quality of life in the region. However, the area is currently experiencing rapid population growth due to its attractive and healthy environment. This high growth rate has resulted in strong community interest and involvement in maintaining the resource-dependent quality of life, which

makes the area an ideal location for a case study that links and applies decision support tools that will enable better land-use and resource management decisions.

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