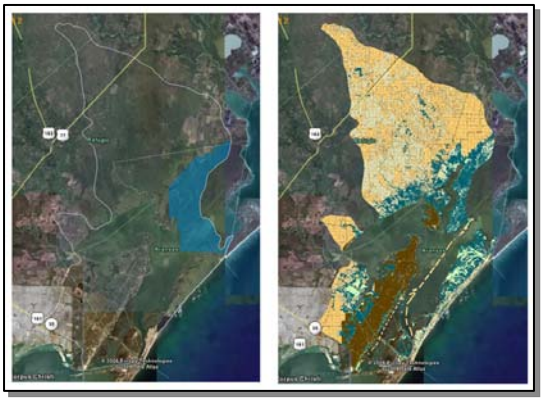
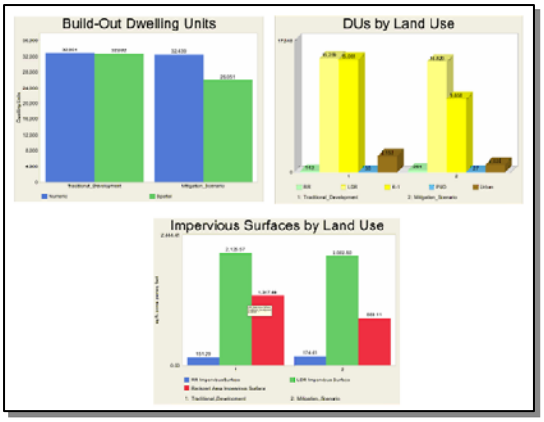
Integrated Land-Sea Planning

A three-component toolkit for coastal planning

Location: Aransas County, Texas
Partners: Mission-Aransas National Estuarine Research Reserve (NERR); National Oceanic and Atmospheric Adminstration (NOAA) Coastal Services Center; NatureServe; Placeways LLC; Texas Coastal Watershed Program

Context: Coastlines attract development for myriad reasons including commerce, recreation, and aesthetics. Half of the population in the United States lives within 50 miles of the coast, and more than 45 percent of new development is occurring there. Coasts are also critical natural areas, where marine and terrestrial ecosystems meet and support commercially and ecologically important fish, birds, plants and more. Because development patterns and practices can have important effects on natural habitats and water quality, scientists, resource managers, and planners are looking for ways to work together on planning practices that respect the human/natural system as a whole.





The Gulf Coast of Texas is a prime example of this nexus, and Port Aransas and nearby Rockport are at its center. The warm weather, beautiful beaches, and abundant recreational opportunities attract vacationers, retirees, and a steadily growing number of permanent and part-time residents. Aransas County's population was 18,000 in 1990 and has since grown to 25,000. At the same time, the fragility and importance of the area's natural ecosystems has been recognized. In 2006, a federal order established the Mission-Aransas National Estuarine Research Reserve (NERR), a 185,708-acre complex of wetland, terrestrial, and marine environments. The majority of the Reserve boundary is adjacent to Aransas County and includes Mission, Aransas, and Copano Bays. The Reserve's mission is to develop and facilitate partnerships that enhance coastal decision-making through an integrated program of research, education, and stewardship.

Project Description: Under a grant from the David and Lucile Packard Foundation, a unique partnership of university, government, non-profit and commercial researchers developed and tested an integrated toolkit of software applications designed to help local planners and managers make decisions about coastal development and water management practices. The toolkit components consisted of:

- CommunityViz® for land-use planning.
- NatureServe Vista for ecological assessment and conservation planning.
- N-SPECT for non-point source water pollution modeling.

The toolkit was piloted in Aransas County under the leadership of the NERR. First, CommunityViz was used to project the type and location of future development based on current policies. Second, CommunityViz results were fed to NatureServe Vista, which was used to assess the new growth's impact on important land-based plant and animal species in the area. Finally, NOAA's N-SPECT model was used to assess the likely effects of growth on the level of pollutants running into the ocean. The integrated analysis showed, for example, that concentrating development in certain locations on the land could significantly reduce pollutant runoff at biologically important points along the shoreline.

Technology and Tools: The pilot toolkit used CommunityViz 3.3, NatureServe Vista 2.0, and N-SPECT 1.5, all running on ArcGIS Desktop 9.2. The primary CommunityViz tool was the Build-Out Wizard.

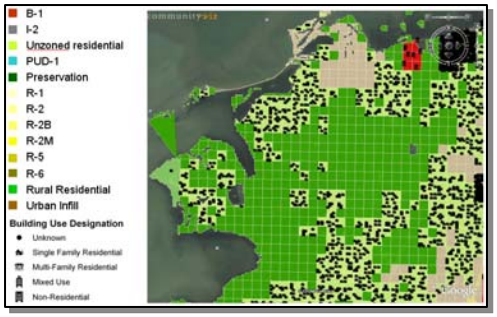
Outcomes: The pilot demonstrated the feasibility of using three software applications together to model the combined effects of planning decisions and to inform the course of future growth. Local planners and resource managers were trained on the combined toolkit and further training and workshops are planned.

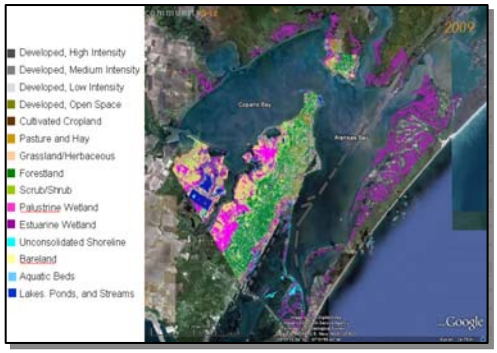
KEY LINKS

CommunityViz
http://www.communityviz.com
Project Site
http://www.utmsi.utexas.edu/about-the-institute/mission-aransas-nerr/research-and-monitoring/ecosystem-based-management-tools-project.html
NatureServe Vista
http://www.natureserve.org/vista
Placeways
http://www.placeways.com
N-SPECT
http://www.csc.noaa.gov/digitalcoast/tools/nspect
Texas Coastal Watershed Program
http://www.urban-nature.org

"The integrated toolkit is providing us with a better understanding of how land-use, biodiversity, and water quality are related. In the end, a better understanding of these linkages will lead to improved planning and resource management decisions that support both the environment and humans in Aransas County."

—Kiersten Madden,
Stewardship Coordinator,
Mission-Aransas NERR





Sources: Mission-Aransas NERR; Placeways, LLC. CommunityViz is a registered trademark of Placeways LLC.