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CORAL REEF SUPPORT

CORAL REEF TASK FORCE MEETING



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KEY BISCAYNE
FLORIDA



NOAA-NOS Coastal Services Center
Overview of Coral Reef-Related Activities

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About the NOAA Coastal Services Center

NOAA Coastal Services Center (CSC) was established in 1994, in Charleston, South Carolina. The Center's mission is to foster and sustain the economic and environmental well-being of the nation's coasts by providing people, information, and technology. Central to the mission are partnerships and the delivery of products and services tailored primarily to meet the needs of state and local coastal resource managers. The Center works with clients to develop tools and techniques to help bridge the gap between science and management, and promotes sustainability through training and capacity-building services.

As part of the emphasis on coastal issues, CSC conducts research that improves both general understanding, as well as the ability to manage, protect, and utilize valuable coastal resources, including coral reefs. This pamphlet provides summary information on Center activities that support coral reef information, management, and decision-making needs.

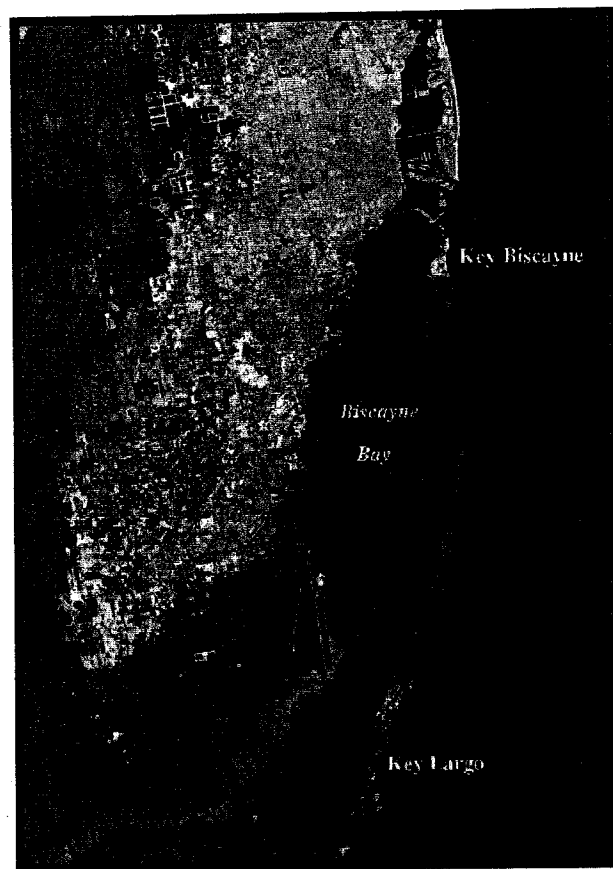
CSC Activities and Expertise in Support of Coral Reefs

MAPPING AND CHARACTERIZATION Florida Land Cover Change Analysis - Impacts of Land Use

CSC's initial project scope, which included the area from southern Lake Okeechobee to the Florida Keys, now is being extended to include all of Florida. Image processing is being undertaken in cooperation with the Department of Environmental Protection's Florida Marine Research Institute (FMRI). Land cover change detection is accomplished by comparing Landsat thematic mapper satellite scenes from 1988 to 1997. Digital data layers will be created for both time periods, as well as one layer for depicting change between dates. This information is especially useful in defining changes in land cover due to land use and other natural and human-induced factors, and for understanding the nature and extent of particular stresses on coral reef ecosystems.

Florida Bay Seagrass Change Detection - Mapping of Essential Habitat

The Florida Everglades and Florida Bay have been host to serious ecosystem degradation and change over the last half century. Habitat degradation, including that for submerged aquatic vegetation (SAV), has led to declines in important fisheries, such as pink shrimp, and associated economic losses in coastal communities. The Center is working with FMRI to map and provide information on changes in SAV habitat. With co-funding from FMRI, and NOAA's National Ocean Service (photogrammetry), 1:48,000 scale aerial photography missions were flown for Florida Bay in 1992 and 1995. The 1992 photography has been interpreted in cooperation with Florida International University. The current approach for vectorization of the Florida Bay data involves scanning and soft copy rectification of the interpreted imagery. Future change detection efforts are planned for critical parts of the bay. These efforts will incorporate new methods for benthic mapping using analytical photogrammetry developed at CSC. These methods incorporate camera calibration data, film registration information, and ground position points to produce a spatially precise data set. The results support detailed change detection with fewer steps and less time than previous methods. CSC and its partners will use the results of this mapping and interpretation to better characterize the nature and rates of change in the distribution and density of SAV. Improved characterization of SAV will lead to a better understanding of the potential impacts on coral reef ecosystems.



Biscayne Bay is a sensitive aquatic ecosystem in close proximity to the Miami urban area. This satellite image shows the agricultural and residential areas that can affect the health of the Bay.

MONITORING

Coastal Ocean Habitat Project

- Use of Remote Sensing Technologies and Data Sets for Monitoring and Assessing Habitat

CSC's coastal remote sensing programs have broad applicability to habitat and other monitoring and assessment needs in coral reef ecosystems. Working with the U.S. Geological Survey's Center for Coastal Geology and Regional Marine Studies, the Center for Coastal Fisheries Habitat at Beaufort, and NOAA's National Climatic Data Center and National Ocean Data Center, the CSC Coastal Ocean Habitat Project operates as the retrospective data product generation sector of applied coastal remote sensing efforts. In fiscal year (FY) 1996, this project produced a CD-ROM data product entitled, *SeaView*, a collection of retrospective sea surface temperature imagery made available in common graphics formats together with public domain browsing software. In FY 1997, the project delivered a set of image sequences that depict the impacts of major hurricanes on coastal waters from 1985 to 1995. In FY 1998, the project produced a CD-ROM that depicts turbidity and sea surface temperature trends over two decades in Florida Bay. Scientists can potentially use the imagery to track warming trends of the waters flowing off the Everglades into Florida Bay, in order to contribute to the understanding of coral reef and seagrass dynamics.

RESEARCH

NOAA Coral Reef Initiative Activities - Support to NURP and OCRM

The National Ocean Service, through the Coastal Services Center, is providing funds to the NOAA Office of Oceanic and Atmospheric Research (OAR) to support coral reef activities within the National Undersea Research Program (NURP). Funds are being used to provide field support and to develop methodologies for a rapid assessment program. CSC is also providing funds to NOAA's Office of Ocean and Coastal Resource Management (OCRM) to support the *South Florida Ecosystem Restoration, Prediction, and Modeling* study, and the *Human-Environmental Linkages in the South Florida Coastal Ecosystem* study, as part of the NOAA Coral Reef Initiative. These projects focus on developing predictive reef system risk assessment tools that will have direct application to evaluating reef management and mitigation measures.

MANAGEMENT AND OUTREACH

U.S. Island Local-level Coral Reef Initiative

- Supporting the Implementation of Locally Developed Coral Reef Management Activities

Since 1996, the National Ocean Service (through OCRM and CSC) has supported a Local-level Coral Reef Initiative (CRI) in partnership with American Samoa, the Commonwealth of the Northern Mariana Islands, Guam, Hawaii, Puerto Rico, and the U.S. Virgin Islands. The initiative involved a visioning and strategic planning effort to determine common needs for coral reef ecosystem management, education, training, and outreach among U.S. flag islands. Island nations submitted proposals to support projects in two areas: (1) education, outreach, training, and strengthening management capabilities in support of local CRI activities and (2) assessment of existing and/or implementation of new local management strategies for the long-term conservation and sustainable use of coral reef environments. Results of the first round of projects were reported at a 1997 workshop following the Annual Pacific Basin Coastal Zone Management Conference. Subsequently, participants also presented potential new activities that could further the Island region's vision for sustainable coral reef ecosystems.

Ocean Planning and Governance GIS

- A Decision Support Tool for the Management of Coastal and Offshore Resources

CSC is working to create PC-based data sets and tools in a geographic information system (GIS) environment that can be used for ocean planning and governance needs. The Ocean Planning and Governance GIS (Ocean GIS) is a prototype on-line regional marine GIS covering the ocean area bounded by North Carolina, South Carolina, Georgia, Florida, the exclusive economic zone, and several maritime boundaries. It is being developed to provide coastal and ocean resource managers in the Southeast access to regional geographic data and mapping technologies to improve coordinated decision making and integrated ocean management. Special emphasis is placed on the laws and institutions that make up the federal ocean management and governance framework, and efforts are ongoing to develop similar data sets for state and local-level policy. As part of this effort, CSC is developing a high-resolution shoreline for this area from the data used to produce NOAA nautical charts. Bathymetric survey data from NOAA and the Corps of Engineers is being combined with ship-track soundings from various sources to create bathymetric contours from the shoreline out to the 200-mile international boundary. These data sets will be combined with other cadastral and natural resources data layers, such as coral reefs, to create a GIS that will improve the decision making capacity of coastal resource managers, and be an important tool for the concurrent management of southeastern U.S. coral reef resources.

Protected Areas GIS

- Improved Information Access and Technical Capabilities for the Understanding and Management of Protected Areas

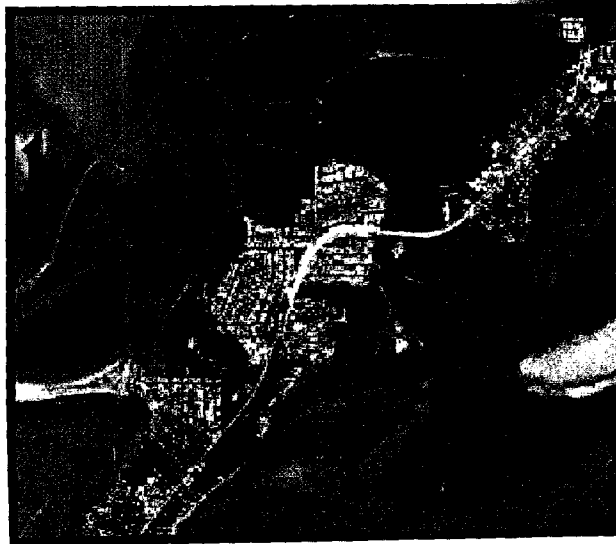
CSC is leading an effort, in coordination with other NOAA offices, to bring GIS technologies to the nation's system of estuarine research reserves and marine sanctuaries. This includes GIS hardware, GIS software, GIS training, spatial data, and improved communications to enhance access to spatial data. The Protected Areas GIS (PAGIS) project will facilitate the use of information and technologies, and promote capacity building for long-term management of reserve and sanctuary resources. The Florida Keys National Marine Sanctuary, which encompasses a large portion of the coral reef distribution in south Florida, is expected to participate in PAGIS, and derive benefits from the application of advanced technology and improved access to information.

How to Access Information

CSC supplies information, products, and services through a variety of sources, including CD-ROM, the Internet, publications, workshop proceedings, and training. Access to resources is available through the Pro link on the CSC Web page. Many items are available online, including search tools to help locate coastal data information and publications, ArcView extensions, views of CD-ROMs, and electronic copies of publications. Copies of paper publications and CD-ROMs can also be ordered via the CSC Clearinghouse.

Of special interest to those concerned with coral reefs are the following documents. The *Coral Remote Sensing Workshop, September 17-18, 1996: Proceedings and Recommendations*, addresses remote sensing technology with the potential for mapping and monitoring coral reefs. The *U.S. Island Coral Reef Initiative Workshop: Summary Report, Maui, Hawaii, September 25-26, 1996*, reports on the results of an island region visioning exercise and summarizes activities proposed to improve management of coral reef ecosystems. These publications can be obtained by sending e-mail to the CSC Clearinghouse. Please include the title(s) of the publication(s) along with your mailing address.

CSC Web Page: <http://www.csc.noaa.gov/>
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Florida Bay contains a wide variety of bottom types and benthic habitats. Here continuous seagrass meadows have been annotated on a rectified color aerial photograph of Tavernier Key, Florida.