

CORE PROGRAMS of the NATIONAL ESTUARINE RESEARCH RESERVE SYSTEM

Research & Monitoring

National estuarine research reserves (NERRs) are living laboratories, ideal sites for research and long-term monitoring. By understanding how estuaries function and change over time, scientists are in a better position to predict how coastal ecosystems will respond to climate change and natural and human-induced disturbances both locally and on a national level.

Monitoring

The monitoring program (known as the System-Wide Monitoring Program, or SWMP) provides long-term data on water quality, weather, biological communities, habitat, and land-use and land-cover characteristics. The use of standardized instrumentation and protocols for data collection at each reserve establishes the NERR System as a coordinated network of coastal observing sites for detecting and understanding environmental change.

SWMP data are available from the NOAA-funded Centralized Data Management Office, which also conducts extensive data quality control. Each reserve also has at least one water quality station and one weather station providing immediate, real-time information.

Research

Reserve research is focused on how environmental factors (including nutrient loading, climate change, invasive species, and storms) impact coastal ecosystems. This research, coupled with the monitoring data, provides a strong, science-based foundation for addressing coastal management challenges. In addition, the NOAA-funded Science Collaborative keeps community relevance in the forefront by bringing the users of the science into the research process.

Many reserves also serve as sentinel sites, or places where intensive, ongoing research and monitoring are used to document and understand climate change impacts on coastal ecosystems.

Education

Each reserve is a living outdoor classroom that advances estuary and data literacy and provides meaningful, hands-on educational experiences for adults, children, and teachers. The opportunities are as varied as the locations and include topics such as climate change and building backyard habitats. Educational experiences provide an exciting entryway for people to become actively involved in coastal conservation.

Teachers & Students

The TOTE (Teachers on the Estuary) program allows educators to come to the reserves to get involved in field research, an experience that brings science to life and shows them how to access reserve data for use in the classroom. Students are also encouraged to participate in hands-on field experiences and enjoy the estuary. To make it easier to bring reserve data and estuary science into the classroom, the reserve system created the Estuary Education website for students and teachers.

Communities

Courses and workshops give citizens and community leaders the scientific and practical knowledge they need to raise awareness of estuary importance and inspire sustainable behaviors.

Stewardship

Protecting estuaries is an important aspect of the reserve system. Good estuary health provides many benefits for the natural and built environment, not the least of which is the ability to act as an effective buffer against rising seas and storm events. The reserves employ an active stewardship program to keep each of the system's 1.3 million acres productive. While each reserve has the ability and responsibility to address site-specific coastal management issues, many stewardship activities are common throughout the network, including

Mapping

A standardized classification scheme is used to map reserve habitats and monitor landscape-scale changes over time.

Restoration

Reserves use their data and expertise to test innovative restoration strategies.

Land acquisition

Acquisition projects are focused on protecting key estuarine and coastal habitats, maintaining biodiversity, and enhancing habitat connectivity.

Other stewardship efforts focus on applying science to land and water management, managing invasive species, reducing environmental stressors, and monitoring habitat resilience and change.

Training

Helping communities and the nation address coastal issues is what drives the NERR training efforts. The Coastal Training Program consists of training professionals from the national program and the 28-site reserve system working together to develop a curriculum that moves national coastal management priorities forward, addresses local needs, and ensures the effective use of reserve-based science.

Audiences

The Coastal Training Program targets professionals who make decisions about coastal resources. These might include elected officials, local government staff members (e.g., county, city, and town managers or planners), state agency personnel, business professionals and organizations, or state and regional professional associations.

Issues

Each reserve determines what coastal resource issues will be addressed through periodic audience assessments and planning and strategy development at the reserve. Topical areas include coastal habitat restoration, water quality, storm-water management, land use, and coastal development.