

# **Estuary Habitat Restoration STRATEGY 2012**

## **INTRODUCTION**

The Estuary Restoration Act of 2000 (ERA), as amended, (title I of Pub. L. 106–457) fosters a collaborative and comprehensive process among federal agencies to maximize benefits derived from estuary habitat restoration projects and address the pressures facing our nation’s estuaries.

The ERA established an inter-agency Estuary Habitat Restoration Council (Council) consisting of representatives from the Department of the Army - U.S. Army Corps of Engineers (USACE), Department of Commerce - National Oceanic and Atmospheric Administration (NOAA), the Environmental Protection Agency (EPA), the Department of the Interior - United States Fish and Wildlife Service (USFWS), and the Department of Agriculture - Natural Resources Conservation Service (NRCS). These agencies work collaboratively to facilitate new collaborative connections among agencies that manage coastal habitats.

The Council is responsible for developing and revising the Estuary Habitat Restoration Strategy (Strategy) in accordance with Section 106 of the ERA. The Council prepared this revised Strategy, which supersedes the original Strategy published in 2002 (67 FR 71942). This document presents the general framework that the Council will follow to fulfill the purposes of the ERA. The Council has prepared a corresponding Action Plan that identifies measurable objectives and the actions necessary to execute the Strategy.

By 2010, it was clear that the original Strategy did not reflect current national priorities and the Council indicated steps should be taken to revise the Strategy. The original Strategy did not address emerging issues and priorities such as adaptation to climate change and sea level rise or the need to balance economic, social, and environmental factors. Additionally, the original Strategy contained ambitious activities that were not consistent with agency priorities. The revision process was initiated in 2010 with a Stakeholder Input Meeting and a request for public comments to guide the revision through a Federal Register Notice. Based on this input a draft revised Strategy was published in the Federal Register for comment in November 2010 and comments were received in early 2011. Several stakeholders provided input throughout the revision process representing the general public, academics, state government, and non-governmental organizations.

## **VISION**

The vision is to successfully restore estuaries and associated ecosystems by leveraging effective public-private partnerships, and to document the environmental and economic benefits associated with estuary restoration.

In order to ensure that this vision is carried out effectively, the Council continues to reinforce the importance of effective partnerships, efficient implementation of habitat restoration projects, and the documentation and analysis of project data that will allow project managers to assess and improve project effectiveness.

The ERA has four primary goals set forth in Section 102:

- 1) Develop and implement a strategy for creating and maintaining effective restoration partnerships among public agencies at all levels of government and between public and private sectors;
- 2) Promote the restoration of estuary habitat by implementing a coordinated federal approach;
- 3) Provide federal assistance for estuary habitat restoration projects; and
- 4) Develop and enhance monitoring and research capabilities to ensure that estuary habitat restoration efforts are based on sound science and innovative technologies.

These four goals are addressed in the main three sections of the Strategy: I) Effective Partnerships, II) Implementation and III) Project Effectiveness. The first and second goals are included in the Effective Partnerships section. The Implementation section addresses federal coordination and collaboration, as well as providing federal assistance for projects and incorporating the pursuit of innovative technologies from the third and fourth goals. The final section, Project Effectiveness, focuses on ways to enhance the value of monitoring and data analysis and advance future project success and restoration designs.

## **I. EFFECTIVE PARTNERSHIPS**

To efficiently restore and preserve our nation's estuarine habitat, it is essential to enhance partnerships among conservation stakeholders. The necessity for effective partnerships is reflected in the goals and objectives of many regional governance structures who engage in estuary conservation, including the Gulf of Mexico Alliance, Northeast Regional Ocean Council, West Coast Governor's Agreement on Ocean Health, Mid-Atlantic Regional Council on the Ocean, National Fish and Habitat, the South Atlantic Alliance, and the agencies and organizations implementing the National Fish Habitat Action Plan. Many of the regional governance structures are working with federal conservation programs, including the numerous conservation programs represented by the Council agencies.

A central theme of the ERA and a critical part of this Strategy is facilitating public-private partnerships. The Council encourages collaboration among all levels of government, private organizations, companies, and individuals, in order to leverage technical and financial resources, and coordinate restoration efforts on a landscape-scale. The purpose of these partnerships is to develop solutions that maximize benefits to estuary habitat restoration projects. Partnerships should deliver effective, efficient, successful, and sustainable estuarine conservation; as such, the Council encourages non-ERA federal agencies to collaborate and support the goals and practices of the ERA and Council.

## **II. IMPLEMENTATION**

One of the goals of the ERA is to promote the restoration of estuary habitat through more efficient project financing and implementation. To that end, the Council provides federal assistance to estuarine restoration projects with a particular focus on projects that utilize an ecosystem approach, exemplify coordination among relevant partners, work to incorporate

adaptive management and maintenance, as well as innovative technology to ensure that the projects are cost effective and are as self-sustainable as possible.

The Council has developed a comprehensive project review process that promotes several restoration principles that are critical in achieving successful projects and long-term sustainable ecological benefits. These restoration principles include:

- 1) **Ecosystem Approach** incorporates multiple conservation benefits;
- 2) **Sustainable Design** emphasizes adaptive projects utilizing natural processes that are self-sustaining, and restore critical habitat structure and function, such as “climate smart” project development;
- 3) **Coordination and Collaboration** among restoration practitioners, including support of Federal, regional, and state management plans is critical to restoration efforts;
- 4) **Innovative Technology** use should be based on sound scientific principles and assumptions; and
- 5) **Adaptive Management and Maintenance** procedures during implementation maximizes the benefits derived from restoration projects.

The following sections provide more details on how these five restoration principles will be implemented by the Council in the next five years.

### 1) **Ecosystem Approach**

The Council recognizes that an ecosystem approach to estuary restoration can enhance the potential for success; improve long-term sustainability; support multiple ecosystem benefits including sustainable fisheries and conservation of federal trust resources. An ecosystem approach assesses the entire ecosystem and evaluates the stressors contributing to degradation. By understanding the primary stressors and the anticipated ecological responses, restoration practitioners can design a restoration plan that will deliver long-term benefits to the ecosystem. In addition, an ecosystem approach can promote long-term sustainability by evaluating the historic, current and future watershed conditions and the use of this insight can improve restoration designs. Achieving a sustainable ecosystem requires conservation partners working together to address the upstream and downstream issues that can negatively impact the entire system. The Council gives priority to projects in watersheds where efforts have been or are being undertaken to reduce adverse impacts on the estuarine system.

This approach includes opportunities to address impacts from human activities on a site-specific basis, such as the spread of invasive species, sediment loading, and the destruction of sensitive habitats. Examples of the benefits of an ecosystem approach include re-establishment of natural communities and historical ecosystem functions and services, including reduction of sediment loads, restoration of hydrology and water quality, and improvements to breeding habitat across a variety of species.

## **2) Sustainable Design**

A central focus of the ERA is restoring estuaries with a goal of establishing self-sustaining ecosystems. By incorporating lessons learned from previous restoration projects and the latest science, projects are designed to adapt to future changes such as climate change. Proactive consideration of climate change impacts in the design, planning, implementation, and maintenance of a restoration project (i.e., “climate smart”) will improve the long-term sustainability and benefits. Examples of climate smart activities include projects that increase the amount of available salt marsh habitat to buffer against sea level rise or fish passage projects that increases available cool water habitat for anadromous fish. To address this goal, the Council supports restoration projects that explicitly address effects of climate change.

## **3) Coordination and Collaboration**

The multi-agency composition of the Council provides for diverse perspectives on estuarine restoration and protection, and promotes the necessary collaboration and coordination for successful conservation projects. Through better coordination, restoration practitioners, including Council agencies, can work together to improve restoration delivery and maximize the ecological benefits, as well as improve the efficiency of restoration by reducing workload redundancies and providing the opportunity to leverage funds and technical resources across agencies or organizations.

One way the Council promotes national coordination is through policy development. For example, the Council agencies continue to engage in revising monitoring data standards, updating developed monitoring documents, implementing the monitoring standards, and providing a public interface for estuarine project information. By engaging in policy development, the Council can promote ERA priorities that will have long-term benefits for estuarine resources.

The Council also promotes local-scale coordination by supporting restoration projects that incorporate comprehensive coordination into the planning and implementation of restoration projects, as well as projects that support Federal, state and local management plans. Through this coordination, restoration practitioners can maximize ecological benefits and ensure that projects are complementary. A coordinated conservation effort may also promote ecological redundancies (i.e., component and functional redundancy), which increases the potential for restoration success. The Council also regards potential projects that include multiple public and private partner collaboration in planning and implementation more favorably.

## **4) Innovative Technology**

The Council encourages restoration practitioners to develop and/or use innovative technology. The ERA considers technology “innovative” if it involves a new process, technique, or material or uses existing processes, techniques, or materials in a new application or habitat type, not just a new region. The ERA includes a financial incentive for the use of innovative technology or approaches by increasing the Federal cost share for the increased costs of using an innovative approach or technique.

The Council acknowledges the increased risk of failure by funding innovative technologies; however, the Council supports these projects because of the potential to attain cost-savings during project implementation and a broader beneficial impact on the resources by improving the science of restoration. To mitigate the increased risk, the Council will only support projects that are based on sound scientific principles, assumptions, and research.

### **5) Adaptive Management and Maintenance**

To ensure the success of a restoration project, it is critical to evaluate the conditions that may affect restoration success. Due to unforeseen design or environmental complications, it is important to evaluate the progress and status of a restoration project during its implementation and after its completion. Changes in conditions may require adaptive management and/or maintenance, which include modifying the design or performing project maintenance.

Adaptive management and maintenance is vital to the long-term success of a restoration project, which ensures that the project achieves its intended objectives. The Council acknowledges that adaptive management and maintenance is an important conservation tool available to restoration practitioners to maximize ecological benefits to estuarine resources.

Adaptive management and maintenance is a crucial component in estuary conservation that may help restoration practitioners address the many complicated environmental issues that affect estuaries, such as climate change. Many restoration practitioners recognize the existing and/or the forecasted effects of climate change on estuary and marine habitats. The adaptability of restoration projects will play an important role in protecting and mitigating for these habitats impacts.

## **III. PROJECT EFFECTIVENESS**

Project monitoring is critical in determining project successes and improving future restoration designs. Monitoring is important because it allows conservation practitioners to track project success, evaluate restoration methodologies for ecological success and cost-effectiveness, document ecosystem services, and identify the need for adaptive management. By closely tracking progress at the project level, restoration practitioners and policy makers can determine whether individual projects contribute to the goals and objectives of estuary and regional restoration plans, and the ERA.

The Council will continue to promote monitoring of estuarine restoration projects by non-Council agencies and organizations when implementing projects. It will also be reviewing and revising, as appropriate, the current monitoring standards used for projects funded under the authority of the ERA.

To address project effectiveness and enhance the data and analysis used to assess estuary restoration projects, the Council is committed to: 1) assessing minimum monitoring data standards, 2) refining the current project tracking and analysis tools, and 3) advancing socio-economic and ecosystem services research. Specific actions to address these commitments are

outlined in the Estuarine Habitat Restoration Action Plan (Action Plan) associated with this Strategy.

### **1) Minimum Monitoring Data Standards**

The ERA recognizes the importance of monitoring to the success of any estuarine restoration program. The ERA requires NOAA, in consultation with the Council, to establish minimum monitoring data standards for projects funded under the ERA. The current standards were published in September 2003 and can be found at:

<http://www.era.noaa.gov/information/monitor.html>. These standards are based on NOAA's two-volume *Science-Based Restoration Monitoring of Coastal Habitats*, which provides a standard data format for project monitoring, along with requirements for types of data collected and frequency of monitoring. The Council encourages the use of these monitoring data standards, as they are applicable to all coastal restoration projects. In a continuing effort to assure monitoring reflects current science and contributes to our understanding of estuarine processes, all five Council agencies have committed to review the current monitoring standards used for ERA funded projects and adopt appropriate revisions.

### **2) Project Tracking and Analysis**

Monitoring alone is not sufficient to improve the effectiveness of project implementation. A broad understanding of restoration trends, failures, and successes is critical for improving the science of restoration, identifying gaps in restoration designs and implementation, and improving the success of restoration projects. This insight will allow for better design, review, and select successful restoration projects.

The ERA also required NOAA, in consultation with the Council, to develop a database to maintain publicly accessible information concerning estuarine habitat restoration projects carried out under the ERA, as well as collect voluntarily shared information for restoration projects carried out under other authorities or programs that fulfill the minimum monitoring standards. NOAA will continue working to incorporate estuarine restoration data from all the agencies represented on the Council in order to make this a more robust tool. To capture a broader sense of ecosystem impact, the Council encourages non-Council agencies to work with NOAA to submit project data to the public database for widespread dissemination and use of the project and monitoring data to identify ecological and socio-economic trends, evaluate project success criteria, and compile lessons learned about project implementation and monitoring across all estuary habitats. The Council will also use the data for strategic targeting, as well as comprehensive, coordinated, or complimentary project selection or prioritization.

### **3) Socio-Economic /Services Research**

NOAA, on behalf of the Council, will continue to explore socio-economic monitoring studies to help the Council agencies, and restoration partners consider systematic approaches for the collection of data to measure and monitor the economic outcomes and human dimensions of habitat restoration in the coastal zone. NOAA has funded an external panel and three case studies to help determine the value and impact of coastal habitat restoration. These studies

are identifying the best methods and metrics to use in measuring the economics of estuary and coastal restoration.

The Council will continue to identify socio-economic monitoring metrics for coastal and estuarine habitat restoration projects to allow for valuation of the ecosystem services that restoration projects provide to the nation, as well as, an understanding of overall socio-economic project impacts.

### **MOVING FORWARD**

The following Action Plan created by the Council articulates what it will do to move forward on the principles and objectives identified in this Strategy. Working with public- and private partners and other interested stakeholders, the Council will review and refine this Strategy and Action Plan in an iterative process, as new information becomes available, as implementation of relevant laws and executive orders are initiated, and as progress toward meeting the goals of the ERA are evaluated.

The Council looks forward to serving as an effective vehicle through which the Council agencies can cooperatively address the challenges in achieving the ERA goals for estuarine habitat restoration. As federal funds allow, one avenue for implementation of the Strategy will be the selection and funding of estuarine habitat restoration projects that will incorporate the Strategy's restoration principles from the Implementation section. As new challenges and priorities arise, they will be incorporated into project selection decisions and assessment tools so that the Council and the Estuarine Habitat Restoration Program can analyze project information to allow the Council to stay at the forefront of adaptive management and innovative technologies that are the cornerstones of ERA project implementation.

## APPENDIX

### Definitions per the Act

- Estuary: a part of a river or stream or other body of water that has an unimpaired connection with the open sea and where the sea water is measurably diluted with fresh water from land drainage; also includes the near coastal waters and wetlands of the Great Lakes that are similar in form and function to estuaries (per the Act).
- Estuary habitat: the physical, biological, and chemical elements associated with an estuary, including the complex of physical and hydrologic features and living organisms within the estuary and associated ecosystems (per the Act).
- Estuary associated ecosystems: salt, brackish, and fresh water coastal marshes, coastal forested wetlands and other coastal wetlands, maritime forests, coastal grasslands, maritime forests, coastal grasslands, tidal flats, natural shoreline areas, shellfish beds, sea grass meadows, kelp beds, river deltas, and river and stream corridors under tidal influence.
- Restored area: that area which appropriate monitoring can document the establishment or improvement of desirable ecosystem characteristics.
- Trends of estuarine habitats: include historic loss, current rate of loss, the extent of the threat of future loss or degradation, and a measurement of the rate of change.
- Habitat Restoration Plan: any Federal, State, or regional plan for restoration of degraded estuary habitat that was developed with the substantial participation of appropriate public and private stakeholders (per the Act).
- Self-sustaining: characteristics will vary by site, but generally include those habitats that require little or no high cost maintenance following the period of initial establishment and adaptive management.
- Innovative: technology that involves a new process, technique, or material or uses existing processes, techniques, or materials in a new application. This includes efforts to identify and transfer innovative restoration technologies, methods, and monitoring strategies to program participants for future use in restoration activities carried out under the Act.
- Estuary Habitat Restoration Activity: an activity that results in improving degraded estuaries or estuary habitat or creating estuary habitat (including both physical and functional restoration), with the goal of attaining a self-sustaining system integrated into the surrounding landscape (per the Act).