



**NOAA  
FISHERIES**

Silver Spring,  
Maryland

# Engineering with Nature and Benefits to NOAA Trust Resources

2018 Restore America's Estuaries Conference  
Engineering with Nature<sup>®</sup> Short Course

December 13, 2018

# NOAA's Mission

- NOAA: Science, Service, & Stewardship
  - To conserve and manage coastal marine ecosystems and resources
- NOAA Fisheries (NMFS)
  - Nation's ocean resources and their habitat
  - Protect and restore habitat and maintain coastal ecosystems
- NMFS Office of Protected Resources
  - Conserve, protect, and recover ESA and MMPA species

# Endangered Species Act: Overview

- Purpose: conservation of threatened and endangered species and their ecosystems
- 2,300 species listed under the Endangered Species Act (ESA)
  - Habitat-related recovery goals



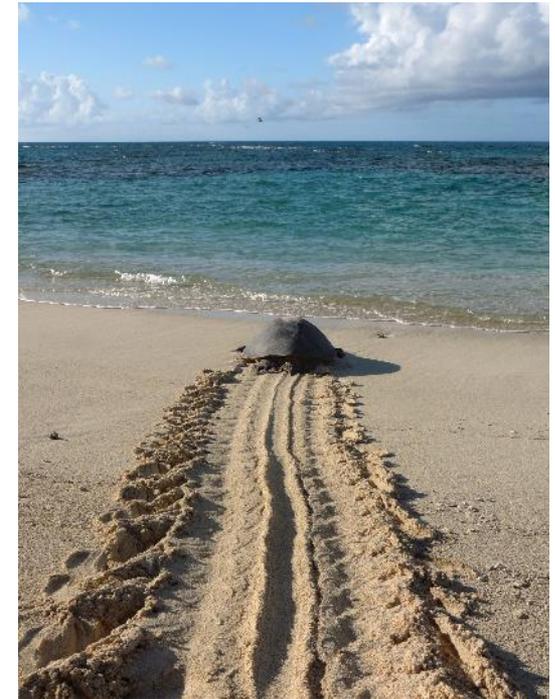
# Habitat and Recovery

- Habitat Loss
  - Loss of access, complexity
- Habitat Degradation
  - Pollution, run-off
  - Unsuitable water conditions
    - Temperature, dissolved oxygen, salinity
- Habitat Restoration Efforts
  - Dam removal, flood plain restoration, wetlands
  - Multiple ecological benefits



# Engineering with Nature® and NOAA's Priorities

- USACE: Engineering with Nature (EWN®)
  - Leveraging nature for engineering value
- NOAA: Mission Priorities
  - Protecting coastlines
  - Benefits to trust resources
  - Promoting Federal partnerships



# Engineering with Nature® Elements

## *Producing Efficiencies*



**Using science and engineering to produce operational efficiencies**

## *Using Natural Processes*



**Using natural processes to maximize benefit**

## *Broadening Benefits*



**Increasing the value provided by projects to include social, environmental, and economic benefits**

## *Promoting Collaboration*



**Using collaborative processes to organize, engage, and focus interests, stakeholders, and partners**

# EWN<sup>®</sup>: Impacts and Benefits

- Near-term
  - Species, Habitats
  - Mitigation
  - Consultation
  - Early Discussion
- Long-term
  - Habitat Improvement
  - Performance
  - Monitoring
  - Adaptive Management

## Balancing Trade-offs

# EWN<sup>®</sup>, Habitat Restoration Examples

- Floodplain Restoration
  - Tillamook Bay Southern Flow Corridor (OR)
  - Oroville Wildlife Area (CA)
  - Grasslands Floodplain Restoration (CA)
- Benefits
  - Flood Control
  - ESA-listed Salmon
- Partnerships



# ESA and EWN<sup>®</sup>

- Benefits to ESA species
  - Islands
  - Beaches
- Path to Environmental Compliance
  - Consultation
  - Mitigation
  - Potential Partnerships



# NOAA and EWN<sup>®</sup>: Current Cooperation



- Impact: USACE projects potential to co-occur with NOAA trust resources
- Research and Monitoring
  - USACE-led project: Mordecai Island, NJ; Swan Island, MD
- Natural and Nature-Based Features Guidelines
  - Participation across NOAA
- Collaboration Meetings
  - USACE Districts, NOAA Regional Offices, and State Partners
  - Emergency Supplemental Funding
- Efforts to use EWN<sup>®</sup> practices
  - ESA Section 7 consultations

# Needs

- Early Awareness—Early Involvement
  - Planning Input
    - Reduce Impacts
- Monitoring
  - Demonstrating and Quantifying Benefits
  - Adaptive Management
- Outreach and Consistency

# EWN<sup>®</sup> Elements & the ESA



- Producing Efficiencies
  - ESA consultation



- Promoting Collaboration
  - Achieving mission goals through partnerships



- Using Natural Processes
  - Green versus gray



- Broadening Benefits
  - Habitat-related recovery goals

# Broad Scope of Engineering with Nature®

- Partnerships to Maximize Benefits
- Engineering with Nature Techniques
  - Coastal resiliency, flood risk reduction
  - Restoring habitat and ecological function
  - Avenue to environmental compliance
  - Habitat-related recovery goals for ESA species

# Questions?

Contact Colette Cairns  
NOAA Fisheries Office of Protected Resources  
[colette.cairns@noaa.gov](mailto:colette.cairns@noaa.gov)