Science & Monitoring to Assess the Success of Restoration Projects related to the DWH Oil Spill & Natural Resource Damage Assessment and Restoration

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Talk Overview

- USGS involvement in NRDAR
- Value/Purpose of monitoring for restoration success in NRDAR
- Examples of monitoring in proposed early restoration projects for DWH
- Looking to the future…

USGS and the DOI NRDAR Program

- Not an affected bureau on NRDAR claims
- Science support for DOI NRDAR cases
- Develops scientifically defensible case strategies, injury assessments, and restoration alternatives
- Provides scientific review and guidance to the NRDAR Program Office
- Provides expert witness or witness of fact testimony for science in support of NRDAR cases

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USGS involved in various DOI NRDAR activities in Gulf of Mexico states

- Science to Document Injury
- Science to Quantify Damages
- Science in Support of Litigation
- Science in Support of Restoration
- Science to Evaluate Restoration Success

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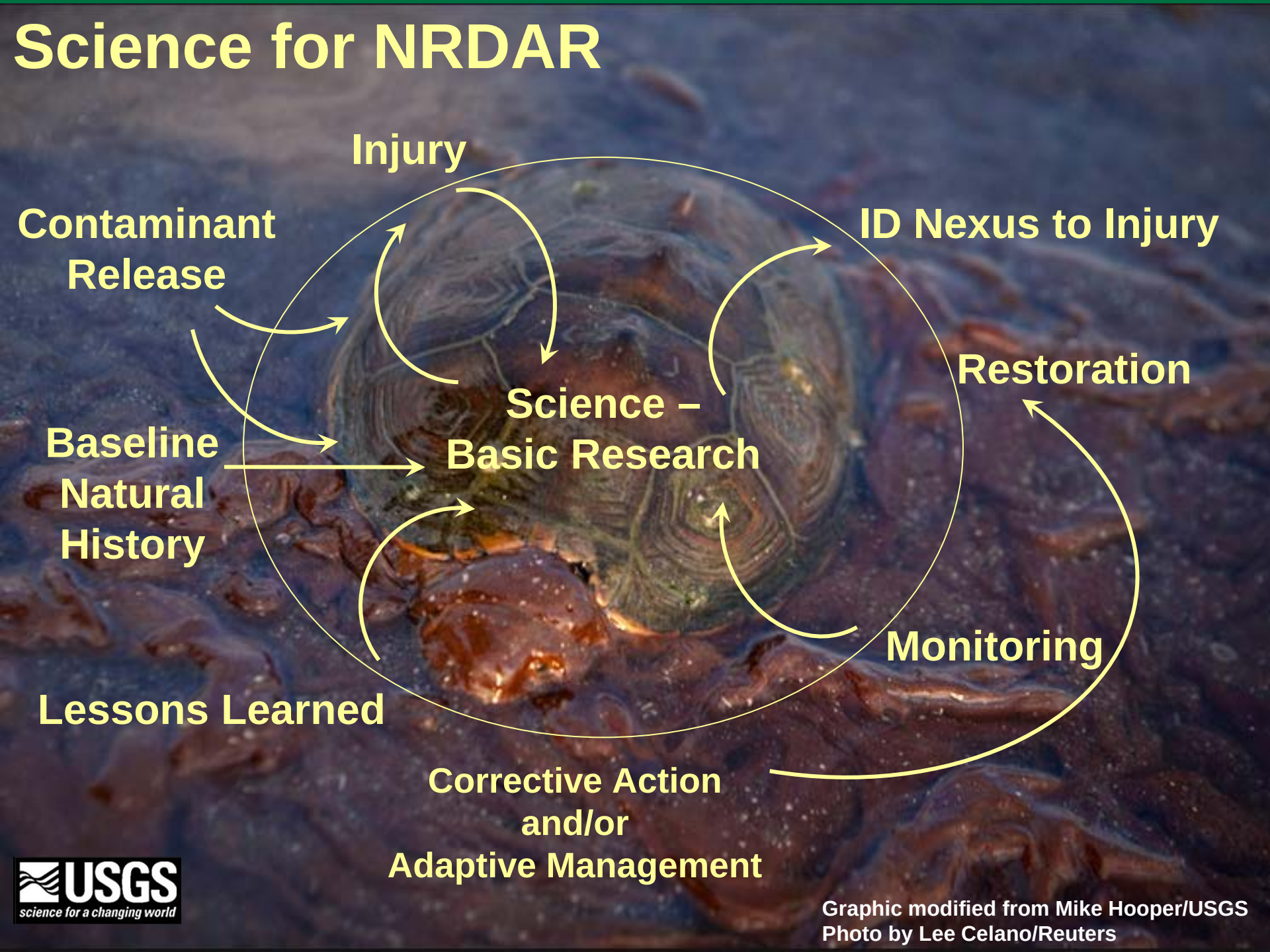
Science for NRDAR



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Graphic modified from Mike Hooper/USGS
Photo by Lee Celano/Reuters

Why monitor for restoration success?

- Accountability: Demonstrates obligation to compensate the public for lost and injured natural resources has been fulfilled
- Increase potential for success: Allows for corrective action and/or adaptive management if restoration goals are not being met
- Evaluates recovery of an ecosystem as a measure of ecosystem services rather than focusing solely on physical restoration
- Enables learning beneficial to implementation of future restoration activities

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Restoration versus Early Restoration

Release → Assessment → Settlement → Restoration → Monitoring

↓

Early Restoration → Monitoring

- Restore injured resources prior to completion of the damage assessment
- Derive “NRD offsets” where trustees calculate expected benefits (in ecological service or monetary terms) applied to reduce RP’s NRD liability (from Draft Phase III ERP/PEIS)
- Approach to monitoring could differ between restoration and early restoration

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Photo by Kari Dequine The Times/Picayune

Examples of Early Restoration project types

- Create and Improve Wetlands
- Restore Barrier Islands and Beaches
- Restore and Protect Birds
- Restore and Protect Sea Turtles
- Restore and Protect SAV
- Conserve Habitat
- Promote Environmental and Cultural Stewardship, Education and Outreach
- Enhance Recreational Experiences

Monitoring approaches with respect to guidelines of framework agreement

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Photo provided by Ben Frater/FWS

How would one monitor the success of these proposed restoration projects?

- ***Beach Enhancement Project at Gulf Island National Seashore***
  - Offsets and project objectives related to human use
  - Success of project is determined by visitor experience

- ***Louisiana Outer Coast Restoration Project***
  - Offsets and project objectives related to habitat and birds
  - Success of project is determined by increase in habitat and birds

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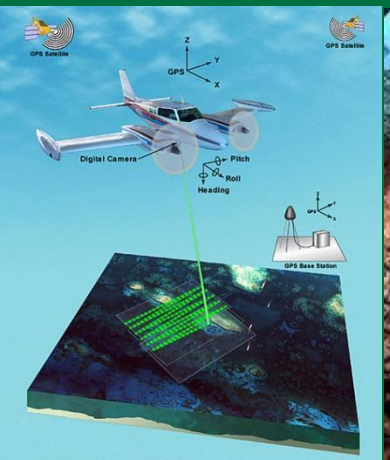
With this background, what is the proposed approach for early restoration monitoring?

- Trustee workgroup(s) created
- Develop monitoring frameworks for early restoration project types***…the "NOAA ladies" leading the charge***
- Frameworks are guidelines with science and monitoring included to assess the success of the project *related to the natural resource it is intended to restore*
- Frameworks provide the potential for projects restoring similar resources to have consistent, comparable, long-term data



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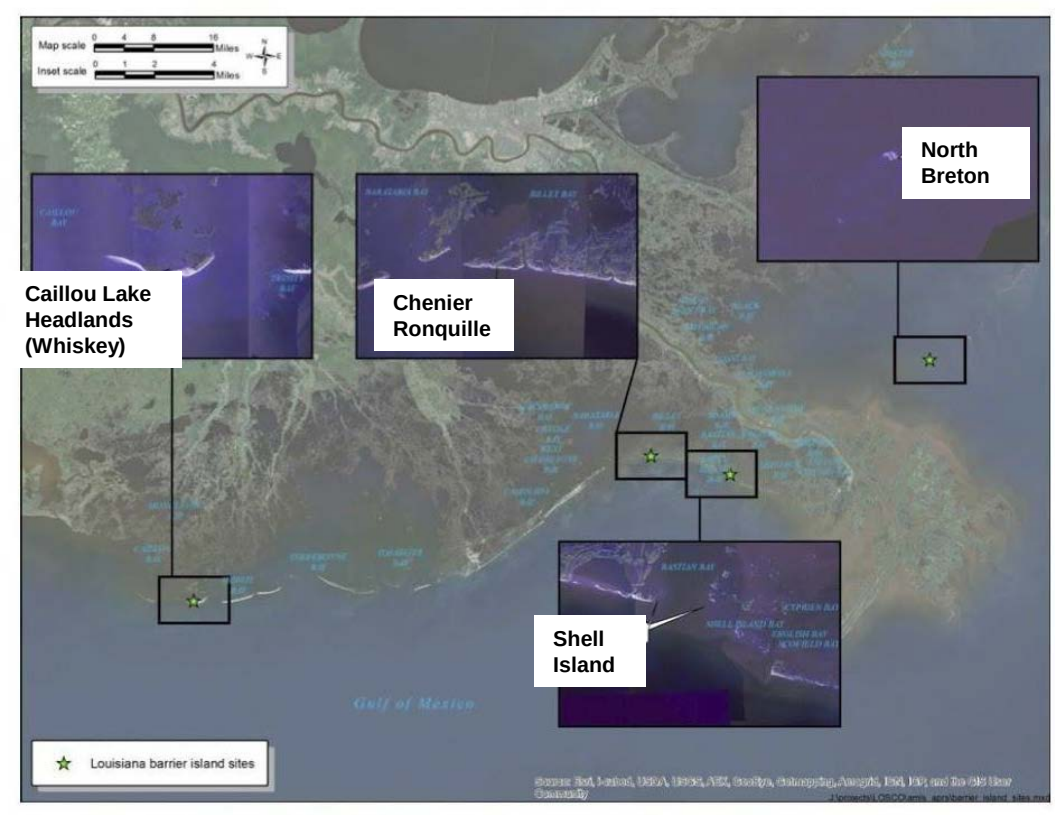
Monitoring frameworks include:

- Performance Monitoring
  - Evaluate effectiveness in meeting objectives and need for corrective actions
- Additional Monitoring (optional, project-specific)
  - Support existing project planning and implementation
  - Support project evaluation and management
  - Support future project planning and implementation (e.g., future project design, restoration scaling assumptions)
  - Gain additional scientific knowledge on restoration ecology
- Details Incorporated:
  - Parameters & Methods
  - Recommended Timing/Frequency
  - Performance Criteria
  - Corrective Actions

Example: Monitoring for the proposed Outer Coast project

- **Restore beach, dune, and back-barrier marsh habitats in LA**
- **Detect presence of nesting pelicans, terns/skimmers and gulls within restored habitat areas**



Potential monitoring components:

- **Barrier island structure and function** ***(e.g. shoreline position, stability, area, elevation, volume)***
- **Bird habitat use and nesting activity** ***(e.g. habitat occupancy surveys, colony size, nest densities)***
- **Habitat characteristics** ***(e.g. species composition, vegetation cover, nekton and invertebrate population densities, habitat areal coverage)***

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Challenges in Coordinating Monitoring for proposed Outer Coast project

- Logistical-multiple moving parts
  - 3 implementing trustees
  - Construction timelines
- Amount of data to be acquired and managed
- Background/Science needed

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Science to support the proposed Outer Coast project

- Identifying appropriate sand resource
  - Color, size, location/distance
  - Ensuring location does not affect island
- Sustainable design
- Linking habitat type to bird utilization
- Accomplished by:
  - Field work
  - Modeling
  - Data analysis
  - Long-term response of the system to restoration

Brian Spears, FWS

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Leveraging Existing Programs for the proposed Outer Coast project

- State of LA (CPRA)-Barrier Island Comprehensive Monitoring
- FWS, LADNR, & USGS bird monitoring
- USGS National Geospatial Program
- USGS and LA Database Management
- USGS Coastal and Marine Geology Program

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Examples of Desired Outcomes:

- Guide projects on need/timing for corrective actions
- Provide information to the public on restoring injured resources
- Learn for future restoration projects
- Successful Gulf Restoration

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Moving forward in the bigger picture: *the DOI NRDAR Program*

- Investment in restoration monitoring is essential
  - Provides guidance for adaptive strategies
  - Allows for evaluation of restoration success
  - Documents that the public is compensated for losses by insuring impaired ecosystem services are replaced
- Drawing together ecotoxicology and restoration communities

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Questions?

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