


DAMAGE ASSESSMENT, REMEDIATION, & RESTORATION PROGRAM

DARRP

Office of Response and Restoration • Office of Habitat Conservation • General Counsel for Natural Resources



Introduction to Natural Resource Damage Assessment

Topics

- Overview
- Legal: Laws and Regulations
- NRDA Process
- Scaling Injuries and Restoration
- Restoration in the Arctic
- Summary



Top Three Things to Know

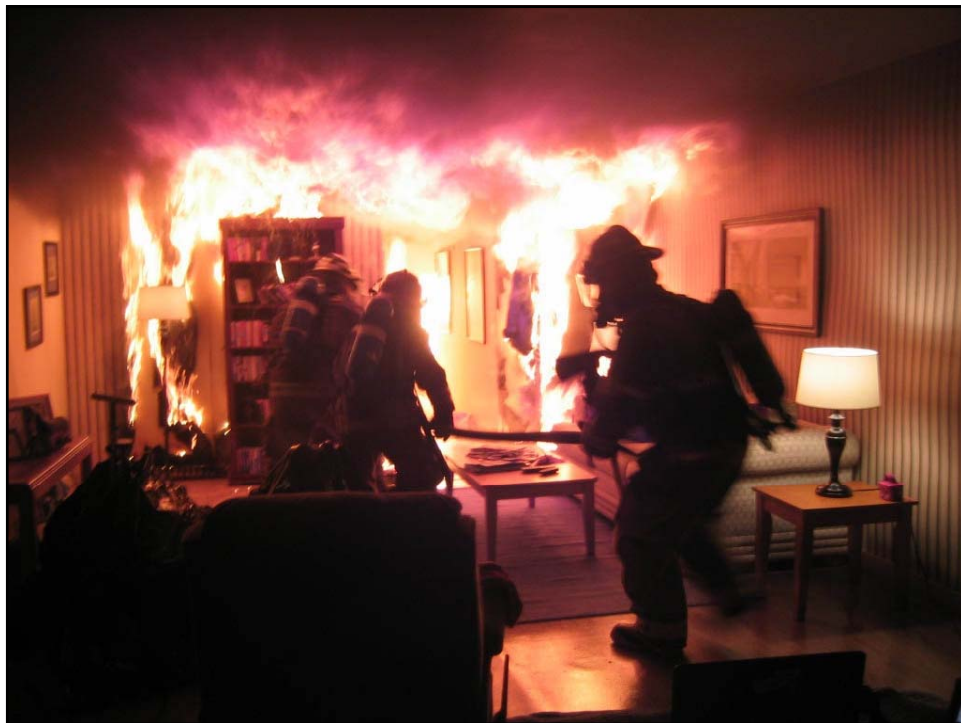
- Three liabilities from oil spills
 - Injury to public natural resources
 - Response
 - 3rd party claims
- NRDA is restoration-focused
 - Restoration is considered early and throughout the process
 - Injuries are balanced against, and directly scaled to restoration
- NRDA is a Legal Process
 - Must demonstrate causality between release and injury
 - Defensible science is key to success
 - Effects of oil must be on top of baseline condition

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An oil spill is like a house fire



Response is intended to stop further harm



Restoration rebuilds



Restoration compensates for loss



NRDA: What is it?

- A process to determine
 - Injuries to or lost use of the public's natural resources
 - to restore, rehabilitate, replace, or acquire the equivalent of injured natural resources and services
- NRD success is measured by amount of appropriate restoration achieved



Natural Resource Damage Assessment

- Amount of restoration implemented must EQUAL amount of injury that occurred



Goal of NRDA

To Balance Injury with Restoration



Oil Pollution Act (1990)

- Applies Public Trust Doctrine
- Polluter pays – compensatory not punitive
- Requires cooperation with polluter
- Requires public involvement
- Restoration must "restore, rehabilitate, replace, and acquire the equivalent" of injured natural resources and services

Damage Assessment Responsibilities

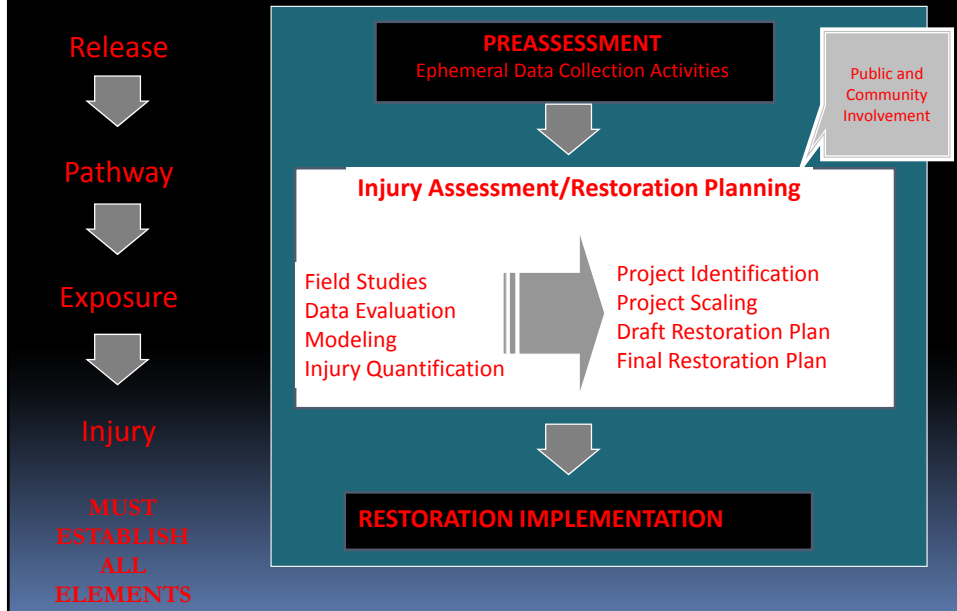
- Coordinate w/response agencies (USCG)
 - Integrate concerns and science into cleanup
- Assess injuries: What was harmed?
- Evaluate Restoration: What can be done to
 - Return resources to baseline?
 - Compensate for lost resources and services?
- Oversee and/or implement
 - restoration projects
- Recover assessment costs



NRDA Does Not Address

- Civil and criminal liability (CWA, OCSLA)
- Damages to real or personal property
 - Net loss of taxes, royalties, rents, fees, and other lost revenues by federal or state governments
 - Loss of profits or loss of earning capacity due to injury to natural resources
 - Net costs of public services

Natural Resource Damage Assessment



OPA 90 Definition of Injury

- ... *an observable or measurable adverse change in a natural resource or impairment of a natural resource service. incorporates ... "destruction," "loss," and "loss of use"*



Injuries and Restoration

Habitat: sub-tidal, inter-tidal, beach, estuarine, marsh

Resources: fish, marine mammals, birds, wildlife

Lost Use: fishing, hunting, bird watching

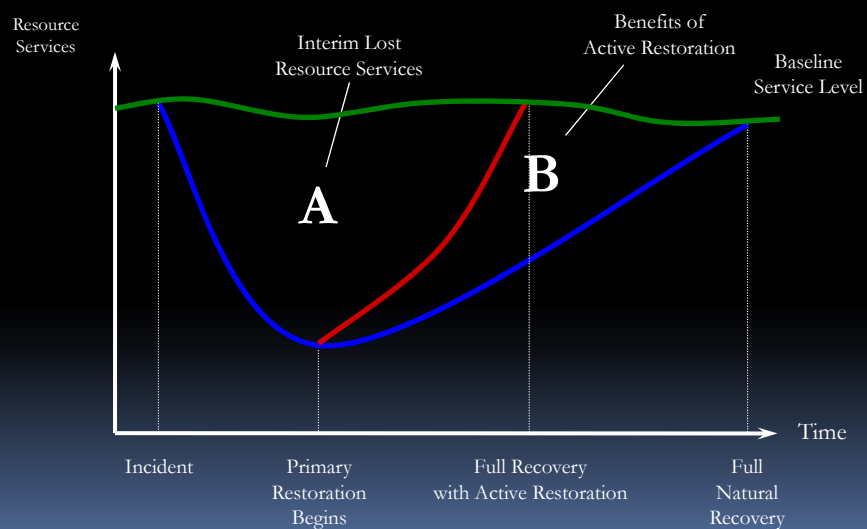


Focus on Restoration

- Primary Restoration
 - Actions taken to stop release and promote recovery
- Compensatory Restoration
 - Actions taken to compensate for interim lost uses

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Restoration Benefits



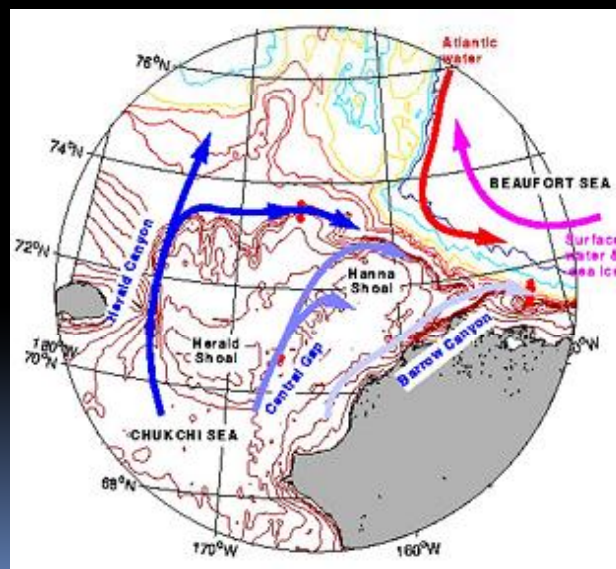
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STEP 1: What Happened?

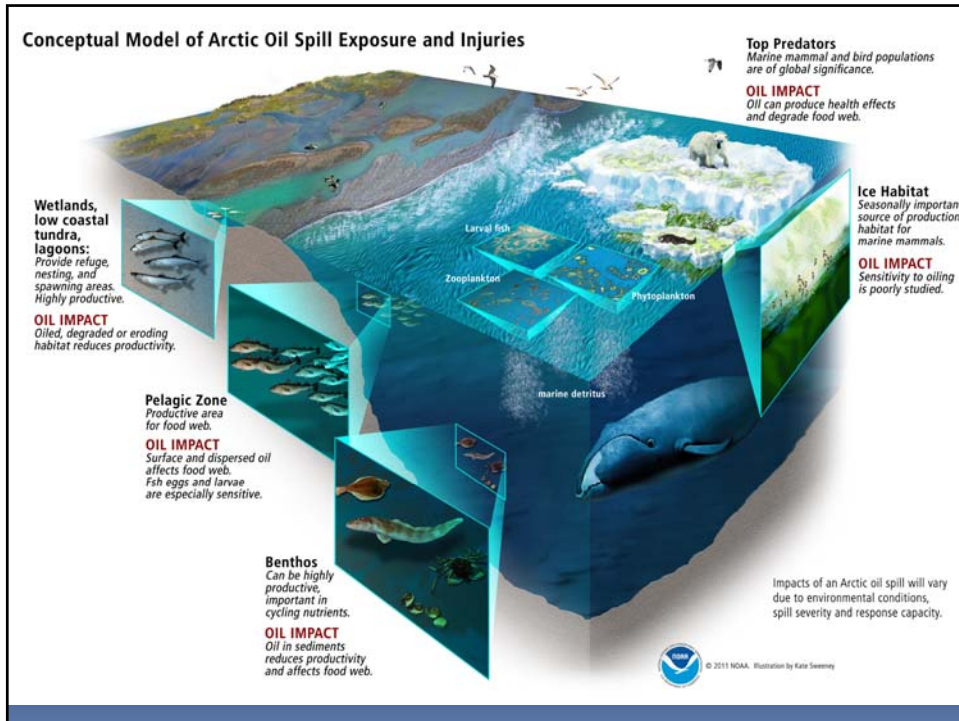
- How is oil reaching natural resources?
 - Physical transport pathways (floating on water, current driven transport, stranding on shorelines, sinking, evaporation)
 - Biological pathways (dermal contact, ingestion of water, prey consumption, inhalation)
- What animals and habitats could be exposed?
- What life stages are most sensitive to oil effects?
- How could they be affected (what injuries would you expect?)
- How are people using the resources?

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Major Currents



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STEP 2: Injury Assessment

- Verify pathways
- Identify resources at risk
- Evaluate exposure
- Measure injuries and compare with baseline
 - Habitat
 - Animals
 - Human Use



Defining Baseline

- Condition “but-for” the spill
 - Comparison to “pre-spill” conditions?
 - is baseline changing?
 - Comparison to appropriate reference sites?
 - Consider confounding factors and competing hypotheses
 - Physical degradation of habitat
 - Presence of other contaminants
 - Climate change

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Evaluating Exposure

- Field Measurements
 - Water concentrations
 - Sediment/soil concentrations
 - Oil degradation rates
 - Invertebrate tissue
 - Fish bile
 - Blood parameters
- Modeling
 - Oil type and volume
 - Weather, current, tides, wind
 - Observations of oil fate
 - Calculated water concentrations
 - Calculated air concentrations

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Evaluating Injury (1)

- Species
 - Field measurements
 - Lab studies
 - Extrapolate from previous spills/literature
- Modeling
 - Biological population estimates
 - Life history tables
 - Toxicity values
 - Production foregone



Evaluating Injury (2)

- Habitat Injuries
 - Extrapolating from individual species metrics
 - Integrated to "total" service losses
- Human Use Injuries
 - Document geographic and temporal extent of lost use
 - Boat access, fishing, hunting areas



Injury Assessment Considerations

- Endpoints must be related to oil effects
- Endpoints should be translated into resource and service loss and restoration
- Have a clear objective for sampling-hypothesis driven or to document exposure conditions
- Use pre-approved protocols
- Clear, accurate, and complete documentation is critical
 - QA documentation
 - Chain of Custody
 - Photos

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Cooperating with the PRP

- Required under NRDA rules – Trustees decide timing, duration, decision making process, level of participation, agreements, public involvement
- Executive Order: Facilitation of Cooperative Conservation (Aug. 26, 2004) calls for Federal agencies to cooperate
- Outcome of cooperative NRDA is a legal agreement—a consent decree

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Injury Assessment What is Needed for Success

- Coordination with
 - response agencies
 - PRPs
- Framework for
 - cooperative planning
 - robust scientific evidence
 - objective decision-making
 - public participation
 - funding



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Natural Resource Services

- Services are fundamental to the determination of interim losses and for scaling restoration
- Services have value because humans care about them
- Services are functions that one resource performs for another or for humans
- A single resource may provide a variety of services

Categories of Natural Resource Services

- Ecological
- Cultural/Historical
- Sustenance
- Commercial
- Recreational
- Passive/Existence

STEP 3: Restoration Planning

- Compensate for what is injured
 - What is injured?
 - How badly is it injured
 - What could be replaced/restored/acquired?
 - How much is needed?



Service-to-Service Approach

Framework

- Services lost and must equal those gained through restoration projects
- Conditions for use:
 - Injured and restored resources and services are the same type, quality, and of comparable value
- Encompasses
 - Habitat/Resource equivalency analysis (HEA/REA)
 - Methods predicting direct human use

Habitat Equivalency Analysis (HEA)

- Calculates compensation for interim lost services
- Habitat services over time is the currency
- Requires that values per unit of lost services and replacement services are comparable (if not, HEA is still applicable if value differences are known)

Habitat Equivalency Analysis - Basic Steps

- Document and quantify the injury in terms of services
- Identify and evaluate replacement project options
- Document and quantify services of the replacement project
- Determine scale of project to compensate for the injury over time

Scale to Compensate for the Injury Over Time

- Compute lost service flows (lost acre years) over time from injury until recovery under likely cleanup scenario
- Compute replacement service flows (gains) from restoration over time
- Scale the restoration project so that total discounted service flows gained are EQUAL TO total discounted service flows lost from injury

Arctic Restoration Options

- Marine mammals
- Birds
- Vegetation
- Fish passage
- Marine debris removal
- Cultural enhancement

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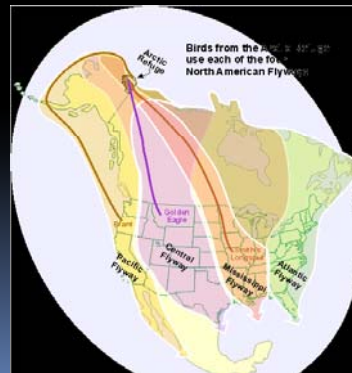
Restoring Marine Mammals

- As ice changes, polar bear and walrus spend more time on land
- Restoration options:
 - Reduce negative polar bear-human interactions
 - Minimize disturbance of walruses
 - Habitat Protection/Marine Protected Areas



Restoring Birds

- Limiting factors:
 - prey base, predation, habitat limited; other sources of mortality...
 - contamination, disturbance, hunting



Bird Restoration Ideas

- Large-scale invasive predator removal –fox removal
- Bury powerlines that kill birds in fog
- Clean up existing contaminated sites along coast
- Habitat protection (acquisition, easements) wetlands mitigation banks



Restoring Vegetation

- Seed or transplant sod or wetland plants: Native grass cultivars or climax species (indigenous species)
- Fertilizer (generally phosphorus)
- Thermokarst (depressions from melting permafrost)
- Rehabilitation activities could exacerbate exiting impact
- No-action may be the most appropriate course
- Arctic rehabilitation (natural or assisted) is a slow process

Restoring Coastal Habitat

- Fish passage/fish habitat
 - Placement of culverts to prevent thawing of the permafrost and subsequent settling of the culvert
 - Culverts placed at correct depths
 - Maintaining flow during late summer



Restoring Human Use

- Citizen Environmental Monitoring (Canada)
 - water temp, fish health, abundance data
 - based on science and traditional knowledge
- Camp Sivunniigvik (Camp Sivu)
 - Language preservation
- Camp Qunqaayu (Culture Camp)
 - Kuroshima Oil spill settlement
 - re-introduce cultural values
 - introduce language
 - promote awareness of natural resources
 - passing on the knowledge of the elders

OSLTF: NRD Claims

- Claims can be submitted for past or future:
 - Emergency restoration costs
 - Assessment costs
 - Restoration Costs
- Claim requirements:
 - Restoration Claim – Measured or observed injury
 - Based upon a publicly-reviewed Restoration Plan
 - First presented to a Responsible Party
 - Submitted within 3 years of completion of Final Restoration Plan

Summary

- Oil Pollution Act requires restoration of injured resources
- Injuries can be ecological or socioeconomic/cultural
- Restoration of oiled Arctic natural resources will be challenging