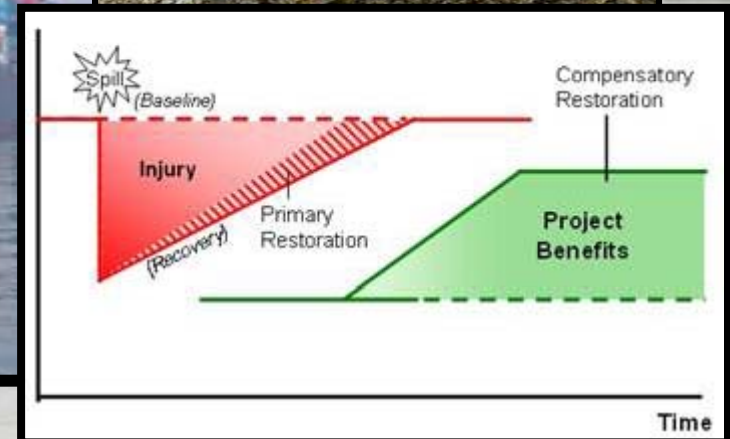


Cosco Busan Oil Spill

Natural Resource Damage Assessment (NRDA)

Prevention First
Long Beach, CA
October 20, 2010

Steve Hampton
Resource Economist
California Department of Fish and Game
Office of Spill Prevention and Response



Potential Components of a Pollution Case Settlement

- response and clean-up costs
- penalties
- natural resource damages
- other claims
 - public entities (lost tax revenue, lost parking fees, extra staff time, etc.)
 - private claims (lost income, injury to property, etc.)



Legal Authority

- OPA 90 – oil
- Other Federal Laws (e.g. Clean Water Act)
- Lempert-Keene-Seastrand – marine oil
- Other State Laws



NRDA Coordination

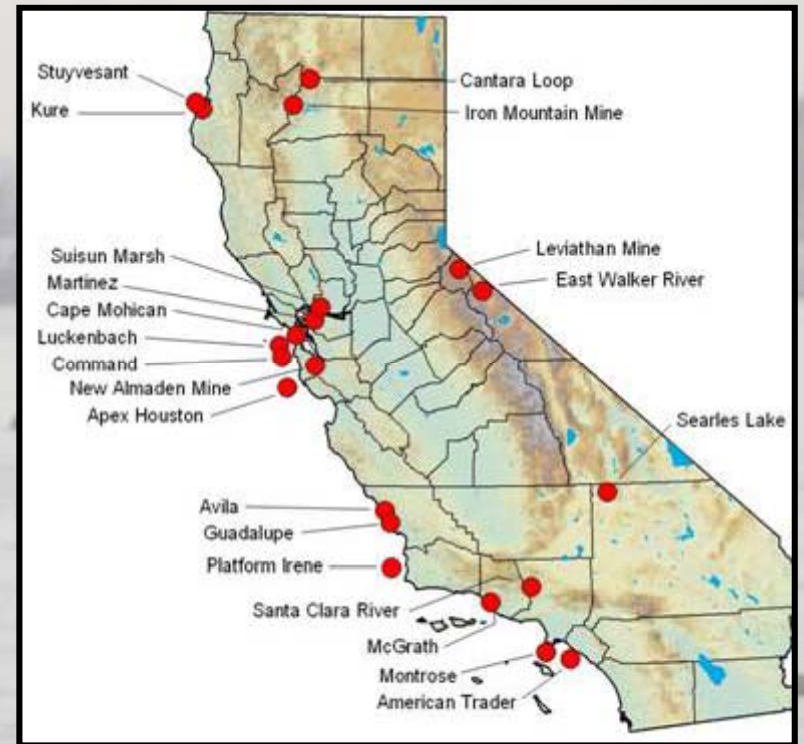
- Trustees – DOI (USFWS, NPS, BLM), NOAA, CDFG, CSLC working together



- Responsible Party – Funding Agreement
- Local Agencies – Assessment Coordination & Restoration Planning (CCSF & EBRPD)
- Other gov't agencies (e.g. State Water Board)
- Local NGO's; local and national experts
- Public – Restoration Planning

The Process

- 1) Oil Spill
- 2) Data Collection
- 3) Public Information Meeting
- 4) Injury and Damage Quantification
- 5) Public Scoping Meeting
- 6) Draft Restoration Plan ← **WE ARE ALMOST HERE**
- 7) Public Comment Period
- 8) Final Restoration Plan
- 9) Implement Restoration Projects



Organization

- Divided into teams according to injured resource category:
 - Birds
 - Mammals
 - Fish
 - Shoreline habitats
 - Human uses
- Also had teams for: data management, public outreach, restoration planning, and case management



Studies and Final Injury Quantification



Birds

Collected Live and Dead: 2,940

Studies

- Intake and Search Effort Data Compilation
- Brown Pelican Surveys
- Marbled Murrelet Aerial Surveys
- Snowy Plover Survival Study
- Other Shorebird Surveys
- Shorebird Oiling Analysis
- Alcatraz Bird Surveys
- Compilation and Analysis of Oiled Bird Observations
- Rehabilitated Surf Scoter Survival Study
- DNA Analysis of Marbled Murrelets
- Oiled Feather Sample Analysis
- Bird Carcass Persistence Study
- Bird Carcass Search Efficiency Study
- Bird Carcass Natural Deposition Study
- Bird Mortality Estimation

Results

Total Estimated Mortality: 6,849

Primary Species Impacted: Surf Scoter, Western Grebe, Eared Grebe, Common Murre, Marbled Murrelet



Mammals

Collected Live and Dead: 3

Studies

- Intake Data Compilation
- Surveys of Pinnipeds at Haul-out Sites
- Collection of Oiled Mammal Observations
- Oil Sampling at Haul-out Sites
- Tissue Analysis at Intake
- River Otter Scat Analysis at Rodeo Lagoon
- Harbor Seal Reproduction Assessment

Results

Total Estimated Mortality: few
No evidence of lost reproduction.



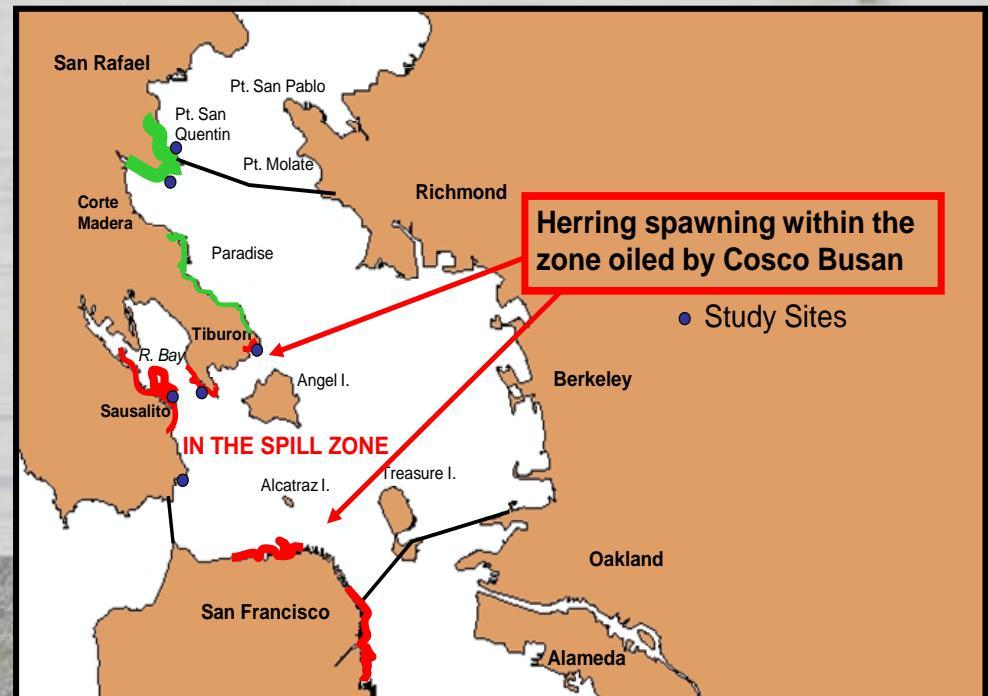
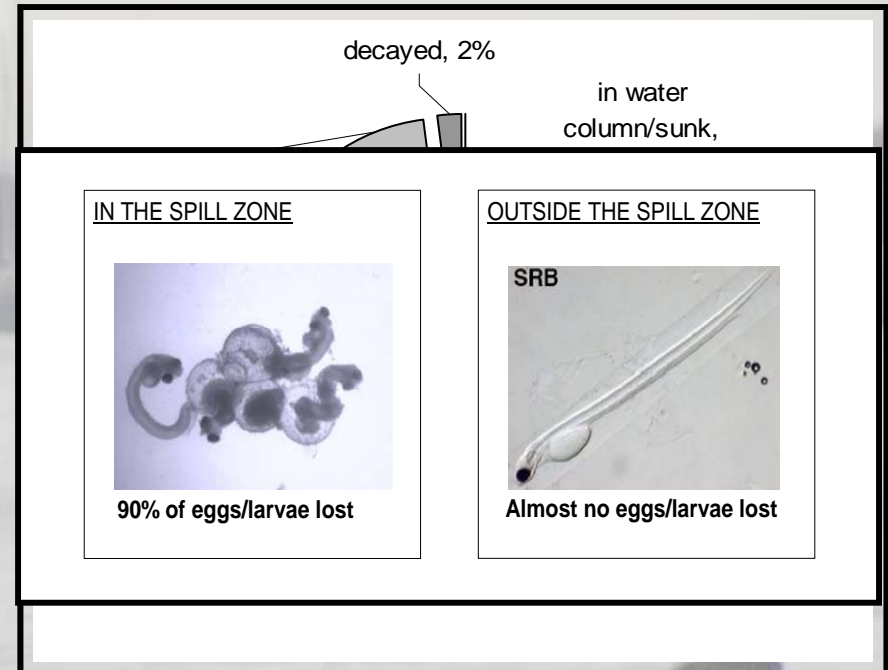
Fish

Studies

- Submerged Oil Screening Survey
- Fish/Shellfish Human Consumption Study
- Redwood Creek Salmon Data Analysis
- Tidewater Goby Surveys
- Dungeness Crab Analysis
- California Grunion Assessment
- Herring Spawning Site Water Sampling
- Herring Spawning Studies

Results

16% to 32% of the 2007/08 spawn deposition was exposed to *Cosco Busan* oil at levels expected to result in deleterious effects



Shoreline Habitats

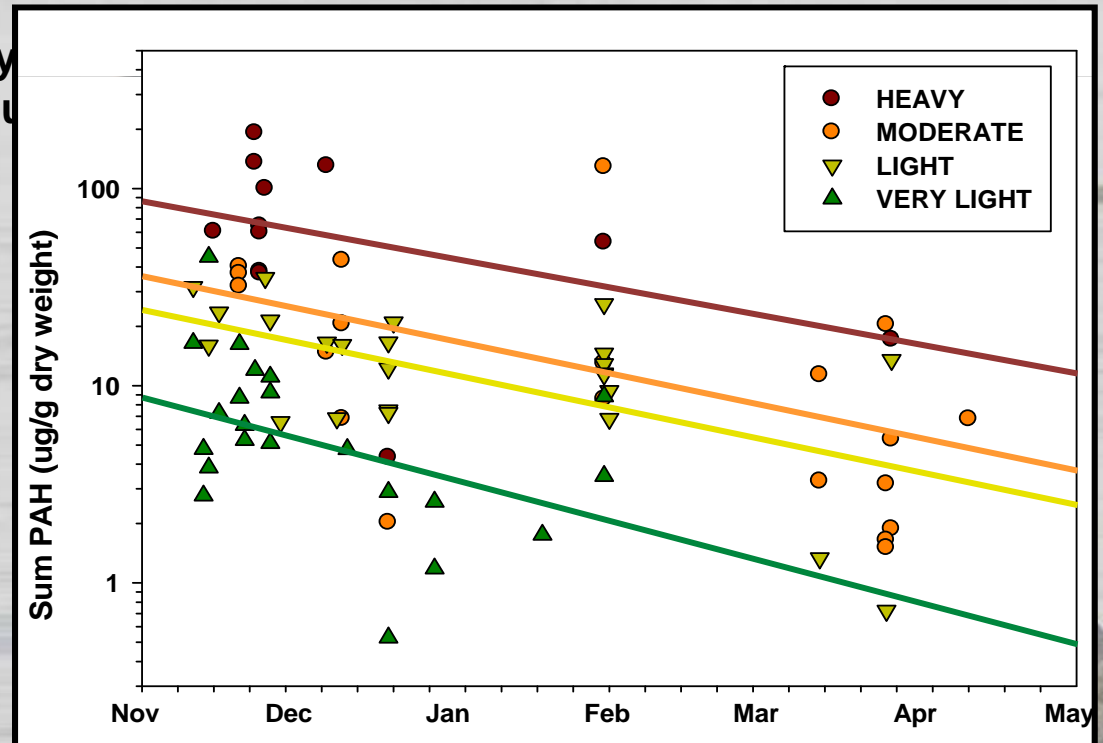
Studies

- SCAT/Supplemental Information Compilation
- Oil Sample Collection and Analysis
- Oiling Quantification and Mapping
- Invertebrate Sample Collection and Analysis
- Rocky Shoreline Community Surveys
- Native Oyster Study
- Eelgrass Side Scan Sonar Survey
- Eelgrass Health/Reproduction Study
- Eelgrass Invertebrates Surveys

Results (acres oiled)

Sandy Beaches	648
Saltmarsh	18
Tidal Flats	1377
Rocky Intertidal	385
Eelgrass	900 acres exposed

- 90% lightly/very lightly oiled
- Recovery times: few months to six years



Human Recreational Uses

Studies

- Documentation of Closures/Impacted Activities
- Nov 2007 Visitor Surveys
- Nov 2008 Visitor Surveys and Baseline Quantification
- Recreational Fishing Loss Analysis
- Recreational Boating Loss Analysis
- Telephone Survey and Valuation Study
(Travel Cost Analysis)

Results (lost trips)

General Shoreline Use	~975,000
Fishing	~70,000
Boating	~25,000
TOTAL	1,070,000

valued at \$18.8 million

Ocean Beach 3 days before spill



Ocean Beach 3 weeks after spill



Potential Restoration Projects



Birds

- Bird roosting and nesting platforms on the Berkeley Pier
- Nest site enhancements at the Farallon Islands
- Water level management at the South Bay Salt Ponds
- Grebe colony enhancement at Tule Lake
- Marbled Murrelet nesting habitat protection
- Project benefiting Surf Scoters and diving ducks

Fish/Eelgrass

- Eelgrass restoration at multiple sites in San Francisco Bay

Shoreline Habitats

- Habitat restoration at Muir Beach
- Habitat restoration at Albany Beach
- Habitat restoration at Aramburu Island
- Native oyster and rockweed restoration at multiple sites

Human Recreational Use

- Wide variety of projects throughout the Bay and outer coast (including a grant program)

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