Marine Mammal and Sea Turtle Management Priorities and Information Needs

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Southwest and Northwest Fisheries Science Centers

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Presentation Overview

1. Introduction
2. Overarching management processes
3. International management
4. Southern Resident killer whales
5. Cetaceans
6. Pinnipeds
7. Sea turtles
8. Emerging issues

WCR Protected Resources

- ESA Policy and Regulation
- MMPA Policy
- Marine Ecosystem Conservation
- 30 species of marine mammals
- 4 species of sea turtles
- Marine invertebrates
- Fish, Sharks
- Partnerships

Coordination with Science Centers

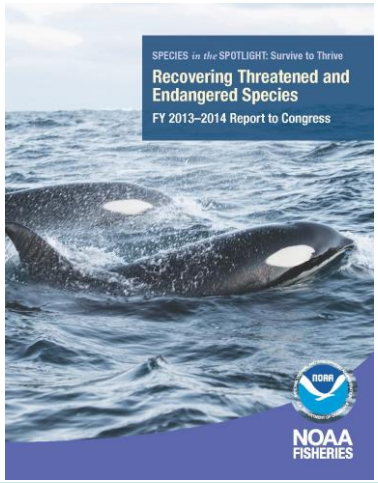
- Our mammal and turtle management scope overlaps with the program focus of three Science Centers:
  - SWFSC: large and small cetaceans, sea turtles, pinnipeds
  - NWFSC: Southern Resident Killer Whales, pinnipeds
  - AFSC – NMML: pinnipeds

- Similarly, these Centers support other Regions on their management needs

Priority Setting

Strategic, pro-active

- Species Recovery Plans (or similar strategic plans)
- Information gaps and long-term monitoring needs
- Annual meetings with Science Center counterparts
- National priorities



Responsive, reactive

- Research and analysis to support specific decisions or answer management questions
- Driven by incoming or ongoing ESA/MMPA management actions

Decision Making Process

How specific priorities are set:

1. Species status
    - endangered/threatened
    - strategic stock (low PBR or known high threats v. healthy stocks)
2. Known management needs
    - ESA (e.g., anticipated Section 7 biological opinions, implementation of high priority recovery actions, petitions)
    - MMPA (e.g., pre-Take Reduction Team (TRT) planning/baseline data gathering, ongoing TRT needs, other statutory requirements)
3. Public/Political drivers (real or perceived)

Overarching Management Priorities

- MMPA stock delineation and ESA Distinct Population Segment (DPS) determinations (Units to Conserve)
- ESA listing/delisting and critical habitat determinations
- Population status assessments
- MMPA Optimum Sustainable Population determinations
- Temporal and spatial distribution mapping tools
- Life cycle modeling tools
- Fisheries bycatch modeling and estimation tools
- Other threats assessment and mitigation tools
- Extinction risk and “limit reference point” tools
- Species status forecasting in a changing environment

International Efforts

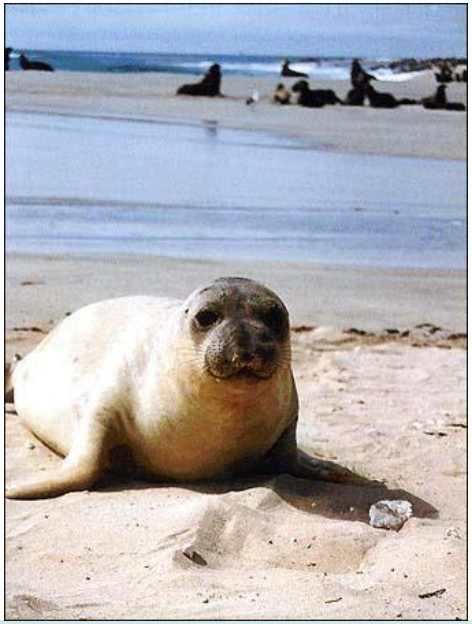
- International Whaling Commission
- Inter-America Convention on Sea Turtles
- China-US Living Marine Resources Intiative
- International Dolphin Conservation Program Act
- International Union for the Conservation of Nature
- International coordination and collaboration

Species groups

- Management Priorities
- Science Priorities

  Science priorities in blue = current investment and progress

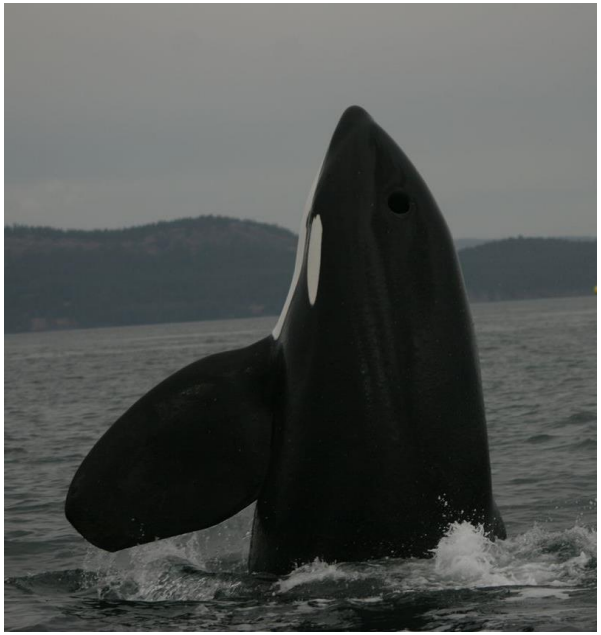
  Science priorities in red = reduced, partial, or no current funding



Southern Resident killer whales

Management Priorities:

- Population assessments/structure
- Distribution
- Understand and address factors affecting health, reproduction and mortality
  - Prey
  - Contaminants
  - Vessels and sound
- Implement actions in recovery plan
  - Reduce threats
  - Oil spill planning and response
  - Stranding response and investigations
  - Transboundary coordination
  - Education and outreach



Southern Residents

Science Priorities

- Improve our understanding of populations and stock structure
  - Continue time series of census data to track progress toward recovery
  - Estimate genetic relationships and historical population size
- Improve our understanding of distribution
  - Coastal distribution, habitat use and diet to inform critical habitat
- Improve the quality of information used for recovery implementation
  - Prey- diet/metabolic studies, food web modeling, direct estimates of salmon consumption, seasonal and stock-specific distribution of prey
  - Contaminants- contaminant profiles, accumulation models, additional contaminant and stable isotope analysis, identify thresholds for impacts, managed population studies
  - Vessels- impacts of vessels on behavior/communication, evaluate effectiveness of regulations, quantify sources of human-caused sound
  - Health- analyze data from biopsy, feces, diet, condition, disease, cause of death to create individual profiles, health index, seasonal health and condition, breath analysis

Cetaceans

Management Priorities:

- Population assessments & structure
- Distribution
- Bycatch, ship strike, and other threats estimation, risk evaluation, and mitigation
- Strandings – causes and response

Cetaceans

Science Priorities

- Improve our understanding of species and stock structure
- Improve our understanding of species and stock distribution
  - Humpback whales under ESA and MMPA
  - PCFG and WNP/ENP gray whales
  - Puget Sound harbor porpoise abundance estimate
  - Remotely-sensed environmental data and habitat-based models
- Improve the quality of information used for management
  - Bycatch estimations
  - Ecosystem effects from human activities and fisheries
  - Acoustic exposures and response
  - Food habits, contaminant exposures
  - Response and subsequent analysis of cetacean strandings
- Improve the tools available to assess risks to species and stocks
  - Fishery interactions and vessel strike risk
  - Changes in population viability for assessing threats, mitigation measures, and recovery criteria (Makah hunt, blue whale recovery, etc.,)

Pinnipeds

Management Priorities:

- Population assessments/ OSP
- Predator/prey interactions
- UMEs/Strandings
- Human interactions (fishery and non-fishery)

Pinnipeds

Science Priorities

- Improve our understanding of populations through long term monitoring
  - California sea lions
  - Puget Sound harbor seals
  - Guadalupe fur seals
- Improve our understanding of predator/prey interactions
  - Ecosystem modeling of predator/prey dynamics
  - Life-cycle modeling to evaluate population-level effects of predation on salmon
  - Estimate and identify causes of fish mortality from estuary to Bonneville
  - Seasonal and spatial diet information
  - Evaluate alternative methods of predator control
- Improve our understanding of ecosystem effects
  - UME causal investigations
  - Ongoing evaluation of harmful algal blooms and diseases from strandings
  - Integrated ecosystem assessments and environmental indicators for population health
- Improve the tools available to manage human-pinniped interactions
  - Deterrents

Sea Turtles

Management Priorities:

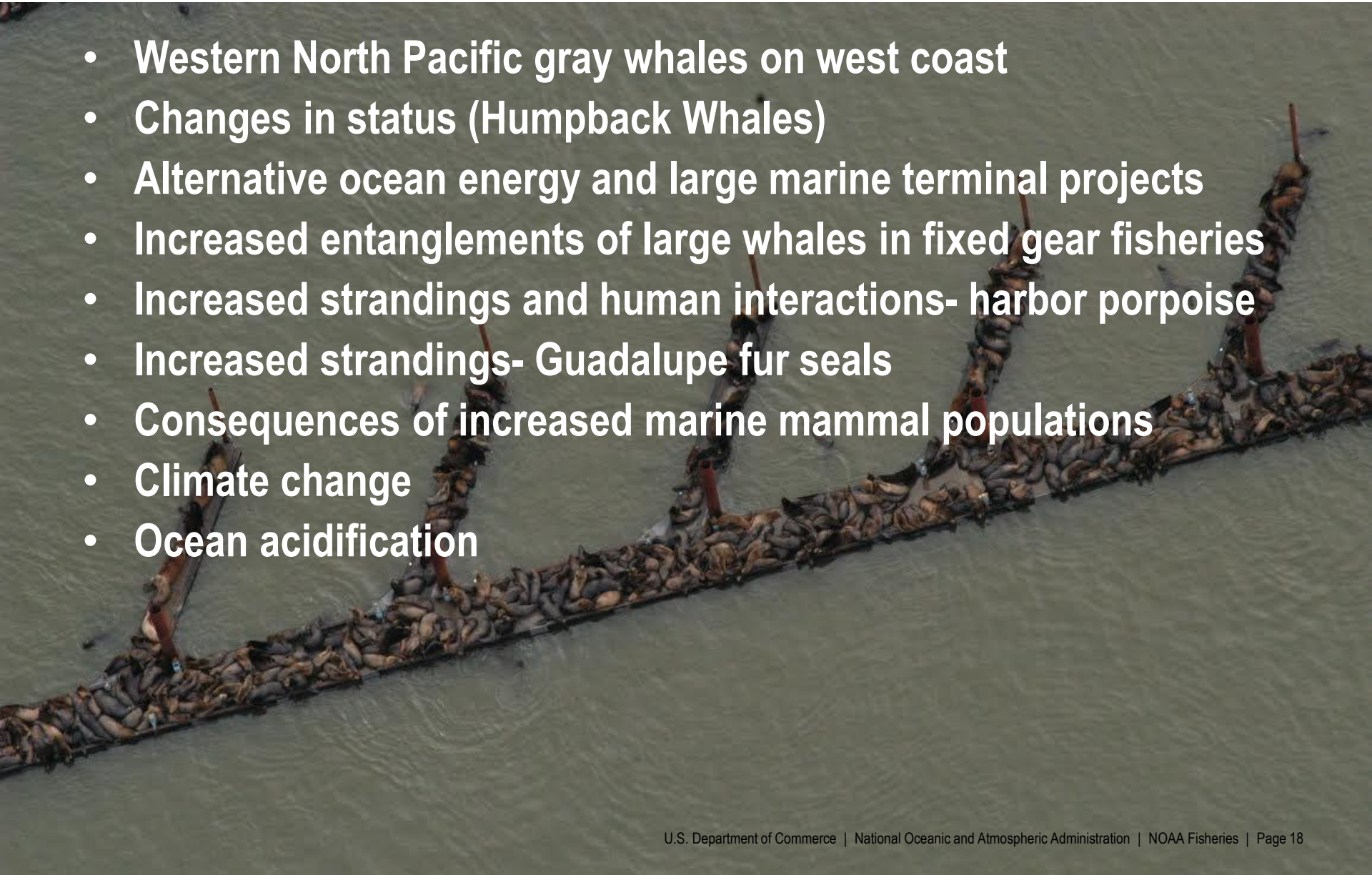
- Population assessments
- Managing fishery interactions
- Health/Behavior
- Risk assessments

Sea Turtles

Science Priorities

- Improve our understanding of population viability and structure
  - Western Pacific leatherback sea turtles
  - Northern Pacific loggerhead sea turtles
  - San Diego and San Gabriel River green sea turtles
- Improve our ability to assess and reduce fishery interactions
  - Bycatch estimation of entanglement or capture in fishing gear
  - Understanding oceanographic influences on species use and distribution along the west coast
- Improve our understanding of behavior, health, and life history
  - Assessing the impacts of activities like dredging, pile driving, and coastal development
  - Assessing health condition and contaminant exposures
- Improve the tools available to assess risk to populations
  - Local limit reference points or other approaches to risk assessment

Emerging Management Issues



- Western North Pacific gray whales on west coast
- Changes in status (Humpback Whales)
- Alternative ocean energy and large marine terminal projects
- Increased entanglements of large whales in fixed gear fisheries
- Increased strandings and human interactions- harbor porpoise
- Increased strandings- Guadalupe fur seals
- Consequences of increased marine mammal populations
- Climate change
- Ocean acidification