

Science, Service, Stewardship



Protection, Conservation and Recovery of Protected Species

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Federal Mandates and Science Needs to Support Management

- **Federal Mandates**
 - Endangered Species Act
 - Marine Mammal Protection Act
- **Science Needs to Support Federal Mandates**
 - Coordination and Prioritization
 - Science Needs by Agenda Topic
- **Emerging Regional Concerns**



Federal Mandates

Endangered Species Act (ESA)

- The purpose of the 1973 Endangered Species Act (ESA) is to conserve endangered and threatened species and their ecosystems
- There are approximately 2,195 species listed as threatened or endangered under the ESA
- 1,560 of those species are found in the United States or its waters
- NOAA Fisheries Service is responsible for 122 species

<http://www.nmfs.noaa.gov/pr/species/esa/>



ESA

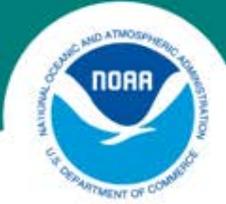
Endangered species: a species in danger of extinction throughout all or a significant portion of its range

Threatened species: a species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range

Species: includes any subspecies of fish or wildlife or plants, and any distinct population segment (DPS) of any species or vertebrate fish or wildlife which interbreeds when mature

Take: means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or to attempt to engage in any such conduct

<http://www.nmfs.noaa.gov/pr/listing/>



Pertinent ESA Sections

Section 4 – petitions, listing, critical habitat designation, recovery plan development

Section 6 – cooperative agreements with states

Section 7 – consultations with federal agencies on actions they authorize, fund, or carry out on impacts to listed species and/or designated critical habitat

Section 9 – take prohibitions

Section 10 – scientific research permits and habitat conservation plans (allow for incidental take occurring in an otherwise lawful activity not subject to section 7)



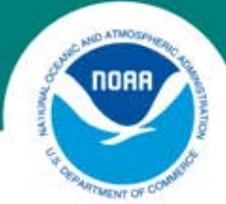
Endangered Species Act

- NOAA Fisheries Service and the U.S. Fish and Wildlife Service (FWS) share responsibility for the ESA
- Generally, FWS manages terrestrial and freshwater species
- NOAA Fisheries Service manages marine and anadromous (e.g., salmon, sturgeon, river herring) species
- Some species have shared jurisdiction: sea turtles, Atlantic salmon, Gulf sturgeon



Greater Atlantic ESA Listed Species

- Whales
 - blue, fin, humpback, right, sei, & sperm whales
- Sea turtles
 - green, hawksbill, Kemp's ridley, leatherback, & loggerhead sea turtles (joint jurisdiction with FWS)
- Shortnose sturgeon
- Atlantic salmon (joint jurisdiction with FWS)
- Atlantic sturgeon



GARFO Candidate Species and Species of Concern

Candidates:

Cusk (*Brosme brosme*)

Species of Concern (SOC):

Atlantic bluefin tuna (*Thunnus thynnus*)

Atlantic halibut (*Hippoglossus hippoglossus*)

Atlantic wolffish (*Anarhichas lupus*)

Cusk (*Brosme brosme*)

Dusky shark (*Carcharhinus obscurus*)

Porbeagle shark (*Lamna nasus*)

Rainbow smelt (*Osmerus mordax*)

River herring

(Alewife - *Alosa pseudoharengus* & Blueback Herring – *A. aestivalis*)

Sand tiger shark (*Carcharias taurus*)

Thorny skate (*Amblyraja radiata*)



Petitions for Species in the GAR

- 7 petitions received between 2003 and 2009 (1 per year except 2007 when there were 2)
- 13 petitions received between 2010 and 2013 (2-4 per year)
- Increased number of petitions, increased complexity (e.g., multiple species instead of single species petitions), and increased petitions for commercially and recreationally important species



Marine Mammal Protection Act

- Established a national policy to prevent marine mammal species and population stocks from declining beyond the point where they ceased to be significant functioning elements of the marine ecosystem
- NOAA Fisheries is charged with protecting whales, dolphins, porpoises, seals, and seal lions.

Overarching Goals of MMPA

- To maintain the optimum sustainable population (OSP) and ecosystem function of marine mammal stocks
- Focus on monitoring status and ensuring human-caused serious injury and mortality (e.g., bycatch) is sustainable



Marine Mammal Protection Act

Focus on monitoring status and ensuring human-caused serious injury and mortality (e.g., bycatch) is sustainable

- Section 117
 - Use the abundance estimate to set a mortality threshold or Potential Biological Removal (PBR) level.
 - Use of the bycatch estimates to determine a species or population's status relative to the PBR level.
- Section 118
 - When mortality of a strategic stock that interacts with a Category I or II fishery is greater than PBR management is triggered.
NMFS establishes TRTs to assist in the development of TRPs.
 - Immediate goal (reduce mortality below PBR within 6 months of TRP implementation)
 - Long-term goal (reduce mortality to insignificant levels within 5 years of TRP implementation)



Marine Mammal Protection Act

Reducing Bycatch- 3 Part Strategy

1. Stock Assessment Reports (SARs)
 - Population size
 - Growth
 - Human-caused takings
 - PBR level
 - Status (e.g. strategic, depleted)
2. Annual List of Fisheries and Marine Mammal Authorization Program
 - Categorize Fisheries
 - Register Category I and II
 - Monitor Category I and II
 - All categories report takings
3. Take Reduction Plans



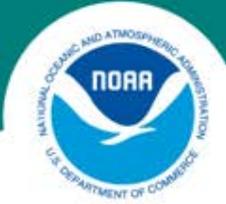
Science Needs

- **Science needs mostly driven by ESA Sections 4 & 7, MMPA Sections 117 & 118**
- **To meet these mandates, information needed on:**
 - Population status – estimate abundance, trends, etc.
 - Threats – identify and quantify impacts
 - Solutions – develop mitigation options & monitor effectiveness
 - Future – predict future status and threats
- **Following slides focus on these information needs for subsequent agenda topics**



Regional Science Needs

- **Prioritization of science needs results from:**
 - Collaborative and joint science and management planning efforts between GAR and NEC for marine mammals, turtles, and salmon
 - Protected Species sections of GAR and NEC (*in prep.*) Strategic Plans
 - NOAA Fisheries' Protected Resources Science Investment and Planning Process (PRSIPP)



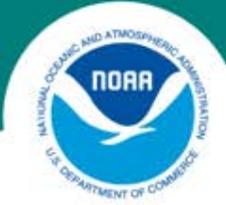
Abundance and Distribution

- Population abundance and trend for suite of species
- Availability of species to surveys for abundance (especially sea turtles and long-diving mammals)
- Ecology, behavior, & distribution of species related to current threats
- Identify areas of concern for species to inform spatial management
- Predict future distributions and risk profiles of species based on ecology, behavior, habitat relationships, and predicted threats



Bycatch Estimation

- Identify and quantify protected species bycatch including number of interactions, life stage impacted, number of serious injuries/mortalities by fishery
- Identify mitigation options (e.g., changes in fishing gear or practices)
- Identify hot spots of bycatch
- Provide input to management bodies, including MMPA Take Reduction Teams (e.g., Harbor Porpoise TRT) and status review teams/recovery teams
- Monitor effectiveness of regulations
- Predict future bycatch hot spots



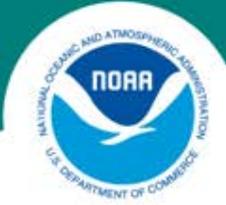
Passive Acoustics

- Estimate density of vocalizing animals (e.g., whales)
- Identify spawning grounds based on breeding calls of fishes
- Track movements of species via vocalizations or acoustic tags
- Assess impacts of noise on species (e.g., BACI approaches)
- Provide real-time monitoring of species in areas of concern to inform dynamic management decisions
- Predict future impacts of noise on species, given development



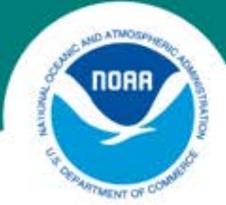
Right Whales & Other Large Whales

- Investigate changing seasonal behavior and distribution
- Given changing distribution, adapt population monitoring methods
- Estimate cause-specific mortality (i.e., ship strike, entanglement)
- Develop criteria for assigning country of origin to entangling gear and associated serious injuries/mortalities
- Evaluate efficacy of ALWTRP measures
- Provide real-time monitoring of species in areas of concern to inform dynamic management decisions
- Strategic evaluation of methods – right balance of visual (vessel/aerial) surveys, passive acoustic moorings, gliders, etc.



Seals

- Abundance and population trends
- Assess migration/mixing between US and Canada
- Assessment of bycatch rates, including unobserved/unreported
- Assessment of seal-human interactions and potential conflicts
- Effective pinniped deterrent methods for fishing activities to reduce depredation, pinniped by-catch and entanglement rates
- Regional strategy for providing targeted education and outreach efforts for pinniped populations in the Northwestern Atlantic
- Predict type and extent of any future seal-human conflicts



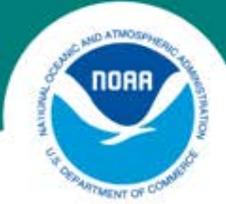
Atlantic Salmon

- Population estimates by river
- Determine stock composition in mixed stock fisheries
- Evaluate impact of dams, fisheries, etc.
- Examine temperature and predator/prey field during migration, impacts on survival, changes with environmental change
- Set thresholds for dam, fisheries, etc., impacts



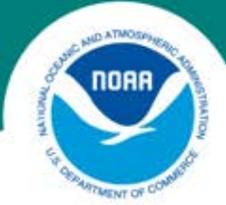
Other Listed Fish

- Population estimates by river
- Population viability analysis
- Improve understanding of stock structure
- Evaluate impact of dams, fisheries, etc.
- Increase fisheries sampling to better assign bycatch to DPS
- Identify important marine areas
- Project future distribution under changing environment



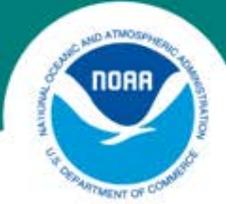
Other Species/Concerns Sea Turtles

- Abundance and population trends
- Include demography in population density/distribution work
- Population viability analysis
- Investigate seasonal distribution and behavior
- Assessment of bycatch rates
- Quantify population level impact of takes
- Identify changes in fishing practices to reduce interactions & SI/M
- Evaluate effectiveness of rehab/relocation of cold-stunned turtles
- Project future seasonal distribution, behavior, etc. and resulting risk profile (including changing overlap with fishing)



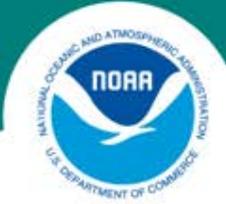
Other Species/Concerns

- Evaluate listing status (for listing petitions or down-/de-listing)
- Population viability analysis (various species)
- Improve understanding of stock structure (various species)
- Include demography in population density/distribution work (esp. turtles)
- Assess spatio-temporal variation in foraging and diet (various species)
- Identify calving, foraging, etc., grounds (esp. large whales)
- Focus on particularly sensitive species (e.g., beaked whales & noise)
- Fisheries displacement/behavioral model – predict fleet’s response to proposed regulations and environmental change



Other Species/Concerns

- Evaluate compliance and efficacy of regulations (e.g., HPTRP)
- Evaluate cost-effectiveness of alternative fishing regulations
- Coordinate with Canada on transboundary stocks and threats
- Project future distribution under changing environment
- Provide science to inform ecosystem models



Emerging Regional Concerns

Upcoming Science Needs

- Ocean Noise
 - Baseline noise levels
 - Seismic (Oil & Gas Exploration)
- Energy
 - Wind
 - Tidal
 - Liquefied Natural Gas (LNG)
- Aquaculture Interactions
- Recreational Fisheries