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**FISHERIES**

Northeast  
Fisheries  
Science Center

# Northeast Fisheries Science Center

An Overview of Other Protected Fish Species and  
Science Challenges

John Kocik  
NEFSC Northeast Atlantic Salmon Team

# Science Needs to Support Federal Mandates

## Atlantic and Shortnose Sturgeon

- Essential
  - Population estimates by river
  - Evaluate impact of dams, fisheries, etc.
  - PVA
- High
  - Increase fisheries sampling to better assign bycatch to DPS {*Atlantic*}
  - Project future distribution under changing environment
  - Identify important marine areas/migratory routes
  - Improve understanding of stock structure {*Shortnose*}

# Other Species Outline

## Diadromous Species

- Links with Atlantic salmon

## Commercial Species

- Recent ESA Engagement

## Other Species of Concern

## Species Covered By SEFSC

# Diadromous Species

- Active research
- Link to Atlantic salmon research
  - Atlantic sturgeon
  - Shortnose sturgeon
  - Alewife
  - Blueback herring
  - American shad
  - Rainbow smelt



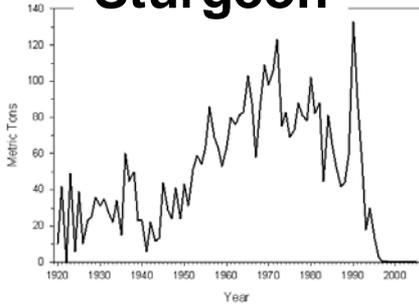
Photo Credit: Jerry Prezioso, NOAA

# Status of Diadromous Fish

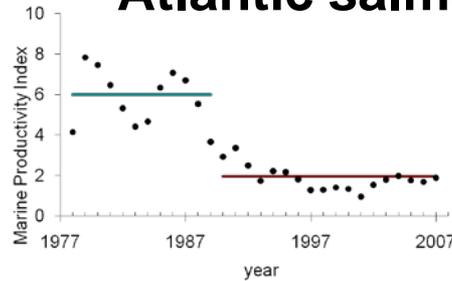


## Decreasing Elements

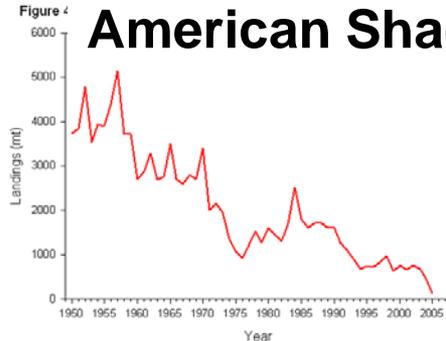
### Sturgeon



### Atlantic salmon



### American Shad



### River Herring

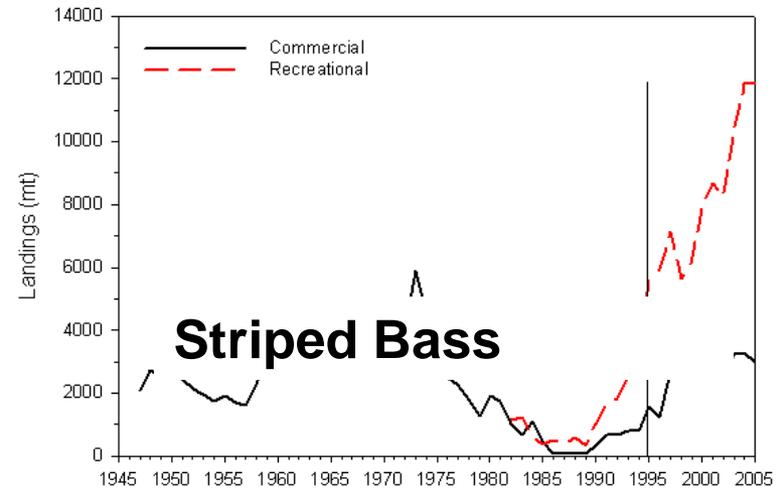


Figure 39.2. Commercial landings for American shad, 1950-2005.

Figure 38.1. Commercial landings of River Herring, 1966-2006.

## Increasing Elements

### Atlantic Striped Bass Commercial and Recreational Landings



### Striped Bass



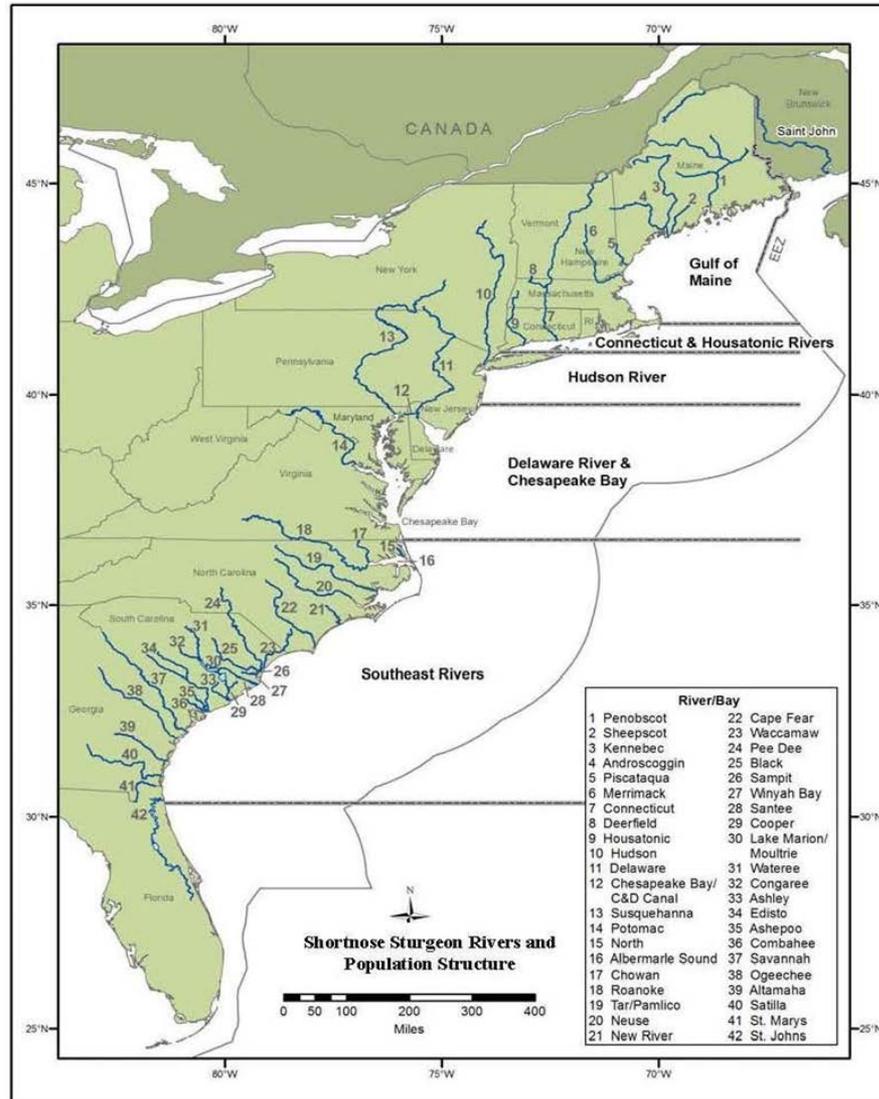
# Shortnose sturgeon – endangered 1973

- Listed at creation of Endangered Species Act
  - Populations in Northeast/Mid Atlantic appear stable
  - Research has recently provided groundbreaking information on migration habits of shortnose sturgeon ([NEFSC telemetry link](#))
- Dated information for the Hudson River, need current information on trends and abundance



Photo Credit: Robert Michelson, Photography by Michelson, Inc.

# Shortnose sturgeon range



# Atlantic sturgeon - listed in 2012

- Endangered in 4 of 5 DPSs; threatened in Gulf of Maine.
- Coast-wide moratorium on fishing - 1998
- Data-poor species: planned 2017 Stock Assessment by Atlantic States Marine Fisheries Commission (ASMFC)
- No agreement by researchers on stability of populations

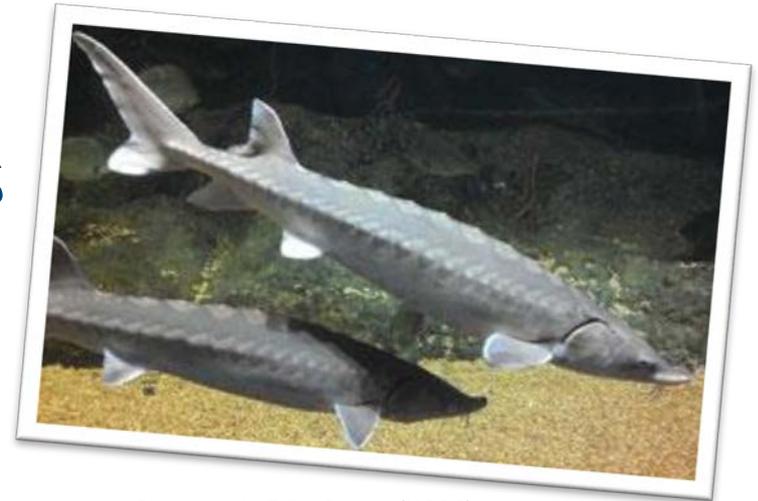
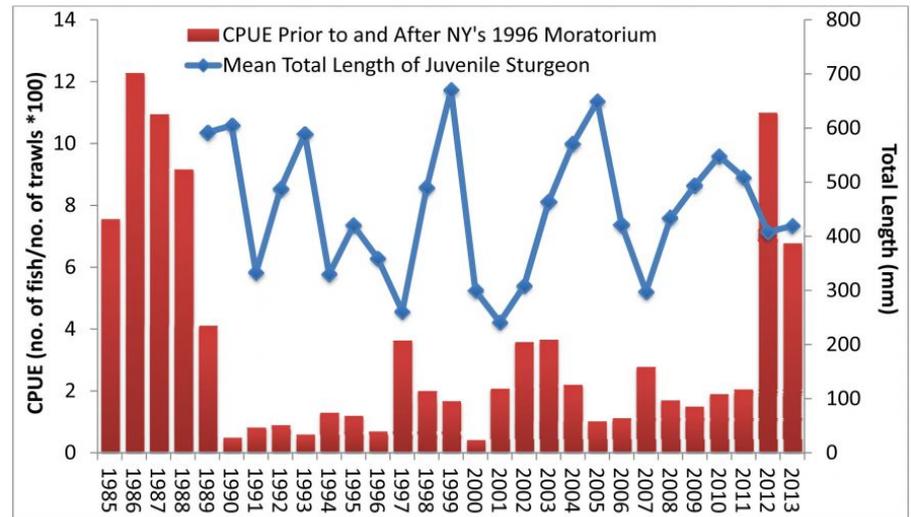
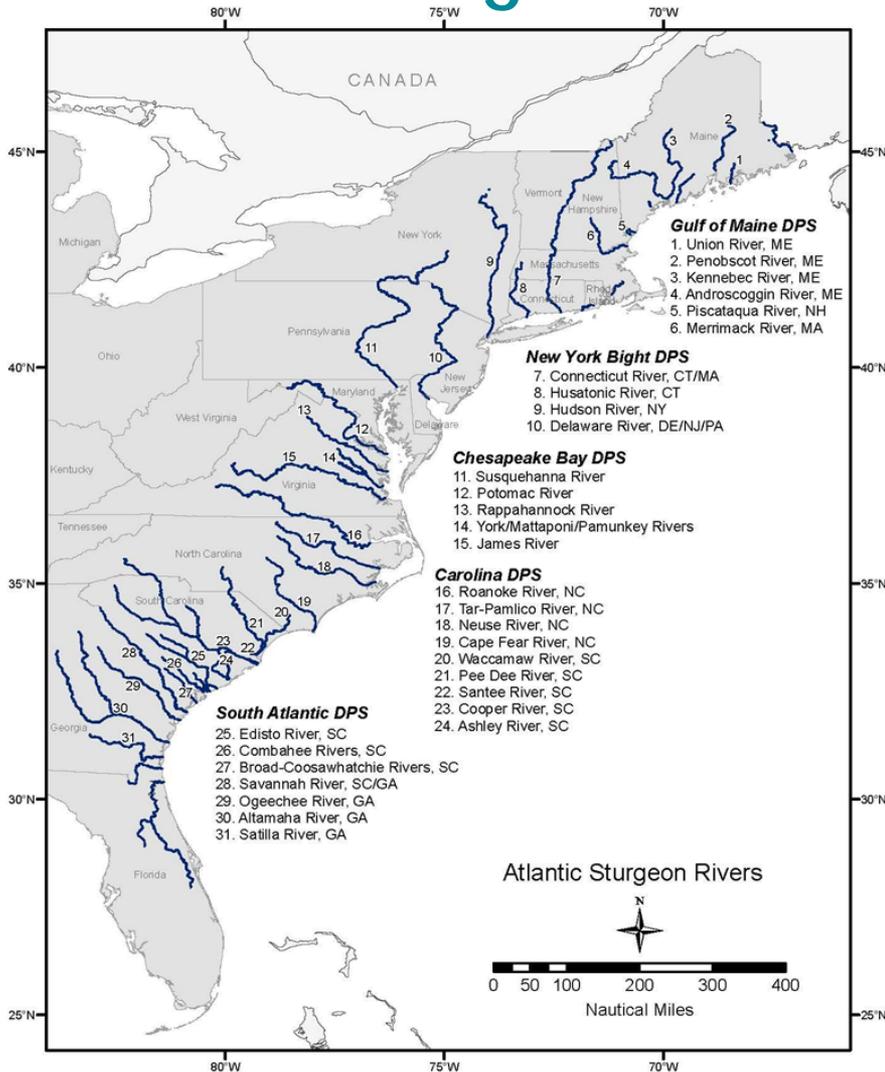


Photo credit: Edith Carson (NOAA)

# Atlantic sturgeon DPSs and Hudson River CPUE



Catch Per Unit Effort (CPUE) of Hudson River Juvenile Atlantic Sturgeon. Source: NY State Dept. of Environmental Conservation with Survey Data from Hudson River Power Generating Companies, Hudson River Monitoring Program, 2013

# NEFSC Involvement in Sturgeon

## Shortnose sturgeon and Atlantic sturgeon

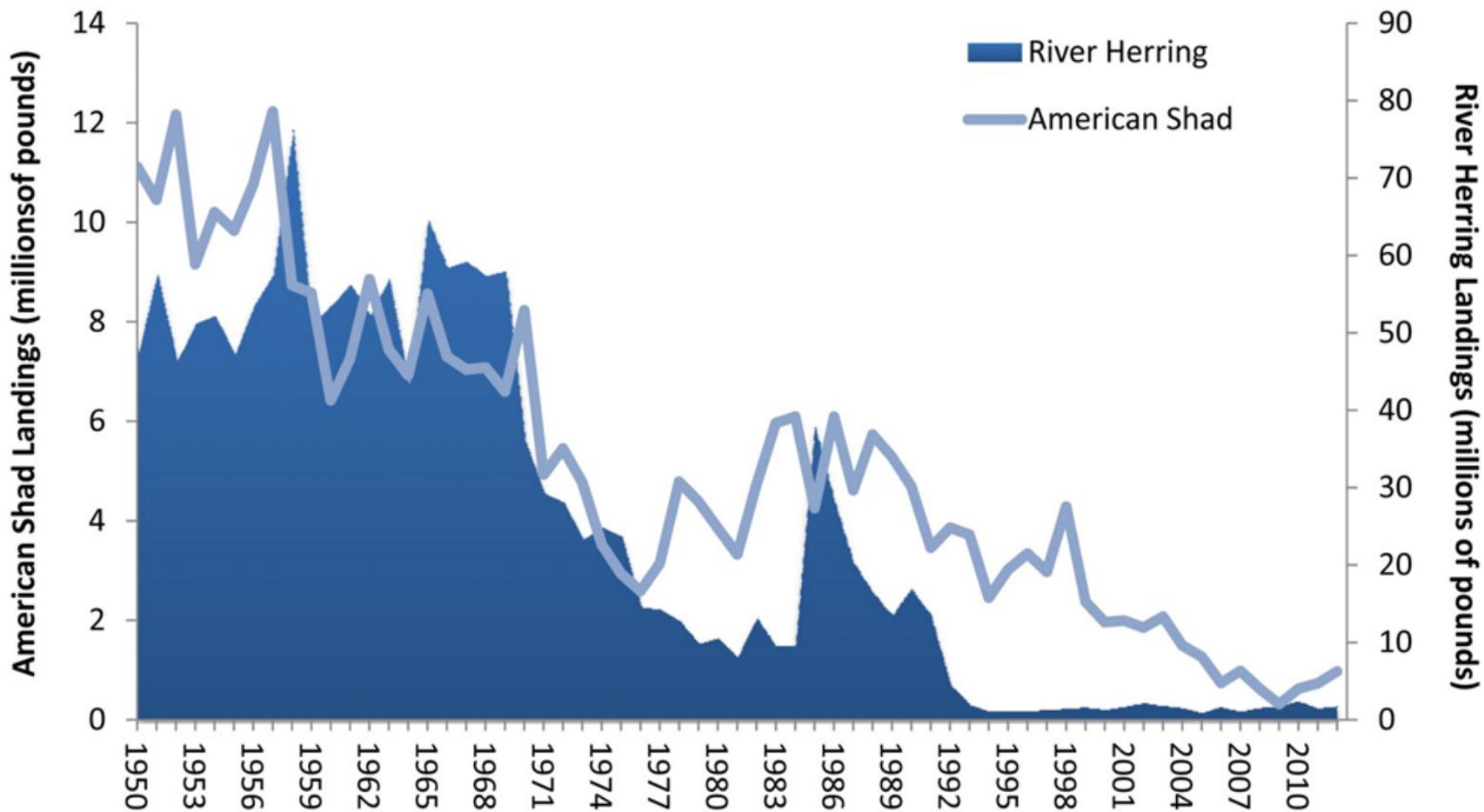
- No directed research
- GARFO provides monetary support and NEFSC technical assistance on sturgeon research to UMaine, Maine DMR
- Bycatch data collected as part of Northeast Fisheries Observer Program and At-Sea Monitoring Program; membership on ASMFC Technical Committee
- Members of ASMFC stock assessment team, and will assist in providing bycatch data and in data modeling for upcoming Atlantic sturgeon assessment in 2017

# River herring (blueback herring and alewife)

- Joint management of the two river herring species (and American shad) by ASMFC
- River herring listed as Species of Concern in 2006 and petitioned to list under ESA in 2011
  - Stock assessment completed in 2012 found
    - 23 stocks depleted relative to historic levels
    - 1 stock increasing
    - 28 stocks with unknown status (time-series of available data was too short )
  - Status review indicated ESA listing was not warranted
  - Sued on MidAtlantic blueback herring determination

# American Shad & River Herring Commercial Landings

Source: Personal communication from NMFS Fisheries Statistics Division,  
Silver Spring, MD, 2013



# NEFSC Involvement in River Herring

## River herring (and Am. shad)

- Contributed to status review
- Membership on ASMFC Technical Committee
- Members of Technical Expert Working Group (TEWG) and its subcommittees
- Conducting estuarine surveys in Penobscot River and Estuary
- Fund Bycatch Reduction Engineering Program Grants



Photo Credit: Justin Stevens, NOAA

# Commercial Species – Recent ESA Engagement

- Cusk
- Atlantic wolffish
- Thorny skate
- Dusky shark
- Porbeagle shark



Dusky Shark. Photo Credit: NOAA

# Cusk

- Listed as Species of Concern in 2004
- Currently undergoing a status review (Candidate Species)
- Considered a data-poor species
- Part of the multispecies complex in the Gulf of Maine, but the stock is not federally managed



Cusk. Photo Credit: SHRMP Science Team and NURTEC at UCONN

# Atlantic wolffish

- Listed as Species of Concern in 2004
- Petitioned to list under ESA in 2008
  - Finding 2009 - listing not warranted
- Managed by the New England Fishery Management Council (NEFMC) as part of Northeast Multispecies Fishery Management Plan



Atlantic Wolffish. Photo Credit: NOAA

# Thorny skate

- Listed as Species of Concern in 2004
- Managed as part of Northeast skate complex, as a bait fishery and a wing fishery
- Petitioned to list under ESA in 2011
  - Finding 2011 - listing not warranted



Thorny Skate. Photo Credit: NOAA

# NEFSC Involvement - Commercial Species (Recent ESA Engagement)

- **Cusk**
  - Funded longline survey
  - Staff contributed to 2011 cusk workshop which produced a list of prioritized actions to improve information on the species and its populations
- **Atlantic wolffish**
  - Participation on the Biological Review Team
  - Development of maturity schedule
  - Assessed within Northeast Data Poor Stocks
- **Thorny skate**
  - Stock assessment on skate complex
  - NEFSC spring and autumn surveys used for assessment

# Other Species of Concern

- No recent Petitions or associated actions
- Included in NEFSC Stock Assessments
  - Atlantic halibut
- Basic biological information
  - Rainbow smelt
  - Sand tiger shark



Sand Tiger Shark. Photo Credit: Paula Whitfield NOAA

# Atlantic halibut

- Listed as Species of Concern in 2004
- Managed by NEFMC as part of Northeast Multispecies Fishery Management Plan



# Rainbow smelt

- Listed as Species of Concern in 2004
- Recently standardized procedures were developed for indexing abundance of spawning stock in New England



Photo Credit: Paul Bentzen Lab, Dalhousie University

# NEFSC Involvement - Other Species of Concern

- **Atlantic halibut**
  - Assessed in Groundfish Assessment Review Meeting (GARM)
- **Rainbow smelt**
  - GARFO funded workshops and other collaborative work by New England states



Photo Credit: Katrina Mueller

# Species Covered By SEFSC

- Atlantic bluefin tuna
- Whale shark
- Great hammerhead shark
- Scalloped hammerhead shark



Hammerhead Shark. Photo Credit: NOAA

# Science Needs to Support Federal Mandates

## Atlantic and Shortnose Sturgeon

- Essential
- Population estimates by river
  - **No NEFSC capacity – would need state co-ops in multiple locations on set index river**
  - ✓ **Some in-kind support to efforts in Maine Rivers (telemetry) through GoM CTN**
- Evaluate impact of dams, fisheries, etc.
  - **NEFSC incidental support in dam impact analysis possible**
  - ✓ **NEFSC bycatch data and some synthesis**
- PVA
  - **No NEFSC capacity – skillsets but not available staff**

# Science Needs to Support Federal Mandates

## Atlantic and Shortnose Sturgeon Cont. High

- Increase fisheries sampling to better assign bycatch to DPS {*Atlantic*}
  - **Currently not a priority within SBRM (standardized bycatch reporting methodology) for FMPs**
- Project future distribution under changing environment
  - **NEFSC analysis as part of Climate Vulnerability analysis**
- Identify important marine areas/migratory routes
  - **NEFSC telemetry program provides seasonal data to cooperators through GoM CTN**
- Improve understanding of stock structure {*Shortnose*}
  - **no NEFSC capacity in population genetics**

# Strengths

- Mostly due to partnerships
  - NEFSC provides funding and technical expertise/advisory services to partners
    - Sturgeon research by UMaine and Maine DMR
    - Sponsor workshops on conservation strategies, data, and species knowledge
    - GoM Coastal Telemetry Network
  - Provide survey and commercial data along with scientific expertise to ASMFC committees for stock assessments
  - Assist GARFO with status reviews

# Challenges

- On several species, NEFSC responsibilities are limited to grant reviews and being point of contact
- Because many species are data-poor due to their large ranges, small populations, and migratory habits, research and assessment over wide spatial and temporal scales is needed to better understand their population dynamics
  - Often need different analytical tools

# More Challenges . . .

- For Non-commercial species
  - Population Dynamics staff must be reprogrammed
  - Impacts commercial stock assessments
  - Limits research time for all forms of stock assessment innovation
- Commercial species petitioned or ESA action
  - Very controversial
  - Require considerable infrastructure support to disseminate results to the public
  - Science moves to “front lines” faster than in harvest-based management enterprises

# Recommendations for improvement

- Having dedicated staff who work on individual or suites of these species will allow NEFSC to:
  - Improve understanding of these species
  - Build targeted approaches to research and analysis
  - Take better advantage of analytical and technical skills that NEFSC scientists already possess
- Integrate protected fish better within overall NEFSC
  - Climate, Ecosystem, Habitat, and Assessment Study Group