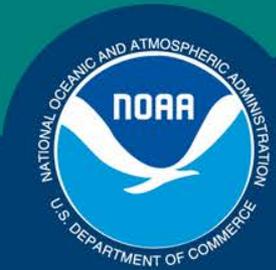


*Science, Service, Stewardship*



# Atlantic Sturgeon –Listing under the Endangered Species Act

April 25, 2012

**NOAA  
FISHERIES  
SERVICE**

NOAA



## Timeline: Listing Atlantic Sturgeon

- March 2007 – status review completed
- October 6, 2009 – Natural Resources Defense Council petition
- January 6, 2010 – positive 90-day finding (established statutory timeline for publication of proposed listing determination by October 6, 2010)
- October 6, 2010 - Proposed rules published ( 75 FR 61872 and 75 FR 61904)
- February 6, 2012 - Final rules published (77 FR 5880 and 77 FR 5914)
- April 6, 2012 – Effective date of the listings



Listing is for 5 Distinct  
Population Segments  
(DPSs)

Gulf of Maine DPS

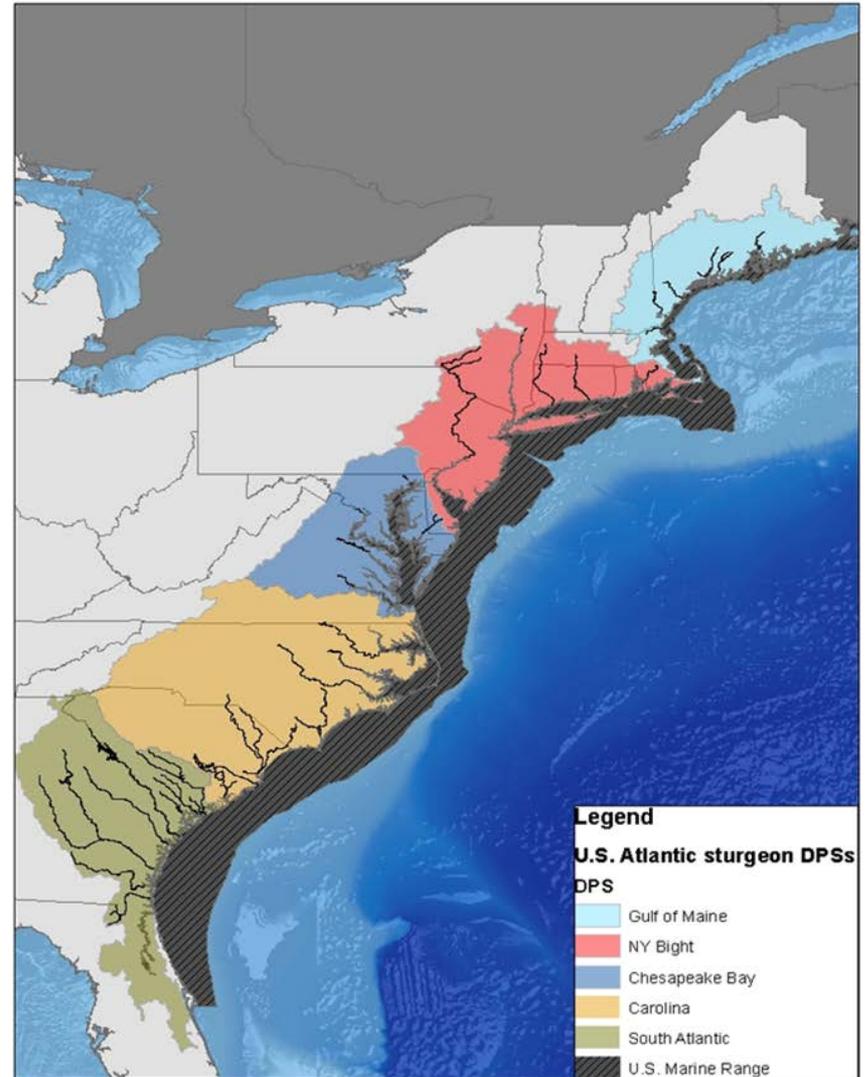
New York Bight DPS

Chesapeake Bay DPS

Carolina DPS

South Atlantic DPS

Marine range for all DPSs  
extends from Canada to FL





## Gulf of Maine Distinct Population Segment

- Significant risk from bycatch; moderate risk from water quality and dredging
- Spawning known to occur in only 1 spawning river, possibly in one other
- Positive signs include observations of Atlantic sturgeon in rivers from which sturgeon observations have not been reported for many years and potentially higher catch-per-unit-effort levels than in the past
- These signs coupled with the fact that some of the threats to the Distinct Population Segment are moderate led to the conclusion that the species is likely to become endangered in the foreseeable future, but is not now endangered

***Conclusion: Gulf of Maine DPS Threatened***



## New York Bight & Chesapeake Bay Distinct Population Segments

- Spawning populations are thought to be one to two orders of magnitude below historical levels
- Significant risks posed by bycatch, water quality, vessel strikes, dredging
- Spawning occurs in two rivers in the New York Bight Distinct Population Segment and at least one river in the Chesapeake Distinct Population Segment

***Conclusion: NYB and CB DPSs endangered***



## Carolina and South Atlantic Distinct Population Segments

- Estimated to be between 1% and 6% of historical population abundance
- Significant risks posed by dams, dredging, reduced water quality and quantity, bycatch, and the inadequacy of regulatory mechanisms to control these threats.
- Spawning occurs in 11 rivers in the Southeast, but spawning populations have been extirpated in 5 to 9 rivers in the Southeast

***Conclusion: Carolina and SA DPSs endangered***



## Additional actions following the listing

- Critical habitat: must be designated within 1 year of the final listing rule (i.e., by February 6, 2013)
- “Five –year status reviews”: required to ensure accuracy of listing classifications
- Recovery Planning:
  - Non-regulatory, will work on completing a plan as soon as possible
  - Recovery Team will develop down-listing and de-listing criteria and actions needed to achieve recovery
  - Public input and engagement is sought in the recovery planning process - ASMFC’s sturgeon technical committee, states, councils, and the public will have input into the Plan



## Post listing

- Final 4(d) rule
- Scientific research permits
- Coordination with Fishery Management Councils, states, ASMFC
- Section 7 consultations



## Final 4(d) rule

- Need to finalize a rule, under section 4(d) of the ESA, to specify prohibitions on take, as well as exemptions to take, for the threatened Gulf of Maine DPS.
- Proposed rule published June 10, 2011 (76 FR 34023)
  - Applied all Section 9 prohibitions with limited exceptions for scientific research, salvage and resuscitation
  - Sought public comment
- Expect to publish final rule in June



## Sections 6, 7, 10

- Section 6 - Cooperative agreement to work collaboratively to enhance the conservation of threatened, endangered, candidate, and proposed species.
- Section 7 – consultation between NMFS and other federal agencies on impacts of projects on listed species
- Section 10 - Two components to authorize different types of take:
  - Section 10(a)(1)(A) - intentional take of listed species for scientific research or to enhance the propagation and survival of the species.
  - Section 10(a)(1)(B) - non-federal entities (e.g., states, local governments, private citizens) to unintentionally take a listed species as long as the take is incidental to otherwise lawful activities.



## Section 7 Consultation

- Section 7 of the ESA directs NMFS to ensure that all Federal actions are not likely to jeopardize the continued existence of any listed species
- Federal action = any discretionary action that is authorized, funded or carried out by a Federal agency
- Jeopardy = an appreciable reduction in the likelihood of survival and recovery of the species in the wild
- For Atlantic sturgeon, each DPS is a unique species (range of all DPSs overlaps)
- Must make a jeopardy determination for each listed species (e.g., each DPS)



## What are we doing now?

We have reviewed existing Biological Opinions to determine which ones consider actions that may affect Atlantic sturgeon

These include actions authorized, funded or carried out by: NMFS, Army Corps of Engineers, Environmental Protection Agency, Federal Energy Regulatory Commission, and the Nuclear Regulatory Commission



## Re-initiation of Consultations

### Informals

- May need to reinitiate a few NLAA consultations that were done for shortnose sturgeon b/c there may be incidental take of Atlantic sturgeon
- Have been providing action agencies with “technical assistance” considering effects of proposed actions on Atlantic sturgeon

### Formals

- Over 50 existing Opinions consider actions that may interact with Atlantic sturgeon. We have identified approximately 20 “high priority” Opinions that we are working to get completed as soon as possible. This includes 11 Fishery Management Plans.



## Biological Opinions

These Opinions have been or will be reinitiated soon:

- 11 FMPs: scallop, multispecies, dogfish, monkfish, skate, squid/mackerel/butterfish, summer flounder/scup/black sea bass, bluefish, lobster, red crab, ocean quahog, tilefish
- NEFSC surveys (e.g., spring and fall bottom trawl)
- NEAMAP
- NEFSC Penobscot River surveys
- Several Army Corps authorized dredging projects



## Biological Opinions...

Additionally, we are likely to reinitiate consultation on:

- Nuclear power plant operations authorized by the NRC
- Water quality issues regulated by EPA
- Penobscot River dam removal project
- USCG activities
- Other bridge and in-water construction activities



## What does a formal consultation do?

Biological Opinion establishes the “status of the species” considering what is known about each spawning population and DPS and the threats that are faced within and outside the action area – together, this information establishes the “baseline”

The jeopardy analysis examines the “future” with and without the action under consideration to determine if the proposed action is likely to appreciably reduce the species likelihood of survival and recovery



## Effects Analysis in the Opinion will...

In addition to whale and sea turtle analysis, we will...

- Determine the effect of the action under consideration, as it currently operates/is proposed, on each DPS of Atlantic sturgeon
- Establish a number of Atlantic sturgeon likely to be captured/injured/killed per DPS
- Determine if that annual loss is likely to appreciably reduce the likelihood of survival and recovery



## If we conclude “No Jeopardy” ...

- Provide an Incidental Take Statement that exempts a certain amount of take from the ESA Section 9 prohibitions on take
- Level of exempted take is the amount of take we anticipate to result from the proposed action operating as is
- ITS also includes Reasonable and Prudent Measures that are non-discretionary and are “reasonable and appropriate” to minimize and monitor take
- Terms and Conditions are required. These serve to implement the RPMs
- In most cases, the action taking place with RPMs in place should result in less take than was exempted
- The “minor change rule”: RPMs can not alter the basic design, location, scope, duration, or timing of the action, and must involve only minor changes



## If we conclude “Jeopardy”

- Must develop at least one Reasonable and Prudent Alternative
- RPA modifies the existing operations of the action to reduce the number of mortalities to avoid the likelihood of jeopardy
- Can have multiple RPAs that can be chosen from as long as they all meet the relevant conditions
- RPA can require one major change in operations or several smaller changes provided that together the small changes had enough of an impact to remove jeopardy.
- RPA is likely to have a “time frame” associated with it (e.g., “must modify operations to reduce bycatch by X% in X years)
- Any RPA must meet several conditions:
  - can be implemented in a manner consistent with the intended purpose of the action,
  - can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction,
  - is economically and technologically feasible; and,
  - removes jeopardy.



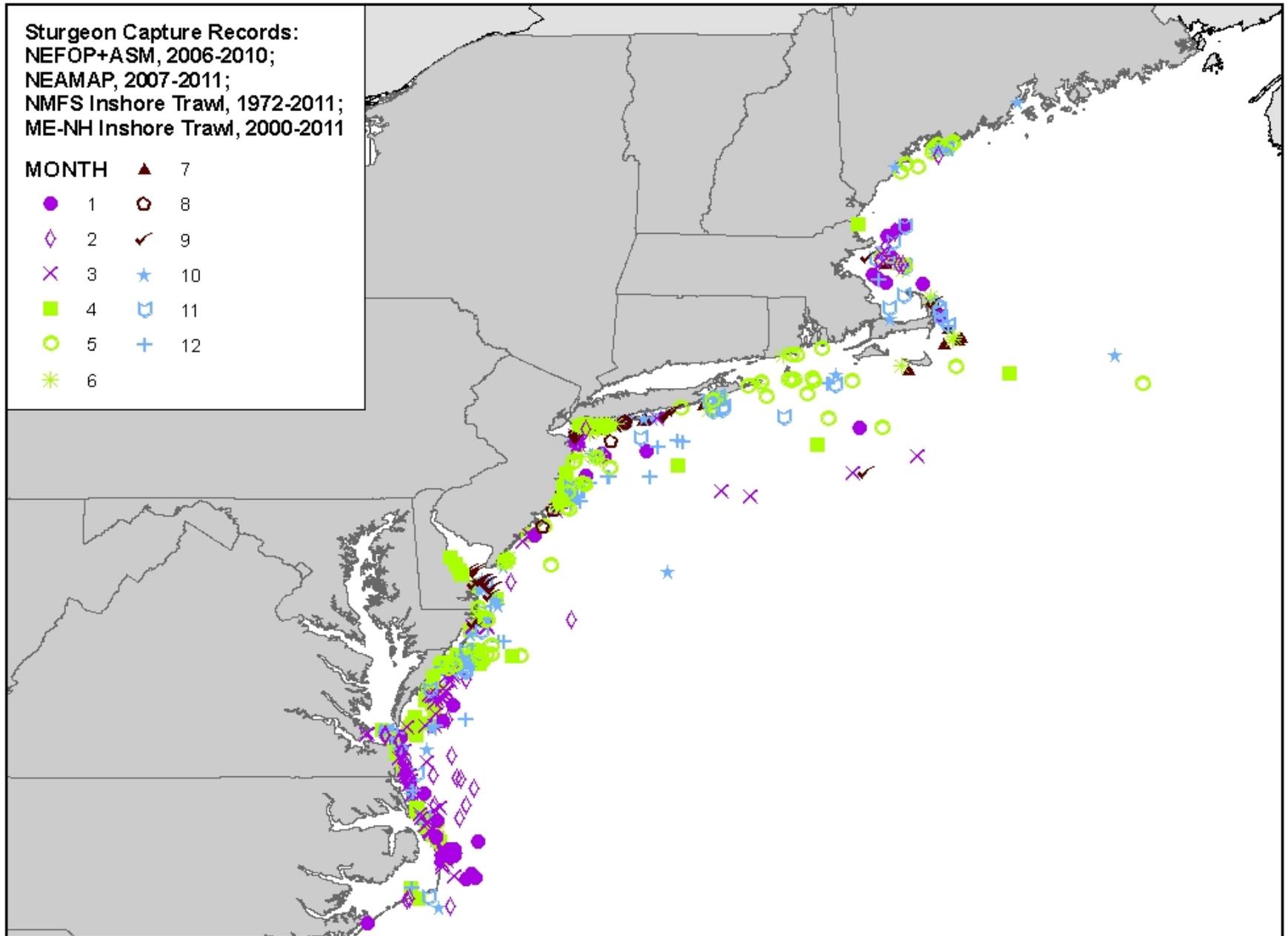
## Once an RPA is developed...

- Implementation of the RPA is mandatory
  - phased in approach to implementation possible provided we can justify that any delay in implementation is not likely to jeopardize the species
- Analysis demonstrating that the action carried out pursuant to that RPA will result in mortalities at a low enough rate so that the action is not likely to jeopardize any listed species (e.g., any DPS of Atlantic sturgeon)
- Incidental Take Statement provided for the modified action
- ITS provides a take exemption (e.g., number of Atlantic sturgeon likely to be captured/injured/killed in modified action) with non-discretionary RPMs and Terms and Conditions

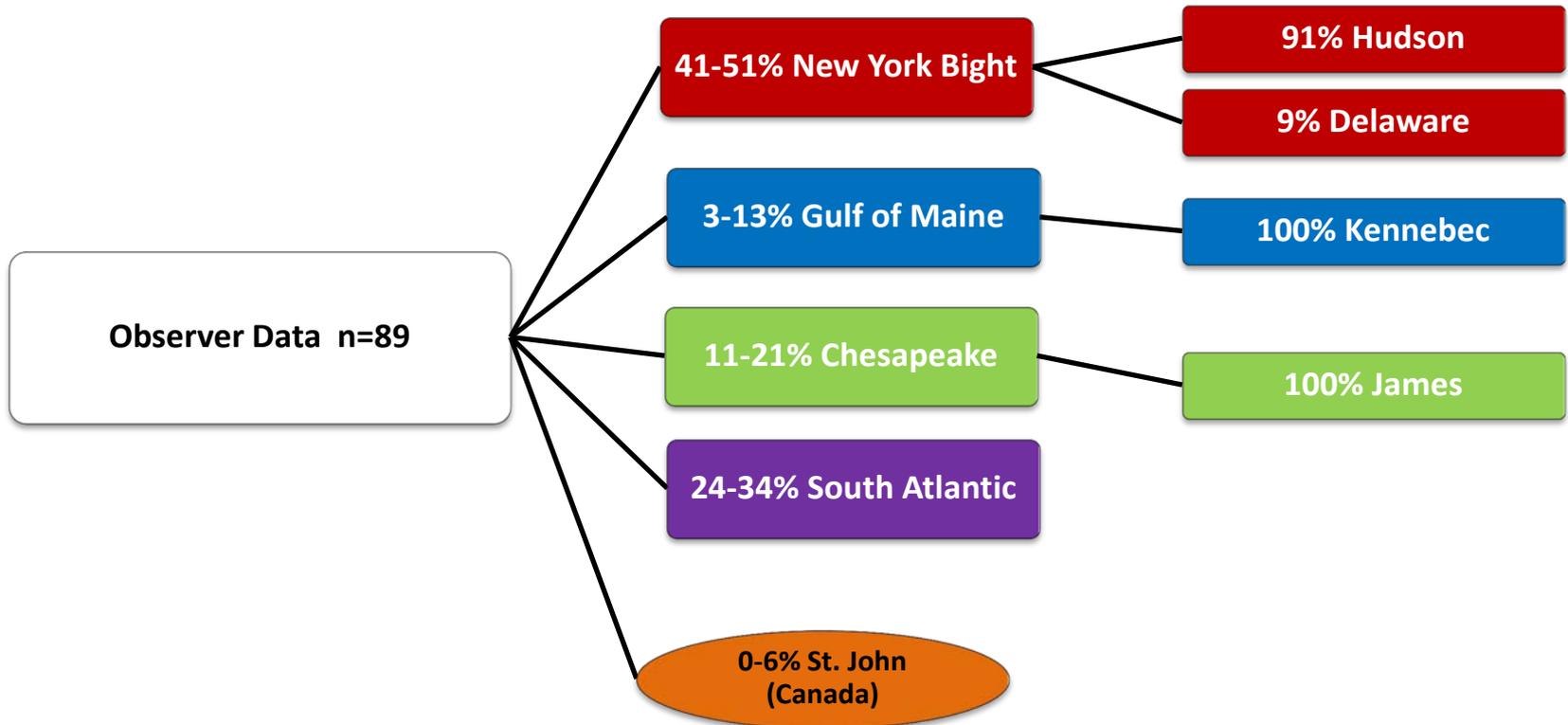
Sturgeon Capture Records:  
NEFOP+ASM, 2006-2010;  
NEAMAP, 2007-2011;  
NMFS Inshore Trawl, 1972-2011;  
ME-NH Inshore Trawl, 2000-2011

MONTH

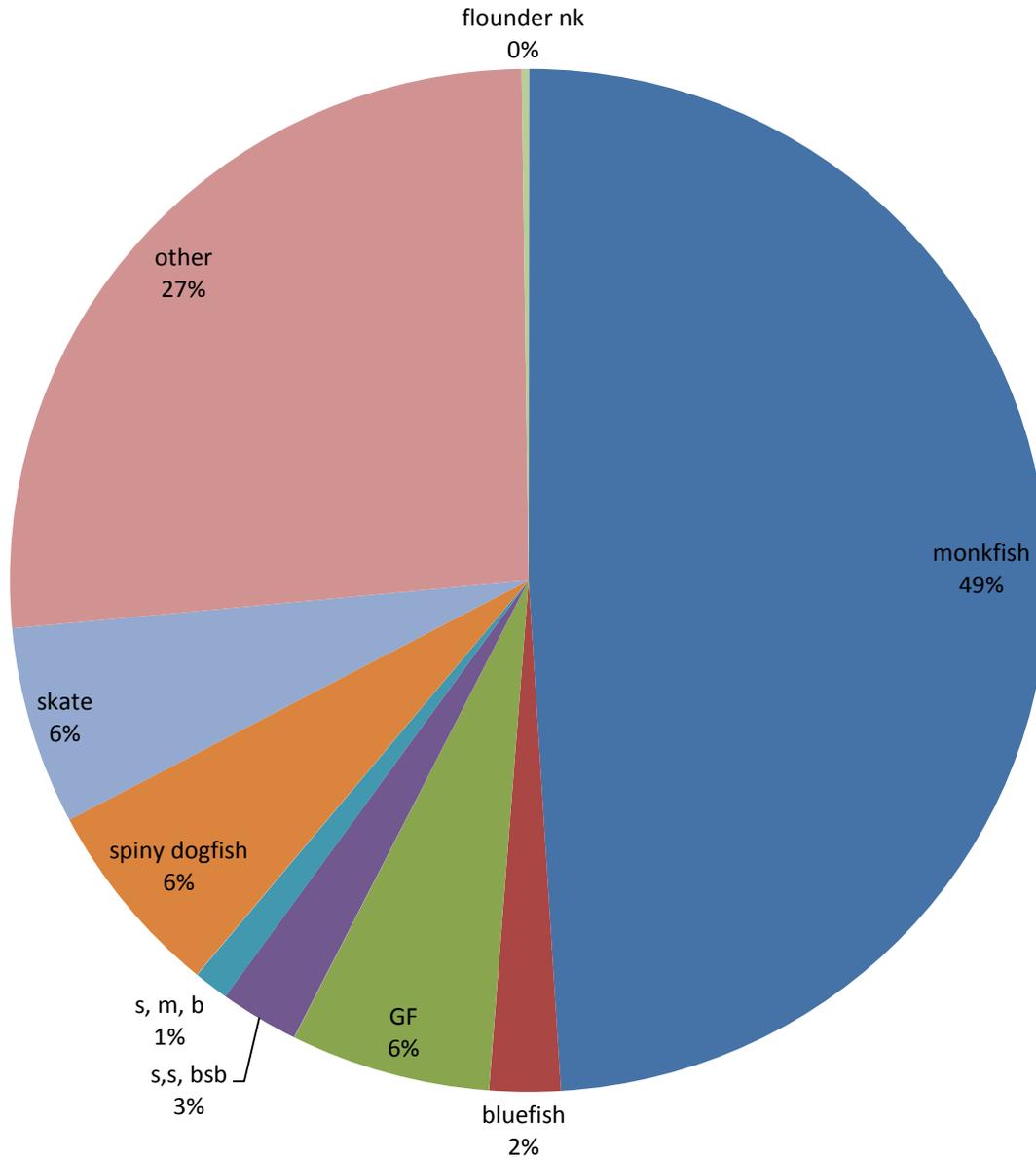
● 1	▲ 7
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× 3	✓ 9
■ 4	★ 10
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* 6	+ 12



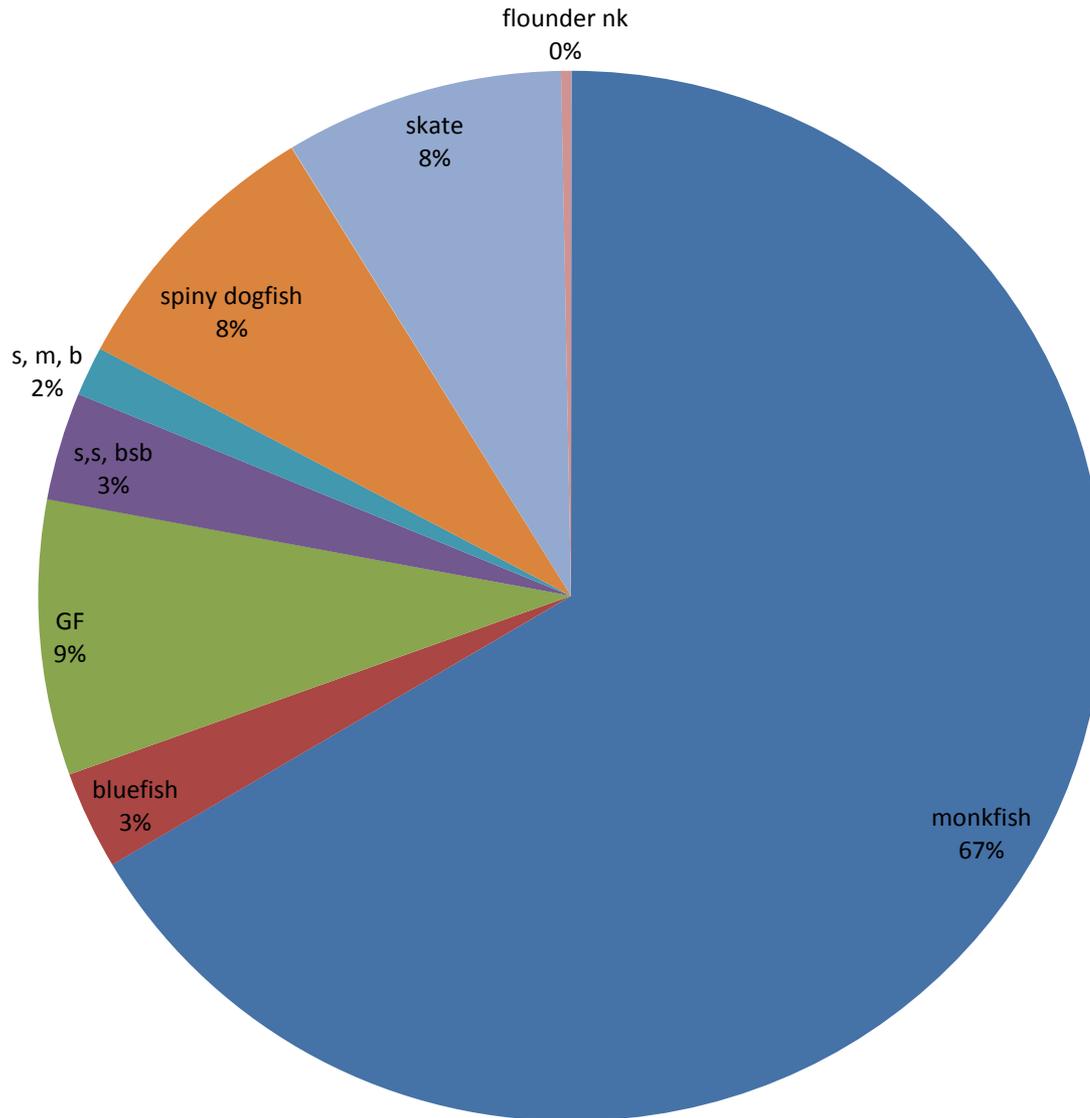
# NEFOP Observer Data Genetic Mixed Stock Analysis



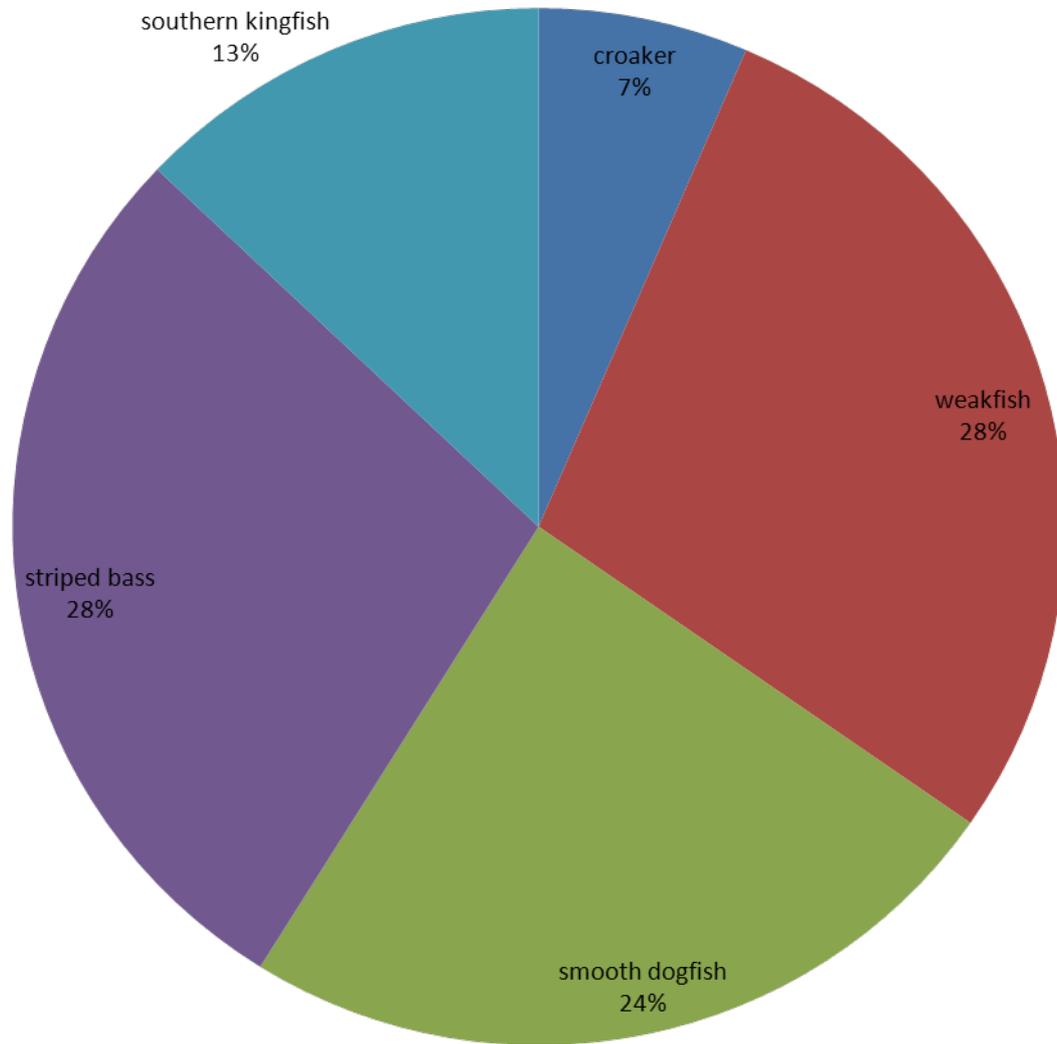
# ASN interactions - gillnet (trip target)



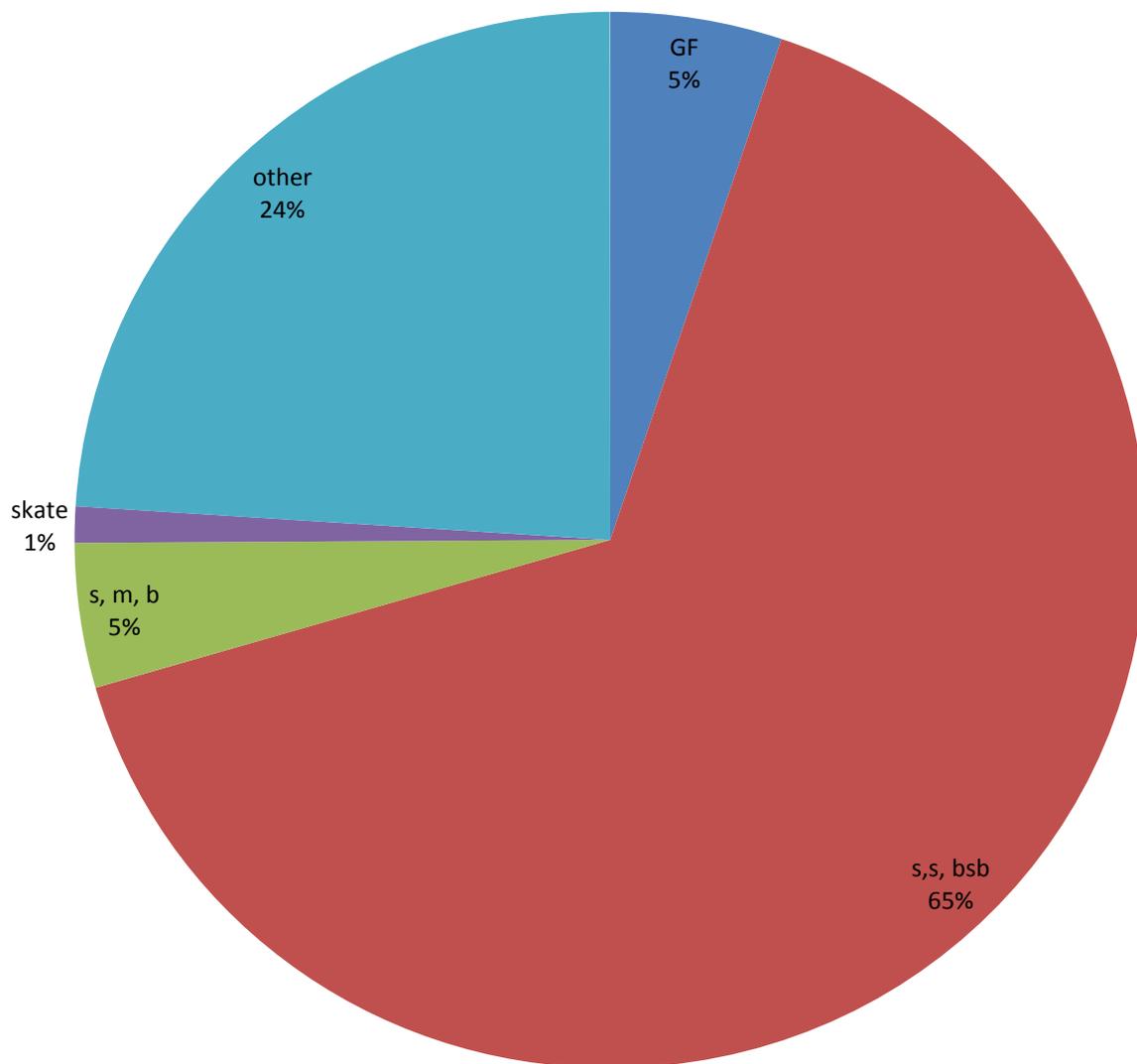
# ASN interactions gillnet (trip target w/out other)



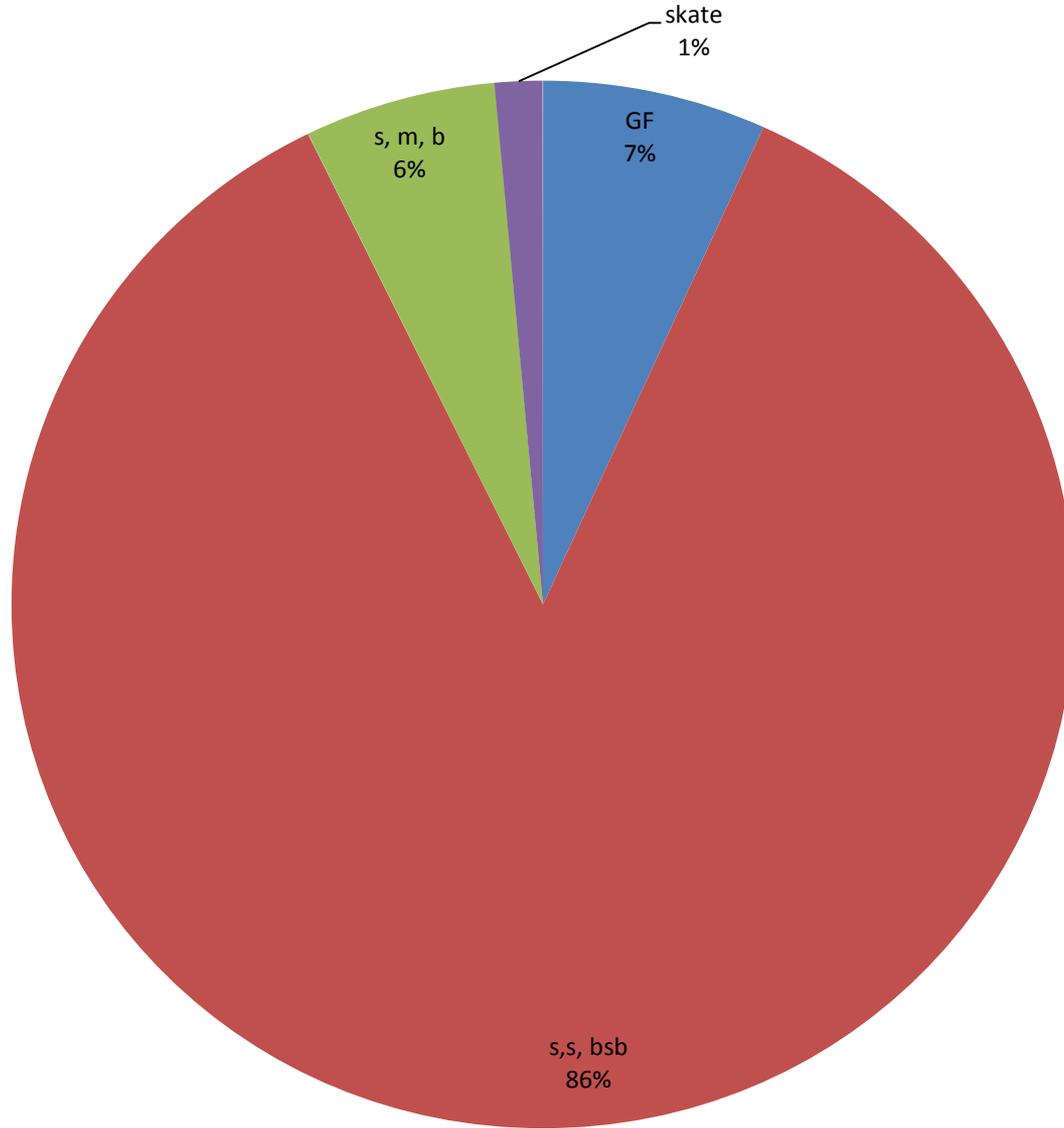
## "Other" ASN interactions gillnet (trip target)



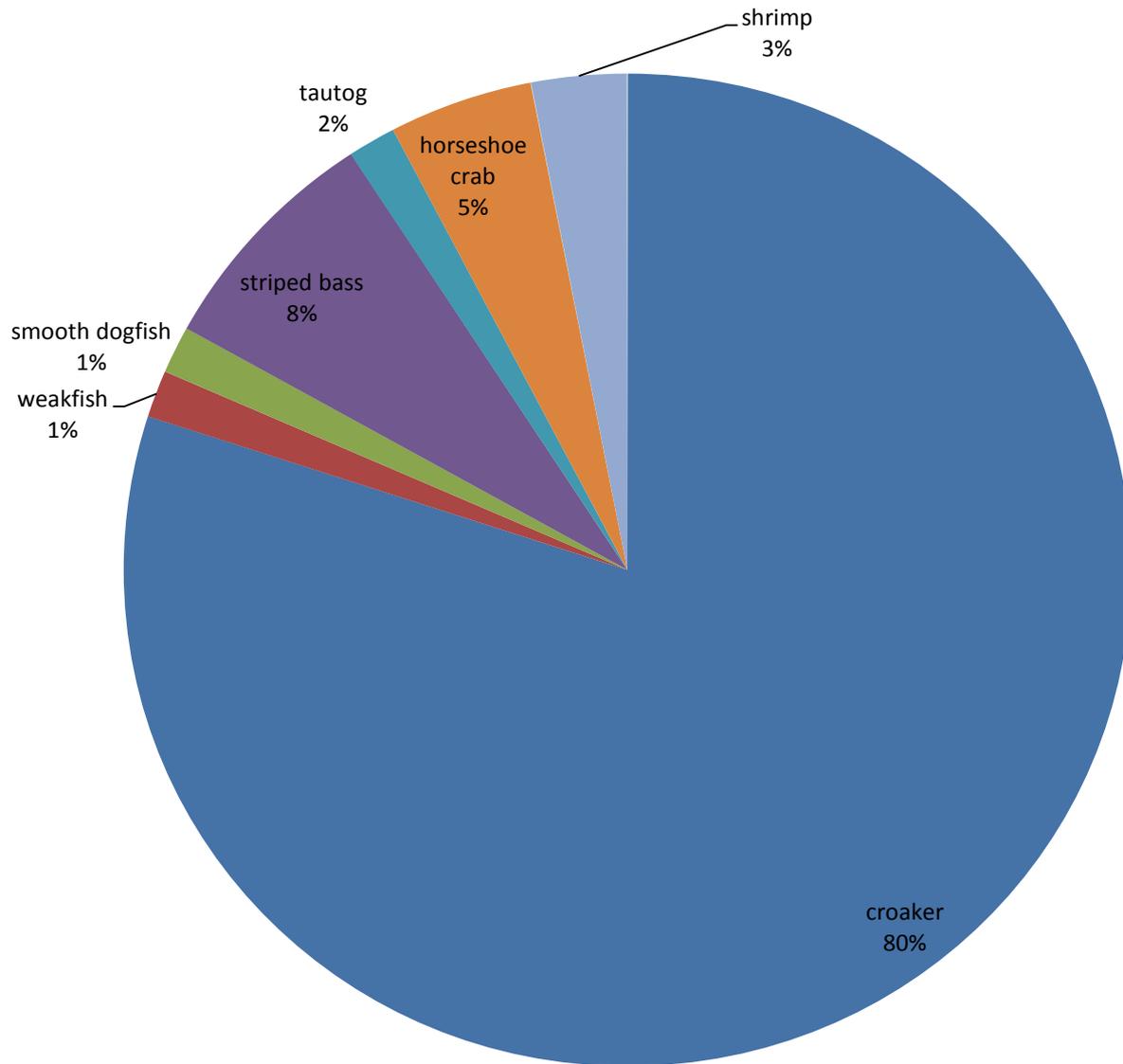
# ASN interactions trawl (trip target)



# ASN interactions trawl without "other" (trip target)



### ASN interactions "other" trawl (trip target)



# NEFSC Bycatch Report

- Used 2006-2010 data to provide an estimate of discards of Atlantic sturgeon
- Otter Trawl and Sink Gillnet Gear
- Only presents information for Northeast Fisheries
- Two methods were presented: design-based and model-based estimator
- Design Based estimator: expands the ratio of total sturgeon takes to total landings by the total landings within a cell
- Model-based estimator: incorporates the mixture of species associated with the observed trips. provided more rigorous results

# NEFSC bycatch report...

- NEFSC considers use of the model based approach more appropriate
- Allocating takes to FMP is difficult based on the available information
- Model based approach is able to allocate takes to otter trawl vs. sink gillnet

# Bycatch Estimates

- On average (2006-2010) – 3,118 Atlantic sturgeon are captured in NER FMP fisheries each year (sink gillnet and otter trawl)
- Otter trawl and sink gillnet: no landings attributable to herring, river herring, salmon, tilefish, red crab or surf clams/ocean quahog when sturgeon were taken
- Mortality rate in otter trawls is approximately 5%\*  
Mortality rate in sink gillnet is approximately 20%\*  
(except gillnets where primary haul target is monkfish where mortality rate is 27%)\*

\*all mortality rates are based on observer categorizing take as dead or alive with no adjustment for post-release survival.

# Bycatch Estimates

- Otter Trawl: 2006-2010 average 1,548 annual encounters (range 1,338-1,794)
- Approximately 77 mortalities/year (5% mortality rate)
- Sink Gillnet: 2006-2010 average 1,597 annual encounters (range 858-2,053)
- Approximately 320 mortalities/year (20% mortality rate)
- These estimates include trips where no “FMP” species were landed
- Approximately 13% of otter trawl estimate and approximately 22% of sink gillnet estimate is attributed to non-FMP

# What % of the Hudson River adult population is captured in NER fisheries each year?

Average No. of Atlantic sturgeon caught in NER fisheries 2006 - 2010: 3,118/year

Mixed Stock Analysis (using observer data) : 46% of bycaught Atlantics originate from NY Bight DPS and of that, 91% are Hudson River origin

1305 Hudson River origin Atlantic sturgeon captured in NER FMP fisheries each year

Observed sturgeon are mostly subadults: 25% adult, 75% subadult based on lengths in Observer database (n=726)

327 adults caught/year

Annual Mature Adult Hudson River Population Estimate 863

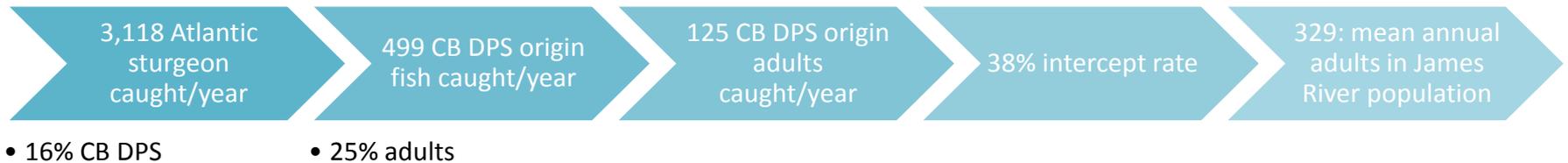
327 captures /863 total adults

38% intercept rate (% of Hudson River origin mature adults captured in NER fisheries each year)

## Using the “Hudson Intercept Rate” to Estimate the Number of Adults in other DPSs– GOM DPS



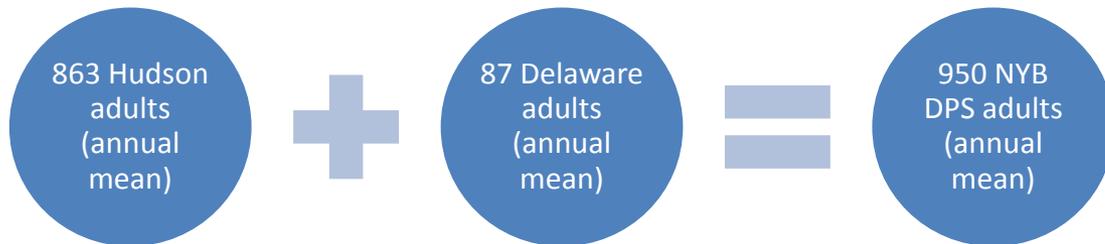
## Use Hudson River intercept % to calculate Chesapeake Bay DPS adult population



## Use Hudson River intercept % to calculate South Atlantic DPS adult population



# Use Hudson River intercept % to calculate Delaware River population



**Using the “intercept rate” and the mixed stock analysis for adults to calculate estimates of the Number of Atlantic sturgeon in NER Marine waters\***

DPS	Mature Adult Population <i>Estimate</i>	<i>Estimated</i> Number of Subadults (at size vulnerable to fisheries)**	Combined <i>Estimate</i> of Adults and Subadults at size vulnerable to fisheries
GOM	166	498	664
NYB (863 in Hudson plus Delaware)	950	2850	3800
Chesapeake Bay	329	987	1316
South Atlantic	598	1794	2392

\*unpublished NMFS estimates determined for the purposes of conducting Section 7 consultations

\*\*this number is based solely on the observed ratio of 25% adults and 75% subadults; it takes the adult estimate and multiplies by 3.

# Re-initiation of Existing Consultations

- All NEFMC and MAFMC FMPs are considered in existing ESA consultations
- Any consultation that considers an action that may affect any DPS of Atlantic sturgeon must be re-initiated to consider effects to these newly listed species
- These Opinions will also update information and analysis for whales and sea turtles as appropriate
- Batched consultation for FMPs with interactions with sturgeon: bluefish, multispecies, monkfish, skate, spiny dogfish, squid/mackerel/butterfish, and summer flounder/scup/black sea bass
- Separate consultations for scallop, lobster, red crab, surf clam/ocean quahog, tilefish, and Atlantic herring

# Existing Consultations

FMP	Existing Consultation Document	Expect Interactions with Atlantic sturgeon?
Red Crab	2002 Biological Opinion	No
Surf Clam/Ocean Quahog	2002 "Not Likely to Adversely Affect" determination	No
Tilefish	2001 Biological Opinion	No
Atlantic Herring	2010 "Not Likely to Adversely Affect" determination	No
Atlantic sea scallop	2008 Biological Opinion	Occasional interactions in trawl gear. None recorded in scallop dredge gear.
Lobster	2010 Biological Opinion	No
Multispecies	2010 Biological Opinion	Yes
Monkfish	2010 Biological Opinion	Yes
Bluefish	2010 Biological Opinion	Yes
Spiny Dogfish	2010 Biological Opinion	Yes
Skate	2010 Biological Opinion	Yes
Squid/Mackerel/ Butterfish	2010 Biological Opinion	Yes
Summer Flounder/Scup/ Black Sea Bass	2010 Biological Opinion	Yes

# Possible Measures to consider to reduce interactions or mortalities

- Seasonal Area Closures (depth, distance from shore)
  - Known sturgeon aggregation areas
- Gear Modification
  - Monkfish BREP study
  - Possibly raised foot rope in foraging areas to get the net off the bottom when fish are swimming on the bottom
- Resuscitation of sturgeon
- Limit soak time or require net tending
- Limit number and/or size of nets
- Increase the efficiency with which fisheries target species (e.g., increase landings/unit effort)
- Individual quotas (e.g., catch fish when they are there then get out of the water)
- Bycatch avoidance program (e.g., hot spot areas)
- Reduced mesh size/increased twine size (reduced mesh size may increase mortality of other species)
- Effort controls
- Incentive Areas or Modified Gear areas
  - Closed to gillnets but open to trawls in areas/times of peak interactions

# Stock Assessment vs. Status Review/listing determination

## Stock assessment

- Completed in 1998
- $F_{50} = 0.03$  for recovered stock
- Cumulative amount of bycatch could not be assessed b/c of lack of effort data
- mortality = 5% from trawls (both north and south), 10-40% from gillnets (north), 9-16% (south), 0% from pound nets
- Attempted to estimate annual mortality (i.e., at pop level) from bycatch but “data sorely lacking”
- Research and information needs are great, lack of basic information apparent throughout stock assessment; management and population restoration hindered until more info available
- Management agencies need to work cooperatively with commercial fishermen to obtain data
- No forecasts presented
- Stock id at riverine level, info presented based on 5 ESA factors
- Egg-per-recruit (EPR) and Yield-Per-Recruit (YPR) models used to estimate target fishing rate and mortality rates assoc. with targeted fisheries estimated using Hudson River population through catch-at-age analysis
- SSB undocumented for all rivers
- Bycatch may be a concern since the upper range of the mortality estimate for the Hudson is close to the estimated harvest rate for a recovered fishery on the Hudson stock
- Rate of bycatch induced mortality on other stocks remains unknown
- All states should characterize and report bycatch

## Status review/listing determination

- SRR completed in 2007, listing determination 2012
- 2 estimates of adults or spawning adults per year generated
- Detailed genetics information that was not available in 1998 on each river used to make a determination as to the distinct population segments found in the US
- Update life history and status information for each river addressed in the stock assessment with information obtained between 1998 and 2010
- Contain a semi-quantitative assessment of extinction risk based on all known available information
- Contain an analysis of the new bycatch data that was produced by Stein et al. in 2004, and NEFSC and ASMFC bycatch report in 2007 (we are also using updated information on bycatch from the NEFSC 2012 analysis)
- Contain updated water quality information in an assessment of habitat quality and suitability
- Detailed analysis of the existing regulatory mechanisms to protect the species as well as discussion of ongoing conservation efforts
- Analysis of the impacts of vessel strikes on the species in particular areas (these data were not available in 1998)
- Information on water availability and climate change impacts assessed



## NERO Sturgeon Task Force

Goal – to provide a mechanism for full and open communication on sturgeon related issues within the region

Members – representatives from all NERO divisions, GCNE, OLE, HRC

Coordinated by PRD