

# Atlantic Sturgeon: Update on Management Action to Reduce Bycatch in Monkfish and Spiny Dogfish Gillnet Fisheries

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**Mid-Atlantic Fishery Management Council**

**February 2024**



# For Today

1. Review and endorse packages of alternatives for sturgeon

# Reminder

- 2021 Biological Opinion **still active** – Atlantic sturgeon bycatch must be reduced in Federal large mesh gillnet fisheries by 2024
- Biological Opinion **re-initiated** September 13, 2023 and new consultation required
  - Reason: Sturgeon Incidental Take Statement (ITS) numbers exceeded in the gillnet fisheries
  - Original approach: Consider the joint Council sturgeon bycatch framework action as part of the reinitiated consultation (action becomes the baseline for the new BiOp)

# FMAT / PDT Work in December

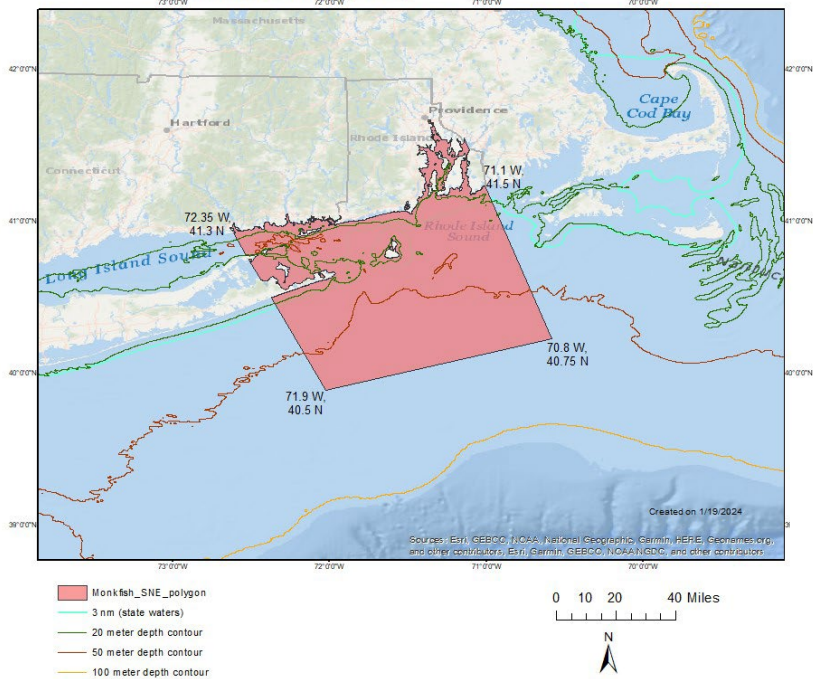
- Discussed the thousands of potential unique combinations of alternatives originally approved by the Councils in the fall
- Agreed that four packages of time/area closures and gear restrictions create a reasonable range of alternatives for April final action
  - Packages range from high to low impacts re: impacts to fisheries and potential reduction in sturgeon bycatch
  - Recommended use of Decision-Support Tool to estimate impacts of closed areas
- Council staff drafted revised alternatives, rationale, bycatch polygons during the holidays
  - Information sent to FMAT/PDT for their review late Dec/early Jan

# Revised Sturgeon Alternative Packages

- Alternative 1: No action.
- Alternative 2: Higher sturgeon impacts; all time/area closures and gear restriction measures.
- Alternative 3: Intermediate sturgeon impacts; subset of time/area closures and gear restriction measures.
- Alternative 4: Lower sturgeon impacts; fewest time/area closures and gear restriction measures.
- Alternative 5: Only gear restriction measures.

# Sturgeon Bycatch Polygons

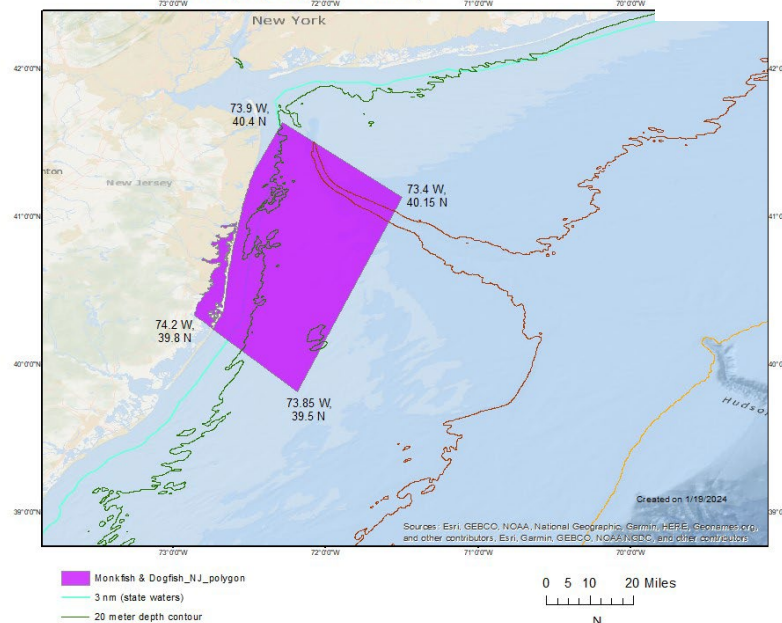
Southern New England Bycatch Hotspot Polygon - Monkfish Fishery Only



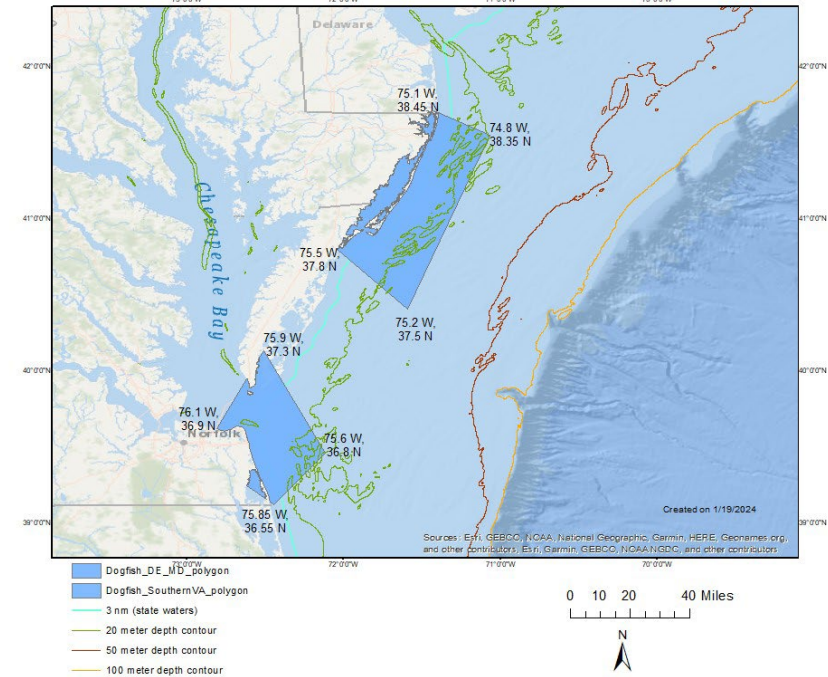
**Southern New England:  
Monkfish only**

**New Jersey: Monkfish & Spiny Dogfish**  
(polygon is the same across both fisheries given sturgeon are caught throughout this area)

New Jersey Bycatch Hotspot Polygon - Monkfish Fishery and Spiny Dogfish Fishery



Delaware, Maryland, Virginia Bycatch Hotspot Polygons - Spiny Dogfish Fishery Only



**DE/MD/VA: Spiny  
Dogfish only**

# How FMAT/PDT developed sturgeon bycatch polygons

1. Sum observed sturgeon takes across 2017-2019 & 2021-2022 by 10-min squares

2. Shade 10-min squares based on # of observed sturgeon takes

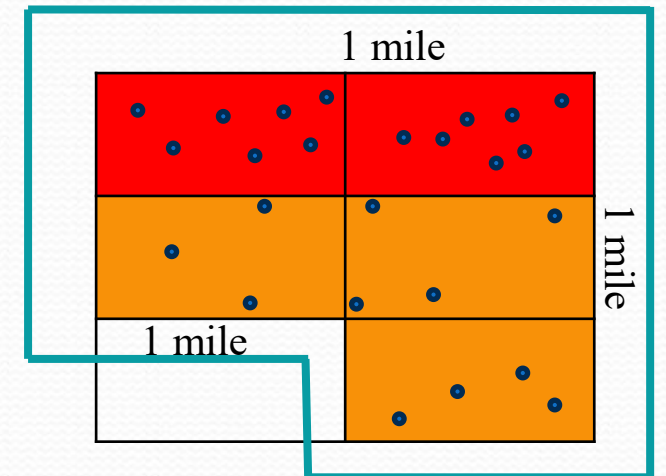
3. Orange/red shading represent area of higher observed takes

5. Polygon buffer either ~1 mi beyond edge of orange/red square OR ~1 mi from location of observed take in yellow square

4. Polygon boundaries encompass all orange/red shading

*Clip to shoreline*

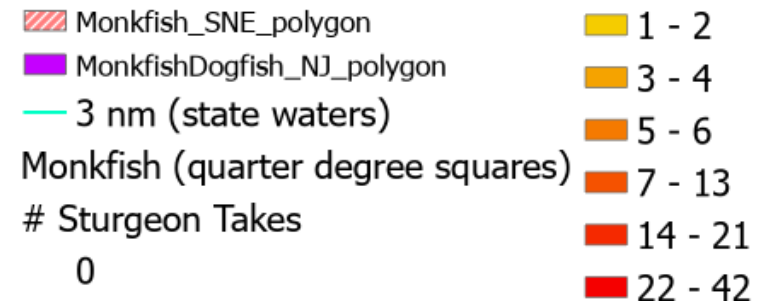
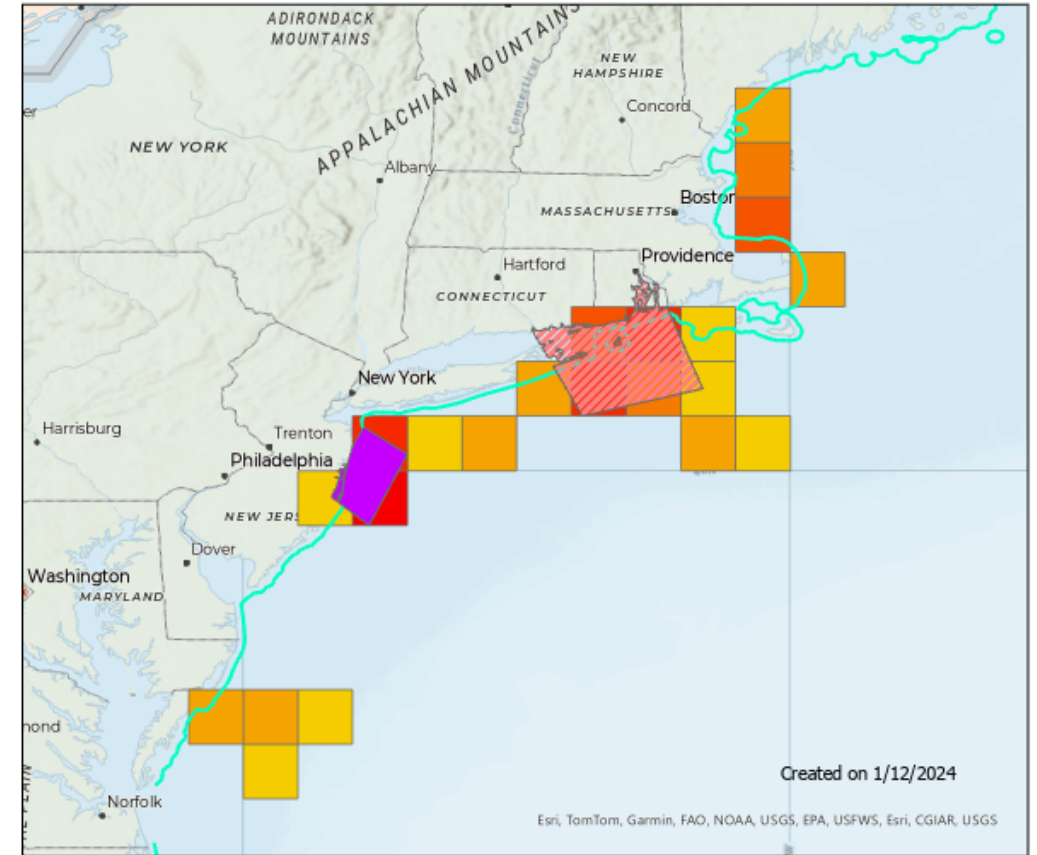
Example:



# Sturgeon Bycatch Hotspots - Monkfish

- Sturgeon hotspots shown as quarter degree squares due to data confidentiality with 10-min squares
  - Key: the polygons do not align with the shaded quarter degree squares because they are based on 10-min square shading

**Sturgeon Bycatch Hotspot Polygons by Quarter Degree Squares for Monkfish Fishery**



0 20 40 80 Miles



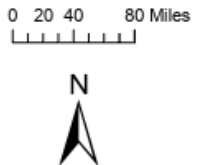
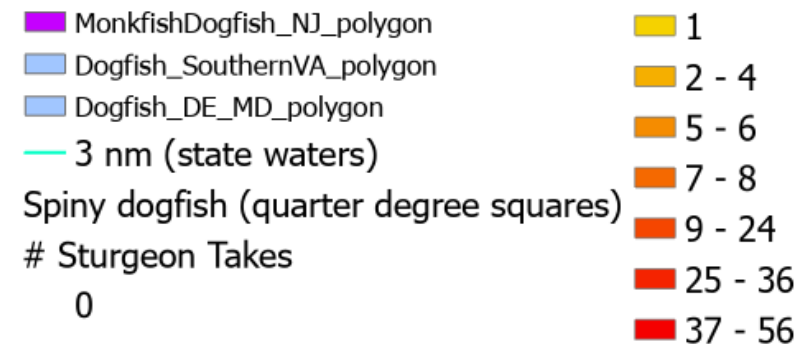
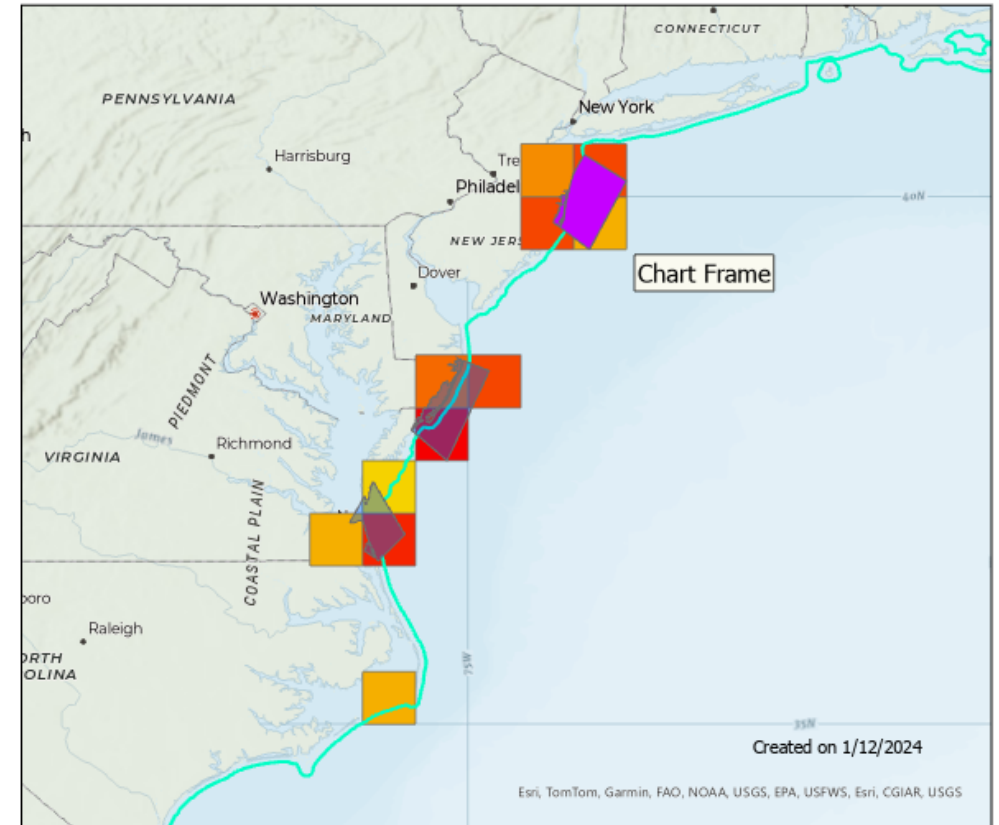
*Source: 2017-2019 and 2021-2022 observer data*



# Sturgeon Bycatch Hotspots – Spiny Dogfish

- Sturgeon hotspots shown as quarter degree squares due to data confidentiality with 10-min squares
  - Key: the polygons do not align with the shaded quarter degree squares because they are based on 10-min square shading

**Sturgeon Bycatch Hotspot Polygons by Quarter Degree Squares for Spiny Dogfish Fishery**



# Alternative 1 – No Action

- Would not satisfy 2021 Biological Opinion's mandate to reduce sturgeon interactions in large-mesh gillnet fisheries
- If Councils choose Alt. 1 No Action → NMFS would take action under ESA rule-making process

# Alternative 2: High Impact Sturgeon Package (most time/area closures & gear restrictions)

## Federal vessels targeting monkfish in federal & state waters

Which polygon?	Type of measure?	When?	Why?
Southern New England	Closure	April 1 – May 31 & Dec. 1 – Dec. 31	~40% of observed takes in monkfish fishery
New Jersey	Closure	May 1 – May 31 & Oct. 15 – Dec. 31	~30% of observed takes in monkfish fishery
	Low-profile gillnet gear	June 1 – Oct. 14 & Jan. 1 – April 30 (when area is not closed)	

## Federal vessels targeting spiny dogfish in federal & state waters

Which polygon?	Type of measure?	When?	Why?
New Jersey	Closure	May 1 – May 31 & Oct. 15 – Dec. 31	~25% of observed takes in spiny dogfish fishery
DE / MD / VA	Closure	Nov. 1 – March 31	~59% of observed takes in dog. fishery

# Alternative 3: Intermediate Impact Sturgeon Package (subset of time/area closures, gear restrictions)

## Federal vessels targeting monkfish in federal & state waters

Which polygon?	Type of measure?	When?	Why?
Southern New England	Closure	May 1 – May 31 & Dec. 1 – Dec. 31	~37% of observed takes in monkfish fishery
New Jersey	Closure	Dec. 1 – Dec. 31	~17% of observed takes in monkfish fishery
	Low-profile gillnet gear	Jan. 1 – Nov. 30 (when area is not closed)	

## Federal vessels targeting spiny dogfish in federal & state waters

Which polygon?	Type of measure?	When?	Why?
New Jersey	Closure	Nov. 1 – Dec. 31	~16% of observed takes in spiny dogfish fishery
	Overnight soak prohibition	May 1 – May 31	
DE / MD / VA	Closure	Dec. 1 – Feb. 28	~44% of observed takes

# Alternative 4: Low Impact Sturgeon Package (less time/area closures & gear restrictions)

## Federal vessels targeting monkfish in federal & state waters

Which polygon?	Type of measure?	When?	Why?
Southern New England	Closure	Dec. 1 – Dec. 31	~19% of observed takes in monkfish fishery
New Jersey	Closure	Nov. 1 – Nov. 30	No takes in monkfish fishery but substantial takes in dogfish fishery
	Low-profile gillnet gear	Dec. 1 – Dec. 31	

## Federal vessels targeting spiny dogfish in federal & state waters

Which polygon?	Type of measure?	When?	Why?
New Jersey	Closure	Nov. 1 – Nov. 30	< ~16% of observed takes in spiny dogfish fishery
	Overnight soak prohibition	Dec. 1 – Dec. 31 & May 1 – May 31	
DE / MD / VA	Closure	Dec. 1 – Jan. 31	~38% of observed takes in dog. fishery

# Alternative 5: Gear-Only Sturgeon Package (Monkfish low-profile gear; Spiny dogfish overnight soak prohibition)

## Federal vessels targeting monkfish in federal & state waters

Which polygon?	Type of measure?	When?
New Jersey	Low-profile gillnet gear	Year-round

## Federal vessels targeting spiny dogfish in federal & state waters

Which polygon?	Type of measure?	When?
New Jersey	Overnight soak prohibition	May 1 – May 31 & Nov. 1 – Nov. 30
DE / MD / VA	Overnight soak prohibition	Nov. 1 – March 31

# Low-profile gillnet definition

Low-profile gillnet gear mentioned below is defined based on research by Fox et al. (2012 and 2019) and He and Jones (2013) in New Jersey:

- Mesh size ranging from 12 to 13 inches,
- Net height ranging from 6 to 8 meshes tall,
- Net length of 300 feet,
- Tie-down length of at least 24 inches to 48 inches max,
- Tie-down spacing of 12 feet,
- Primary hanging ratio of 0.50,
- Twine size 0.81mm, and
- Net is tied at every float to keep float line down.

NOTE: Harbor Porpoise regulations require 0.90 mm minimum twine mesh for large-mesh gillnets in the Mid-Atlantic management areas Jan. – April.

Exemption needed for 0.81 mm twine size for low-profile gillnet gear via work with the Harbor Porpoise Take Reduction Team (see Council letter)

# Rationale for Low-Profile Gillnet Gear Monkfish Fishery

- Several studies testing various iterations of this gear including Fox, et al. 2019:
  - Sturgeon bycatch reduced by ~76% when using low-profile gear in NJ
  - No significant difference in monkfish catch rates off NJ
  - Significantly fewer monkfish caught off NY
  - No significant difference in winter skate catch off NJ or NY
- Proposed delayed requirement until Jan. 1, 2026 to allow gear to be produced & to allow Harbor Porpoise Take Reduction Team to consider changes to minimum twine size requirements

<b>Fox, et al. 2019</b>	<b>Mesh Size (in.)</b>	<b>Net Height (# Mesh)</b>	<b>Tie Down Length (ft)</b>	<b>Tie Down Spacing (ft)</b>	<b>Hanging Ratio</b>	<b>Net Length (ft)</b>	<b>Twine Diameter (mm)</b>	<b>Sturgeon Catch (#)</b>
<i>Control</i>	12	12	4	24	0.5	300	0.90	25
<i>Experimental</i>	13	8	2	12	0.5	300	0.81	6



# Rationale for Prohibition of Overnight Soaks (8pm – 5am) Spiny Dogfish Fishery

- Required during times of documented high sturgeon bycatch
- Reduces time the gear is in the water
- Also reduces discard mortality (earliest sturgeon ‘dead’ condition occurred at 16 hours soak time)
- More enforceable compared to a limit of  $\geq 24$  hours
- May be feasible for overall fishery but may vary by fisherman and region

Total Takes	<b>309</b>
Total Dead	38
<b>% Reduction in Dead Takes</b>	
No overnight soaks (15 hours)	100%
24-hour limit	26%
48-hour limit	13%
72-hour limit	11%

*Source: preliminary analysis of 2015-2022 observed sturgeon takes, dogfish target 1 & 2 trips*

# Other Updates

## Analyses by GARFO

- Adapted the Atlantic Large Whale Take Reduction Team's Decision Support Tool for the Council's sturgeon action
  - **Goal:** model fishing behavior & willingness / ability to change location in response to implementation of the draft closed area alternatives
  - **Overall gear result:** most gear is re-located adjacent to closed areas; some gear eliminated (more eliminated if a 20-mile max. relocation used)
- Risk mapping for sturgeon interactions
  - **Goal:** model likelihood of sturgeon take occurrence in a given location
  - **Overall sturgeon result:** Risk of sturgeon takes highly diffuse
- Combined analyses
  - **Goal:** evaluate changes in sturgeon takes from these draft closed area alternatives
  - **Preliminary result:** shift in total fishing effort may offset intended bycatch mitigation → similar chance of encountering a sturgeon relative to where previous fishing activity occurred

# Informal industry meetings to review decision-support tool model results

- Two meetings: Jan. 9<sup>th</sup> and 17<sup>th</sup> as requested by FMAT/PDT
  - 5 industry members participated from Southern New England to VA
- Meeting goal: review model results and provide feedback
- Initial feedback:
  - Model simplifies movement; model doesn't allocate gear to historic fishing grounds not recently fished
  - Fishing likely to relocate next to closed areas
  - Does not account for gear conflicts or external factors that may influence future fishing behavior (wind energy, unknown Atlantic Large Whale measures)
  - Underemphasizes effects of closures on regional participants
  - Bycatch reduction is from full gear removal (vs gear relocation)

# Additional Reminders

## In September:

- Time/area closures by entire statistical area removed from consideration
- Councils recommended adding to their research priorities:
  - Data loggers as a tool to enforce gillnet soak times
  - Explore use of low-profile gillnet gear in the spiny dogfish fishery and Southern New England region for monkfish as a potential future management tool

# Draft NEFMC and MAFMC Letter to NOAA

## re: Twine Size Changes

### **Purpose of letter:**

- Harbor Porpoise regulations require 0.90 mm for large-mesh gillnets ( $\geq 7''$ ) in the Mid-Atlantic management areas during applicable months (January-April)
- Low-profile gillnet gear is 0.81 mm twine size


### **NEFMC/MAFMC Request:**

- Consideration of an exemption of the low-profile gear twine size requirements
- Harbor Porpoise Take Reduction Team meets this spring → Council request can be discussed then

### **Timing of this process:**

- Proposed delay in low-profile gear requirement will allow gear to be produced and for the Harbor Porpoise Take Reduction Team to consider changes to minimum twine size requirements

# Timeline

2023	
APR	Formation of FMAT/PDT; <b>NEFMC - initiates Framework</b>
APR-JUN	FMAT/PDT and Joint Dogfish and Monkfish Committee develop range of alternatives; Joint Dogfish and Monkfish AP input
JUN	<b>MAFMC – FMAT/PDT tasking</b>
JUN	<b>NEFMC – approves range of alternatives for <u>monkfish only</u></b>
SEP	Joint Monkfish/Dogfish Committee with OLE/Coast Guard to refine alternatives
SEP	<b>NEFMC – progress report, approve refined range of alternatives for monkfish, and range for dogfish</b>
OCT	<b>MAFMC – approve range of alternatives for dogfish &amp; monkfish</b>
Fall	FMAT/PDT continue to refine alternatives and begin analyzing alternatives
Fall	ASMFC meeting on alternatives
2024	
FEB	<b>NEFMC – review, provide feedback on revised range of sturgeon alternative packages</b>
FEB 	<b>MAFMC – review, provide feedback on revised range of sturgeon alternative packages</b>
MAR	Joint AP meeting (March 5 <sup>th</sup> ) and joint Committee meeting (March 13 <sup>th</sup> ) to select preferred alternatives
APR	<b>NEFMC and MAFMC final action</b>
TBD	Staff submits framework to NMFS
TBD	NMFS publishes proposed rule; NMFS publishes final rule/Implementation

# For Today

1. Review and endorse packages of alternatives for sturgeon

# Extra Slides



# Observer Coverage

## Monkfish Observer Coverage Summary

Stat Area	Polygon Proximity	Monkfish Commercial Trips	Monkfish Observed Trips	% Observer Coverage
539	SNE	882	92	10%
537	SNE	3439	441	13%
613	SNE	2316	260	11%
612	NJ	772	86	11%
615	NJ	1229	136	11%

*Data source: unpublished observer data and CAMS trip data from 2017, 2018, 2019, 2021, 2022; accessed January 2024.*

## Spiny Dogfish Observer Coverage Summary

Stat Area	Polygon Proximity	Spiny Dogfish Commercial Trips	Spiny Dogfish Observed Trips	% Observer Coverage
612	NJ	591	61	10%
615	NJ	369	72	20%
614	NJ	626	105	17%
621	MD/VA	827	102	12%
625	MD/VA	1232	79	6%
631	MD/VA	2633	308	12%

# Atlantic Sturgeon Population Status

- Coastwide Atlantic sturgeon population is made up of five distinct population segments (DPSs): (1) Gulf of Maine (GOM), (2) New York Bight, (3) Chesapeake Bay, (4) Carolina and (5) South Atlantic.
- All are listed as endangered under ESA except GOM DPS which is listed as threatened
- 2017 assessment report (ASMFC):
  - Slight positive trend coastwide for Atlantic sturgeon since the 1998 moratorium with variable signs of recovery by DPS.
  - Atlantic sturgeon is depleted coastwide
- **Next assessment:**
  - **Assessment update scheduled for spring 2024, peer review expected summer 2024**

# Background

- 2021 Biological Opinion – Atlantic sturgeon bycatch must be reduced in Federal large mesh gillnet fisheries by 2024 ( $\geq 7''$ )
- Atlantic Sturgeon Bycatch Working Group – formed and produced an action plan that recommended a Council process be used to meet needed reduction

## Potential measures recommended in plan:

- Modifications to gear
  - Reductions in soak time
  - Focused time/area measures (plan identified hotspot areas)
- Councils agreed to joint dogfish and monkfish action given those fisheries' contribution to bycatch and their joint management

# Data Loggers for Enforcement of Soak Times

- Council/GARFO staff spoke with Carrie Upite and Ellen Keane on Aug. 22<sup>nd</sup>
- Technology has progressed since the 2015 Matzen, et al. paper, cited in the Sturgeon Action Plan
- NMFS had more funding to develop this tool, all effort is planned for implementation on trawl vessels (for possible sea turtle measures)
- Theoretically tech should also apply to gillnet gear, however no initial testing has occurred
  - Would need to figure out how to secure to gear, housing for logger, and how loggers handle longer soaks
  - Data collection frequency tradeoff with data quantity and storage issues
- Not viable to implement on this action timeline --> FMAT/PDT research recommendation

# Joint Monkfish Dogfish Committee Discussion

- Questions and concerns with gear restrictions and time/area closures:
  - Shifting effort to other areas
  - Unclear how sturgeon interactions would be reduced (especially short closures)
  - Unclear if low-profile gear is ready for commercial use
  - How, when, and where measures would be applied – need to clarify alternatives
  - Impacts to markets (mostly export species)
  - Desire to have additional AP input on these measures before final action (beyond AP input provided in May to include short closure options, for example)

## Questions asked of GARFO:

- Which data were used to prompt reinitiation of BiOp?
- Specific guidance on magnitude of reduction in sturgeon interactions needed?
- Will this Council action be used for basis of new BiOp?

Measure / tool	Joint Committee Input	Enforcement Input <span style="float: right;">Cont.</span>
<b>Soak time restrictions (dogfish)</b>	<ul style="list-style-type: none"> <li>• Sunrise to sunset provision more substantial impact in winter</li> <li>• Impact varies by region</li> <li>• Want more AP input</li> <li>• VMS likely needed for enforcing soak times greater than 24 hr</li> <li>• Want to avoid immediately resetting gear – does not mitigate bycatch overall</li> <li>• Concerned about flexibility and safety concerns</li> </ul>	<ul style="list-style-type: none"> <li>• Could consider sunrise to sunset provision or 6am to 6pm soak time limit for non-VMS fisheries               <ul style="list-style-type: none"> <li>→ Not overly different options</li> <li>→ Do not require VMS to enforce</li> </ul> </li> <li>• Could be boarding officer-specific if folks doing best to comply with restriction</li> </ul>
<b>Short closures</b>	<ul style="list-style-type: none"> <li>• Unclear how sturgeon interactions would be reduced</li> <li>• Need to evaluate finer scale data &amp; sturgeon migration patterns/time</li> <li>• Concerned about shutting down fisheries</li> <li>• Need to consider timing of closures</li> </ul>	<ul style="list-style-type: none"> <li>• Enforce any closures / gear requirements by hauling gear to confirm mesh size or via gear marking</li> <li>• Simpler closure polygon easier to enforce</li> <li>• Monitor the same way as other closures</li> <li>• Coast Guard only issues violations based on visual siting (e.g., not by VMS tracks)</li> </ul>

# Action Objectives

- Develop measures that minimize impacts to Atlantic Sturgeon in the monkfish and spiny dogfish gillnet fisheries in federal waters.
- Measures must involve only a minor change that do not alter the basic design, location, scope, duration, or timing of the federal large mesh gillnet fisheries ( $\geq 7''$ ) considered in the Biological Opinion.

# Input from Joint AP re-Monkfish

## (11 advisors) - May

**New Jersey:** measures apply inshore within 3-6 miles in statistical area 612, 614, 615 in the spring given sturgeon are more nearshore (i.e., change Options B and D to apply more inshore vs stat areas)

- Prefer no measures on low-profile gillnet gear – focus on shorter closure or soak time of 48 – 72 hours, with a preference for 72 hours
- Do not prefer measures by stat areas given they're too large

**Southern New England:** Delete options for SNE (Options E and F) given the low interactions (not a hotspot relative to further south)

### **Overarching comments:**

- Need better data and science regarding sturgeon and monkfish assessments and state vs. federal sturgeon interactions
- Generally thought the interactions were a state issue vs federal
- Overall decline in gillnet effort so expect a decline in sturgeon interactions



# Input from Joint AP re-Dogfish

(8 advisors) - May

**New Jersey:** No overnight soak times (sub-option 1) seemed reasonable for some fishermen given most are day-fishing (i.e., would apply to Options A and B)

**Delaware/Maryland/Virginia:** preference for 48 – 72-hour soak time (i.e., new options for 48 and 72-hour soak duration); not viable to have no overnight soak time restrictions for this area

## Overarching comments/questions:

- Consider smaller areas than by stat area for spring for NJ (Option B) and Delmarva (Option D) - potentially 3-6 miles or 3-9 miles from shore
- Unclear if measures apply to only  $\geq 7$ " mesh or if measures are being considered for smaller mesh
- Need better data and science regarding sturgeon assessments and state vs. federal sturgeon interactions
- Overall decline in gillnet effort and dogfish quotas so expect a decline in sturgeon interactions

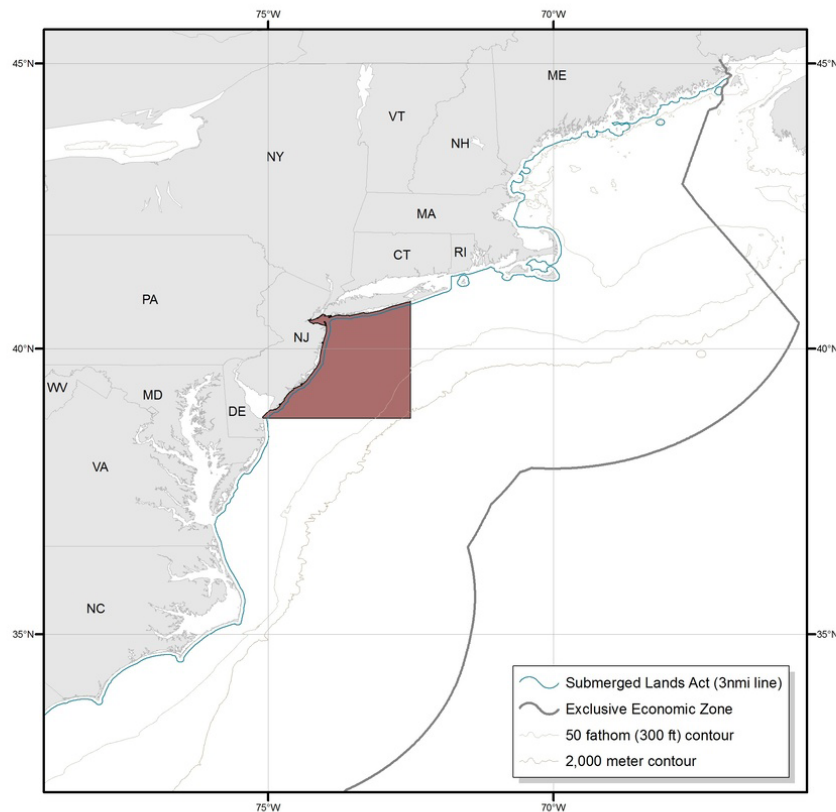
# Harbor Porpoise Take Reduction Plan

Shapefile: Waters\_Off\_New\_Jersey\_Management\_Area.shp

Posted to Website: 9/15/2014

This shapefile includes the NMFS Regulated Areas in Northeast and Mid-Atlantic Waters depicted below. The dataset can be downloaded from the GARFO GIS website at <http://www.greateratlantic.fisheries.noaa.gov/gis>.

 Waters Off New Jersey Management Area



Large Mesh Gillnet Gear (7-18 inches)	Apr 1-20	Closed (No Large Mesh Gillnets)
Large Mesh Gillnet Gear (7-18 inches)	Jan. 1-Mar. 31, Apr 21-30	Gear Modification Requirements
Small Mesh Gillnet Gear (>5 inches - <7 inches)	Jan. 1-Apr 30	Gear Modification Requirements