



Mid-Atlantic Fishery Management Council

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Sturgeon Bycatch Framework Update

December 2023 Council Meeting

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On December 4, 2023, NMFS' Greater Atlantic Regional Fisheries Office (GARFO) Protected Resources Division sent a document for consideration by the Sturgeon Bycatch Framework's Joint FMAT/PDT¹. The GARFO document, attached below, includes updated take estimates, potential reduction targets, and several sturgeon bycatch reduction Questions and Answers (Q&As). Next steps and related challenges are discussed below.

Updated Sturgeon Take Estimates

Gillnet bycatch estimates for the years (2011-2015) that were used to establish the authorized takes in the Incidental Take Statement (ITS) of the 2021 Biological Opinion have been revised higher. GARFO's new Catch Accounting and Monitoring System, "CAMS" is likely capturing some catch/effort data that was missed in previous analysis of Vessel Trip Reports (VTRs).

"Recent" bycatch estimates exceeded both the existing ITS' authorized takes and the higher revisions to the years used to develop the ITS. "Recent" is defined as an average of 2016, 2017, 2018, 2019, and 2021 because of data issues associated with 2020 and 2022. Discussions involving updates with 2022 data are ongoing. The results of those discussions could change our understanding of how much the ITS' take allowance has recently been exceeded.

Potential Reduction Targets and Q&As

GARFO's document suggests that the Councils should now consider additional measures (more impactful and beyond those currently in the range of alternatives). The resulting bycatch reductions would then be considered during the re-initiated consultation process triggered by exceeding the ITS take allowance. Initial GARFO calculations indicate that a 68% reduction in sturgeon takes is now required. The Q&As in the GARFO document provide additional input on the types of measures that could reduce sturgeon bycatch to the ITS level.

Next Steps

The Joint FMAT/PDT is scheduling meetings in December to consider next steps. It's not clear how measures that reduce the take by 68%, and the associated fishery impacts, would align with existing authorities for this action². However, unless the re-initiated consultation results in a substantially higher ITS authorized take number, NMFS or the Councils may need to consider follow-up actions

¹ Joint FMAT/PDT = Fishery Management Action Team/Plan Development Team

² Authorities: A) The 2021 Biological Opinion's requirement to reduce sturgeon bycatch by 2024 to an unspecified degree but in a manner that limits fishery impacts to minor changes, and B) National Standard 9's obligation to minimize all bycatch/bycatch mortality to the extent practicable.

if the Councils have not sufficiently reduced sturgeon bycatch via this current framework action. There are several specific analytical and timeline challenges to consider:

Analytical Challenges

Due to NMFS staff workload issues, the Joint FMAT/PDT is just beginning to evaluate how to estimate the impacts on sturgeon bycatch for the Councils' previously adopted range of measures. The 2017 Sturgeon Assessment concluded that simple approaches to sturgeon bycatch estimation are insufficient due to the heterogeneity of sturgeon encounters, and developed the accepted, peer-reviewed model used to generate the current estimates³. However, it is not clear if NMFS staff will be able to use/adapt the model to predict changes in sturgeon catch within the planned timeline. This constraint may force the Joint FMAT/PDT to consider simpler, ad-hoc impact analysis methods. Given the 2017 Sturgeon Assessment's findings, Council staff requested that GARFO confirm with the NMFS Northeast Fisheries Science Center that such simpler methods are sufficiently scientifically robust.

Timeline Challenges

Once the Joint FMAT/PDT develops a consensus on analytical approaches, the original intent was to apply those analyses to the range of measures approved by the Councils in 2023. The approved range of alternatives includes management measures such as time/area closures, gear modifications, and soak time restrictions. The Councils granted the Joint FMAT/PDT considerable flexibility to develop a range of options for both the monkfish and spiny dogfish fisheries. The goal was to create alternatives that reduce sturgeon bycatch (no specified amount) by 2024 in a manner that limits fishery impacts to minor changes, per the 2021 Biological Opinion. GARFO's document calls into question whether this goal is still appropriate, but changing the goal (and intent of alternatives) would likely hinder taking final action by April 2024 as planned⁴. To prepare for Advisory Panel and Committee meetings in late February 2024 and mid-March 2024 respectively, all analyses need to be complete and documented by February 14, 2024 (41 working days after the December 2023 Mid-Atlantic Fishery Management Council Meeting). Given delays to date, meeting this timeline with even the current goal and alternative range will be challenging.

Conclusion

The new GARFO document adds considerable uncertainty to the Sturgeon Bycatch Framework's alternatives and timeline. Council staff will provide updates as more information becomes available.

³ ASMFC 2017, available at <https://asmfc.org/species/atlantic-sturgeon>.

⁴ GARFO indicated measures must be implemented during 2024 to meet the 2021 Biological Opinion's requirements.

Take Reduction Recommendations for Atlantic Sturgeon in Federal Gillnet Fisheries

Introduction

Given the new information on the estimated bycatch of Atlantic sturgeon in fisheries using gillnet gear, we are providing this document to assist with the development of measures to reduce take. Our recommendations for percentage reductions aim to achieve a take level that previously did not result in jeopardy, which will minimize the likelihood of additional reductions needed in the future.

Background

As we updated you earlier this year, new estimates show that the bycatch of Atlantic sturgeon in gillnet gear exceeds the level exempted in the Incidental Take Statement (ITS) of the 2021 Batched Fisheries Biological Opinion. We have reinitiated consultation as required by the Endangered Species Act (ESA) on eight Federal Fishery Management Plans (FMPs).¹

Until we complete the analysis for the reinitiated Opinion and consider the best available information for the new consultation, we do not know whether the long-term operation of federal waters fisheries will jeopardize Atlantic sturgeon. To the extent possible, we want to ensure that additional reductions are not necessary. Therefore, we have developed various reduction scenarios (and an attached supplementary document providing example measures) that could help reduce this possibility. As described in more detail below, measures that specifically target reducing lethal take (e.g., soak durations, low profile gillnets) rather than total take (e.g., time/area closures) may reduce impacts to the fisheries. Further, efforts aimed at decreasing the lethal bycatch of Atlantic sturgeon within the Delaware River population may also alleviate the need for broader measures, considering the heightened concern for this particular population.

The new information for the estimated take of Atlantic sturgeon was initially provided in Boucher and Curti (2023) and subsequently updated by Hocking (2023). The estimate by Hocking (2023), exceeds that in Boucher and Curti (2023) by, on average annually, 220 (45 lethal) takes in state and federal waters. Hocking (2023) used the same methods as Boucher and Curti (2023) to provide an updated estimate based on the Catch Accounting and Monitoring System (CAMS)² and also evaluated the proportion of take occurring in federal and state waters.

¹ The eight Federal FMPs considered in the 2021 Opinion include: (1) Atlantic Bluefish; (2) Atlantic Deep-sea Red Crab; (3) Mackerel, Squid, and Butterfish; (4) Monkfish; (5) Northeast Multispecies; (6) Northeast Skate Complex; (7) Spiny Dogfish; and (8) Summer Flounder, Scup, and Black Sea Bass.

² The VESLOG data was the standard VTR database used by the NEFSC when the analysis was conducted in fall 2022. Since then, the CAMS database was brought online. The CAMS database is used by both the NEFSC and GARFO and is considered the best available source of VTR data by both APSD and the NEFSC. This change resulted in a higher estimate of bycatch in state and federal waters than was estimated in Boucher and Curti (2023).

Because Hocking (2023) represents the most up-to-date information, we use it below to calculate the level of reductions in state and federal waters.

Table 1: Estimated take of Atlantic sturgeon of U.S. origin in gillnet fisheries.

	Waters	Years	Take Estimate (Mortalities)	Increase over ITS
2021 Biological Opinion	State and Federal	2011-2015	622 (124)	NA
Hocking (2023)	State and Federal	2016-2019, 2021	1,335 (369)	713 (245)
Hocking (2023)	Federal	2016-2019, 2021	807 (227)	NA

Reduction Targets

As stated above, until we complete the analysis for the reinitiated Opinion, we will not be able to say whether the level of take occurring in federal waters fisheries is jeopardizing Atlantic sturgeon. The full analysis on the action will be considered in the context of the environmental baseline, status of the species, and cumulative effects, all of which regularly change as a result of other, ongoing actions that also impact Atlantic sturgeon (e.g., port development and offshore wind projects). Because we know that: (1) Gillnet fisheries are one of the primary threats to this listed species; and (2) a significant proportion (~60 percent from 2016-2022) of gillnet takes reported on the VTR are occurring in federal waters, we explored several metrics which could inform the level of reduction needed to help mitigate concerns about the take of Atlantic sturgeon in these fisheries.

At this time, we do not have the necessary information needed to identify a specific threshold at which take levels could lead to jeopardy. However, given that the level of take analyzed in the 2021 Opinion was not likely to result in jeopardy, we believe that reducing take to those levels (which considered take in both state and federal waters) provides a guideline by which to develop measures. Thus, our approach to identifying potential metrics is anchored to the 2021 Opinion. Within this approach, there are different metrics that could be applied. These include metrics that are tied to reducing the take level and/or reducing the mortality rate. We used the most recent bycatch estimate in Hocking (2023) and evaluated the level needed in federal waters based on the proportion of gillnet takes that occur in those waters. Commensurate measures would be needed in state waters to reach the levels specified in the 2021 Opinion.

First, we considered a reduction in the total (lethal and non-lethal) take level in the federal fisheries to reach the total take level considered in the 2021 Opinion. This resulted in a reduction of 54 percent. However, it does not address lethal take directly. While a 54 percent reduction would reduce the total take to the level considered in the 2021 Opinion, it does not take into account the increase in mortality rate observed in recent years. In the 2021 Opinion, we considered a 20 percent mortality rate based on the best available information at that time.

More recently, Hocking (2023) estimated the mortality rate from 2016-2022 to be 29 percent. When this increase in mortality rate is considered, a 68 percent reduction (Approach 1) in total take is needed to achieve the mortality estimates considered in the 2021 Opinion.

Approach 2 considers implementing measures specifically designed to reduce the number of lethal takes, which would reduce the mortality rate. Reducing mortality is one of the primary focuses in recovering sturgeon populations. This may alleviate the need for broader measures that may need to be implemented to reduce total take under Approach 1. To achieve this, a 67 percent reduction in lethal bycatch is needed.

Approach 3 combines the approaches above, considering both a reduction in the total take and in the mortality rate to the levels that were considered in the 2021 Opinion. Under this approach, reducing total take by 54 percent and reducing the mortality rate from 29 percent to 20 percent (31 percent reduction (i.e., a 9 percent decrease in the percentage point)) will achieve the levels that were considered in the 2021 Opinion.

Table 2: Estimated take of Atlantic sturgeon of U.S. origin in gillnet fisheries operating in federal waters and reductions needed to achieve target.

	2023 Estimate¹	2021 Estimate²	Percent Reduction	Considerations
1. Reduce overall take level in the 2021 Opinion but consider the change in mortality rate	807	261 (=75.6/0.29)	68	Reduces the total take to 261 which results in the level of lethal take analyzed in the 2021 Opinion when the updated mortality rate is applied.
2. Reduce lethal take to the level in the 2021 Opinion	226.7	75.6 (=0.61*124) ³	67	Targeted at reducing the lethal take which will have a greater impact on the population; considers the increase in mortality rate.
3. Combined approach (reduce total take and reduce the mortality rate)	807	373.2 (=0.60*622) ⁴	54	Targeted at reducing the total take while reducing the mortality rate. Results in a lower total take reduction than what would be considered under Approach 2, potentially reducing the burden to the industry.
	29% mortality	20% mortality	31 (9 percentage points)	

¹ Based on the information on the percent of bycatch in federal waters in Hocking (2023)

² Based on the ITS in the 2021 Opinion, adjusted to federal waters only using data in Hocking (2023)

³ Applies the proportion of lethal take in federal waters (61 percent from 2016-2022) from Hocking (2023) to ITS

⁴ Applies the proportion of take in federal waters (60 percent from 2016-2022) from Hocking (2023) to the ITS

Conclusion

Rather than provide a single target, we have provided a range that we hope informs you of the magnitude of reduction in bycatch that could help to minimize the likelihood that further reductions will be needed once we complete the new Opinion.

We look forward to continuing our work together to address this issue and to identify measures that are feasible to implement to reduce Atlantic sturgeon bycatch in the federal fisheries.

Questions and Answers

Do we need to reach these reductions in order to meet the requirement of the RPM in the 2021 Opinion?

No, the requirement under the RPM in the 2021 Opinion remains the same. The RPM in the 2021 Opinion requires that takes be reduced by 2024. To meet this requirement, we need to continue to move forward on the current framework actions.

However, the increase in takes has raised significant concerns about the impacts of federal gillnet fisheries on Atlantic sturgeon. To minimize the likelihood of needing additional reductions in the future, we strongly encourage that you consider the recent increase in takes and the significance of the targets mentioned above as you develop measures to reduce Atlantic sturgeon bycatch in federal gillnet fisheries.

What type of measures would be most effective in recovering the populations?

The RPM of the 2021 Opinion specifically speaks to reducing bycatch rather than reducing bycatch mortality. However, as previously mentioned, reducing mortality is one of the primary focuses in recovering endangered populations and the most recent bycatch estimates also indicate that Atlantic sturgeon mortality in gillnet gear has increased. The types of measures that could be taken are described in the Sturgeon Action Plan and include measures to reduce lethal take and total take. We recognize that some of these are outside of the range of alternatives approved by both Councils during meetings this fall. However, given the level of reduction recommended, we wanted to acknowledge the range of approaches that could address sturgeon bycatch.

Measures that could reduce lethal take (thereby reducing the mortality rate) include:

Decreased soak times could reduce mortality by hauling gear more frequently and being able to remove live sturgeon from the gear even if the gear is immediately reset. Although enforcement may be a challenge, and total take may not be reduced, this measure could be revisited to evaluate reductions in mortality. Further, this measure could be less burdensome on the fisheries than measures designed to reduce total take (e.g., time/area closures).

Low profile gillnets are a gear modification, involving a combination of modifications (e.g., number and spacing of the tie-downs, overall height of the net) that have shown some promise for reducing bycatch of Atlantic sturgeon while still allowing catch of the targeted species. Although more research is needed to apply it broadly, the implementation of this measure could be considered in times and areas where it has been shown or has the potential to be effective in the fisheries.

Closures in “hot-spot” areas may reduce total and lethal take by temporarily removing gillnet gear in locations and during periods where there is a known high abundance of sturgeon. Area closures should be implemented where any shift in fishing effort will have minimal overlap with sturgeon presence. The duration of the closures should also take into account the seasonal sturgeon migration patterns and the annual variability of environmental factors associated with migration (e.g., water temperature).

Are there particular areas where we should focus our efforts?

Additional stressors in the Delaware River and the low spawning numbers for this population have increased concerns about its ability to recover. The Delaware River population, along with the Hudson River population, are part of the New York Bight DPS. Measures that focus on areas where bycatch of the Delaware River population are located (i.e., mid-Atlantic) are more likely to help address these concerns.

How do we measure progress towards achieving the target?

Currently, we evaluate the bycatch of Atlantic sturgeon in the fisheries through annual monitoring of the observer and vessel trip report (VTR) data and through periodic bycatch estimates. While the observer and VTR data provide us some insight into what is happening in the fisheries, it is not sufficient to evaluate progress to the target. While the bycatch estimates could provide a measure of progress, mitigation measures would need to be in place for a number of years before we could assess them with a bycatch estimate.

We currently do not have a tool like the right whale decision support tool to assess relative risk reductions for sturgeon from particular measures. It is possible that a co-occurrence or decision support tool model could be developed, and we look forward to working with Council staff to develop an appropriate approach.

Are you working with the states to reduce bycatch in state waters?

We recently completed a new analysis which indicates that approximately 60 percent of the Atlantic sturgeon total bycatch and bycatch mortality since 2016 is occurring in federal waters. To reach the level of take analyzed in the 2021 Opinion, take would need to be reduced in both state and federal waters. Above, we use the state-federal proportions in Hocking (2023) to apportion the take in the ITS between state and federal waters. The reductions above, therefore, are based on federal waters only. While the new Opinion will evaluate the effects of the federal fisheries on Atlantic sturgeon, this is considered in the context of the environmental baseline, status of the species, and cumulative effects. Takes of Atlantic sturgeon in state waters fisheries and from other activities are considered in the environmental baseline. Commensurate measures are needed in state waters to reduce take in the combined state and federal waters fisheries that was analyzed in the 2021 Opinion. We will be reaching out to the Commission and our state partners to discuss this further.