



Mid-Atlantic Fishery Management Council

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Ecosystem Approach to Fisheries Management (EAFM) Updates April 2021 Council Meeting

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This briefing document provides an update on the developments and accomplishments of projects that continue to advance and implement the Mid-Atlantic Fishery Management Council's (Council) Ecosystem Approach to Fisheries Management (EAFM) Guidance Document, most notably the summer flounder management strategy evaluation (MSE) and a climate driven short-term projections project. The Council has been briefed on both projects in the past, with the latest update at the October 2020 Council meeting¹. Here we provide some short background information but focus on the activities that have taken place since the last update and on future work and timelines. For the summer flounder MSE project, it is anticipated that this will be the last general update to the Council and the next time this topic comes before the Council will be at a joint meeting with the Atlantic States Marine Fisheries Commission Summer Flounder, Scup, and Black Sea Bass Board for specific feedback and direction as the MSE progresses (more information in memo).

In addition, during the April 2021 meeting, the Council will receive the 2021 EAFM Risk Assessment update that is included as part of the Mid-Atlantic State of the Ecosystem agenda item (materials behind Tab 6). The updated risk assessment allows the Council to re-evaluate risk on an annual basis, track changes in risk across managed species and sectors, and identify possible management and science priorities.

Summer Flounder Management Strategy Evaluation:

Background

Analyzing management procedures through a comprehensive management strategy evaluation (MSE) is the third step in the Council's EAFM structured framework process (Figure 1). In December 2019, the Council initiated the development of an MSE following the completion of a conceptual model process which helped identify key management questions to address. Using the results of the conceptual model, the Council agreed to conduct an MSE that will evaluate different management strategies designed to minimize discards in the recreational summer flounder fishery.

¹ See the October 2020 staff memo for additional information on last EAFM update found at:

https://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/5f6e4559be67f1454e7c771f/1601062234474/Tab06_EAFM+Update_10_2020.pdf

The objectives of this MSE are to (1) evaluate the biological and economic benefits of minimizing discards (dead and alive) and converting discards into landings in the recreational summer flounder fishery, and (2) identify management strategies to effectively realize these benefits. Utilizing an MSE to help evaluate these broad objectives will provide the Council an opportunity to balance different management strategies and their associated biological, social, and economic trade-offs that best address their management objectives within an ecosystem context. This MSE also provides a unique opportunity to align the EAFM process and the Council’s typical recreational management process.

Because the Council jointly manages summer flounder with the Atlantic States Marine Fisheries Commission (ASMFC), any management outcomes and alternatives developed as a result of this project will require a joint decision. Therefore, while the MSE is a Council led effort, the MSE process will also require extensive involvement and engagement of the ASMFC Summer Flounder, Scup, and Black Sea Bass Board (Board), staff, and stakeholders.



Figure 1. The Mid-Atlantic Fishery Management Council’s EAFM structured decision framework to incorporate ecosystem considerations into management (from Gaichas et al. 2016).

A critical component of MSE development is an inclusive stakeholder process. Stakeholder engagement will be particularly important for this project since the MSE process is relatively new to the Council and Board and there has been mixed reaction to the use and success of MSEs in other regions. In an effort to solicit as much stakeholder input for this project as feasible, the Council is planning an extensive outreach and engagement approach (Figure 2, see additional details on these activities in section below). Stakeholders will help the Council and Board identify clearly defined objectives, performance metrics, and management strategies to test as part of the MSE.

Additional details about the summer flounder MSE project, including more information about the EAFM structured framework, can be found at a recently developed webpage devoted to the project: <https://www.mafmc.org/actions/summer-flounder-mse>. This page also includes information about upcoming meetings and activities, technical work group membership and work products.

Stakeholder Engagement

Advisory Panel Kick-Off Webinar and Mock Workshop

In September 2020, a kick-off webinar and mock MSE workshop was held with the Council’s Ecosystem and Ocean Planning Advisory Panel (AP) and the Council and ASMFC Summer Flounder, Scup, and Black Sea Bass APs². This webinar introduced AP members to the MSE process and simulated a mock MSE workshop using an example fishery with the goal of familiarizing participants about MSE goals and expectations to help provide for more productive stakeholder workshops in the future.

The workshop was well attended (55 participants) with a diverse mix of participants and AP members that provided a lot of good insights during the workshop. Workshop attendees were

² The agenda, all meeting materials, presentations, and webinar recording for the September 22nd AP meeting can be found at: <https://www.mafmc.org/council-events/2020/eop-sfsbsb-ap-meeting-sept22>

also provided a survey following the workshop to obtain insights on their perspectives regarding workshop materials, structure, format, and overall value. In general, the response from workshop participants was very positive and most indicated they learned something new or, by the end of the workshop, understood the value of conducting an MSE. Participants also provided feedback on areas of the workshop that did not work as well and this input was considered by the technical work group to help plan and improve future stakeholder workshops.

The follow-up survey also included a solicitation of interest to serve on a core stakeholder group that would participate in future workshops specific to the summer flounder recreational discards MSE project (more details on the core stakeholder group can be found in sub-section below). As noted above, the survey was sent to all workshop participants and it was also sent to all AP members to help ensure a broad and diverse group of potential participants. There was high interest from across the AP in participating on the core stakeholder group with over 95% of the survey respondents expressing interest. The technical work group had initially considered using the AP membership to populate the core stakeholder group; however, after further discussion and consideration, it was determined that a broader core stakeholder group, that includes AP members, would be more appropriate. This approach would help ensure core group members represent and can provide insight from key stakeholder groups. Therefore, the technical work group proposed additional solicitation opportunities be provided for interested stakeholders.

Stakeholder Scoping Feedback

The technical work group also proposed additional stakeholder scoping and outreach initiatives, beyond AP membership, to obtain as much input from as many interested individuals as possible (Figure 2). The technical work group felt that investing in more outreach up front and early will be more beneficial to the entire process, lead to more productive core stakeholder group workshops, and greater buy-in by the public in the process and outcomes. Each initiative could then build upon each other where the input and results from one activity would then be used to help inform and focus the discussion and input in later activities.

The first of these additional initiatives was an online scoping feedback form³. This method was an efficient, simple, and effective way to collect information from any interested stakeholder. The scoping form solicited input on management objectives, performance metrics, and identifying uncertainties associated with recreational summer flounder discards. It also included a solicitation for the core stakeholder group.

From January 11 – 25, 2021, the Council solicited public input regarding current and future management of the recreational summer flounder fishery through an online scoping form. The scoping form contained a number of mandatory, close-ended questions (i.e., participants provided options to choose) and optional, open-ended questions covering a variety of topics such as recreational discard concerns and fishery implications, management objectives and strategies, data sources, and uncertainties. The

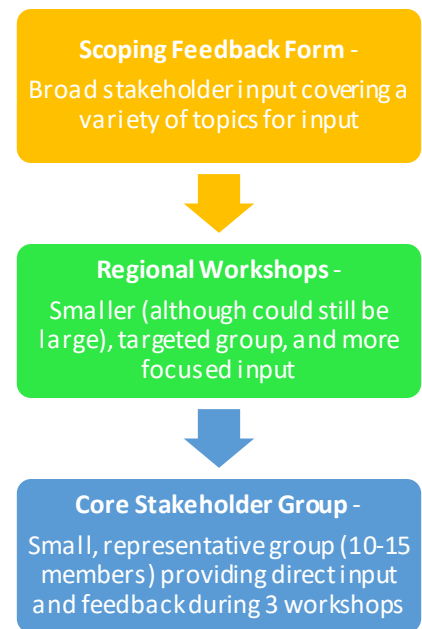


Figure 2. Process and approach for stakeholder engagement and input for EAFM summer flounder MSE project.

³ For more information about the stakeholder scoping feedback, including the scoping form with all questions, please see: <https://www.mafmc.org/newsfeed/2021/summer-flounder-mse-comment-opportunity>

feedback form also requested input regarding the core stakeholder group and, if a respondent was interested, additional questions regarding their fishing background were included.

Response to the scoping feedback was extremely high, with a total of 818 individual responses received and at least one response from each state from Massachusetts through North Carolina, the entire summer flounder management unit. Response was also very high to the optional, open-ended questions with as many as 56% of all respondents providing detailed input to a particular question. In addition, 220 respondents recommended a peer for consideration as a core stakeholder member and over 31% of all respondents indicated they were interested in serving as a core stakeholder member.

The technical work group then worked to analyze and summarize all of the input received in order to find common themes, evaluate regional similarities/differences, identify possible priorities, and the potential application of stakeholder suggestions and ideas within the scope of the MSE. The initial analysis and results will be used to help structure and focus feedback and input during the regional workshops (more information in sub-section below). The work group will continue to evaluate and incorporate the scoping feedback as the MSE progresses and to help identify well-defined objectives and strategies.

A general summary of the top ranked concerns, management objectives, and strategies across all respondents and across regions (MA-CT, NY-DE, and MD-NC) are presented here. Additional background information, analysis and approaches, and findings from the stakeholder scoping form can be found in the supplemental document behind Tab 1 of briefing book, titled “MSE Stakeholder Scoping – Summary of Stakeholder Feedback and Regional Evaluation”.

Respondents were first asked about their perceived discard concerns to understand what the current issues are and what concerns are driving a desire to improve management of recreational discards in the summer flounder fishery. Respondents were asked to rank their concern from “not concerned” to “major concern” for 16 specific discard related impacts in the recreational summer flounder fishery. Table 1 identifies the top 5 concerns ranked by all respondents and by region as a “major concern”.

Table 1. Top five discard concerns identified by region and for all respondents. Same concern is noted with the same color across groupings.

Rank	All Respondents	MA-CT	NY-DE	MD-NC
1	High discard rates and mortality of females	High discard rates and mortality of females	High discard rates and mortality of females	Ability to retain fish
2	Ability to retain fish	Lack of robust and trusted data	Lack of robust and trusted data	Angler satisfaction
3	Lack of fairness/inequitable access among states	Lack of fairness/inequitable access among states	Lack of fairness/inequitable access among states	High discard rates and mortality of females
4	Future management implications to address discards	Proper handling techniques	Management response to stakeholder input	Management response to stakeholder input
5	Lack of robust and trusted data	Three tied for 5th	Future management implications to address discards	Two tied for 5th

The next set of questions asked respondents about management objectives to understand what a successful recreational fishery would look like that minimized discards and discard mortality. Table 2 identifies the top 5 management objectives identified by all respondents and by region.

Table 2. Top five management objectives identified by region and for all respondents. Same concern is noted with the same color across the groupings.

Rank	All Respondents	MA-CT	NY-DE	MD-NC
1	Maximize chances a trip produces a legal sized fish	Minimize risk of overfishing and stock becoming overfished	Maximize chances a trip produces a legal sized fish	Improve quality of recreational fishing experience
2	Improve quality of recreational fishing experience	Minimize the mortality of released summer flounder	Minimize the mortality of released summer flounder	Minimize negative biological impacts to the summer flounder stock
3	Minimize the mortality of released summer flounder	Minimize negative biological impacts to the summer flounder stock	Minimize the differences in regulations between neighboring states	Maximize recreational fishing participation in all sectors
4	Minimize the differences in regulations between neighboring states	Maximize chances a trip produces a legal sized fish	Improve quality of recreational fishing experience	Minimize risk of overfishing and stock becoming overfished
5	Minimize risk of overfishing and stock becoming overfished	Improve quality of recreational fishing experience	Reduce the harvest of female summer flounder	Minimize the mortality of released summer flounder

Finally, respondents were then asked about strategies that could be implemented to successfully achieve those objectives. Strategies identified here would consist of potential management actions or alternatives (e.g., slot limits, gear requirements, reporting requirements etc.) that should be evaluated in the MSE to determine if management objectives were achieved. Table 3 identifies the top 5 strategies by all respondents and all regions.

Table 3. Top five strategies identified by region and for all respondents (Question #6). Same concern is noted with the same color across the groupings.

Rank	All Respondents	MA-CT	NY-DE	MD-NC
1	Best practice recommendations to minimize recreational discard mortality	Best practice recommendations to minimize recreational discard mortality	Implement lower size limits	Expand the recreational season
2	Establish slot size limits	Create an outreach program to improve angler education on proper discarding techniques	Establish slot size limits	Establish slot size limits
3	Expand the recreational season	Research to validate or update the current 10% recreational discard mortality rate	Research to validate or update the current 10% recreational discard mortality rate	Research to validate or update the current 10% recreational discard mortality rate
4	Research to validate or update the current 10% recreational discard mortality rate	Expand use of electronic reporting and volunteer angler surveys to report discards	Best practice recommendations to minimize recreational discard mortality	Best practice recommendations to minimize recreational discard mortality
5	Implement lower size limits	Adjust regulations dynamically through time based on the status of the fishery	Expand the recreational season	Two tied for 5th

Regional Stakeholder Workshops

The second additional stakeholder engagement initiative identified by the technical work group was a series of three regional MSE workshops. Similar to the online scoping feedback form, these regional workshops are intended to allow a broad group of stakeholders bring ideas into the process early on and before any analysis begins or any decisions are made, but in a more structured and interactive approach. Workshop participants will provide input on topics such as recreational discard concerns, possible management objectives, and performance metrics to achieve these objectives. The findings from the scoping feedback form will be used to help focus the discussion on these topics.

All regional workshops will be held virtually and begin with introductory presentations to familiarize participants with the Council's EAFM process, give a quick introduction to the MSE process and approach, and provide an overview of the regional results received through the scoping feedback. Everyone will then participate in both full group and smaller breakout sessions to allow for some focused discussion and feedback on each topic. Workshop participants will also be asked about their interest in potentially serving on the core stakeholder group or recommend someone for the group.

The three scheduled virtual regional workshops are as follows:

- **Massachusetts through Connecticut:** Monday, March 29th from 5:30 P.M. – 8:00 P.M.
- **New York through Delaware:** Wednesday, March 31st from 5:30 P.M. – 8:00 P.M.
- **Maryland through North Carolina:** Monday, April 5th from 5:30 P.M. – 8:00 P.M.

For additional workshop information, including the agenda and all meeting materials, see the workshop webpage at: <https://www.mafmc.org/workshop/summer-flounder-mse>.

MSE Core Stakeholder Group

As mentioned above and outlined in Figure 2, all the input received from these broad outreach activities will then feed into a series of more focused stakeholder workshops. For these workshops, a small core group of stakeholders (12-15 in total) representing the range of fishery perspectives will participate in a series of workshops to help the Council more efficiently and effectively progress through the MSE process. Core stakeholder group members will be asked to participate and attend all workshops, represent both their interests and those of the fishery, be open minded and collaborative, and support the potential outcomes of the MSE process.

Through the AP kick-off webinar and the scoping feedback form, 282 individuals have already expressed interest in being considered for the core stakeholder group and an additional 185 individuals have been recommended by their peers. It is anticipated that additional individuals will express interest after the completion of the regional workshops. Given this level of interest and the limited number of spots available for the core stakeholder group, careful consideration will be needed to identify the right mix of representation, background, and experience.

To begin the process of narrowing down possible participants, the technical work group has already started evaluating the responses interested individuals provided to a series of core group questions. Once the regional workshops are complete and all interested individuals have submitted their background information, the technical work group will evaluate all information and make recommendations regarding core group participants. The technical work group plans to develop a document that outlines the process of collecting information, evaluating respondents, and identifying the criteria and tools used by work group to reach their core group

recommendations. This document, including the core group recommendations, will then be provided to the Council and Board for their review and approval. Once finalized, the document and names and affiliation/representation of the core group members will be posted the MSE webpage: <https://www.mafmc.org/actions/summer-flounder-mse>.

Next Steps and Anticipated Timeline

The proposed next steps and anticipated timeline remain very similar to what was presented to the Council in October. Once membership has been finalized, the technical work group and facilitator will begin planning and preparing to hold three core stakeholder group workshops for the project. These workshops would be spread out over the next 8-10 months. The first workshop, likely held in June, would solicit input and feedback on management objectives, performance metrics, and identifying uncertainties and unknowns. The second workshop would review initial model development and any preliminary results. The final workshop would review updated model development and preliminary “final” results.

After each core-group workshop, the Council’s EOP and Summer Flounder, Scup, and Black Sea Bass Committees, along with a sub-set of members from the Board will meet to review the stakeholder feedback and input provided during these workshops. This sub-group of managers will provide further direction and refinement for the technical work group to consider. This would then be followed by check-ins during joint meetings of the full Council and Board. It is anticipated these check-ins would occur in August and December 2021 (Table 4). This iterative process and regular check-ins will ensure the technical work group is receiving input from stakeholders and managers to make sure project goals, objectives, and expectations are being met (Figure 3).



Figure 3. Proposed process for stakeholder and management input for EAFM summer flounder MSE project.

While originally unplanned stakeholder engagement opportunities were added since the last update, they are not expected to result in any delays to the project. These additional opportunities should help streamline the first round of workshops and meetings and keep the remaining tasks on schedule. It is anticipated the final results and management alternatives will be presented to the Council and Board for consideration in April/May 2022. Any outcomes and decisions, depending on their scope, could potentially be implemented for the 2023 recreational season as the Council and Board begin specification and regulation review and development in August 2022. Table 4 below provides an updated overview of MSE tasks/activities and the associated timelines.

Table 4. Anticipated timeline of activities associated with completion of the EAFM summer flounder management strategy evaluation project.

Task/Activity	Timeframe (subject to change)
Finalize technical work group membership and initial meeting	May 2020
Kick-off webinar and mock workshop with Council and ASMFC advisory panels (https://www.mafmc.org/council-events/2020/eop-sfsbsb-ap-meeting-sept22)	September 2020
Stakeholder scoping feedback form (https://www.mafmc.org/newsfeed/2021/summer-flounder-mse-comment-opportunity)	January 2021
Regional MSE workshops (https://www.mafmc.org/newsfeed/2021/council-to-hold-virtual-summer-flounder-management-strategy-evaluation-mse-workshops)	March – April 2021
Finalize core stakeholder group participants; initial core stakeholder workshop and Committee/Board sub-group meeting to develop objectives/performance metrics/uncertainties; data synthesis, initial model development and linking existing models	May – August 2021
Simulation testing of management strategies; model refinement as necessary; deliver interim results at second stakeholder workshop and Committee/Board sub-group meeting	September – December 2021
Continue with MSE analysis; third stakeholder workshop and Committee/Board sub-group meeting to review draft final results; refine models and results, as needed	January 2022 – March 2022
Review final results; Council and ASMFC Board considers potential management alternatives and action to address recreational summer flounder discards	April/May 2022

Short-Term Projections Project:

Significant progress continues to be made on the collaborative project between the Council and Dr. Malin Pinsky and Dr. Alexa Fredston from Rutgers University. This research project, funded by the Lenfest Ocean Program, will test new methods and models to predict short-term (the next one to ten years) climate-induced movements of diverse species that better align with management timescales⁴. The four focal species to be evaluated as part of the project include spiny dogfish, *Illex* squid, summer flounder, and gray triggerfish.

Since the Council’s last update on the project in October 2020, there have been a number of advancements and activities associated with this project. The first set of dynamic range models that will be fit to the four focal species has been completed. These models include the following features and processes:

- Spatial population structure (one “patch” for each 1-degree latitude band)
- Dispersal between adjacent patches

⁴ Additional background information on this project can be found at: <https://www.lenfestocean.org/en/research-projects/predicting-near-term-fisheries-shifts-under-climate-change>

- Life stage structure (3 stages – small juveniles, large juveniles, adults)
- Temperature-dependent growth between life stages or temperature-dependent fecundity

Once the process model component of the forecast has been completed, the team will proceed with observation models of the four focal species. Development of observation models for spiny dogfish and summer flounder began in late 2020. The next steps are to fit the model to data using tailored observation models that take into account each species' unique data distribution over space and time in various survey datasets. The group anticipates having fitted models for each focal species by summer 2021.

The group is also working on, or planning, a number of different outreach components to the project. The first manuscript describing the model and methods, testing it on simulated data, and applying it to a small test case will be submitted to a peer-reviewed journal in April. In addition, abstracts have been submitted to the 2021 Ecological Society of America annual meeting and the Society for Industrial and Applied Mathematics annual meeting in order to present this work and get feedback on the project's theoretical aspects. Lastly, the group is planning a possible follow-up webinar in late summer/early fall with the Ecosystem and Ocean Planning (EOP) Committee and AP to provide an update and get feedback on the model development and preliminary results. Council staff will work with the project team and EOP leadership to determine an appropriate time and agenda for the webinar.



Summer Flounder Management Strategy Evaluation Stakeholder Scoping

Summary of Stakeholder Feedback and Regional Evaluation

March 2021

Background:

From January 11 – 25, 2021, the Mid-Atlantic Fishery Management Council (Council) collected stakeholder feedback regarding the current and future management of the recreational summer flounder fishery¹. Public input provided will help inform the development of a management strategy evaluation (MSE) which will evaluate different management strategies designed to minimize discards in the recreational summer flounder fishery. The results of the scoping feedback will be used by the Council, independent facilitators, and a technical work group to help guide model development and plan future stakeholder workshops.

The Council, along with several state and federal partners, notified stakeholders, permit holders, and interested parties about the scoping feedback form² using their available listserv contacts and advisory panel membership lists. A total of 818 individual responses were received with at least one response from each state from Massachusetts through North Carolina, the entire summer flounder management unit. Respondents' answers could be submitted anonymously, or they could provide their name and email address. In addition, the scoping form included questions regarding a respondent's interest in potential participation in future MSE stakeholder workshops. If a respondent expressed interest, they were asked a series of additional questions regarding their fishing background. These questions provided the opportunity to collect some basic demographic information such as state fished and stakeholder type.

The answers from this sub-set of respondents (285 individuals or approx. 35% of all respondents) were then pooled into regional groupings (MA-CT, NY-CT, and MD-NC) and analyzed to identify regional differences/similarities and common themes. In addition, regional responses were compared to the entire dataset (i.e., all 818 responses) to evaluate the overall representativeness of the regional information. A summary of the results of this analysis are provided below and focuses on information provided regarding summer flounder discard concerns, possible management objectives, and potential strategies to achieve these objectives.

¹ Link to the Mid-Atlantic Council's announcement on the MSE scoping feedback form: <https://www.mafmc.org/newsfeed/2021/summer-flounder-mse-comment-opportunity>

² See Appendix B for the entire stakeholder feedback form which includes all questions asked of stakeholders.

General Findings:

- Of the respondents that provided demographic information, over 60% were from New Jersey, followed by North Carolina (13%) and Massachusetts (10%) (Figure 1).
- Of the respondents that provided demographic information, recreational fishermen (private boat angler and shore angler) comprised nearly 84% of the response (Figure 2). This was followed by charter captain/owner (6.8%) and then the general public (3.2%).
- In general, the regional responses appear to be very reflective of the responses provided by all survey respondents (Figures 3, 5, and 8). The responses between the two groups are most similar for the discard concerns that were ranked as a “major concern” (Table 1); while only slightly less similar when identifying priority management objectives and strategies (Tables 4 and 5).
 - **Top discard concern:** High discard rates and discard mortality of larger female summer flounder and potential negative impacts to stock (both groups)
 - **Top management objective:** Maximize the chances a trip produces a legal sized summer flounder (both groups)
 - **Top strategy to achieve objective:** Provide best practice recommendations to minimize recreational discard mortality (all respondents); Establish slot size limits (regional respondents)
- In general, the NY-DE and MD-NC region responses were more similar than those from the MA-CT region (Figures 4, 6, 9). For example, the NY-DE and MD-NC tended to rank a greater number of discard concerns as “major concern” compared to the MA-CT region. However, there was a lot of similarities and common themes when evaluating only the top five concerns, management objectives, and strategies across all respondents and all regions (Tables 1, 2, and 3).
- Response to the open-ended questions was very high and, in many cases, stakeholders provided extensive feedback. However, evaluating and summarizing this information can be challenging. Fortunately, using different techniques (Appendix A, Figure 1a and b), it was possible to find broad categories and common themes across all responses (Appendix A, Tables 1 – 6).
 - For example, “Other discard concerns” identified by respondents were grouped into the following six broad categories, including one common theme associated with the category:
 - Commercial Fishery – smaller commercial size limit
 - Enforcement and Education – proper fish handling techniques
 - Regulations – implement lower size limits
 - Gear and Tackle – use of circle hooks
 - Management – more responsive management
 - Science and Data – estimated discard mortality rate is incorrect

Regional Demographics:

A total of 818 individuals completed the summer flounder scoping form. Respondents were asked if they would be interested in potentially serving on a core group of stakeholders that would participate in future focused MSE workshops. If a respondent was interested, they were asked to provide additional information about themselves, including their fishing experience and relevant demographic information. A sub-set of the total respondents, 285 individuals or 35% of all respondents, indicated they were interested in the core group and this information was used to evaluate scoping responses by state, region, and sector.

The majority of the respondents indicated they were from New Jersey, which represented just over 64% of all individual respondents (Figure 1). This was followed by North Carolina (13%), Massachusetts (9.9%), and New York (6%). In general, the states with the greater response tend to account for a higher proportion of summer flounder harvest and many of these states (e.g., New Jersey and Massachusetts) used their state email listserv to send targeted notification to their anglers about the scoping opportunity. However, it's unclear as to why the New Jersey response was significantly higher than other states.

When looking at response by stakeholder type, private boat anglers and shore anglers comprised nearly 84% of all respondents (53.6% and 30.4%, respectively) (Figure 2). This was followed by charter boat captain/owner (6.8%), the general public (3.2%), and then head boat captain/owner and scientist (both at 1.6%). This response by stakeholder category within the recreational sector contrasts with the typical feedback received for other Council public comment opportunities. Generally, the for-hire sector tends to provide most of the public input and shore-mode anglers tend to make up a small portion of the input. However, this response is more in line with the recent (2015-2019) breakdown of recreational summer flounder harvest where private boat and shore anglers comprise 94% of the harvest and the for-hire fleet comprises 6%. Lastly, given the focus on recreational discards, it's not surprising that respondents from the commercial sector made up a very small portion of the response.

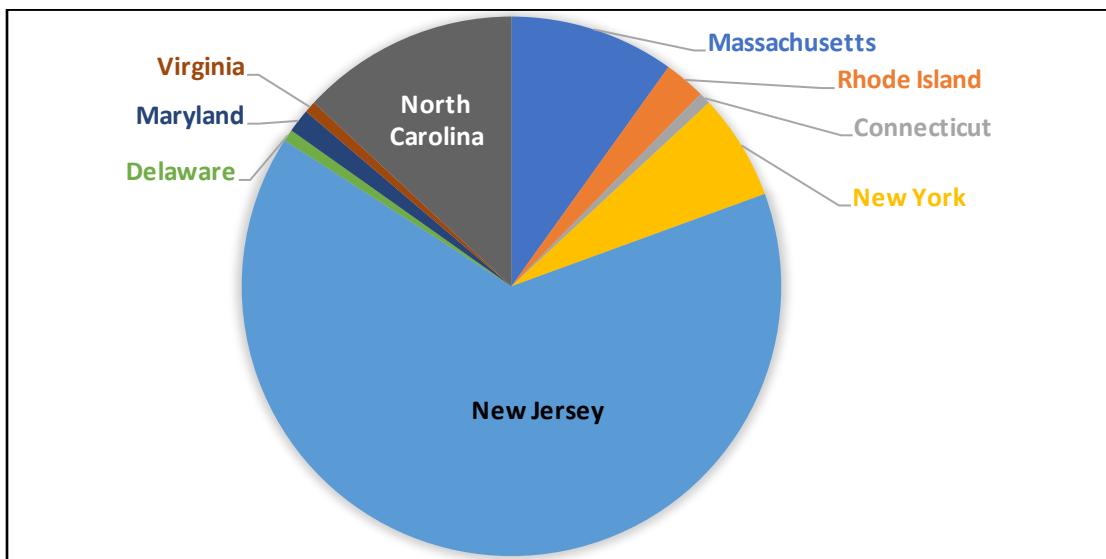


Figure 1. Breakdown of respondents by state that completed the summer flounder scoping questionnaire and answered questions regarding demographic information.

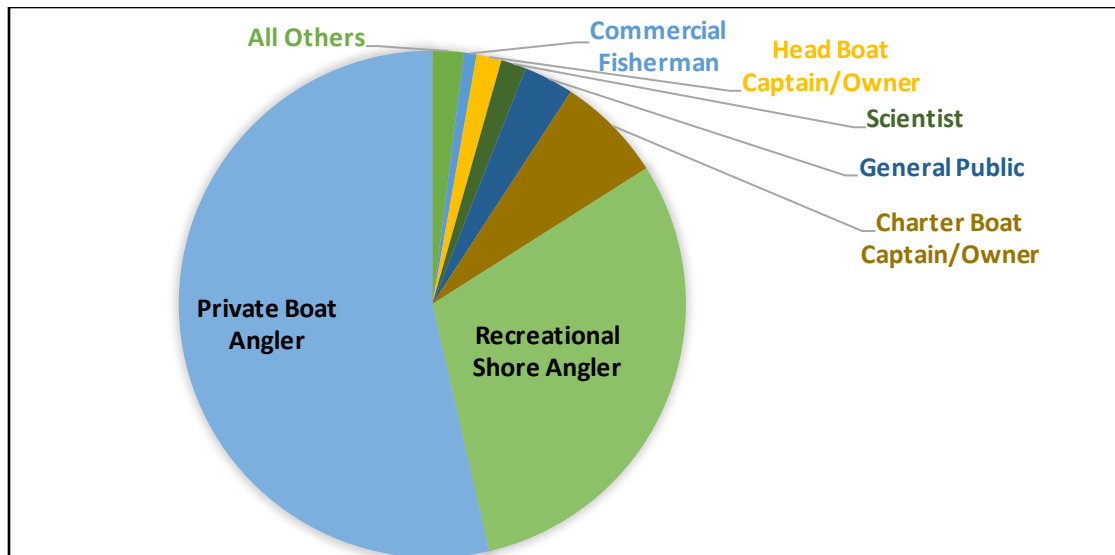


Figure 2. Breakdown of respondents by stakeholder type that completed the summer flounder scoping questionnaire and answered questions regarding demographic information.

Discard Concerns:

The first part of the scoping form was to obtain feedback on the Council’s identified “problem definition” to be addressed through the MSE – *management approaches to account for the effects of discarding on the recreational summer flounder fishery*. Respondents were asked a series of questions regarding their perceived discard concerns to understand what the current issues are and what concerns are driving a desire to improve management of recreational discards in the summer flounder fishery.

Question #1 asked respondents to rank their concern from “not concerned” to “major concern” for 16 specific discard related impacts in the recreational summer flounder fishery. The proportion of respondents that ranked a specific discard impact as a “major concern” was evaluated across all respondents and across regions (state specific responses were pooled into three regions, MA-CT, NY-DE, and MD-NC) to identify those impacts respondents’ thought were of greatest concern.

In general, the proportion of respondents that indicated a discard impact was identified as a “major concern” was very similar across all respondents and regional respondents (Figure 3). When looking across regions, the NY-DE and MD-NC were quite similar and tended to consider a greater proportion of impacts as “major concern”; while the MA-CT region respondents tended to consider more impacts as a lower concern (Figure 4). However, when looking at the top five ranked impacts identified as a “major concern”, all respondents and all regions had very similar concerns (Table 1). For example, concerns about the high discard rates/discard mortality of females was a top five concern for all respondents and all regions. In addition, the lack of fairness/equitable access among states and the lack of robust/trusted discard data were “major concerns” for three of the four groups. Lack of angler knowledge of gear configurations (e.g., hook sizes) that reduce mortality and reduced patronage of for-hire vessels due to high regulatory discard rates were most frequently ranked as impacts with “minor concern” across all groups.

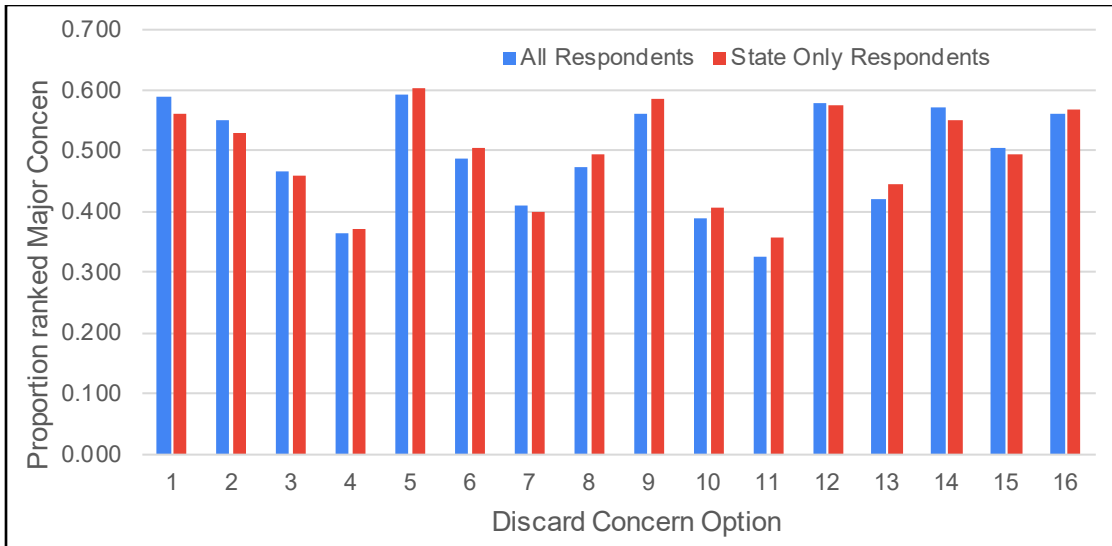


Figure 3. The proportion that all scoping respondents and regional respondents (i.e., state-specific information provided) indicated whether a specific discard impact was ranked as a “major concern”. See Appendix B, Question #1 for discard concern options.

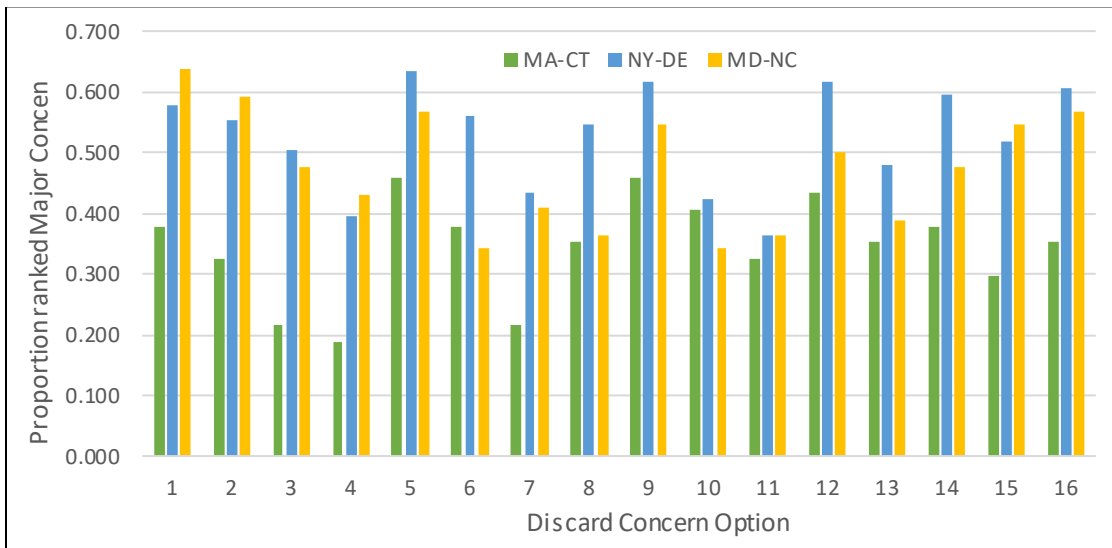


Figure 4. The proportion respondents by region that indicated whether a specific discard concern was ranked as a “major concern”. See Appendix B, Question #1 for discard concern options.

Table 1. Top five discard concerns identified by region and for all respondents. Same concern is noted with the same color across groupings.

Rank	All Respondents	MA-CT	NY-DE	MD-NC
1	High discard rates and mortality of females	High discard rates and mortality of females	High discard rates and mortality of females	Ability to retain fish
2	Ability to retain fish	Lack of robust and trusted data	Lack of robust and trusted data	Angler satisfaction
3	Lack of fairness/inequitable access among states	Lack of fairness/inequitable access among states	Lack of fairness/inequitable access among states	High discard rates and mortality of females
4	Future management implications to address discards	Proper handling techniques	Management response to stakeholder input	Management response to stakeholder input
5	Lack of robust and trusted data	Three tied for 5th	Future management implications to address discards	Two tied for 5th

Please see Appendix A for additional information regarding the analysis, results, and potential application of stakeholder feedback received on the open-ended questions focusing on “other discard concerns”.

Management Objectives

With the management problem defined and stakeholder concerns associated with the problem identified, the next section of scoping feedback focused on management objectives. Here respondents were asked a few questions to elicit input and perspectives as to what a successful recreational fishery would look like that minimized discards and discard mortality.

Similar to the discard concerns section, there were a combination of closed and open-ended questions provided for feedback. However, for the closed-ended question, instead of using a linear ranking scale (e.g., not concerned to highly concerned) for feedback, respondents were asked to select their top five management objectives. Management objectives were then evaluated and prioritized based on the proportion a particular objective was selected compared to all objectives or by the frequency an objective was selected by respondents (note: both methods produced nearly identical results, see Figure 7 as an example). Again, results were evaluated across all respondents and across all regions to find similarities and differences between the different groupings.

While there are some slight differences for a few specific management objectives, the results were consistent with the discard concern findings. Overall, the proportion of all respondents selecting a particular objective was very similar to those respondents at a regional level (Figure 5). When looking across the three regions, the responses are more varied, but the NY-DE and MD-NC were again more similar than the MA-CT region (Figure 6). However, when considering just the top five management objectives selected by the different groups, many similarities arise across all groups (Table 2). For example, two management objectives were ranked in the top five for all four groups: minimize the mortality of released summer flounder and improve the quality of the recreational fishing experience. Two more management objectives were in the top five for three of the four groups: minimize the risk of

overfishing and the stock becoming overfished and maximize the chances a trip produces a legal sized fish. Similarly, there was also general agreement across all groups on the lowest priority management objectives. Minimizing the differences in retention rates by fishing method (e.g., shore, private vessel, for-hire) and minimizing the regulatory burden on recreational businesses (e.g., for-hire, bait and tackle, boat rentals) ranked as the two lowest management objectives.

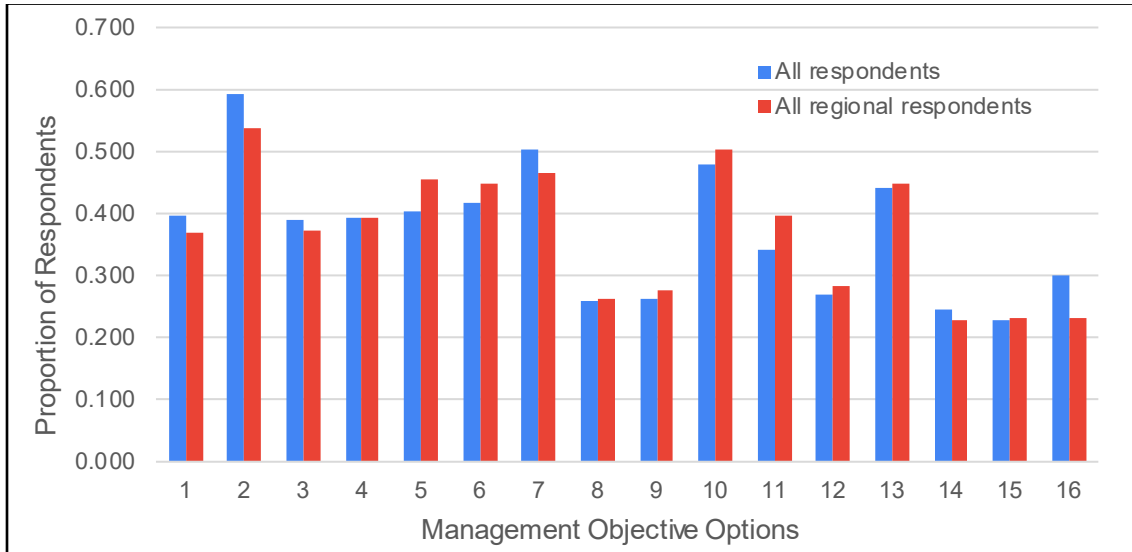


Figure 5. The proportion that all scoping respondents and regional respondents that selected a specific management objective option as one of the most critical to achieve. See Appendix B, Question #4 for management objectives options.

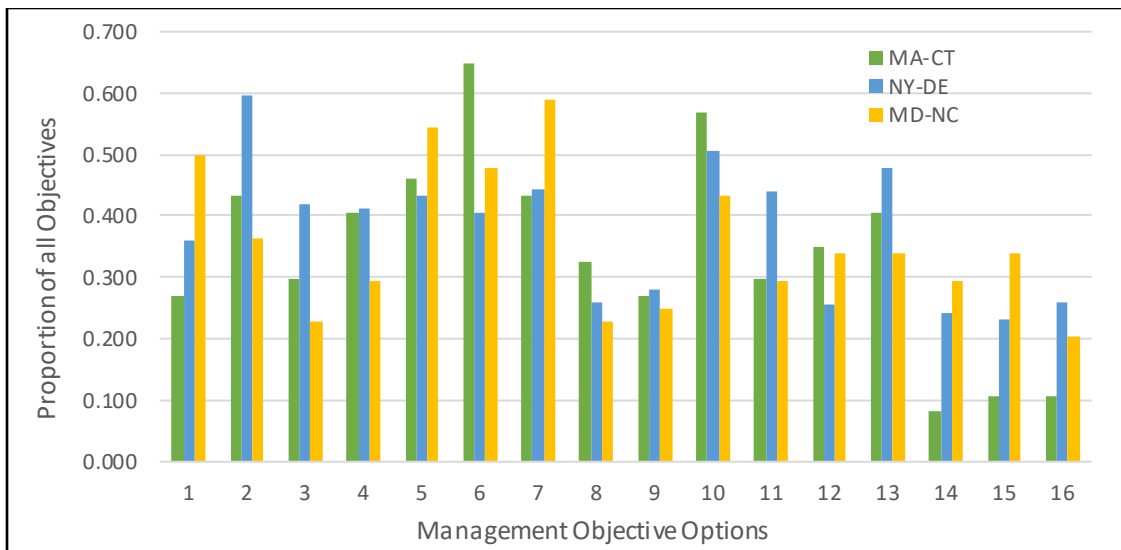


Figure 6. The proportion of respondents by region that selected a specific management objective alternative as one of the most critical to achieve. See Appendix B. Question #4 for management objective options.

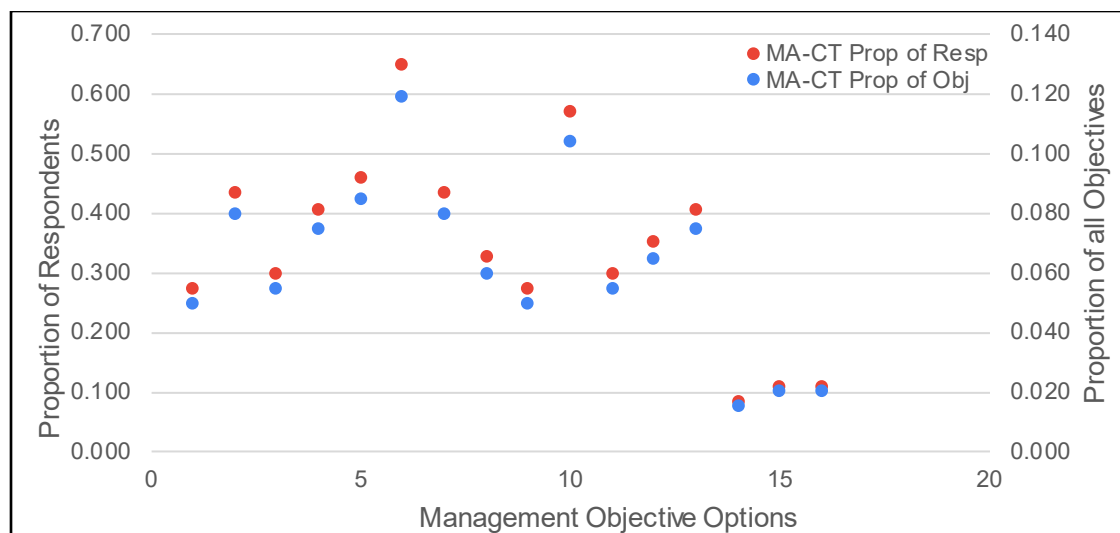


Figure 7. Comparison between the proportion of an objective relative to all objectives and the proportion a management objective was selected by a respondent for the MA-CT region (Question #4).

Table 2. Top five management objectives identified by region and for all respondents. Same concern is noted with the same color across the groupings.

Rank	All Respondents	MA-CT	NY-DE	MD-NC
1	Maximize chances a trip produces a legal sized fish	Minimize risk of overfishing and stock becoming overfished	Maximize chances a trip produces a legal sized fish	Improve quality of recreational fishing experience
2	Improve quality of recreational fishing experience	Minimize the mortality of released summer flounder	Minimize the mortality of released summer flounder	Minimize negative biological impacts to the summer flounder stock
3	Minimize the mortality of released summer flounder	Minimize negative biological impacts to the summer flounder stock	Minimize the differences in regulations between neighboring states	Maximize recreational fishing participation in all sectors
4	Minimize the differences in regulations between neighboring states	Maximize chances a trip produces a legal sized fish	Improve quality of recreational fishing experience	Minimize risk of overfishing and stock becoming overfished
5	Minimize risk of overfishing and stock becoming overfished	Improve quality of recreational fishing experience	Reduce the harvest of female summer flounder	Minimize the mortality of released summer flounder

Strategies

Once priority objectives were identified, respondents were then asked about strategies that could be implemented to successfully achieve those objectives. Strategies identified here would consist of potential management actions or alternatives (e.g., slot limits, gear requirements, reporting

requirements etc.) that should be evaluated in the MSE to determine if management objectives were achieved. The question structure and subsequent analysis was the same as that used for the management objectives section.

Similar to the discard concern and management objective findings, the proportion an individual strategy was selected as a priority compared to all strategies was very similar between all respondents and those respondents at a regional level (Figure 8). When looking across the three regions, there were greater differences in some of the selected priority strategies and the differences in priority strategies between the MA-CT region and the NY-DE and MD-NC regions were more pronounced (Figure 9). In fact, only two of the top five priority strategies for the MA-CT region were also a priority in the other three groups (Table 3). However, the remaining two strategies did rank in the top five for all groups: best practice recommendations to minimize recreational discard mortality and research to validate or update the current 10% recreational discard mortality rate. Establishing slot limits was a priority strategy for three of the four groupings. The lowest priority strategies were consistent across all of the groupings with increasing possession limits, expanding shore-based opportunities, and setting differential regulations by sector at the bottom.

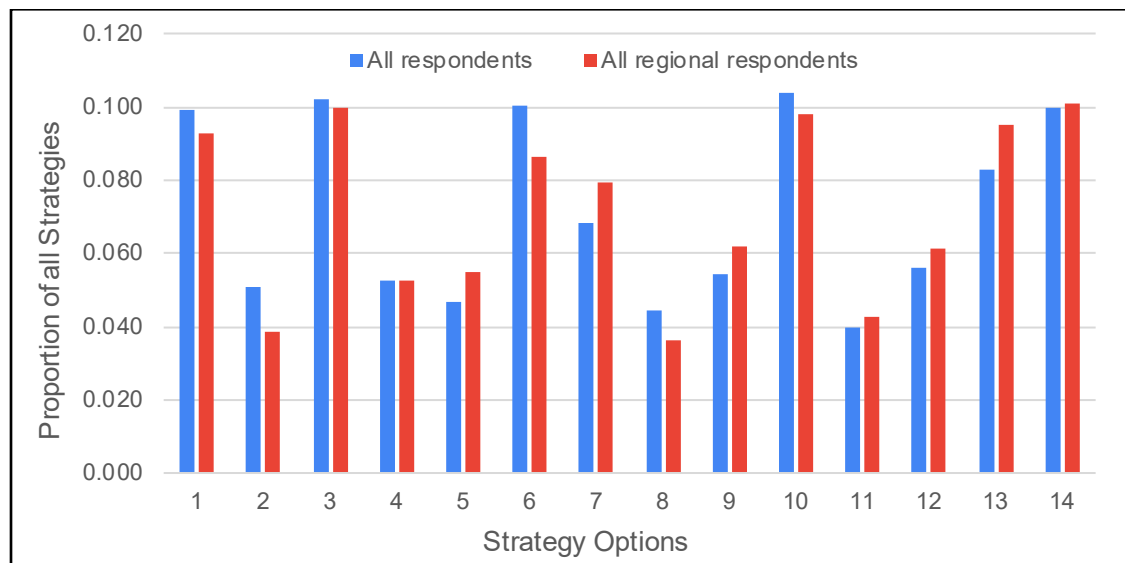


Figure 8. The proportion a management strategy was selected to be evaluated compared to all possible strategies by all scoping respondents and by regional respondents. See Appendix B, Question #6 for all strategy options.

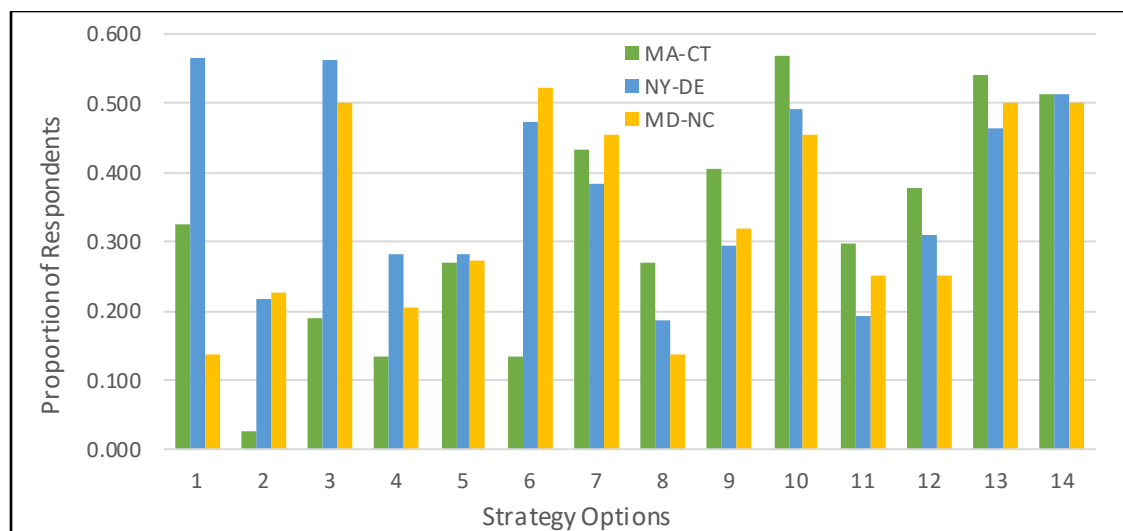


Figure 9. The proportion a management strategy was selected to be evaluated compared to all possible strategies by region. See Appendix B, Question #6 for all strategy options.

Table 3. Top five strategies identified by region and for all respondents (Question #6). Same concern is noted with the same color across the groupings.

Rank	All Respondents	MA-CT	NY-DE	MD-NC
1	Best practice recommendations to minimize recreational discard mortality	Best practice recommendations to minimize recreational discard mortality	Implement lower size limits	Expand the recreational season
2	Establish slot size limits	Create an outreach program to improve angler education on proper discarding techniques	Establish slot size limits	Establish slot size limits
3	Expand the recreational season	Research to validate or update the current 10% recreational discard mortality rate	Research to validate or update the current 10% recreational discard mortality rate	Research to validate or update the current 10% recreational discard mortality rate
4	Research to validate or update the current 10% recreational discard mortality rate	Expand use of electronic reporting and volunteer angler surveys to report discards	Best practice recommendations to minimize recreational discard mortality	Best practice recommendations to minimize recreational discard mortality
5	Implement lower size limits	Adjust regulations dynamically through time based on the status of the fishery	Expand the recreational season	Two tied for 5th



Analysis and Outcomes of Open-Ended Scoping Questions

Stakeholder Feedback on Other Discard Concerns

In addition to discrete, closed-ended questions (e.g., Question #1) in which a respondent would select an appropriate answer(s), there were also open-ended questions included to allow for respondents to provide any additional feedback or comments that may not have been previously considered. Question #2 asked respondents to provide additional concerns that were not mentioned previously. The response to Question #2 (consistent with the other open-ended questions) was quite high for a survey like this with 376 individuals, or 46% of all respondents, providing additional feedback and comments regarding discard concerns.

While these types of questions can provide extremely valuable information regarding stakeholder insights, they are much more difficult to quantify and evaluate. A variety of different tools and techniques, such as word clouds, were used to analyze the feedback to search for commonly used words and phrases (Figure 5a and b). After applying these techniques, it was possible to find broad common response categories in which individual responses could be binned. Six different broad discard concern categories were identified: Commercial Fishery, Enforcement and Education, Regulations, Gear and Tackle, Management, and Science and Data. Then within each category, it was possible to identify themes in which multiple responses would provide very similar recommendations (e.g., different configurations of slot limit sizes). This process efficiently and effectively condensed 376 individual responses down to 50 distinct themes that captures all of the feedback received on other discard concerns (Tables 1 – 6).

While all input and every recommendation will be reviewed, not all of them can be considered. This may be due to a variety of factors such as: a lack of data, the inability to model an idea, outside the scope of the MSE (i.e., recreational discards), enforceability concerns, or higher management priorities etc. Therefore, the MSE technical work group reviewed all distinct discard concern themes to determine if a theme could be modeled, could be evaluated with a proxy metric, or would be considered in this MSE. This will help refine and prioritize potential management objectives and strategies to be evaluated in this MSE and documentation that provides the rationale as to why a particular recommendation was/was not considered will be developed.

Figure 1a and b. Word cloud diagrams capturing the key words and phrases from 376 individual stakeholder responses to the open-ended question regarding recreational summer flounder discard concerns (Question 2). a) an evaluation of slightly condensed individual responses and b) an evaluation of highly condensed individual responses.

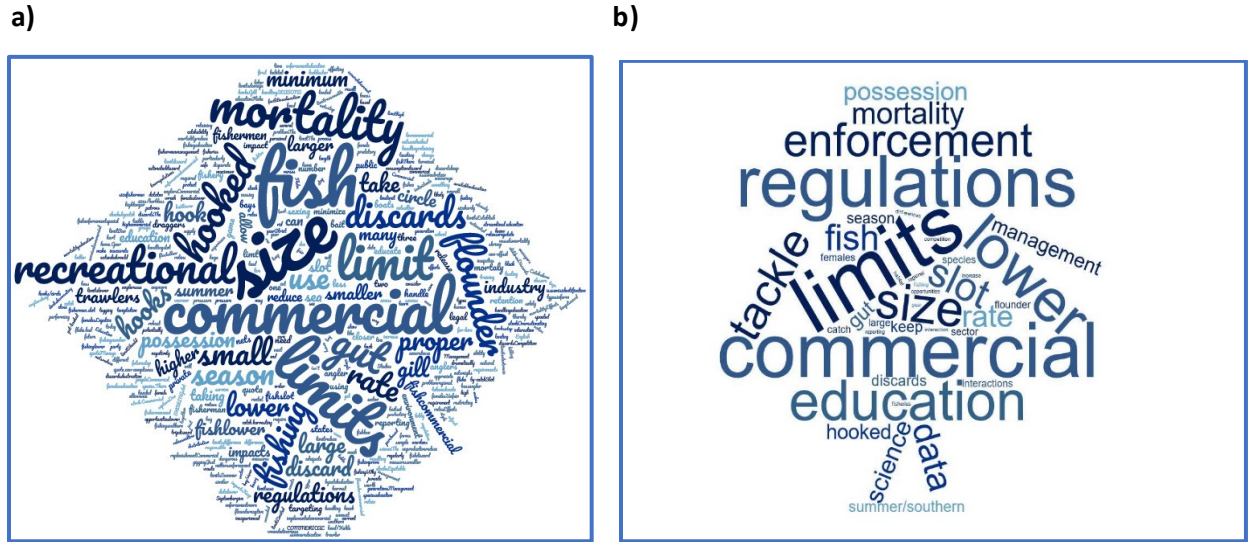


Table 1. Summary of response categories to Question #2 – Other Discard Concerns – grouped under the “Commercial Industry” broad category. Each individual response was reviewed and grouped into a broad theme and, within each theme, responses were then grouped into categories with other similar responses. Each response category was reviewed for possible consideration to determine if it could be evaluated in a simulation model(s) or would be considered in this MSE. A proxy determination means a specific recommendation could not be modeled or included in the MSE, but an alternative metric could be used instead.

Broad Concern Category: Commercial Fishery		
Concern from 22% of all regional respondents		
Common general themes	Possible to model (Y/N/M/Proxy)	Within scope of MSE (Y/N/M/Proxy)
Impacts, access, and equity of smaller (14 inch) commercial minimum size limit	Proxy	N
Ban use/get rid of commercial gill nets, bottom trawls, small mesh	Y	N
Commercial discards are greater concern/impact compared to recreational discards	Y	N
Negative impacts of commercial fishing gear on habitat and juvenile fish/summer flounder	M	N
Reduce the commercial quota	Y	N
Modify the commercial fishing season	Proxy	N
Bycatch by commercial fishing vessels	Y	N
Commercial reporting is not accurate	Y	M

Table 2. Summary and individual responses to Question #2 – Other Discard Concerns – grouped under the “Education and Enforcement” broad category theme. See caption for Table 2 for additional table information.

Broad Concern Category: Education and Enforcement		
Concern from 20% of all regional respondents		
Common General Themes	Possible to model (Y/N/M/Proxy)	Within scope of MSE (Y/N/M/Proxy)
Inform public about impacts of discards, small/released fish are legal fish in the future	Proxy	Proxy
Angler education programs: proper handling, safe release, proper release of gut hooked fish, guidelines to maximize fish survival	Proxy	Proxy
Provide educational information on proper handling and releasing at bait and tackle shops and boat rental facilities; require training prior to renting a boat	Proxy	Proxy
Need additional enforcement across all sectors to ensure regulations have meaning	Proxy	M/Proxy
Regulations frustrate anglers and create cheaters and poor handling of fish	Proxy	M/Proxy
Coast Guard should do more enforcement, particularly inspecting private vessels	Proxy	M/Proxy
Confusion and education regarding NC flounder (summer and southern) regulations	Proxy	M/Proxy

Table 3. Summary and individual responses to Question #2 – Other Discard Concerns – grouped under the “Regulations” broad category theme. See caption for Table 2 for additional table information.

Broad Concern Category: Regulations		
Concern from 39% of all regional respondents		
Common general themes	Possible to model (Y/N/M/Proxy)	Within scope of MSE (Y/N/M/Proxy)
Too many and unfair regulations; public losing interest	Proxy	M/Proxy
Slot limits will not work for the charter/party fleet	Y	M
Consider the open seasons for other fisheries (e.g., black sea bass)	Y	Proxy
Allowance/use a tag program to retain a gut hooked/mortally wounded fish	M	M
Lower the size limit (e.g., 14", 15", 16", or 17"); allowance for one large (e.g., >22") fish	Y	Y
Implement slot limits; maximum size limit	Y	Y
Extend the recreational season; keep season open later in year when larger fish are available	Y	M

Bag limit needs to be increased	Y	Y
Bag limit should be reduced	Y	Y
Protect females	Y	M/N
Incentivize states with additional quota if they implement measures to reduce discard mortality	Y	M
Release all large, female fish	Y	M
Keep first three fish caught	Y	M
Different measures for shore and back bay anglers	Y	M
Fishing every other year	Y	M

Table 4. Summary and individual responses to Question #2 – Other Discard Concerns – grouped under the “Gear and Tackle” broad category theme. See caption for Table 2 for additional table information.

Broad Concern Category: Gear and Tackle		
Concern from 7% of all regional respondents		
Common general themes	Possible to model (Y/N/M/Proxy)	Within scope of MSE (Y/N/M/Proxy)
Regulate hook types: minimum hook size, barbless hook, circle hook	M/Proxy	M/Proxy
Ban English bend/Kahle style hook	M/Proxy	M/Proxy
Require the use of non-offset circle hooks for all live or cut bait fishing to reduce gut hooked flounder	M/Proxy	M/Proxy
Implement measure such as: one line per person, barbless hooks, no plastic baits, no treble hooks unless fishing from shore	M/Proxy	M/Proxy

Table 5. Summary and individual responses to Question #2 – Other Discard Concerns – grouped under the “Management” broad category theme. See caption for Table 2 for additional table information.

Broad Concern Category: Management		
Concern from 4% of all regional respondents		
Common General Themes	Possible to model (Y/N/M/Proxy)	Within scope of MSE (Y/N/M/Proxy)
Address regional differences: between states, within states (e.g., northern/southern New Jersey)	Y/M	Y
Responsive and streamlined management process; listen to advisors	Y/M	M/N
Manage for future generations; maintain high abundance and size structure	Y	Y
Too many regulations	Y	Y
Create opportunities for fishermen to keep a fish	Y	Y

Table 6. Summary and individual responses to Question #2 – Other Discard Concerns – grouped under the “Science and Data” broad category theme. See caption for Table 2 for additional table information.

Broad Concern Category: Science and Data		
Concern from 13% of all regional respondents		
Common General Themes	Possible to model (Y/N/M/Proxy)	Within scope of MSE (Y/N/M/Proxy)
Bad or inadequate data on recreational harvest and discards; improper use of data	Y	Y
Effects of discards on "natural mortality" in the stock assessment	M	N
Protect females; stock implications of harvesting too many females	Y	Proxy
10% recreational discard mortality rate is incorrect (too high, too low)	Y	Y
Overestimating recreational harvest and catch per angler or trip	Y	Y
Require electronic reporting for all recreational anglers/trips	Proxy	Proxy
Use of Volunteer Angler Surveys to collect discard information; need to minimize handling to collect information	Proxy	Proxy
Use of the ALS dataset	M	M/N
Species interactions (e.g., change in summer flounder abundance once black sea bass became abundant in LIS or sea robins in back bays)	M	M
Loss of summer flounder habitat; impacts of beach replenishment projects	M	N