



New England Fishery Management Council

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MEMORANDUM

DATE: September 29, 2020
TO: Groundfish Committee
FROM: Groundfish Plan Development Team
SUBJECT: Amendment 23/Groundfish Monitoring follow up and clarifications

The Groundfish Plan Development Team (PDT) met via webinar on September 28, 2020, to hold a follow-up discussion on Amendment 23 (A23) after the recent Groundfish Committee meeting.

Overview

The PDT discussed several recurring questions and points raised during the Committee meeting and in public comments on analyses in the A23 Draft Environmental Impact Statement (DEIS) and provides clarifications to those questions below.

1. For the electronic monitoring (EM) options, some commenters wondered about the selected review rates and how this might change when the program is implemented.

This is described on page 438 of the DEIS:

“The following assumptions were used in generating cost and impacts analyses for the EM options considered in this action. It is recognized that these assumptions may not play out in reality and different values for program review for example may be used if electronic monitoring tools are implemented in this action. These assumptions were informed in part by recent NMFS guidance on adequate electronic monitoring standards:

- *review rates will decline over three years of a vessel’s program participation, from 50% to 30% to 15% for the Audit model and 50%, 50% and 25% for the MaxRet model;*
- *vessels enroll in a program in year 1 and remain in the same program for all three years;*
- *costs vary by year, where year 1 costs include the cost of equipment and installation, and year 2 and 3 costs include only operations and maintenance;*
- *for the MaxRet model, dockside monitoring costs (DSM) are included and are estimated to be slightly higher than those estimated for the stand-alone DSM options due to the inclusion of monitoring sub-legal catch offloads; and,*

- *costs do not vary across ASM sub-options and review rates apply to 100% of a vessel's days absent"*

A greater range of review rate assumptions and their impact on cost was investigated by the Cost Efficiency Model (Appendix VI of the DEIS). A discussion of review rates can be found on page 30.

2. Some commenters wondered how the cost estimates provided in the document will compare to costs that participants will incur once the program is implemented.

The DEIS does not predict the true costs of various alternatives, but the analyses allow comparisons of the relative costs of various alternatives. It should be noted that all models are simplifications and abstractions of reality, and actual impacts depend on the details of implementation and actual conditions of the fishery that are not able to be taken into account such as future prices, market conditions in other fisheries, changes in vessel participation since FY 2018, etc. The inability of the different economic models in the DEIS to predict future costs is described on page 384 of the DEIS:

"It is important to note that the primary purpose of the monitoring cost estimates developed for this action is to help the Council and public compare alternatives. These cost estimates are not predictions of actual monitoring costs in either the short or long term. These analyses are intended to highlight the potential magnitude of differences in costs and benefits between the alternatives under consideration. If selected, the estimates of costs presented in this document should not be considered actual predictions. Costs will vary based on many factors, some of which are explained in these analyses (e.g. review rates for electronic monitoring, possible economies of scale, technological improvements, or changes in fleet participation and effort over time)."

3. Several commenters requested that impacts instead be compared in terms of net revenue, or that a break-even analysis be prepared, since that would better show impacts on profitability and viability.

The DEIS only considers impacts on operating profits, which excludes fixed costs (e.g., vessel cost and depreciation, upgrades, repairs, insurance, and equipment). A net revenue analysis that incorporates both operating (variable) and overhead (fixed) costs could not be prepared in the DEIS because fixed cost data is not available for the groundfish fleet in any recent fishing year due to low response rates to cost surveys since FY 2011 (Tables 1 and 2).

Table 1: Number of vessels indicating groundfish was their highest revenue fishery as their response to NEFSC cost survey.

Survey Year	2011	2012	2015
# of vessels	38	15	8

Table 2: Sample size and response rates by calendar year for the NEFSC cost survey by gear type (all fisheries).

	2011			2012			2015		
	Sample	Response	% Response	Sample	Response	% Response	Sample	Response	% Response
Gillnet_Large	60	24	40.0%	61	14	23.0%	96	3	3.1%
Gillnet_Small	58	16	27.6%	62	12	19.4%	84	7	8.3%
Trawl_Large	101	33	32.7%	86	22	25.6%	97	7	7.2%
Trawl_Small	100	28	28.0%	112	12	10.7%	149	9	6.0%
Total (all gears)	1287	372	28.9%	1778	358	20.1%	2489	160	6.4%

4. A few commenters thought that the provided analyses did not evaluate fixed coverage level options against the Amendment 23 purpose and need or its stated goal to improve documentation of catch, or improved catch accounting.

The DEIS concludes that there is bias associated with recent levels of monitoring coverage and suggests as coverage rates increase, the risk of potential bias decreases, i.e., accuracy increases with coverage. Although, it does not estimate the magnitude of the inaccurately accounted for catch, which is the source of bias. The DEIS does qualitatively evaluate the fixed coverage level options, as well as several other alternatives, in terms of the risk of non-compliance and enforceability to evaluate improvements to catch accounting and accountability. It was not possible to quantitatively compare how each alternative would affect bias because the current groundfish monitoring program cannot provide sufficient estimates of catch on unobserved trips.

Compliance and enforceability as they relate to catch accounting is described on page 396, specifically with respect to the compliance scores:

“Compliance scores are an indicator of economic benefits resulting from different levels of monitoring coverage levels, either at-sea or shoreside. Compliance related benefits include increased catch accounting, which decreases the risk that ACL exceedances occur and the degradation of long-run fishing revenue as a result of overharvesting. In addition, increased catch accounting ensures that appropriate price signals are sent through the ACE lease market, which affects participation decisions and incentives targeting and other efficient fishing practices, as well as ensuring those who lease out their ACE are compensated for the true opportunity cost of their ACE.”

The compliance scores are used as a component in evaluating the biological impacts of the different coverage level options, which begins on page 304 of the DEIS. Compliance scores provide some idea of the risk of non-compliance with different fixed rates of at-sea monitoring coverage, and demonstrate biological benefits of compliance with monitoring requirements because “non-compliance with regulations reduces the accuracy of catch accounting and increases the potential for ACLs to be exceeded.” The biological impacts refer to the compliance scores to describe expected improvements to accountability with the different coverage level options when compared to status quo coverage and relate improvements in catch accounting and accountability to expected improvements in accuracy of catch estimates.

5. Some commenters wanted to know how it was possible that under increased monitoring that revenues generated by the fishery could increase.

The Quota Change Model (QCM) estimates potential aggregate revenue changes across monitoring alternatives in two distinct ways in the DEIS.

First, the general ability for the fishery to generate different levels of revenue under each proposed monitoring level is explained by the Quota Change Model on page 390 of the DEIS. Under each monitoring coverage rate, the QCM generates a pool of efficient trips which minimize operating costs relative to revenues. The pool of efficient trips changes as monitoring costs are estimated to change. As variable costs rise, less efficient producers choose to not fish. This frees up additional opportunities for more efficient vessels, increasing revenues and, perhaps but not always, operating profits.

Secondly, revenue also is estimated to increase under increased monitoring levels when the management uncertainty buffers for allocated stocks are also removed. Removal of the management uncertainty buffer introduces more quota allowing for more trips to be selected by the model before the quota limit is reached for any stock in a given broad stock area, thereby increasing total revenue. This revenue increase is not 1:1, as the total estimated value of additional fishery revenue is greater than the proportional increase in available ACE. This is because additional ACE for high-utilization stocks can be leveraged to attain higher catch levels of other stocks.

The QCM results are subject to several assumptions:

- *stock conditions, fishing practices and harvest technologies existing during the data period are representative;*
- *trips are repeatable;*
- *demand for groundfish is constant, noting that fish prices do vary between the reference population and the sample population, but this variability is consistent with the underlying price/quantity relationship observed during the reference period;*
- *as ACE leases are contracted at the vessel level, allocations to individual sectors are not influential in the ultimate allocation of ACE;*
- *quota opportunity costs and operating costs are both constant; and,*
- *ACE flows seamlessly from lesser to lessee such that fishery-wide caps can be met without leaving ACE for constraining stocks stranded.*

The QCM did not estimate how trip-level catch composition and overall fishery attainment may be impacted by previously unaccounted for discards instead being landed and only uses observed trip data in FY 2018 to compare impacts across years.

6. A few questions were asked about how many vessels might leave the fishery as a result of increased cost burdens under different scenarios.

The economic analyses, as currently constructed, cannot answer this question. The DEIS analyses are based on trips, rather than vessels. Additionally, vessels may opt to fish under the

common pool, rather than fishing as part of a sector or exiting the groundfish fishery. Instead there are indicators of who in the fishery might be most impacted and whose estimated costs might account for a large proportion of recent groundfish trip revenue, since these vessels may be more likely to cease fishing as part of a sector to fish in the common pool, or shift their effort into other fisheries in their portfolio. The fishery profiles included in the Public Hearing Document indicate that fishing vessels who are the least engaged in the fishery (spend less than 20 days absent fishing in the groundfish fishery) have the highest estimated costs as a proportion of revenue and are most likely to make different participation decisions as a result; however, it should be noted that these operations are among the least reliant on the groundfish fishery and generally obtain the majority of their annual fishery revenue from other fisheries (page 170 of the DEIS).

7. For the Gulf of Maine (GOM) cod multiplier work that explores the potential magnitude of missing GOM cod discards, some commenters wondered about the purpose and context of this analysis, and questioned whether this estimate was realistic given declines in number of vessels in the fleet over time.

On page 300 of the DEIS, the PDT explains the motivation of this work was a follow up to the PDT analyses on observer bias and the subsequent SSC sub-panel review:

“The magnitude of the missing removals of GOM cod that results from illegal discards across the entire fishery was not quantified at the SSC review (the PDT does provide an estimate of potential magnitude of missing removals for GOM cod on gillnet trips; see Section 6.6.10.5.3 and Appendix V, “Predicting Gulf of Maine (GOM) cod catch on Northeast Multispecies (groundfish) sector trips: implications for observer bias and fishery catch accounting”). The reviewers did suggest that further investigation into quantifying the missing catch should be done.”

The PDT acknowledges the challenges with determining magnitude of missing discards given the findings that the catch information available are biased, but conducted this simple analysis to provide a rough “estimate of an upper bound of the potential magnitude for missing legal-sized discards of GOM cod” (page 302 in the DEIS), in order to provide some characterization of the bounds of the discarding problem. The potential magnitude of missing GOM cod discards is expected to fall somewhere between 0 and the rough upper bound estimate provided by this analysis. The PDT cannot estimate a minimum bound above 0, but 0 is likely not a realistic minimum given the evidence of observer effects. The PDT explains the choice of GOM cod as an example on page 301.

The approach taken in this analysis is described on beginning on page 302 of the DEIS:

“The concept behind the following analyses is to calculate potential landings in a target year [2018] by multiplying the landings per unit of effort (landings/day absent) from a reference year [both 2012 and 2013] by the amount of effort (days absent) in the target year. In this analysis, the reference year is chosen as a year where the stock size is similar to the target year, but the ABC is larger. Under the assumption that landing rates (landings/days absent) are influenced by stock size, the landing rates would be expected to be similar for the reference year and target year. Based on analyses in Appendix V, a lower allowable catch would be expected to change fishing behavior. Fishermen could

change fishing practices in a number of ways, but one possible response would be to increase discards of legal-sized fish. The landing rate in the reference year (with the higher ABC) could be multiplied by the total effort measure in the target year (with the lower ABC) to estimate a potential landings amount. This could be compared to the actual landings, and the difference can be considered a rough estimate of discards. Since all legal-sized fish are required to be landed in the sector system, this estimate could represent unaccounted for legal-sized discards.”

The analysis uses the fishing effort in the target year, and so accounts for changes in effort and declines in the fleet over time.

This approach results in an average upper bound estimate of possible missing GOM cod legal-sized discards of 2.3 times GOM cod landings, with a rough uncertainty range of 1.5-2.5 (page 304 of the DEIS). This results in roughly 1,100 thousand pounds of missing legal-sized GOM cod discards, with an uncertainty range of ~ 700 thousand pounds to ~1,200 thousand pounds (page 304 of the DEIS).

The analysis makes several assumptions about fishing behavior and landings, described on page 301 of the DEIS:

- Landings per day absent is proportional to stock size and is constant during different years with similar stock sizes.
- Fishing practices are similar in the years that are compared (other than possible discarding). This assumption ignores changes in behavior that reduce the landings per unit of effort in the target year. As a result, the calculation can be viewed as a potential upper bound on the magnitude of uncounted legal-size discards.
- Landings are assumed to be known without error. Other sources of errors in landings amounts, such as stock area misreporting or dealer misreporting, are not estimated and assumed to be insignificant in this analysis.

The PDT also notes several caveats, including that the results would likely differ if the analysis included assumptions about changes in targeting and avoidance behavior in the fishery, which are largely unknown and difficult to account for in estimating the bound of missing catch (described on page 303 of the DEIS). The analysis does not account for the change in minimum fish size for cod that occurred mid-2013 (from 22 inches to 19 inches), but if it did, the estimate of missing discards would be expected to be larger, given the expected increase in landings in 2013. There is considerable uncertainty surrounding this estimate of the magnitude of unreported legal-sized GOM discards, but the PDT feels, as noted on page 304 of the DEIS, that “this estimate is perhaps a more realistic bound on the potential missing catch for GOM cod relative to multipliers that are much higher since total fishing effort will limit the potential for missing discards.”

8. Some commenters requested that more information on economic impacts be presented in a different way in order to understand potential impacts on communities.

Costs were estimated and impacts were assessed on specific communities throughout the DEIS, but not highlighted in the public hearing document. The public hearing document focused on the different engagement (days absent on groundfish trips) levels by homeport state. Example tables of impacts on specific communities including a range of costs for a given community and a range of impacts on operating profits can be found on pages 400 and 405 of the DEIS (Tables 90 and 99). The PDT notes that it is possible to generate indicators similar to those in the public hearing document by community to show how many vessels in a given community may be more affected than others or make different participation decisions. An example of this is below and could be added to the FEIS.

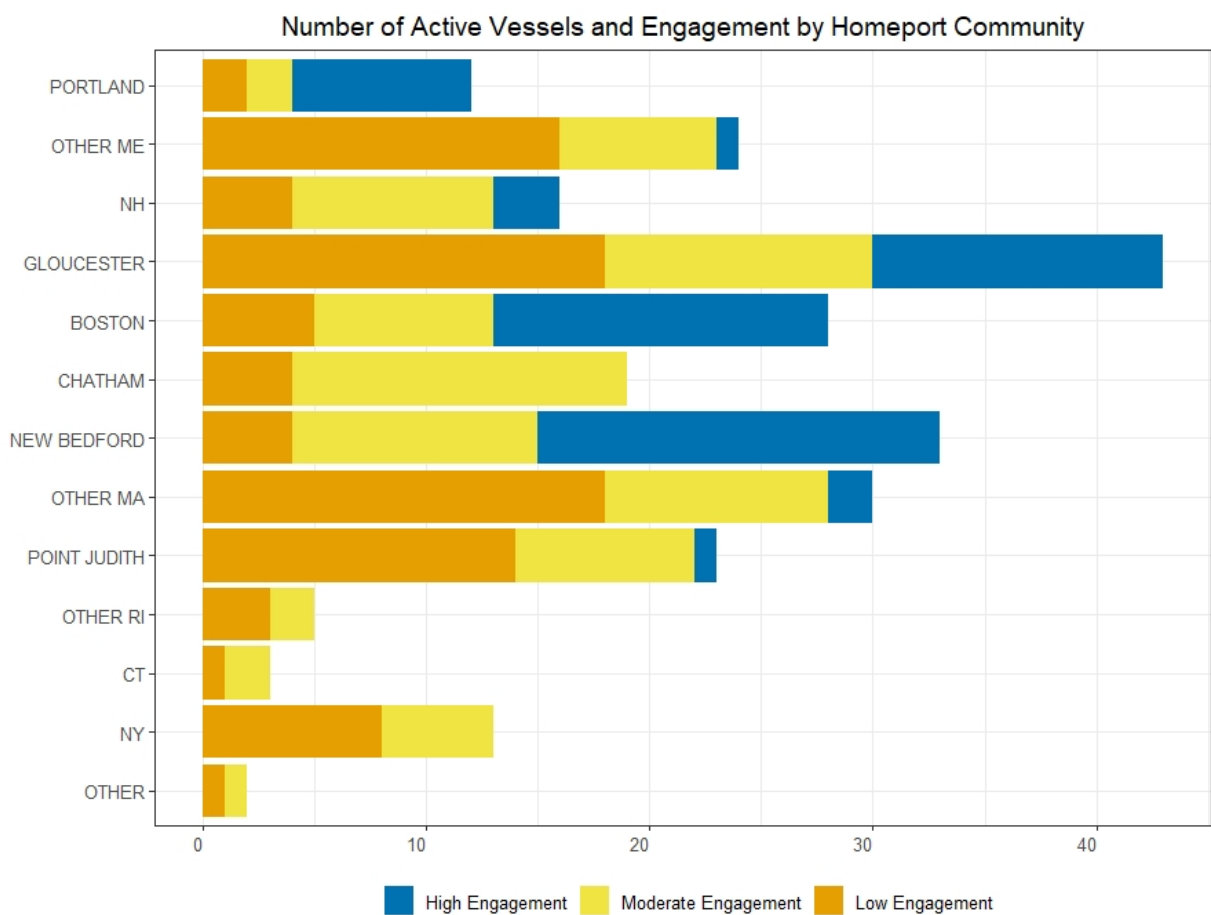


Figure 1. Number of Active sector vessels and their average engagement in the groundfish fishery (days absent on groundfish trips) between fishing years 2016 and 2018. 'Low engagement' is less than 20 days absent per year, 'moderate engagement' is greater than or equal to 20 days but less than 80, while 'high engagement' represents a vessel who spends over 80 days absent on groundfish trips per year.