Approaches to Address the Current Species Separation Requirements in the Atlantic Surfclam and Ocean Quahog Fisheries

Prepared by the Surfclam and Ocean Quahog Species Separation Requirements Fishery Management Action Team (FMAT)

October 2021

Table of Contents

1.0 EXECUTIVE SUMMARY 2

2.0 BACKGROUND 2

3.0 DISCUSSION AND PROPOSED OPTIONS TO ADDRESS THE ISSUE 7

4.0 POTENTIAL SOLUTIONS 8

5.0 RECOMMENDATIONS TO THE COUNCIL (NEXT STEPS) 11

6.0 REFERENCES 12

1.0 Executive Summary

To be completed later.

2.0 Background

Industry has asked the Council to address issues related to the mixing of surfclam and ocean quahog in landings in the fishery. The current regulations do not allow for both surfclam and ocean quahog to be landed on the same trip or placed in the same cages - these are a result of the Individual Transferable Quota (ITQ) system which requires landings by species to be tracked separately. Industry noted that they currently avoid areas where species co-occur to the extent possible because mixed catches are undesirable, as processors can only process one species at a time. Furthermore, there is not an easy way to fully separate these species onboard and industry has indicated that onboard sorting by hand is not a desirable solution to this issue. Despite both regulatory and economic incentives to avoid mixed catches, industry has indicated that this issue needs to be addressed because cooccurrence (i.e., "commingling") of these clams is occurring more frequently, and it may become a larger problem in the future due to climate change.

These mixed landings of both surfclam and ocean quahog within ITQ tagged cages do create a monitoring issue. The commercial landings data are an important input to the stock assessment. They are assumed to be 100 percent accurate, and the stock assessment relies heavily upon the assumption that the landings reported in each of the tagged cages are not mixed. This presents challenges in terms of mixing allowance and how to address this issue without degrading any of the data streams or cross-checks in the data collection systems, to ensure that both commercial landings of each species are accurately tracked and that catch limits and accountability measures can be effectively applied.

A Fishery Management Action Team (FMAT)[1] has been tasked with synthesizing information on this issue in the surfclam and ocean quahog fisheries, and the extent to which this has created concerns for the industry related to the current species separation requirements and existing regulations. Through this document, the FMAT will describe the extent of the mixing issue, how this relates to the current regulations and their enforcement, data collection related issues, and how it relates to industry operations and practices described by Council advisors and experts in the industry. The FMAT will also explore approaches to address the mixed landings issue - which will likely require an approach to separating and monitoring the catch somehow (e.g., manual separation, and/or through a manual sampling program or electronic monitoring (EM) system). This document will also summarize information available on different approaches, as well as some of the pros and cons, and general costs (with potential detailed costs to be later analyzed). It is possible that the recommendations made in this document could be addressed via regulatory action by NMFS or recommendations for new measures and regulations by the Council through an Amendment.

Cage Tagging Requirements

The surfclam and ocean quahog fisheries have been managed under an ITQ system since 1990. Each fishing year, the Greater Atlantic Regional Fisheries Office (GARFO) calculates the initial allocation of surfclam and ocean quahog for the next fishing year by multiplying the allocation percentage owned by each allocation owner by the total allowable catch for the fishing season. The total number of bushels of allocation for both surfclam and ocean quahog are divided by 32 (32-bushel cages; 60ft^3 cages(1,700 L of cage volume)) to determine the appropriate number of cage tags to be issued to ITQ allocation owners. GARFO issues uniquely numbered cage tags corresponding to the owner's share of the allowed harvest at the beginning of the year.

After fishing has occurred and before offloading from the vessel, all cages that contain surfclam or ocean quahog must be tagged on or as near as possible to the upper crossbar of the cage. A tag is required for every 60 ft^3, or portion thereof. A tag or tags must not be removed until the cage is emptied by the processor, at which time the processor must promptly remove and retain the tag(s) for 60 days beyond the end of the calendar year.

[1] FMAT members are Jessica Coakley (Council Staff- FMAT Chair), Brett Alger (NMFS OST), Daniel Hennen (NMFS NEFSC), José Montañez (Council Staff), Douglas Potts (NMFS GARFO - SFD), John Walden (NMFS NEFSC - SSB), John Sullivan (NMFS GARFO- APSD), and Sharon Benjamin (NMFS GARFO – NEPA).

VMS, Logbook, and Dealer Reporting Requirements

Mandatory reporting of landings (for vessel owners/operators) and purchase of clams (for dealers) is required. Vessel owners/operators report vessel catch using a clam logbook report (nearly all electronically) and dealers report clam purchases electronically. Cage tag numbers must be reported on both vessel logbook reports and dealer-processor reports and are used to cross-check logbooks between the vessels reports and the dealer reports. These landings data are then utilized in the stock assessment and are assumed to be accurate. Estimates of discards are based on area and effort expansion of observed trips (see Wigley et al., 2020) and are subject to the limitations imposed by observer coverage. It is worth noting that most of the commingling of surfclams and ocean quahogs occurs at the deepest margin of surfclam distribution and may not overlap well with the limited number of observed trips in any given year.

Permitted surfclam and ocean quahog fishing vessels in the EEZ (i.e., those that hold a surfclam (SF 1) or an ocean quahog (OQ 6) open access permit) are also required to use a vessel monitoring system (VMS) at all times, except when a "VMS Power Down Exemption Request" has been granted. Prior to leaving port at the start of a fishing trip, the vessel's owner or operator must declare its intent to fish through the vessel's vessel monitoring system and declare the target species for the trip (i.e., surfclam or ocean quahog).

There is no allowance for small amounts of the non-target species to be kept on board federally permitted surfclam and/or ocean quahog vessels that are part of the federal ITQ program.[2] In addition, unlike some other fisheries in the region, there is no "take home" or "consumption allowance" of surfclam or ocean quahog on these ITQ fishing trips.

Dealers are required to provide the unit of measure and amount by species being purchased. In the case of surfclam and ocean quahog, cage tag numbers must also be reported. A review of the dealer data indicated that no mixing is being reported. This means if a 32-bushel cage of surfclam is purchased, but only 30 bushels were surfclam, this creates an issue with data quality and reporting.

Industry members indicate that processing facilities are set up to handle either surfclam or ocean quahog only, or for processors that process both species they are run one at a time through their processing lines. This is because processing facilities do not process mixed clam catches - each species is being processed for different market products. Non-target species are typically discarded at the facility because it is not feasible to store and transport them to another facility.

[2] Vessels fishing in state-only waters may have slightly different requirements; see individual state regulations for more details.

Onboard Vessel Sorting (History of)

The minimum size (shell length) regulation for the surfclam fishery was first established by Amendment 2 to the FMP (1979). That amendment implemented a 4.5" minimum size limit for surfclam. Surfclam beds were also to be closed to fishing when over 60 percent of the clams were under 4.5" in length and less than 15 percent were over 5.5" in length. Amendment 3 (1981) to the FMP implemented a 5.5" minimum size limit. Amendment 3 was not intended to secure sustainability of the resource as much as it was intended to assure a supply of large surfclam for breaded fried clam products (Marvin 1992). Some facilities producing clam strips have indicated a preference for larger size clams, for ease of hand shucking.

The 5.5" minimum size limit had been in place from 1982-1990 and was suspended because it led to high levels of discarded surfclam in the early years of implementation (1982-1986; ranged from 11.4 - 37.1 percent of landings discarded annually), although discard rates declined over time (1987-1991; ranged from 2.7 - 8.7 percent). The vast majority of those surfclams died because vessels used "sorting" machines which often damaged undersized clams as it routed them back overboard.

Since the suspension of the minimum size limit, the primary tool to minimize bycatch and bycatch mortality has been the design of a highly selective dredge. The fishery employs a steel hydraulic dredge that uses jets of water to fluidize the bottom sediment, thereby loosening the clams from their habitat. The bars of the dredge are spaced to retain larger surfclam and quahog and let the smaller ones, along with the bulk of unwanted fish and invertebrates, and other unwanted debris, pass through. After tows ranging from several minutes up to an hour the dredge is retrieved, the material is run through a shaker to remove rocks and shells (but not the clams), then dumped onto a belt, and the harvested clams are then discharged into steel cages on the vessel. This process is repeated until the vessel has completed its operations. The gear itself is not able to sort the two clam species of the selected size; therefore, both are retained in the dredge and appear on the belt.

At present, sorting machines to separate surfclams from quahogs are not used, but there is some hand sorting that is done on the conveyor belt on the vessels after the dredge is retrieved and clams are moved to the cages. When a mixed dredge is retrieved, the crew try to separate the material as fast as possible. Because of the speed of the belt, it is not possible for all the species and material to be separated and it is not possible to separate all the surfclam or ocean quahog bycatch. As noted above, this mixed composition is not captured in the logbook data or the dealer data.

Biological Sampling

Biological sampling by port agents (or contractors applicable) is conducted to collect data for the surfclam minimum size analysis required in the regulations. Only surfclam is sampled - not ocean

quahog. This sampling is done sometimes by walking on top of the cages or a narrow ledge above the cages while they are still on board the vessels, or when the cages are offloaded. Cages are not dumped to obtain surfclam samples as tags cannot be removed to take samples. Samples are obtained by grabbing a few random surfclam off the top of the cage. Port agents have indicated they can see both surfclam and ocean quahog in these top layers of the cages on visual inspection. Obtaining required biological samples can be further hindered by weather and inability of samplers and boat captains to coordinate sampling activity. Some limited biological sampling is performed inside the processing facilities (e.g., samples are taken from coolers). However, this is not a widespread practice. In addition, there is limited observer coverage in this fishery (less than 3%) which indicates that surfclam are a top discard on quahog trips and vice versa, although the majority of each trip is comprised of the target species.

Port of Landing to Processor

As described above, surfclam and ocean quahog may not be landed without appropriate tags attached to all cages containing surfclam or quahog. When cages are landed, they must be transported to a dealer/processing facility without removing the cage tags (unless landed at a processing facility). Cages are loaded onto a truck immediately to avoid clam damage, and this can create difficulty in conducting necessary sampling, in part due to the very large sizes of the cages and inability to access contents.

Law Enforcement

Enforcement in the SCOQ ITQ program relies heavily on shoreside surveillance. As previously indicated, to establish a chain of evidence adequate for enforcement of the SCOQ ITQ program from the vessel to the processor, all surfclam and ocean quahog cages must be tagged before the winch cable is disconnected from the cage on the dock, and tags must not be removed until cages are emptied at the processing plant. Cross-checking logbooks between vessels and processors also provides a system to double check the information reported. ITQ allocation permits may be suspended, revoked, or modified by NMFS for violations of the FMP.

Law enforcement officers may inspect cages once they are offloaded from fishing boats to verify that tags are attached to the cages. However, cages are not inspected to determine if surfclam and ocean quahog are mixed in the cages as this would require that the entire contents of the cages be dumped out. Dumping animals out of the cage would be a messy process, create difficulties with refilling the cages, and potentially kill many of the clams (catch loss). Fishing vessels are not required to report to law enforcement when they are coming back to port (unless they have fished in a paralytic shellfish poisoning (PSP) area of concern); therefore, vessels are only inspected when they are spotted on the VMS system or when they are visually seen reaching port.

3.0 Discussion and Proposed Options to Address the Issue

Key Issues

- To account for and monitor the extent of mixing in cages. If mixing were to be allowed, the clams must be sorted at some point: either by hand, visually, or electronically. At this point, each cage is assumed to be 100% one clam species or the other when tagged.
- Processors do not want mixed cages for processing, as product lines for each species are different and some processors only process one species. Live clams have a limited shelf life, therefore, storing and saving non-target species for transport to other processing lines is not feasible.
- Captains/vessels don't want mixed cages because it is undesirable for the processors for whom they land clams. In addition, landing mixed species may impact vessel profitability.
- Cages of clams cannot easily be dumped for sorting once filled. They are extremely large and heavy and must be tagged. Dumping out clams for sorting would be time consuming, expensive, cages are difficult to refill, and it creates the potential for mixing between cages/tags.
- Fishing industry representatives have indicated that onboard sorting beyond what is currently done would be an undesirable outcome; it is labor intensive and challenging on deck.
- The stock assessment relies heavily on the bushels of clams for each species reported by cage. Those cages erroneously are assumed to be 100 percent clean and unmixed for each species.
- Catch limits and accountability measures rely heavily on accurate reporting of the logbook catch. In addition, the dealer data is utilized as a crosscheck on the logbook reporting.
- Surfclam distribution has been shifting northward and further offshore, and increased mixing has been occurring in the survey data; this may continue as the ocean continues to warm. This makes static assumptions about the extent of mixing challenging (i.e., ongoing monitoring will be required).
- Contents of cages are currently not inspected by enforcement, nor is any biological sampling of the entire cage occurring (i.e., only a few surfclam taken from perimeter/top for sampling). Therefore, even though it is required that the contents be 100% of the tagged species, no one from enforcement is presently checking cage contents.

4.0 Potential Solutions

1. Require onboard sorting/removal of surfclam or ocean quahog before cages are filled (i.e., while on belt), so only one species are landed and cage contents are 100% that target clam species.

- *Advantages:*
    a) Ensures the cage contents on the vessel are 100% of the target clam species.
    b) Allows for precise ITQ catch accounting, and consistent with assumption that 100 percent of the cage contents are as tagged for each species (as is assumed in the stock assessment and by enforcement).
    c) Vessels only land one species per trip, which is appealing to processors.
- *Disadvantages:*
    a) May require an amendment process which is time consuming.
    b) Difficult to manually sort effectively on board; may need to slow down operations to fully sort catch.
    c) Intercepting every vessel on arrival to port, or at processing facilities, to verify cage contents would be time consuming and logistically challenging.

2. Modify the regulations to allow for mixing of clam species (not primary target) up to X% (e.g., 10%).

- *Advantages:*
    a) Relatively easy to implement (may not require an amendment; Council could potentially request NMFS implementation).
    b) This would address concerns about enforcement of current ban on mixed trips.
    c) Industry first proposed this as a potential solution so presumably supports it.
- *Disadvantages:*
    a) Difficult to enforce; contents of cages are currently not inspected by enforcement, nor is any biological sampling occurring of the entire cage (i.e., only a few surfclam taken from perimeter/top for sampling).
    b) Dumping cage contents to sort and assess mixed percentage would likely cause additional clam breakage/mortality and it would be challenging to "refill" cages.
    c) Having an unknown percentage of mixing and landed species impacts the stock assessment and presents challenges for annual catch limit and accountability measure tracking.

3. Modify the regulations to allow for mixing of clam species (not primary target) up to X% (e.g., 10%) with additional monitoring to assess composition in the landings/cages.

- *Overall Possible Advantages (depending on the type of monitoring):*
    a) Allows for precise ITQ catch accounting, (as is assumed in the stock assessment, catch limit monitoring, and by enforcement).
- *Overall Possible Disadvantages (depending on the type of monitoring):*
    a) May require an amendment process which is time consuming.
    b) May require some changes to operations of industry or data collection systems.
    c) Would require a 100% monitoring system or carefully designed, representative sampling, which has costs associated with it.
- *Types of Monitoring (Options - sorting cage contents or electronic monitoring of cage contents)*
    A. Electronically record (video) contents of cages (on belt) prior to filling the cages.
        i. Advantages
            a. Existing electronic recording technology may be easily adapted.
            b. Clam vessels have belt with catch that can easily be surveyed without capturing confidential details onboard vessel.
            c. Could support large-scale, ongoing monitoring of the landings of both surfclam and ocean quahog. This could include the collection of length data to support the length-based stock assessment.
            d. The technology could be utilized in a way that allows for video review later for accounting purposes, or in real time that be shared in a timely manner to the fishing fleet, or to the captain onboard the vessel, to avoid areas where large amounts of mixing exist.
            e. Electronic recording may be easily installed to avoid interfering with any onboard fishing operations.
            f. Could create long-term cost advantages by avoiding fishing in areas where large overlap of species exists; may reduce or eliminate need for length sampling by port samplers.
            g. Industry in other regions have played large role in implementation of EM solutions.

ii. Disadvantages
    a. There may be resistance to adopting new monitoring technologies or concerns with proprietary information being provided.
    b. Initial cost may be high; but there may be cost offsets related to early technology adoption for the small clam fleet or making the fleet more climate-resilient.
    c. There would be ongoing costs associated with storing and analyzing the video data.

B. Visually inspect all cages on arrival at the port /processing facility and dump cage contents - sort by species and record volume.
    i. Advantages
        a. Very accurate accounting of mixed landings.
    ii. Disadvantages
        a. May require port samplers within processing facilities or to intercept vessels at the dock to process cage contents. Need a crosscheck on mixing composition beyond only the dealer report.
        b. Will require a substantial amount of labor because subsampling may not be sufficient.
        c. Dumping cage contents to sort and assess mixed percentage would likely cause additional clam breakage/mortality. Must be done before processing.

C. Electronically inspect (video) material in dumped cages at the port /processing facility.
    i. Advantages
        a. Very accurate accounting of mixed landings.
        b. Only a handful of processors (lower cost EM solution), and creates fewer on the water logistical challenges. Implies ability to dump one cage at a time, associate a tag with cage, and separate the pile enough to see the catch (unclear if feasible?).
        c. Industry in other regions have played large role in implementation of EM solutions.

    ii. Disadvantages
        a. May require some port sampler subsampling within processing facilities to crosscheck on mixing composition collected by EM.

b. May require additional labor at the processing facility to dump cages or record data to support aspects of this process.
c. May slow processing lines and have associated costs to processors.
d. Initial cost may be high; but there may be cost offsets related to early technology adoption for the small clam fleet or making the fleet more climate-resilient.
e. There would be ongoing costs associated with storing and analyzing the video data.

4. Industry Solution (No Council Action). Industry and GARFO must ensure regulations are followed, and only one species are landed and cage contents are 100% that target clam species.

- *Advantages:*
    a) The industry can find the most cost efficient and practical solution on their own.
    b) Ensures the cage contents on the vessel are 100% of the target clam species.
    c) Allows for precise ITQ catch accounting, and consistent with assumption that 100 percent of the cage contents are as tagged for each species (as is assumed in the stock assessment and by enforcement).
    d) Vessels only land one species per trip, which is appealing to processors.
    e) This would not require an amendment or Council action.

- *Disadvantages:*
    a) Given the species mixing and data quality issues, additional monitoring/sampling and/or enforcement levels may be required by GARFO to ensure regulation are followed. There may be costs associated with this depending on the approach.
    b) Industry may incur additional costs depending on the solution they identify to remove and report non-target clam species.
    c) Discards of non-target clam species will need to be reported and monitored.

5.0 Recommendations to the Council (Next Steps)

This section contains any proposed recommendations, AP, FMAT, staff, or committee. To be later completed.

6.0 References

Marvin, K.A. 1992 Protecting Common Property Resources Through the Marketplace: Individual Transferable Quotas for Surf Clams and Ocean Quahogs. Vermont Law Review 16: 1127-1168.

Wigley, S., Asci, S., Benjamin S., Chamberlain, G., Cierpich, S., Didden, J., Drew, K., Legault, C., Linden, D., Murray, K., Potts, D., Sampson, K., and Tholke, C. 2021 "Standardized Bycatch Reporting Methodology 3-year Review Report-2020.". US Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Northeast Fisheries Science Center. Woods Hole, Massachusetts, March 2021. 171p.