FINAL

FRAMEWORK ADJUSTMENT #6

to the

NORTHEAST MULTISPECIES FISHERY MANAGEMENT PLAN

To increase the minimum mesh size in the Cultivator Shoal Whiting Fishery

Prepared by

New England Fishery Management Council

in consultation with

National Marine Fisheries Service

Mid-Atlantic Fishery Management Council

First Framework meeting:	May 12, 1994
Second Framework meeting:	June 29, 1994
Submitted by NEFMC:	August 2, 1994
Action by NMFS:	

FRAMEWORK ADJUSTMENT #6
NORTHEAST MULTISPECIES FMP

To increase the minimum mesh size in the Cultivator Shoal Whiting Fishery

1.0 INTRODUCTION

The New England Fishery Management Council established the Cultivator Shoal Whiting Fishery in January, 1991 with the implementation of Amendment #4 to the Northeast Multispecies Fishery Management Plan (FMP). For three years preceding that implementation, the National Marine Fisheries Service, on the Council's recommendation, conducted an experimental fishery program to collect data about the fishery and particularly about the groundfish bycatch. Under the terms of the current management program, vessels may obtain authorization to fish for silver hake (whiting) in the specified area with a minimum mesh size of 2.5 inches from June 15 through October (unless another season is specified). The defined area is totally within the Regulated Mesh Area where possession of mesh smaller than the regulated minimum size (6 inches) is otherwise prohibited (see Figure 1, map of the Cultivator Shoal Fishery Area). The Council is proposing to increase the minimum mesh size to 3 inches using the framework abbreviated rulemaking procedure established by Amendment #5.

The framework process requires the Council to consider the adjustment over the span of at least two Council meetings, during which time the public is invited to comment on the proposal and associated analyses. The Council held the first of the two meetings on May 12 in Falmouth, Massachusetts and the second meeting on June 28-29 in Danvers, Massachusetts. The Council recommends that the Secretary of Commerce publish the adjustment as a final rule without providing further opportunity for comment.

2.0 PURPOSE AND NEED

2.1 Need for adjustment

Fishermen who have participated in the Cultivator Shoal Whiting Fishery Program during the past several years have recently asked the Council to adopt more restrictive regulations to conserve the stocks and protect the resource from a potential increase in fishing effort directed at the juvenile component of the stocks. The fishermen's concerns are based on at least two recent developments in the industry which directly affect the whiting fisheries, as well as on the assessment scientists' uncertainty about the stock status and the impact of those recent changes.

As restrictive management plans are implemented in other fisheries in the region, a significant amount of potential fishing effort is being displaced. Whiting fishermen anticipate that some portion of that displaced fishing effort will be directed on whiting since whiting is relatively unregulated and the stocks are comparatively stable. The effect of a sudden increase in fishing effort on whiting stocks and markets is uncertain, but potentially detrimental to both. The most recent advisory report from the Stock Assessment Workshop

(SAW 17, February 1994) states that any increase in effort on whiting stocks should be avoided.

Secondly, an export market emerged in the past year for juvenile whiting. The potential demand from this new market and its impact on the stocks are unknown. Assessment scientists, while acknowledging that natural mortality rates of juvenile whiting are high and that discards of juveniles in the traditional whiting fisheries are very high, have cautioned against any increase in fishing effort directed at juveniles. If juvenile mortality increases, the spawning stock biomass will decline and the catch of large whiting in traditional fisheries will also decline. Generally, increasing the mesh size will delay the age at which fish become susceptible to the gear thereby reducing juvenile mortality.

As noted earlier, with so many uncertainties and the need for caution surrounding the impacts of the emerging juvenile fishery and the displacement of effort from other fisheries, the Council has started preparing a plan amendment to regulate fishing for whiting. Except for the Cultivator Shoal program, fishing for whiting is currently unregulated and a plan amendment is required in order to establish a management regime for that fishery. While the objectives of the plan amendment and this framework action are similar, the purpose of this action is to implement the conservation measures as quickly as possible for the Cultivator Shoal fishery.

2.2 Need for final rule

The Council has considered the following factors and recommends that NMFS publish the proposed adjustment as a final rule.

2.2.1 Timing of the rule

The timing of the rule does not depend on the availability of time-critical data, and the Council did not consider data availability in its decision to recommend publishing the adjusted measure as a final rule.

The season of the Cultivator Shoal Whiting Fishery began on June 15 and runs through October. With the implementation of effort reduction programs in other fisheries in the region this year, the general decline in the abundance of other commercial stocks, and the emergence of the juvenile whiting market, the Council believes that effort on Cultivator Shoal fishery may increase significantly this year. If implemented through the publication as a final rule, the regulations could provide protection for most of the 1994 season. Since the fishing season peaks in mid-summer, the conservation benefits of the adjustment will be diminished by delaying implementation for even one month.

2.2.2 Opportunity for public comment

The Council has been discussing and hearing public comment on the general issue of whiting management for nearly a year, although it has only considered the specific issue of the Cultivator Shoal fishery since the Gloucester Fisheries Commission proposed the adjustment on April 15. In September, 1993, the Council convened a meeting of industry advisors from

whiting fisheries ranging from New Jersey to Maine. The advisory committee identified a range of alternatives and a preferred alternative which it forwarded to the Groundfish Committee for review. From September, 1993 to March, 1994, the Council held several meetings to scope out management options and review scientific information on the whiting fishery. The meetings listed below are those in which the juvenile whiting issue was discussed:

Date	Meeting	Location
9/14/93	Whiting Industry Advisors	Mansfield, MA
9/22-23/93	Council	Kennebunkport, ME
10/28/93	Council	Danvers, MA
11/23/93	Groundfish Committee and Whiting Advisors (joint session)	Danvers, MA
12/8-9/93	Council	Danvers, MA
1/19-20/94	Plan Development Team	Saugus, MA
2/2-3/94	Groundfish Committee	Peabody, MA
2/16-17/94	Council	Danvers, MA
3/7/94	Informational hearing	South Wall, NJ
3/8/94	Informational hearing	Montauk, NY

In addition, the 17th Stock Assessment Workshop conducted an assessment of silver hake stocks in the Fall, 1993 and presented its findings in a plenary session on January 25th at Ocean City, MD. The stock status and description of the fishery are presented in a separate section below.

After receiving the industry proposal for Cultivator Shoal, the Groundfish Committee placed the subject on the agenda for its May 4 meeting, at which the whiting amendment public hearing document was already scheduled for discussion. The public is informed of Groundfish Committee meetings by a letter to about 500 interested parties and advisors, including the press and industry associations. At the May 4 meeting, the Groundfish Committee recommended that the Council initiate a framework action at the May 12 Council meeting.

The public is notified of all Council meetings by publication of a notice in the *Federal Register* and the agenda is mailed to approximately 1,500 interested parties including local and trade publications and industry associations.

COUNCIL MEETING	FEDERAL REGISTER NOTICE	INTERESTED PARTIES MAILING	MEETING DATE AND LOCATION
INITIAL	5/4/94	5/2/94	5/11-12/94 Falmouth, MA
FINAL	6/21/94	6/14/94	6/29-30/94 Danvers, MA

The Cultivator Shoal Fishery Program for 1994 began on June 15, and vessels began requesting their letters of authorization approximately one week before that date. The Council sent a letter to each person who requested a Cultivator Shoal Fishery permit describing the proposed changes, informing them of the availability of the framework document, and inviting comments. Approximately twenty five vessels requested permits for the fishery and were sent notification of the Council's action. In this way, the most directly concerned individuals were personally informed of the action and of the opportunity for comment. A copy of the letter is included in Appendix I. Public comments received by the Council during this framework process are contained in Appendix I.

2.2.3 Need for immediate resource protection

The Cultivator Shoal fishery accounts for approximately one-half of the landings from the Northern Georges Bank/Gulf of Maine whiting stock. According to the Stock Assessment Workshop Advisory Report (SAW 17, February,1994) the stock is "at least fully-exploited" and the age structure is severely truncated even though the stock abundance appears to be increasing due to recent recruitment. The management advice from SAW 17 states that "under any exploitation pattern, increases in effort on this stock are not warranted." While the SAW did not complete an age-based assessment, it did estimate the fishing mortality rate to be F=0.4, near the level of the revised overfishing definition of 0.36.

2.2.4 Continuing evaluation

The current regulations governing the Cultivator Shoal Whiting Fishery require the Council to conduct an annual review of the program. The Council will also continue to monitor and evaluate the catch through the mandatory reporting requirements established by Amendment #5 and it may make further adjustments as needed through the framework process.

3.0 PROPOSED ACTION AND ALTERNATIVES

3.1 Proposed action

The Council proposes to increase the minimum mesh size in the Cultivator Shoal Whiting Fishery from 2.5 inches to 3 inches (inside stretched measurement).

3.2 Alternatives to the proposed action

3.2.1 No action

The minimum mesh size in the Cultivator Shoal Whiting Fishery is currently 2.5 inches. While the traditional "market cull" of whiting has resulted in some cases in vessels using nets with mesh sizes of three inches or more, the increased demand for juvenile whiting provides a market incentive for vessels to target the smaller fish with the smallest mesh allowed. Furthermore, vessels which are only recently entering the whiting fishery program, having been displaced out of other restricted fisheries, may not have such a clear understanding of the optimal mesh to use and may consequently fish with the smallest allowed mesh in order

to maximize catch rates. Taking no action is not consistent with the Council's intent with this framework action, nor with its management objectives as stated in the draft public hearing document for the whiting amendment.

3.2.2 Proposed measure plus a minimum fish size of ten inches with a 20 percent tolerance for undersize fish and a 30,000-pound trip limit

The Gloucester Fisheries Commission's initial proposal for adjusting the regulations governing the Cultivator Shoal Fishery included the proposed mesh size increase, a minimum fish size of ten inches with a 20 percent tolerance for undersize fish, and a 30,000-pound trip limit. Based on initial comments from some fishermen, the Groundfish Committee did not include the trip limit in its recommendation to the Council (see Appendix I). The Council, however, had already identified the so-called "10-20" proposal as its preferred alternative for a public hearing document in the development of a plan amendment to address whiting fishery management throughout the region. The Council included the 10-20 proposal in its initial draft of this framework action on the basis of the broad industry support already indicated.

The Council felt that implementing this unprecedented measure under the limited scope of the Cultivator Shoal Program would provide a valuable test of the efficacy and practicality of the proposal. At the second meeting under the framework process, the NMFS Regional Director expressed concerns about the enforceability of a tolerance factor and particularly the sampling method that fishermen and enforcement agents could use to determine compliance. On the basis of those concerns, the Council deleted this part of the proposed adjustment and moved for more immediate implementation of the minimum mesh size as quickly as practicable in the Cultivator Shoal Program. The Council intends to address the Regional Director's concerns with the 10-20 proposal and it may still propose the measure in the broader plan amendment.

3.2.3 Minimum fish size with no tolerance for undersized fish

The Groundfish Committee discussed the alternative of an absolute minimum fish size and concluded that the option is unworkable. Without the tolerance, all vessels will have to sort the catch at sea resulting in lower product quality because of the high-volume and perishable nature of the product. If the product quality is substandard when the catch is inspected by the processor, the entire catch is sold as bait or gurry.

4.0 ANALYSIS OF IMPACTS

The 17th Stock Assessment Workshop, held in the Fall of 1993, conducted the most recent assessment of silver hake stock status. Appendix II contains the Advisory Report for silver hake stocks, both the Northern Georges Bank/Gulf of Maine stock to which the Cultivator Shoal fishery is generally attributed, and the Southern Georges Bank/Mid-Atlantic stock. As the report indicates, some uncertainty exists with respect to stock boundary definition, and mixing of the stocks may occur in the region of the Cultivator Shoal. The SAW points out additional uncertainties about the exploitation pattern in the silver hake fishery and recommends against allowing any increase in the mortality of juvenile whiting.

The Council is proposing this adjustment to the regulations to protect the Cultivator Shoal fishery from a sudden increase in fishing effort, particularly directed at the smaller fish. Even though the regulations allow vessels to use 2.5-inch mesh, fishermen who have participated in this fishery for the past several years have commented that they frequently use nets with mesh sizes larger than the required minimum size. These fishermen use larger mesh, in part to avoid catching a large percentage of fish which are below the traditional market size. The Council thus expects the impact of the mesh increase on the historical fishery will be minimal. The Council does expect, however, that the mesh increase will help prevent a shift in the exploitation pattern to smaller ages by new vessels entering the fishery looking to supply the juvenile export market.

The general minimum market size in traditional, domestic whiting fisheries is ten inches and larger fish are preferred. Some participants in the fishery, particularly those from the port of Gloucester, MA, cull, ice and box the product at sea. Others, particularly those fishing out of Point Judith, Rhode Island, do not cull the product at sea but stow the catch as quickly as possible in a temperature-controlled environment so it can be sorted ashore. In this operation, vessels land the undersized (by market standards) fish instead of discarding it at sea. Once the fish are sorted, the undersized and unmarketable components are sold as lobster bait or used for industrial purposes. In both cases, fish that are smaller than that which can be marketed are either discarded or sold for industrial purposes reducing the economic yield of the fishery.

By increasing the mesh size, and therefore the selection pattern of the gear, fewer small fish will be caught, increasing the potential yield from the fishery by reducing the revenues lost due to discarding or industrial uses of the catch. Furthermore, since approximately 50 percent of the ten-inch fish are sexually mature, increasing the mesh size to allow more ten-inch fish to escape will increase the spawning stock biomass per recruit while not significantly impacting traditional whiting fishery operations.

4.1 Biological impacts

4.1.1 Mesh size

Data collected in scientific gear studies, like the commercial catch, is highly variable and suggest a wide range in the selection pattern for meshes in the 2.5-3.5 inch range. Selectivity studies on whiting suggest that a 1/2-inch increase in mesh size may raise the L50 (the length at which 50 percent of the fish of that length are retained by the net) by up to 5 centimeters or nearly one year in age. Whether the mesh increase under commercial conditions will produce the same results, however, remains unknown due to the number of factors contributing to the exploitation pattern (stock conditions, area variations, fishing patterns and gear configuration to name a few).

Figure 2a shows the silver hake selection curves for four mesh sizes ranging from 2.0 to 3.5 inches (diamond mesh) based on data collected by Jensen and Hennemuth in 1966. According to these data, approximately 22 percent of the 10-inch fish will be caught by the proposed 3-inch mesh, as opposed to approximately 32 percent with the 2.5-inch mesh. More recent whiting mesh selection studies undertaken by Arnie Carr and Jessica Harris of

Massachusetts Division of Marine Fisheries corroborate the earlier data with respect to the selection of fish in the size range of nine to eleven inches (Figure 2b). The later studies suggest that the L50 is significantly lower than that predicted by Jensen and Hennemuth further demonstrating the variability in the whiting selectivity data.

Figure 3 shows the length frequencies of the catch on sampled trips in the Gulf of Maine and Northern Georges Bank from 1989 to 1992. Based on the increased selectivity of the larger mesh, discards which are predominantly of fish under ten inches may be reduced significantly. Theoretically, the yield from the fishery would increase if the number of small fish that are caught and discarded were to be reduced by increasing the mesh size in use.

Figure 4 shows the relationship between length and age of silver hake, and indicates that slightly more than half of all 10-inch fish are sexually mature. While questions remain about whether the Cultivator Shoal is a spawning area, there may be some overlap of the spawning season for the northern whiting stock and the Cultivator Shoal fishing season. Delaying the age at first capture to a time after fish have reached sexual maturity will increase the spawning stock biomass per recruit. In the case of whiting in the Cultivator Shoal area, the timing of the delay may actually result in increased opportunity to spawn. As with the yield-per-recruit discussion, the actual impacts on spawning stock biomass per recruit of a 1/2-inch increase in the mesh size applied to a portion of a stock or stocks cannot be quantified but, theoretically, the impacts will be positive.

4.2 Economic impacts

Under the current fishing pattern, a significant portion of whiting are discarded on the basis of size. As a result, future revenues are foregone and stock recruitment is negatively impacted by the resultant decline in spawning stock biomass per recruit. If a directed fishery for juvenile whiting develops in a way that increases the mortality of juveniles, the long-term yield from the fishery will theoretically decline. If, on the other hand, the juvenile market is supplied by whiting that otherwise would have been discarded, or if the catch and discarding of juvenile whiting in traditional fisheries is reduced, the economic yield from the resource may increase. By increasing the minimum mesh size, the Council is taking the latter approach.

The Council does not expect this action to significantly increase costs for vessels currently in the Cultivator Shoal fishery. While some vessels will need to purchase larger mesh codends, many vessels already use the larger mesh at times and thus have the nets available. For those vessels that cull the product at sea, culling time will be reduced since, theoretically, fewer small fish will be caught. Furthermore, the fishermen who requested this action have indicated a willingness to bear the costs of the proposal noting that the protection which these measures will provide to the stocks outweighs the costs.

Available data is insufficient to quantify and model the overall economic impact of the proposed action. The problem is complicated by the fact that the mesh size is not being applied to an entire stock but to an area in which, arguably, two stocks are mixing. Even if the fishery could be attributed to part of a single stock, the question that remains is how a change in mesh will translate into a change in the partial recruitment and the exploitation

pattern for the stock as a whole. Conceptually, however, since the cost of increasing the mesh size is low, and since the reductions in catch will most likely be on those components of the catch which otherwise are discarded in traditional whiting fisheries, the Council expects that the economic benefits of the proposed action will be positive.

5.0 APPLICABLE LAW

5.1 Magnuson Act- Consistency with National Standards

Section 301 of the FCMA requires that any regulation promulgated to implement any FMP or amendment shall be consistent with the seven national standards listed below.

1. *Conservation and management measures shall prevent over-fishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.*

   The proposed action will reduce the catch of juvenile whiting and whiting that is below the market cull for traditional whiting fisheries which otherwise would be discarded. The impact of reducing discards will be to improve the yield from the fishery and, since the fish that are being protected by the mesh increase are at or near the age of sexual maturity, to increase the spawning stock biomass per recruit.

2. *Conservation and management measures shall be based upon the best scientific information available.*

   This measure is consistent with the recommendation from the Northeast Fisheries Science Center's 17th Stock Assessment Workshop that the mortality rate of juvenile whiting should be reduced. The measure is based on historical mesh selectivity studies as well as more recent studies conducted by the Massachusetts Division of Marine Fisheries.

3. *To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.*

   At this time, with the exception of the Cultivator Shoal Whiting Fishery Program, whiting fisheries in the region are not regulated. The Council initially established the Cultivator Shoal Program in order to allow small-mesh fishing in the Regulated Mesh Area since the fishery had been shown to have an insignificant impact on the regulated multispecies fisheries. The Council is in the process of developing an amendment to the FMP which address whiting management throughout the region.

4. *Conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.*

The Cultivator Shoal Fishery Program is open to residents of all states. The proposed mesh size increase has no implications for the allocation of fishing privileges.

5. *Conservation and management measures shall, where practicable, promote efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.*

The proposed action will reduce discards of juvenile whiting by increasing the selectivity of the gear. Reducing discards of juvenile fish will increase the yield from the resource and increase spawning stock biomass per recruit, thereby improving efficiency in the utilization of the resource.

6. *Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.*

The Council is making this adjustment to the regulations using the framework abbreviated rulemaking procedure established by Amendment #5 to the Multispecies FMP. As such, the Council is acting in a manner which is fully consistent with the guidelines for this national standard as contained in Section 602 of 50 CFR.

7. *Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.*

The proposed action does not significantly increase the cost of fishing in the Cultivator Shoal program and is merely an adjustment to a mesh-size regulation already in effect.

5.2 National Environmental Policy Act (NEPA)

The Council conducted an Environmental Assessment of Amendment #4 to the Multispecies FMP which included the establishment of the Cultivator Shoal Whiting Fishery. For Amendment #5 implementing the groundfish effort reduction program and other measures, the Council produced an Environmental Impact Statement which is contained in Volume I of the amendment document. Amendment #5 did not change the measures applicable to the Cultivator Shoal but the amendment may indirectly impact the fishery, particularly as fishing effort is displaced out of the large-mesh fisheries.

5.2.1 Environmental Assessment

The purpose and need for the proposed action are discussed in Section 2.1. The proposed action and alternatives, including the no-action alternative, are discussed in Section 3.0. Appendix II contains the most recent Advisory Report on Stock Status, and further detail on the affected environment can be found in Section E.6.0 of Amendment #5. The environmental consequences are discussed in Section 4.0 of this document. Based on this analysis, the Council finds that the proposed action will have no significant impact on the environment.

5.2.2 Finding of no significant environmental impact (FONSI)

NOAA Administrative Order 216-6 provides guidance for the determination of significance of the impacts of fishery management plans and amendments. The five criteria to be considered are addressed below:

1) *Can the proposed action be reasonably expected to jeopardize the long-term productive capability of any stocks that may be affected by the action?*

The proposed action is being taken to prevent an increase in fishing effort directed at the juvenile component of the whiting stocks in the Cultivator Shoal area. Concerned members of the industry and the stock assessment workshop have suggested that if such an increase were to occur, the spawning stock biomass would decline and the landings of large whiting would decrease. The Council feels that just such an increase in juvenile fishing mortality is possible, if not imminent, based on the development of a market for the small fish and the displacement of fishing effort out of other regulated fisheries in the region. The no-action alternative is expected to jeopardize the productivity of the whiting stocks by allowing effort to be directed on the juvenile fish increasing the mortality of that component of the population.

2) *Can the proposed action be reasonably expected to allow substantial damage to the ocean and coastal habitats?*

The proposed action is not expected to impact coastal or ocean habitat.

3) *Can the proposed action be reasonably expected to have an adverse impact on public health or safety?*

The measure is not expected to have any impact on public health or safety.

4) *Can the proposed action be reasonably expected to have an adverse effect on endangered, threatened species or a marine mammal population?*

The NMFS Biological Opinion for Amendment #5, issued under authority of Section 7 (a) (2) of the Endangered Species Act indicated that the "existing fishing activities and related management measures proposed ... are not likely to jeopardize the continued existence of any threatened or endangered species under (NMFS) jurisdiction." The proposed measure does not change that finding.

5) *Can the proposed action be reasonably expected to result in the cumulative adverse effects that could have a substantial effect on the target resource species or any related stocks that may be affected?*

The proposed action is intended to be a part of the overall groundfish management program implemented through Amendment #5. As such the cumulative effect is expected to be consistent with that of the Multispecies FMP. The proposed action is not expected to add to the effect of the FMP on other stocks.

The guidelines on the determination of significance also identify two other factors to be

considered: degree of controversy and socio-economic effects. Since the proposed action is merely an adjustment to an existing regulation and is being taken in response to industry petitions, the Council expects no significant socio-economic impacts. The Council also has determined that the proposal is not controversial since there has been no substantial dispute on the environmental effects of the proposed action. Based on this guidance and the evaluation of the preceding criteria, the Council proposes a finding of no significant impact.

FONSI statement: In view of the analysis presented in this document and in the DSEIS for Amendment #5 to the Northeast multispecies Fishery Management Plan, it is hereby determined that the proposed action would not significantly affect the quality of the human environment with specific reference to the criteria contained in NDM 02-10 implementing the National Environmental Policy Act. Accordingly, the preparation of a Supplemental Environmental Impact Statement for this proposed is not necessary.

_____ _____

Assistant Administrator for Fisheries, NOAA — Date

5.3 Regulatory Impact Review (Regulatory Flexibility Act and Executive Order 12866)

This section provides the information necessary for the Secretary of Commerce to address the requirements of Executive Order 12866 and the Regulatory Flexibility Act. The purpose and need for management (statement of the problem) is described in Section 2.0 of this document. The alternative management measures of the proposed regulatory action are described in Section 3.0. The economic impact analysis is in Section 4.2 and is summarized below under the discussion of how the proposed action is characterized under Executive Order 12866 and the Regulatory Flexibility Act..

5.3.1 Executive Order 12866

The proposed action does not constitute a significant regulatory action under Executive Order 12866. (1) As stated in section 4.2, the management proposals will not significantly impact the landings and revenues of the existing fishery. Therefore, the proposed action will not have an annual effect on the economy of more than $100 million. (2) Since the proposed action is being taken to protect the juvenile component of whiting from directed fishing trips, it will prevent a decline in spawning stock biomass or yield per recruit and, therefore, will prevent a reduction in the economic benefits generated from this fishery. For these reasons, the proposed actions will not adversely affect in a material way the economy, productivity, competition and jobs. (3) For the same reasons, it will not affect competition, jobs, the environment, public health or safety, or state, local or tribal governments and communities. (4) The proposed action will not create an inconsistency or otherwise interfere with an action taken or planned by another agency. No other agency has indicated that it plans an action that will affect this fishery. (5) The proposed action will not materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of their recipients. (6) The proposed action does not raise novel legal or policy issues. Regulations regarding mesh size have long been used to manage other fisheries in the

Northeast, and the Cultivator Shoal Fishery has had a minimum mesh size since its establishment under Amendment #4.

5.3.2 Regulatory Flexibility Act

The Cultivator Shoal fishery is composed of small business entities. The number of active vessels in the fishery was 14 in 1991, 19 in 1992 and 29 in 1993. The majority of the vessels fished out of and landed in the ports of Gloucester or Point Judith. The proposed reductions are not expected to have any significant effects on the existing fishery since many of these vessels are already fishing with mesh sizes larger than the required 2.5 inches. Therefore, the proposed action would affect less than 20 percent of these fishing operations. For the same reasons, the proposed action will not result in a reduction in annual gross revenues of more than 5 percent. Similarly, the proposed measures will not increase annual compliance costs for small entities by more than five percent and they will not increase compliance costs for small entities compared to large entities.

The proposed action, therefore, will not have a significant economic impact on a substantial number of small business entities and a Regulatory Flexibility Analysis is not required.

5.4 Endangered Species Act

See Section 8.4, Volume IV of Amendment #5 to the Northeast Multispecies FMP. The Council finds no cause to change its earlier findings with respect to the Endangered Species Act requirements.

5.5 Coastal Zone Management Act (CZMA)

Upon the submission of Amendment #5, the Council conducted a review of the FMP for its consistency with the coastal zone management plans of the affected states and all the states concurred with the Council's consistency determination. See Section 8.5 Volume IV of Amendment #5 to the Northeast Multispecies FMP for the Council's consistency determination. The states' response letters are on file at the Council office. The Council has determined that the proposed action is within the scope of measures already reviewed and that the consistency determination done for Amendment #5 is sufficient. The affected coastal states have been informed of this decision.

5.6 Paperwork Reduction Act (PRA)

Copies of the PRA analysis for Amendment #5 to the Northeast Multispecies FMP are available from NMFS Regional Office. The burden-hour estimates are detailed in the Classification section of the *Federal Register* notice of the final rule implementing the amendment (*Federal Register*, vol. 59, no. 40, p. 9885, March 1, 1994). The proposed action requires no additional paperwork.

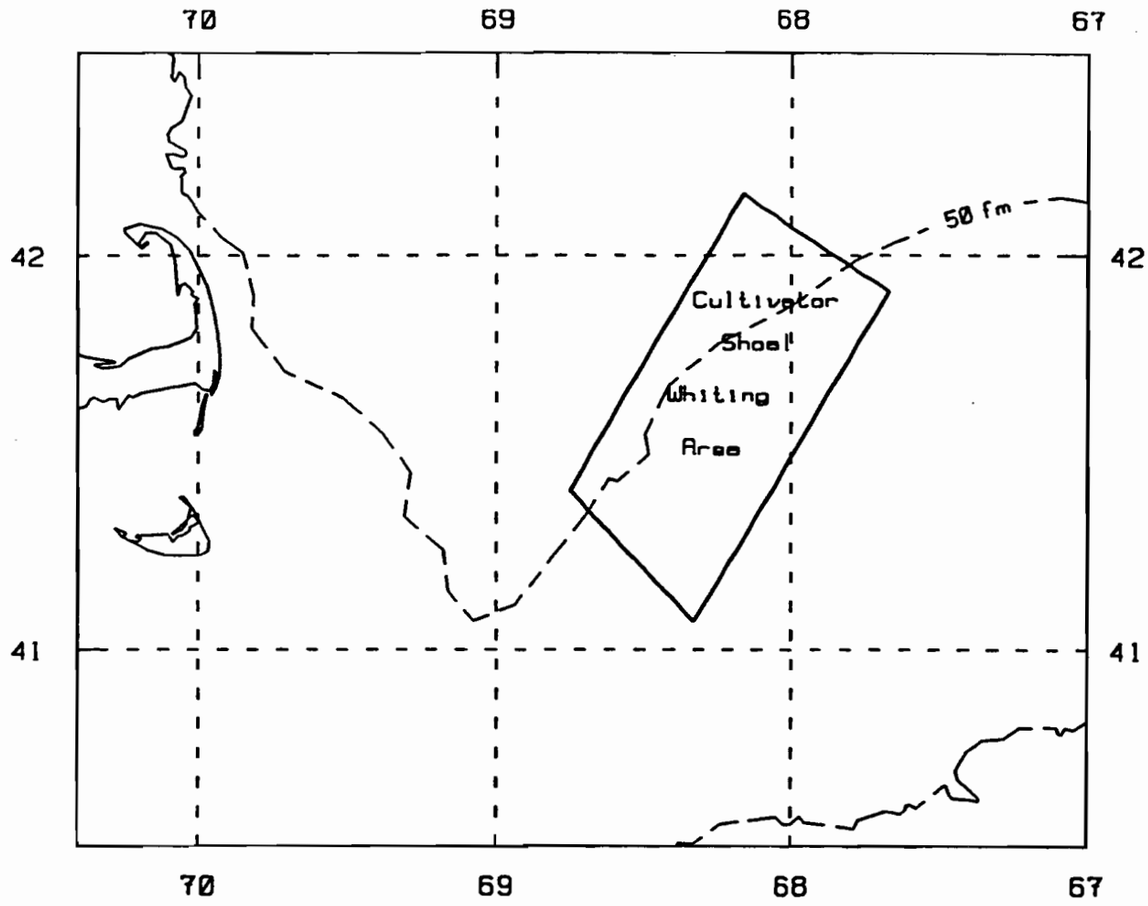


Figure 1- Map of the Cultivator Shoal Whiting Fishery Area

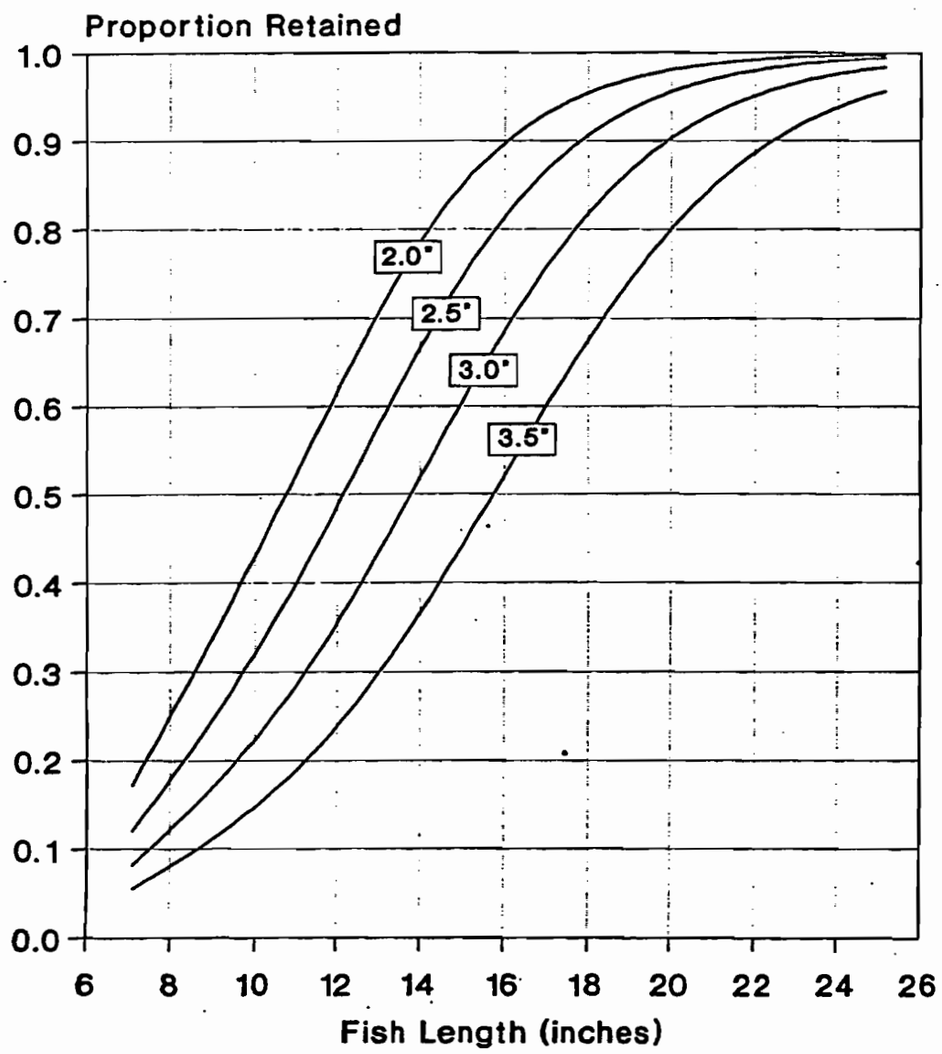
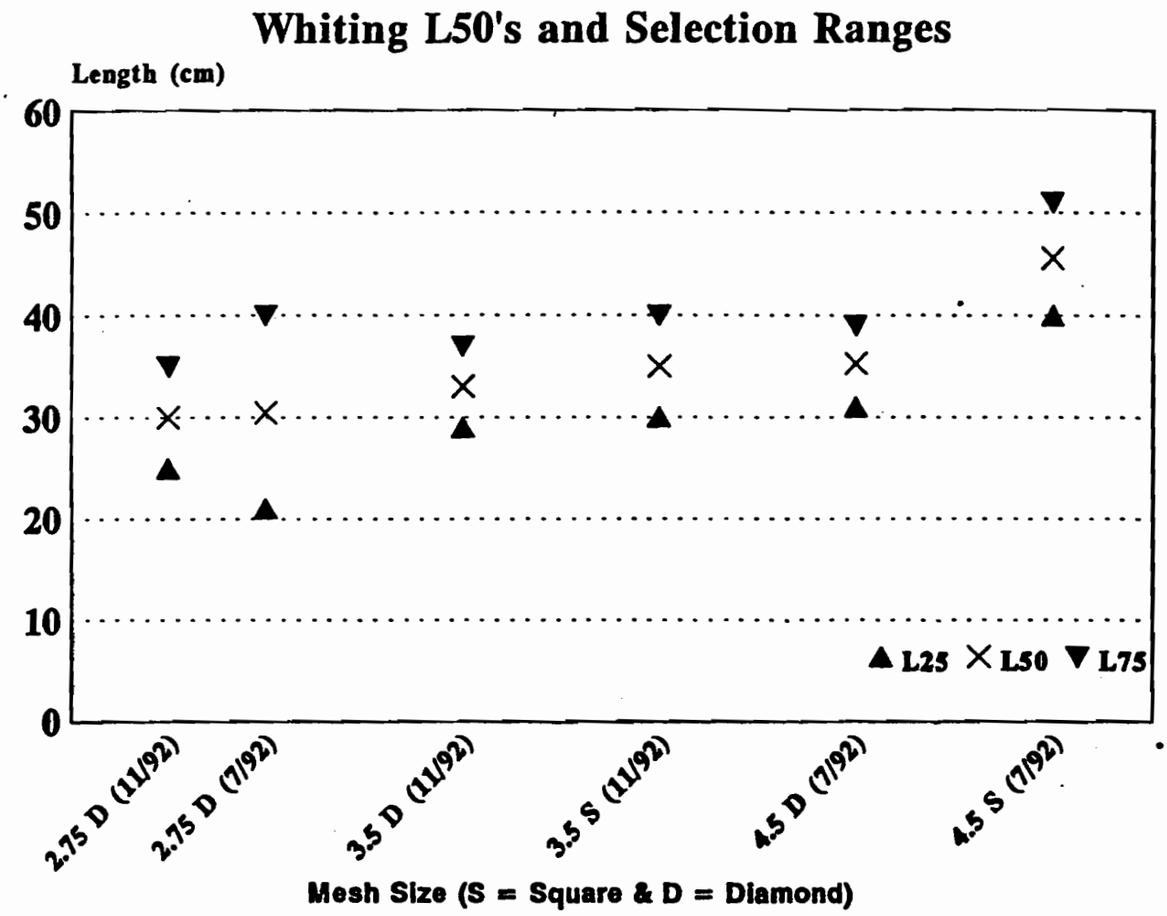


Figure 2a- Size selection of silver hake, after Jensen and Hennemuth, "Size selection and retainment of silver and red hake in nylon codends of trawl nets", in ICNAF Research Bulletin, No. 3, 1966.



■Mesh sizes are in inches and were determined using the Marfish Gauge.

■Selection characteristics were calculated from retention probabilities calculated from data summed over all tows.

•Sources:
7/92 = DMF Cruises on R/V DELAWARE & 11/92 = commercial fishing vessels — Mass. Division of Marine Fisheries, Sandwich, MA.

Figure 2b- Mesh selection characteristics for whiting calculated from data collected by Massachusetts Division of Marine Fisheries in 1992.

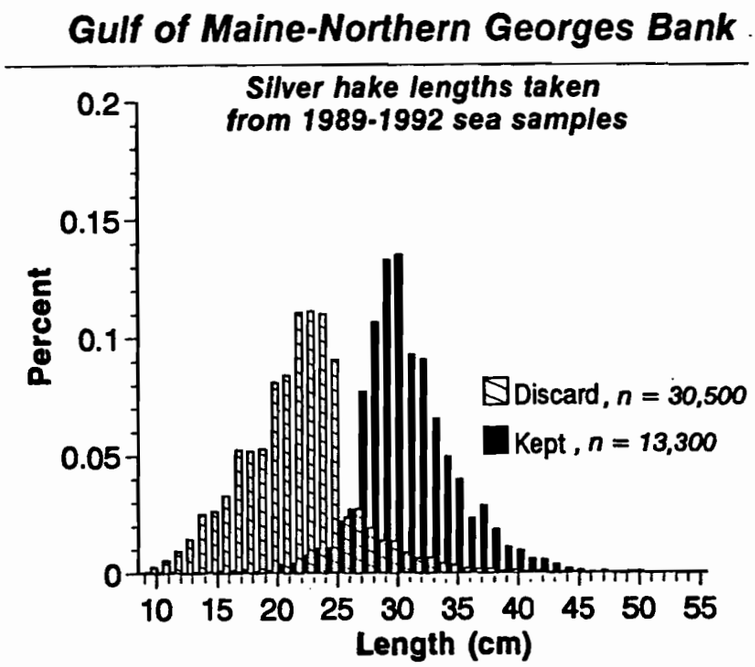


Figure 3- Length frequencies of silver hake caught on sea sampled trips in the Gulf of Maine and Northern Georges Bank in 1989-1992.

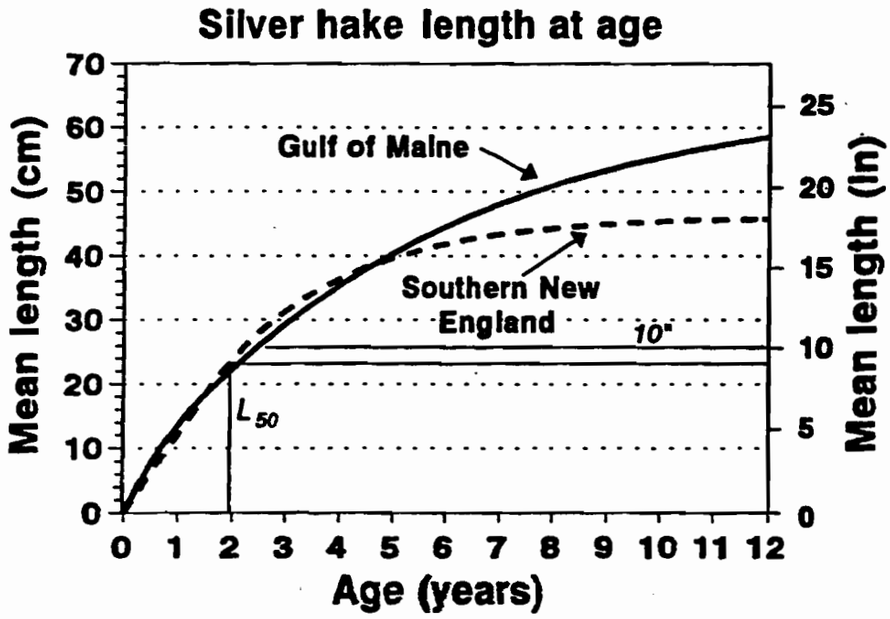


Figure 4- Length at age of silver hake showing the length at which 50 percent of the fish are sexually mature

APPENDIX I

Public comments on Framework #6

Northeast Multispecies (Groundfish) FMP

Public Comments
Framework #6- Multispecies FMP

The Gloucester Fisheries Commission's initial proposal for the Cultivator Shoal Whiting Fishery contained three measures: a minimum fish size of ten inches with a twenty percent tolerance for undersize fish, a minimum mesh size of three inches and a 30,000-pound trip limit. At the May 4 Groundfish Committee meeting, several members of the public spoke on the proposal. Joe Testaverde, a whiting fisherman from Gloucester, stated that catch rates have declined in recent years and that 30,000 pounds has been an average trip . The proposed trip limit would prevent excessive catches. Committee member Jim McCauley from Point Judith stated that a trip limit would take the boats from Point Judith out of the fishery.

Steve Alfieri, NMFS Enforcement, stated that catch limits and bycatch allowances are difficult to enforce, especially at sea, and that they promote smuggling and inaccurate data collection. Ed MacLeod, Point Judith Fishermen's Coop opposed the trip limit. Fred Matera, a whiting fisherman from Point Judith representing eight vessels, stated that his boats are fishing with 3-inch mesh and that he supports the "10-20" proposal but opposes the trip limit.

The committee voted to recommend a framework action with the "10-20" measure and the 3-inch minimum mesh size, but no trip limit. Fred Matera commented that if the measure is not implemented until after the end of July, it may not have a significant impact since in recent years the fishery has tended to slow down significantly in August.

At the May 12 Council meeting, the first of the two required meetings under the framework procedure, the Point Judith Fishermen's Cooperative provided the only public comment which was a statement in support of the Council's proposal.

The following is a verbatim transcript from the June 29, 1994 Council meeting containing public comment on the proposed adjustment and the analysis of impacts as well as the full Council discussion. Written comments submitted on this framework action are also attached. Based on concerns about the practicability and statistical validity of the minimum size tolerance provision, the Council eliminated the minimum fish size component of the proposal.

Philip Haring, NEFMC Staff member: Framework Adjustment #6 is to increase the minimum mesh and fish size in the Cultivator Shoal whiting fishery. This was an action prompted by a request from the Gloucester Fisheries Commission to the Council. The original request was for a ten-inch minimum size with a 20 percent allowance for undersize fish. This is an increase from 2-1/2 inch to 3 inches on the minimum mesh size and a 30,000 possession limit. The Groundfish committee, when it first considered it, dropped the 30,000 pound possession limit. I would like to point out that the 10/20 proposal is the same as that which is contained in the whiting public hearing document as a preferred alternative. Implementing this through a framework and publishing it as a final rule, or at least getting this rule for a meaningful part of the season, will enable both fishermen and enforcement people to have some experience with it. It is a new kind of rule and has not been used here. This is the first time that a minimum size for whiting has been used and this can be thought of as a test for the regional whiting regulation preferred alternative if that goes forward.

There are some technical questions about the applicability of the mesh size with whiting because it is such a high volume fishery. However, there are some indications that you do select smaller fish out with a 1/2 inch increase in mesh. It does not show up conclusively, but it is an improvement. The other thing about this rule is that, at this time, it does not appear to be a restrictive regulation. The vessels that have traditionally participated in this fishery are fishing for a market call of at least ten inches. Also, they are using two and one-half inch to three inch-mesh sizes according to testimony from fishermen and in some cases larger than 3 inches. The rule is more a preventive measure and the primary purpose is to protect against an increase in the fishing mortality of juvenile whiting which is imminent or predicted on the basis of two major factors: 1) the development or emergence of an export market for undersize whiting in the 8 to 10 §inch range; and 2) vessels that are being displaced from other fisheries that have effort to burn, are looking for relatively unregulated fisheries that they can get into and whiting is one of them. If there is a market for undersized fish and an excess of effort or a surplus of effort that is looking for something to do, the fishermen that are involved feel that this is a recipe for an increase in the mortality of juveniles. The stock assessment that has been done on whiting recently has some problems that prevent it from making conclusive statements about some parts such as the catch at age and the stock boundary definitions, but they generally did point out that any increase in juvenile mortality at this time is not warranted. This action could possibly address that concern by preventing an increase in the fishing mortality of juvenile whiting.

James McCauley, Council member: Just for information, it was last week that I heard that the overseas market for juvenile whiting was about at the 250,000 pounds a week level.

Mr. Haring: We have tried to get some hard numbers on this and it has proven difficult, but we are on the verge of getting some official figures on the market to substantiate, but that is the first number I have heard in a long time.

Tony DiLernia, MAFMC member and liaison: I have a question, Mr. Chairman. If this framework was approved, how soon before it becomes implemented?

Joel MacDonald, NMFS General Counsel: It is hard to say how long it would take to implement it because, again, there is no time frame associated with it as there is a final rule implementing an FMP. It is my understanding that this document has not been made available to the public prior to this second meeting and there has not been much public comment on it. Is that true?

Mr. Haring: The public has been notified that this framework action is taking place and it has been discussed in the trade press as well as in Council meeting notices. We had a unique opportunity with this Cultivator Shoal public hearing document to directly inform the fishermen who are involved. They have to get a letter of authorization from NMFS so we sent a notice of this action and the availability of this document to NMFS so that they could include it with every permit they sent out with the authorization to participate in this fishery. The state of Rhode Island has a cooperative arrangement with NMFS where they directly issue authorization letters and they also included a notice of this action. So, in this case, every person who requested a Cultivator Shoal permit was notified and had the opportunity to provide oral or written comments.

Mr. MacDonald: The reason that I raise this issue is that this framework action is a short cut of the normal APA process. If there isn't adequate public comment and involvement it really opens up the final rule to a successful attack on a procedural flaw. I don't want to see that happen.

Mr. DiLernia: Is there an answer to my question as to how soon it would be implemented?

Mr. MacDonald: There is really no way to gauge how long it will take the agency to implement it.

Mr. DiLernia: The reason that I ask is that the management that is being proposed here is very similar to the preferred alternative to the whiting fishery (inaudible) and this is on the Cultivator Shoal fishery and making a decision on the proposed alternative to the entire whiting fishery.

Mr. McCauley: That was discussed in the Groundfish Committee and was more or less the intent at the time. I think the answer to your question was that they said that the earliest would be the end of July. That was the information we were working on and why we went with this framework adjustment. This fishery goes on until October. It peaks in August and peters off in September and many vessels don't participate in October. Your question was a good one in that we were trying to decide on the 20 percent tolerance and this would be a test case for that whole issue and would probably be in effect for, at the most, a month to six weeks. It would give everyone a chance to find out how it worked.

Mr. Peterson: Thank you, Mr. Chairman. It is not a direct question to Mr. DiLernia, but part of the timing of getting these things done is the complexity of it and I have to raise the issue that I am still very troubled by the ability to enforce a 20 percent tolerance, what the implications are, how we are going to do that and at this point in time, it has not been brought to my attention of how able we will be to do that. That may become a question which will hang it up and have to be sent back to the Council. This is a question at this point in time that I don't think has been adequately addressed and may delay the implementation.

Mr. Haring: The question of how this 20 percent tolerance or allowance would be implemented is a valid concern. On the advice of general counsel who has discussed it with NMFS enforcement, the preference that I received was that we leave the language general, that is, it be done on the basis of a random sample and that NMFS enforcement would then, in consultation with the Coast Guard, design some sampling guidelines to implement this. They would rather have that flexibility than something from the Council that specifically says you take ten boxes and you count the fish or use a coffee can, or whatever. I think unless I get guidance from the Council and from yourself and the enforcement people in the room, I think we will go forward with that general characterization in submission of the document.

Mr. Peterson: I understand that and that is one of the reasons that I said this could get hung up. While I am regional director, I am not going down the scallop road all over again I can guarantee you that unless we work out a system that the industry disagrees with, i.e. what is a sample, what is not a sample, and given the fact that we will be talking 50,00 to 100,000

pound trips. Before I sign off on it I am going to be comfortable that everyone is in agreement of how it's going to be enforced and we will sign it in blood.

Mr. McCauley: Mr. Austin, are you willing to say anything of how easy it is? I invited Mr. Austin down to the Pt. Judith Coop to see how it is done in real life. I don't think it is a difficult process to come up with. It is pretty simple.

Mr. Austin: I did go down to the Coop about six weeks ago and Mr. McCauley showed me the facility where they were landing the whiting and processing it. It was an education for me because it was clear that it was a high volume type of fish that was landed. I participated in the sorting process and the measuring of it. The samples were there and I didn't see it to be a very difficult process. Clearly it was a dockside type of enforcement because of that possession limit. It is not something that someone can go to bins at sea and try to determine it at sea. Mr. Peterson's comments about having an agreement amongst the Council members on how it would be enforced I think is very prudent because the way I might come up with it may be different from what Mr. McCauley showed me. Some other expert from the industry may think its the best way to do it. Where it is such a big issue, I think it's very important that concurrence be reached on the method used and for the Council to decide the on an enforcement policy.

Mr. Peterson: That is the point. I don't presume that it is very difficult. I could probably devise a system or probably accept what the Coop uses, but our experiences in scallops is that when people have a citation, they don't agree with the system any more. They start to argue whether you have been fair or unfair. I cannot get into that ball game. We have to have an agreement that everybody is willing to live with. I will not go down the scallop path again. We gave a tolerance of 33 percent in scallops and that became the operational nod, so then when you were at 34 they would say that they were only over by one. No, we would say, you are over by four. We are not going to get into that as long as I am regional director. If it says ten percent, then 10.2 percent is a violation. A tolerance is not the operational limit and the method for sampling, how the samples are picked, how they are measured should all be clear. As a fish biologist, I know the problems of measuring fish. We are saying there is a minimum size and there is a tolerance and we all have to be very comfortable of how that is drawn. I see this tolerance issue as a hang up in this very high-volume fishery because you can't spend hours and hours checking out each and every boat.

Mr. McCauley: I can tell you that I could never land a legal box of fish with a fixed size on whiting. It cannot be done. Next thing we know we will be doing it for squid. You are talking about a trip of 150,000 pounds of fish that you have to look at for size and they all look the same. It is one thing to look at yellowtail flounder, but these things spoil, unless you just take and call it a ten-inch fish and everybody brings in twelve and you jump it a couple of inches. I told the guys when they are doing yellowtails, that if you bring in one that is right on the nose I don't want to see it, I want to see a quarter or half-inch leeway because we just cannot take them out. This is different. I think that is why we are looking at a tolerance and this is a test case for a lot of different species here and in the mid-Atlantic that you cannot just use a fish size. This means that you are back to a mesh-size regulation that creates a problem because, as you all well know, having a variability of different kinds of species and the flexibility of going from one different species once you lock a mesh size in.

That means that is a directed fishery for that fish. We are trying to avoid that in the preferred alternative with whiting. It would mean that you could not fish for squid, for example. We are talking about a limited number of boats, all registered to fish in Cultivator Shoal. We are not talking about turning this on to the whole fleet.

Mr. Peterson: I don't want anybody to misunderstand me. I am not opposed to doing it. I support it and I think we ought to do it. I am not comfortable with NMFS deciding how we will do sampling. I know the first time we make a case we will be up to our eyeballs in arguments. I just want everyone to agree beforehand on how the samples will be taken, what they mean and this is when a violation occurs.

Mr. Brancaleone: Mr. Testaverde, the Gloucester Fisheries Commission brought forward this issue. Did you discuss the problem of what happens when you are at 20.2 percent and you get cited?

Joseph Testaverde: The 20 percent recommendation really came out of the industry meetings that took place a year ago. Everybody thought it could be worked out. It will come down to some agreeing and some won't. There will always be someone that does not agree. When we presented this, it was for a test for the whole whiting plan that is coming. Not that it is all perfect, but when the whiting plan eventually comes, this would be a test and gives us a chance to try out the three-inch mesh and see what it is doing. Also to try out the 10/20 which was what the industry wanted on a limited basis, Mr. Peterson, because we are talking about less than twenty boats who will go to Cultivator Shoal. I am the smallest boat that goes there. If you want us to sign off when we sign that permit, if you agree, we'll come up with a way of getting the 10/20 percent and we will agree when we sign off and take out the permit that we agree to that standard. Otherwise, we don't take the permit and we don't go to Cultivator Shoal. It's that simple, I think. If the guys want to try it, let's try it. Let's do something so that we can get some data together for the whiting plan. Whiting are not in the best of shape. That is why we came out with the plan. We see the whiting going downhill faster than what the records are showing. We want to do something now. You can meet with the guys from Pt. Judith and Gloucester and meet with law enforcement and the Coast Guard and we can work out how we can figure out the 20 percent and then we will sign off on the permit.

Tony Verga, Gloucester Fisheries Commission: It seems to me that this whole Cultivator Shoal whiting fishery started as an experimental thing in the first place. I think the important thing here is increasing the mesh size to three inches. You should go on and try it as an experimental fishery and see just exactly what you are getting out of there when you are getting your trips landed. If it exceeds 20 percent then you know it doesn't work. But, at least you are trying and by increasing that to a three-inch mesh, a lot of the smaller stuff that you would normally be catching is going to escape. To say that it isn't going to work or not, the only way is to experiment with the thing in the first place. The three-inch mesh should certainly be put in place.

Mr. Borden: Since anything we do on this subject, the way I interpret it, will be an improvement from a conservation basis. As the industry seems willing to comply with it, is there any necessity that we have a specific penalty for a violation at this point. In other

words, is it possible to put in the 10/20 and just say we are going to monitor it for X period of time and then decide whether or not there should be specific penalties that are associated with it. I think all the points that Mr. Peterson made, since that went back to the point when I was chairman of the Scallop Committee, I absolutely have to agree with his points. The problem is created when you assess the penalty and somebody is one-tenth of a meat count or one meat count over. I would just view this as having the industry concerned about it and they are willing to try and comply with it and it is a small number of boats. I don's see why we just can't put it in as an experimental provision or some other qualifier, try it, and monitor it for the rest of the season without the penalty.

Mr. Peterson: We are talking about two things here. One is an experiment to see if you can do this and there is nothing to stop us from doing that right now, no constraints that says you can't fish with a three-inch mesh, that you can't sample the catch and try to stay above the ten inches. That can all be done now without regulations. What this says is that we are making a regulatory amendment to the Plan that then comes out in rules and regulations. We don't write rules and regulations and then say they don't mean anything. It's a small number of boats and we want to do an experiment, that is fine. We are taking this forward, not something that is an experiment, but an amendment or, in better words, an adjustment to an FMP and it's going to have the force of law when it is in place. That is the difference. I see ways around it and again it's not one of opposition at all, not in the least. I think Mr. Testaverde's comment about an agreement, *a priori*, as a condition of the permit and that the permit would be given up if the person violates it. I think there are ways that you could work it out, but they are not worked out at this point in time and the commentary that it will be up to NMFs is not adequate, in my point of view. We use to have a legitimized small mesh fishery when you were suppose to keep a record. If you remember, NMFS cited people for going over the 25 percent and all hell broke lose..."how come you are violating us for telling you what we are catching?" It wasn't a provision to say you could catch whatever you want, that was the restriction. I see the same kind of problems in this if we don't all come to an agreement, particularly the sampling regime. How do you sample the takeout of 100,000 pounds? Are you going to keep someone there for the whole operation? There will be several boats. Where and how do you pick those samples? Not that it can't be done. I am comfortable that it can be done. The level of precision will vary on how we do that, but people have to accept how that sampling regime is, is the one that says whether you violated it or not. Now if we don't want to make a violation out of it, then we should not put it in the rule and regulations.

Mr. Borden: Not to debate Mr. Peterson, but it seems to me that one of the prerogatives that the Council has here is the way we did with scallops. We had a tolerance that we clearly allowed. Everybody understood that around the table. We also prescribed a specific penalty schedule that was triggered, based on certain levels of violations which was very graduated. We could use some creative thinking here and have a very low or insignificant penalty for minor infractions over the 10/20 rule and make it more severe at the top end for people that are clearly trying to violate the regulations.

Mr. Haring: With regards to doing an experimental fishery or conducting some additional data collection, I don't think it is really necessary. We know that the 10/20 came from the industry and that was their sense of what their catch was. What I did as I went into the sea

sampling data was take the length/frequency and converted them to weights, and discovered that they were right. At least on the basis of all the sea sampling trips that caught whiting, the proportion of fish under ten inches was approximately 20 percent of the whiting landed. We know that basically that is a snapshot of what is going on. In fact, we are at the point now that all we have to do is figure out how to incorporate that into the rule. Getting more data is not going to substantiate the validity of this measure at this point.

Thomas Testaverde, fishing boat owner: I made three trips there last week on the Cultivator Shoal. I got 175 meshes of 3-inch inside. I think it culls pretty good. I also got inquiries from New York and off of Long Island and they wanted to know if there were any small fish there yet because they weren't there for the European market and I guess they are looking for it. It's not eight to ten inch they are looking for, but five inch if they can find them. As far as the 10/20 is concerned, I don't want to get a fine for twenty pounds of eight inch whiting. If there is going to be a confusion, let it go by for now. I would like to see that a 30,000 trip limit on it. It might help a little in case some guys want to go there for small fish for the Spanish market. The 3-inch mesh is working and looks pretty good.

Mr. Allen: I think the point that this is not a marketing call and not something that doesn't have the force of law is a key one. I think the scallop meat count was fine if you were using it to buy scallops, grading them and doing that. When you turned it into a law with penalties, it became something entirely different. I had thought as I read through these documents prior to the meeting that this was good policy but bad law. That it would be great if we could find a way to put this into effect and everybody did it and that was the policy. But, when you try to do this and enforce these kind of trips, whether at sea or at dock, the point is that when you enforce at the dock it implies that the fishermen have to have a way to comply at sea. A number of questions came to my mind about the fishery and how fishermen would react. The point, as I read through the documents and noted that Mr. Haring referred to the average catch of fish under ten inches, is not the important thing to me, it's the frequency of trips above and below the average, or the frequency of haulbacks above and below the average. How many haulbacks and how many trips had a higher percentage than 20 percent. If the average was twenty, there must have been quite a few that were higher and how would a fisherman react to getting himself back into compliance. You have this big tow, he has some samples, he is over and does that mean he has to sort the whole tow to the point to where he gets it back below 20 percent and keep sampling. How does he figure out how many small fish to pull out and things like that. It seems to me it has the potential for being a very troublesome regulation, rather than a troublesome policy if it could be carried out. Then I think about why are we doing this? What is the problem that we are trying to solve? It's not to do anything different than the fishery has done in the past as it appears to me that the whole whiting regulation pretty much, at least the size limit, is aimed at preventing a juvenile fishery. Then, you ask yourself, how do the people target juvenile whiting? Can you target juvenile whiting on the Cultivator Shoal? Can you target them with three-inch mesh? If you can't target juvenile whiting on the Cultivator Shoal with three-inch mesh, then there is no real reason for putting in the size limit. If you can target them, then there is an incentive for people to fish to the tolerance. If it is economically attractive to catch the small fish, and you can target them, then people would go and try to catch twenty percent small whiting and work right around that edge and we will be right back into "well, I only had twenty one percent and you can't get me for twenty pounds of

fish, etc.". I find this real troublesome to put into a regulation that is going to have all the force. We will run into the people who draw the penalty schedules up saying, "this is the regulation and these are our penalties." I would be very hesitant to go ahead with this much as I hate to go against what appears to be an industry consensus that this is workable. I am not sure the industry has thought down to the implications. They think of it as a workable thing to do, kind of as a working approach. Whether they have thought of it as a workable thing to do when somebody is going to be there sampling the catches and giving out violations based on 20.1 percent, I am not sure they have thought it through. I think there has been a lot of size limit, discard things that this would just compound.

Mr. Brennan: It is amazing to me how closely aligned Mr. Allen and I are today. I think that what's going on here is that the longer we discuss this, the greater the likelihood that we can override human nature. In my view, we are never going to be able to do that. If there is a tolerance, the tolerance is a target. I don't care what fishery it is. People will fish to it no matter how many agreements they sign, and as soon as they get violated for exceeding the tolerance they will be upset. The more they get upset, the more reaction there will be and we will be dealing with all the issues raised by Mr. Allen. Also, we do not know if the fishery practice is so specific that they can target the juveniles. If they cannot target on the juveniles and if the three inches is enough to overlook that, then why are we looking at a size limit?

Mr. McCauley: You have to go back to the whiting plan that is coming up to go to public hearing. The preferred alternative is a fish size, not a mesh size. Nobody wants to deal with a mesh size. You put a mesh size and you are really creating a problem. You have got the same thing on scup in the mid-Atlantic. You got a fish size and nobody knows how to deal with the mesh size. The reason for that is that every time you put a mesh size on a species of fish then that's the only mesh that you can use. Once you catch over a certain amount of one kind of fish then you have to stay with that mesh size. Every species in the mid-Atlantic is gone once you establish a mesh size for a fish. The only one that you can use, and everybody in the mid-Atlantic has agreed on is for squid because that's going to be at the lower level. So we have said one inch and three-quarters and go out to public hearing with that and say that's the smallest mesh of any of the fisheries that we do so we can agree with the mesh size, but nothing else. Anything else above that is going to have to be a targeted trip. This is kind of a test case to get us around that situation until we get to some other regime.

Edward MacLeod, Pt. Judith Coop: I know that Mr. Verga and Mr. Testaverde have very good intentions with what they are proposing here. By the same token, the vessels at Pt. Judith have good intentions also of what they are concerned about here. To make a general comment, Mr. Peterson hit the nail on the head. Whatever you do here you are proposing to take an do in stone and that is where there is some real concerns. As Mr. Peterson has brought out, when is a ten-inch fish not a ten-inch fish? As most of you know, I was in the herring business and we use to handle 350,000 pounds a day. We would take a five gallon pail to sample herring on every 18,000 pound truck load that came over the scale and there were no two fish identical in length even though they were from the same year class. Visually looking at fish is very difficult when you are operating under a size regulation. We are also concerned about the three-inch mesh. As I am told, there are times when fishing

would be considered normal and a two and one half-inch mesh does control mortality and there are times when fishing is great and the mortality is great and that's when the honorable fishermen, in Gloucester and other ports, swing over to a three-inch mesh. Is there really a scientific necessity that has been proven that you should be at a three-inch mesh rather than a two and one half-inch mesh. I can't help but remember the headaches that this Council had when it was dealing with New York and New Jersey fishermen about going to a two and one half-inch mesh regulation on whiting. I mean they practically created their own battle down there because of that. Just look back to about two or three hours ago, you voted to make a recommendation that would allow fishermen fishing for bait, who admitted that they were fishing with two and a half-inch mesh, to bring in whiting and hakes. Will you make them go to three-inch as well as the fishermen in New Jersey? This is the training ground and I think you should not act in haste.

Mr. Brancaleone: This issue was sent back to the Advisory Committee. Didn't the Advisory Committee come up with a three-inch mesh?

Patrick Carroll, Groundfish Advisory Committee Chairman: No, they discussed two and a half to three-inch mesh, but no specific recommendation made at the time. They were focussed on a 10/20.

James O'Malley, East Coast Fisheries Federation: Mr. Carroll is right. There was no real agreement on the mesh size. One of the things that we're about to go to the MAFMC with on the scup plan is a requirement that the fishermen at least have the appropriate twine aboard so if he is out there fishing, for example, on squid and runs across scup he must in his own mind change over to a four or a four and a half-inch bag. To do that he must have it aboard. It seems to me that to accommodate the normal fishing situations that Mr MacLeod is talking about, the two and one half-inch mesh is appropriate, but I would want him to be required to have the three-inch mesh aboard.

Mr. Rathbun: I think we are talking about two different things here and we are getting them confused in our minds. The one issue, as I see it, is the Cultivator Shoal whiting fishery which is a specific fishery limited to a certain amount of boats and fishing for one product and they go out and get it and come back. We are confusing that with this plan which would encompass the occasional whiting fisherman, the person that catches whiting as an adjunct to the other fish. I am not a fan of the minimum size, because the minimum size means that is the size that you are trying to catch. One of the ways that we might get around this thing at the moment would be to make a requirement of a mesh for the Cultivator Shoal fishery and monitor over a period time. Anyone who has caught whiting knows that whiting does not act in the net in the same way that a codfish or haddock does. Whiting are like bullets in the way they react in the net. In other words, you don't trap them, they go through a mesh that is smaller then you would normally expect them to go. By monitoring them for a period of time we would get away from Mr. Peterson's enforcement problems. I would like to see more fisheries regulated by mesh as opposed to Mr. McCauley because that is the only way that we will get rid of the minimum size. If the mesh size is right we would not need a minimum size for fish.

Mr. Brancaleone: Isn't the requirement on Cultivator Shoal right now two and one half-inch?

(It was agreed that it was.) The fishermen are asking to go up from two and one half to three-inch mesh and we don't want to.

Tom Brancaleone: We don't want whiting to go the way of scup. It seems to me that we are playing games all the time. We did that with the groundfish, now we are trying to do it with the whiting. This is the industry trying to up the mesh size -- trying to conserve what we have out there, not to destroy it. There are a lot of small whiting in Cultivator Shoal and you have boats from Rhode Island working all winter long for groundfish and whiting. They have a whiting net aboard the boat. You guys don't see it but I see it. I don't want to be a spy, but that is bad. The guys from southern New England seem to do anything they want. There is an industry that is trying to avoid destroying the fish that we have there. We are only asking for that mesh size in the Cultivator Shoal area, not any place else. I don't know why you guys are making all kinds of rules and regulations. If you bring the mesh size up we will conserve more fish.

Mr. Haring: In answer to your question, Mr. Chairman, this is the second meeting, but we are not bound to only two meetings. In this particular case the fishery has started and it peaks in the end of July and August and begins to taper off, historically.

Mr. Kellogg: It seems to me from listening to Mr. Peterson that we are not going to get a 10/20 rule in the Cultivator Shoal fishery as a requirement. What the Council could do is go ahead with the mesh size on this framework and try and ask to have the 10/20 rule be an experiment to look at some of these trips.

Mr. Brancaleone: We could go forward the way it is written and let NMFS disapprove that portion and maybe increase the mesh size or we could just go forward with just the mesh size. I am asking the Council what they want to do.

Mr. Brennan: I have a question to help guide me in what it is we are here to do. A lot of the discussion that seemed to be in opposition to the direction were are headed towards had to do with fisheries in the mid-Atlantic area. My understanding is that the framework had to do with the Cultivator Shoal area. If that is the case and if most of the sentiment, with respect to the Cultivator Shoal area, would seem to favor an increase in the mesh size and then we have some concerns about the fish size. Why not move forward with the course of action that would approve the whole thing with the reasons that Allen indicated if they desire to reject the fish size, so be it. I support that action because I understand the difficulty that NMFS would have with the mesh size and the tolerance.

Mr. Brancaleone: The only question that I have is could NMFS approve the fish size without the tolerance?

Mr. MacDonald: Technically they could.

Mr. Brancaleone: That's why we have to be careful. These guys did not come forward with the twenty percent tolerance because they want to go up to twenty percent. I know how the fishery works. It's going to happen. You're going to get small fish. Mr. McCauley said the same thing. We should not be signing off on a fish size without a tolerance.

Mr. Allen moved and it was seconded:

to make the mesh size three inches for the Cultivator Shoal whiting fishery as proposed in Framework #6.

Edward Todd, Pt. Judith fisherman: I would not be in favor of increasing the mesh size and I will explain. I have been fishing on Cultivator Shoal for four years on my own boat and about six years on someone else's boat. We had the net constructed where we had two and one half-inch mesh in the extension and we used various different bags and liners to cull out the different size fish that we did not want to catch In particular, last year when many boats were bringing in lot smaller stuff we fished with two and one half inch-mesh in our extension, but in our bag we used a five and one half-inch bag with a four-inch liner. We got rid of a lot of small stuff. We would come in with a trip of 40,000 pounds and we would have 30,000 pounds of fish that were about twelve inches and maybe 1,000 to 2,000 that were below eleven inches. If you start to limit the mesh size at two and a half you will make an awful lot of people buy new nets and you mentioned that this was an experiment. Mr. Borden said that you are going to try to get an awful lot of information here and make some sort of judgement later on. The problem with that, as Mr. Borden said, you don't fine anybody. The Coast Guard was doing that with all the safety regulations. They would come on board and if we did not have the proper equipment on board they would give us a warning and give us time to get the proper equipment later on. I don't mean to get off the track, but wanted to explain how you could have a law, that you do not necessarily enforce, but give out warnings for. I am against having an overall ban of two and one half-inch mesh. I know I could live with a three-inch mesh in the codend with 75 to 100 meshes, but I would be against just a blanket rule that does away with two and one half-inch mesh on the Cultivator Shoal.

Joe Testaverde: On Cultivator Shoal you are suppose to use 160 meshes of two and one half inches and you are not allowed to use a liner. While you are using a bag over a liner, which I have never tried, you are putting a certain amount of meshes sided with a bigger net, you are clouding it all up. Maybe this is working, but you are opening yourself up with using liners, and we have gone through this with other fisheries,when you put a bag inside another bag with twine, you have effectively got nothing with no water going through it. We have always stated that you are not suppose to use liners according to the regulations.

David Goethal: This isn't my fishery, but I would like to offer some compromise. This size limit thing doesn't sound like it is going to fly and I think you should drop that because it is impossible to enforce. I think the three-inch mesh sounds good for Cultivator Shoal. It will select out something which is better than nothing. A trip limit would be good and I would let the market decide. Is a fisherman going to fish for 30,000 pounds of eight cent fish that are eight inches long, or will he fish for 30,000 pounds that might be worth 50 or 60 cents.

Angela Sanfilippo, Gloucester Fishermen Wives Assoc.: When you to cultivator Shoal, you need a special permit to fish which means that you are just targeting whiting. Once you do that can you fish for other things? No. So what is the problem. I support the increase the increase in mesh size. No trip limit, no fish size because we are asking for the same things that we have been arguing about under Groundfish. Thank you.

The motion passed with one abstention from Mr. McCauley.

Mr. Borden: I would like to go back to the 10/20 proposal and recognize some of Mr. Peterson's reservations about the enforcement issue. What I heard was that industry testified in favor of the concept that was embodied in that proposal. Since there is a very limited number of participants, why can't the Council simply take a position in support of that concept and send a letter to all participants and ask them to try to comply with that as a standard. There wouldn't be any enforcement standard and clearly we would be on record as that is our intent. We want the industry to try and select that size fish.

Mr. Peterson: I don't care whether we send the letter or not, but Mr. McCauley raised an issue that I will face with the MAFMC which is looking at this as a way to manage them. My opposition is not to the tolerance, not to size limit, but how we can apply this in an agreed-upon action. In the context of the Cultivator Shoal fishery, we can maybe look at it more closely and see how good those numbers fit with the mesh size. We could do some experimental work on enforcing in the context of trying different methodologies, looking at how Pt. Judith does it from a marketing point of view, look at how that is applicable and use the opportunity to see if there is a workable way to ultimately put this kind of thing in place. I don't have a closed mind to that at all and think if we can figure it out, it makes sense. At this point in time, I had my reservations about putting it into place without the agreement. Now if that is not a requirement we can still try to see if it is a workable approach and how best to go about doing it.

Mr. DiLernia: My concern when I first asked when the framework would be implemented was for many of the reasons that the regional director just mentioned. We in the mid-Atlantic are faced with some requests that Mr. McCauley has made and I would like more information on it. I was hoping to see that framework on the Cultivator Shoal in place for this season so that we can gather some data to see how the three-inch mesh works. If it works it can be a wonderful tool that we could use. If there is someway that this Council could support some type of initiative where the 10/20 could be tested on Cultivator Shoal, it would provide us with guidance in the mid-Atlantic later on when we are faced with making decisions with scup and squid. There are people going around asking for a minimum size on squid and it is getting a little difficult. I would like to see the results of that testing and I know it would drive us in making our decisions in the future.

Mr. Allen: I know a lot of people might not think this is comparable, but I really think that we did quite a long-term, intensive experiment with a similar program in scallops. I haven't heard any mention of how you would deal with whiting that are sorted at sea by size, whiting that are frozen at sea, whiting that somebody catches with a tow of a small run of fish. They put that down and then they go catch a tow of a bigger run of fish and put that down to meet the percentage tolerance requirement. Then you get into how you sample and their reaction to the sampling. It seems to me that people who are interested in this approach would want to review very carefully how the scallop program evolved overtime, how it started as a very simple, market volumetric measure that everybody understood and it seemed like it would work very well. Also how we got into the sophisticated digital scales and the point one pieces of the scallop, etc. Look at that and take note of it. I think the sophisticated digital scales are probably put away, but are probably available as soon as we

come out with this kind of a program. Just don't ignore the experience we have had.

Mr. Hill: As maker of the motion at the Groundfish Committee for pursuing the 10/20 concept, I am a little concerned, even though I voted for this motion, that the premise which has been stated by other speakers is being lost. One of those premises in going forward with this is giving us guidance as we have future deliberations on the whiting plan in general. I would support the idea of doing some kind of experimental work to see if the 10/20 process is valid. I guess my procedural question is that the Council is now finishing the drafting of the whiting amendment and they just moved to essentially suggest that the preferred alternative in the whiting document is suspect. Procedurally I have a question as to where we are at?

Mr. Brancaleone: We will be talking about the whiting public hearing document next on the agenda.

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Chairman
Joseph M. Brancaleone

Executive Director
Douglas G. Marshall

MEMORANDUM

DATE: June 1994

TO: Cultivator Shoals Whiting Fishery permit holders

FROM: Douglas G. Marshall, Executive Director

SUBJECT: Proposed changes to the Cultivator Shoals fishery rules

In response to requests from some industry members, the Council is in the process of adjusting the rules governing the Cultivator Shoals Whiting Fishery. Under the proposed rules, the minimum mesh size would be increased from 2.5 inches to 3 inches, and a minimum fish size of ten inches would be established. Vessels would be allowed to retain fish smaller than 10 inches as long as the total weight of undersized fish is less than 20 percent of the total weight of whiting on board. The 20-percent allowance would be measured by a random sampling process.

The Council is making this adjustment under the framework abbreviated rulemaking procedure established by Amendment #5. Under this procedure, the Council considers public comment over the span of at least two Council meetings. The second meeting for this framework action is June 29-30 at the King's Grant Inn in Danvers, MA. The Council invites your comments on this matter. If you are interested in providing comment, please do so by writing to the Council office or in person at the Council meeting. The relevant documents and meeting agenda can be obtained by contacting the Council office.

Please feel free to pass this notice along to any other individuals you think may also be interested in this matter.

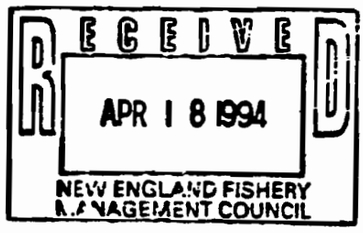
CITY OF GLOUCESTER

FISHERIES COMMISSION

FILE COPY

CITY HALL * GLOUCESTER * MASSACHUSETTS * 01930

APRIL 15,1994



NEW ENGLAND FISHERY MANAGEMENT COUNCIL
JOSEPH BRANCLEONE, CHAIRMAN
5 BROADWAY
SAUGUS,MA.01906-1097

DEAR JOE,

DURING THE PAST FEW WEEKS I HAVE BEEN TALKING TO DEALERS AND FISHERMAN (GLOUCESTER,PROVINCETOWN,NEW BEDFORD,POINT JUDITH,AND LONG ISLAND) WHO FISH THE CULTIVATOR SHOALS AREA DURING THE ALLOWED PERIOD.THERE IS GREAT CONCERN THAT THE PRESSURE ON THE STOCK OF WHITING IN THE AREA WILL INCREASE WITH THE PASSAGE OF AMENDMENT 5. WE HAVE SEEN A NUMBER OF VESSELS WHO ARE WORKING A FEW DAYS TO FILL THE BOATS UP THEN HAVE A LARGE PART OF THEIR TRIP DUMPED IN A LANDFILL. WE DON'T THINK THIS PRACTICE IS DOING THE STOCK ANY GOOD. RECENT STOCK ASSESSMENTS SHOW THAT WHITING NEED SOME PROTECTION. NOT ONLY FROM THIS PRACTICE BUT ANY INCREASE IN FISHING EFFORT. WE REALIZE THAT THE GROUNDFISH COMMITTEE HAS STARTED A FRAME WORK PLAN FOR WHITING BUT THIS COULD GET BOGGED DOWN AND TAKE A YEAR OR MORE. IN THE MEAN TIME MUCH DAMAGE COULD BE DONE. I WOULD LIKE FOR YOU TO CONSIDER A FEW CHANGES TO THE CULTIVATOR SHOALS FISHERY FOR THE 1994 SEASON:

(1) 2 1/2" CODEND CHANGE

AN INCREASE TO 3" INSIDE MEASUREMENT OF THE 160 MESH CODEND. THIS COULD BE A GOOD TIME TO GET SOME REAL WORLD TESTING DATA OF THIS SIZE CODEND WHILE THE WHITING PLAN IS BEING FORMULATED.

(2) "10/20/30"

A MINIMUM [10"] OVERALL LENGTH ALLOWANCE OF WHITING.

A [20%] BYCATCH ALLOWANCE OF UNDER THE MINIMUM SIZE ALLOWED.

A [30,000 lb.] TOTAL TRIP LIMIT.

cc: STAFF

APPENDIX II

SAW 17 Advisory Report on Silver Hake Stock Status

Northeast Multispecies (Groundfish) FMP

Silver Hake Overview

Assessment of the status of silver hake stocks and the provision of management advice is hampered by several problems. First, there remains considerable uncertainty about the current definition of stock boundaries. Possible mixture of silver hake from the presently defined southern stock with those from the northern stock in the region of Cultivator Shoals may be introducing considerable variability into the landings at age matrices for both stocks. Second, discarding of juvenile silver hake appears to be substantial for both stocks and lack of discard estimates in the catch at age renders any virtual population analysis (VPA) results suspect. The emerging juvenile fishery has not yet been adequately monitored. Finally, biological sampling in the ports and aboard commercial vessels has been insufficient in recent years to adequately estimate the length and age composition of the catch

The SARC can provide basic advice on these stocks based on indices of relative abundance and total mortality estimates derived from bottom trawl survey data. The SARC can also provide advice on the long-term consequences to both stocks of continued exploitation of both juvenile and adult components of the stock, but the impact of recent increases in landings of juvenile silver hake from both stocks cannot be quantified at present because of insufficient information on the extent of landings and discards.

These stocks were last assessed in 1990 at the 11th SAW. At that time biological reference points were derived from stock and recruitment data computed from a VPA using landings data. For the northern stock, F_{REP} was estimated at 0.51 corresponding to 31% of the maximum spawning potential (MSP), and for the southern stock, at 0.39, corresponding to 42% of the MSP. New information in this assessment estimated an exploitation pattern which allowed for discards, and produced an F of 0.36 for the northern stock and 0.34 for the southern stock.

A. GULF OF MAINE - NORTHERN GEORGES BANK SILVER HAKE

State of Stock: Stock abundance appears to be increasing while landings remain relatively low and the stock is at least fully-exploited. The age structure is still severely truncated as few fish older than age 4 have been detected in the population. Although uncertain, fishing mortality (F) is estimated as 0.4 during 1988-1992, and is near the revised overfishing level of 0.36.

Management Advice: The exploitation pattern in this fishery is problematic and could become of greater concern if increased effort is directed towards juvenile hake. Information on increased landings of juvenile silver hake is insufficient at present to document any quantitative impacts on the stock. If the increased landings are derived from catches that would otherwise have been discarded, then there would be no further impact on the stock and overall yield would increase by the newly retained catches. If, on the other hand, the increase in landings of juveniles is the result of increased exploitation on younger ages, spawning stock biomass and catches of large silver hake will decline and the stock will become over-exploited. Furthermore, under any exploitation pattern, increases in effort on this stock are not warranted. Under the current fishing mortality rate and exploitation pattern, strong recruiting year classes are not likely to contribute to any significant rebuilding of the stock biomass.

Persistent discarding or landing of small hake results in a substantial loss of yield from the adult component of the stock and a reduction in spawning stock biomass per recruit (Figure A3). Most of the discard of silver hake consists of juveniles in the range of 15-25 cm (6-10 inches) at age 1 and, to a lesser extent, at age 2. The SARC notes that the size at 50% maturation is 22-23 cm (9 inches) and the age at 50% maturation is 1.7 year for males and females. To better assess the impact of the emerging juvenile fishery it will be necessary to collect additional information on juvenile catch and discard.

Forecast for 1994: No forecasts were performed.

Landings and Status Table (weights in '000 mt): Northern Silver Hake

Year	1986	1987	1988	1989	1990	1991	1992	Max (1955-1992)	Min (1955-1992)	Mean (1955-1992)
Total Comm Landings	8.5	5.7	6.8	4.6	6.4	6.1	5.3	94.5	3.4	28.6
USA Comm Landings	8.5	5.7	6.8	4.6	6.4	6.1	5.3	62.8	3.4	20.6
Discards	N/A	N/A	N/A	7.2	1.8	1.7	2.9	N/A	N/A	N/A
USA Rec Landings	-	-	-	-	-	-	-			
Catch used in Assessment	8.5	5.7	6.8	11.8	8.2	7.8	8.2	94.5	3.4	28.9
Survey F's, Age 3+	— 0.51 —			——	0.40	——				

Catches: Total annual commercial landings declined from over 90,000 mt in 1963 to less than 10,000 mt since 1979 (Figure A1). The 1992 landings of 5,300 mt is among the lowest on record. Discard estimates for 1989-1992 represent a substantial fraction of the total catch.

Data and Assessment: Data are seriously lacking for this species (see overview). This stock was last assessed in December 1990 at the 11th SAW. Indices of abundance are available from NEFSC bottom trawl surveys. Estimates of total mortality are also available from spring and autumn surveys. Yield and SSB per recruit analyses are based on an exploitation pattern derived from analysis of catch-at-age including discards from 1989 through 1992. Discards were estimated from data derived from the NEFSC Sea Sampling Program.

Fishing Mortality: Based on a VPA analysis on landings data from the 11th SAW, F decreased from values in excess of 1.0 during the late 1970's to half that by the early 1980's (Figure A1). Average F derived from bottom trawl survey indices was 0.47 in 1974-1977; 0.58 in 1979-1982; 0.51 in 1984-1987 and 0.40 in 1989-1992 (Figure A1). The estimates of F are uncertain due to insufficient information on the levels of natural mortality and this most recent estimate of F is also uncertain due to recent variability in the survey indices.

In 1990, biological reference points were derived from stock and recruitment data computed from a VPA using landings data. For this stock, F_{REP} (F_{MED}) was estimated at 0.51 corresponding to 31% MSP (Figure A3). The current assessment estimated an exploitation pattern which allowed for discards (the "Ref" line in Fig. A3), and produced an F of 0.36, corresponding to 31% MSP. If increased mortality on ages 1 and 2 is from a new fishery on juveniles (e.g., the "+100%" line in Fig. A3), then F at 31% MSP would be 0.29.

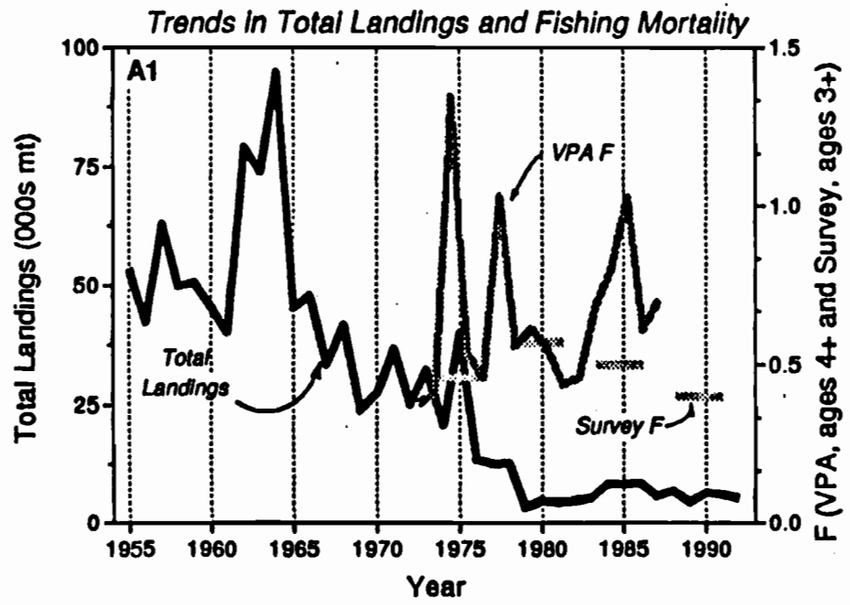
Recruitment: The 1985, 1988 and 1991 year classes appear to be particularly strong as indicated by research vessel surveys (Figure A2).

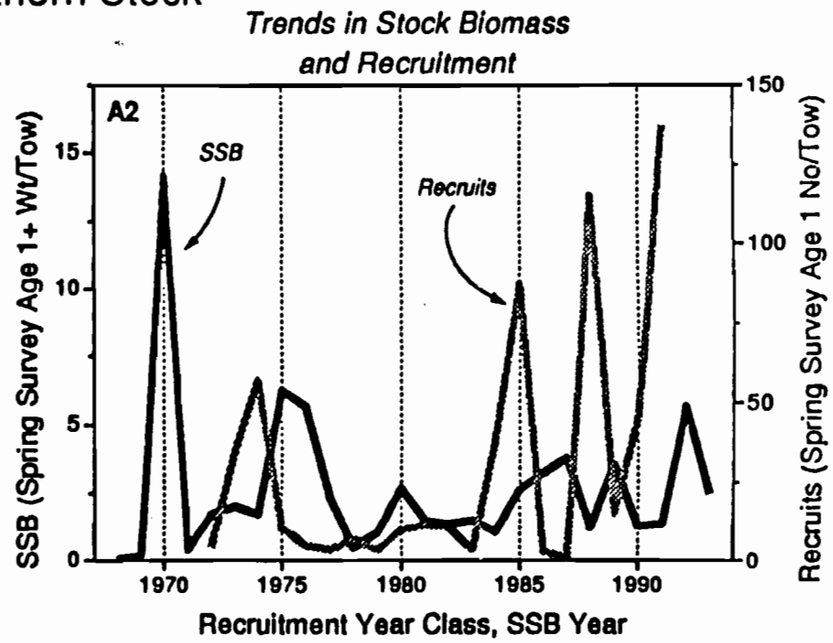
Stock Biomass: Total biomass is increasing due to the contribution of pre-recruit biomass from recent year classes, however, there is no corresponding increase in adult biomass (Figure A2).

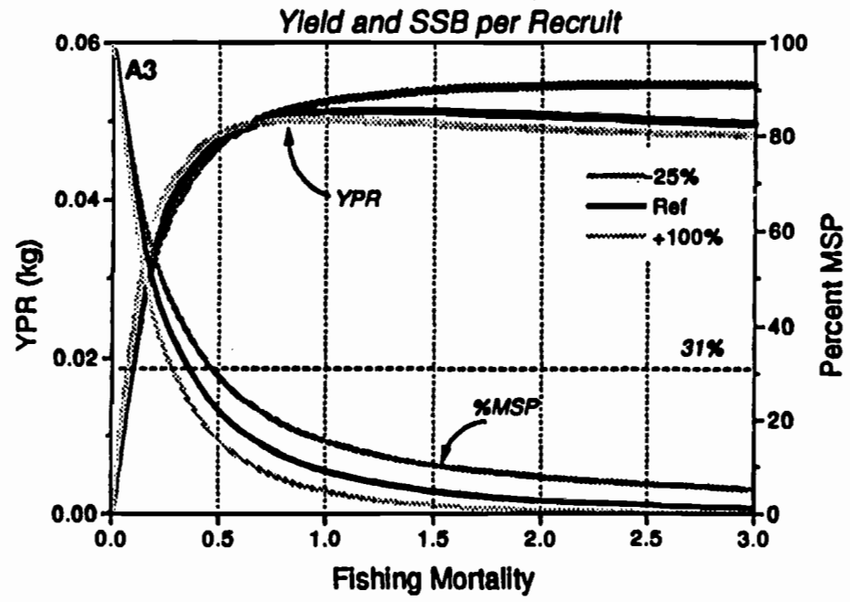
Special Comments: Despite continued low levels of landings since 1979, the age structure of the stock remains severely truncated as few fish older than 4 years appear in the population. Considering that recruitment has been relatively good in recent years, this suggests that total mortality has remained high either from predation on juvenile hake or because of unaccounted fishing mortality due to discarding.

Source of Information: Report of the 17th SAW; Report of the 11th SAW; Helser, T. E., NEFSC Lab Ref 94-01.

Silver Hake-Northern Stock







B. SOUTHERN GEORGES BANK - MIDDLE ATLANTIC SILVER HAKE

State of Stock: Stock abundance continues to decline and is at a low level (Figure B2). Landings remain relatively low and the stock is considered to be over-exploited. The age structure is still severely truncated as few fish older than age 4 have been detected in the population. Although the actual level of fishing mortality (F) is uncertain because natural mortality is not well known, F appears to have been close to 1.2 during 1988-1992. For the purpose of comparison, F_{REP} (F_{MED}) is 0.39.

Management Advice: Fishing effort on this stock needs to be reduced. The exploitation pattern in this fishery is problematic and is expected to become of greater concern if increased effort is directed towards juvenile hake. Recent reports of increased landings of juvenile silver hake are insufficient at present to document any quantitative impacts on the stock. If the increased landings are derived from catches that would otherwise have been discarded, then there would be no further impact on the stock and yield would increase by the newly retained catches. If, on the other hand, the increase in landings of juveniles is the result of increased exploitation on younger ages, spawning stock biomass and catches of large silver hake will decline and the stock will become increasingly over-exploited. Furthermore, under any exploitation pattern, increases in effort on this stock are not warranted. Under the current fishing mortality rate and exploitation pattern, strong recruiting year classes are not likely to contribute to any significant rebuilding of the stock biomass.

Persistent discarding or landing of small hake results in a substantial loss of yield from the adult component of the stock and a reduction in spawning stock biomass per recruit (Figure B3). Most of the discard of silver hake consists of juveniles in the range of 15-25 cm (6-10 inches) at age 1 and, to a lesser extent, at age 2. The SARC notes that the size at 50% maturation is 22-23 cm (9 inches) and the age at 50% maturation is 1.7 year for males and females. To better assess the impact of the emerging juvenile fishery it will be necessary to collect additional information on juvenile catch and discard.

Forecast for 1994: No forecasts were performed.

Landings and Status Table (weights in '000 mt): Southern Silver Hake

Year	1986	1987	1988	1989	1990	1991	1992	Max (1955-1992)	Min (1955-1992)	Mean (1955-1992)
Total Comm Landings	10.0	10.0	9.2	13.2	13.6	10.1	10.3	305.7	9.2	49.9
USA Comm Landings	9.5	10.0	9.2	13.2	13.6	10.1	10.3	25.0	5.2	11.4
Other Comm Landings[1]	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	283.4	<0.1	56.3
Discards	N/A	N/A	N/A	10.0	4.5	1.2	3.8	N/A	N/A	N/A
USA Rec Landings	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	2.0	<0.1	0.7
Catch used in Assessment	10.1	10.1	9.2	23.2	18.1	11.3	14.1	305.7	9.2	52.4
Survey F's, Age 3+	— 0.71 —			——	1.16	——				

[1] 1962-1987

Catches: Total annual commercial landings declined from over 300,000 mt in 1965 to less than 15,000 mt since 1980 (Figure B1). Total landings have been stable since 1986 between 9,000 and 14,000 mt. The 1992 total of 10,300 mt is among the lowest on record. Discard estimates for 1989-1992 represent a substantial fraction of the total catch.

Data and Assessment: This stock was last assessed in December, 1991 at the 11th SAW. Data are seriously lacking for this species (see overview). Indices of abundance are available from NEFSC bottom trawl surveys. Estimates of total mortality are also available from spring and autumn surveys. Yield and SSB per recruit analyses are based on an exploitation pattern derived from analysis of catch at age including discards from 1989 through 1992.

Fishing Mortality: Based on a VPA analysis on landings data from the 11th SAW, F decreased from a mean of 1.0 during 1974-1977 to 0.5 during 1978-1980 and increased to over 1.0 during 1983-1987 (Figure B1). The average F derived from bottom trawl survey indices was 0.37 in 1974-1977, 0.27 in 1979-1982, 0.71 in 1984-1987 and 1.16 in 1989-1992 (Figure B1). The estimates are uncertain due to insufficient information on the level of natural mortality and, for the most recent estimates, because of survey variability as well.

At SAW11 in 1990, biological reference points were derived from stock and recruitment data computed from a VPA using landings data. For this stock, F_{REP} (F_{MED}) was estimated at 0.39 corresponding to 42% MSP (Figure B3). The current assessment estimated an exploitation pattern which allowed for existing discards (the "Ref" line in Fig. B3), and produced an F of 0.34, corresponding to 42% MSP. If increased mortality on ages 1 and 2 is from a new fishery on juveniles (e.g., the "+100%" line in Fig. B3), then F at 42% MSP would be 0.25.

Recruitment: The 1984, 1988 and 1991 year classes appear to be above average as indicated by research vessel surveys (Figure B2).

Stock Biomass: Despite some recent above average recruitment, total weight per tow indices have declined from the late 1980s (Figure B2).

Special Comments: Despite continued low levels of landings since 1980, the age structure of the stock remains severely restricted as few fish older than 4 years appear in the population. Considering that recruitment has been at least average in recent years, this suggests that total mortality has remained high either from predation on juvenile hake or because of unaccounted fishing mortality due to discarding.

Source of Information: Report of the 17th SAW; Report of the 11th SAW; Helser, T. E., NEFSC Lab Ref 94-01.

Silver Hake-Southern Stock