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New England Fishery Management Council
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MEMORANDUM

DATE: March 23, 2012

TO: Groundfish Oversight Committee

FROM: Groundfish Plan Development Team (PDT)

SUBJECT: **2012 Groundfish Actions; PDT meetings February 27, 2012 and March 13, 2012**

1. The PDT met on two occasions to work on the sector management action, possible modifications to groundfish closed areas, and FY 2013-2014 ABCs. This memo summarizes PDT work on the sector action and the possible modifications to closed areas. ABCs are addressed in a separate memo written to both the Science and Statistical Committee and the Groundfish Committee.

2. PDT members participating in these meetings were Tom Nies, Anne Hawkins, and Michelle Bachmann (NEMFC), Sarah Heil, Melissa Vasquez, and Dan Caless (NERO), Sally Sherman (Maine DMR), Sally Roman (SMAST), Steve Correia (Mass DMF), Chad Demarest, Paul Nitschke, and Evan Bing-Sawyer (NEFSC). Amy Van Atten and Michael Palmer (NEFSC) also participated in the at-sea monitoring discussions.

Sector Action

ACE Carryover

3. The PDT intends to perform analysis on the effects of changing the percentage of ACE that is allowed to be carried over at the end of a fishing year, but is unable to proceed until NMFS policy on carryover is clarified. On December 28, 2011, the Council received a letter from the Northeast Regional Office of NMFS that contained an analysis of acceptable carryover limits. The Council submitted a letter in response on January 20, 2012 posing several questions about the analysis, including how carryover quota interacts

with rebuilding plans and with stocks that have large declines in quota from one year to the next. The PDT will continue analysis on this topic once a response is received.

Monitoring Coordination

4. The PDT briefly discussed the coordination of effort for various groups that are working on monitoring issues. While the PDT is advising the Groundfish Committee on monitoring, the Gulf of Maine Research Institute is convening a Monitoring Working Group with industry members and there is some internal work to be done at NERO and the NEFSC. The PDT felt that the GMRI working group look may be better equipped than the PDT to work with sectors on issues related to internal operations for monitoring.

Monitoring Goals

5. The PDT had a lengthy discussion about goals for the groundfish monitoring program. They considered the goals that the Groundfish Committee approved in January 2012 and attempted to discern how those goals would be translated into an operational program. The PDT developed a document, based on the committee recommendations and discussion, which suggests more refined goals and objectives. The document is attached (Discussion Paper 1). There were some goals for which the PDT requested additional clarification from the committee, including what data streams were intended to be produced for stock assessments. In general, PDT members felt that it would be useful to collect as much information as possible from at-sea observers given that, in most instances, useful information could be gathered with very little additional cost to the program. They also discussed the idea that having inadequate monitoring could increase costs to the fishery in certain ways (such as less accurate assessments) and stressed the importance of considering a holistic concept of "monitoring costs". The PDT noted that there are distributional effects associated with analyzing the costs of a monitoring program. These issues will be discussed further when the PDT considers monitoring costs at a later meeting.

Management Uncertainty Auction to Fund Monitoring

6. The PDT briefly reviewed a paper that explores the concept of auctioning a percentage of quota of fish that is set aside for management uncertainty in order to fund monitoring programs. There were many concerns with this approach, including that it creates logical issues associated with whether the fish were expected to be caught, the appropriate size of the buffer, the administration of such a program, and that the economic benefits of such an auction are unclear. The paper is attached (Discussion Paper 2).

Observer Bias

7. An issue to be considered when designing an at-sea monitoring program for sectors is whether the monitored activity is a valid sample of all fishing activity. If unmonitored activity is different than monitored activity, then catch estimates based on the monitoring program may be biased and inaccurate. To date the PDT has not analyzed whether there

are differences between monitored and unmonitored activity within sectors, though during the three-year review of the Standardized Bycatch Reporting Methodology (SBRM) there was an effort to address this issue for the overall NEFOP observer program. The focus for sector at-sea monitoring has been primarily on the level of coverage needed to achieve a specified coefficient of variation (CV), a measure of precision. This ignores that an estimate can be precise at the same time that it is inaccurate.

8. The PDT is investigating whether there is evidence of monitoring bias within sectors. Using the terminology of Benoit and Allard (2009)[1], there are two possible causes for a monitoring bias. First, the selection of which trips are observed may not be random, leading to a selection bias. Second, behavior on observed trips may not be the same as behavior on unobserved trips, leading to an observer effect that biases catch estimates. With the assistance of the NEFSC observer program and NEFSC staff that work on the SBRM, the PDT has identified several metrics that may indicate whether these types of bias exist within sectors. If a monitoring bias (either a selection effect or an observer effect) is found the PDT will attempt to determine how this affects catch estimates. The desired result would be to indicate how biased catches affect assessment results and what that costs the industry in terms of the reduced opportunities to catch fish, but it is not yet clear that these linkages can be made.

9. The PDT's focus is on the presence of a monitoring bias within the at-sea monitoring program (NEFOP and ASM combined). There could also be monitoring bias in any dockside monitoring program that does not sample all trips. This issue is not being investigated at present. The dockside monitoring program that was adopted by Amendment 16 did not generate any data streams so it is not clear how a monitoring bias in that program would have affected landing reports.

Possible Modifications to Groundfish Closed Areas

10. The PDT continues to work on the issue of possible modifications to the groundfish closed areas. In December 2012, the PDT identified the attached list of possible impacts of closed areas (see **Table 2**, copied from the PDT's January 12, 2012 report). As noted in an earlier report, the PDT believes that this list can be used in at least two ways. First, this list begins the process of identifying the possible impacts that will need to be analyzed in the supporting NEPA document if changes to the areas are considered. Second, the list may provide a broader view of the types of management objectives that closed areas may help achieve. It is possible that this may provide a way to evaluate the utility of areas as a tool to achieve a range of management objectives. This in turn could help in the design and selection of any changes to the existing areas. Given the Council's stated intent to move towards ecosystem based management a broader view of the uses of closed areas may be appropriate.

[1] Benoit, Hugues P. and Allard, Jacques. 2009. Can the data from at-sea observer surveys be used to make general inferences about catch composition and discards?. Can. J. Fish. Aquat. Sci. 66:2025-2039.

11. Since the development of the table, the PDT has taken the following actions to evaluate the possible impacts of closed areas:

- Reviewed published articles that investigated the impacts of the groundfish closed areas. While the focus was on research specific to the Northeast Multispecies FMP closure system, articles that evaluated similar temperate closures have been identified. Approximately 20 studies have been identified to date.

- Received a presentation from Dr. Lisa Kerr on a research project that used survey data to evaluate the impacts of the year round closed areas on groundfish stocks. The final report will be added to the list of research papers.

- Received a report from Greg DeCelles, SMAST, and four other SMAST researchers on an analysis of an industry-based survey for yellowtail flounder and its implications for the effectiveness of the NLCA in improving the status of yellowtail flounder.

- Received an explanation and update of the Habitat Committee and PDT's work from the Habitat PDT chair.

- NERO members on the PDT have met with NERO Protected Species personnel to determine which closed areas may have impacts on protected species.

- Initiated a literature search and review of available information on spawning times and locations for groundfish species.

12. In the near future, the PDT intends to organize this information and provide a report and recommendations for possible changes to the closed areas. This work is competing for PDT time with other groundfish issues and as a result is not proceeding as quickly as hoped.

Table 1 – Possible impacts of closed areas

Category	Description of Possible Impact	Comments/examples/explanation
Biological	Mortality control	Not only groundfish common pool measures but perhaps for other species; e.g. skates; monkfish;
	Changes in stock productivity	increasing productivity for stocks - potential benefit - see if productivity has changed
	--Spawning protection	Whaleback closure, several state waters examples
	--Refuge	May be a better way to describe control of catch? Consider refuge for old, larger fish as well as juveniles; some portions of population may be sedentary at certain life stages and areas may provide protection during vulnerable life stages
	--Life stage protection/vulnerability	Example: wolffish nests; ocean pout; juvenile cod
	--Improved age/size structure	
	Modify or control bycatch	MWT, whiting fisheries
	Public health	PSP ; New Bedford state waters pcb closures; any applicable to federal waters? Pollution? May facilitate disease transmission inside areas
	Possible impacts on stock assessments	Methot/Punt article noting that Marine Protected Areas may create conditions that violate stock assessment assumptions
Economic	Catch rate changes	Fishing along border?
	SAP opportunities (e.g. CAI Hook Gear Haddock SAP)	Trawl-fixed gear separation
	Scallop access areas	
	Restrict access to resources that cannot be accessed in other ways	Haddock on EGB
	Dedicated areas for user groups	Rec fishing; SAPs; lobster fishery

Category	Description of Possible Impact	Comments/examples/explanation
Social	Prevent/reduce gear conflicts	Commercial-party/charter; groundfish-lobster
	Aggravate user group competition	Resentment over access to "closed" areas
Protected Species	Reduce interactions between fishing activity and protected species	Harbor porpoise, right wales, turtles, sturgeon, etc.
Ecological	Promote interspecific and intraspecific species diversity	Closed areas may protect unique spawning groups within populations
	Research value	Response of habitat to changes in fishing pressure
	Herring spawning - other species spawning protection	asmfc; fish or mats?
	River herring measures -	Herring A5
	Less disturbed community structure/ less disturbed food web	
	Species and ecosystem resilience	
	Concentration of fishing effort	May concentrate effort outside of closed areas; this could overlap critical habitat for some species
Other	Skate, monkfish mortality	FMPs that may use effort control measures as an element of the plan
	Areas for other ocean uses	Wind farms, etc. Effects not necessarily positive for fishery resources
Habitat	(See habitat amendment analyses)	

Discussion Paper 1: PDT Analysis on Groundfish Committee's Monitoring Goals

On January 18, 2012, the Groundfish Committee voted to adopt the following goals for monitoring:

1. Improve documentation of catch;
2. Reduce cost of monitoring;
3. Incentivize reducing discards; and
4. Provide additional data streams for stock assessments.

These goals provide guidance on program development, but could be further defined as they are difficult to translate into data elements. For example, it is not clear for what stocks catch should be documented, what programmatic elements of monitoring can incentivize reduction of discards, and what types of data will be most desirable for stock assessments. In order to clearly illustrate how these goals would be translated into specific program objectives, the following table compares them to the example goals from the PDT white paper and notes cases of uncertainty.

Category	Goal	Adopted?
Science	Determine total catch and effort of target or regulated species	YES
Science	Determine total catch and effort of non-target or non-regulated species	* (Goal 1?)
Science	Biological sampling	* (Goal 4?)
Science	Environmental parameters	0
Science	Monitor for high-grading	0
Science	Determine condition of caught and released species	0
Science	Protected species monitoring or sampling	* (Goal 1?)
Science	Determining gear effectiveness	* (Goal 3?)
Science	Estimates of pollution levels	0
Science	Production estimation	* (Goal 4?)
Science	Determine discard rate	* (Goal 1 or 3?)
Science	Quantify total mortality including discards	YES
Science	Gather data to determine mortality rate	* (Goal 1 or 4?)
Science	Determine catch by area	* (Goal 1 or 4?)
Science	Obtain accurate catch and effort information	YES
Science	Describe fishing practices	0
Compliance	Area and gear restrictions	0
Compliance	Illegal discarding	0
Compliance	Prohibited species	0
Compliance	Size limits	0
Compliance	Validate vessel logbooks	0
Compliance	Labeling of processed fish (?)	0
Compliance	Monitor overall ACL	0
Compliance	Monitor sector catch in order to prevent overage and coordinate ACE transfer	0
Compliance	Protection of non-biological resources	0
Other	Affordability	YES
Other	Improved communication with fishermen	0
Other	Improve stock assessment inputs	YES
Other	Promote fairness among industry participants	0
Other	Allow for improved business planning	0
Other	Provide greater operation flexibility	0
Other	Remove need for certain management measures	0
Other	Reduce management and/or biological uncertainty	YES

Other	Improve asset value of allocations	0
Other	Develop timely entry of fishery data into searchable databases	0
Other	Review monitoring program for effectiveness	0
Other	Have individual accountability	0
Other	Transparency	0
Other	Consistency	0
Other	Tailored requirements for different fleet components	0
Other	Shared accountability and/or access	0

* = Unclear whether anticipated by committee's goals

The PDT recommends clarifying the above goals, the adoption of concrete objectives to further define what is to be included in the goals, and the inclusion of periodic review as a program goal. Specifically, they recommend:

Goal 1: Improve documentation of catch

Objectives:

- Determine total catch and effort, for each sector and common pool, of target or regulated species
- Determine total catch and effort, for each sector and common pool, of non-target, non-regulated, and protected species caught on groundfish trips
- Determine catch by area to ensure accurate catch accounting
- Achieve coverage level sufficient to minimize effects of potential monitoring bias

Goal 2: Reduce cost of monitoring

Objectives:

- Streamline data management and eliminate redundancy
- Explore options for cost-sharing and deferment of cost to industry
- Recognize opportunity costs of insufficient monitoring

Goal 3: Incentivize reducing discards

Objectives:

- Determine discard rate by smallest possible strata while maintaining cost-effectiveness
- Collect information by gear type to accurately calculate discard rates

Goal 4: Provide additional data streams for stock assessments

Objectives:

- Reduce management and/or biological uncertainty
- Perform biological sampling if it may be used to enhance accuracy of mortality or recruitment calculations

Goal 5: Enhance safety of monitoring program

Goal 6: Perform periodic review of monitoring program for effectiveness

Note: These suggested goals completely remove any compliance element from the monitoring program.

Discussion Paper 2: Using a Management Uncertainty Auction to Fund Monitoring

Background

In the Northeast Multispecies FMP, consistent with the National Standard Guidelines the difference between the Acceptable Biological Catch (ABC) and the Annual Catch Limit (ACL) is designed to account for management uncertainty. Appendix II to Framework Adjustment 44 describes management uncertainty as accounting for the uncertainty over the ability of the management program to constrain catch so that the ACL is not exceeded. There are five principal factors identified as leading to management uncertainty:

- Enforceability: can management measures be adequately enforced?
- Monitoring adequacy: can relevant data be collected in a timely, complete, and accurate manner?
- Precision: can management tools be used in a manner to result in the desired catch?
- Latent effort: is latent effort eliminated or controlled?
- Other fishery catch: can the FMP regulate or limit catch by other fisheries, including state, exempted, or recreational fisheries?

The difference between the ABC and the ACL is often referred to as the management uncertainty buffer, though this term was not used in Amendment 16. FW 44 set this buffer at relatively low levels that ranged from 3 to 7 percent, with 5 percent used for most stocks and components of the fishery[2]. The logic was that since most TTACs had not been exceeded in recent years it appeared that management controls were generally effective. No attempt was made to partition the buffer into its different elements (as an example, x% accounts for enforceability concerns, y% accounts for monitoring issues, etc.). Both Amendment 16 and FW 44 recognized that the size of this buffer might need to be increased or decreased as experience was gained with the ACL system, and provision was made to allow for changes when ABCs and ACLs are established.

During the review for FW 47, the Groundfish PDT considered modifying the management uncertainty buffers. Given only one year of experience with sectors and evidence that there was a learning curve involved with the program, as well as concerns that ABCs and ACLs may have been over-estimated, the PDT did not recommend changes to theses buffers, but acknowledged that changes might be possible in the future. The PDT did recommend, and the Council did accept, several changes to the distribution of the ABC to various sub-components.

The management uncertainty buffer is thus **an amount of fish that is planned not to be caught** so that if the management uncertainty leads to excessive catch there is less likelihood that the ABC will be exceeded and mortality targets will be missed.

Discussion

The Groundfish Committee is considering auctioning off part of the management uncertainty buffer to help defray at-sea monitoring costs. It is not clear if this is intended to increase the

[2] The Scallop FMP sets ABC=ACL, but for the limited access fleet uses an ACT that has a 25 percent probability of exceeding the sub-ACL fishing mortality rate. The Monkfish FMP also sets ABC=ACL but uses an ACT that was set at 86.5 pct of the ACL for the northern management area (i.e. a 13.5 pct uncertainty buffer).

amount of at-sea monitoring or is merely intended to reduce the costs to the industry of at-sea monitoring.

- Auctioning off part of the management uncertainty buffer conflicts with the logic behind the buffer. It converts an amount of fish that is set-aside and not expected to be caught to an amount of fish that are likely to be caught. As such, this is a reduction in the size of the buffer between the ABC and the ACL.

- If the proceeds from the auction are used to fund additional at-sea monitoring effort beyond that which will occur without the auction, then it might be argued that reducing the size of the buffer is justified because it will also reduce management uncertainty and thus reduce the need for the buffer. But if the proceeds of the auction are only used to defray industry costs for monitoring that will occur anyway then it cannot be logically argued that management uncertainty will be reduced if the buffer is used to defray cost of the existing program.

- If the management uncertainty buffer is larger than needed, then auctioning off part of the buffer could be viewed as justifiable use of this fish. The problem with this approach is that it is not known until after the fishing year whether the buffer is too large or not. The auction anticipates a result (unused fish in the buffer) that may not be realized.

- The management uncertainty buffer may be smaller than needed. Expected reductions in several ABCs over the next few years will highlight this issue. While sector catches may be well controlled, it is not clear that the same is true for other components of the ABC. If buffers prove to be too small then reducing the size of the buffer would exacerbate the lack of rebuilding progress.

- It is possible that an auction may not attract participants if the costs are viewed as too high, the species available are not desired, or species are sold individually rather than as a package. Many ACE transfers that take place are exchanges of one stock for another – this option is not likely to be available within an auction. These factors could reduce the revenues realized form the auction.

- It is not clear who will run the auction, or how the administrative costs of the auction an will be funded. If costs are taken from the auction proceeds it will reduce the amount available for monitoring programs.

- An estimate of the amount of revenue that could be generated from an auction is shown in Table 1. This table was generated using leasing prices from the FY 2010 Year End report (insert reference). It reflects the range of auction prices observed in FY 2010 as well as a range of available amounts for the leasing. At approximately $650 per sea day, using 1 to 5 pct of the FY 2012 ABCs could fund 670 – 4,700 monitoring sea-days. Lower ABCs or prices would reduce expected revenues.

- An advantage to an auction is that it would provide additional information on the value of leased fish.

Once more experience is gained with the ABC/ACL system we may learn that reducing the buffer is justified. At that point a decision could be made that rather than reduce the buffer and

redistribute the available fish to all participants, a portion could be auctioned off to defray monitoring costs.

The decision not to redistribute all the fish available is an allocation decision. In the case of limiting stocks, there may be some permit holders that could leverage the fish (if redistributed) into larger revenues than will be realized by the auction. The auction eliminates that possibility. These same permit holders may not be able to participate in the auction due to a lack of capital. It is not clear the economic benefits from the auction would be larger than the benefits from redistributing the fish.

- If the auction is used to defray monitoring costs of an existing program, and not to provide supplemental coverage, the auction is a transfer of part of the monitoring costs from all vessels to a smaller group of auction participants that are willing to pay the costs to lease the auctioned fish. The auction participants will use the revenues from the leased fish to reduce the leasing costs. The reduced monitoring costs for permit holders that do not participate in the auction only accrue to those permit holders that actually fish and incur monitoring costs. Since leasing prices are usually lower than ex-vessel prices for the same stock, the reduction in monitoring costs for each vessel is likely to be less than the revenues that would be generated if the same fish was redistributed and caught. In addition, permit holders that choose not to fish are unlikely to receive any benefits from the reduced monitoring costs. This approach, as noted earlier, would reduce the management uncertainty buffer, and conflicts with the logic for establishing the buffer.
- If the auction proceeds are used to supplement the monitoring program, the benefits are even less clear for the fishery as a whole. Auction participants will benefit from access to additional fish available for leasing and presumably will not participate unless it is profitable to do so. As a result the auction should increase total fishery revenues. But other permit holders will only benefit if the increased monitoring coverage reduces management uncertainty enough that it leads to a future reduction in the scientific or management uncertainty buffers. It is difficult to predict if this will occur and how long it will take to lead to changes in the distribution of the ABC. In contrast, redistributing the fish that would be made available for the auction would immediately benefit most permit holders (either through increased landings or increased allocations to lease to other permit holders).

Table 2 – Estimated potential auction revenues based on FY 2012 ABCs. Auction prices are from Table 26 of NMFS Year End report (GOM winter flounder prices are from Table 27). Pollock, redfish, and GB haddock are italicized to indicate that proceeds may be more uncertain than for other stocks because of large ACE that is available for these stocks. Estimates will be updated when 2013 ABCs are known.

			Available for Auction (mt)			Auction Price Per Pound		Potential Auction Proceeds					
								5%		3%		1%	
Stock	Year	2012 Commercial Groundfish ABC	5%	3%	1%	Low	High	Low	High	Low	High	Low	High
GB Cod	2012	4,848	242	145	48	0.71	0.75	$ 379,409	$ 400,784	$ 227,645	$ 240,470	$ 75,882	$ 80,157
GOM Cod	2012	2,743	137	82	27	1.2	1.26	$ 362,833	$ 380,975	$ 217,700	$ 228,585	$ 72,567	$ 76,195
GB Haddock	*2012*	*28,882*	*144 4*	*866*	*289*			$ -	$ -	$ -	$ -	$ -	$ -
GOM Haddock	2012	734	37	22	7	0.88	0.98	$ 71,241	$ 79,337	$ 42,745	$ 47,602	$ 14,248	$ 15,867
GB Yellowtail Flounder	2012	224	11	7	2	0.12	0.32	$ 2,969	$ 7,917	$ 1,781	$ 4,750	$ 594	$ 1,583
SNE/MA Yellowtail Flounder	2012	817	41	25	8	0.54	0.88	$ 48,622	$ 79,236	$ 29,173	$ 47,542	$ 9,724	$ 15,847
CC/GOM Yellowtail Flounder	2012	1,101	55	33	11	0.19	0.48	$ 23,060	$ 58,257	$ 13,836	$ 34,954	$ 4,612	$ 11,651
Plaice	2012	3,450	173	104	35	0.29	0.54	$ 110,298	$ 205,382	$ 66,179	$ 123,229	$ 22,060	$ 41,076
Witch Flounder	2012	1,524	76	46	15	0.8	1.12	$ 134,416	$ 188,183	$ 80,650	$ 112,910	$ 26,883	$ 37,637
GB Winter Flounder	2012	3,565	178	107	36	0.86	1.2	$ 337,987	$ 471,610	$ 202,792	$ 282,966	$ 67,597	$ 94,322
GOM Winter Flounder	2012	752	38	23	8	0.32	1.14	$ 26,538	$ 94,540	$ 15,923	$ 56,724	$ 5,308	$ 18,908
Redfish	*2012*	*8,763*	*438*	*263*	*88*	*0.49*	*0.89*	*$ 473,302*	*$ 859,672*	*$ 283,981*	*$ 515,803*	*$ 94,660*	*$ 171,934*
White Hake	2012	3,456	173	104	35	0.36	0.4	$ 137,148	$ 152,386	$ 82,289	$ 91,432	$ 27,430	$ 30,477
Pollock	*2012*	*13,276*	*664*	*398*	*133*	*0.05*	*0.08*	*$ 73,171*	*$ 117,073*	*$ 43,902*	*$ 70,244*	*$ 14,634*	*$ 23,415*
							Total	$ 2,180,994	$ 3,095,352	$ 1,308,596	$ 1,857,211	$ 436,199	$ 619,070
						Sea Days	$650 /day	3,355	4,762	2,013	2,857	671	952