New England Fishery Management Council
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John Pappalardo, *Chairman* | Paul J. Howard, *Executive Director*

MEMORANDUM

DATE: November 3, 2009 (revised)

TO: Groundfish Oversight Committee

FROM: Groundfish Plan Development Team

SUBJECT: **Framework 44**

1. The Groundfish PDT met in Mansfield, MA to discuss FY 2010-2012 ACLs, the value of yellowtail flounder to the groundfish fishery, and adjustments to effort controls for FY 2010. The PDT briefly discussed U.S./Canada area measures for FY 2010. Participants included Tom Nies and Anne Hawkins (NEFMC), Tom Warren (NMFS NERO), Eric Thunberg and Paul Nitschke (NMFS NEFSC), Steve Correia (Massachusetts DMF), and Dan Holland (via conference call, GMRI).

2. NERO advised that in order to modify FY 2010 management measures changes must be submitted in a framework document. Framework 44 (FW 44) will include OFLs/ABCs/ACLs, special management program incidental catch TACs, U.S./Canada TACs, and measures for FY 2010. The vote on the framework action is planned for the November Council meeting.

Annual Catch Limits (ACLs)

3. The PDT recommended ACLs for FY 2010 – FY 2012 are attached (see FW 44 measures document). The values presented to the Committee differ slightly from the preliminary values presented to the Council in September for the following reasons:

(a) The ACLs for GB cod and GB yellowtail flounder reflect Council decisions on the U.S./Canada TACs. The values presented in September were developed before these decisions were made.

(b) For those cases where management uncertainty is considered larger than for other stocks, the ACL is set at 93 percent of the ABC. This reflects a Council decision; in September, the ACL for these stocks was set at 90 percent of the ABC.

(c) The GOM haddock ACL is calculated similar to the way the GOM cod ACL is calculated. These two stocks are the only two stocks with a specific recreational/commercial allocation, so the PDT recommends the calculation of ACLs be as similar as possible. The details are explained in the draft FW 44 appendix that details the ACL calculations.

(d) Minor errors have been corrected throughout the table.

Value of Yellowtail Flounder to the Groundfish Fishery

4. The Committee will need to develop a recommendation for the allocation of yellowtail flounder stocks between the scallop and groundfish fisheries. In FY 2010, these values will be considered a sub-component of the overall ACLs and will not trigger scallop fishery AMs. For FY 2011-2012, it is expected that AMs will be adopted by a scallop action and these allocations will be a sub-ACL. The values for FY 2011-2012 may be revisited in the summer of 2010 once the scallop area management program is defined for those years. The Council asked the Groundfish and Scallop PDTs to develop information to assist in the allocation decision ("that the Council requests the PDT to develop an analysis of groundfish/scallop revenue impacts under the different scenarios and the effects on fishing opportunities…".

5. When considering the allocation of yellowtail flounder between the two fisheries, it is important to note that neither fishery "owns" the yellowtail flounder. Fishing mortality on yellowtail flounder stocks has resulted from both fisheries over the years. Table 1 summarizes scallop fishery removals of yellowtail since 2004. The scallop fishery accounted for a relatively small percentage of the CC/GOM yellowtail flounder removals in all years, a substantial portion of SNE/MA yellowtail flounder removals, and variable amounts for GB yellowtail flounder. There is no clear trend for any stock, but other PDT work illustrated that GB yellowtail flounder catches are highest when the CAII access area is open. While groundfish catches of yellowtail flounder have been reduced since 2004 to promote rebuilding, there is little evidence of the similar reductions in the scallop dredge fishery, particularly in SNE. In both absolute and relative terms the 2010 estimates of incidental catch developed by the scallop and groundfish PDTs for the scenarios are similar to recent dredge catches. These 2010 estimates reflect four scallop fishery rotational management alternatives.

6. The amount of yellowtail flounder available to the groundfish fishery can influence the fishery's access to other groundfish stocks. Under the regulations implementing the U.S./Canada Resource Sharing Understanding, common pool vessels can lose access to the Eastern U.S./Canada area as the GB yellowtail flounder TAC is approached (through gear restrictions, restrictive trip limits, etc.) and the area is closed when the TAC is caught. Similarly, for vessels that join sectors, they may lose access to the yellowtail flounder stock areas if they harvest their entire ACE. For common pool vessels, beginning in FY 2012 with the implementation of the hard TAC AM they can lose all access to any yellowtail flounder stock area when 90 percent of the ACL is harvested. For these reasons, the value of yellowtail flounder to the groundfish fishery is more than just the value of the yellowtail flounder.

Table 1 – Scallop fishery yellowtail flounder catches, CY 2004-2008

	Fishing Year	2004	2005	2006	2007	2008	*2010 Estimates*
CC/GOM	Total TAC	881	1233	650	1078	1406	*863*
	Total TAC for scallop fishery*	86.3	120.8	63.7	105.6	137.8	*???*
	Scallop AA open or closed	N/A	N/A	N/A	N/A	N/A	*N/A*
	Total YT catch by dredge gear (landings and discards)	18	6	12	35	5	*17-30*
	Total YT Catch (all gear)	1186	997	620	627	727	
	Scallop catch as percent of total catch	1.5%	0.6%	1.9%	5.6%	0.7%	
SNE	Total TAC	707	1982	146	213	312	*493*
	Total TAC for scallop fishery*	69	194	14	21	31	*???*
	Scallop AA open or closed	open	closed	open	open	open	*open*
	Total YT catch by dredge gear (landings and discards)	125	130	168	188	151	*111-202*
	Total YT Catch (all gear)	614	367	369	396	504	
	Scallop catch as percent of total catch	20.3%	35.4%	45.5%	47.5%	29.9%	
GB	Total TAC	6000	4260	2070	900	1869	*960*
	Total TAC for scallop fishery*	588	417	203	88	183	*???*
	Scallop AA open or closed	open	open	open	open	close d	*open*
	Total YT catch by dredge gear (landings and discards)	84	194	254	122	134	110-215
	Total YT Catch (all gear, U.S. only)	6386	3637	1573	1564	1118	
	Scallop catch as percent of total catch	1.3%	5.3%	16.1%	7.8%	12.0%	

*Scallop TAC has been calculated from total TAC = 9.8% of total TAC. These values have not been confirmed with regulations.

Note that the 2010 YT TACs are = ABC recommended by SSC

7. The PDT estimated the value of each metric ton of yellowtail flounder to the groundfish fishery for the GB and SNE/MA yellowtail stocks. The same analysis was not done for the CC/GOM yellowtail flounder stocks since scallop fishery incidental catches seem to be at a low level. Two estimates for each stock were developed. The low value represents the average value of the yellowtail flounder alone, while the upper value represents the value of all species caught on trips landing yellowtail flounder. The calculations are further explained for each stock in the following sections.

(a) With respect to pertinent considerations to determine the appropriate amount of Georges Bank (GB) yellowtail flounder to allocate to the scallop fishery, the value of GB yellowtail flounder to the groundfish fishery is one of the principal considerations (other considerations include the size of the yellowtail ACL, catch trends by groundfish and scallop fisheries, discard rate of yellowtail by the scallop fishery, value of yellowtail to the scallop fishery, etc). There are primary and secondary causes of revenue reduction to the groundfish fishery associated with GB yellowtail flounder allocations to the scallop fishery.

The primary value of Georges Bank yellowtail flounder to the groundfish fishery is the amount of lost yellowtail revenue associated with a particular allocation to the scallop fishery that results in a lower yellowtail catch limit for the groundfish fishery. A simple estimation of the value would be derived from the ex-vessel price of yellowtail and the amount of yellowtail allocated to the scallop fishery. A more accurate valuation should take into account the fact that both landings and discards of yellowtail count toward the ACL, and a percentage of the yellowtail caught are discarded and are not landed (regulatory discards due to minimum size and maximum possession regulations). In other words the allocation of a ton of yellowtail to the scallop fishery does not result in the loss of a ton of landings by the groundfish fishery, but an amount reduced by the groundfish fishery yellowtail discard rate.

There are secondary affects of allocating yellowtail to scallop fishery when a reduced and limited yellowtail flounder sub-ACL limits the ability of vessels to fish in the GB yellowtail stock area, or a portion of the stock area. Current groundfish regulations and proposed Amendment 16 regulations limit fishing when the GB yellowtail groundfish sub-ACL is attained. Therefore, a lower ACL of yellowtail for the groundfish fishery may result in a reduced number of trips and the loss of all revenue from such trips. For example, for common pool vessels, the when the pertinent sub-ACL of GB yellowtail flounder is caught, the Eastern U.S./Canada Area (Eastern Area) is closed to fishing for common pool vessels. Therefore, for vessels fishing in the Eastern Area, allocation of yellowtail flounder to the scallop fishery may represent a loss of yellowtail flounder revenue and other revenue gained from trips to the Eastern Area. For common pool vessels fishing in the Western U.S./Canada Area (Western Area), when the GB yellowtail flounder sub-ACL is caught, vessels are prohibited from possessing yellowtail flounder, but may continue to fish in the Western Area. For such trips, the value of lost GB yellowtail sub-ACL results from only the value of the lost yellowtail landings.

NMFS's Fishery Statistics Office compiled dealer landings and revenue data for all species landed from trips to the U.S./Canada Management Area (U.S./Canada Area) during FY 2007 and 2008. Not all trips to the U.S./Canada Area could be linked (matched) to dealer data, so matched trips were extrapolated using trip length in order to derive the total value of all species landed (ratio of the cumulative trip length on matched trips to the total cumulative trip length). The total value of GB yellowtail flounder was calculated using 2007 and 2009 prices (overall U.S./Canada price and price associated with trips to the Eastern U.S./CA Area) and the total landings of GB yellowtail. Because the revenue loss associated with allocation of GB yellowtail to the scallop fishery depends upon whether a common pool vessel fishes in the Eastern Area or the Western Area, the proportion of GB yellowtail caught in the Eastern Area and the Western Area was calculated. Another important assumption in the analysis was the discard rate of yellowtail by groundfish vessels. Revenue loss per mt of GB yellowtail allocated to the scallop fishery was calculated based upon these considerations.

Primary revenue lost per mt of GB yellowtail allocated was estimated as $ 3,296. Secondary revenue loss per mt of GB yellowtail allocated was estimated as $ 37,880. For common pool vessels, the total revenue loss per mt of GB yellowtail allocated, considering discards and the relative amounts of primary and secondary revenue loss (based on location fished) was $ 12,674. For sector vessels, because they may not fish in the GB stock area when their Annual Catch Entitlement (ACE) for GB yellowtail flounder has been caught, the total revenue loss per mt of GB yellowtail allocated may be as high as $ 41,176 (primary plus secondary revenue loss). Table 2 contains some of the important values in the analysis.

Table 2 - Revenue Loss to Common Pool per mt of GB Yellowtail Allocated to the Scallop Fishery. Pertinent Values

	2007	2008	Average
Discard Rate	0.19	0.14	0.17
Proportion of Yellowtail From Eastern Area	0.14	0.49	0.32
Yellowtail price/lb From East	$ 1.46	$ 1.45	na
Yellowtail price/lb Overall	$ 1.66	$ 1.33	na
Primary revenue loss: Value of only yellowtail per mt allocated	$ 3,660	$ 2,932	$ 3,296
Secondary revenue loss: Value of other species per mt allocated	$ 41,752	$ 34,008	$ 37,880
Primary and secondary revenue loss per mt allocated			$ 41,176
	East	West	Total
Allocated to Scallop Fishery (mt)			1
Catch Lost to Groundfish Fishery	0.315	0.685	
Landings Lost	0.262	0.570	
Revenue Loss per mt allocated	$ 10,795	$ 1,879	$ 12,674

b. A similar analysis was developed for SNE/MA yellowtail flounder using the dealer database. The data were queried to extract pounds landed (live weight) and revenues for trips that were not in the GOM or GB and that did not use scallop dredge gear, hydraulic surf clam dredges, or mid-water trawls in CY 2007 and 2008. The first query focused on trips that landed yellowtail flounder. The average value per metric ton of yellowtail flounder is $28,708, lower than for trips on GB. This represents the loss of revenue for each metric ton of yellowtail flounder that is not allocated to the groundfish fishery under either sectors or a hard TAC AM. As with the previous analysis this assumes that all revenues are lost on a trip that landed yellowtail flounder, and as a result is likely the maximum estimate. If only the value of the yellowtail flounder is considered, the average is $3,895 per mt of yellowtail flounder (Table 3).

Table 3 – Value of a metric ton of SNE/MA yellowtail flounder

YEAR	Total Live Weight	Total Revenues	YTF Live Weight	YTF Revenues	YTF Revs/LB	YTF Revs/MT	Total Revs/YTF MT
2007	9,251,321	10,306,591	706,797	1,324,991	1.874642	4,133	32,148
2008	12,487,688	10,726,339	935,850	1,552,701	1.659134	3,658	25,268
Average					1.766888	3,895	28,708

The analysis was extended to all trips that land any groundfish species, monkfish and skates – that is, trips likely to be fishing under the groundfish regulations. This results in values that are much higher than those reported above, but interpretation is more complex because of the mixed nature of the fishery in SNE. While there are over 45,000 trips that land one of these species, fewer than 5,000 land yellowtail flounder on the same trips. High value species like monkfish can be landed without using a groundfish DAS, so including these revenues in the evaluation would overestimate the revenues losses. For this reason the results are not shown here.

(c) It's important to note that while the value of yellowtail flounder may seem small in absolute terms ($3K – 4K per mt, if only yellowtail flounder is considered, higher when other stocks included) but this may be a large relative percentage of groundfish revenues from an area. This may be more important in SNE where there are fewer groundfish opportunities. Yellowtail revenues were almost 13 percent of total revenues on trips landing yellowtail flounder in the SNE/MA area in 2007. There are similar concerns in the U.S./Canada area. The analysis showed that losses in the U.S./Canada area could be $1.5-2.3 million if 120-180 mt are allocated. This represents approximately 4 to 7 percent of the overall revenue from the U.S./Canada area in 2007 and 2008. With respect to the Eastern U.S./Canada area, the loss of revenue associated with allocations of 120 to 180 mt is approximately 32% to 51% of estimated revenues from 2007 and 6% to 10% of revenues from 2008. This could make trips to that area unprofitable for groundfish fishermen.

(d) This analysis focuses on changes in revenue. A true economic analysis would also consider costs. It is not clear how the changes in revenue summarized here affect the profitability of fishing businesses.

8. The estimates provided assume no change in fishing behavior by groundfish fishermen to avoid yellowtail flounder in order to prevent losing access to the yellowtail flounder stock areas. Observer data was examined for evidence that this may be possible. Table 4 and Table 5 summarize the catches of several groundfish species on observed tows to determine which species are likely to be caught with yellowtail flounder. For each groundfish species listed, the tables shows the weight of that species caught on tows that also had a specific percentage of either GB or SNE/MA yellowtail flounder. As an example, observed tows caught 229,408 kg. of cod on tows in statistical areas 522,525,561, and 562 that did not catch any GB yellowtail flounder. This was 62 percent of the cod caught on observed tows.

In the GB yellowtail flounder stock area yellowtail flounder was rarely observed in tows catching white hake, redfish, and pollock. Roughly two-thirds of the cod, monkfish (both live and tails), and witch flounder was caught on tows that did not catch GB yellowtail flounder. For the remaining species, however, yellowtail was frequently caught in the same tows. This suggests that there is some potential that behavioral changes could be adopted that would reduce the costs to the groundfish fleet of allocating yellowtail to the scallop fishery, at least for species like cod, monkfish, pollock, and redfish. The opportunities are more limited for skates and other flatfish species.

In the SNE/MA yellowtail flounder stock area, pollock, white hake, witch flounder, and monkfish are rarely caught with yellowtail founder. Winter flounder, plaice, windowpane flounder, and skates are caught less frequently. Unlike on GB, cod and haddock are caught with yellowtail flounder fairly frequently. Still, there is some evidence that targeting behavior may reduce the costs of allocating yellowtail flounder to the scallop fishery in this area.

Adaptations are more likely to be adopted by sector members who presumably will be able to organize their efforts to maximize access to their ACE. There may be similar adaptations available to the scallop fishery, but that is outside the expertise of this PDT.

9. An additional concern is worth mentioning. In recent years scallop fishermen have discarded almost all yellowtail flounder caught. Allocating yellowtail flounder to this fishery effectively means accepting discards. This would seem to conflict with M-S Act requirements to minimize bycatch to the extent practicable. Such discards could be reduced by requiring scallop vessels to land legal-size yellowtail flounder; this may require adjustments to trip limits currently in place.

10. There may be differential impacts on communities as yellowtail flounder is allocated to the scallop fishery. SNE/MA yellowtail flounder is one of the few groundfish stocks available to smaller vessels from SNE ports; reducing the amount available may limit access to the groundfish fishery of both common pool and sector vessels from these ports. At first blush the same could be true for GB yellowtail flounder and the port of New Bedford, but for this community the benefits to the scallop fishery could outweigh the losses from local groundfish vessels.

Table 4 – Percent of tow that was GB YTF using 2008 observed tows data that caught at least one groundfish species. Values in columns are kilgrams caught or percent of the groundfish species

Percent Georges Bank	cod	dab	had	monk live	monk tails	opout	pol	red	skate live	skate wing	wfl	whh	wit	wpf	ytf
yellowtail on a tow basis															
0	229,408	54,494	423,758	52,430	31,056	2,503	103,546	21,651	908,953	149,387	137,027	35,497	52,749	15,434	0
1-25	135,878	40,931	525,378	17,456	11,510	5,319	21,664	675	1,623,355	175,288	173,402	2,326	22,737	33,742	121,191
25-50	4,365	6,722	18,337	4,662	1,225	920	28	1	127,788	13,723	7,658	172	1,911	5,874	105,209
50-75	1,278	4,219	3,113	2,121	886	524	105	0	30,297	2,360	1,622	151	1,795	2,973	81,858
75-100	310	1,438	357	1,445	416	214	1	1	6,986	626	398	117	1,521	671	66,341
total kg	371,239	107,804	970,942	78,114	45,093	9,480	125,345	22,328	2,697,379	341,383	320,106	38,264	80,713	58,693	374,599
0	62%	51%	44%	67%	69%	26%	83%	97%	34%	44%	43%	93%	65%	26%	0%
1-25	37%	38%	54%	22%	26%	56%	17%	3%	60%	51%	54%	6%	28%	57%	32%
25-50	1%	6%	2%	6%	3%	10%	0%	0%	5%	4%	2%	0%	2%	10%	28%
50-75	0%	4%	0%	3%	2%	6%	0%	0%	1%	1%	1%	0%	2%	5%	22%
75-100	0%	1%	0%	2%	1%	2%	0%	0%	0%	0%	0%	0%	2%	1%	18%
total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 5 - Percent of tow that was SNEMA YTF using 2008 observed tows data that caught at least one groundfish species. Values in columns are kilograms pounds caught or percent of the groundfish species

Percent SNE	cod	dab	had	monk live	monk tails	opout	pol	red	skate live	skate wing	wfl	whh	wit	wpf	ytf
yellowtail on a tow basis															
0	910	115	11	85,498	35,455	559	14	45	496,765	31,377	13,108	3,347	2,879	6,657	0
1-25	1,214	53	266	4,207	1,168	2,031	0	0	251,210	26,028	4,790	59	560	3,336	7,526
25-50	5	0	0	10	0	14	0	0	707	0	103	0	0	138	354
50-75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
75-100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
total kg	2,130	168	276	89,714	36,623	2,604	14	45	748,683	57,404	18,002	3,406	3,440	10,132	7,880
0	43%	68%	4%	95%	97%	21%	100%	100%	66%	55%	73%	98%	84%	66%	0%
1-25	57%	32%	96%	5%	3%	78%	0%	0%	34%	45%	27%	2%	16%	33%	96%
25-50	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%	1%	4%
50-75	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
75-100	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

FY 2010 Effort Controls

11. At the September Council meeting the following motion was passed:

> "that the Council direct the PDT to include measures in the Amendment 16 spec package to slow the catch in order not to exceed the ACL for the common pool with trip limit adjustments and/or differential DAS adjustments in season by the Regional Administrator."

This motion was driven by concerns that many vessels can catch more GOM cod or pollock by fishing in the common pool than they can by fishing within sectors. If many vessels choose to fish in the common pool, Council members were worried that the common pool ACLs would be rapidly exceeded and lead to continued overfishing, at least in FY 2010 before the common pool AMs can address the issue.

12. Throughout the development of Amendment 16 it was clear that the development of effort controls was more uncertain than in the past because it was not known which vessels would choose to join sectors and which vessels would choose to fish under the effort controls. If the vessels that choose to fish in the common pool are not representative of the vessels in the model, then the model results might not accurately predict impacts. The ability to model the 24-hour clock added additional uncertainty. Another source of uncertainty is the estimate of cod discards. The Closed Area Model (CAM) parameters reflect revealed preferences based on catch rates in gear/block/month combinations. If catch rates in the model are lower than actual catch rates due to low estimates of discards, then some areas may be seen as less favorable within the model than is actually the case, and the model may over-estimate changes in exploitation. When the effort control alternative was developed there was a considerable buffer between the needed changes in exploitation for GOM cod and the model's predicted results, but this gap was essentially eliminated when the Council adopted the revised ABC control rules.

13. There has been considerable speculation about the vessels in the common pool based on the September 1 rosters. It may be useful to review the characteristics of these vessels in some detail. Based on the September 1, 2009 rosters, there are 757 vessels in the common pool and 723 vessels in sectors. There are 686 readily identifiable owners (i.e. exact match of owner's corporate name or first and last name). Owner's mailing addresses – an indication of where the permits are located - are distributed as shown in Table 6.

Of the vessels in the common pool, 477 have no DAS allocated. The remaining 280 permits have 3,601 DAS, or an average of 12.8 DAS. The distribution of DAS is shown in Table 7 – 93 percent of common pool vessels have 20 DAS or fewer. Of the 280 permits with DAS, 105 did not land a single GOM cod during the qualification period. Permits that did land GOM cod during the qualification period have 2,572 DAS.

The size distribution (permit baseline length) of vessels in the common pool that have DAS is similar to the size of all vessels eligible for sectors, but the common pool actually has a smaller percentage of large vessels (Table 8).

Table 6 – Common pool owner mailing addresses, state and number of permits

CT	17
DE	2
FL	2
GA	1
MA	291
MD	6
ME	91
NC	12
NH	37
NJ	88
NY	100
RI	65
VA	17

Table 7 - Distribution of Category A DAS to permits in the common pool (as of September 1, 2009)

Cat A DAS Allocated	*Frequency*	*Cumulative %*
0	477	63.10%
> 0 - 10	116	78.44%
> 10 - 20	112	93.25%
> 20 - 30	48	99.60%
> 30 - 40	3	100.00%
50	0	100.00%
More	0	100.00

Table 8 – Length distribution comparison based on September 1, 2009 sector rosters

With DAS, in common pool			All Permits		
Length	*Frequency*	*Cumulative %*	*Length*	*Frequency*	*Cumulative %*
0	0	0.00%	0	0	0.00%
>0 - 30	15	5.38%	30	68	5.11%
>30 - 50	137	54.48%	50	677	55.93%
> 50 -75	100	90.32%	75	362	83.11%
More	27	100.00%	More	225	100.00%

14. The PDT used the PSC allocations to determine the permits that could catch more cod by remaining in the common pool than by joining sectors. This was done based solely on GOM cod, and then based on total cod. Various trip limits were considered, as well as a “DAS factor” that in it simplest form can be considered a differential DAS counting rate. The analysis includes three key assumptions:

(a) Every DAS used catches the full trip limit.
(b) Every permit can catch all of the cod ACE that it is entitled to by its PSC.
(c) Each permit was treated as an individual decision – permits are not treated as if an owner based his decision on a group if owned permits.

15. The two figures below summarize the results of the analysis. For a given trip limit and DAS factor, the curved lines provide the number of vessels that can catch more cod in a sector than in the common pool. Small circles represent data points. Figure 1shows the results for GOM cod alone. At the 2,000 pound trip limit and DAS factor of 1 proposed by Amendment 16, few vessels (33) can catch more GOM cod in sectors than in the common pool. Figure 2 shows the results for total cod; the number of vessels that can catch more cod in sectors is almost twice as many (61) with the proposed trip limit, but the biggest difference is the number increases more rapidly as the trip limit and/or DAS factor is reduced. The two figures also provide a caution: basing conclusions on one stock alone may be misleading.

Figure 1 - Number of vessels catching more GOM cod in a sector than under effort controls as a function of the GOM cod trip limit and the DAS factor

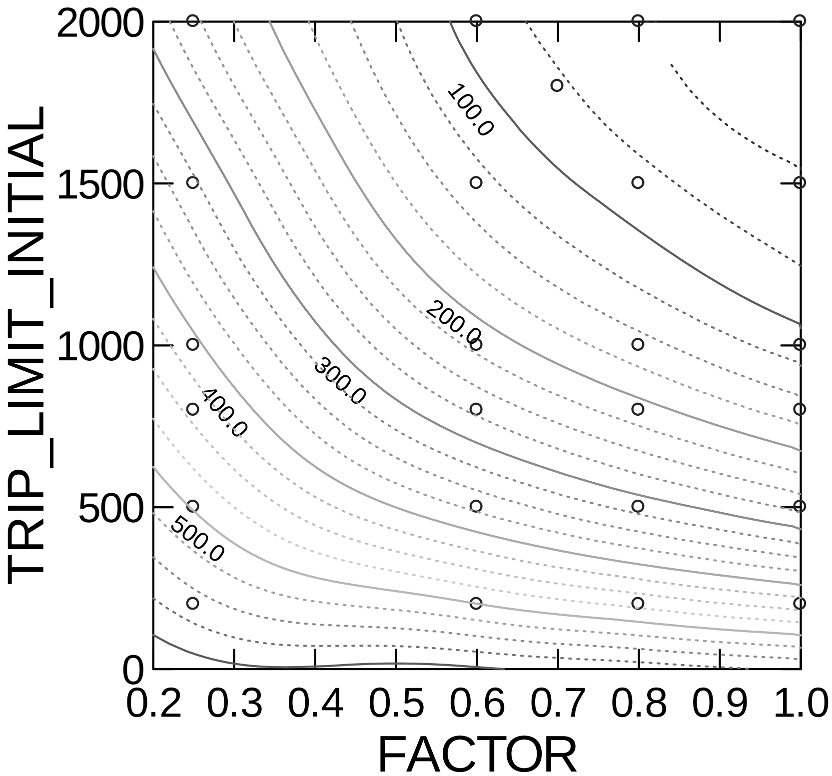
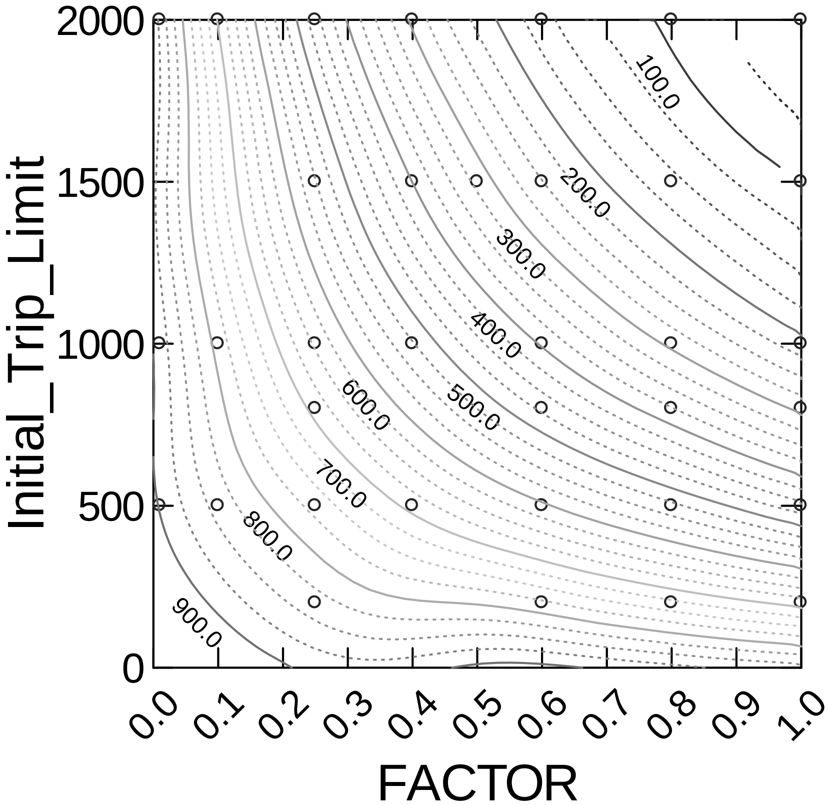


Figure 2 - Number of vessels catching more cod (both stocks) in a sector than under effort controls as a function of the cod trip limit and the DAS factor



16. The PDT explored a number of analyses in an attempt to develop an analytic approach to setting a cod trip limit without knowing who will be in sectors. These attempts were not successful but did have some interesting results.

> (a) If the decision to join sectors is made solely on the amount of cod that can be caught, lower initial trip limits will result in more vessels remaining in sectors. At the same time, the vessels that remain in the common pool have a larger disparity between cod available to the common pool and DAS in the common pool. This means an even lower trip limit is needed to be certain the common pool does not exceed its ACL (if the full trip limit is caught on every DAS used). This relationship does not change until low initial trip limits (less than 500 pounds) are combined with low DAS factors (that is, a high differential DAS counting rate). Trip limits at these low levels will likely lead to increased discards of cod, which increased in 2008 under the 800 pound trip limit. With the stock expected to remain at high levels, low trip limits will only exacerbate the discard problem.
>
> (b) The analyses provide a possible approach to in-season monitoring of catches to determine if a trip limit or differential DAS adjustment is needed. Once the permits in the common pool are identified, the cumulative PSC for those permits is used to determine the ACL for the common pool. The desired catch (landings and discards) rate for the common pool for any stock can be calculated. The formula for this rate is:
>
> Common pool ACL/Common Pool Category A DAS (including carry-over DAS)

If the trip limit at the beginning of the year is set at this desired daily catch rate, then at any time in the year the trip limit needed can be calculated by dividing the remaining ACL by the remaining DAS. This provides a simple way to monitor the fishery in-season to determine if a trip limit adjustment is needed. If the trip limit at a given point in time exceeds the ratio of ACL remaining to DAS remaining, a trip limit adjustment may be needed.

If the trip limit at the beginning of the year is not set at the desired daily catch rate, the problem becomes more complex and a two-step evaluation is needed. First, the catch is divided by the DAS used. This value is compared to the ACL remaining divided by the DAS remaining. If the observed catch rate is higher than the desired rate, a trip limit reduction may be needed. If it is lower, it may be possible to increase the trip limit.

The following example illustrates this approach. Using the sector rosters as of September 1, 2009, the cumulative common pool PSC for GB winter flounder is 0.029666463, and the common pool ACL is 121,126 pounds. With 3,601 DAS in the common pool, the desired daily catch rate is 33.6 pounds per DAS used. Note this is based on all DAS used, not just DAS used to catch GB winter flounder. For illustration, assume a trip limit of 2,000 lbs./DAS is set.

Assume in May the GB winter flounder catch by common pool vessels is 3,700 pounds and 450 DAS are used. The ratio of GB winter flounder to DAS is 3,700/450, or 8.2 lbs./DAS. This is lower than the desired daily catch rate and a decrease is not needed. Is an increase appropriate since the daily catch rate is much lower than the desired rate? About 12.5 percent of DAS have been used (.875 remaining) while less than 1 percent of the ACL has been harvested (.995 remaining). The ratio of the remaining ACL to remaining DAS is 1.13, suggesting the desired daily catch rate could increase. If increased by the ratio of 13 percent, the new desired catch rate would be about 40 lbs/DAS. Rather than make an adjustment based on one data point, it would be better to track these relation ships over time and make adjustments based on the trend.

17. The PDT decided not to recommend a specific cod trip limit or differential DAS adjustment. Without definitive information on the number of permits in the common pool, there is little basis for any specific value. This seems to be a policy decision that is related to a desire to encourage sector participation coupled with concern over the uncertainty associated with Amendment 16 effort control development. The PDT believes these policy decision are best left to the Committee and Council.

Pollock

18. For the fleet as a whole, the ACE associated with each permit was divided by the DAS allocation to get a daily trip limit value that would limit the permit catch to the same amount of pollock in either the sector or common pool. The distribution of these values is shown in Table 9. Those permits that have a trip limit of 1,000 pounds or more account for 54.5% of the pollock PSC, while those with a limit of 500 pounds or more account for 76.5% of the pollock PSC.

Table 9 – Distribution of FY 2010 pollock ACE/DAS for permits eligible to join sectors

Pollock/DAS	*Frequency*	*Cumulative %*
0	83	8.57%
250	679	78.72%

500	83	87.29%
1000	62	93.70%
1500	27	96.49%
2000	15	98.04%
More	19	100.00%

19. Analyses prepared for Amendment 16 may assist the Committee in determining an appropriate limit. Analyses prepared for the amendment showed evidence that pollock can be effectively targeted on specific tows, and that trips that land large amounts of pollock tend to have a number of tows where pollock is the primary species caught. At the same time, there is a lower level of pollock that is frequently caught in a large number of tows (see the June 12, 2009 PDT report). For Amendment 16 the PDT developed a recommended trip limit of 1,000 lbs/DAS with a maximum of 10,000 lbs./trip in order to modify the differential DAS alternative so that it would meet the amendment's mortality objectives.

20. Any trip limit must necessarily balance the trip limit needed to modify targeting behavior with the effect on discards. A trip limit analysis prepared for Amendment 16 highlights this tradeoff. Daily limits of less than 2,000 pounds are likely to result in additional discards of more than 50 percent of landings (Table 10).

Table 10 – Additional discards under various pollock trip limits. Analysis prepared for Amendment 16.

	Maximum per Trip	
Daily Limit	10000	5000
500	0.9265	0.7389
1000	0.5857	0.8748
2000	0.4989	0.7851
3000	0.4248	0.6838

21. The vessels that are in the common pool based on September 1, 2009 rosters have small PSCs for pollock. This suggests these permits do not have a history of targeting pollock in the past. It is unclear whether these vessels will choose to target a low value species like pollock under the proposed effort controls. A trip limit similar to that recommended for Amendment 16's differential DAS alternative will prevent the most of the vessels that targeted pollock in the past from being able to catch more pollock under the DAS program than in sectors, but will also increase discards by those vessels that remain in the common pool. Lower trip limits may exacerbate the discard problem.

U.S./Canada Area Measures

22. The PDT briefly discussed U.S./Canada area common pool measures for FY 2010. Because of the reduced TACs for GB yellowtail flounder and EGB cod, the PDT recommends the eastern area not op0en to trawl gear until August 1 (as was the case in FY 2008 and FY b2009). In addition, the PDT suggests that use of a flounder net be prohibited when the area first opens. The GB yellowtail flounder trip limit should be set low at the start of the fishing year.