Background on ACLs in the Scallop Fishery

Amendment 15

The MSA was reauthorized in 2007. Section 104(a) (10) of the Act established new requirements to end and prevent overfishing, including annual catch limits (ACLs) and accountability measures (AMs). Section 303(a)(15) was added to the MSA to read as follows: ‘‘establish a mechanism for specifying annual catch limits in the plan (including a multiyear plan), implementing regulations, or annual specifications, at a level such that overfishing does not occur in the fishery, including measures to ensure accountability.’’ ACLs and AMs are required by fishing year 2010 if overfishing is occurring in a fishery, and they are required for all other fisheries by fishing year 2011.

Overfishing Limit (OFL): OFL means the annual amount of catch that corresponds to the estimate of MFMT applied to a stock's abundance and is expressed in terms of numbers or weight of fish. OFL is an estimate of the catch level above which overfishing is occurring, corresponds to the level that jeopardizes the capacity of a stock to produce MSY on a continuing basis.

ABC Control Rule: A specified approach to setting the ABC for a stock (complex) as a function of scientific uncertainty in the estimate of OFL and any other scientific uncertainty.

Acceptable Biological Catch (ABC): The maximum catch that is recommended for harvest, consistent with meeting the biological objectives of the management plan. ABC can never exceed the OFL. The determination of ABC will consider scientific uncertainty.
For the Scallop FMP, ABC will be set at a catch amount produced by a fishing mortality equivalent to having a 25% chance of exceeding OFL. This is based on a recommendation of the SSC using quantitative and qualitative analyses of scientific uncertainty completed by the Scallop PDT.

Annual Catch Limit (ACL): Annual amount of catch over which accountability measures are triggered. ACL can be equal to but can never exceed the ABC. ACL should be set lower than the ABC when necessary due to uncertainty over the effectiveness of management measures.
For the Scallop FMP, ACL = ABC; therefore the catch that corresponds to a fishing mortality level that has 25% chance of exceeding OFL.

Sector-ACLs: Council may, but isn't required, to divide an ACL into sector-ACLs. Sectors include gear groups within a fishery. Sector-specific ACLs may be necessary if the different sectors differ in their degree of management uncertainty so that appropriate AMs can be developed for each sector. **The Scallop FMP will have two sector ACLs: one for the limited access scallop fishery (LA) and one for the limited access general category scallop fishery (LAGC).**

Annual Catch Target (ACT): An amount of annual catch of a stock or stock complex that is the management target of the fishery and accounts for management uncertainty. A stock or stock complex's ACT should usually be less than its ACL.
For the Scallop FMP, use of an ACT is recommended as a "proactive" in-season accountability measure to help ensure the ACL is not exceeded. There will be separate ACTs for the two sub-ACLs: one for the limited access fishery and one for the general category fishery.

- ***Accountability Measures (AMs):***

AMs: Management controls that prevent ACLs or sector-ACLs from being exceeded (in-season AMs), where possible, and correct or mitigate overages if they occur.

In-season AM: Includes (but is not limited to) an ACT, closure of a fishery, closure of a specific area, reductions in effort, or changes in trip size or bag limits based on in-season monitoring of the fishery. For fisheries without in-season management control, AMs should utilize ACTs that are set below ACLs so catches do not exceed ACL.

AMs for when ACL is exceeded: AM that is triggered and implemented as soon as possible to correct the operational issue that caused the ACL overage. This can include modifications of in-season AMs and/or overage adjustments. If catch exceeds the ACL more than once in four years, the system of ACLs and AMs should be re-evaluated.

AMs based on multi-year data: For fisheries without annual data upon which to base AMs, AMs could be based on comparisons of average catch to average ACL over a 3-year moving average period, or some other period based on an appropriate analysis.

State-Federal AMs: FMPs must have, at a minimum, AMs for the Federal portion of the state-federal fisheries. AMs could, for example, include closing the EEZ when the Federal portion of the ACL is reached.

The Scallop FMP has alternatives for in-season AMs and AMs for when ACLs are exceeded. Use of an ACT is recommended as a "proactive" in-season accountability measure to help ensure the ACL is not exceeded. The FMP also includes several other "reactive" AM alternatives if the fishery exceeds sub-ACLs.

ACL structure (PROPOSED ACTION)

The overall ACL will be divided into two sub-ACLs: one for the limited access scallop fishery (LA) and one for the limited access general category scallop fishery (LAGC). Each sub-ACL will have an associated ACT.

There are specific buffers proposed between these required terms. A buffer for scientific uncertainty between OFL and ABC and another buffer for management uncertainty between both sub-ACLs and sub-ACTs for the limited access and general category fisheries.

Northern Gulf of Maine ACL (PROPOSED ACTION)

In addition to the ACL for the directed scallop fishery (LA and LAGC), a separate NGOM ACL will be specified and will have a separate hard-TAC. Because resource in the NGOM is currently not incorporated in the overall assessment of the scallop resource, the ACL for this area can be treated separately as long as it is within the overall OFL for the resource. Therefore, an estimate of catch from this area will be added to the OFL and later removed before setting ABC and the overall ACL for the scallop fishery. It should be noted that NGOM survey data is being incorporated into the stock assessment for 2010 (SAW 50) so this may change in the future.

Other sources of scallop fishing mortality (PROPOSED ACTION)

There are three additional sources of fishing mortality that will be taken into account before setting OFL. Mortality from discards (in all fisheries), incidental catch, and catch by vessels with state only scallop permits in state waters will be removed before setting OFL. Sea scallops are sometimes discarded on directed scallop trips because they are too small to be economically profitable to shuck or because of high-grading during access area trips to previously-closed areas (discard mortality). Scallops are also caught and either landed or discarded in fisheries targeting finfish and other invertebrates (incidental catch mortality). Currently it is estimated that dead discard mortality equals 370,373 pounds, 6.8 million pounds for incidental catch mortality (5.5 million pounds from GB and 1.3 million pounds for the MA). Both these estimates are from the recent scallop assessment using 2006 data. Incidental mortality was unusually high in 2006 because most of the fishing occurred in Georges Bank (which is assumed to have much higher incidental M than the Mid-Atlantic). The third source of additional scallop fishing mortality is from landings in state waters by vessels without federal scallop permits; for fishing year 2008, the current estimate of this catch is over 160,000 pounds. These estimates will be periodically re-evaluated in scallop assessments and can be adjusted. The PDT will account for these sources of mortality when setting OFL. Each source of mortality is described in more detail below.

ACL sub-components (PROPOSED ACTION)

An overall ACL will be applied to the entire scallop fishery with two sub-ACLs for the LA and LAGC fisheries (See **Error! Reference source not found.**). Figure 1 is an example of how this structure will work as proposed, using FY2011 estimates. Mortality from discards, incidental catch, and catch from state permitted vessels will be accounted for in setting OFL (OFL will be reduced by estimates of catch from these sources of mortality). Each sub-ACL will have an associated ACT with separate accountability measures (AMs). Before sub-ACLs are set, an estimate of mortality from incidental catch permits will be removed. This incidental catch

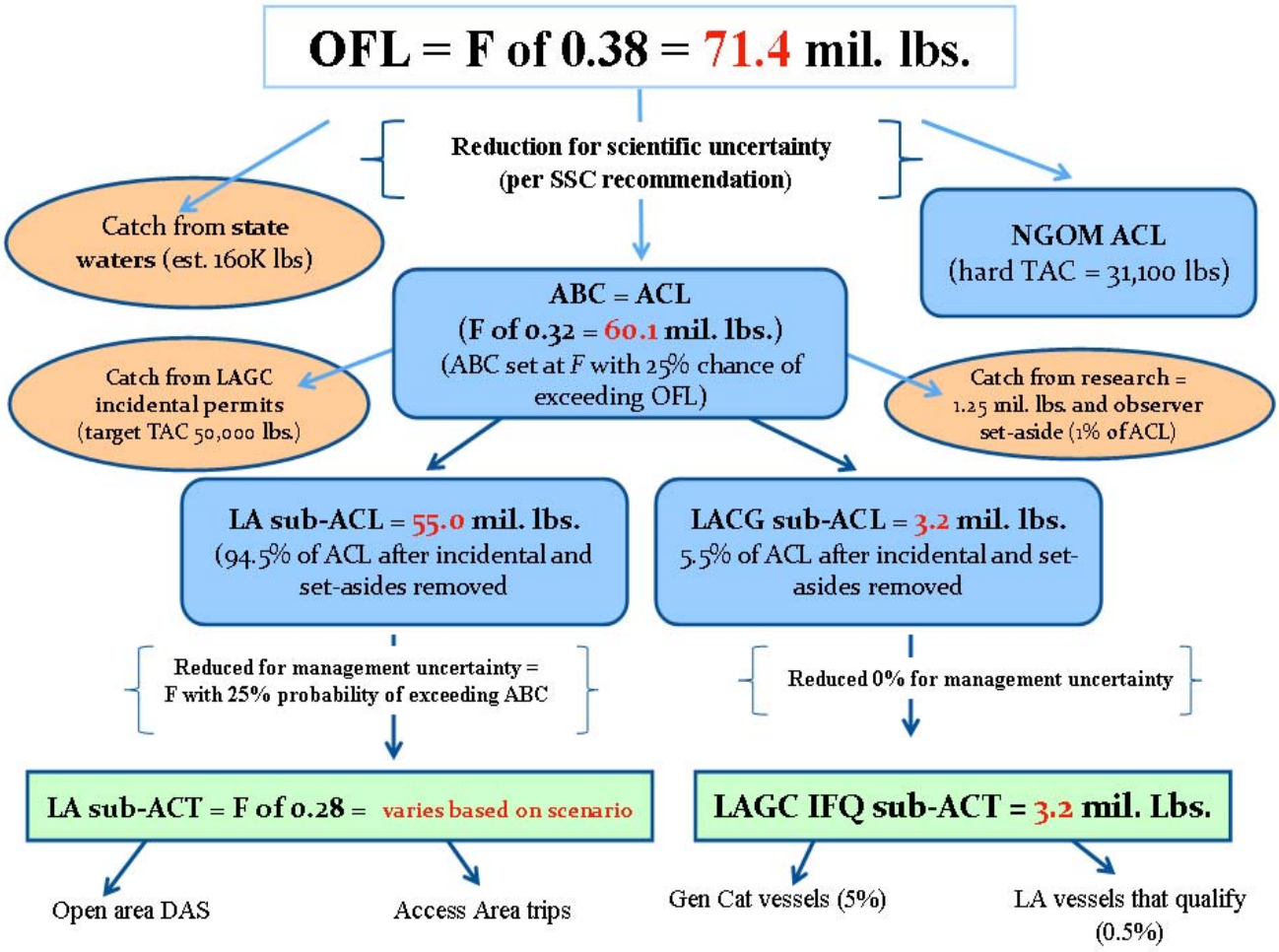
estimate is currently 50,000 pounds. Catch associated with the research and observer set-aside programs will also be removed before the ACL is divided into two sub-ACLs. One percent of total projected catch in all areas will be set aside to help defray the cost of observer coverage even though general category vessels will still be exempt from the requirement to fund observers in open areas if required to carry one.

The primary reason there will be two ACLs is so that AMs can be applied to the component of the fishery responsible for the excess catch. Thus, one component of the fishery will not shut another out or have to "pay for" an overage they did not cause.

It needs to be clarified that this action will modify the allocation decision made in Amendment 11 to allocate 5% of the total projected catch to the general category vessels that qualify for a LAGC permit, 0.5% to limited access vessels that qualify for a LAGC permit, and 94.5% for limited access vessels. The intent of Amendment 11 was to allocate 5% to the general category fishery, and since that action did not anticipate ACLs, that allocation decision should be in terms of ACL, not ACT. Therefore, the allocation decision will be applied before buffers for management uncertainty are applied since currently the two fisheries have different levels of uncertainty. Specifically, general category vessels will be allocated 5.5% of the total ACL (5% for LAGC vessels and 0.5% for LA vessels that also qualify for a LAGC permit). Because the buffers for management uncertainty for the two fleets are likely to be different based on decisions made in Section 0, the final allocations to the different fisheries, or ACTs, will not be based on the same percentages. Specifically, the LAGC ACT will likely not be 5% of the total ACT for the fishery.

Figure 1 below includes the proposed action to the ACL related measures including where to set ABC, sub-ACLs, sub-ACTs, and where to account for set-asides, NGOM catch, and other sources of mortality including dead discards and incidental catch.

Figure 1 – Example of how proposed ACL measures would work after Amendment 15 is approved, using FY2011 estimates considered in Framework 22



Placement of terms and buffers for uncertainty

The MSRA discusses that in setting catch levels the Council needs to recognize and account for uncertainty in setting and achieving harvest levels. Overall the levels of scientific and management uncertainty in the Scallop FMP are relatively low. Multiple surveys and methods are used to assess the scallop resource on an annual basis. A benchmark assessment is completed every three years, and the Scallop PDT evaluates the status of the resource each year. Section 0 below summarizes the scientific uncertainty in estimating OFL and how certain the estimate of ABC is with respect to preventing overfishing. **Based on a recommendation from the SSC, ABC will be set corresponding to a fishing mortality that has 25% chance of exceeding OFL, as depicted in Error! Reference source not found..**

For the Scallop FMP, the Council has decided to use ACTs an in-season accountability measure. What that means is that management uncertainty will be accounted for as the buffer between ACL and ACT, rather than the difference between ABC and ACL if no ACT was used.

Therefore, the Scallop FMP will use an overall approach of OFL>ABC=ACL>ACT. ABC will equal the ACL because management uncertainty is accounted for between the ACL and ACT and scientific uncertainty is accounted for between OFL and ABC. Keep in mind that the overall ACL will be divided between the limited access and general category sectors and each ACL will have an associated ACT.

The Scallop FMP has decided to go with 1) OFL>ABC=ACL>ACT for three main reasons:

1. AMs are likely hard TACs or something like them that restrict fishing by season and/or area. Hard TACs can lead to derby fishing having negative impacts on the fishery. Derby fishing has all sorts of negative consequences such as increased bycatch, lower price for product due to spikes in supply, loss of yield if fishing shifts to seasons with lower meat weights, etc. One goal of this FMP is stable and consistent landings. Markets have been developed in the US and abroad based on a steady supply of fresh scallops being available all year long.
2. In addition, an ACT would help avoid localized overfishing; with some scallops locked in closed areas that remain unavailable to the scallop fishery, fishing mortality is higher in open areas. If open area DAS are set too high, there is potential for localized overfishing.
3. The public is more likely to perceive success. The scallop industry has told the Council they would support setting fishing allocations at ACT below ACL so that there is not a misunderstanding in the public that the scallop resource is not managed responsibly. If AMs are not triggered, the public is more confident that management is working. There are a variety of reasons why a fishery could exceed a fishing target, including some that are not the control of the fishery or caused by fishing, so if a fishery is under or over a target the ramifications are different than if the fishery is under or over an ACL.

Overall, by having an ACT as an in-season AM, the management plan can "address and minimize both the frequency and magnitude of overages" by setting management measures below ACL. It may be more beneficial to catch less than the resource can biologically support, compared to catching the maximum and running a greater risk of triggering AMs that would cause derby fishing. Most AMs the Council has developed so far have derby effects and that is not a good way to manage the scallop fishery. It should be noted that this amendment also includes reactive AMs, so if both the ACT and ACL are exceeded, other AMs would be triggered that would reduce future catch to account for any overages above the ACL.

There is some management uncertainty in this fishery, but it is relatively low because the majority of the fishery is managed under output controls that cap catch (access area trips have a possession limit, and the general category fishery is managed under IFQs). Actual catch has exceeded projected catch for a variety of reasons in the past, but the estimates are getting closer. There is reason to believe estimates will become even more accurate now that the general category fishery is under IFQs, more access area trips are allocated with a possession limit per trip, more surveys are being conducted, and more is known about parameters used to estimate biomass. In addition, if general monitoring programs improve, it may be feasible to reduce the buffer between ACL and ACT. Section 0 summarizes the level of management uncertainty in this fishery. Because the limited access and general category vessels are under different management regimes with different levels of management uncertainty, they each have a separate buffer between their sub-ACLs and sub-ACTs. **In summary, there will be two options considered for the buffer between the sub-ACL and sub-ACT for the limited access fishery**

and two options considered for the buffer between the sub-ACL and sub-ACT for the limited access general category fishery.

The actual catch amounts in pounds that correspond to these acronyms will be determined in each framework that sets specifications, but the distance between each term (percentage amounts) will remain the same unless a future framework or amendment action considers changing them. However, the PDT recommends that the Council still have the authority to set the overall fishing mortality target (ACT) lower than the selected buffers if there is a justified reason. In the past the Council has set the fishing target below F_{target}, and it is understood that the Council would still have the authority to set management measures that are more precautionary than ACT if warranted. However, if the Council wanted to set management measures above ACT, that action would have to also consider revising ACT to a higher value closer to ACL.

PDT – Spatial nature of fishery can cause this flowchart to function somewhat ineffectively

Description of scientific uncertainty (PROPOSED ACTION)

Scientific uncertainty stems from incomplete or inaccurate data, model error, and environmental variation (Rosenberg et al. 2007). It affects estimates within assessments, including mortality, growth rates, and recruitment (SARC 32). Scientific uncertainty can arise from variability in growth rates, differences in aging techniques, and also statistical errors (SARC 39). Rosenberg and Restrepo (1994; as quoted in SARC 32) identified 5 types: measurement error (in observed quantities), process error (or natural population variability), model error (mis-specification of assumed values or model structure), estimation error (in population parameters or reference points, due to any of the preceding types of errors), and implementation error (or the inability to achieve targets exactly for whatever reason). Implementation error falls generally under the realm of management uncertainty, discussed in the next section.

In order to identify the appropriate buffer between OFL and ABC, the Scallop PDT evaluated the level of scientific uncertainty in two ways. First, a qualitative evaluation of the various biological parameters was completed in terms of the overall level of uncertainty related to each parameter and the impact of that uncertainty on the overall assessment (Section 0). Second, as requested by the SSC, the PDT conducted a quantitative analysis of scientific uncertainty (Section 0). Specifically, a quantified estimate of uncertainty in the estimate of OFL and MSY was conducted.

Based on a combination of these analyses, the SSC recommended that ABC be set at the catch that corresponds to a fishing mortality level that has a 25% chance of exceeding OFL.

Qualitative analysis of scientific uncertainty

While the scallop stock assessment is a relatively data rich assessments there are various sources of uncertainty that are highlighted in recent assessment reports:

- There are relatively small, but imprecisely known amounts of sea scallop biomass occur in areas outside the regularly surveyed NEFSC shellfish strata (NEFSC Reference Doc. 06-20), which can lead to biological uncertainty in the assessment. However, landings from regions outside Georges Bank and the Mid-Atlantic are comparatively minor (NEFSC Reference Doc. 06-20).
- Spatial averaging of the overfishing definition over the closed, open, and access areas leads to uncertainty about the status determination of whether overfishing is occurring (NEFSC Reference Doc. 06-20); it is known that fishing levels in the open areas are high due to the large amount of biomass in the closed areas. This allows a higher F in open areas – potential localized overfishing because averaged with no fishing on resource in closed areas.
- The ability to link dealer reports and vessel trip reports in data processing is reduced by incomplete data reports and other problems, which make it difficult to precisely estimate catches and fishing effort, and to prorate catches and fishing effort among areas and gear types (SAW 39).
- Regulatory and reporting changes cause uncertainty while comparing trends in fishing effort and catch rates before and after 1994 (SAW 39).

The scallop assessment is generally conducted about every three years. Reference points are updated and new information about catch, recruitment and other factors are evaluated. Various parameters are used in the assessment and the values used are based on the best available science.

Below is a description of the parameters used in the assessment including the most recent research data used to produce each parameter and if discussed, the degree of uncertainty associated with each parameter and the importance of that parameter on the overall assessment of the scallop resource. References included in the following assessment parameters were cited from the 45th SAW report. The Scallop PDT has evaluated the level of uncertainty on a scale of 0-4 (*zero is no uncertainty, 1= little uncertainty, 2= some uncertainty, 3= fairly uncertain, and 4=completely uncertain*) as well as the importance or effect of that parameter on the overall assessment of the scallop resource on a scale of 1-3 *(1= low, 2=moderate, and 3=high effect).* The second score is a way to qualify the uncertainty of each parameter in terms of importance or effect, a value was given to describe the sensitivity of each parameter – whether the level of uncertainty has a small or large impact on the overall assessment of the resource.

Table 1 – Summary of qualitative scientific uncertainty by parameter

Parameter	Uncertainty (Score from 0-4)	Importance or Effect on Outcome of Assessment
Growth	2	High
Maturity and fecundity	2.5	Low
Shell height / Meat weight relationships	2	Some
Natural mortality	2.5	High
Catch data	1	Some
Discards	1	Low
Discard mortality	3	Low
Incidental mortality	3	Some
Commercial shell height data	1	High
Commercial gear selectivity	1	Low
Survey gear selectivity	1	Some
Commercial gear efficiency	1.5	Low
Survey gear efficiency	1.5	Some
Stock-recruit relationship	3	Some
Density dependence	2	Some
Averages	1.87	Low to Some

		Importance or effect on outcome of assessment		
		Low	Medium	High
Uncertainty	Low	• Discards • Commercial gear selectivity • Commercial gear efficiency	• Catch data • Survey gear selectivity • Survey gear efficiency	Commercial SH data
	Medium	Maturity and fecundity	• SH-MW relationships • Natural mortality • Density dependence	Growth
	High	Discard mortality	• Incidental mortality • Stock-recruit relationship	*none*

Quantitative analysis of scientific uncertainty

On February 6, 2009, the SSC reviewed the qualitative analysis recommended by the PDT that could be used for setting ABC. While the SSC agreed that the proposed general process for setting ACLs is appropriate, they recommended that some specific modifications are needed to comply with the final rule on National Standard 1 Guidelines, which was published after the PDT prepared the qualitative analyses.

Specifically, the SSC requested "a quantified estimate of uncertainty in OFL (including uncertainty in the F_{MSY} proxy as well as the projected stock biomass). The PDT examined the

consequences of a range of fishing scenarios, the associated probability of overfishing (i.e., probability that 2010 F is greater than F_{max}) and the projected loss in yield relative to F_{max}. Based on the results of these analyses, the SSC endorsed the proposal by the Scallop PDT and other conventions of risk-based harvest rules that ABC be based on 25% probability of overfishing. Analyses of uncertainty indicate that a 25% risk of overfishing is associated with less than 1% loss in yield relative to F_{max}. The Council agreed with this determination and therefore includes an ABC rule that includes setting ABC at an F that has a 25% chance of exceeding F_{max}.

PDT – Any reason to consider alternatives to adjust ABC control rule? Scientific uncertainty

Description of management uncertainty (PROPOSED ACTION)

Management uncertainty encompasses factors such as efficacy of management controls and monitoring effectiveness. It also includes implementation error, described above as the inability to achieve targets exactly for whatever reason (Rosenberg and Restrepo 1994, in SARC 32). If the allocations are highly controlled and high quality data is collected, management uncertainty will be low, which allows the difference between the ACL and ACT to be minimized or eliminated.

There are two primary fishery components in the scallop fishery: the limited access fishery and the general category fishery. Each is managed differently so the level of management uncertainty varies for these fleets. Therefore, the Council decided to have two separate sub-ACLs for these fleets, with different buffers for management uncertainty to recognize that there are different levels of management uncertainty for these fleets.

Overall, there are only a handful of issues that contribute to management uncertainty in the scallop fishery. The Scallop PDT has identified seven primary sources of management uncertainty:

1) fishing mortality from the general category fishery;
2) increases in fishing effort from limited access vessels becoming “active” and switching from the confirmation of permit history (CPH) permit category;
3) mortality from the allowance of vessels to carry-over up to 10 DAS to the next fishing year;
4) increased mortality from vessels that upgrade or are replaced with new vessels;
5) uncertainty in catch from open area DAS (estimated versus actual landings per DAS);
6) ability of plan to monitor and enforce all catch; and
7) changes in fishing behavior that could increase landings above projected values.

The first two sources of management uncertainty are no longer an issue: mortality from the general category fishery and increases in fishing effort from limited access vessel becoming active from the CPH category.

Limited access scallop fishery

With respect to the limited access fishery (full-time, part-time, and occasional permits), the primary source of management uncertainty is the open area DAS allocation to full-time vessels. The effort from part-time and occasional vessels does not contribute enough to warrant serious consideration in the identification of sources of management uncertainty because there are very few vessels left in these categories. Increased catch from carryover DAS and vessel upgrades and replacements are sources of management uncertainty as well. Each will be described below separately.

- *Estimate of catch from open areas*

While catch from open area DAS is viewed as a source of management uncertainty, the PDT feels strongly that DAS management may account for risk associated with projected versus actual estimates better than full output controls on catch. Specifically, if biomass projections are higher than actual biomass, DAS allocations will be set higher as well. But if biomass is actually lower than projected the catch rates will be lower per DAS since less biomass is available then projected. However, if a complete output control was used for open areas (i.e. possession limit per trip or quota for the year per vessel) each vessel would harvest that amount – whether the biomass estimate was high or low. Since DAS is a limit on the time a vessel can fish, it is better linked to the amount of resource actually available; in a sense DAS are self regulating because catch rates match the biomass available and the vessel can only harvest what it can in a set amount of time.

There are two sources of error making up management uncertainty – error in the model, and from the estimate of exploitable biomass for open areas. The CV for LPUE model is ~5%. CV for exploitable biomass is 6.7%. (Are these about the same now?)

- *Carry over provision*

There are currently several "carry-over" provisions that increase management uncertainty in terms of controlling the maximum catch per year. For example, each limited access vessel is permitted to carry over up to 10 DAS to the next fishing year. In addition, limited access vessels are permitted to take an access area trip or compensation trip in an access area within the first 60 days of the next fishing year if the area is open the following year. This was implemented as a way to promote safety at sea so vessels are not in a use-it-or-lose-it situation at the end of the fishing year. However, measures like this add some degree of uncertainty in terms of when catch will be harvested. It is not additional catch, but could increase catch to a small degree in the subsequent fishing year.

The PDT will continue to monitor the number of DAS carried forward. It was also suggested that if this becomes a major source of management uncertainty the Council may want to consider reducing the amount of DAS a vessel can carry forward to reduce uncertainty. Now that total DAS have reduced from 120 to closer to 40 DAS, a 10 DAS carryover provision has gone from 8% of total DAS allocated to close to 25%.

- *Vessel upgrades and replacements*

All limited access vessels are permitted to upgrade their permit once, and are allowed to replace their vessel within the same vessel replacement criteria (10:10:20 for GRT:Length:HP). This is a source of management uncertainty because if a vessel increases its horsepower, it is potentially

able to catch more per DAS. This is not a real issue for access area trips because vessels are limited to a possession limit, but if many vessels in the fishery upgrade, overall catch could increase as a result. It is not likely that many vessels will upgrade or be replaced in a single year because it is expensive.

NMFS estimates that approximately 1/3 of the current limited access vessels have completed their one-time vessel upgrade allowance. Therefore, about 2/3 of the fleet could still upgrade their horsepower beyond 10%. (Are these about the same now?)

Vessel replacement is another type of management uncertainty. Vessels are permitted to be replaced if the GRT:Length:HP of the new vessel is within the 10:10:20 restrictions – horsepower cannot be increase by more than 20%, GRT cannot be increased by more than 10%, and length cannot be increased by more than 10%. If some fraction of the fleet replaces their vessels in one year catch could increase. The analyses below describe the potential impact of vessel replacement. Again, it is very unlikely that a large number of vessels will be replaced in one year since it is very expensive.

The PDT analyzed the impact of this source of uncertainty on estimated catch based on a few scenarios and the overall catch could increase up to 5% depending on the level of vessel replacement. (Do we have a sense of how many vessels have been replaced in the last 10 years or post A15?)

- *Overall*

The three sources of management uncertainty above are all related to open area DAS effort. It has been mentioned that catch from access areas has a much higher degree of certainty in terms of actual catch. The PDT discussed that there is a level of uncertainty related to access area trips as well however, in terms of overall monitoring and enforcement. Similar to the general category IFQ program, this component of the limited access fishery does have a high degree of certainty in terms of landings, but that is dependent on a sufficient monitoring and enforcement program.

Currently the violations for exceeding the possession limit for an access area trip are severe, and industry members have voiced that they would rather land less because the penalties are so high for noncompliance. Overall, the PDT is confident in the monitoring and enforcement of catch from access area trips, but recognizes that a small part of the overall buffer between the LA sub-ACL and ACT should recognize that monitoring and enforcement of access area trips are not perfect.

Overall, when all three sources are considered, along with the issue of monitoring and enforcement uncertainty, the final recommendation was:

Option 1: LA ACT set at *F* rate with 25% probability of exceeding the total ACL (which is equal to ABC). (PROPOSED ACTION)

PDT – Any reason to consider alternatives to adjust ABC control rule? Scientific uncertainty

General category scallop fishery

This action proposes that a management uncertainty buffer be applied for this component of the fishery, but it should be very small since this fishery is managed under an IFQ. A15 considered 0% and 5% buffers, and the final recommendation was 0%.

PDT – Any reason to consider alternatives to adjust ABC control rule? Scientific uncertainty

Accountability measures for Scallop ACLs

Limited Access AMs (PROPOSED ACTION)

The primary AM for the limited access fishery is the use of an ACT. The buffer between ACL and ACT would act as a proactive in-season AM. Setting allocations to ACT rather than ACL would reduce the likelihood of exceeding the ACL.

If the sub-ACL for the limited access fleet is exceeded, the simplest, cleanest AM would be an **overall DAS reduction in the subsequent year to account for any overages**. The PDT will identify how much the LA sub-ACL was exceeded, identify an appropriate DAS equivalent for that overage, and total DAS allocations for the LA fleet will be reduced the following year to account for that overage. Specifically, a formula will be used to determine the translation of this reduction from overage (poundage) to the input control (DAS) based on the most up-to-date landings per unit effort per day data. For instance, if the fishery goes over an ACL by 100 mt, that would be equivalent to *x* DAS, as determined by a mean LPUE for the fishery. That *x* DAS will be divided by the number of vessels in the fleet to determine *y* DAS per vessel reduction in the following year. Using the projected LPUE for 2010 of 1837 (NEFMC, 2010) pounds per day, an overage of 100 mt (220,000 pounds) would amount to a reduction of 0.4 DAS per vessel (using the estimate of 325 FTE vessels) as shown below.

$$\frac{220{,}000 lbs}{1837 lbs / DAS} = 119.8 DAS, \frac{119.8 DAS}{325 FTEvessels} = 0.4 DAS / FTEvessel$$

DAS are currently rounded when allocated, if AMs are triggered and the reduction is a fraction of a DAS, that would be rounded up to one DAS.

Option to include a disclaimer for when LA AM would not be triggered even if LA sub-ACL exceeded (PROPOSED ACTION)

If overall *F* is re-estimated after the fishing year has ended and is more than one standard deviation below overall *F* for ACL (currently estimated to be 0.28), AMs for the limited access fishery would not be triggered. One standard deviation around ACL is 0.04 (range of 0.24 to 0.32). Therefore if re-estimated *F* is 0.23 or less AMs would not be triggered.

This disclaimer was originally discussed by the PDT because there have been cases in recent years when actual catch is higher than estimated, primarily because catch-per-day is higher than estimated. Concurrently, *F* was lower than projected. It is possible that biomass was underestimated in these cases and if the ACL is exceeded for that reason, it is awkward to trigger AMs when biomass is higher than expected. It was also pointed out that while actual catch is sometimes substantially higher than projected, most of the projections have a CV of at least 10%, meaning that the actual biomass could be at least 20% higher or lower than the estimate, and even 30-40% higher in years further out in the projection. The proposed AM disclaimer provision for the LA fleet is only appropriate for a stock that is above the biomass target. If would not be appropriate at any time the stock is overfished or in the process of rebuilding.

If the limited access scallop fishery exceeds their ACL, the PDT will re-estimate *F* the summer after that fishing year is completed. The scallop fishing year ends February 29 for 2011. NMFS should have a good idea if ACLs were exceeded by the following June. If NMFS finds that the limited access ACL has been exceeded, then the PDT will re-estimate *F* for that fishing year using new information before September. If the updated estimate of *F* is less than one standard deviation of *F* associated with ACL then LA AMs will not be triggered for the fishing year that starts the following March. If however, updated *F* is below ACL but within one standard deviation (currently 0.24 and higher), AMs will be triggered for the following fishing year. The PDT will estimate how many DAS should be reduced per vessel to account for the overage if AMs are triggered.

General Category AMs (PROPOSED ACTION)

If an individual vessel exceeds their IFQ or leased IFQ in a given fishing year, their IFQ the following fishing year would be reduced the following fishing year by the same amount. If they exceed their IFQ in excess of their allocation the following year, any outstanding overage would carry over to future fishing years. The Committee clarified that if an individual leases quota and exceeds the amount he/she can fish for the year, that individual is subject to any AMs that may be associated with the leased quota.

Option to allocate catch to the LAGC fishery in subsequent fishing year if the LA disclaimer is triggered and AMs are not imposed on LA fishery for exceeding their sub-ACL (PROPOSED ACTION)

If the disclaimer for the limited access fishery is triggered, Alternative 0, then 5.5% of the difference between the exceeded limited access sub-ACL and the actual limited access landings will be allocated to the general category IFQ fleet in the next fishing year. The poundage will be deducted directly from the following year's limited access sub-ACL and will be divided among the IFQ fleet in the same way that all quota is divided now.

The Council developed this alternative at the final meeting in response to concerns raised during the public comment process. There was general support for the use of the limited access disclaimer so AMs are not triggered when biomass is actually higher than expected. But concerns were raised that this disclaimer was unfair because it allowed one portion of the fleet to exceed their sub-ACL in the event that biomass was underestimated, but not the other. This

proposed change will in effect replace some of the allocation the LAGC would have received had the projection been closer to realized catch (more biomass provided more catch under the same F). It was argued that having a disclaimer for only one portion of the fleet impacted fishing opportunities for the LAGC fleet, and that was unfair. Amendment 11 approved that the LAGC fishery should receive 5.5% of projected catch, and this measure will further that concept so that the LAGC fishery is allocated closer to 5.5% of the actual catch in the event that the LA fishery catches more than projected because projections underestimated catch for a particular fishing mortality rate.

Because additional catch for the LAGC fishery is deducted directly from the following year's limited access sub-ACL this is not a reallocation of fishing opportunity. The limited access fishery caught an equivalent amount of that additional catch the first year, while the LAGC fleet would be given that opportunity the second year. Again, this allocation would only occur if the LA disclaimer is triggered, not if the LA fishery exceeds their sub-ACT or sub-ACL, only if the disclaimer is triggered.

NGOM AMs (PROPOSED ACTION)

Technically, the NGOM already has an in-season AM because when the hard-TAC is predicted to be reached, the fishery is closed. If that component of the fishery exceeds the overall hard-TAC (equal to the NGOM ACL) after all data is final, then the hard TAC the following year could be reduced by that amount the following fishing year, or by mid season the following fishing year if data are not available (i.e. reduction on June 1 if necessary).

Scallop ACL for other fisheries

The scallop fishery may want to consider implementing ACLs for other fisheries in which scallops are appreciably caught as bycatch. However, based on bycatch analyses and input from PDT, there are no fisheries that catch an appreciable amount of scallops as discards (**Error! Reference source not found.**). Based on CY2005 data used in the SBRM Amendment, 2% of all scallop discards are from other fisheries and when compared to total scallop catch (landed plus discards), that percentage is reduced to about 0.5%. Therefore, no scallop sub-ACLs in other fisheries will be considered at this time; the expected impacts on overall mortality are low from non-targeted fisheries. (Is this still the case from last assessment?)

PDT – Any initial discussion points for Cmte to consider when developing measures to address ACL flowchart.

Data needs?

Performance of ACL management to date

		Allocated		% of Total Allocated	Actual		% Difference (allocated vs actual)	% of Total Actual
		mt	lb		mt	lb		
2011	OFL	32,387	71,401,113					81.88%
	ABC/ACL	27,269	60,117,854					97.24%
	Total Projected Landings	23,723	52,300,000		26,518	58,461,465	112%	
	incidental	23	50,000	0.10%	18	38,700	77%	0.07%
	RSA	567	1,250,000	2.39%	553	1,218,781	98%	2.08%
	OBS	273	601,170	1.15%	104	228,370	38%	0.39%
	IFQ	1,452	3,201,880	6.12%	1,382	3,046,245	95%	5.21%
	LA ACT	21,431	47,247,267	90.34%	24,462	53,929,369	114%	92.25%
	LA ACL	24,954	55,014,153		24,462	53,929,369		
2012	OFL	34,382	75,799,335					75.33%
	ABC/ACL	28,961	63,848,076					89.43%
	Total Projected Landings	25,945	57,200,000		25,900	57,098,684	100%	
	incidental	23	50,000	0.09%	28	61,869	124%	0.11%
	RSA	567	1,250,000	2.19%	529	1,167,316	93%	2.04%
	OBS	290	638,470	1.12%	120	263,700	41%	0.46%
	IFQ	1,544	3,405,000	5.95%	1,511	3,331,284	98%	5.83%
	LA ACT	23,546	51,910,044	90.75%	23,711	52,274,515	101%	91.55%
	LA ACL	26,537	58,503,960					
2013	OFL	31,555	69,566,867					57.22%
	ABC/ACL	21,004	46,305,894					85.97%
	Total Projected Landings	17,335	38,216,741		18,056	39,807,589	104%	
	incidental	23	50,000	0.13%	21	47,337	95%	0.12%
	RSA	567	1,250,000	3.27%	553	1,218,204	97%	3.06%
	OBS	210	463,059	1.21%	174	384,545	83%	0.97%
	IFQ	1,111	2,449,856	6.41%	1,095	2,414,256	99%	6.06%
	LA ACT	15,324	33,783,637	88.40%	16,213	35,743,247	106%	89.79%
	LA ACL	19,093	42,092,979		16,213	35,743,247		
2014	OFL	30,419	67,062,415		0			47.75%
	ABC/ACL	20,782	45,816,467		0			69.89%
	Total Projected Landings	17,327	38,463,656		14,524	32,020,980	83%	
	incidental	23	50,000	0.13%	19	42,107	84%	0.13%
	RSA	567	1,250,000	3.27%	433	954,011	76%	2.98%
	OBS	237	458,562	1.37%	177	390,579	85%	1.22%
	IFQ	1,099	2,423,145	6.34%	948	2,089,589	86%	6.53%
	LA ACT	15,567	34,319,360	89.84%	12,948	28,544,694	83%	89.14%
	LA ACL	18,885	41,634,305		12,948	28,544,694		