North Pacific Fishery Management Council

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REPORT
of the
SCIENTIFIC AND STATISTICAL COMMITTEE
to the
NORTH PACIFIC FISHERY MANAGEMENT COUNCIL
September 30th – October 1st, 2013

The SSC met from September 30th through October 1st at the Hilton Hotel, Anchorage AK.

Members present were:

Pat Livingston, Chair *NOAA Fisheries—AFSC*	Robert Clark, Vice Chair *Alaska Department of Fish and Game*	Jennifer Burns *University of Alaska Anchorage*
Alison Dauble *Oregon Dept. of Fish and Wildlife*	Sherri Dressel *Alaska Department of Fish and Game*	Anne Hollowed *NOAA Fisheries—AFSC*
George Hunt *University of Washington*	Gordon Kruse *University of Alaska Fairbanks*	Seth Macinko *University of Rhode Island*
Steve Martell *Intl. Pacific Halibut Commission*	Franz Mueter *University of Alaska Fairbanks*	Lew Queirolo *NOAA Fisheries—Alaska Region*
Terry Quinn *University of Alaska Fairbanks*	Kate Reedy-Maschner *Idaho State University Pocatello*	Farron Wallace *NOAA Fisheries—AFSC*

C-1(b) Observer Program 2014 deployment plan
A presentation was given by Craig Faunce (NMFS-AFSC) on the NMFS Annual Deployment Plan (ADP) for the North Pacific Groundfish Observer Program in 2014. Public testimony was provided by Bob Alverson (FVOA).

The SSC appreciates the extensive work done to initiate the revised observer program in 2013 and to develop the draft 2014 ADP. For years, the SSC has pointed out the bias that may occur by not placing observers on vessels according to a random sampling design. The new observer program has finally addressed this problem although several issues remain.

The 2014 deployment plan provides details on the deployment that attempts to obtain observation rates that constrain program costs and provide sample sizes for precisely observing catches at sea and dockside for groundfish fisheries in the Gulf of Alaska and Bering Sea/Aleutian Islands. The draft 2014 ADP also provides an initial review of successes and challenges of implementing the ADP based on data from a portion of the 2013 season. This will be an ongoing process to improve the program.

The SSC looks forward to a complete performance review of the 2013 season along with an evaluation of the efficiency of the current sample design with respect to coverage of catch and bycatch. A standard

set of performance measures should be developed for the purpose of evaluating how well the observer program is meeting its objectives (precision and accuracy of estimating catch, bycatch, and catch of prohibited species, collection of biological information, and ability to fulfill assigned tasks, including special projects).The review should also highlight any changes in the magnitude of sampling rates of harvests and other harvesting characteristics (such as discard rates) that deviate significantly from years prior to implementing the revised program.

Additional SSC comments on the 2014 ADP are:

- The revised Chinook salmon genetics sampling design for the GOA appears to be well suited for the fisheries in the GOA. This revised design should result in many more genetic samples taken at a lower cost than the Pella-Geiger sampling design, which was developed for systematically sampling a 100% observed bycatch of Chinook salmon in the BSAI.
- The trip selection process appears to be working well with respect to the implementation of a random sample of trips. The SSC recommends addressing the potential problems associated with self-selecting the order of trips and the ability of captains to opt out of carrying an observer without apparent penalty in a future ADP. There was also a potential bias detected in 2013 as it appears that trips delivering to tenders are not being observed. **This omission needs to be addressed with a regulatory change as soon as possible.**
- **Problems with the vessel selection process need to be addressed in the next ADP.** The registry of vessels to be potentially selected is based on prior year fishing activity, leading to potential bias in the selection of vessels to be observed. Perhaps a pre-registration system for vessels that will be fishing in the coming year could be implemented to resolve this sampling issue.
- Further research is needed on the use of EM technology as an auditing tool to reduce the "observer effect" (the alteration of harvesting behavior when an observer is onboard).
- Observer program personnel could look at other observer programs from around to world to see how they deal with the observer effect.
- Now that small vessels are being observed, an analysis should be conducted to compare the spatial distribution of catch and bycatch with that of larger boats.
- A list of vessels that opt out of observer coverage and their reasons for opting out could be maintained and published to determine representativeness of sampling.

C-3 BSAI Crab Management

Diana Stram (NPFMC) presented the Crab Plan Team report and sections of the Crab SAFE. There was no public testimony. The SSC reviewed the SAFE chapters and information provided by the Plan Team with respect to the stock status information from 2012/2013 relative to total catch in that time period (Table 1). The SSC notes that no stock was subject to overfishing in 2012/2013. In addition, Tables 2 and 3 contain the SSC recommendations for 2013/2014 catch specifications.

Table 1. Stock status of BSAI crab stocks in relation to status determination criteria for 2012/13. Values are in thousand metric tons (kt).

Chapter	Stock	Tier	MSST	B_{MSY} or $B_{MSYproxy}$	2012/13 MMB	2012/13 MMB / MMB_{MSY}	2012/13 OFL	2012/13 Total catch	Rebuilding Status
1	EBS snow crab	3	77.1	154.2	170.1	1.10	67.8	32.4	
2	BB red king crab	3	13.19	26.4	29.05	1.10	7.96	3.90	
3	EBS Tanner crab	3	16.77	33.54	59.35	1.77	19.02	0.71	
4	Pribilof Islands red king crab	4	2.61	5.22	4.03	0.77	0.90	0.013	
5	Pribilof Islands blue king crab	4	1.99	3.98	0.58	0.15	0.00116	0.00061	overfished
6	St. Matthew Island blue king crab	4	1.8	3.6	2.85	0.79	1.02 [total male catch]	0.82 [total male catch]	
7	Norton Sound red king crab	4	0.8	1.6	2.08	1.30	0.24	0.21	
8	AI golden king crab	5					5.69	3.12	
9	Pribilof Islands golden king crab	5					0.09	Conf.	
10	Adak red king crab	5					0.054	0.001	

MMB as estimated during this assessment for 2012/13 as of 2/15/2013.

Table 2. Maximum permissible ABCs for 2013/14 and SSC recommended ABCs for those stocks where the SSC recommendation is below the maximum permissible ABC as defined by Amendment 38 to the Crab FMP. Bold indicates where SSC recommendations differ from Crab Plan Team recommendations. Values are in thousand metric tons (kt).

Stock	Tier	2013/14 *Max*ABC	2013/14 ABC
EBS Snow Crab	3a	78.03	70.30
BBRKC	3b	7.07	6.36
Tanner Crab	3a	25.31	17.82
PIRKC	4b	0.759	0.718
PIBKC	4c	0.00116	0.00104
SMBKC	4b	1.23	0.45
Norton Sound RKC	**4a**	**0.26**	**0.24**
Adak red king crab	5	0.05	0.03

Table 3. SSC recommendations for 2013/2014 (stocks 1-7). Note that recommendations for stocks 7-10 represent those final values recommended by the SSC in June 2013. Bold indicates where SSC recommendations differ from September 2013 Crab Plan Team recommendations. Note diagonal fill indicated parameters not applicable for that tier level. Values are in thousand metric tons (kt).

Chapter	Stock	Tier	Status (a,b,c)	F_{OFL}	B_{MSY} or $B_{MSYproxy}$	Years[1] (biomass or catch)	2013/14[2] [3]MMB	2013 MMB / MMB_{MSY}	γ	Mortality (M)	2013/14 OFL	2013/14 ABC
1	EBS snow crab	3	a	1.58	154.2	1979-current [recruitment]	157.6	1.02		0.23(females) 0.386 (imm) 0.2613 (mat males)	78.1	70.3
2	BB red king crab	3	b	0.29	26.4	1984-current [recruitment]	25.0	0.95		0.18 default Estimated[4]	7.07	6.36
3	EBS Tanner crab	3	a	0.73	33.54	1982-current [recruitment]	59.4	1.77		0.34 (females), 0.25 (mat males), 0.247 (imm males and females)	25.35	17.82
4	Pribilof Islands red king crab	4	b	0.16	5.16	1991-current	4.68	0.91	1.0	0.18	0.90	0.72
5	Pribilof Islands blue king crab	4	c	0	3.99	1980-1984 1990-1997	0.28	0.07	1.0	0.18	0.00116	0.00104
6	St. Matthew Island blue king crab	4	b	0.18	3.1	1978-current	3.01	0.98	1.0	0.18	0.56 [total male catch]	0.45 [total male catch]
7	Norton Sound red king crab	4	a	**0.18**	**1.86**	1980-current [model estimate]	**2.27**	**1.22**	1.0	0.18 0.68 (>123 mm)	**0.26** [total male]	**0.24** [total male]
8	AI golden king crab	5				See intro chapter					5.69	5.12
9	Pribilof Island golden king crab	5				See intro chapter					0.09	0.08
10	Adak red king crab	5				1995/96–2007/08					0.05	0.03

[1] For Tiers 3 and 4 where B_{MSY} or $B_{MSYproxy}$ is estimable, the years refer to the time period over which the estimate is made. For Tier 5 stocks it is the years upon which the catch average for OFL is obtained.
[2] MMB as projected for 2/15/2014 at time of mating.
[3] Model mature biomass on 7/1/2013
[4] Additional mortality males, two periods: 1980-1985; 1968-1979 and 1986-2013. Females, three periods: 1980-1984; 1976-1979; 1985-1993 and 1968-1975; 1994-2013. See assessment mortality rates associated with these time periods.

Snow Crab

Jack Turnock (NMFS-AFSC) presented results from this year's snow crab assessment. Survey estimates of both male and female biomass, as well as base model estimates of MMB at mating, decreased in 2012/13 compared to the previous year. The model structure of this year's base model differs from the September 2012 assessment in two ways: discard mortality was changed to 30%, and new growth data from Somerton (2012) was fit by sex within the model to estimate parameters of a linear growth function. Three alternative scenarios were explored. Model 2 used the new growth data but a 50% discard mortality as in previous years, while models 3 and 4 used the old growth data (with priors on growth parameters and a common intercept for both sexes) with a 30% and 50% discard mortality, respectively.

The SSC concurs with the CPT to use the base model for specification purposes for 2013/14, although we share CPT concerns over the poor fit to the female growth data. **Results from the assessment place the EBS snow crab stock in Tier 3a, with a mature male biomass at mating in 2013/14 that was estimated to remain above the current proxy for B_{MSY} ($B_{35\%}$ = 154.2 kt).** The SSC had some concerns over the current stock status. After a substantial increase in biomass in 2010/11 and 2011/12, both survey and model estimates of biomass have dropped substantially in the last two years and the model estimate is currently projected to stay just above $B_{35\%}$. This drop occurred in spite of conservative harvest levels and favorable environmental conditions for young crab (cold bottom temperatures). Earlier surveys, particularly in 2009/10, suggested a large pulse of small crab was entering the population, but the anticipated strong recruitment failed to materialize. For these reasons, and because of the continuing concerns over how growth is modeled, **we concur with the CPT recommendation to use a 10% buffer to set the ABC below maximum permissible. This results in an OFL for 2013/14 - as determined by the $F_{35\%}$ control rule - of 78.1 kt (172.1 million lb) and an ABC of 70.3 kt (154.9 million lb).**

The SSC further endorses the Plan Team recommendations for improving the stock assessment as listed in CPT minutes and offers some additional suggestions. The SSC recommended in June 2013 to use a "best" estimate of discard mortality in addition to discard mortalities of 0.5 and 0.3. Based on their review of available information on discard mortality, the CPT recommended 0.3 as a "best" estimate; however, their estimate is still based on the maximum short-term mortality estimate and maximum injury rate, multiplied by 1.5 to account for unknown long-term mortality. The assumed level of discard mortality has a substantial impact on reference points (e.g. $F_{35\%}$) and the SSC re-iterates its request from June 2013 to develop a "best" estimate of total handling mortality derived by adding the average annual short-term estimate (0.04) to the average injury rate, and multiplying the result by a factor corresponding to the best guess of additional long-term mortality.

The CPT and SSC previously recommended a 2-piece growth function, but the model failed to converge, hence a linear growth model by sex is used in the current assessment, using the growth data recommended by Somerton (2012). The model is reasonably consistent with observed male growth but not with observed female growth. The SSC recommends that the authors further examine how to best parameterize growth in the model to achieve a better fit to the growth data, maybe using a simple curvilinear or non-linear model rather than the suggested two-piece model.

Additional minor comments on the assessment follow:

- Some figures (e.g. Figure 4) have mis-labeled lines and there is a discrepancy between the units in the figure legend and in the y-axis label.
- The paragraph on the centroids of the cold pool in the middle of the section on "Mating ratio and reproductive success" is out of place and should be moved.

Bristol Bay Red King Crab

This assessment was based on six alternative model scenarios. The base model for the alternatives, Scenario 0, was identical to the Scenario 7ac model used in the 2012 assessment, except that it was updated using the 2013 survey and 2012/13 fishery data, and used NMFS length-weight relationships. The author explored alternative ways to estimate effective sample sizes and molting probabilities. The SSC agrees with the author's and Plan Team's recommendation to use the proposed new methods for estimating effective sample size and molting probability. The author also explored the implications of alternative start dates (i.e., start in 1975, Scenario 1) and the incorporation of length / sex composition and survey biomass estimates from the BSFRF survey (Scenario 4). In response to an SSC request, the authors implemented a random walk approach for estimating natural mortality to evaluate the evidence for time blocks of high natural mortality. The SSC appreciates the responsiveness of the author to Plan Team and SSC requests. The SSC agrees with the Plan Team recommendation to use Scenario 4 as the basis for 2013/14 harvest specifications. The SSC agrees with the author that the results from Scenario 7 were informative and indicate that further exploration of the time blocks used for estimating elevated natural mortality is needed.

The SSC appreciates the author's consideration of breakpoints for estimation of biological reference points. This year's assessment contains a detailed statistical evaluation of the stock recruitment relationships. The authors provided several lines of evidence to support their selection of the 1984-2012 time period. **The SSC agrees with the author's recommendation for use of this time period for estimation of reference points for 2013/14.**

The author was responsive to SSC and Plan Team requests to conduct retrospective analyses. The previous evidence for overestimation at the end of the time series appears to be less evident in the new model.

The SSC accepts the OFL recommendations of the Plan Team. Based on the results of Scenario 4, the stock is in Tier 3b resulting in an OFL of 7.07 kt (15.58 million pounds).

The SSC agrees with the Plan Team that a 10% uncertainty buffer should be applied to determine ABC. The rationale for this decision is the lack of small crab in the survey since 2008. While the 2011 survey showed a very high catch of crab <60 mm CL at a single station, this high catch did not track into the 2012 or 2013 surveys.

The SSC accepts the ABC recommendations of the Plan Team. Based on the results of Scenario 4, the stock is in Tier 3b resulting in an ABC of 6.36 kt (14.02 million pounds).

Recommended research:

1. Shifts in the center of distribution of BBRKC can be a function of depletion of the stock, the crab closure area, shifts in larval drift, habitat selection, or fishing. The interpretation of which of these potential causes contributes to the selection of a time period should be investigated.
2. We suggest that the authors work with flatfish authors to come up with a consistent approach to treatment of biomass outside of the survey area.
3. Further study of maturity is needed.
4. The SSC suggests a re-evaluation of predation pressure on BBRKC.
5. The Plan Team should investigate the impact of dropping hotspots as per the CIE review.
6. The Plan Team should investigate the impact of corner stations for hotspots as per the CIE review.
7. The Plan Team should investigate the impact of re-tows as per the CIE review.

Tanner Crab

With the acceptance of a new stock assessment model last year, the Tanner crab assessment was shifted in 2012 from Tier 4 to Tier 3, which resulted in a significant reduction in B_{MSY}. As a consequence, this stock

was found to no longer be overfished and was declared to be rebuilt in 2012. However, despite the specification of an ABC, the fishery remained closed this year owing to the State of Alaska harvest strategy.

The 2013 Tanner Crab assessment is clearly written. The SSC appreciates the summary of changes and detailed responses to previous Crab Plan Team and SSC comments. The model code was modified to improve user friendliness, computational speed, and presentation of output. Also, a few coding errors were discovered and corrected. Impacts of model coding fixes are clearly shown in tables and figures and the net effects are relatively minor. Several extant Crab Plan Team and SSC comments have not yet been addressed and the SSC looks forward to the progress on those in the next assessment. The Crab Plan Team again highlighted some of those in their report.

The SSC agrees with the authors' and team's recommendation to use Model 01 (based on the 2012 base model including fixes to known errors in model code) for this year's specifications. Last year, the SSC recommended adoption of a 3-year stair-step strategy to transition from the lower ABCs resulting from the previous assessment to the higher ABCs indicated by the 2012 assessment. Application of this stair step resulted in an ABC of 8.17 kt for 2012/2013. In this year's assessment, the authors noted that, if the third and final step were to be applied with a 10% buffer, the ABC would equate to a 40% harvest rate. The authors further noted that rates of this magnitude were associated with stock collapses during the history of this fishery. Owing to these concerns, the authors recommended re-starting the stair step transition at the first step (8 kt) for 2013/2014. The Crab Plan Team recommended continuing with the SSC approach and implementing the second step for 2013/2014, which would equate to an ABC of 17.82 kt. However, in so doing, the Plan Team also expressed concern about the uncertainty in this stock assessment and the stock status. The Plan Team indicated that they will reevaluate their ABC recommendations next year, rather than automatically applying the final stair step.

The SSC agrees with the Crab Plan Team's recommendation to apply the second stair step for setting OFL and ABC for 2013/2014. In doing so, the SSC noted that the State of Alaska harvest policy will reduce the TAC by 50% if a fishery is opened, given that next year will be the first year of a resumed fishery after a period of closure. So, there is an additional large buffer between ABC and TAC for 2013/2014. This will not be the case for 2014/2015.

Over the long term, the SSC shares the author's and team's concerns about the control rule used to set OFL and ABC for Tanner crab and looks forward to additional advice from the authors and team in next year's assessment. The SSC recommends conducting a management strategy evaluation (MSE) to determining the long-term consequences of alternative harvest rates on stock status and yield under various sources of uncertainty. The SSC understands that a MSE may not be feasible in the coming year, especially given additional planned work on the assessment model.

The Crab Plan Team provided a number of recommendations to the stock assessment authors, which the SSC supports. The SSC continues to note that some retrospective patterns in model estimated biomass remain. For instance, the model under-estimates the decline in male and females in the survey in the mid-1980s and overestimates them in recent years. On the other hand, legal males appear to be overestimated in recent years. There are patterns in other residuals. The SSC continues to encourage alternative model specifications to address these patterns. Possibly, inclusion of a time-varying growth function may address some of those retrospective patterns, as pointed out in previous comments. New growth studies on EBS Tanner crab remains a very high priority.

The SSC greatly appreciates the author's additional work on break-point analyses shown in the Appendix that largely address the SSC's previous comments on this matter. Two candidate periods for break points were identified: 1974-1975 and 1983-1987. The former was interpreted as a decrease in productivity,

whereas the latter was interpreted as an increase in density-dependent mortality. The team discounted the latter and pointed out that the 1974-1975 change point was quite similar to the 1976-1977 regime shift recommended by the SSC on an interim basis. This results in the use of recruitments from 1982 onwards for purposes of MSY estimation. However, as noted by the authors and team, the break point analysis did not lead to a compelling reason to differ from the regime shift-based break point recommended by the SSC. **Given this, the SSC continues to support the use of recruitments since 1982 for purposes of computing B_{MSY}.** The author listed additional work to be conducted on this topic in the future. The SSC looks forward to any new findings that may shed more light on this topic.

Finally, the SSC encourages the authors to continue to review model code for any lingering errors, and also encourages a thorough review and re-compilation of all data sources. The team raised some questions about the validity of the size composition data used in the assessment, however it would be wise to check and verify all data used in the assessment.

Pribilof Islands Red King Crab

The fishery for red king crab in the Pribilof Islands district has been closed since 1999 due to concerns about low abundance, imprecise biomass estimates, and bycatch of Pribilof Islands blue king crab, which are classified as overfished. Fishing mortality since the closure of the directed fishery has been limited to incidental catches in other crab fisheries and in groundfish fisheries. The SSC supports the CPT recommendation to continue using the same base years as used previously (1991 to the current year) for determination of B_{MSY} for the Pribilof Islands red king crab stock. **The SSC also supports a Tier 4b designation for this stock, noting that the estimate of mature male biomass (MMB; 4.68 kt) is below B_{MSY} (5.16 kt). As in 2012, estimates of MMB were calculated in the assessment as a 3-year weighted moving average, centered on the current year and weighted by the inverse variance. Under the Tier 4b designation, the OFL for 2013/2014 is 0.90 kt.**

The SSC agrees with the CPT recommendation to include additional uncertainty ($\sigma_b = 0.4$) when calculating the ABC using the P* approach, resulting in an ABC of 0.72 kt. The SSC's support for this approach is based in large part on the recognition that the brief history of exploitation of this stock makes it difficult to identify an appropriate period of time suitable for establishing B_{MSY}, such that the true distribution of the OFL is poorly known. The SSC notes that large cohorts of young crab have not been observed since the mid-2000s and that estimates of bycatch in the groundfish fisheries were higher in 2012/13 than in previous years.

The SSC appreciates the author's responses to requests for CVs in tables of abundance estimates and confidence intervals in the table of weighted moving average estimates of abundance, and appreciates the improved estimates of discard catch for 2009/10-2012/13 based on a new methodology using State reporting areas.

Pribilof Islands Blue King Crab

Retained catches for Pribilof Island blue king crab have not occurred since 1998/1999. Improved estimates of discard catch were calculated for 2009/10-2012/13 based on a new methodology using State reporting areas. Bycatch and discards have been steady or decreasing in recent years, but increased in the trawl fishery for 2012/13.

In this assessment, survey biomass estimates were updated to include an additional 20 nm strip on the eastern portion of the Pribilof District due to the change in the stock boundary. Stock biomass estimates decreased by more than 50% from 2012 to 2013, but the uncertainty in biomass estimates is extremely high due to low survey catches. Following the approach in the 2012 assessment, biomass estimates were based on a 3-year weighted average, centered on the current year and weighted by the inverse of the variance. The projected

mature male biomass (MMB) decreased substantially in this assessment, from 0.58 kt in 2012/13 to 0.28 kt in 2013/14, and remained well below the minimum stock size threshold.

The SSC supports the CPT and author recommendations for management of Pribilof Islands blue king crab under Tier 4c to reflect the conservation concerns with this stock and to acknowledge the existing non-directed bycatch mortality. Following the advice of the CPT, **the SSC recommends a modified Tier 5 calculation of average catch mortalities between 1999/2000 and 2005/2006, resulting in a total catch OFL of 0.00116 kt. Similarly, the SSC supports using a 10 percent buffer for the ABC calculation, resulting in an ABC_{max} of 0.00104 kt.** The SSC discussed using a more conservative buffer (e.g., 20%) to further reduce the ABC due to concerns over the status of the Pribilof Islands blue king crab stock, but continues to recommend the 10% buffer for 2013/14. **The Pribilof blue king crab stock is overfished; however, overfishing did not occur during the 2012/2013 season.**

The MSY stock size (B_{MSY}) is based on mature male biomass at the time of mating (MMB_{mating}), which serves as an approximation for egg production. The MMB for 2013/14 was estimated at 0.28 kt. For 2012/2013, $B_{MSYproxy}$ = 3.99 kt of MMB_{mating} derived as the mean MMB from 1980 to 1984 and 1990 to 1997. The stock demonstrated highly variable levels of MMB during both of these periods. Compared to other BSAI crab stocks, the uncertainty associated with the biomass estimates for Pribilof Islands blue king crab is very high due to insufficient data and the small distribution of the stock relative to the survey sampling density, likely leading to uncertain approximations of B_{MSY}.

A revised rebuilding plan was approved by the Council in June 2012 and was submitted for review by the Secretary of Commerce in early 2013. The revised rebuilding plan closes the Pribilof Habitat Conservation Zone to Pacific cod pot fishing.

Saint Matthew Island Blue King Crab

The author evaluated 11 alternative model configurations against the base model first used to provide harvest specifications in 2012. Alternative model configurations differed in their treatment of M, weighting of trawl survey and pot survey size-compositions, and trawl survey selectivity by crab stage. The author also provided a preliminary evaluation of a stage-transition matrix based on the growth study of Otto and Cummiskey (1990) on Pribilof and St. Matthew Island blue king crab. Results from alternative model scenarios do not provide a compelling reason to switch models. **Thus both the author and CPT recommended continued use of the base model for the 2013 harvest specifications using Tier 4b. The SSC agrees and also concurs with the team's recommendation to set the ABC to be 20% below the OFL instead of the more usual 10%.** The use of a larger buffer is recommended due to large uncertainty in stock abundance estimates owing to a retrospective pattern. With each year's new assessment, there is a decline in the estimates of abundance in prior years, suggesting that the stock is in poorer condition than the current-year model indicates. Additionally, there is a declining trend in abundance coupled to very large CVs in trawl survey estimates in recent years. In combination, these factors lead to higher than usual uncertainty in current year biomass estimates for this declining stock.

For next year's assessment, the SSC encourages the stock assessment author to focus on addressing the retrospective bias in the current assessment and offers the following recommendations:

- Develop a likelihood profile over a large range of Ms and provide diagnostics on model fits. Misspecification of M can lead to biases in abundance estimates.
- As suggested by the team, further work on a biologically defensible age-transition matrix may be fruitful. Alternative models should be developed using this approach.
- Investigate all other model assumptions to evaluate their potential contribution to the retrospective pattern.

Norton Sound Red King Crab

The lead author, Toshihide Hamazaki (ADF&G), was available to answer questions on this assessment. In June 2013 the Crab Plan Team and SSC recommended that the assessment model be used to calculate ABC and OFL, and ABC and OFL values were determined for 2013-2014 because there is no survey for this stock. It was also recommended that the assessment schedule be changed from July 1 – June 30 to November 1 – October 31 to better accommodate the summer fishery.

Thus, an updated assessment was completed for this meeting to commence the new schedule. Updated data included the 2013 summer commercial fishery catch, the 2012/2013 winter commercial fishery catch, and standardized CPUE data with the 2013 summer commercial fishery observer data. Revised data included time series of the historical winter total subsistence catch (now including mortality of discards) and crab abundance estimates from the 1976-1991 NMFS survey (re-estimated from the original survey data). The model was revised to start in February instead of July. Some other minor changes were also made. Assessment results now calculate retained OFL and ABC for both winter (including subsistence) and summer fisheries.

The assessment authors had only about two weeks to complete the stock assessment and SAFE document, because CPUE data were not available until the end of summer. Initial results from the full model that used all the data were puzzling, showing very high recruitment in 2013, and resulting in very high projected legal biomass in 2014 (almost double that of the previous year). The authors then conducted a reduced model run without the 2013 observer data, which resulted in a slight decline in projected legal biomass in 2014.

The authors checked that the change of assessment schedule did not have an effect. There were no differences in fits to all data sources between the full model and the reduced model. Almost all parameter estimates and their standard errors (SE's) were similar. The exception was the last recruitment parameter, which was estimated to be 4.5 million in 2013 in the full model (more than twice as high as the next largest estimate) and 0.646 million in 2013 in the reduced model (lower than average; Table 12). The uncertainty (SE) for log recruitment in 2013 in the full model was 1.1, and it was higher in the reduced model (SE = 7.0; Table 11). The authors examined the observer data from 2013 in great detail and found nothing that would indicate an error in data collection. Over 50% of the sublegal crab were in the smallest length class, the highest percentage on record (Table 7). This apparent large recruitment event seems at odds with declining fishery CPUE; fishery CPUE in 2013 was the lowest of the past 12 years.

The Crab Plan Team chose the reduced model because it did not find the 2013 recruitment estimate to be credible. The SSC declined to follow this course because it could find no reason to reject the data, which was collected according to normal protocols. Instead, it encourages the stock assessment authors to further examine the data and stock assessment model to see if better understanding of the effect of the 2013 observer data can be found by the time of the next assessment cycle in May/June 2014. In addition, the SSC requests a sensitivity analysis of data weighting, with consideration of recent recruitment events. Effectively, this will put off the change in the assessment cycle until next year. Also, there will be a trawl survey next year that should help reconcile data conflicts and should substantially reduce the uncertainty in the 2013 recruitment estimate.

In the absence of an accepted model from this new assessment, the SSC recommends using the assessment results from June 2013. This places Norton Sound RKC in Tier 4a, with an ABC of 0.24 kt and an OFL of 0.26 kt.

Pribilof Island Golden King Crab

This is a Tier 5 stock and it is not possible to determine stock status; therefore, it is unknown if the stock is overfished. Due to the limited number of participants in this fishery, catch information is confidential;

however, the author does indicate that the total catch did not exceed the OFL of 0.20 million lb. The OFL for 2014 was calculated as 90.7 t (0.20 million lb), and the ABC is based on a 10% buffer at 81.6 t (0.18 million lb). **The SSC supports the CPT recommendation of a 10% buffer to set the ABC below the maximum permissible.**

This year the assessment author also prepared an appendix proposing a Tier 4 biomass calculation for catch specifications. The crab plan team reviewed this appendix and recommends that alternative OFL and ABC specifications based on this approach be included in the 2014 assessment. **The SSC recommends including any auxiliary trend information that can be used to support Tier 4 recommendations.**

Adak Red King Crab

The CPT discussed the Alaska Board of Fisheries proposals to establish an Adak red king crab district in order to prosecute a proposed red king crab fishery in the AI. The SSC agreed with the comments and concerns raised during the CPT discussion regarding these proposals and their associated implications for Adak red king crab management.

Economic SAFE

A brief presentation of the Economic SAFE was provided by Diana Stram (NPFMC) on behalf of the AFSC Social and Economic Program staff. The subject SAFE is nicely presented, including interesting reporting on price projection modeling efforts. **The SSC believes it would be very valuable if the authors of the Economic SAFE report(s) could be present during the annual Council meeting cycle to provide the SSC with the opportunity to formally interact with them.** Over several consecutive years, the SSC has not received a "formal" presentation of the Economic SAFE, either for crab or groundfish. This puts the SSC at a disadvantage in conducting a meaningful review, as questions cannot be asked of the analyst, nor can recommendations be offered.

The SSC suggests that the AFSC undertake modifications to the Economic SAFE documents (again, ultimately for both crab and groundfish) to accommodate and reflect new Small Business Administration mandates to employ separate thresholds to determine the relevant size of the directly regulated entity for RFA. Effective July 22, 2013, an entity participating in commercial finfish fishing is small for RFA purposes if their total average annual gross receipts, from all economic activity, including that of all affiliates, worldwide, is $19.0 million or less. Commercial entities participating in shellfish fishing are small for RFA purposes if their total average annual gross receipts, from all economic activity, including that of all affiliates, worldwide, is $5.0 million or less. Previously, commercial fishing had a single threshold, making target species differentiation unnecessary. This is no longer true.

NMFS has provided initial guidance on application of these new standards. That advice will require identifying the principal commercial fishery source of gross receipts for each directly regulated entity. Council management actions will require analysis of these differential principal-source thresholds for each future action it proposes. The Economic SAFE is an excellent opportunity to provide one identifiable official source.

C-4 (a) Stock Structure Workshop Report

Jane DiCosimo (NPFMC) provided a report on the Council workshop on spatial management held in Seattle on April 16, 2013. Public testimony was provided by Merrick Burden (Marine Conservation Alliance) and Jason Anderson (Alaska Seafood Cooperative). The purpose of the workshop was to improve the current process for determining spatial management by raising new ideas, issues to be addressed in the future, and potential actions. It was also a venue to discuss the need for and application of the stock structure template.

Determination of stock structure is a scientific matter. It is one of the most fundamental and most important tasks of fishery scientists. Information on stock separation may come from a variety of sources. Genetics can provide the clearest scientific basis in cases where analyses demonstrate little gene flow among stocks. While genetics can demonstrate that stocks are different, it cannot prove that stocks are the same. Thus, other scientific evidence is important. There is a rich scientific literature on the use of other biological information for stock separation, including statistical differences in morphometrics (e.g., body shape), meristics (e.g., number of vertebrae), growth rates, size/age of maturity, recruitment patterns, spawning areas, and migration routes as evidenced by mark-recapture studies. These biological considerations are specified in the stock structure template, which has been previously reviewed and approved by the SSC. **The stock structure template is based on accepted findings and common practices used in the field of fisheries science. Thus the determination of stock structure is a scientific matter obtained from biological information and based on commonly accepted scientific best practices. Moreover, this issue is intimately tied to the SSC responsibility to recommend ABCs and OFLs that prevent overfishing of each underlying stock. The MSFCMA clearly directs the SSC to establish annual catch limits. These limits include an assessment of the evidence for stock delineation and the biological reference points associated with sustainable management of stocks. Therefore, the SSC suggests a modification of the approach recommended by the Plan Teams.**

The SSC feels that spatial stock management is a two-step process. The first step is the scientific matter of determining the stock structure. The second step is to determine the management response to these scientific findings. Ideally, separate ABCs and OFLs would be specified for each stock. However, this is not always necessary or practical. There are cases where ABCs and OFLs might be reasonably specified for a collection of stocks, while still achieving conservation and management goals. The SSC recognizes that the NPFMC has a variety of tools that could be utilized to achieve sustainable management of stocks and we encourage input on alternative approaches to maintaining catches at a sustainable level. As soon as preliminary scientific information reveals that further stock separation may be indicated, the stock assessment authors, Plan Teams, and SSC should advise the Council so that remedial actions can be considered to avert conservation problems.

In summary, the SSC does not see a current problem to be addressed in determining stock structure. The stock structure template represents a defensible scientific approach using accepted methods for establishing the biological basis for stock separation. The next step, determining appropriate Council action, is one where other economic and management considerations are brought into the decision-making process. These discussions are typically included in the stock assessments, but they could be highlighted in Plan Team and SSC minutes so that these new issues come to the full attention of the Council family while the science is still being finalized and vetted. **The SSC does not support Option 2 in the joint Groundfish Plan Team report that suggests that the Plan Team should consider economic and management issues in identifying stock structure, which instead should only be based on best science.** The Council always has the option to request further information/analysis (e.g., risk analyses) to evaluate the full range of potential impacts of proposed and alternative actions in formulating its preferred action. The SSC agrees with the Plan Teams that there is a need to address these issues on a case-by-case basis. Finally, the SSC encourages the Council to include the members of the Crab and Scallop Plan teams in future discussions on this topic. The underlying stock structure of weathervane scallops and crab (e.g., EBS snow crab, Adak red king crab) and the possibility of needing increased spatial management have been recurring recent topics of discussion by plan teams and the SSC.

C-4(c) Plan Team Report and Groundfish Harvest Specifications

The SSC received a presentation from Jane DiCosimo (NPFMC) and Diana Stram (NPFMC) on the proposed harvest specifications for groundfish in both the BSAI and the GOA for 2014 and 2015. There was no public testimony. **The SSC recommends approval of these specifications.**

For the most part, the SSC supports the GPT recommendations, but also had comments and additional recommendations on some of the items presented that are provided below.

BSAI and GOA Pacific cod models

The SSC received summaries from Diana Stram (NPFMC) for the Gulf of Alaska and Joint Plan Teams and from Jane DiCosimo (NPFMC) for the Eastern Bering Sea and Aleutian Islands on preliminary Pacific cod model explorations and Plan Team recommendations with regard to these models. Public testimony, primarily regarding the preliminary Aleutian Islands model, was provided by Chad See (Freezer Longliner Coalition) and Dave Fraser (Adak Community Development Corporation).

The SSC notes that all of the Pacific cod models are characterized by a large number of parameters and dome-shaped selectivities, features that were found to be associated with retrospective patterns and a higher risk of overfishing in the meta-analysis by Hanselman et al. (see separate section). The SSC has previously encouraged the authors to simplify the models when possible and appreciates the suggestion by Grant Thompson (AFSC) to consider omitting seasonal structure in one or more of these models in the future. With respect to this year's assessments, the SSC offers the following recommendations:

Gulf of Alaska

We agree with the Plan Team recommendations regarding the suite of models to bring forward in December. However, we note the large and increasing number of models and model variants being considered. While most of these models have a similar overall structure, the SSC cautions the analyst and Plan Team to carefully explore incremental changes to the model to evaluate their effects on model fits and reference points.

Eastern Bering Sea

The SSC agrees with Plan Team recommendations regarding models to bring forward in December. In addition to the recommended model configurations, the SSC would like to see a model or models that fix survey catchability at Q=1. We suggest presenting variants of model 2a (or 2b with mean Q= 1) and model 3a with Q=1. Our rationale for this request is based on the increasing evidence that catchability is higher and quite possibly much higher than the current standard assumption that selectivity in the 60-81 cm size range is 0.47, which is based on a limited study by Nichol (2007). Evidence from an unpublished study conducted in 2012 (Lauth) suggests that there is no difference in catchability between the low-opening (2.5 m) trawl used in the Bering Sea survey and the high opening (7 m) trawl used in the Gulf of Alaska survey. Moreover, observations of acoustic backscatter showed that Pacific cod tended to be near the bottom in the study area, consistent with a dive response to passing vessels commonly observed in other gadids. We note that the default assumption in most assessments is that survey catchability is 1, unless there is strong evidence to the contrary. The evidence to date consists of the vertical distribution of 11 tagged fish under undisturbed conditions over a period of one month (Nichol et al 2007).

Aleutian Islands

The SSC concurs with the Plan Team to drop Model 3 from consideration in the December assessment because of the unrealistic value for catchability estimated in the model. Hence, we recommend bringing forward results from models 1 and 2 (and any others at the authors discretion), as well as reference points based on Tier 5 considerations in the December assessment as the SSC has notified the Council that it intends to set separate ABCs for the Aleutians and the Eastern Bering Sea.

Flatfish models
The Groundfish Plan Team reviewed three white papers at their September meeting: (1) aggregate stock assessment for northern and southern rock sole, (2) a transition to a Stock Synthesis model (SS3) for Dover sole, and (3) a transition to SS3 for flathead sole.

For the rock sole model, the primary benefit of using the aggregate northern–southern model is the ability to use a longer time-series of data (back to the 1980s). There was some concern, however, that the SS model fit to the survey abundance index is worse than the 2012 platforms (northern rock sole). Moreover, species composition is not available for the early part of the series. The observer program may be able to help apply species composition ratios to the haul-level. The Plan Team made several recommendations to proceed for the November assessment including: continue to develop SS models for aggregate northern and southern species, investigate empirical weight-at-age data to simplify model structure, investigate data weighting and improve fits to survey data, and find a method to calculate ABC for the aggregate model. Also, there is a need to explore likelihood profiles for the natural mortality rate, derive a prior distribution for M based on plausible values from similar flatfish, and report the total likelihood and components of the total likelihood for alternative model structures.

A new assessment author has assumed assessment responsibilities for Dover sole and flathead sole. For both Dover sole and flathead sole, new SS models are being developed to replace the previous assessment platforms. The SS models are able to accommodate many of the previous issues identified by the SSC, and the models also appear to match the 2011 models for both species; however, there were some discrepancies in the Dover sole model due to how data are treated within SS3. **The SSC recommends that the previous stock assessment platforms be updated with the most current data for comparison to the new SS models before transition to the new SS platform. The SSC also endorses the Plan Team recommendations to list maturity studies as a research priority due to the large differences in maturity rates between studies in different regions. The SSC also agrees with Plan Team recommendations pertaining to survey expansion, and to disregarding composition data from earlier survey years that had incomplete spatial coverage.**

Retrospective analysis workgroup
The SSC commends the members of the working group for an excellent meta-analysis of retrospective patterns across 20 groundfish stocks, and appreciates the cooperation of all of the assessment authors who contributed. The analysis of patterns across stocks was very informative and suggested that models that are highly parameterized and use dome-shaped selectivities are associated with retrospective patterns that imply a higher risk. **We agree with the recommendations of the Plan Team that retrospective analyses extending back 10 years, and including Mohn's revised ρ, should routinely be presented in the assessments. Retrospective patterns should be taken into consideration when selecting a model and when communicating uncertainties associated with biomass estimates.** The SSC also notes that a strong retrospective bias should be one of the criteria considered when setting ABCs and could provide justification for recommending a higher or lower ABC.

Survey averaging workgroup
The SSC agrees with the Plan Teams' recommendation that authors should compare their method of survey averaging with the random effects approach.

Stock recruitment workgroup
Jane DiCosimo (NPFMC) reviewed the "Phase III" Report of the Joint Groundfish and Crab Plan Team/SSC Working Group on Assessment/Management Issues Related to Recruitment. The SSC appreciates the opportunity to review the stock recruitment working group report. This document will improve transparency

in decision making with respect to setting management tiers, recruitment time frames, and methods for estimating biological reference points.

The SSC discussed the strict criteria for determining reliability of the F_{MSY} pdf in topic B5, and questioned if currently Tier 1 stocks would meet these criteria. The SSC also emphasized that use of environmental variables to explain recruitment variability or in stock assessments need not be at the scale of regime shifts.

ACL II discussion

The Joint Plan Teams reviewed issues involved in implementing annual catch limits (ACLs) in the groundfish FMPs. The three main issues identified were:

1. Expanding/revising the role of scientific uncertainty in harvest control rules,
2. Establishing a numerical MSST; and
3. Accounting for total catch removals

The basis for the Joint Plan Team review was a report prepared by Grant Thompson in May 2011. Other information considered included the SSC review of the issue paper (June 2011), the Joint Plan Team's review of the document (August 2011, September 2012), excerpts from other SSC reports, as well as SSC comments on the Advance Notice of Public Rulemaking regarding NS1 guidelines. In their September 2013 meeting, the Joint Plan Teams provided new advice on issues 1 and 3, which the SSC supports. Regarding issue 3, the SSC continues to support steady progress toward full accounting of "other" removals. The Joint Plan Teams offered practical guidance in this regard. The SSC encourages further development of these analyses over a reasonable time frame.

GOA DSR

The SSC received the Plan Team report on the Southeast Demersal Shelf Rockfish (DSR) assessment. In light of the change in survey methodology from use of a submarine to use of a remotely operated vehicle (ROV) without the ability to do a side-by-side comparison, the SSC recommends authors review earlier comparisons of submarine and ROV equipment (O'Connell and Carlile 1994) for potential differences in coverage.

Moving non-Southeast DSR into Other Rockfish

The SSC agreed with the GPT and author recommendation that DSR remain in the Other Rockfish complex for areas of the GOA outside of the eastern Gulf. We also agree that for the November assessment the author should apply the survey averaging technique for smoothing survey biomass estimates in addition to the current method.

C-5 (a) Discussion paper on GOA Trawl Bycatch Management

The SSC received a presentation by Darrell Brannan (NPFMC consultant) and Sam Cunningham (NPFMC). Public testimony was provided by Rachel Donkersloot (Alaska Marine Conservation Council). The introduction to this paper sets out an ambitious task. Overall, the paper is nicely written, clear and concise, and it succeeds in presenting each promised element. However, the parts do not appear to comprise a coherent whole. The paper's title, GOA TRAWL BYCATCH MANAGEMENT is only partially and occasionally descriptive of the paper's content, partially because there are passages that address bycatch management and occasionally because the component chapters of the draft move from topic to topic without clear transitions and linkages. The SSC believes that we would have benefited from the initial staff discussion paper presented to the Council in June and the Council's comments/guidance based on that initial discussion paper. However, within the limits of the information presented to the SSC in the document under review, we offer the following observations.

The first substantive section (Section 2) provides a brief, recent, and selective literature review of the general subject area of "quota share-based" fisheries management. The review identifies several key elements of programmatic structures that are based upon apportioning catch-shares to stakeholders. Important observations and assertions about quota-share management, structural elements of several forms of shares management, and principal arguments and counter arguments pertaining to aspects of quota-share based programs within differing temporal and geo-political settings are highlighted by the authors. However, the SSC felt that this selective literature review only captured some aspects of quota-share based fishery management research contained in the contemporary literature and therefore did not provide adequate coverage of the subject.

The presenters informed the SSC that the literature review is unlikely to be edited and reviewed again even with our suggested changes to broaden the literature covered and to develop a stronger analysis of the pertinent findings. This is troubling because of inaccuracies and selective biases in the review. The suggestion that the review will be archived at this point effectively represents an explicit decision to memorialize these shortcomings (which otherwise could easily be addressed). In one example, the economic outcomes section treats fishing as a job with individuals weighing opportunity costs; this discussion ignores the range of cultural attachments, place-based identities, heritages, and many other elements that accompany the fisheries and for which there is an extensive peer-reviewed literature. Specific to catch shares, there is a broad literature on the effects on communities (e.g. Langdon, St. Martin, Macinko, McCay, Eythorsson, Lowe and Carothers, Hegelson and Palsson), however, in the current version, "sociocultural value on maintaining a fishing lifestyle" is only acknowledged in an unreferenced footnote.

The SSC believes this literature review needs to be broadened before releasing the document to the public. A detailed set of comments will be provided to the authors, but some of the SSCs concerns are elaborated below.

The review is supposedly confined to recent peer-reviewed literature and yet there are references to selected publications from as early as 2001 (e.g. Hartley and Fina, 2001; Copes and Palsson, 2001) and to non-peer-reviewed working papers (e.g., Grainger and Costello, 2012). Thus it is hard to determine by what process the vast body of potentially relevant literature was culled to produce the sample examined in the review. Further, it is frequently hard to tell when the authors are discussing assertions made by other authors and when they are presenting generally accepted findings or conclusions from world experience with catch share programs. More attention to phrasing could eliminate much of the potential confusion here (e.g., sentences that begin "authors X, Y, Z assert that...." or "authors in this camp generally conclude that...").

The review contains numerous references to efficiency, productivity, and profitability and sometimes these terms appear to be used interchangeably. These terms are not synonyms and "efficiency" in particular is susceptible to much misuse in public policy settings. The essay by Saraydar (1989) would be particularly helpful in sorting out the confusion on display in the review and in the fisheries economics literature. Older literature is not invalid or irrelevant simply by virtue of its publication date and should not have been excluded.

The discussion of resource rent is jumbled with economic rent and is misleading due to the confusion in the literature relied upon. Resource rent is not "society's opportunity cost of prosecuting the fishery" regardless of whether that phrase appeared in a publication. Here, the discussion in Bromley (2009) provides model clarity.

The problem of the truncated nature of the literature selected for review becomes glaring when the discussion turns to the so-called transitional gains trap. Here, the authoritative citation would be that of the originator of that phrase in the fisheries literature, Copes (1986), not the more recent works cited. Contrary to the

statement in the discussion paper (footnote 7), the transitional gains trap applies to all subsequent generations of purchasers (the gains are conferred on the initial recipients alone).

The discussion of stewardship effects ignores both established literature emphasizing the importance of the discount rate on personal conservation ethics (Clark, 1973) and recent experiences in the North Pacific involving high profile prosecutions of catch shareholders.

The suggestion that enforcement costs are lower under catch shares (p. 8) contradicts most world-wide experience.

The reference to MSA language defining catch shares as non-compensable privileges, not property, as a disclaimer is inappropriate and inaccurate. This language mirrors Congressional language in the Taylor Grazing Act regarding public lands grazing permits—in both cases Congress has gone to great lengths to be precise about what it is and isn't creating and such language is more than a disclaimer.

In general, the remainder of the discussion paper presents an initial look at several alternatives before the Council. These alternatives have been submitted by various stakeholders and are at various stages of development and specificity. At this early stage, the draft discussion paper does a good job at describing the policy choices inherent in many of the alternatives and these are beyond the scope of the SSC's responsibility or prerogative in the Council process. The procedural steps described appear appropriate as they pertain to what is identified as Tier 1, then Tier 2 level decision points. The eight proposals presented in Section 3 represent a commendable degree of effort, serious consideration, and investment on the part of the submitting stakeholder groups. Each provides useful, imaginative ideas. While no consensus could have been anticipated at this stage of the process, it is encouraging to see the active participation reflected in these thoughtful contributions to the Council process.

The proposals range from relatively complete and comprehensive concepts, to narrow, partial treatment of specific areas, fleets, or sectors. The systematic way in which each of the eight proposals is broken into key topics by the analysts is excellent and should facilitate meaningful Council comparisons. Each proposal is in the early stages of development, making a rigorous review of each by the SSC premature. However, **it would be extremely useful to see the authors apply the literature review to each of these proposals to highlight the potential positive and challenging elements they variously contain, informing further development of these proposals**. We again note the frequent misapplication of the terms bycatch and prohibited species catch. The error in this circumstance must be corrected because these two distinct categories of removal are actually proposed to be formally managed as discrete elements of the QS program (i.e., bycatch allocations and prohibited species catch allowances).

Section 4 is an extensive treatment of state-water fisheries management that may accompany any of several different structural forms a Federal groundfish quota shares program might take. The information contained in this section is excellent, although its immediate relevance to the topic of GOA Trawl Bycatch/PSC Management is unclear. Indeed, the tabular representations of various forms of State Water Management in the face of any given Federal QS program raises many questions specific to PSC accounting. There does not appear to be any treatment of trawl avoidance of PSC or groundfish bycatch; the state does not have PSC limits, but could consider creating them.

Section 5 is a treatment of the various forms of, and barriers to, the concept of one or more Community Fishing Associations (CFAs). This section presents both theoretic and case-study descriptions of how CFAs might participate in fishing activity to further inform consideration of one of the stakeholder proposals. This is excellent information, although many questions would have to be addressed before such an approach could be tailored to the GOA trawl fisheries.

Finally, the Appendix contains a very helpful table that contrasts a suite of programmatic performance elements as applies to the submitted proposals. However, this material is provided without further explanation or interpretation, both of which would enhance the presentation.

C-5 (c) Initial review of GOA Rockfish Chinook Cap Rollover

The SSC received a presentation on the initial draft EA/RIR by Sam Cunningham (NPFMC). There was no public comment. The document is a follow-on of the proposed GOA Amendment 97 Chinook Salmon PSC Avoidance action, evaluating an addendum that would address the concept of PSC rollovers. The June 2013 action serves as the analytical baseline against which the suite of alternatives in this supplement is contrasted. The document is clear, well written, and relatively concise.

The author has provided a succinct and helpful definition differentiating bycatch from PSC. However, application of this definition is not adhered to in the document. It is important to maintain this regulatory distinction throughout the document.

PSC is never to be utilized, but is to be " ... avoided to the extent practicable." An allowance is made to accommodate unavoidable interceptions. The analysis consistently makes the error of assigning use rights to PSC; it is an maximum allowance, not a property use right, and cannot therefore be said to be stranded. There are several places in the document where a rephrasing is necessary. The linguistic inclination adopted by the author (e.g., PSC is a tool to be used) dilutes the message that avoidance is essential to realizing the optimum yield objective of the MSA and the Council's efforts to manage on an ecosystem-wide basis. This critique extends to the interpretation of PSC removals under each of the alternative descriptions.

The characterization in the draft of the downstream effects of this action is limited to the groundfish sectors. There are, of course, downstream effects on users of the Chinook salmon lost to PSC. The document lacks identification of possible end users of Chinook salmon (commercial, subsistence, personal use, and sport) and at least a qualitative evaluation of the nature of impacts these users are likely to face. In particular, the impacts assessment section of the RIR needs a qualitative acknowledgment of what was/would be the value of the Chinook salmon savings. Numerous communities within Alaska and along the West Coast depend upon, and sustain uses and users in each of these categories, and these effects should be characterized in the rollover discussion, as well as in the larger document.

In the section reporting Chinook salmon PSC performance, it is relevant to note that GOA CVs have historically had low levels of observer coverage. This could bias interpretation of the PSC estimates. This should be reflected in the text and sector-attributed PSC performance tables. While mention is made in footnote 13, this point is critical to the readers' understanding of these reported PSC performance indicators. It should not be relegated to a footnote. The low level of observer coverage also speaks to the difficulty of obtaining the data necessary to manage the proposed PSC limits in the GOA non-pollock trawl fisheries. The document appears to presuppose more precision in the management system than seems reasonable, as for instance, in the discussion of rollovers.

Under the Alternative 4 Rollover discussion, "...without the uncertainty buffer incentive, the RP CV sector would be just as well off taking all of the 1,200 Chinook salmon that it is permitted, as it would be when limiting Chinook PSC to the greatest extent practicable." This is an important finding that should be highlighted for the reader and the Council.

The SSC recommends summarizing the positive and negative elements of the alternatives in the document. It would be useful to set out in a tabular form the major features of each alternative and the advantages and disadvantages of the alternatives.

The SSC recommends integration of this Addendum (after the necessary corrections are made) into the main GOA Chinook PSC in the Non-Pollock Trawl Management document, at which point the Addendum will be ready for release to the public.

The SSC also had several specific comments and follow-up questions for the authors as follows. In the RIR treatment of groundfish harvest, the analysis employs economic indicators that present concerns for comparative performance between the CVs, CPs, and inshore processing sectors. CVs, by definition, do not process. Ex-vessel equivalent value has traditionally been the leveling measure because wholesale value is determined by a number of factors. The SSC recommends replacing these CV wholesale tables with those that show processor first wholesale value (or correctly labeling them) and supplement the report with ex-vessel value performance measures for the CV sector.

In the treatment of catch attribution, it might be worthwhile to more fully explain how trip target assignment can change based upon species-preponderance in the catch.

In the discussion of "Interaction with the uncertainty pool mechanism," on page 40, there seems to be a contradiction. Clarification is needed, as the mandate that " ... 160 fish must have been truly saved" and the suggestion that " ... some of the RP CV sector's avoided PSC ... are taken in the non-RP CV fall fisheries during Year " are discordant.

In 4.3.3 Alternative 3, "The Council chose to consider holding back precisely 160 Chinook salmon in the RP CV sector because that is the amount of Chinook in the sector's uncertainty buffer." Keeping those 160 Chinook allowances within the sector prevents a scenario where the PSC that is marked for possible "use" in case of high-PSC during the following year is, instead, caught by the non-RP CV sector in the fall. But what about the issue just cited regarding post-transfer overages?

Continuing with the Alternative 3 rollover, the draft asserts: "Consider the example where the RP CV sector takes 1,000 Chinook salmon before October 1. If all but 160 of the remaining 200 Chinook PSC allowances are rolled into the non-RP CV sector, the next Chinook recorded on a Rockfish Program trip would bring the sector's remaining PSC to 159. Catch accounting – and the agents responsible for administering the uncertainty pool – would have to track that this was, in fact, only the 1,001st Chinook salmon taken in the sector." What happens in this case? This is a critical question, left unanswered in the draft.

C-6 (b) BSAI Chinook Salmon Report

The SSC received a presentation from Diana Stram (NPFMC) on an updated analysis of BSAI Chinook salmon stock status, AEQ, and PSC rates. Public testimony was provided by Art Nelson (Bering Sea Fisherman's Association). This report was requested by the Council at its April 2013 meeting and largely updates analyses that were reported on at the Arctic-Yukon-Kuskokwim Sustainable Salmon Initiative Chinook Expert Panel symposium in 2012. The report also summarizes fishing and PSC performance by sectors as requested by the Council. The SSC had previously reviewed and approved the methodology for calculating AEQs and PSC rates so did not comment on this aspect of the report.

The SSC greatly appreciates the work of NMFS, Council, and ADF&G staff in bringing together disparate Chinook salmon run strength, AEQ, and PSC information into a single report that summarizes the impact of PSC on runs of Chinook salmon in western Alaska. The SSC had the following comments on the report:

- **The report does an excellent job of addressing the Council motion and request to review the status of Chinook salmon stocks in Alaska, update genetic stock identification efforts, and provide updated AEQ analysis and PSC harvest rates relative to actual PSC and relative to**

current cap levels. Summaries of vessel PSC rates were also found to be useful in confirming that efforts of IPAs to reduce PSC of Chinook salmon should be effective at the vessel level.

- We suggest that this type of report be produced periodically to update the SSC and Council on the performance of Chinook salmon stocks and on efforts to reduce PSC in the BSAI groundfish fisheries.
- While we applaud the inclusion of stock-specific run size information in the document, stock status information in the report could be improved in the future by adding information on harvests of Chinook salmon in the various state-managed terminal fisheries (subsistence, commercial, and recreational), as well as whether Amounts Necessary for Subsistence (ANS) are being met or not.
- Sufficiency of sampling of Chinook salmon PSC for lengths should be evaluated in light of the sampling design for genetics, and sampling rates for lengths be adjusted if necessary.