

# North Pacific Fishery Management Council

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## MINUTES

Scientific and Statistical Committee  
June 8-10, 1998

The Scientific and Statistical Committee of the North Pacific Fishery Management Council met June 8-10, 1998 at the Grand Aleutian Hotel in Dutch Harbor, AK. All members were present except Dan Kimura and Phil Rigby:

Richard Marasco, Chair  
Harold Weeks  
Sue Hills  
Steve Kloiewski

Jack Tagart, Vice-Chair  
Terry Quinn  
Keith Criddle

Doug Larson  
Seth Macinko  
Milo Adkison

### C-1 INSHORE/OFFSHORE 3

Chris Oliver presented the analytical package, with additional detail on Appendix II prepared by Impact Assessment, Inc. Public testimony was received John Gauvin of Groundfish Forum; Rebecca Baldwin of EEA, representing North Pacific Seafood Processors Association; Ed Richardson, representing At Sea Processors Association; and Jim Wilen, representing At Sea Processors Association.

The SSC reviewed the modifications to the analytical package which was mailed out after the April 1998 meeting, and was satisfied that the authors were responsive to the SSC concerns raised at that time. Specifically, the discussion of spillover effects, marine mammal/CVOA issues, and product markets/market control issues have been expanded. In addition, the Impact Assessment Inc. and McDowell group contract reports have been expanded to include a discussion of sampling methodology and field protocols. **The EA/RIR and accompanying appendices present a great deal of information that provides a reasonable basis for a Council decision regarding the pollock allocation. The information presented is appropriately qualified. Nevertheless, it is worth reiterating that both the biological information (e.g., on abundance and exploitation rates in and near the CVOA) and the economic information (e.g., on markets, gross values, utilization rates) are snapshots of performance at a point in time, with no assurance that they will persist into the future.** There is substantial uncertainty about the point estimates presented, and the point estimates themselves will change as the industry responds both to new opportunities and to regulation. The SSC minutes from the April 1998 meeting provide further articulations of the limitations which must be taken into account when making comparisons across sectors.

## **C-2 ESSENTIAL FISH HABITAT**

Dave Witherell and Lowell Fritz presented the staff report on this agenda item. As in the past, we commend the analysts for preparing a substantive and substantial product in a short time. The revised document responds fully to the SSC comments from the April meeting:

- the use of level 0 information has been clarified;
- a discussion paper has been developed that will assist the public in preparing proposals for designation as Habitat Areas of Particular Concern (HAPC); and
- the proposed Cape Edgcombe pinnacle closure has been made a distinct decision item in this amendment package.

It is important for the Council, the public and the fishing industry to realize that a great deal remains to be accomplished to meet the goals set forward in the Act. By and large, our understanding of marine fish distribution, important habitat features, and the ecological processes that maintain and create appropriate marine habitat are quite rudimentary. A well-defined research plan and funding are required to improve current knowledge to meet the intent of the Act.

Continued integration is encouraged of the complimentary criteria articulated by Short et al. (pages 344-353 in the EA) with information on fish distribution by life history stages as a guide to identifying essential habitat types. The Council's Ecosystem Committee might wish to pursue this issue.

Areas can be proposed for HAPC designation by the public or agencies. To guide evaluation of proposals an organized conceptual plan is needed that clearly states HAPC designation objectives. Therefore, we recommend that:

- (1) Objectives of HAPC designation be developed,
- (2) HAPC designation be frame worked in the respective fishery management plans to avoid the need for a full plan amendment with each new designation considered, and
- (3) the call for proposals to designate HAPCs require proposers to include supporting rationale and data with the proposal.

Subsection 10.1.3 contains Habitat Conservation and Enhancement Recommendations (subsection 10.1.3). As presented, this subsection could be interpreted as being an-all-inclusive list of recommendations for eliminating impacts on EFH by non-fishing activities. The supporting rationale is lacking for items included in the list. This does not mean that the recommendations do not have merit. Rather, it is suggested that recommendations be developed for these and other activities in the context of EFH objectives.

Ultimately, ensuring continued productivity of living marine resources requires the protection and possibly restoration of both habitat and ecological processes. Understanding what to protect and how to approach protecting it will require active efforts to collect and incorporate new information.

#### **C-4 LICENSE LIMITATION PROGRAM**

The SSC heard a staff presentation of the Draft EA/RIR for License Limitation.

The draft document needs some revision before it is released for public review. The needed revisions include:

- (1) Elimination of regressions analyses reported on pages 19-23 and 32-34. These analyses are not essential to the completeness of the EA/RIR and are statistically flawed. The cumulative frequency diagrams should be retained.
- (2) Editing for proper terminology. For example the draft EA/RIR had numerous references to "mode" that should refer to "median"
- (3) Editing for readability.

#### **C-6 OBSERVER PROGRAM**

SSC received a report from Sue Salvesson and Bill Karp regarding problems associated with implementation of the Joint Partnership Agreement (JPA) with PSMFC. The inability to resolve critical liability issues has terminated pursuit of the JPA with PSMFC. To assure sustained at-sea monitoring of catch, the Council must extend the pay-as-you go observer program indefinitely. Final action is required in fall 1998 to facilitate completion of final rules for the LLP. The SSC recommends that the Council proceed with extensions of pay-as-you-go program.

#### **D-1(a) POLLOCK BOTTOM TRAWL BAN**

Dave Witherell presented the SSC with a review of a proposal, scheduled for final action by the Council, to ban bottom trawling in the directed BSAI pollock fishery. There was no public testimony on this agenda item. Following initial review of the EA/RIR/IRFA in April, 1998, the SSC recommended several substantive revisions to the draft document. All requested items were incorporated into the analysis.

The revised EA/RIR contains a new section comparing the average per ton of halibut bycatch in the pollock target fishery and other commercial fisheries. This section needs qualification to avoid potential misinterpretation. The relevant comparison is the incremental pollock revenue lost due to a reduction of halibut bycatch by one ton. This cannot be easily or accurately estimated by use of average figures.

Because the pollock fishery is constrained by multiple quotas, including the pollock TAC and crab bycatch, it is possible (perhaps likely) that the incremental value of an additional halibut to the pollock target fishery is zero. This would happen, for example, if the fishery currently takes the TAC without the halibut catch constraint being binding. In this case, another ton of halibut allocated as bycatch would make no difference to pollock revenue, so its incremental worth in the pollock fishery is zero. This is not to suggest that the incremental value of halibut to other fisheries is zero.

## **D-1(b) ATKA MACKEREL APPORTIONMENT**

Tim Ragen and Lowell Fritz presented the revised EA/RIR and public testimony was given by Ken Stump, John Gauvin, Tim Meintz, Matt Dougherty, Dorothy Childers, Chris Blackburn, Andrew Trites, David Allison, and Mike Szymanski. This issue has come about because the Atka mackerel fishery occurs close to sea lion rookeries, there is concern about localized depletion of mackerel population components, and the depletions may affect the recovery of the sea lion population in the Aleutians.

**Overall, the SSC recommends a seasonal allocation to reduce local depletion and urges caution in implementing any critical habitat allocation at this time. As a long-term goal, the SSC supports the distribution of catch inside and outside of critical habitat in proportion to Atka mackerel biomass. The SSC is aware that the Council may need to consider a critical habitat allocation in order to address ESA requirements. The SSC cannot offer any scientifically based recommendations regarding specific inside/outside harvest splits at this time. Upon reexamination of the appropriateness of the current critical habitat of sea lions and determination of relative Atka mackerel distribution, then a better approach can be implemented. As it noted in April, the SSC recommends a one-year sunset period so that this matter will be reexamined next year. Furthermore, the SSC recommends that future management be based on an experimental design that provides information about the interactions of the fishery and Steller sea lions. To initiate this approach it is recommended that a workshop be convened as discussed below.**

The revised EA/RIR is a substantial improvement and addresses the concerns listed in the April SSC minutes. The document is based on two primary determinations: (1) whether localized depletions are really occurring and (2) whether such depletions constitute adverse modification of sea lion habitat (as measured by food limitation or disturbance). The SSC will comment on the scientific basis for these determinations and for making management decisions, the utility of the alternatives for addressing management concerns, and the appropriate approach that should be used in this situation.

**Local depletion:** This issue is investigated in the EA/RIR by means of a Leslie depletion analysis, in which CPUE is modeled as a linear function of cumulative catch. Results indicate that CPUE declined significantly in 17 of 37 time/area fisheries considered. The SSC notes that there are several ways of conducting the analysis as pointed out in three outside scientific reviews (2 under contract to Groundfish Forum and one to NMFS). Further technical suggestions by the SSC appear below. Nevertheless, the main conclusion that CPUE declines substantially in some areas at some times seems fairly certain. These declines are indicative of local depletion, although alternative hypotheses include emigration from the area, natural mortality, and changes in catchability due to changes in fish or fisher behavior. The declines are in line with expectations related to level of catch: the higher the catch and the longer the season, the more likely there is to be a substantial decline. Finally the magnitudes of the estimated decline can be quite substantial at up to 94% (although it averaged 56% in 1996 and 37% in 1997). Therefore, the Atka mackerel fishery may have a large effect on fish abundance in some areas at some times.

**Adverse habitat modification:** This is defined as a measurable adverse effect on habitat affecting sea lions. The major hypothesis considered in the EA/RIR is that localized depletion of Atka mackerel may make it harder for sea lions to forage adequately at some times in some places. Atka mackerel does constitute a major food item for sea lions and the fishery occurs in areas occupied or transited by them. An alternate hypothesis that the fishery disturbs sea lions (through noise or other factors) is dismissed by the EA/RIR because few direct encounters with sea lions have been observed. There is no direct scientific evidence to connect local depletions with inadequate foraging opportunities. Nor has there been an analysis of a minimum biomass level necessary to support the total sea lion population.

In an excellent summary of the stock assessment information in the EA/RIR, the Atka mackerel population was estimated to be relatively low during the 1970's and 1980's, so that the TAC was also set low. During this period, the sea lion population had its strongest decline. In the 1990's the population was estimated to be high so that the TAC increased. The sea lion population has continued to decline but at a much lower rate and may have stabilized. Therefore, changes in the abundance and catch of Atka mackerel do not explain the historical decline in the sea lion population. On the other hand, the hypothesis that local depletion of Atka mackerel is currently impeding recovery of the sea lion population cannot be disproven either. The SSC notes that there is little scientific information to conclude that sea lion habitat is adversely affected by the Atka mackerel fishery but that this does not mean that such an effect is absent either.

**Critical habitat:** Sea lion protection zones were established in 1991 to preclude the possibility of groundfish fisheries having an adverse impact on sea lion populations. These zones later became part of "critical habitat" during Endangered Species Act considerations. The scientific basis for these zones is not well established nor is there any evidence that they have had much of an effect in stemming the decline or contributing to the recovery of the sea lion populations. It is perhaps time to investigate whether a redefinition of critical habitat is needed that would incorporate recent information from NMFS and other scientific sea lion studies.

**Atka mackerel abundance and distribution:**

As mentioned earlier, current Atka mackerel survey biomass of 348,200 mt is higher than estimates made during the 1980's (52,000 to 300,000 mt) but is lower than the 1986 survey estimate of 545,000 mt and the peak model biomass estimate of 1,171,000 mt from 1993. The recent decline is due to a lower survey estimate in 1996 and a change in the time at which spawning biomass is calculated. Uncertainty in Atka mackerel biomass is high because of its schooling character and the difficulty in trawling this area. The current survey design precludes the calculation of relative biomass distributions inside and outside of sea lion critical habitat.

Comparison of stock assessment results with Leslie depletion analyses suggests that about 25% of the population is in areas currently fished. About 80% of the catch is taken inside sea lion critical habitat. About 69% of the area at depths less than 200 m or less (area available to the fishery) is within critical habitat. Atka mackerel CPUE is similar inside and outside of critical habitat. However, the fishery does not occur in all areas, because fishers tend to return to areas where they have experienced good catches and because certain areas are less accessible or not trawlable. Therefore, the relative distribution of Atka mackerel inside and outside of critical habitat is not well-known. Furthermore, the amount of movement of Atka mackerel is not known.

**Research:** There are many pressing needs for new information upon which to base a prudent management strategy. First, the relative distribution of Atka mackerel and their movement patterns needs to be known. Secondly, studies of catchability are needed to determine the targeting practices of harvesters and the influence of tides, daylight, and other factors. Third, there is no information from this area on foraging patterns of sea lions upon which to base critical habitat definitions. There also needs to be better information on sea lion diet on a year-round basis.

**Consideration of the alternatives:**

**Alternative 1. Status quo.**

This alternative is clearly unacceptable because local depletions are occurring in some areas at some times. While there is no clear connection to sea lion populations, the prudent course would be to reduce local depletions if possible.

#### Alternative 2. Seasonal allocation.

A seasonal allocation is a straightforward mechanism to reduce local depletion. The proposal calls for an A season starting January 20 and a B season starting September 1 to November 1. For Atka mackerel, the summer is avoided for quality reasons and to avoid the spawning period. For Steller sea lions, the winter period is thought to be most critical, so no season occurs from November 1 to January 20 and the A season limit reduces winter catch compared to the status quo. A set of more seasons of shorter duration could reduce local depletion even more but could prove infeasible for prosecuting a fishery.

#### Alternative 3. Add critical habitat allocation.

This alternative would limit the catch inside of sea lion critical habitat to a target of 40% inside (roughly a drop of one-half from the present percentage), either in a one year adjustment or an incremental multi-year set of adjustments. The SSC recommends that the Council use extreme caution if it chooses to implement this option. In other Council fisheries, the general goal is to set catch limits in proportion to available biomass. Because relative biomass distribution for Atka mackerel is so uncertain, there is not a good scientific basis for making an adjustment until better survey information is available. Indeed, if fish are sedentary and fishermen currently distribute effort in proportion to biomass, then the allocation could actually exacerbate the situation by fishing the outer population component at too high a rate, with potential downstream effects on future recruitment if that component makes a major contribution toward spawning.

#### Alternative 4. Add critical habitat allocation with depletion adjustments.

This approach is a modification of Alternative 3 wherein further adjustments are made based on estimated biomasses from the Leslie depletion analysis. The advantage of this approach is that the number of seasons is set based on a maximal seasonal apportionment designed to reduce local depletion. The disadvantage is that these estimates are highly uncertain and implementation would be difficult. Until technical issues with the Leslie approach are resolved, the SSC recommends that this approach not be used.

#### Alternative 5. Rolling closures.

This alternative would have sequential openings in areas 541, 542, and 543. This option could reduce local depletion by allocating small amounts in each area but like Alternative 2 has no allocation by critical habitat. If all vessels fish in the same area at the same time, then local depletion may be accelerated. A potential advantage is that returning to the same area after a short closure (say three to six weeks) could provide timely information on the amount of time it takes to rejuvenate fishing grounds.

#### Alternative 6. Voluntary fleet dispersion.

As pointed out in the EA/RIR, there is no assurance that this will work.

#### Future management

Clearly the many questions that exist regarding the relationships between fishing and Steller sea lions are extremely difficult to answer with a satisfactory degree of certainty. Because of the life history characteristics of the Atka mackerel and the localized nature of the fishery, there is a unique opportunity here for us to gather the data that is necessary to put management decisions on a firmer scientific basis. Thus investigations regarding the relationships between sea lions, Atka mackerel and the Atka mackerel fishery may also provide insights into other similar situations. However, if a blanket management measure is implemented across all areas, then no learning will take place and after several years we will not know if such a measure had anything to do with

changes in the sea lion population. Therefore, consideration of an appropriate management design that incorporates learning should be given strong consideration, as noted in April.

The SSC sees the main questions to be answered as:

- 1) What is the distribution of fish in relation to areas that are used for fishing;
- 2) What is the distribution of fish in fishing areas during and after fishing;
- 3) How do sea lions use Atka mackerel in relation to Atka mackerel distribution;
- 4) What does the answer to #3 mean in relation to sea lion population dynamics; and
- 5) Does the fishery affect sea lions in other ways (e.g., disturbance).

The SSC suggests that a workshop be held to explore these areas further, to identify critical assumptions and tests, and experimental designs for appropriate data collection. One of the strengths of the current situation is the general willingness to cooperate among industry, agencies and others. All recognize the importance of the situation and the need for more information soon. The SSC urges that the strengths and ideas of all players be brought out in something like a workshop setting to address these critical questions.

Technical comments on Leslie depletion analysis:

The reviews by Sullivan, Kirkley, Hoening, and Smith include excellent recommendations for improvements to the statistical analysis of CPUE data. Key points are:

- Ordinary Least Squares (OLS) is inappropriate for binned data. When data are binned, generalized Least Squares (GLS) or Weighted Least Squares (WLS) are preferred methodologies because they account for variability within the binned observations. GLS can address heteroscedasticity and serial correlation.
- Regression analyses based on the disaggregated data are preferred to analyses based on aggregated data. Results from analyses based on the disaggregated data will have smaller coefficients of determination ( $R^2$ ) but increased significance of fit (significance of F-statistic). The significance of estimated coefficients (slope and intercept) may increase or decrease depending on the offsetting effects of increases in the sum of squared errors (SSE) about the regression line.
- The Instrumental Variables approach used by Smith is a good approach for addressing the endogeneity of current catch. However, it is important to remember that instrumental variable regression yields estimates of coefficients and standard errors that can be combined to derive asymptotic t-statistics. When the number of observations used in the regression is small, the asymptotic -t overstates the significance of the estimated coefficients.
- Hypothesis tests reported by the authors are (at best) asymptotic. If the estimated coefficients are biased, the hypothesis tests are incorrect and it is not possible to determine the significance of the coefficient estimates.
- Tests for the detection of serial correlation are weak. First order serial correlation is often tested with the Durbin-Watson statistic or the Durbin-h statistic where the model includes lagged endogenous variables. Tests for higher order serial correlation (e.g. Q-tests) are notoriously weak. A preferred alternative is to apply linear or nonlinear time series techniques to the regression model residuals.



- The possibility that fish behavior (e.g. aggregation/dispersal on diurnal or seasonal basis) could confound fishery induced responses (e.g. localized depletion) needs to be explored.
- The assumption of a closed population is suspect. Immigration, emmigration, and natural mortality may affect our ability to observe localized depletion.
- The model needs to examine the magnitude of influence exercised by individual observations, particularly at the start and end of the data series. Use of disaggregated data will reduce the ability of individual observations to exercise undue influence on estimates of the slope (and hence intercept) coefficient.
- The model should be tested for random (time-varying) coefficients. If present, these could suggest a nonlinear relationship between CPUE and time.

#### **D-1(c) GROUND FISH OVERFISHING DEFINITIONS/SAFE CONSIDERATIONS**

The revised EA/RIR for Amendment 56 reflects the changes suggested by the SSC in April. Therefore, the SSC recommends the adoption of Alternative 2, which makes some minor modifications to current definitions of ABC and OFL. The April SSC minutes provide the rationale for this Alternative.

The SSC further recommends that the Plan Team consider further improvements to ABC and OFL definitions at their September meeting. These potential improvements could include consideration of proxies for biological reference points (along the lines of Alternative 2 and 3 of the previous EA/RIR), adjustments of either biomass or fishing mortality using standard errors, and other approaches to incorporating uncertainty into decision making. The SSC will then review Plan Team findings for possible development of an amendment at its October meeting.

##### SAFE Considerations

The SSC reviewed the proposed outline for stock assessment chapters of the December SAFE document relative to the checklist contained in Appendix D of "Improving Fish Stock Assessments". The proposed outline is congruent with the NRC checklist in most respects. We encourage analysts to address assessments as creatively and thoroughly as individual datasets allow. As in our April minutes, we encourage analysts to include:

- (1) 10 year projections of biomass levels;
- (2) discussion of uncertainty in estimates of population parameters, projections and harvest strategies. Stochastic projections of future population biomass and risk indices of falling below specified population levels would be helpful.
- (3) time series of actual exploitation or fishing mortality rates as outputs, and indication of measures that may have created discontinuities in time series.

#### **D-1(d) HALIBUT DISCARD MORTALITY RATES**

Gregg Williams (IPHC) presented the proposed change in halibut discard mortality rates (DMR) to be applied to the BSAI Pacific cod hook and line fishery. The estimated 11.5% adopted in the specifications process will be reduced to 11% and applied retro-actively to all of 1998 for this fishery.



**The SSC endorses this change, we commend IPHC staff for including standard errors in reporting DMRs. This welcome addition clearly illustrates the improved fleet performance in this area.**

#### **D-1(e) EXPERIMENTAL FISHING PERMIT**

John Gauvin (Groundfish Forum) presented the proposal for an experimental fishing permit to test a device to reduce halibut bycatch in flatfish fisheries and to further refine deck sorting and quick release procedures. Gregg Williams (IPHC) noted that IPHC had provided a letter supporting this proposal, and the commission sees particular value in the continued refinement and testing of deck sorting techniques. **The SSC adds its endorsement to this proposal; we note that the effort is intended to capture the creativity of the fishing fleet in both designing and testing the bycatch reduction device to be employed. We look forward to the report from this experiment which will address changes in bycatch and target species catch rates and selectivity.**

#### **D-2 VBA/HMAP/IVCP**

The SSC received a report from Dave Witherell, with additional information from VBA Committee member John Gauvin.

#### **D-3 SCALLOP OVERFISHING DEFINITIONS**

**The SSC concluded that alternative 2, which redefines overfishing, OY, and MSY, should be adopted. This alternative fulfills the legal obligation of specifying measurable and objective definitions of MSY, an overfishing rate, and a minimum stock size threshold. It also caps the OY below MSY.**

The definitions adopted are based on the only information available, historical catch records. The SSC recommends that developing methods to monitor biomass be given high priority.

#### **D-4 CRAB OVERFISHING DEFINITIONS**

Peggy Murphy and Dave Witherell presented the draft amendment and a summary of the plan teams' reaction to the April comments of the SSC. Grant Thompson provided a clarification of the circumstances under which a quota could exceed MSY without constituting overfishing.

The SSC commends staff of their efforts in updating the FMP. However, the SSC had numerous concerns about the draft amendment as written. The presenters were able to verbally resolve many of the issues raised by the SSC. **Accordingly, the SSC favored alternative 2 subject to a satisfactory revision of the document.**

The SSC noted that the draft document needed updating to ensure consistent notation. Options given for data tiers need to be tied into the alternatives and analyses.

The SSC noted some conceptual ambiguities in the draft document. These included:

An ambiguity as to how overfishing was to be determined when the harvest targeted a sub-component of the population (e.g. males of a certain size). The presenters indicated that if the legal male component of the population experienced a fishing mortality rate greater than M, this would constitute overfishing. The SSC noted this procedure was acceptable, whereas other possible interpretations of the procedure would require justification.

In estimating MSY, the use of average historical biomass as an estimate of biomass expected under the MSY control rule depends upon the assumption that the population was fully exploited. This is not obvious when only one sex is harvested. The presenters indicated there is some justification for thinking historical harvest rates are high enough that biomass was not above MSY levels.

The biomass used in calculating MSY and MSST when biomass estimates were unavailable is obtained by multiplying the catch by the ratio of catch to mature biomass in proxy stocks. Use of this point estimate is contrary to the principle to be more conservative when less information is available. The presenters felt that the harvest strategy, which targets only a portion of the male population, was already so conservative that no additional conservatism was required, but acknowledged a more conservative fishing mortality rate could be applied.

The plan team chose not to adopt the SSC's previous recommendation that the amendment be structured as a procedure for calculating quantities, rather than a set of specific quantities. The plan team felt that this approach would result in declining MSY and MSST as stocks declined, possibly never triggering rebuilding requirements. The SSC noted that the amendment indicated that quantities would be recalculated if environmental conditions changed. The presenters clarified that the Team agreed to evaluate the need to update MSY estimates on a five year cycle.

#### **D-5 SALMON OVERFISHING DEFINITIONS**

The SSC recommends the adoption of Alternative 2, which will update the FMP to include recent information on conservation policies of the State of Alaska and Pacific Salmon Commission.

#### **MISCELLANEOUS - PLAN TEAM MEMBERSHIP**

The SSC endorsed the appointment of Dr. Mark Hermann (University of Alaska-Fairbanks) to the crab plan team to replace Dr. Josh Greenberg.

#### **OTHER ISSUES**

##### **Relative Fishing Prowess**

The SSC conducted a sampling exercise in the Bering Sea to determine the relative fishing prowess of SSC and AP members. The SSC was ably represented by Drs. Larson, Klosiewski, and Criddle, an onboard observer (Dr. Karp), and a representative of the NMFS national office (Dr. D. Evans). Catches of Pacific halibut (*Hippoglossus stenolepis*) and bycatches of Pacific cod (*Gadus macrocephalus*) were recorded. Although a significant level of high grading occurred, careful release practices were employed and all discarded halibut were certified to be in excellent viability. The results of this exercise can be stated quite simply:

"The SSC kicked'but on the AP." Not only did the SSC fully exploit their quota while the AP failed to reach its OY, but the SSC also achieved higher overage yield per fish." This was attributed to the unusual chumming technique of one member, who in the interest of protecting the guilty shall go unnamed.