Western Alaska Salmon Stock Identification Project
Joint Meeting of Advisory Panel and Technical Committee
14 November, 2011
Hilton Hotel
Anchorage, Alaska

MINUTES

Chair: Eric Volk, Alaska Department of Fish and Game (ADFG)

Call to Order: 8:37 AM Monday, November 14th

Attending: (Name and affiliation)

Eric Volk, ADFG
Robin Waples, NOAA Fisheries, (Technical Committee; TC)
Bruce Weir, University of Washington, (TC)
Tim Baker, ADFG
Doug Eggers, ADFG
Chris Habicht, ADFG
Lisa Fox, ADFG
Matt Nemeth, ADFG
Charlie Lean, Norton Sound Economic Development Corporation (NSEDC)
Katie Howard, ADFG
Chuck McCallum, Lake and Penn Borough
Michael Link, Bristol Bay Native Association (BBNA)/BBSRI/LGL
Art Nelson, Bering Sea Fishermen's Association (BSFA)
Andrew Munro, ADFG
Denby Lloyd, Aleutians East Borough (AEB)
Bill Templin, ADFG
Pat Martin, Concerned Area M Fishermen (CAMF)
Lisa Kangas, Tanana Chiefs Conference (TCC)
Nick Decovich, ADFG
Casie Stockdale, Association of Village Council Presidents (AVCP)
Steve Brown, CAMF
Jill Klein, Yukon River Drainage Fisheries Association (YRDFA)
Loren Peterson, Senator Olson Legislative Staff
Alisa Frothingham, TCC
Karen Gillis, BSFA
Loretta Bullard, Kawerak Incorporated
Roy Ashenfelter, NSEDC

Missing:

Dick Jacobsen, Aleut Corporation (AC)

Agenda:

1. Welcome and introductions
2. Review and approval of agenda
3. Review of report and recommendation from *ad hoc* committee on coastal western Alaska chum salmon reporting groups (*ad hoc* committee)
4. Discussion of *ad hoc* committee recommendation and decision on chum salmon reporting groups (Advisory Panel)

Notes:

1. Welcome and introductions

Eric Volk (EV) – Opened the meeting and thanked all for attending on such short notice. He reviewed the need for this meeting and explained what would be covered:

1) Will the Coastal Western Alaska reporting group be separated?
2) What kind of compromises to accuracy and bias are acceptable?
3) What did the *ad hoc* committee (Michael Link (ML), Art Nelson (AN), Pat Martin (PM), and Denby Lloyd (DL)) recommend? They gave a recommendation to the AP and TC, but not all the AP concurred with the recommendation.
4) EV noted that the process is a full month behind the agreed-upon timeline and this issue needs to be resolved.

2. Review and approval of agenda

No questions about or additions to the agenda were made.

3. Review of report and recommendation from ad hoc committee on coastal western Alaska chum salmon reporting groups (ad hoc committee)

ML chaired the *ad hoc* committee. ML asked Chris Habicht (CH) to present the analysis requested by the Advisory Panel (AP) at the September meeting.

CH presented Technical Document 15: "Chum salmon reporting group evaluations using simulated fishery mixtures". This presentation provided the background and purpose of the analysis, methods, results, and department recommendations. The purpose of the analysis was to examine the effect of using 4 reporting groups rather than 1 reporting group within Coastal Western Alaska (CWAK) on the biases and precision of estimates using simulated fishery mixtures. The results showed high levels of bias coupled with wide credibility intervals within the CWAK reporting groups relative to reporting groups outside this region that met the standard criteria. Despite the wider 90% credibility intervals (CI), the biases were so high that credibility intervals did not include the correct value at an appropriate level (only 68% of the correct values within the 90% CIs). These results led to the department recommendation that the CWAK reporting group should not be divided into finer-scale reporting groups. The *ad hoc* committee members agreed with this recommendation, but not all AP members concurred. The chair convened an e-mail

poll regarding the ad-hoc committee recommendation. The results were:

Concur: ADF&G, BBNA, BSFA, Aleut Corp., AEB, CAMF, Lake and Penn, YRDFA

Not Concur: TCC, AVCP, Kawerak.

ML followed up by covering what the *ad hoc* committee recommendations were and why:

- With 12 reporting groups, the proof tests appeared to be enough to conclude that dividing CWAK does not meet the 90% standard.
- The hypothetical fishery mixtures resolution had a significant bias when run with further division of CWAK, leading to inaccurate estimates. There's not a lot of mystery as to why the *ad hoc* committee came up with the recommendation to not divide CWAK.

5 .Discussion of ad hoc committee recommendation and decision on chum salmon reporting groups (Advisory Panel)

EV – Welcomed comments from other members of the committee.

Robin Waples (RW) initiated a discussion on alternative statistical mixed stock analysis methods that might help.

- There was a discussion about using SPAM instead of BAYES.
    - SPAM appeared to work as well as BAYES in this set of mixtures.
    - SPAM is easier to run than BAYES.
    - However, SPAM generally had more upward biases for low proportions.
- RW brought up other ways to do population assignments.
    - When there are strong differences between populations, it doesn't matter as much which method you use.
    - For populations that are less separated, the Koljonen et al. method might be better, but it might be too hard to set it up in the pipeline.
    - It also might be best to rerun these estimates with the newer Pella-Masuda method.
    - The Koljonen et al. method might not be the magic bullet, but it could show appreciable improvements over the BAYES and SPAM estimates.
- ML – Even if this might give you better results, would it clear up this CWAK division question?
    - RW – It might. It seems worth doing some tests.
    - RW – If we look at the MDS plot, the clump in the middle is the problem. There are some collections that are separating out well.
    - CH – Unfortunately, the dots that separate out represent the smaller populations.
- EV initiated a discussion on time commitment to vetting a new program given the time restrains on this project.
    - RW – I'm not sure how long it would take, staff time, a few staff days? It might not be in a user friendly package.

- Bill Templin (BT) – BAYES and SPAM are long-standing methods, they are faster, and we have more experience. My experience with the new package was that it wasn't really a ready to go package, and it's not user friendly. On the restricted timeline that we have, we're trying to not spend time chasing programs that might not provide better results.
- RW – It might improve the results non-trivially. Have a quick look at the paper, look at the results. For some of the difficult mixtures it performs better.
- PM – Are we close enough to adequate separation that we think that the software will give incremental improvement needed to separate CWAK?
- RW – I'd be surprised that this new method would get you part of the way there. The real problem is getting the right priors, getting in the right prior is a big help.
- CH – My gut feeling is that the increase would be minor.
- DL – We'd all like to see better discrimination, but it doesn't appear that we can do that for CWAK. This new program might (but not likely) increase the resolution in CWAK. If the gene lab has the time, then maybe they can use this new program. If we agree to that then we need to come up with a solution for what happens if we are still not able to divide CWAK.
- Karen Gillis (KG) – I understood from RW that there is a method available that might allow for differentiation among CWAK reporting groups and what I'm hearing from PM is that it is not worth trying. Our concern is the CWAK group. If there is any potential to make better estimates, then we should take that step.
- RW – I wasn't advocating any approach, I was just throwing out suggestions. Another incremental thing that might work is simulating fish without removing them from the baseline so that you don't reduce the baseline. These results are possibly a little pessimistic because you remove the fish from the baseline. ONCOR might be better.
- BT – SPAM results are considered to be optimistic, computing hypothetical mixtures and leaving those fish in the baseline, and those results are not much better than these BAYES results. ONCOR has some problems; it doesn't do things in a regional fashion. It's probably at least a week to get a hold of Masuda to see if the package is available, get the data into the right format, etc.
- RW – There are two differences in the SPAM vs. the BAYES results, you could look at those differences and see which makes the most difference.

- PM – Suggest continuing the analyses using the CWAK while also doing more program investigations. Does anyone object to doing both?

There was discussion on biological reasons why reporting groups within CWAK cannot be distinguished.

- Steve Brown (SB) – What kind of straying would explain this?
  - CH – No empirical evidence that I know of. Straying is one reason for this lack of divergence, another is recent separation of populations coupled

with large population sizes, in this situation there's probably a combination of all of these.

- Charlie Lean (CL) – Another thing that is playing a role in the differentiation between stocks is the temporal component. We could focus more on this temporal shift in the CWAK.
    - PM – How can we relate this to CWAK?
    - CL – We might not be able to distinguish one stock from another using geography, but you could look at timing of when fish return to spawning grounds. Look at fall stocks and see their proportion in the composition.
    - PM – Decades of high seas tagging shows that chum return timing is about the same.

Loretta Bullard (LB) – Called for a break.

Break: 10:15 AM
Resume: 10:35 AM

BT – Contacted Michelle Masuda during the break and she said that she is not working on the same package anymore. ADFG would need a week or so to get the package together and another week to get the analyses done. Masuda's sense was that this program might not help differentiate the groups further. She agreed to talk with ADFG after the meeting.

Casie Stockdale (CS) thanked the *ad hoc* committee and asked the technical committee if they had any input on how to divide CWAK.

- Bruce Weir (BW) – Thought the *ad hoc* committee's report was very helpful, if depressing. Suggested: a long way off there's sequencing. These markers are doing good overall, just not very good for CWAK.
- RW – Another option, you could get some insight by simulating more markers, using microsatellite data, allozyme data, and put together a virtual dataset to do some simulated mixtures and see if all three marker types make a difference in dividing CWAK, it might let you know how many markers you would need to develop to differentiate CWAK.
- RW – You'd have to do a lot more lab work to run all the mixture samples with non-SNP markers. This would be exploratory in the baseline, using datasets that exist with allozymes and microsatellites. It might take weeks to do if everyone wasn't already committed, but more likely months.
- CH – We don't have samples to run allozymes for the current baseline, so this work would be exploratory in nature.

Lisa Kangas (LK) – Is there a reason that this report will give different results from Doug Eggers (DE) report? There's a lot of pressure to meet this timeline, but this issue has been around longer than the weeks and months that we're losing, years have gone into this study. I need to represent my region.

- EV – There's a lot of complexity in that suggestion. This group has been adamant that we will meet these deadlines. The group has decided that the project would only go forward with both species, not only one. Any comments?
- PM – There are two studies of note, one was a tagging study and another study was genetics. The tagging study was useful in stock composition; the genetics was useful in identifying Asian stocks. Any information other than the June fishery would be new information.
- AN – The chum reporting groups are not significantly different than the Seeb work. The sampling effort was impressive. The reporting groups are so vague that I don't see what the value in analyzing all those samples. With sockeye, there is some interesting data there. With the reporting groups as is, there's not a whole lot to be gained from analyzing chum.
- LK – Suggested to change the timeline for chum, not drop it.
- Chuck McCallum (CM) – We have a timeline to have this report ready for Board of Fisheries (BOF). We are not getting more separation, so that's a huge disappointment. What will we lose if we don't analyze this data? That would take a consensus of the group. Do I understand the discussion going on here?
- Jill Klein (JK) – Are there any comments on what we gain or lose analyzing the chum? Do we gain anything towards what we set out to do?
- CM – What we could lose if we don't complete the chum analysis? The loss would be tremendous. Consider where we've come so far, I'd like to move past this point with the best face forward. We need to categorize our goals to move forward.
- LB – We got into this process, developed the timeframe based on what we could do, and now the BOF meeting timeline is driving this whole process. Take the time to bring the data that is good to the BOF.
- DL – Agree with CM. Asked LK what tweaking the timeline for chum means? Not being bound by a BOF meeting timeline? How much time will be necessary to investigate these other possibilities?

SB – Not sure how using the CWAK reporting group as one would hurt the group.

- KG – One of the problems in the beginning is that there are stocks within CWAK that are declining. The resolution is important so that we can finally get answers on which stocks are impacted negatively.
- LB– My concern is that these results will deem our issues laid to rest.

CM – Moved to bifurcate the analysis of sockeye and chum for WASSIP.

  - LB – Second.

- PM – As far as saving cost, most of these samples have been run. That money has been spent. Those markers that we agreed to use have been applied. We've incurred the significant amount of money. This project is about trying to find any stock in any fishery in Western Alaska. I'm sensitive to LB's concerns, I do not want to see the door closed on this issue, and the stakeholders have contributed a lot to this process. My sense is that the department is going to present the results that they spent their money on. My question is whether the department will want to participate in a process in the future with stakeholder participation. Let's not

flush the data that we have collected. SB is going to vote, let's keep the stakeholders in the game; the department is going to present these results with or without us.

- ML – Will the department present these results?
- EV – Not here to make that call.
- CM – One of the huge issues is the political cost. We've spent a lot of money that can't be saved. How much money could be saved, or how much mud will be on our face, if we stop the process now?
- EV – Significant effort that has been expended, not sure how to calculate political costs of interrupting process or monetary savings.
- CM – The political risk is still there.
- DL – I appreciate LB's comments. I'm concerned that if we go forward with the sockeye and drop the chum, that we might lose momentum on the chum. PM talked about loss of cost, but there's a large amount of scientific data. SB mentioned the fact of contemporary samples, more broadly spaced samples. I'm nervous about characterizing this study as unsuccessful; the success is characterized by how it was conducted. I'd hate to stall because we didn't get the resolution.
- PM – The MOU contemplates future use of the samples. I'll propose the motion to use the CWAK and have a plan B to pursue research to find further resolution within CWAK.
- LB – Wait until after lunch? Can we do a word-smithing exercise?
- EV – Motion on the table? CM
- CM – Not ready to withdraw this motion yet.

Roy Aschenfelter (RA) provided a perspective from Norton Sound. Lack of chum salmon is a major issue for Norton Sound. Need data to deal with issue. Don't expect this issue to be dealt with by BOF. A discussion on the management of Area M ensued.

Break for lunch: 11:45 AM
Resume: 1:01 PM

After the lunch break, CM withdrew his motion and PM suggested a new motion:

"CAMF moves that the AP approves going forward with the use of the CWAK reporting group with the understanding that the AP, the department, and the TC will aggressively pursue alternative analytical methods and marker combinations in order to better resolve CWAK chum salmon constituent groups."

- Seconded by DL.
- The AP and TC made suggestions to improve the wording of this motion.
    - EV – Clarified what role the department, AP, and TC would have beyond the timeline of WASSIP.
    - Tim Baker (TB) – Noted that the efforts to secure funding was from stakeholders, and wondered whose burden the additional finances would be.

- JK, RW – Clarified what analytical methods would be included.
    - Koljonen, Masuda, and Anderson.
- CL, PM – Timeline for additional work was discussed. MOU has more of a long term goal than the 2012 BOF meeting and the MOU allows the department to use the samples for future use after consulting with WASSIP signatories.
- CM – Emphasized that the minutes need to note how we are interpreting our MOU, so that we can understand where this motion is coming from.
- EV – Questioned whether passing this motion means we report the results with CWAK group at the BOF.
- PM – We should add the TC to the motion. We should stay on the timeline and have the results for the BOF meetings. If we have to change the timeline then let's do it now. Aren't we going backwards when we try to put in too many barriers?
- CL – We need to, as part of our report, talk about the limitations and the positives on how far we've gone. I just really doubt that we're going to have a satisfactory answer by a year from now.
- AN – One of my questions always has been, if CWAK is let go, what then? What does "aggressively pursue" mean? If we let the chum go, how do we make sure we pursue this aggressively?
    - EV – from the standpoint of our lab, we are fully interested in pursuing this. The commissioner is the one who can approve whether we will continue, what we will have funding for.
    - TB – My perspective, without the commissioner's word, we have made so much progress in the past 15 years, we will continue to work up additional baseline, and we have a huge momentum to keep working on it. The limitations are money and staff. We're working with the best there is, and if it takes years then we'll find the resolution for chum that we want.
    - EV – I feel much better looking at something like this, seeing that we're going to be moving forward together, and see that as a testament towards the success of our group. I'm still looking for more discussion on this motion.
- LK – We are all here for the same reason. I agree with the motion but rework the wording to: 1) exclude the insertion of a date deadline and 2) ensure that enough attention has been given toward pursuing differentiating among CWAK reporting groups, before moving forward. We would like to test this baseline more, as RW suggested, and when those tests are done then move forward with CWAK as we can.
    - BT – As a lab we have projects that will continue to study CWAK, for example the joint project with Tony Gharrett, Mike Garvin and Jeff Guyon which is looking for more markers and continuing baseline development, chasing several analytical methods for improving mixture assignments, hierarchical Bayesian methods, etc. We are committed to this region, so I can support this statement.

        - PM – Is there a way to set a timeline that would not interfere meeting the timeline that we're already on? Does the *ad hoc* committee potentially have a role in this?
        - BT – The way the mixtures are approved to be run, since we're doing sequential priors, we don't have time. The schedule is already squeezed. There are already 300-600 tables. We don't really have time to delay analysis, we could run them in parallel, but not push them off more.
        - EV – Let's explore the idea of running analyses in parallel.
    - RW – For clarity, BT says there's two ways of doing this: stop the process for chum and do these analyses and not make the deadline, or keep the chum process going now with the CWAK reporting groups and in the background, do these other analyses, and then you could reassess and if there's substantial changes. Then call a meeting and figure out whether to keep moving.
        - BT – Many of these decisions were made, to do the best that we could with the available science. I like the idea of having the flexibility to take advantage of new analyses.
        - DL – The original motion contemplated the parallel idea, plus going forward into the future. By shifting the motion around with a date, we're limiting ourselves and not putting the pressure on for future studies.
    - LB – Suggest the changes: "The advisory panel approves going forward with the use of the CWAK reporting group. However, recognizing that the resolution presently proposed for CWAK does not provide the level of resolution desired, the AP and Department, with support of the TC, will aggressively pursue alternative approaches, analytical methods, and marker combinations, in order to better resolve CWAK chum salmon constituent groups."
        - PM – Address suggestions of RW now, not with separate funding and proposals, in the short term and in parallel with ongoing progress. In the long term, let's not give up.
        - LK – What happens if the analyses change the reporting groups, what will we do then?
        - EV – We can put language in the motion, so that if analyses change the results, then they can change the timeline, but we should not change the timeline and hope that the analyses will change the results.

Break: 2:00 PM
Resume: 2:17 PM

- EV – BT and CH, are these 3 things (these 3 things are listed in the resolution that passed at the end of this meeting) reasonable to do before January?
    - CH – We can probably get the first two done, the third one is a little more difficult.

    - BT – We can have partial answers to all three of them, but maybe not full answers to all or any of them.
    - EV – We will run these two tests and then revisit the issue if there is more resolution within CWAK, it allows us to move ahead, with further discussion coming up
- JK – Is there anything we can discuss between now and the January meeting, with the AP and TC, about how these results will effect the future direction of CWAK?
    - EV – My hope is that these tests will create the groundwork for this discussion.
    - AN – It would be nice to have by our January meeting, some indication of what will come out of these analyses, so we can know what we need to be planning for in the future, what kind of funding we need to secure. I would be more comfortable having some more info by the next AP meeting.
- ML – What would happen if an agreement with this motion is not reached?
    - BT – Stated that the department would continue on with analyses with the hope that a resolution would be made.
    - EV – Indicated that it would come down to the director and the commissioner's decision.
- CS – Called for a short break.

Break: 2:45 PM
Resume: 2:51 PM

During the break, several AP and TC members crafted a new resolution:

"The advisory panel approves going forward with use of the CWAK reporting group for chum salmon on the established timeline. However, recognizing that the resolution presently proposed for CWAK does not provide the level of resolution desired, the AP and Department, with support from the TC, will aggressively pursue alternative approaches, analytical methods, and marker combinations in order to better resolve CWAK chum salmon constituent groups.
In the short term, these analyses will include:
Three analyses:

1) For simulations involving power analysis, implement the algorithm proposed by Anderson et al. (2008), which does not require dropping part of the baseline samples to avoid problems with lack of proper cross validation.
2) For mixture analyses, implement the method proposed by Koljonen et al. (2005), which they found performed better than standard methods (SPAM, Bayes).
3) To give a rough idea of how much additional resolution can be expected from modest increases in numbers of markers, create baseline datasets for a subset of key populations for which data are already available for three different marker types: allozymes, SNPs, and microsatellites. Using the combined sets of allele frequencies, simulate mixtures from the problem areas and see whether these modest increases in marker number and type substantially improve resolution.

Results from these analyses should provide the AP and TC a better foundation for discussing long-term approaches to achieving the desired level of resolution for CWAK chum salmon."

EV asked for further comments, and the question was called. The motion was reviewed and the AP and TC were asked if there were any objections to adopting the motion to the advisory panel. No objections were given and **the motion was adopted**.

Next meeting is January 17th and 18th, Tuesday and Wednesday.

Draft minutes of the last meeting will be up before the January meeting.

Meeting Adjourned: 4:32 PM