Western Alaska Salmon Stock Identification Project
Joint Meeting of Advisory Panel and Technical Committee
7 October, 2010
Hilton Hotel
Anchorage, Alaska

Chair: Eric Volk

Call to Order: 08:30

Attending: (Name and affiliation)
  Michael Sloan, Kawerak
  Loretta Bullard, Kawerak
  Michael Smith, TCC
  Tom Quinn, Technical Committee; UW
  Doug Eggers, ADFG
  Chris Habicht, ADFG
  Michael Link, BBNA/BBSRI/LGL
  Tim Baker, ADFG
  Robin Waples, Technical Committee; NOAA
  Milo Adkison, Technical Committee; UAF-Fisheries
  Bill Templin, ADFG
  Eric Volk, ADFG
  Chuck McCallum, Lake and Penn Borough
  Ty Spaulding, ADFG
  (Unrecorded) BSFA
  Pat Martin, CAMF
  Steve Brown, CAMF
  Nick Decovich, ADFG
  Tyler Dann, ADFG
  Jim Jasper, ADFG
  Jill Kline, YRDFA

Missing:
  Bruce Weir, Technical Committee; UW

Agenda
  1. Welcome and introductions
  2. Review and approval of agenda
  3. Presentation of current project status
      a. Project budget update
      b. Project timeline
          i. Current status
          ii. Any changes?
          iii. Finished by summer 2012
      c. Status of project components
          i. Fishery sampling review 2006-2009

1. Final report status
2. Overview
   ii. Harvest rate analysis
      1. Estimation of run sizes
   iii. SNP discovery
      1. Chum
   iv. Baseline update
      1. Chum
      2. Sockeye
   v. Methods
      1. Delineating reporting regions
      2. Establishing MSA model
   d. Other business

4. Review and approval of minutes from April, 2010 meeting
5. Scheduling of next meeting

Notes
Welcome and Introductions
    A. The meeting began with Eric Volk (EV; chair) welcoming everyone and each person introducing themselves. Fish and Game deputy commissioner David Bedford received a special introduction from EV.
    B. EV also emphasized that all four technical committee members wanted to be here, but Bruce Weir was not able to make it.

Review and approval of agenda
    EV reviewed the agenda. Agenda was approved.

Presentation of current project status
A. Budget update: WASSIP 0.75 million dollars was approved AR.43643
B. Project timeline: Project is proceeding to meet the summer 2012 deadline. To accomplish this, the laboratory analysis of sockeye salmon samples has been moved up while we wait for chum salmon markers to be developed.
C. Status of project components:
    a. Fisheries sampling review 2006-2009
      i. EV summarized the report, explaining tables and figures and explaining how the 2006-2009 sampling report is divided into three components, why some strata were not included or extracted, why there may be missing data from tables or why appendix tables may not have been included (closed fishery or no fish were caught).
      ii. Doug Eggers (DE) and Tim Baker (TB) emphasized that the sample selection was in proportion to catch on days sampled within strata. They also explained that because catch was different among strata, but the number-to-be-analyzed goal was the same among strata, that the sampling was not in proportion to catch among strata.

iii. Michael Link (ML) had a question concerning samples taken in proportion to catch on Appendix L9 (pg. 184). This precipitated considerable discussion and it became clear that:
1. The appendix did not reflect all the information needed to understand how fish were selected and what fish would ultimately be included in the final analysis and
2. That there may be errors in the report that need to be addressed.
iv. The term "significant fishery" was used in describing why sometimes logistics played into whether samples were collected or not. Loretta Bullard (LB) suggested using the term "representative fishery" instead of "significant fishery" because the former term does not imply the importance of fisheries to different users.
b. Harvest rate analysis
i. DE provided a power point presentation "Abundance of sockeye and chum salmon in WASSIP area marine fisheries"
ii. Assessment of harvest rates requires: An assessment of stock-specific catch in all fisheries where the stock occurs.
iii. Sockeye salmon run assessment: summarized sockeye run assessments from the WASSIP regions and sockeye outside WASSIP.
1. Problem areas for sockeye assessments are:
a. Kuskokwim, middle fork escapement; Kanektok only has weir operating part-time.
b. South Alaska Peninsula; to get total runs two-fold expansions were conducted.
c. Confidence intervals could not really be put on the stock estimates in the assessments.
2. Pat Martin (PM) asked how accurate tower counts are and if there was a comparison to other methods of counting. TB suggested that tower counts are more accurate than a mark and recapture method.
iv. Chum salmon run assessment: DE summarized chum run assessments from the WASSIP regions and sockeye outside WASSIP.
1. Problem areas for chum salmon assessments are:
a. No escapement information from Russia based on catch; assume that there are large runs.
b. Norton Sound-Golovin Subdistrict has experienced low runs due to fishing.
c. Kuskokwim; long-term sonar project early counts less precise, project has undergone serious evolution, recent counts are accurate. Weirs have been established for chum and coho. Chum is more problematic because of issues with catchability of marked fish.
d. Bristol Bay; escapement indices are comparable to catch.
v. All data presented are available on ADF&G website.
c. SNP discovery
i. Bill Templin (BT) presented a power point presentation "Selection of Chum Salmon SNP's for WASSIP"
ii. There was some confusion between department staff and the TC over the set

of fish used to develop markers and the set of fish used to screen these markers to select the best ones. CH clarified that the "backbone population set" was used for the latter and that just a few fish were used during the development of markers.

iii. RW suggested screening candidate loci using Eric Anderson's methods in new published paper in molecular ecology.

iv. Scoring loci: There was some discussion on the scoring of loci. Nick Decovich (ND) explained that some measures would be scored by rank, but that most would be scored based on their performance and standardized from zero to one and then multiplied by the weighting.

v. PM stated that the ability to choose SNPs depends on the biology of the salmon species and CH agreed.

vi. H-W equilibrium: RW raised the issue that difficult-to-score loci might show bias toward genotypes e.g heterozygotes may be less likely to be scorable. Milo Adkison (MA) asked if H-W equilibrium has little ranking power. Jim Jasper (JJ) and CH said any deviations from H-W equilibrium will result in exclusion during SNP selection.

vii. BT said that we are being conservative in the selection process because of the tissue availability and quality for the baseline was lower than with sockeye.

viii. Timeline: PM asked when SNP selection and final ranking will take place. CH responded this year, if not this month.

ix. Backbone effect on selection: Mike Sloan (MS) asked how the backbone populations were selected and if there were implications from breaking sub-districts? ND said that backbone populations were optimized by regional selection practicality. CH asked if the AP and TC agreed that ADF&G should focus locus selection in western Alaska. MA asked if we were taking broader questions into account to make the baseline useful for other applications. BT explained that this has been a big topic of discussion and that we included backbone populations to enable us to determine loci that are important for these other issues. The broad-scale PCA will include them, but the western Alaska PCA will be weighted more heavily. BT said that solving WASSIP is priority one, the rest are being incorporated as well as possible.

x. CH - the loci we're picking to pull apart western Alaska will likely do well everywhere else.

xi. Linked loci: CH responded to why it is appropriate to delete one of the paired loci or to combine linked loci.

xii. ND and RW - discussion of fORCA to determine number of SNPs to use for MSA.

xiii. RW commented that all of the processes described are logical. When you just do a sum of ranks for the final ranking, you're inadvertently weighting each by the number of factors that you're ranking. The weighted approach for chum salmon is more controlled. JJ noted that we are weighting things more heavily towards distinguishing among regions within Western Alaska. RW noted, and ND agreed, that really high FST may trump some of the

other ranking scores.

xiv. Definition of "Western Alaska": PM pointed out that "Western Alaska" has been used to mean different things and has different connotations. WASSIP definition of "Western Alaska" includes everything from Chignik to Kotzebue. Which populations are you trying to discriminate between? We need to define "Western Alaska" for different purposes. ND defined Western Alaska from "bookend" populations in Chignik and Kotzebue. PM agreed that this is an acceptable definition, but we need to be clear in the publications. EV noted this discussion but tabled it for later.

D. 12:30 EV calls for lunch, meeting resumes at 13:44.

a. Baseline Updates
    i. Chum salmon
        1. ND presented the chum salmon baseline update
        2. PM asked a question about the fall Kuskokwim. BT responded that they are distinctive but in such small quantities that they might not be identifiable in a mixture.
        3. Steve Brown (SB) pointed out that these groups are what you're aiming for, but not what has been defined? ND confirmed.
        4. Jill Klein (JK) asked if hatchery stocks are in the baseline and if they are identifiable. BT responded that they are in the baseline, but we might not be able to distinguish them from their wild counterparts.
    ii. Sockeye salmon
        1. Tyler Dann (TD) presented the sockeye salmon baseline update
        2. LB asked if the Norton Sound reporting group could be divided into two different groups. TD responded that there aren't enough samples to break it into two using the current guidelines.
b. Methods
    i. Delineating reporting groups
        1. CH presented "Identifying appropriate reporting groups for WASSIP: adjusting scales to increase precision". TD and CH explained that we are looking for standard reporting methods for WASSIP that will be acceptable to the AP and the TC. We are looking for input from the AP on stakeholder needs and from the TC on how to set up guidelines.
        2. There was discussion about why not just allocate to the finest-scale reporting group possible and then just combine smaller reporting groups into larger ones. It really comes down to reporting and stakeholder needs.
            a. Both TB and Beth Stewart (BS) pointed out that the method provides estimates to fine-scale regions – why not just report these and then also larger-scale reporting groups?
            b. TB pointed out that we will report the fine-scale groups in the appendix and the broader-scale estimates in the main table. This combination will provide all the information, but highlight the most relevant information in the tables. MA asked how hard it is to add

up the different estimates to reporting groups. And JJ responded that this calculation/reporting will be pretty easy.

c. JJ pointed out that this is an iterative process that is influenced by the mixture which you are trying to allocate.

d. CH pointed out that the stock composition estimates caught in nearby commercial fisheries are expected to be largely made up of fish returning to nearby drainages, less likely to go to further drainages.

e. There was a lot of discussion about whether the 380-fish threshold for minimum baseline size should be flexible. There seemed to be consensus that flexibility was appropriate and dependent on whether the mixture was likely to contain fish from that reporting group or not.

f. TD – in Norton Sound there aren't many samples (breaks down to each collection). Snake River population is probably very different from other populations and unable to pool.

g. MS asked why the level of distinction was not down to the level of Lake Clark included? CH responded that this level of distinction was not used before because it was not of interest to managers in Bristol Bay and did not seem to be of interest to WASSIP stakeholders. DE added we don't manage on that scale and TB said that it's valuable to have that information, we have it now, but that we might not need to analyze at that level. BS asked if the database will be available so that we can get to some of these questions later. EV said yes, but that we want to define appropriate groups for WASSIP now.

3. There was discussion about specific reporting groups and the needs or wishes of stakeholders. BS pointed out that we need to explain the reporting groups better to the fishers, because they don't make sense from a commercial fisheries sense. If there is no difference between the different reporting groups, then explain why.

a. Yukon and Norton Sound

1) JK – asked if people interested in Norton Sound fish within Norton Sound or from outside Norton Sound? MS responded that they are interested in both and that it would be best if we can break out the lakes.

2) CH – there are not many fish that will be caught in Bristol Bay that are headed to Norton Sound so the baseline will not be influenced much by those mixtures. Within Norton Sound, it might be possible to break these groups out with smaller baseline and smaller mixtures.

3) MS – were some of the fish from the collections in Norton Sound culled by the temporally overlapping samples? DE – no, they just weren't sampled that much.

4) There was discussion about what to do with the Andreafsky population. Do we include it in the Norton Sound reporting

group or not. DE suggested just dropping it from the baseline since it represents a very small run.

    b. Chignik and Surprise Lake
        1) CM – If you put Surprise Lake in, will it detract from the ability to allocate to Chignik or Black Lake?
        2) CH – it is not that large of a collection, nor will it contribute much to the mixtures, so it likely won't influence the assignments. Maybe drop this from the baseline also?
    c. Nelson Lagoon
        1) MW – can we move Nelson Lagoon into its own reporting group and put Northfork in with the other reporting group? CH – I will check and get back to you.

4. RW – there could be a real world case where there are more samples that are in the mixtures than in the baseline. There also may be some drift in the baseline samples between mixture years. You might want to be more tolerant with the cutoff level for baseline-to-mixture ratio for assignments especially for older baseline collections. Further, you might want to use mixtures to strengthen your baseline.

5. PM – have there been any updates on methods for estimates? Do we still have confidence intervals that include zeros? Does that exclude those estimates?
    a. BT – Jim did some detection work but we haven't come up with a rule of thumb on estimates that include zero.
    b. JJ – Milo came up with a plan for a contingency table for estimates and likelihoods of falling within certain confidence intervals.
    c. MA – there are different statistical perspectives for different management objectives.
    d. PM – do we expect ongoing work here?
    e. BT – we need to nail down methods in order to meet our deadlines. During the next circulation to the TC, we need to address this and other issues.
    f. RW – the level of precaution needs to be determined by the scientists. What that is used for is up to the managers. The TC can give some guidance, but the ultimate decision is up to the managers.

6. PM – our initial intention was not to find the needle in the haystack. Now that we have all the data, it's a little too late to ask. We have the right people to try and answer these questions with the data we have.
    a. EV – should we add more now, in regards to reporting groups or do we want to wait for a technical document?

7. PM – just want to make sure that the estimates of small populations should not be more than the escapement. That will be a defining level of confidence interval. This could be used as a threshold? TD and CH – maybe.

8. MA – regional model verses Pella and Masuda? If you start breaking out a small stock with equal prior weight to a larger stock to multiple regions, could cause problems. JJ – we will perform sensitivity analysis

of priors. With larger mixtures, the data are driving the estimates and priors are not as important.
9. CH – need to get the technical document out soon, so we can make these decisions soon. EV – both Doug's document and Jim's documents will be out soon.

E. Break 3:33; Resume 3:55
   i. Establishing MSA model
      1. CH – This was put on the agenda as a reality check – we are testing new methods, but we will only use published or heavily reviewed methods for WASSIP.
      2. TQ – do you wish there was anything else? JJ – yes, definitely but there's not time for all of it. I'd like to learn how to do the cost-benefit analysis that Milo is talking about, which is published. We can use that with confidence.

F. EV – other business?
   a. Meeting frequency
      i. EV – is meeting twice a year sufficient? June of 2012 is not far off and we only have 3 meetings between now and then.
      ii. BS – need to meet as necessary to make the deadline. Try to schedule around council meeting?
      iii. TD – reporting groups is a priority for the genetics folks.
      iv. JK – map out what we need to know by when?
      v. BT – a January meeting would be focused on some very specific point.
   b. Approval to analyze samples
      i. PM – when are we analyzing samples?
      ii. CH – we're running them in the lab now.
      iii. PM – was that approved? I don't think that was approved, and if it's not in the minutes then we need to have a formal approval.
      iv. BS – motion to move forward with lab analysis.
      v. BM – second
      vi. EV – no analyses will be done on mixtures until approved. ADF&G is trying to follow the MOU. The departure from MOU is a practicality, but we need to strive to get back to the MOU and work on better communication. Okay to keep moving ahead?
      vii. BS – how do we give the consensus in accord with the MOU
      viii. EV – need to make a decision on analyses very soon. Any objection to moving forward with lab analysis? None voiced.
   c. PM – white papers and replies? We need to encourage more feedback from and to the Technical Committee and Advisory Panel. Can we do more to get that?
      i. CH – I could highlight places where there are specific questions for specific people.
      ii. RW – that would be great.

G. Review and approval of minutes from April 2010 meeting
   a. BS moved to approve the minutes to last meeting. BM seconded.
   b. EV thanked Lisa and Ty for taking notes. Will review the minutes and make alterations and send out. Minutes approved from last meeting.

H. Scheduling of next meeting
    a. Council starts on the first Monday in April, goes to the noon on Thursday afternoon. After discussion meeting tentatively scheduled for17th of March 2011.
    b. PM – were the samples shown last meeting WASSIP samples?
        i. TB – those were for Dann et al. and do not totally represent the WASSIP samples that will be statistically analyzed.
        ii. PM – can we get an updated table?
    c. EV – can we publish a Bristol Bay addendum to address which fish will be selected by time stratum for WASSIP and get that out to AP and TC members?

I. Adjourning
    a. BS moved to adjourn. CM seconded. Adjourned at 16:30.