FEBRUARY 24, 2023- ALASKA BOARD OF FISH, ALASKA PENINSULA / CHIGNIK

DR. DANIEL SCHINDLER 1:30PM
Professor of Fisheries, UW. Comments on #140

Alaska's fisheries management is the envy of the world. And the reason for that is that there is sustainable salmon policy that emphasizes escapement as a way of management. And also emphasizes subsistence priority as a way of respect and social equity. Another issue is the challenges of mixed stock fisheries and that it is of the case, and I would argue pretty much in every fishery in Alaska, you have multiple stocks that are being exploited at the same time. Some of those stocks are very strong and abundant, some of them are very weak with low abundance and productivity. Alaska has grappled with this problem for decades. In fact, the escapement policies that are in place show time and time again that this is the way to manage different stocks and to conserve stocks that are on the ropes.

One example of this, from the Kvichak, the world's largest sockeye producer, period. Nothing even comes close to it in the last century. But in the 1990's and early 2000's, for reasons we still don't understand, the Kvichak started declining in abundance and productivity. It got to the point where ADF&G had to put severe restrictions on harvest and it was essentially shut down for several years. The whole purpose for doing that was to allow escapement into the river and allow that stock to recover, which it subsequently has. At the same time, the Alagnak River, or what some people called the Branch in those days, literally exploded and for several years salmon escaped up that small system. Those fish could have been harvested but they weren't. That was the cost of conservation on the Kvichak.

So there is precedence for this type of approach in the past and it is very effective form of salmon management in Alaska. With the respect to weak stocks, last week, ADF&G reported, trying to put into context what percentage of the runs were actually harvested. Lots of details in that report, an immense amount of work, getting down to one number, and that's 5%. The average percent of all (AYK bound) stocks harvested in the South Peninsula fishery.

That sounds like a low number but I think there are two important points to think about what 5% really means.

First of all, that 5% is a number that is reached after a long chain of calculations and assumptions. And then you average across all that stuff. From a precautionary approach, which is part of the Sustainable Salmon Policy, we should be considering that 5% against the alternative of how bad can that number actually be? It could be a lot higher because those numbers are subject to so much uncertainty. So the 5% is averaged against a precautionary approach, I guarantee it is higher than 5%.

The other issue is that 5% still needs interpretation and context. When a run is up against its carrying capacity, plus or minus 5% means little to contributing reproductive potential to that population. But when a population is down at a very low abundance, 5% can mean a lot. You have heard this week that "every fish matters" and see slogans outside, it sounds like hyperbole but when the stocks are on the ropes every fish *does* count a lot more than when the populations

are high abundance. In the case of AYK stocks right now, it is very obvious to everyone in this room that those stocks are very depressed abundances. 5% means a heck of a lot more to those populations now that if they were more abundant.

The last point I want to make – RC84, the original proposal referred to as the original "adaptive management proposal" as an alternative to Proposal #140.

(1) It's a complicated scheme. And we would have to trust that these guys could pull it off in terms of coordination, sampling, etc. But those aren't my concerns.

(2) My first concern is that the use of the term has been co-opted with this proposal. This is *not* adaptive management. "Adaptive management" means having a clear objective. The objective here is to reduce fishing pressure on AYK chum stocks. But the way RC84 is set up as an objective is to avoid a cap. In other words, to conduct adaptive management you
    a. Set an objective
    b. You initiate whatever you are going to do
    c. You assess relative to the objective
    d. You adjust your plan

    But in RC84 there is no way to assess how well you are doing relative to the objective because the objective is back in the watersheds of the AYK. You won't know how well you did until the end of the season when you can count escapements up all those rivers. So we should not be talking about "adaptive management" for RC84.

(3) My last point is about trigger points, or caps. This comes back to the 5% statistic. What is reasonable for a cap if the objective is to protect biological productivity? It depends on the status of the stock, If, for instance, the Yukon and the Kuskokwim produce as many chum as they have in the past, on peak years the chum are upwards of 4million fish, if we get one of those years, Area M is going to reach a cap really quickly because the number of fish that are intercepted is a function of how many fish are there, when you fish, and where you fish. So, having a cap actually works against what Area M should be striving for. If there are a lot of chum out there, the number of chum caught probably doesn't matter to the populations back in AYK rivers. But if the populations in western Alaska river are severely depressed like they are now, then a few thousands of fish can make a big difference. So, proposing these caps or trigger points, I would argue works against the interests of Area M fishermen and it doesn't protect Area M's chum stocks.

Q&A
Wood: Just for the record, give a brief background. I know you have been involved in these fisheries a long time.

Schindler: I started working on Alaska fisheries in 1997, so about 25 years. I am faculty for what used to be called the Fisheries Research Institute (FRI) at the University of Washington. FRI started working in Alaska salmon in 1946, before Statehood. We have maintained camps in Bristol Bay, out of Chignik. We do independent science, working collaboratively with ADF&G,

with the fishing industry, many fishing communities, etc. Many of our grad students now have jobs within ADF&G. My work on salmon ecosystems started in the '80's on the Frasier River in British Columbia. Since then, most of my work has been in Bristol Bay and Chignik. In the last 15 years I have been working on AYK Chinook and chum salmon.

(BOF member) Wood: We have been given presentative by Dept staff (on the run reconstruction) and CWAK came out a 5.9%. With the stocks being in the state that they are, what is the significance of a 5.9% harvest rate?

Schindler: That's going to require some calculation. 2 things I think are noteworthy.

(1) That's a highly uncertain estimate. We know it has to be above 0%, but the upper bound is something greater than 5.9% and what we really need to ask is: how high could it be?
(2) The second issue is the relevance to the population depends on status and goal. If your goal is to rebuild these stocks, then a higher harvest rate is going to suppress how quickly they can rebuild. Obviously, any harvest will reduce the number of fish that spawn. And that feeds back into the recovery rate when conditions becomes more favorable.

Wood: Should we be shocked at 5.9% or is it to be expected with the state of the salmon

Schindler: I don't know what the expectation is. The expectation could be anything. The reality is that that 5.9% is calculated where the harvest is (Area M) I think those data are probably reasonable. The ADF&G Gene lab is state of the art. Genetics tools exist now that would have seemed impossible ten years ago. The uncertainties in the genetics are very low. Where the uncertainty is is comparing that number to whatever fish made it to the terminal watersheds. Because we have very poor data on how many of those fish have actually returned to western Alaska waters. So what you need to do is run scenarios, with different assumptions about the few observations we do have into watershed scale estimates. The way you approach this is to do a full uncertainty analysis for the first assumption to the last assumption you make to come up with that 5.9%. As far as I can tell that hasn't been done as part of that report. So the upper bound is certainly higher than 5.9% with a higher impact on the population.

(BOF member) Zuray: I have a question about these moving caps that are being presented in various proposals. Could these moving caps be valid? Like right now chum abundance in AYK, if that never change, could a set moving cap be valid? Because it is the variability that screws it all up?

Schindler: Absolutely. This is Fisheries 101. The variability in any fishery is a function of where do you fish, when do you fish, how long do you fish *and how many fish are there.* The only thing we have control over are the fist three things. We have no control over how many fish area there in any given time strata and its very unpredictable. If you look at the returns of chum to the Yukon… and our errors on those estimates are very high… but they are also boom/ bust, boom/bust… So our ability to predict so that we could proactively manage that is pretty close to zero. Basically, what you have to be able to do is figure out a mechanism to allow enough fish though, independent of knowing how many fish are coming. That's why 140 is a very reasonable proposal because it provides windows for fish to come through. The number of fish

to be caught is a function of the number of fish that are there (when fishing occurs.) But we don't know that number ahead of time.

Zuray: I see your point, thank you.

Commissioner DVL: So, I guess, coming back to that, if you don't know what's there, why wouldn't you want some kind of trigger cap if these rates are harvest are potentially underestimated. Why wouldn't you want to have some trigger as an upward cap?

Schindler: Because the biologically relevant cap depends on abundance. If next year , by some miracle of nature, we have 6million chum coming back to Western Alaska, and you have a 300,000 fish cap, in Area M they are shut down. So 6million fish swim by, more than is needed for escapement, subsistence harvest, or other harvest, but Area M is shut down and can't fish sockeye. On the other side, what if next year, western Alaska rivers produce 200,000 chum.. which is possible given current conditions… and your cap is 300,000, 1/3 of which are western Alaska chum, then you are seriously hitting them. The problem is, we don't know how many fish are coming next year. So caps do not work. Caps are a good way to estimate how many fish are there (in Area M interception rates.) The more fish are there, the more you can catch.

DVL: I would agree with that, however, if we can't accurately predict what will come back, why wouldn't you want a fail safe to keep chum harvest at some current level? So that you don't end up with 800 or 900,000 chum harvested?

Schindler: I agree. You want something that is failsafe. But putting a cap on is not failsafe. Because putting a cap on does two things. (1) runs the risk of having too high a cap, or (2) runs the risk of having too low a cap if returns are big. And that will constrain Area M fisheries. So, the alternative is to say, if we don't know how many fish are coming, providing the occasional window to allow fish to move through the district and clear the district, which means it has to be longer than one or two days, so that you make sure you get enough fish back. That's the way that every mixed stock fishery I know of is managed. There is a front-end closure on the Kuskokwim for Chinook to allow the first pass of fish to get through because they are going to the upper watershed. In Bristol Bay, they have gone out of their way to make sure that they distribute their escapement over the course of run as a way to maintain stock diversity.

Chair Carlson-Van Dort: To follow on the Commissioner's line of thinking, I understand the bind that puts a manager in, it almost sounds like an allocation plan but we are allocating to the river and then when you get into a harvestable surplus, if focusing just on escapement and ANS, potentially a trigger could go away if you tie it to the fact that AYK … (could not hear)

Schindler: That's true, from year to year you don't really know if you have made escapement until July or August. So what you need is a strategy that is robust under the uncertainty. Caps don't do that. Caps do just the opposite. They may not be enough when stocks are down and too restrictive when stocks are up, so you need an alternative strategy. And that's why windows work. They aren't perfect … It's sort of the way Chignik and Bristol Bay work because they have real time data, with counting towers or weirs right where fisheries occur. Area M operates differently. You need robust management strategies to give fish the best chance for getting

through. In my professional opinion, windows is the way to do that. Caps constrain both the high end and the low end.

Heimbuch: I feel the same way. I have been working a solution using relative abundance of chum to sockeye. Maybe adaptive is not the right word. Sideboards, triggers would have been a better way…..

Schindler : The challenge is that sockeye numbers are also bouncing around the map. Right now we are seeing record catches of sockeye in South Pen fisheries because Bristol Bay sockeye runs are so high. So my guess is that chum are going to have a lower proportion of catch while sockeye are so abundant. Ratio tactics are easily seductive and tricky – I don't think it is the solution.

Wood: Windows have been advocated twice here. 72 hours is the proper time. What is your opinion?

Schindler: I can't tell you what that number is. I think we should explore that. What I can tell you with certainty that it has to be long enough for fish to enter and exit that area before they are harvested. Boats are mobile. They can get on fish within 24 hours. Two days gives fish more opportunity to pass through. Three days is a reasonable starting point. But that number could be refined based on some science, computer simulations. One day is not enough… that's pretty clear. That's a big district – fish cannot move through that district in one day.

Wood: We aren't going to have time to calculate all that before we have to vote, but 72 hours is a good starting point.

Schindler: in my opinion, that is a very good starting point.

Chair Carlson-Van Dort: What I am taking away from this discussion right now is to "keep it simple, stupid" and we are over complicating with triggers and caps. It really boils down to passage.

Schindler: Absolutely. Keeping it simple is always going to be effective. The times when you can get very technical and complicated are places you have a lot of control. An example is the Chignik weir with literally hourly passage info. There you can get fancy with management. I would not be fancy with Area M. Simpler is better.

Heimbuch: I am also taken with the notion that windows are completely --- with proportionate abundance through that time. No one gets off scot free. There are still some contingencies.

Schindler: What you can do if you really want to with conservation is to have windows *and* caps. You would be letting fish through on windows, and you would also be allowing some fish to be caught to run genetics, But, because we don't know abundance, allowing fish passage has got to be priority 1

Zuray: To keep things simple, for this meeting, would you say looking at 140 as it stands and making it acceptable with time adjustments, windows

Schindler: That's a tough question on what is acceptable depends on who you ask. But from a biological stand point, giving those stocks a chance to get to their natal rivers, windows have to be implemented. There has to be enough of them and they have to be long enough so fish can get through the district before they are exploited.

Zuray: I just see that as something that could be worked out within the time we have.

Schindler: short term, windows is a place to start. Long term, you may way to do some science, simulations, tagging, and figure out what is the optimal way to figure our passage.

Wood: You raised genetics, but we are told that we can't tell one stock from another. Is that because studies haven't been done or because we can distinguish?

Schindler: A bit of both. The fish that can't be distinguished are populations within coastal western Alaska. But fish going to the upper Yukon are distinct. CWAK chum are distinct from Asian chum. So there is some resolution in the genetics. The ADF&G gene lab is pushing the frontiers of genetics and fish stocks at a global level. I say keep funding them, letting them try to find markers that would allow them to distinguish stocks more.