ALASKA STATE LEGISLATURE
JOINT MEETING
SENATE RESOURCES STANDING COMMITTEE
HOUSE RESOURCES STANDING COMMITTEE
January 23, 2008
01:07 p.m.

MEMBERS PRESENT

SENATE RESOURCES

Senator Charlie Huggins, Chair
Senator Lyda Green
Senator Lesil McGuire
Senator Bill Wielechowski

HOUSE RESOURCES

Representative Carl Gatto, Co-Chair
Representative Craig Johnson, Co-Chair
Representative Anna Fairclough
Representative Bob Roses
Representative Paul Seaton
Representative Peggy Wilson
Representative David Guttenberg
Representative Scott Kawasaki
Representative Bill Thomas
Representative Neuman

MEMBERS ABSENT

SENATE RESOURCES
Senator Bert Stedman, Vice Chair
Senator Gary Stevens
Senator Thomas Wagoner

HOUSE RESOURCES
Representative Guttenberg
Representative Bryce Edgmon

COMMITTEE CALENDAR

Kenai River Fish Model Presentation by Ray Beamesderfer

PREVIOUS COMMITTEE ACTION

No previous action to report.

WITNESS REGISTER

RAY BEAMESDERFER, Associate Consultant
Kenai River Sportfishing Association (KRSA)
Fisheries Scientist
Cramer Fish Sciences
Gresham, OR
POSITION STATEMENT: Presented a computer model for managing Kenai River fisheries.

ROLAND MAW, Executive Director
United Cook Inlet Drift Association
Soldotna, AK
POSITION STATEMENT: Criticized the fishery model.

BRENT JOHNSON, President
Kenai Peninsula Fishermen's Association
Soldotna, AK
POSITION STATEMENT: Criticized the fishery model.

ACTION NARRATIVE

CO-CHAIR CARL GATTO called the joint meeting of the House and House Resources Standing Committees to order at 1:07:37 PM.

Presentation of Kenai River fisheries model by Ray Beamesderfer

CO-CHAIR JOHNSON said there was a meeting in Palmer with the finance subcommittee for fish and game, and it came to light that there was no good scientific base for some of the decisions the legislature makes. So, he asked the Alaska Department of Fish & Game (ADF&G) to come up with a plan "to allow us to exercise good science," and not manage the resource on a crisis basis. "There's a closing – we don't have enough fish. We close it – too many fish, we open it." This is based on "a count that may or may not be accurate." He asked ADF&G the cost for the legislature to start making good, sound decisions based upon science. This meeting is the first step. The governor said Alaska manages fish on science not special interest. It is a step to stop making emotional and political decisions and use good, sound science. This meeting is not an allocation debate.

1:11:10 PM
RAY BEAMESDERFER, Associate Consultant, Fisheries Scientist, Cramer Fish Sciences, Gresham, OR, said he will give an

informational briefing on upper Cook Inlet fishery issues. He will focus on a series of projects that were funded by the legislature and a fishery model that he has been working on to interpret that information. He said he is an independent fish scientists working with the Kenai River Sportfishing Association (KRSA). He works from California to Alaska and recently worked on the scientific certification committee for the Marine Stewardship Council. He once worked for the Oregon Department of Fish and Wildlife on sport, commercial, and native fisheries. A commercial drifter in Oregon told him he is a hero there but in Alaska, "you're working for that blankety blank sportfishing association." In Oregon he did risk modeling for the Endangered Species Act "so they can keep fishing" under the act. But science is science, and the fish don't care who catches them. He won't advocate for one group or another; he will advocate for science not allocation. "I'm particularly here to support the Department of Fish and Game's continuing research … to apply in Cook Inlet."

1:14:30 PM
MR. BEAMESDERFER said he will discuss research projects that are starting to produce some results; problems that led to that research; and a modeling tool that he has been working on. He will also point out needs for continuing work. Fish managers have to make difficult fish allocation decisions that impact people's lives. It is tough to know what to do or to defend what one does. It is more difficult given the population growth and increasing demands. He showed a graph of the competing uses and commercial fish prices, which has tended to decrease. Commercial fishers have to catch more fish just to stay in place, and they are now competing with more people for the same number of fish. The complexities of the fisheries compound the problem. There are multiple users and multiple species with mixed stock. Another problem is that it is difficult to not catch non-target fish.

1:17:09 PM
MR. BEAMESDERFER said sockeye are the money fish and the popular sport and personal-use fish. He showed a graph showing how often management goals, such as in-river spawning goals, have been met. The graph shows it to be a low number. The managers do a great job, but the system is complex and information is lacking.

REPRESENTATIVE SEATON asked for an explanation of his graph.

1:18:07 PM

MR. BEAMESDERFER said 20 percent signifies that in only two out of ten years in the 1980s the Kenai sockeye in-river goals and the spawning escapement goals were both met. The escapement could have been over or under the goals. Meeting one goal and not the other also puts it in the failed category, he explained. There are tiered goals in the Kenai: to get enough fish to the river for fishing and escapement to maintain the future stocks.

REPRESENTATIVE SEATON surmised that the graph "is saying that they weren't within their minimum or maximum. So those years in which there was over escapement is shown as … not meeting the accuracy."

MR. BEAMESDERFER said yes, the managers try to keep escapements within a range.

1:19:41 PM
REPRESENTATIVE SEATON suggested that if all fish went up the river, the goals were not met.

MR. BEAMESDERFER said yes. Nobody expects that every goal will be met all the time. It is impossible because some runs are late, some are small, etc. The manager attempts to optimize the net benefits across all of the goals. There might be a very good reason for being off the goal. It may be to protect the escapement into the northern district or some other reason.

1:21:06 PM
REPRESENTATIVE WILSON asked if the numbers of people fishing are counted and how that fits into the graph.

MR. BEAMESDERFER said the management plan predicts the number of people fishing. The plan manages for optimum goals but the fish are in charge. Managers make adjustments throughout the season to try to hit the goals. Despite missing the goals, the Kenai fish are doing great. Stocks, harvests, and productivities are very high, so the graph just reflects the complexity of managing the system.

1:22:38 PM
REPRESENTATIVE SEATON said he tenders in Cook Inlet. He asked if the 16 percent means that the goal was met and the rest represents over-escapement "because of the management strategies that had closure windows when they couldn't open to take the fish … so all of that pink in the 2000s are over-escapement."

MR. BEAMESDERFER said the 16 percent represents a year where both the sonar goal and the escapement goal were met. In 2000 and 2001, the sonar goals were met but the fishery was bigger than expected and the escapement goals weren't met. And there is also a series of over-escapements in those years, "so I was actually surprised when I went through the data that it's not a new advent." It is difficult to forecast the run size. So, it includes some spawning under-escapements and over-escapements, and it includes some in-river goal over-escapement.

1:24:28 PM
MR. BEAMESDERFER asked about progressing in the face of such complexities. The stakeholders have been struggling with it. Users want to know how any change in management affects them; there are so many moving parts with hidden consequences. The KRSA asked for help, and he told it that all major West Coast salmon fisheries use computer models. KRSA asked him to build a model, so he "stole one that was already built." The model is fairly routine, and one for the upper Cook Inlet was developed by Phil Munday at the Auke Bay Lab and published in 1993. Mr. Beamesderfer adapted it with the latest information.

MR. BEAMESDERFER said the model is a giant spreadsheet of how many fish escape and are caught for a given year for a given run. He named the model FSCAPE. It provides a way to organize the data and systematically evaluate alternatives. The Cook Inlet fisheries are managed with a model that is only in people's heads, "and not everyone is managing off the same page." The axiom is that all models are wrong but some are useful. All details cannot be captured in the model, but it is a powerful analytical tool.

1:29:09 PM
MR. BEAMESDERFER said he ran through the model. The variables are time of year (June into August); time of day; location; size of run; stock composition, escapement; harvest and others.

1:32:37 PM
CO-CHAIR GATTO about the graph and the pattern of escapement versus the fish that show up.

MR. BEAMESDERFER said it takes a certain number of days for the fish to move from the bottom up the inlet and up the river.

REPRESENTATIVE THOMAS said he is the only permit holder in the building. The first graph set the whole attitude, and it was wrong to say that commercial fish value has gone down. The Exxon

Valdez oil spill of 1988 caused fish values to plummet, and it has never recovered." When using a graph like that "at least say … we've never recovered." He doesn't like the comparison of sport and commercial fish value and that sport fish are worth more now. He takes insult to that. He spoke of his fishing history, fishing by hand in a small boat without a fathometer or other modern equipment. He now has autopilot, GPS, sonar, and monofilament net, and ADF&G has not used that in the models. Bristol Bay is a good example. The models don't change to show the aggressiveness of the fishing fleet. He repeated keeping in mind the Exxon Valdez disaster.

1:36:04 PM
CO-CHAIR GATTO asked about sockeye dollars per pound and that the demand didn't change but the supply must have changed dramatically. He said 1988 was not the bottom – "we've had worse years." In 2003, the price was worse. Is Representative Thomas making a correct statement regarding the Exxon Valdez or has Alaska recovered from that?

1:37:15 PM
MR. BEAMESDERFER said clearly the Exxon Valdez "threw a big hairball in the whole fishery up here." But the long-term trend reflects a combination of conditions. There are as many sockeye as ever being caught because the management system has improved. The price is driven by market conditions. Competition with farmed salmon caused the price to bottom out at the beginning of the century, but it is coming back. The graph represents fluctuations, and he didn't want to devalue commercial fishing.

1:38:57 PM
CO-CHAIR GATTO asked if the price went back up because consumers decided that farmed fish aren't good; they want wild fish.

MR. BEAMESDERFER said he is not an economist, but it is consistent with what he has heard.

REPRESENTATIVE SEATON said to recognize that the legislature had a salmon industry task force and provided value-added credits, refrigeration programs to improve fish quality, and other things. Most Alaska fish was shifted to a fresh product and it took awhile for Alaska to catch up, and the legislature is responsible for some of the value increase. But there are many factors figuring in on fish prices, he conceded.

1:40:29 PM

MR. BEAMESDERFER said there are “really cool things” that can be done with the model. “We can game out different fisheries in different alternatives and see what it’s going to take to get the biggest bang for the buck.” “We don’t have to implement a management plan and work it through ten years to see how it’s going to work; we can game it out and get some sense of [how] it’s going to work under different combinations of conditions.”

REPRESENTATIVE WILSON asked if fish lifecycles are included.

MR. BEAMESDERFER said there lifecycle models, but his is just looking at the fishery in any one year. To get a full picture of what that means, the model would need to look at a generation. ADF&G does those models to capture long-term effects of fishing.

1:42:36 PM
CO-CHAIR GATTO noted the dramatic change after July 20.

MR. BEAMESDERFER said the model can game out the effects on escapements and of fishing on downstream fisheries. This is the 2005 Kenai River sockeye sonar counts. There was a mandatory fishery closure on Fridays to pass fish onto personal-use and sport fisheries. In 2005 it worked well. It was a normal year and the commercial fishing time was loaded in the front part of the week, and the closure was timed to get the fish in the river during the weekend. It works in some years. When fish were late, there were a lot of fish in all the fisheries. The model is useful for predicting when that management technique might work.

1:44:55 PM
REPRESENTATIVE SEATON asked about the escapement for that year.

MR. BEAMESDERFER said the goals were exceeded in 2001.

REPRESENTATIVE SEATON said some effects are shown. The impact was that 5 million pounds of sockeye were lost to the state by using that management tool.

1:45:47 PM
MR. BEAMESDERFER said the model can test whether the over-escapement was from the windows or from the fish movement pattern. Or was the forecast accurate? The model allows testing by changing any one variable.

REPRESENTATIVE SEATON said the problem is that the windows are not a constraint on the fish, but on the management. The board has told managers not to open the fishery. How can the effect of

windows be analyzed since it must be integrated with the management opening it for extra fishing time in the inlet? You would need to assume that if the run is strong, the managers would have opened it. "How do you relate those management decisions into the closure of the window?"

1:47:36 PM
MR. BEAMESDERFER said that is exactly the drill. So, on that "we would emulate the decisions that the manager would make under those run conditions – just fix the windows." Without the window, how should the fishery be managed to capitalize on catching those fish? That can be done effectively, "or we'll just go ask him," and plug that into the model. The model is good for looking at allocation impacts. He showed a graph of who is taking the sockeye for the last five years. The vast majority are taken in the commercial fishery between set nets and drift nets. The personal and sport catch is significant and growing. The model can be run with the windows and without to see what impact it would have on the allocation.

1:49:58 PM
CO-CHAIR GATTO asked if the personal and sport usage is growing in percentage or just poundage.

MR. BEAMESDERFER said both.

REPRESENTATIVE WILSON asked if his goal is "to change the shift from the commercial fisheries to the sports fisheries?"

MR. BEAMESDERFER said he is a scientist with no goal regarding allocation. He just wants the best science to be used. Everyone wants sustainability, and that is what drives the escapement goals. The next question is who gets them, and the model tells the consequences of various decisions. Nobody wants to put anybody out of business. This isn't about sustainability, per se, but the model helps managers achieve whatever objectives they have.

1:52:39 PM
CO-CHAIR GATTO asked if he fishes for sport, but then eats it, is he in the personal-use or sport fish column.

MR. BEAMESDERFER said personal-use is a specific fishery.

1:53:32 PM
MR. BEAMESDERFER said the model is really good at showing the gaps in the necessary information. Modelers call the missing

pieces “critical uncertainties”. “If we can manage it, we can model it.” But there are unknowns that should be researched in order to be more accurate. There are three fundamental needs. The first is escapement studies – the basis for sustainable management. Without this information managers don't know what to shoot for. ADF&G has a great program for monitoring it, but there are holes in it. Sonar counts and new technological tools are being used. The legislature funded a sonar study in the northern district where there has been a lot of escapement issues, and that information is starting to come in. There was a similar study in the Kenai with sockeye and kings. The studies indicate that “we’re not always counting the right number of fish, and that has huge implications.” There is need for more research on the extent of the problem and how to fix it.

1:56:40 PM
MR. BEAMESDERFER said another current project is a genetic stock identification study of the commercially caught sockeye in the inlet. The stocks are mixed, and to be effective the number of fish at any given place or time needs to be known in order to catch the right fish. New genetic technology is mindboggling, and the accuracy and value of the information is tremendous. There are three years of data showing that some assumptions have been wrong, but a bigger data set is needed. The kings are a center piece in the inlet fisheries. Recent economic data show how valuable all sectors of the fishing communities are. The research needs for kings are compelling. There are questions in the northern district about the status of the stock and what level of monitoring is appropriate. The Kenai kings are designated as a sport fish priority fish, but in the big sockeye return years, the commercial fishery catches as many or more than the in-river fisheries. The in-river fisheries find that to be objectionable. Better information of the mix will make it possible to manage to avoid that problem.

1:59:53 PM
MR. BEAMESDERFER noted the many studies funded by the legislature, federal monies, and groups like KRSA. There is controversy over the value of some of the studies, but early results show that these were good studies to do. It is money well-spent. Everyone will be better off if management is by sound science.

2:01:09 PM
REPRESENTATIVE WILSON said sportfishing is a big part of income for many Alaskans, especially charter people. She understands

bag limits, but wonders how to control the increased numbers of people fishing.

MR. BEAMESDERFER said that is a fundamental management dilemma, and that is why management is an art as well as a science. The fish are in charge, so the management intent is to be flexible enough to respond to changing events. What is done with one fishery affects another.

CO-CHAIR GATTO said he has been in contact with Monsanto, which is doing genetic work on peanuts and corn and spending a lot of money preparing seeds for 2020. "They are way ahead of the game." Is there research going on with fish in case there is an enormous fish kill from a fungus or change in water temperature? Is someone looking at gene modification for wild fish?

2:03:50 PM
MR. BEAMESDERFER asked what Co-Chair Gatto was asking.

CO-CHAIR GATTO said he wants to know "if there was a Monsanto of the fishing industry that says, listen, we're expecting certain changes to occur and our goal, from Monsanto, is we have certain kinds of worms and nematodes; we have fungi; we have things that kill plants, and we want to make them tougher, so we need less pesticide, less fertilizer, et cetera, less water. And they'll do that. Is there anything along those lines that's saying we want a fish where 80 percent don't die off from a fungal infection?"

MR. BEAMESDERFER said the commercial aquaculture industry does research on how best to optimize their returns on their investments. If there is a Monsanto in the wild salmon field, it is the State of Alaska. The research he has spoken about is an investment in the future of salmon in Alaska. The fishery systems now are the fruits of wise old biologists working for ADF&G for the last 30 years. Additional research is to set Alaska up the next 10 or 20 years.

2:05:35 PM
CHAIR HUGGINS said he wants people to be open-minded and do something with confidence. He killed his first moose 33 years ago in 16B, where there is not a moose season today. Most people that hunt there go by airplane. "The moose are almost extinct in some of the areas." There is a system that is supposed to be managing the moose. "We" manage for an opportunity to have a field experience. He fished across the Kenai River, and it was fun and it was combat fishing. Across from there, in Trading

Bay, there are a few sockeye salmon. Old timers showed him how to determine if there were fish or not. “It is more or less true. That area is controlled by Kenai enforcement jurisdiction … but the fish are not there.” It is true of sockeye, kings and silvers. The chum are next to extinction. He said he is interested in anything that will turn that around. He said Representative Mark Neuman lives in Big Lake where Fish Creek used to be a personal-use fishery. “It’s benign neglect – denial in some cases.” He is interested in replenishment of those stocks, but not at the expense of someone else. But he wants to know the cause and effects. The legislature has spent money on it, but “I was a little bit disappointed, and I got some communications from the people saying: my gosh, why would you do this? And they were taking exception to maybe it was going to dip into their area. I understand the fish debate is a blood sport.” Some people's livelihoods depend on it. But it is an ongoing debate, “but it’s the fish, in my estimation, that we have to pay attention to.” He surmised that Mr. Beamesderfer’s model addresses the fish and not the allocation. “I’m assuming that your model is a portion of a solution, maybe, but prototypically something that I’m willing to look at along with other tools. Let’s think of the fish; subordinate ourselves and maybe there’ll be enough to go around for all of us.”

2:09:49 PM
REPRESENTATIVE SEATON said the State of Alaska is not the Monsanto of salmon. “We do not do genetic alterations. Frankenfish are on the East Coast.” Alaska’s aquaculture programs take wild stock to spawn and don't do any genetic alteration. Marketing of quality wild fish is what has made the uptick in price of Alaska fish. Alaska has definitely protected against the introduction of genetically-altered fish. There are companies modifying Atlantic salmon in British Columbia, but the State of Alaska does not allow that in any way.

CO-CHAIR GATTO asked if they are modifying farmed fish or all fish.

2:11:18 PM
REPRESENTATIVE SEATON said farmed fish. Fish farmers have a market incentive to raise a fish that needs less food or is resistant to viral infections, for example. Those fish are unfortunately escaping, and no one knows what kind of problems will now occur. Alaska’s genetic work is in stock sampling to identify where caught fish come from.

CO-CHAIR JOHNSON said computers are garbage in garbage out. He asked how much sampling is needed for the model to work. There is a specific number of samples needed, "but I am pretty sure we're not there now." He asked what it will take to get to a place to have reasonable accuracy.

2:13:27 PM
MR. BEAMESDERFER said he doesn't know how many samples are needed, but the model flags the big information gaps. There is good information on how many fish are being caught and the escapements for key stocks, but there are holes there, like in the northern district and some peninsula stocks. The genetic stock identification information is good, but three years are not representative. There are questions about what factors are driving trends in the northern district. "We need to incorporate some of these refinements in research and in the current management." So for sonar studies, a three to five year study is needed to evaluate accuracy. Genetic stock identification is so important it needs to be incorporated into the normal management scheme, with its associated costs. The king studies have had some basic work done on genetic stock identification, and the next step is collecting samples from commercial fisheries. It is a significant cost for a three to five year program.

2:17:03 PM
CO-CHAIR JOHNSON said there is not enough money to do everything, so should the state fill in the holes or expand the research. Where is the best place to put the money?

MR. BEAMESDERFER said accurate escapements and stock accountability is the priority.

REPRESENTATIVE SEATON noted that the model is 15 years old with fresh data. He asked why ADF&G isn't using it now. He asked about peer review.

2:19:13 PM
MR. BEAMESDERFER said he met with ADF&G and saw that there was significant interest in "picking this up and carrying it forward." The root of the issue may be that fishery science has evolved, and the area manager has a model in his head, and that works fine for a simple fishery situation and if the stakeholders aren't intense. The model provides transparency for the managers to explain their decisions. The managers may not need the model to accomplish the goal that the board has laid out for them, but the stakeholders need the model to understand what the tradeoffs are.

REPRESENTATIVE SEATON said not to give the impression that the managers are doing everything in their heads. They have models, graphs, and computers.

REPRESENTATIVE NEUMAN said a biological model was discussed for economic benefits, “but we haven’t talked at all about any models of the biological management studies that we have to have -- the fact that we don’t have any more chum salmon in western Cook Inlet entering the streams.” If the issue of return is not addressed as a biological need, the rest of it is not going to matter. The biological need includes the bears, eagles, and everything that feed on the salmon. “How do you set up a model that says if we don’t meet escapement on the Yentna River for the last five or seven years, even though escapement goals have dropped from 120 down to 70,000 fish, what are we doing here?” “None of that is going to matter.” There is an economic model, but the biology part is crucial.

Representative Olson arrived.

2:23:18 PM
ROLAND MAW, Executive Director, United Cook Inlet Drift Association, Soldotna, AK, said he provided two memos to the committee. There is a Board of Fish hearing in six days, so he hasn't had time to examine this model. He asked for an opportunity to meet later. Stakeholders do not have copies of the model, and there has been no peer or stakeholder review of it. The potential for prejudicial outcomes by using the model is high. “We would be extremely stressed to find this model to be anywhere near that Board of Fish.” If it is used, there will be prejudicial outcomes. It is not a coincidence that this is occurring five or six days before the regulatory hearing. The drafts are not labeled and the years are not there.

2:27:46 PM
DR. MAW said not all windows are represented on the graph. “I do not believe that graph represents the truth.” The data sources and assumptions used in the model are not shown. In upper Cook Inlet there have been two of the earliest and two of the latest returns in last six years. As the fish begin to return to upper Cook Inlet, data is collected, but the actual timing of the run and its shape is not really known until the fishery is almost over. The late returns are not clear until about August 20. "I really don't know how this model, even with a stretch of the imagination, could be used as an in-season management tool." It could be used for post-analysis. Mr. Beamesderfer misspoke; 2007

was not a late return. Fish prices are not “down and down”. “We are receiving a very handsome price for these fish in today’s market, especially as we have improved on quality and marketing, and our fish are going to a primarily domestic market.” Using the model violates some fairness and legal issues. He would like to come before the committee and present additional information from a commercial fishing perspective.

2:30:35 PM
BRENT JOHNSON, President, Kenai Peninsula Fishermen’s Association, said the association represents a large group of set netters in Cook Inlet. He is also the president of the Cook Inlet Aquaculture Association. Both groups are very interested in science. The set netters have misgivings about any model that predicts openings and closings in the commercial fleet for the purpose of sending fish to the rivers. They have more confidence in the local managers. Models can predict the weather, for example, but the best information comes from the local meteorologist rather than from a model.

2:33:26 PM
MR. JOHNSON said fish don't follow exactly what they did before. Local managers are the best way to get the fish to the rivers. The Board of Fish should set clear and specific river goals and ask local manager to accomplish them -- as long as the goals are realistic, they can do it. The fish that he catches hit the nadir of 60 cents per pound in 2003. Now he gets up to $2.00 per pound for the early sockeye, because the wild market has driven the price up. There is nowhere in the world that farm fish sell for more than sockeye because they are not farmed. Wild sockeye in Alaska fetch the best price. The price goes down at the end of the season, but early fish are highly prized. He said he knows that Representative Neuman lives around Big Lake, and three years ago the aquaculture associate found out that the people at Big Lake stacked rocks in the outlet, “which is a dandy thing to do if you want to drive water skis, but from a fish standpoint, that was particularly unfortunate.” Fish were spawning in the outlet and they couldn't go over the rocks to rear. The aquaculture association tried to fix it to help the fry.

2:36:01 PM
MR. JOHNSON said the Kenai River fishery is anything but healthy. There have been nice runs, but there is data that the Kenai River is headed for a giant plunge starting in 2009 and into the future. Skilak Lake produces about 80 percent of the sockeye for the Kenai River. When it was producing salmon well,

the fall fry weighed 1.75 grams, and there was plenty of food to put on necessary body fat. The size of those fish has dropped to 0.6 grams in the last three years. Mark Willet [spelling?] has studied these fish and starved the fry to see how small they can get and survive a winter, and he found that the threshold is 0.5 grams. The fish have been too small to have a high survival rate. A few will come back but not enough for a good fishery.

2:38:26 PM
MR. JOHNSON said Mr. Beamesderfer's model doesn't focus on coho, chum, or pinks. "We need on-site field biologists that are monitoring all these different fisheries." When the federal government ran the fishery before 1959, they did it from Washington D.C. without on-site biologists to close and open fisheries. Accurate escapement goals need to be established for each river, and the local biologist will have better success than any model.

2:39:21 PM
MR. JOHNSON repeated his discussion about Skilak Lake fry.

CO-CHAIR GATTO asked what percent of healthy fry survive.

2:41:14 PM
MR. JOHNSON said at 0.5 grams it is zero, and the larger fry have a survival rate of between 70 and 80 percent, and this is just surviving over the winter. They then go out to sea and only 20 percent survive "if things are going real well." A salmon lays about 3,000 eggs, and only 10 percent hatch. Of those, there may be 10 percent survival. In a good world, 5 or 10 fish come back from that one female. The aquaculture association boosts nature by taking the 3,000 eggs to a hatchery, which increases the hatching rate to 90 percent, and the fry are then put directly into the lake.

REPRESENTATIVE SEATON asked Mr. Beamesderfer for a copy of the model and all the assumptions.

MR. BEAMESDERFER said he is working on the documentation for the model, and it will be available for the Board of Fish meeting.

2:43:41 PM
DR. MAW said he doesn't want the presentation at the meeting.

2:44:44 PM
REPRESENTATIVE SEATON said this is a publicly-funded model yet it can't be seen before the meeting. Models can have problems,

and it should be made available to the public before the presentation, and it should be peer reviewed. He wants to see it himself to see the construction and how it operates.

REPRESENTATIVE JOHNSON asked who paid for the work.

MR. BEAMESDERFER said it was paid for by the Kenai Sports fishing Association. The data used for it is public information.

REPRESENTATIVE ROSES surmised that the legislature has no control over who presents at the board meeting.

CO-CHAIR GATTO said the board decides.

2:47:43 PM
CO-CHAIR GATTO said it would be more valuable for the model be presented and criticized, rather than be ignored.

REPRESENTATIVE WILSON asked if the board wants to see the model.

MR. BEAMESDERFER said the model was developed for KRSA for its needs, and it will be used at the meeting. "If there are errors of assumptions in there, we're fooling ourselves." The group advised the board that he gave a presentation a few months ago at the board work session to brief them on the model. He supposed it would be a useful tool for KRSA, and others can use it. He will be glad to sit down with anyone to discuss it.

2:49:29 PM
CO-CHAIR GATTO said the legislature uses modeling a lot. He asked how many years ago there was enough data to be able to make predictions, and if the prediction ended up being accurate.

MR. BEAMESDERFER said there are good data on the key pieces since the 1980s, but there are fundamental uncertainties. "So really what I talked about today wasn't so much the model results or what it meant to one person or another, but the use of the model [is] to flag these big uncertainties," such as genetic stock composition and escapement accuracy.

CO-CHAIR GATTO said there are ways to test models, and he asked if the predictions for the 20 years of the model were accurate. There may never be a perfect model, but one should be helpful.

2:51:44 PM
REPRESENTATIVE ROSES referred to the data on fry size. "How difficult would it be to incorporate those data into the model?"

MR. BEAMESDERFER said that information is about the year to year effects of escapement. This model looks at fishery implementation within one season and does not look at long-term consequences of the fisheries. That is what the department develops with its escapement goals. “So the model doesn’t say whether an escapement goal is good or bad or what the long-term consequences of meeting it or not meeting it are; it simply tells you, with the fishery that you’ve got, what’s the likelihood that you’ll meet it or not meet it.”

REPRESENTATIVE ROSES surmised that his modeling uses ADF&G escapement goals, and so that is the data it would use to develop its escapement goals. “So it’s encompassed within the portion of the assumptions that you made based on the data you received from them on escapement.” So it is being considered but wouldn't show up as a line item in the model’s data, but is encompassed within that.

REPRESENTATIVE SEATON asked if he was saying that the ADF&G escapement goals already incorporate the size of overwintering fry, year-to-year affects, and lowered run strength.

2:54:32 PM
MR. BEAMESDERFER said the ADF&G escapement goals are based on the historical data from the returns of the spawners. They reflect the average productivity from an escapement. If something has fundamentally changed, “then we're not always sure what happens there, and that’s the issue with the sockeye escapements in the inlet. There hasn’t been a lot of data on -- actual adult fish return data -- on what’s liable to return from these big escapements. So it’s a big unknown.” Some information suggests that there could be problems, but other evidence suggests not. The scientists all agree that we are not sure what will happen with the large escapements.

REPRESENTATIVE SEATON surmised that the model assumes an average run, so the large over-escapements with extra-small fry aren’t calculated into the formula. He asked where the original model is available.

MR. BEAMESDERFER said the reference is Phil Munday, 1993, in “Management Strategies for Exploited Fisheries.”

2:57:11 PM
REPRESENTATIVE WILSON said she would spend her money finding out why the fry are getting smaller. That may be why there might not

be enough fish for everyone in the future. She is confused about Mr. Beamesderfer's goal. She thinks people should zero in on known problems. She asked why the association isn't pursuing that.

2:58:41 PM
MR. BEAMESDERFER said the ADF&G has been researching it for years, and the aquaculture association is collecting data. The sustainable salmon funds are used for research on smolt out migration. There is a lot of focused attention on this concern.

CO-CHAIR JOHNSON asked if the model was used to predict last year's data and how close it was to what actually happened.

2:59:49 PM
MR. BEAMESDERFER said the model is calibrated for each year. "The way we evaluate how well it worked for that year, is we look-see at what percent of the actual variability in the return is accounted for by the model as we have it configured." He's finding that it matches up very well. "Generally they're falling in the 50/80 percent range on the run reconstruction. So we're able to match the historic data very well, with the model, but the question then becomes: how well does it work for the future?" It is not designed to predict escapement or the number of fish coming back. Its purpose is to flag the places where there is no data. Beyond that, the main purpose, given the weird years, is to tell how well the management system holds up. It's more of a sensitivity and risk analysis, and not predictive.

3:01:55 PM
CO-CHAIR JOHNSON said Dr. Maw mentioned an in-season model, but this was not designed to manage fish in season. This is a 30,000-foot model. In every meeting, the drain of talent is discussed. Those game biologists that everyone puts stock in are getting younger and less experienced. How long can the state rely on the brain on the ground? He said he is interested in assisting the new biologists' historical knowledge.

REPRESENTATIVE ROSES asked if the model could be modified to predict revenue streams, like expanding a cannery, for example. How would the assumptions change to help make that decision?

3:04:23 PM
MR. BEAMESDERFER said the data in the model wouldn't be changed, but information could be added to adapt to those needs.

REPRESENTATIVE ROSES asked if he were to predict the number of fish, would the model be changed.

MR. BEAMESDERFER said it will not predict the number of fish; it shows how many fish can be taken with a given management strategy.

REPRESENTATIVE SEATON said he is happy to hear that the model has no predictive use, but the other testifiers fear it will be used that way. He surmised that it will be presented to the Board of Fish in an advocacy role for some kind of change in the management strategy. This is the concern, even though Mr. Beamesderfer said it isn't to be used to predict or to allocate. It gives the mantle of science to promote an allocation, he opined. The model did show one thing: management procedures are only within the goals 16 percent of the time. The tools used for allocation purposes, like windows, are getting us outside the management goals. The fisheries committee received a great publication showing the streams that are meeting the escapement goals. One problem is that we have reached the point of exceeding the escapement goals in 55 percent of the monitored streams in the entire state. He requested the ADF&G to come back and discuss what statutory changes need to be made so that foregone harvests can become income for the state.

3:09:41 PM

ADJOURNMENT

There being no further business before the committee, the meeting was adjourned at 3:09:56 PM.