



Submitted By  
Jeffrey Fuller  
Submitted On  
8/25/2017 2:55:27 PM  
Affiliation

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I'm concerned about our sport fishing in the Matsu Borough I moved here around year 2000 and started sport fishing, fishing wasn't great when I moved here, and continued to worsen.

around 2005 I quit fishing in matsu borough and focused on dipnetting in kenai or snagging in seaward or sport fishing in the kenai peninsula.

This is lost revenue for my borough and its a great loss financially for me as I have to spend hundreds of dollars just to get to the peninsula. Lets make sport fishing great again in the matsu, bring back the fishing tourism to our borough, and stop giving commercial fishermen particularly out of state commercial fishermen all of our fish.

My brother just recently graduated and I am sad to say he never got a chance to make a connection to sport fishing here in the matsu valley due to poor returns of fish and the endless restrictions.

I think the publications book is great however there are so many regulations for sport fishing you almost need to call adfg in advance tell them where your going to fish and find out what the regulations are, as I have done several times.

I think the board of fisheries is doing Alaska a terrible injustice by allowing as much commercial fishing as they do, sport fishermen spend way more to catch the fish locally than commercial fishermen do and I plan to cast ballot in elections to come for people that hold Alaskans values and concerns highly.



**From:** Joe Lindholm  
**To:** spawn on kelp--SE ALASKA  
**Subject:** Friday, September 29, 2017 9:44:50 AM  
**Date:**

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I am in favor of an alternate style of fishery for the SE roe herring fishery. The existing permit holders would have the option of either participating in the existing herring for roe fishery, or convert to the proposed spawn on kelp fishery.

The pluses to this are: A) The fishers that elected to stay in the herring fishery would have a much better chance to "make" a season because the fleet would be smaller

B) The fishers that elected to pursue the roe on kelp fishery would not hurt the existing fishery in any way because there would be no killing of fish...

C) The permit would generate more revenue to the state (thru higher grosses) and permit values would go up

D) Additional employment would be enjoyed (most likely by the community of Sitka)

The minuses are: There is some belief that this fishery would dilute the existing roe on kelp market. The open pond method of harvesting kelp produces a much thinner product, therefore the product is not the same.

Arguments there will be, but substantiation of this is available. It can be likened to frozen salmon versus canned salmon - both salmon but different markets.

John Nevin  
P.O. Box 2125  
Kodiak AK 99615  
9-30-17



PC053  
1 of 2

Chairman John Jensen  
Alaska Board of Fisheries  
Board Support Section  
P.O. Box 115526  
Juneau AK 99811-5526

RE: UCIDA Agenda Change Request  
and genetic stock composition  
in the Kodiak Management Area

Dear Board Members,

I understand there is a proposal to change the management of a large portion of the Kodiak salmon season based on Cook Inlets reds passing by our area. I am against this proposal.

I have seined salmon in Kodiak as a permit holder every year since 1979. A few years as a beach seiner the rest purse seiner. I ~~regularly~~ write letters to your board but in this case I worry you could badly damage Kodiak fishery by managing it by ~~and~~ where and when Cook Inlets fish may be passing Kodiak and how many of those fish may be caught by Kodiak fishermen and how that may effect another areas management.

There will always be a mixture of stocks from different management areas. Different from day today, year to year, where the fish are going to bounce off the shores of the different areas. It seems the most reliable, effective way to manage salmon stock is in the area they are going to. Trying to manage Cook inlets red fishery by shutting down Kodiaks fishery could greatly effect Kodiaks management plan, cause over escapement and a loss of income to its fishermen. There are already caps put on red fishing in the Sherikof



to allow fish to pass by. We fish a long season in Kodiak. I'll bet more days than any other area. and it takes all those days to put in a decent season

Thanks for reading this and for all the work you do. Please do not vote to change the management of Kodiak's stocks this way.

Sincerely,

John Nevin  
/ SOIK 564456



Submitted By  
Jonathon Brandal  
Submitted On  
9/23/2017 10:33:55 PM  
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Kodiak , Alaska 99615

I am Jonathon Brandal, a commercial fisherman. This is in response to ACR 11, I am against this! My livelihood relies on being able to fish as well as the backbone of our economy!



Submitted By  
Julie Kavanugh  
Submitted On  
9/23/2017 9:03:53 PM  
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self

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I am testifying in opposition of ACR #11. This agenda change request is acutely allocative in nature. The proposer attempts to limit the gravity of this by indicating it's justification is due to an inter-regional aspect. The fish in Alaska are held in trust for all Alaskans and discounting one regions dependancy over anothers is wrong economically and ethically. Note that the proposer states that ACR #11 is "**regionally allocative**". If the Board adopts this proposal even with good intentions, it will harm the Kodiak Area Salmon fishery through mangement concerns such as over escapement, create gear conflicts, cause plausible harm to fishers not equipped with vessels or gear for bay fishing, interrupt processing, reduce work hours for processing employees, insert extreme uncertainty into fishing opportunity, and literally wreck havoc throughout Kodiak's economy. In 1989, the Board of Fish addressed the interception of Cook Inlet Salmon. Kodiak's salmon fleet has historically and rightfully caught salmon on it's capes while adhering to the adjustments made in 1989. The genetics study only shows a brief snap shot of interception with anomallys well documented. I would argue that a reactionary proposal such as ACR #11 is dangerous and the 3 year cycle is in place to prevent the harm that such action would cause. My family participates in the area K salmon fishery with a 58 ft limit seiner, the Sylvia Star. Our vessel and gear are built for cape seining. If forced into bays we are at an extreme disadvantage. We would be forced to compete for fish in areas that generally have gill nets and small boats. I respectfully ask the Board to reject this ACR for; a lack of careful study and depth of data needed for analysis; the heavy handed allocative measures this ACR is lifting; the certainty in regards to negative economic effects; and the biological harm it could cause to the area K salmon stocks.



**Ken Christiansen**  
**1849 Marmot Drive**  
**Kodiak AK 99615**

~~~~~

October 2, 2017

Chairman John Jensen  
Alaska Board of Fisheries  
Boards Support Section  
P.O. Box 115526  
Juneau, AK 99811-5526

Via email: [dfg.bof.comments@alaska.gov](mailto:dfg.bof.comments@alaska.gov)

**RE: UCIDA Agenda Change Request and Genetic Stock Composition of Sockeye Salmon in the Kodiak Management Area**

I oppose the UCIDA agenda change request because it does not meet the Board's agenda change request criteria. The Kodiak Management Area genetic stock composition study does not present any "new information" that "corrects an effect on the fishery that was unforeseen when the regulation (management plan) was adopted," nor does Cook Inlet sockeye caught in the Kodiak Management Area create a conservation concern or have conservation purpose or reason. Moreover, there is no error in regulation that needs correcting.

I have been fishing for salmon in Kodiak waters for fifty years. I have owned and run a boat for 40 years and have owned a Kodiak Salmon Seine permit since limited entry began. I have participated in other fisheries as well however salmon fishing is my primary source of income, it is my livelihood and I work very hard to make every season successful enough to pay the bills and put food on the table through the winter.

It has long been known that Cook Inlet bound salmon may be "intercepted" in Kodiak waters; however it is dependent upon tides, wind direction and other uncontrollable and unpredictable factors. It is also known that the Kodiak Salmon Management Plan and current regulations take this possibility into consideration. Given that these are known facts, the recent genetic study does not provide any truly new information.

Further, there is no information provided about how changes in the current regulations to accommodate the Cook Inlet fishermen would affect the local Kodiak runs should fishing be closed during June and July. It is my understanding that the primary concern of the



Kodiak Salmon Management Plan is to manage local salmon stocks. If there are regulated closures to accommodate the possible passage of Cook Inlet bound salmon, then Kodiak's stocks could be threatened by over-escapement, insufficient food sources, etc.

There is also no information provided about the potential economic effects of June and July closures or destroyed local salmon runs to the Kodiak area, including Kodiak fisherman with various gear types, the local processors, and the local workforce. Should there be significant changes to the Kodiak salmon fishery, there will undoubtedly be significant effects to the whole community.

I feel that the ICIDA Agenda Change Request is inappropriate for many reasons but particularly that it does not meet the Board of Fisheries Agenda Change Request criteria and I urge you to decline it.

Sincerely yours,

A handwritten signature in black ink that reads "Ken Christiansen".

Ken Christiansen  
f/v Mary Ann



Submitted By  
Dwight Kramer, Secretary  
Submitted On  
9/21/2017 12:30:38 PM  
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Kenai, Alaska 99611

Sept. 20, 2017

Dear BOF Board Members,

We would like to take this opportunity to provide comment on your upcoming discussions and decision on the location for the 2020 UCI BOF meeting.

Throughout the 2017 UCI BOF meeting we continually requested various board members to evaluate the attending audience to get a sense of where the attending participants were from. It was very obvious that after the public testimony portion of the meeting almost all in attendance were from the Kenai Peninsula area. This only makes sense because 85% of the nearly 300 proposals are for the Kenai and Kasilof rivers or immediate offshore waters. These are the people that have the most involvement in the issues at hand in UCI fishery decisions.

What doesn't make any sense is that none of these meetings have been held in the Kenai / Soldotna area for nearly 20 years. Please ask yourself how you would like it if meetings for Kodiak, Bristol Bay, Fairbanks or the AYK were always held in Anchorage because a minority of power players want it that way so that they can have a better chance at controlling the outcome if local participation is minimized by time and travel expenses necessary to attend.

The BOF has a mandate to try to hold their meetings closest to the fisheries involved in these critical meetings. By the sheer volume of proposals related to the Kenai Peninsula waters it would infer that the Kenai / Soldotna area should be an obvious location for this meeting.

Our organization, Kenai Area Fisherman's coalition (KAFC), represents private, mom and pop, anglers. Private anglers do not have any commercial interest or concerns in the outcome of these meetings so the financial burdens to attend an Anchorage meeting makes it financially impossible to attend. At the 2014 meeting, Chairman Johnstone, eluded to the fact that people who filed proposals should be present to defend them. That is financially impractical for most from the Kenai area when the meeting is held in Anchorage.

I hope all of you will understand that a private angler is different from a guide or a commercial fisherman in that they do not have any financial gain in the outcome of their proposals, so for them to come to Anchorage to give 3 minutes of testimony and stay around for 4-5 days to serve in the committee process would cost them between 500 – 1,000 dollars. I hope you can see by this example why private anglers from the Kenai area are largely excluded from the process when the meeting is held in Anchorage.

Last year it cost our organization about \$3,200 for three of us to attend the meeting in its entirety. Roughly 95% of the attending audience on any given day after public testimony was from the Kenai area so you can imagine the total financial burden on Kenai area individuals and organizations. It has been mentioned in the past that Anchorage is a good central location but central for who? It's a simple fact that Anchorage and MATSU folks simply don't attend these meetings very much.

KAFC has offered a solution to this problem and that is to have alternating meetings between the Kenai / Soldotna area and the Anchorage / MATSU area. We think this is a fair and equitable solution for all concerned with UCI Fishery issues and one that should be adopted by the board.

There is also a stigma, that because of one isolated incident at the 1999 Soldotna meeting, this area is not a safe place to hold these meetings. I hope that concern has been put to rest over the years. The BOF recently held the 2013 King Salmon Task Force meetings here over several timeframes, as well as the 2016 Oct. work session without incident. Throughout these meetings the panel and the audience conducted themselves in a friendly and respectful manner. It should be considered that a UCI BOF meeting in this area would be no different.

Thank you for your time and consideration in this matter.

Respectfully Submitted,

Ed Schmitt, Chairman  
Kenai Area Fisherman's Coalition



**SOLDOTNA**  
City of Soldotna, Alaska



September 27, 2017

The Alaska Board of Fisheries  
Alaska Department of Fish & Game  
PO Box 115526  
Juneau, AK 99811

Reed J. Morisky  
John E. Jensen

Orville H. Huntington  
Alan Cain  
Israel Payton

Robert Ruffner  
Fritz Johnson

*RE: Alaska Board of Fisheries 2020 Upper Cook Inlet Finfish Meeting*

Dear Board Members:

On behalf of the Kenai Peninsula Borough and the cities of Kenai and Soldotna, we are writing to respectfully request that the Board of Fisheries (BOF) hold the 2020 Upper Cook Inlet Finfish (UCI) Regulatory Meeting in the Kenai-Soldotna area. Many local residents and businesses of the Kenai Peninsula are affected by decisions made by the BOF. Holding the 2020 BOF UCI meeting on the central Kenai Peninsula would allow much needed opportunities for input from our residents and businesses. The Kenai Peninsula Borough and the cities of Soldotna and Kenai appreciate the board's willingness to consider this request.

The last BOF UCI meeting held on the Kenai Peninsula was in 1999, over six full cycles ago. Since that time, Alaskans living on the Kenai Peninsula have not enjoyed reasonable access to the Board of Fisheries meetings. A significant portion of the proposals considered at the BOF UCI meeting concern watersheds of the Kenai Peninsula. Rotating BOF meetings between the central Kenai Peninsula area and the Anchorage area is a cost-effective method of allowing reasonable access for all Alaska residents. The Kenai Peninsula Borough and the cities of Soldotna and Kenai are prepared to provide resources and assistance to the State in order to assure that meetings on the peninsula are run successfully and efficiently.

**Fairness & Process**

Holding the two-week BOF UCI meetings solely in Anchorage leads to disproportionate representation of the special-interest groups that have the resources to attend the meetings, and underrepresentation of individual residents of the Kenai Peninsula. Government officials and representatives of special-interest groups are able to attend UCI meetings, because costs



associated with attendance are borne by the organizations and not the individuals. This is not the circumstance for the vast majority of residents on the Kenai Peninsula.

As you know, the daily schedule for the BOF UCI meetings is somewhat fluid, therefore it is difficult for residents from the Kenai Peninsula to effectively know when to travel to Anchorage in order to provide testimony and participate in committees. This often requires burdensome costs associated with multiple days of lodging and subsistence, in addition to transportation costs. Not having reasonable, periodic access to the BOF process is simply unfair to the large population of Alaskans residing on the Kenai Peninsula.

Additionally, by not holding the UCI meeting on the Kenai Peninsula on a periodic basis, the BOF process itself is rendered less comprehensive and effective. By minimizing or eliminating input and testimony from residents of the Kenai Peninsula, the BOF is denied the knowledge of individuals who are closest to, and most directly affected by, the fisheries and decisions made by the BOF.

### **Cost Savings**

There are cost savings that will be realized by holding the 2020 UCI meeting in the Kenai-Soldotna area. The Kenai Peninsula Borough, and the cities of Kenai and Soldotna commit to providing a venue for the meeting and providing coffee, tea and water, at no cost to the State of Alaska.

The venues which are available and capable of hosting the meeting are the Soldotna Regional Sports Center and the Kenai Central High School Auditorium, and the Kenai Challenger Learning Center.

The Kenai Municipal Airport is a full-service airport offering over 20 scheduled flights per day to and from Anchorage. The Soldotna-Kenai area is served by hotels and motels with approximately 500 rooms. During the February and March time period, vacancy levels are generally high, so availability of lodging for the BOF, staff, and other meeting participants is easily accommodated. The Kenai-Soldotna area also hosts a wide range of support services including over 30 restaurants and cafes within a short distance from either of the three available venues. Ground transportation for the Board and staff to and from local hotels for the meeting will be provided at no cost to the State.

The borough and cities will establish a point of contact for BOF and staff to assist in identifying resources and cost savings for the State. We believe that additional savings will be realized subsequent to a decision to locate the meeting in the Soldotna-Kenai area and specific needs/services are identified.

### **Security**

The central peninsula area is a safe location to hold the BOF UCI meeting. The state has held numerous public meetings, including a 2016 BOF work session in the area without issues. The cities of Soldotna and Kenai have committed to providing a police officer to be present at the 2020 UCI BOF meeting at no cost to the State.



### Information Technology (IT) Support

The Kenai Peninsula Borough and the cities of Soldotna and Kenai will provide IT support as requested by the BOF.

### Support from Individuals, Organizations and Political Subdivisions

There has been consistent strong support from local government, businesses, and residents for the BOF to hold UCI Meetings on the Kenai Peninsula. In 2014, the Kenai Peninsula Borough and the cities of Homer, Kenai, Seldovia, Seward, and Soldotna passed a joint resolution requesting that the 2017 BOF UCI meeting be held on the Peninsula (see attached). The Kenai Peninsula Borough Assembly and the cities of Soldotna and Kenai will be considering resolutions requesting that the 2020 BOF UCI meeting be held in the central Kenai Peninsula at their next meetings, and these resolutions will also be forwarded to the BOF prior to the October 17-19 work session.

Thank you for your attention and deliberations regarding our request. The residents and governments of the Kenai Peninsula look forward to being your hosts for the 2020 Alaska Board of Fisheries Upper Cook Inlet Finfish Meeting.

Sincerely

KENAI PENINSULA  
BOROUGH

Mike Navarre  
Mayor

CITY OF SOLDOTNA

Pete Sprague  
Mayor

CITY OF KENAI

Brian Gabriel  
Mayor

### Attachments

cc: Governor Bill Walker  
Senator Peter Micciche  
Representative Mike Chenault  
Representative Gary Knopp  
Representative Paul Seaton  
Sam Cotten, Commissioner ADF&G  
Glenn Haight, Executive Director BOF



**KENAI PENINSULA BOROUGH  
CITY OF HOMER  
CITY OF KENAI  
CITY OF SELDOVIA  
CITY OF SEWARD  
CITY OF SOLDOTNA**

**JOINT RESOLUTION NO. 2014 - 01**

**A JOINT RESOLUTION OF THE ASSEMBLY OF THE KENAI PENINSULA BOROUGH, COUNCILS OF THE CITY OF HOMER, CITY OF KENAI, CITY OF SELDOVIA, CITY OF SEWARD AND CITY OF SOLDOTNA, REQUESTING THE ALASKA BOARD OF FISHERIES HOLD ITS 2017 UPPER COOK INLET FINNFISH MEETING ON THE KENAI PENINSULA.**

WHEREAS, Upper Cook Inlet Finfish issues are vitally important to, and directly impact residents, municipal governments and communities on the Kenai Peninsula; and

WHEREAS, many local residents and businesses of the Kenai Peninsula depend on, participate in, and are otherwise affected by decisions made by the Board of Fisheries with regard to subsistence fisheries, sport fisheries, commercial fisheries, personal use fisheries and conservation measures in Upper Cook Inlet; and

WHEREAS, when making informed decisions regarding finfish issues in Upper Cook Inlet, the Board of Fisheries should consider the comments and interests from residents of the Kenai Peninsula; and

WHEREAS, the costs and travel time to attend meetings outside the Kenai Peninsula pose a significant burden to local residents, limiting participation and the Board of Fisheries' ability to benefit from local knowledge; and

WHEREAS, the Alaska Board of Fisheries has not held its Upper Cook Inlet Finfish meeting on the Peninsula since 1999 despite numerous requests that it do so; and

WHEREAS, holding the meeting on the Kenai Peninsula would show local residents, businesses and communities that the Board of Fisheries listens, cares about and understands the local impacts of its decisions; and

WHEREAS, there are local quality venues of sufficient size with advanced technologic capabilities to host public meetings, as well as exceptional lodging and dining opportunities on the Kenai Peninsula;

**NOW, THEREFORE, BE IT RESOLVED BY THE KENAI PENINSULA BOROUGH ASSEMBLY, AND THE COUNCILS FOR THE CITY OF HOMER, CITY OF KENAI, CITY OF SELDOVIA, CITY OF SEWARD AND CITY OF SOLDOTNA;**

**Section 1. That the Alaska Board of Fisheries is respectfully and strongly urged by the Kenai Peninsula municipal governments representing their constituents to hold the 2017 Upper Cook Inlet Finfish meeting on the Kenai Peninsula.**



Kenai Peninsula Joint Resolution  
Page 2 of 3

Section 2. That this Joint Resolution be forwarded to Governor Sean Parnell, Senator Peter Micciche, Senator Gary Stevens, Speaker Mike Chenault, Representative Kurt Olson, Representative Paul Seaton, Governor's Chief of Staff Mike Nizich, Department of Fish & Game Commissioner Cora Campbell, Alaska Board of Fisheries Members - Karl Johnstone, Orville Huntington, Susan Jeffrey, John Jensen, Fritz Johnson, Thomas Kluberton, Reed Morisky, Alaska Board of Fisheries Executive Director Glean Haight

Section 3. That this resolution takes effect immediately upon approval by the participating city councils.

APPROVED BY THE ASSEMBLY OF THE KENAI PENINSULA BOROUGH THIS 2nd  
DAY OF September 2014.



Hal Smalley  
HAL SMAILEY,  
ASSEMBLY PRESIDENT

Mike Navarre  
MIKE NAVARRE,  
KENAI PENINSULA BOROUGH MAYOR

ATTEST:

Johni Blankenship  
Johni Blankenship, Borough Clerk

APPROVED BY THE COUNCIL OF THE CITY OF HOMER this 8th day of  
September 2014.

Mary E. Wythe  
MARY E. WYTHE, HOMER MAYOR

ATTEST:

Fritz Johnson  
Fritz Johnson, City Clerk



Kenai Peninsula Joint Resolution  
Page 3 of 3

APPROVED BY THE COUNCIL OF THE CITY OF KENAI this 8<sup>th</sup> day of  
September, 2014.

Pat Porter  
PAT PORTER, KENAI MAYOR

ATTEST:

Sandra Modigh  
for Sandra Modigh, City Clerk

APPROVED BY THE COUNCIL OF THE CITY OF SELDOVIA THIS 10 DAY OF  
September, 2014.

Keith Gain  
KEITH GAIN, SELDOVIA MAYOR

ATTEST:

Mary Klingler Deputy Clerk  
Mary Klingler, City Clerk

APPROVED BY THE COUNCIL OF THE CITY OF SEWARD, THIS 11<sup>th</sup> DAY OF  
September, 2014.

Jean Bardarson  
JEAN BARDARSON, SEWARD MAYOR



ATTEST:

Johanna Kinney  
Johanna Kinney, City Clerk

APPROVED BY THE COUNCIL OF THE CITY OF SOLDOTNA, this 10<sup>th</sup> day of  
September, 2014.

Nels Anderson  
NELS ANDERSON, SOLDOTNA MAYOR

ATTEST:

Michelle M. Sanner  
Michelle M. Sanner, City Clerk



Submitted By  
Ricky Gease  
Submitted On  
10/2/2017 11:15:50 AM  
Affiliation  
KRSA

Phone  
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Email  
[ricky@krsa.com](mailto:ricky@krsa.com)  
Address  
224 Kenai Avenue, Suite 102  
Soldotna, , Alaska 99669

Monday, October 02, 2017

TO: Alaska Board of Fisheries  
BOF Work Session, October 17 – 19, 2017  
Anchorage, Alaska

FROM: Kenai River Sportfishing Association  
224 Kenai Avenue, Suite 102  
Soldotna, Alaska, 99669

**KRSA comments on Agenda Change Requests to be considered by the Alaska Board of Fisheries  
at the 2017 Work Session, October 17-19, Anchorage, Alaska.**

Kenai River Sportfishing Association (KRSA) strongly recommends that the Alaska Board of Fisheries (BOF) fail, in each case, the following three Agenda Change Requests (ACRs) as they fail to meet any criteria for accepting ACRs.

- ACR #8
- ACR #9
- ACR #10

Discussion: In accordance with 5 AAC 39.999 Policy for changing board agenda.

*The Board of Fisheries will accept an agenda change request only:*

- 1) *For a fishery conservation purpose or reason; or*
- 2) *To correct an error in regulation; or*
- 3) *To correct an effect on a fishery that was unforeseen when a regulation was adopted.*

*The Board will not accept an agenda change request that is predominantly allocative in nature in the absence of new information found by the Board to be compelling.*

A thorough review of the current codified regulations, fishery statistics from each of the previous five salmon fishing seasons in Upper

Cook Inlet (2013-2017), and a review of the documents archived from the 2011, 2014 and 2017 Upper Cook Inlet (UCI) meetings of the BOF makes it perfectly clear that the criteria set forth for acceptance of an ACR are not satisfied by any of the three put before the BOF at this time.



Acceptance of any one of these ACRs particularly ACR # 10 which seeks to open and address key aspects of the major fishery management plans that govern the complicated mixed stock, mixed species UCI salmon fisheries, would result in a piecemeal, out-of-cycle meeting of the BOF in one of the most complex, contentious areas of the State. In spite of the authors' erroneous claim that the changes they suggest would not result in the reallocation of salmon fishery resources, this claim flies in the face of facts.

The BOF met for a fourteen day long regularly scheduled meeting in February and March of this year. It is not persuasive that it was unforeseen that regulatory actions taken by the BOF at the UCI 2017 meeting somehow failed to address known conservation concerns are in error or failed to foresee the situations described in the three ACR's.

Specific comments:

ACR #8 This ACR seeks to "Close a portion of the Big River to sport fishing and reduce the bag limit for salmon, other than king salmon in the South Fork and tributaries of Otter Lake (5 AAC 62.122)." The author of this ACR makes the case that a critical conservation situation exists. This argument is not supported by the most recent data and observations by the Alaska Department of Fish and Game. For this reason, this ACR request clearly fails to meet the criteria

ACR #9 This ACR seeks to "Reduce the bag limit for salmon, other than king salmon, from three to two fish in Otter Lake and its tributaries (5 AAC 62.122)." The author of this ACR makes the case that a critical conservation situation exists. This argument is not supported by the most recent data and observations by the Alaska Department of Fish and Game. For this reason, this ACR clearly fails to meet the criteria for acceptance.

ACR #10 This ACR seeks "to close and open all commercial, personal use and sport fisheries concurrently when salmon escapement goals are not going to be achieved in Upper Cook Inlet (5 AAC 21.363 Upper Cook Inlet Salmon Management Plan, 5 AAC 56.122 Special provisions for the seasons, bag, possession, annual and size limits and methods and means for the Kenai Peninsula Area, 5 AAC 57.121 Special provisions for the seasons, bag, possession, annual and size limits and methods and means for the Lower Kenai River Drainage Area, 5 AAC 57.122 Special provisions for the seasons, bag, possession, annual and size limits and methods and means for the Middle Kenai River Drainage Area, 5 AAC 57.123 Special provisions for the seasons, bag, possession, annual and size limits and methods and means for the Upper Kenai River Drainage Area and 5 AAC 77.540 Upper Cook Inlet Personal Use Fishery Management Plan."

A careful review of the transcripts of the 2017 regularly scheduled Upper Cook Inlet meeting of the BOF makes it clear that this ACR fails to meet any of the three criteria for acceptance. In addition, no new information, variation in run timing for Kenai River sockeye is not new information, is offered by the author of this ACR. And, of necessity, implementation of a strategy such as that suggested by this ACR would be predominantly allocative in nature.

In summary, KRSA recommends that the BOF fail all three of these ACR's in that they fail to meet the established criteria for acceptance.



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*Office of the Mayor*

September 8, 2017

Chairman John Jensen, Alaska Board of Fisheries

Board Support, P.O. Box 115526

Juneau, AK, 99811-5526

Emailed via pdf attachment to [dfg.bof.comments@alaska.gov](mailto:dfg.bof.comments@alaska.gov)

**Re: Requesting the Board of Fisheries Reject Agenda Change Request 12**

Dear Chairman Jensen,

We urge the Alaska Board of Fisheries to reject ACR 12 at your October 17-19, 2017 Work Session. This ACR does not meet Board criteria found in 5 AAC 39.999, for approving an agenda change Request.

Last year at the February 2016 Board meeting, the Board encouraged salmon fishery stakeholder groups from the South Alaska Peninsula area and Chignik area to find a compromise solution that would restrict commercial fishing in the Dolgoi Island Area to allow additional sockeye salmon to potentially travel to Chignik, while still allowing harvest opportunity for South Alaska Peninsula fishermen. The new regulations were in place for the 2016 & 2017 salmon seasons.

ACR 12 proposes to radically change the mutually agreed upon Doloi Island Area regulations. ACR 12 is predominately allocative and therefore should not be approved at this time. We believe this ACR does not meet the Board's criteria for accepting an ACR:

- There is no fishery conservation concern. This new regulation established only last year is working as conceived. Dolgoi fishing is restricted and Chignik escapement goals have been met.
- There is no error in the regulation – the Board was diligent in promulgating the compromise proposal into regulations, and the Department has been careful to enact the rules as written.
- There were no unforeseen effects on the salmon fisheries from this regulation. Both the 2016 & 2017 salmon seasons were unique and surprising, but not as a result of these regulations.

There are plenty of problems with this ACR, however we would prefer to debate the merits of the proposal during the next meeting cycle, when it would regularly come up. At the February 2019 Alaska Peninsula/Chignik Fishfish meeting, the Board will have three years of data under the new regulations to better inform the next decision on this issue.

We respectfully request the Alaska Board of Fisheries reject ACR 12 at the 2017 Work Session. Thank you for the opportunity to provide written comment.

Sincerely,

Henry Mack  
Mayor



Submitted By  
kip thomet  
Submitted On  
9/30/2017 1:12:43 PM  
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po box 3258  
kodiak, Alaska 99615

Kip homet  
Holiday Island  
Kodiak, AK. 99615  
907-539-8822  
Sept. 27, 2017

Chairman John Jensen  
Alaska Board of Fish  
Board Support Section  
P.O. Box115526  
Juneau, AK. 99811-5526

RE: UCIDA Agenda Change request and  
Genetic Stock Composition of Sockeye  
Salmon in the Kodiak Management Area

Dear members of the Alaska Board of Fish:

My name is Kip homet. I'm a long time Alaskan fisherman living in Kodiak. My wife Leigh and I have owned and operated a salmon Set-Net site on Kodiaks' West side for the last 27 years and derive the majority of our income from it. We employ 2 to 3 crewmembers each year depending on ADF&G run strength forecasts. Currently I have the privilege of serving on the Kodiak A.C. I also sit on the board of the Kodiak Regional Aquaculture Association.

I'm writing to you today in the hope of dissuading you from granting UCIDA's request for an agenda change for the Board to take up UCIDA's proposal to change the Kodiak Area Salmon Management Plan. I also respectfully request that the Board refrain from authoring a Board generated proposal pertaining to Kodiaks' management plan for the following reason;

- he proposed changes are drastic with such far-reaching consequences. Salmon is a huge part of the economic picture here in Kodiak and a large part of the social fabric. o have the proposal taken up anywhere other than Kodiak would disenfranchise the vast majority of the Kodiak community. he effected people, not only the fisherman and their families, but also the processor workers, the business owners, the support industry.... In short, everyone in this Island community is connected to salmon in some way. For the Board to take this up out of cycle, without the opportunity for most of Kodiak to be involved in the process, would be in my opinion, unfair and just plain wrong.

I'll leave it to others to argue whether the UCIDA ACR meets the Boards criteria for granting the request . Personally, I don't think that it does but the bigger question to me is whether you, the Board, without any Kodiak representation, is willing to deprive Kodiak its' entire voice in such an important matter.



Thank you for your time, sincerely,

Kip Homet



## **KODIAK ARCHIPELAGO RURAL REGIONAL LEADERSHIP FORUM**

### **RESOLUTION 2017-8**

#### **A RESOLUTION TO THE ALASKA BOARD OF FISHERIES OPPOSING OUT OF CYCLE SCHEDULING OF KODIAK MANAGEMENT AREA FINFISH ISSUES**

**WHEREAS**, the Kodiak Archipelago Rural Regional Leadership Forum is a consortium of tribal, municipal, Alaska native corporation and other leaders who support the coastal communities of Akhiok, Karluk, Larsen Bay, Ouzinkie and Port Lions, and

**WHEREAS**, fisheries and access to marine resources have always been a foundational resource for these island communities and we rely on strong fisheries and resident fishermen to thrive; and

**WHEREAS**, the Alaska Board of Fisheries has established a 3-year cycle for their agenda schedule in addressing finfish issues in each of Alaska's fisheries management areas; and

**WHEREAS**, the Alaska Board of Fisheries just completed the Kodiak finfish cycle meeting in Kodiak to discuss Kodiak finfish issues in January of 2017; and

**WHEREAS**, exceptions to the Alaska Board of Fisheries 3-year cycle for addressing area finfish issues are narrowly outlined in the Board's "Policy for Changing Board of Fisheries Agenda" and such "Agenda Change Requests" (ACRs) are only heard by the Board during their "first meeting in the fall"; and

**WHEREAS**, United Cook Inlet Drift Association (UCIDA) has submitted an Agenda Change Request (#11) to have the Board schedule Kodiak finfish issues out of cycle during the Board's 2017-18 meeting schedule to "address the harvests of Cook Inlet and other non-local salmon stocks in the Kodiak Area"; and

**WHEREAS**, the UCIDA Agenda Change Request does not meet the Alaska Board of Fisheries' criteria for approval in that it is not; a. for a fishery conservation purpose or reason, b. to correct an error in a regulation or c. to correct an effect on a fishery that was unforeseen when a regulation was adopted; and

**WHEREAS**, the UCIDA Agenda Change Request states on its face that it is "address the harvests of Cook Inlet and other non-local salmon stocks in the Kodiak Area"; and

**WHEREAS**, the Alaska Board of Fisheries Policy for Changing Board of Fisheries Agenda clearly states that "the board will not accept an agenda change request that is predominately allocative in nature absent new information found by the board to be compelling"; and



**WHEREAS**, the UCIDA Agenda Change Request is entirely allocative in nature and information about the opportunistic harvest of Cook Inlet bound sockeye in the Kodiak Management Area while fishing for local stocks has been known for more than 70 years and was documented before the Alaska Board of Fisheries 25 years ago with research reaching back to the 1940s with estimates of the presence of Cook Inlet sockeye in the Kodiak Management Area ranging from 0 to 60%; and

**WHEREAS**, the 2016 report on the Genetic Stock Composition of the Commercial Harvest of Sockeye Salmon in the Kodiak Management Area, 2014-2016 merely provides additional detail to information already known by the Alaska Board of Fisheries about the opportunist harvest of Cook Inlet bound sockeye in the Kodiak Management Area and was not an assessment for allocative purposes;

**THEREFORE BE IT RESOLVED** that the Alaska Board of Fisheries reject the UCIDA agenda change proposal to address, out of cycle, the harvest of Cook Inlet stocks in the Kodiak area; and

**AND THEREFORE BE IT FURTHER RESOLVED** that the Board of Fisheries leave the issue of the harvest of Cook Inlet bound sockeye caught in the Kodiak Management Area to be thoroughly vetted through the normal Board of Fisheries process during the 2019-2020 Kodiak finfish meeting.

**PASSED AND ADOPTED THIS 21<sup>ST</sup> DAY OF SEPTEMBER, 2017 BY THE FIFTY-SEVEN (57) COMMUNITY, ALASKA NATIVE CORPORATION AND TRIBAL LEADERS PARTICIPATING IN REVIEW OF THIS RESOLUTION AT THE KODIAK ARCHIPELAGO LEADERSHIP FORUM.**

IN WITNESS THEREOF:

  
\_\_\_\_\_  
Roberta Townsend Vennel, Forum Facilitator



**Kodiak Island Borough**  
710 Mill Bay Road, Rm. 101  
Kodiak, AK 99615  
907.486.9310



**City of Kodiak**  
710 Mill Bay Road, Rm. 220  
Kodiak, AK 99615  
907.486.8636

September 22, 2017

Chairman John Jensen  
Alaska Board of Fisheries  
Boards Support Section  
P.O. Box 115526  
Juneau, Alaska 99811-5526

Submitted electronically to: [dfg.bofcomments@alaska.gov](mailto:dfg.bofcomments@alaska.gov)

Re: Comments regarding Agenda Change Request #11

Dear Chairman Jensen and Members of the Board of Fisheries:

The Kodiak Management Area (KMA) salmon fisheries, with over a one hundred year history, are the oldest mixed stock fisheries in Alaska. The harvests in the KMA are not new nor expanding, and harvest patterns have not recently changed.

Therefore, both the Kodiak Island Borough and the City of Kodiak strongly oppose all aspects of Agenda Change Request #11, and join Kodiak salmon fishery stakeholders and supporters in urging the Board of Fisheries to deny the request to consider this proposal out of cycle.

The requirements that must be met for the Board of Fisheries to accept Agenda Change Requests are restricted to three key criteria: meaningful new information; conservation concerns; and errors or mistakes in regulations.

Finfish managers in the Alaska Department of Fish and Game (ADF&G) have for decades known that sockeye bound for Cook Inlet have been a component of salmon harvests in the KMA. Therefore, ADF&G managers have incorporated this biological fact into the KMA's management plans, and the existing, historic, and traditional harvest of sockeye in the KMA reflect this established precedent. Furthermore, recent genetic studies do not reflect new knowledge; rather, they corroborate this well-known facet of salmon management in Kodiak. Therefore, the information presented in January within the Genetic Stock Composition report (FMS 16-10) should not trigger abrupt consideration of management changes nor be permissible for acceptable Agenda Change Requests.



Any sudden change to the KMA's management plan based on information that has been readily available for many years would be disruptive, and potentially catastrophic to the thousands of individuals and families whose livelihood depends on responsible and stable salmon management in the KMA. The economies of the City of Kodiak as well as the rural, urban, and village communities of the Kodiak Island Borough are already struggling with downturns in fisheries markets as well as general and acute uncertainties with local, State, and Federal budgets. Any curtailment of KMA salmon harvests would have a direct and negative impact to our entire Borough in this tenuous economic climate.

At the recent meeting of the City and Borough's Kodiak Fisheries Work Group, harvesters asked for our support to respectfully request the Board of Fisheries to not take up any hasty reactions stemming from this recent genetic study, and instead work towards the continuation of balanced and science-driven approaches.

Agenda Change Request #11 will completely disrupt the well-established and well-managed allocative balance between the Kodiak Archipelago's purse seiners and gillnetters by eliminating fishing opportunities for the seine fleet and drastically reducing opportunities for gillnetters. Consequently, the entire KMA and its decades of fine-tuned management will be overturned. Changes in one management district will impact all other parts of the Kodiak area. The Board should avoid creating management chaos because of incomplete genetic assessments that are not new information and do not indicate any conservation concerns.

It is important and a matter of public policy that the Board of Fisheries maintains its 3-year schedule, and we in Kodiak's communities look forward to discussing this issue and other salmon fisheries topics at the Board's already-scheduled meeting in January 2020. As such, we are adamantly opposed to arbitrarily changing publicly noticed and established meeting cycles to take up an issue not based on scientific nor management merit.

All of our communities in Kodiak are salmon-dependent communities, and decades of effective State management have maintained healthy returns that contribute to the backbone of our Archipelago's economy. Please remember these comments as you consider this issue, and thank you for your continued support of the people of Kodiak and your public service.

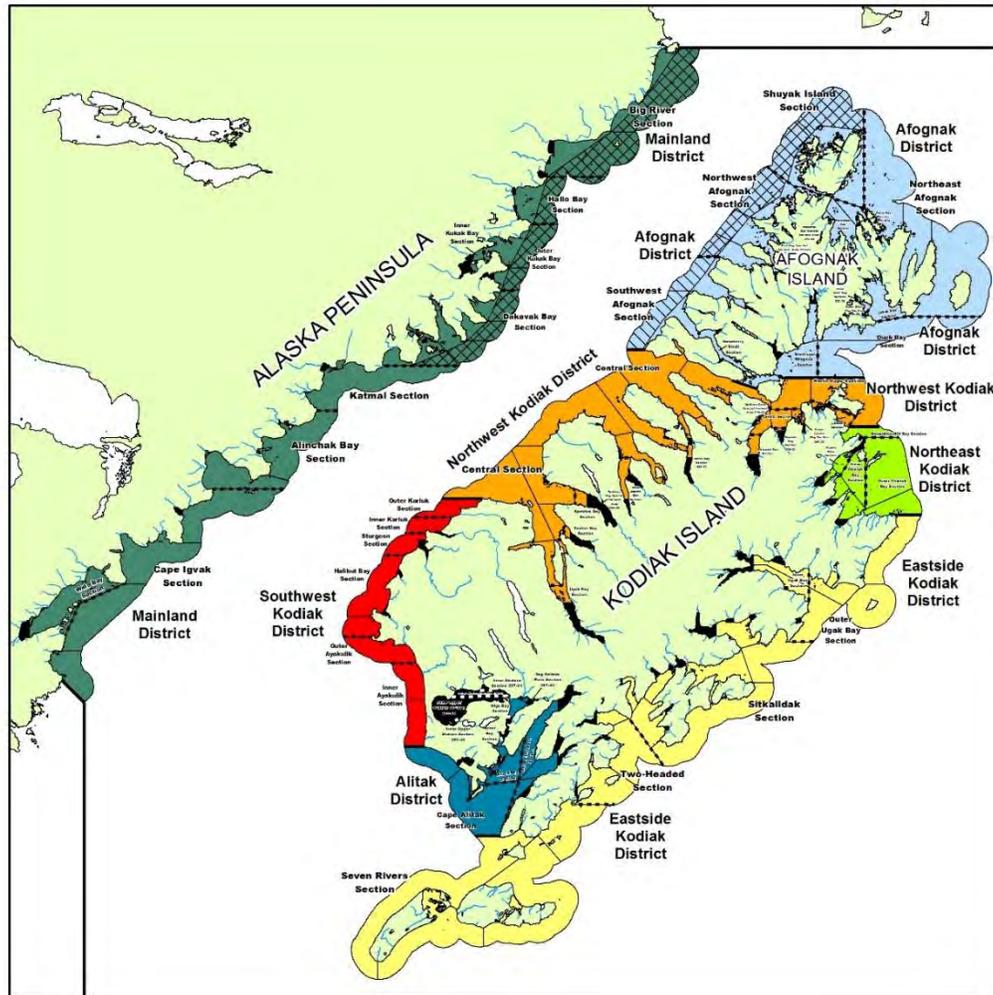
Sincerely,

A handwritten signature in blue ink, appearing to read "D. Rohrer".

Daniel A. Rohrer, Mayor  
Kodiak Island Borough

A handwritten signature in blue ink, appearing to read "Pat Branson".

Pat Branson, Mayor  
City of Kodiak



# Kodiak's Salmon Fishery and ACR #11

Kodiak Salmon Work Group

10/2/2017



Kodiak Salmon Work Group  
c/o Kodiak Regional Aquaculture Association  
104 Center Ave., Suite 205  
Kodiak, Alaska 99615

October 3, 2017

Chairman John Jensen  
Alaska Board of Fisheries  
Boards Support Section  
P.O. Box 115526  
Juneau, AK 99811-5526

RE: UCIDA Agenda Change Request (#11) and  
Stock Composition of Sockeye Salmon in  
the Kodiak Management Area

Dear Chairman Jensen and Board Members:

The Kodiak Salmon Work Group (KSW) is an ad hoc committee created to address the issue of Cook Inlet bound sockeye captured in the Kodiak Management Area. Membership is open and encompasses seiners from both Kodiak seine organizations, setnetters from both Kodiak setnet organizations, beach seine permit holders and processors. In other words, all of Kodiak's salmon fishing community. The group is supported by voluntary stakeholder contributions including those from the City of Kodiak and the Kodiak Island Borough.

KSWG is herewith submitting several critical documents for the Board's review. The Kodiak Seinners Association, United Fisherman's Marketing Association and the Northwest setnetters are supplementing these documents by providing detailed historical fishery information that supports and dovetails with the Salmon Workgroup's submissions. In addition, important documents outlining the history of the issue and the fishery have been submitted by Larry Malloy, Bruce Schactler, Chris Berns and myself. Together these documents construct an integrated thesis that Status Quo is, by far, the most reasoned and appropriate decision for the Alaska Board of Fisheries regarding possible presence of Cook Inlet Bound sockeye in the Kodiak Management Area.

## Process:

Any organization whether a family or a fishing crew or a deliberative body like the Alaska Board of Fisheries has to develop rules or protocols for decision making. Having everyone involved follow the rules is recognized as fair and equitable. Often the rules for process at a fish camp or on a vessel are unwritten but the Alaska Board of Fisheries had taken the time and effort to codify its rules. One of the fundamental first rules is that the Alaska Board of Fisheries will only take up issues regarding an area and fishery every three years. This is a "Bold Black Letter" rule for the Alaska Board of Fisheries. All stakeholders everywhere in Alaska rely on this rule. If you lose at the Board of Fish on your proposal you have 3 years to



retool and try again. If the Board implements regulatory change, you have 3 years to see if it works out. The rule is clear, it's known and it's fair.

Nevertheless, because mistakes are sometimes made and the Board isn't omniscient regarding future events, two exceptions to the hard and fast 3-year rule have developed. The first is the Agenda Change Request (ACR) and the second is the Board Generated Proposal (BGP). Each exception has clear criteria. However, some advocates try to shoehorn their economic interests into one of these two process exceptions by redefining the Board's criteria. It's up to the Board to apply the plain English understanding of the criteria for the exceptions while recognizing that exceptions are rare and that it's important, on the basis of fairness and equity, to support the primary rule of the 3-year cycle.

Agenda Change Request 11 submitted by the United Cook Inlet Drift Association must be seen in the context on the Board's strong process policy of the 3-year cycle. The request, on the basis of text itself, simply fails to meet the Board's ACR criteria.

- 1. "For a fishery conservation or reason". The ACR responds that "best management practices may not be followed." The UCIDA answer does not address the conservation question.
- 2. "To correct an error in Regulation". UCIDA responds, "the burden of conservation will be accurately applied". No error in regulation is presented.
- 3. "To correct an effect on a fishery that was unforeseen when a regulation was adopted". The UCIDA response: "The Board in December 1989 intended to minimize the harvests of Upper Cook Inlet stocks. It was only recently, as the result of genetic testing and analysis, that the real magnitude of the harvest of Cook Inlet.... Stocks in the Kodiak Management Area became apparent." UCIDA is vague about an unforeseen effect on a fishery when a regulation was adopted but perhaps an effect could be inferred from an apparent unknown magnitude of harvest in the Kodiak area.

Assuming the inference, the facts are incorrect. First, the assertion that the Board of Fisheries intended, in 1989, to minimize the harvests of Upper Cook Inlet stocks is false. The Board's intent at the time was to limit Kodiak's targeting of Cook Inlet stocks and to focus Kodiak's fishermen on the harvest of local stocks. Second, the assertion ignores the next 7 years of Board of Fisheries actions on the issue as well as the subsequent modification of the North Shelikof management plan based on the need to harvest local stocks. Third, the genetic testing simply provided finer detail to what was already known and had been presented to the Alaska Board of Fisheries by in 1991. (a range of 0-59% Cook Inlet fish). Consequently, the UCIDA Agenda Change request fails the 3<sup>rd</sup> criteria.

**In summary, the Alaska Board of Fisheries does not have a basis for accepting ACR #11.**



## The Board Generated Proposal:

Four criteria are listed to support a Board generated proposal. It is uncertain if the Board is empowered to generate a proposal based on just one of the criteria or if two or more criteria would be required. Criteria for Board Generated Proposals are broader than the ACR exceptions and require substantive information to inform what are likely more subjective assessments. Issues of “the public’s best interests” and “urgency in considering an issue” may be viewed differently by each Board member. However, assessment of “processes insufficient to bring the subject to the Board’s attention” and “reasonable and adequate opportunity for public comment” are more objective and assessed on a factual basis.

The latter criteria first: The 3-year Board cycle is SUFFICIENT to bring the subject to the Board’s attention. Cook Inlet stakeholders are expected to submit these types of regulatory proposals for the next Kodiak meeting in 2020. Process sufficiency is not the issue here.

Also of great importance is the opportunity for public comment. The current format for public input is written comments in response to an ACR. This does not give the public notice of what a Board Generated Proposal might be and whether or not it would be appropriate to generate such a proposal. In short, the public has no notice at this point whether or not the Board may consider a Board Generated Proposal and consequently, very limited opportunity to comment. Moreover, once a proposal would be generated, it’s uncertain if Kodiak stakeholders would have adequate opportunity for public testimony. Taking the Kodiak/Cook Inlet issue out of cycle would substantially disadvantage Kodiak stakeholders in that off-island travel would be required.

## Urgency for Consideration?

Given that Cook Inlet systems are meeting or exceeding their sockeye escapement goals and that the Kodiak fisheries are constrained by management plans that have been in place for more than 20 years, it’s hard to see an urgency for the Board to generate a proposal on the Kodiak/Cook Inlet issue. Once again, the Board’s overarching policy of a 3-year cycle should be considered when assessing “urgency”. In this context, the equities associated with the 3-year cycle far outweigh any immediate concerns some stakeholders may have.

## The Public’s Best Interest(s)?

Whether or not a Board Generated Proposal is the “public’s best interest” or there is an “urgency” to the Kodiak/Cook Inlet issue requires knowledge about the fisheries, contextualizing the recent genetic analysis, a framework for the historical development of the fisheries, familiarity with management structures and an understanding of inter-annual variability – of near shore survival, of run strength, of migration patterns, of the weather and oceanographic conditions and a host of other factors that impact the availability of Cook Inlet sockeye in the Kodiak Area. With this in mind, the Kodiak Salmon workgroup is presenting the Alaska Board of Fisheries with the following attached documents:



## The Elephant in the Room:

An assessment by marine biologist, Mike Litzow, Ph.D., in his paper “Unusual Gulf of Alaska Climate Conditions during the 2014-2016 Time Frame”, is **startling**. Temperatures in the Gulf of Alaska and in Cook Inlet streams were at an all-time high in 2015 and 2016 --- by huge margins. This document affirms the critical limitations outlined by the authors of “The Genetic Stock Composition of the Commercial Harvest of Sockeye Salmon in the Kodiak Management Area” when they state .... **“caution must be exercised when extrapolating the results to years, areas, and temporal periods not analyzed because changes in... migratory behavior due to ocean conditions very likely affect distribution of stock specific harvests among fisheries.”** The magnitude of ocean temperature changes in the Gulf of Alaska in 2015 and 2016 as correlated to Cook Inlet run timing as well as bird and marine mammal die offs indicates that the genetic study primarily shows that 2015 and 2016 were not representative of the long-term availability of Cook Inlet sockeye in the Kodiak Management Area.

## Pebble in a Pond:

Two papers show the ripple effect of the proposed UCIDA Agenda Change Request or similar regulatory changes. These demonstrate that it would NOT be in the public’s interest to make these types of regulatory changes. First, “The Genetic Stock Composition of the Commercial Harvest of Sockeye Salmon in the Kodiak Management Area” is a study with a narrow focus on **sockeye only** and NOT on other local stocks. Moreover, it was limited to sockeye during a specific period and area did not include sockeye caught outside of September 1<sup>st</sup> and on the East Side of Kodiak Island and on parts of Afognak. When the genetic study is viewed in the context of the entire Kodiak fishery, with all species included, Cook Inlet bound sockeye make up a very small percentage of fish caught in the Kodiak area during the timeframe of the study.

Second, regulating Kodiak because of the possibility of Cook Inlet bound stocks being present in the KMA would be not be in the public’s interest because of the respective economics of the two fisheries. Economic losses in Kodiak do not equal comparable economic gains in Cook Inlet. As one major processor has stated, “I cannot keep my plant open if the fishery is closed for several days during each of 5 weeks in late June or July. My fixed costs are too high and my processing workers can’t afford to stay here.” Kodiak is a volume fishery that relies on fishing time. In contrast, Cook Inlet is a high value fishery that relies on spatial opportunity. Regulations that may work in Cook Inlet will have devastating impacts in Kodiak. The economics impacts paper should give the Board pause regarding unintended consequences from management changes.

## Reflections in the Mirror:

The report by Harold Geiger and Terrance Quinn is important for contextualizing “The Genetic Stock Composition of the Commercial Harvest of Sockeye Salmon in the Kodiak Management Area”. When assessing “the public’s interest” it is critical to understand the



foundation for decision making. It does NOT appear that the genetic stock composition report could justify a public policy reassessment. Although Geiger & Quinn affirm that the genetic report is reliable, its application is limited to questions it directly addressed. The report was intended to assess the mixing of Kodiak sockeye in the Kodiak Management Area, particularly the Frazer and Upper Station stocks (see selected spatial strata). For that purpose, the report is reliable --- the mirror reflects the objects put in front of it.

However, Geiger & Quinn conclude that with “.... substantial variability in stock composition across years, among spatial strata, and among temporal strata. Further study ... would thus be desirable.” And again “this observed variation shows the danger in looking at just three years and thinking that one sees a trend.” Then finally, “with only three years of measurements, with a large fraction of the catch not sampled, and with large annual variation in these measurements...., **it is very hard to conclude that these results bracket the range of what to expect if the study were to be repeated, or to conclude that these results represent what would happen in a ‘typical year’.**”

## Conclusion:

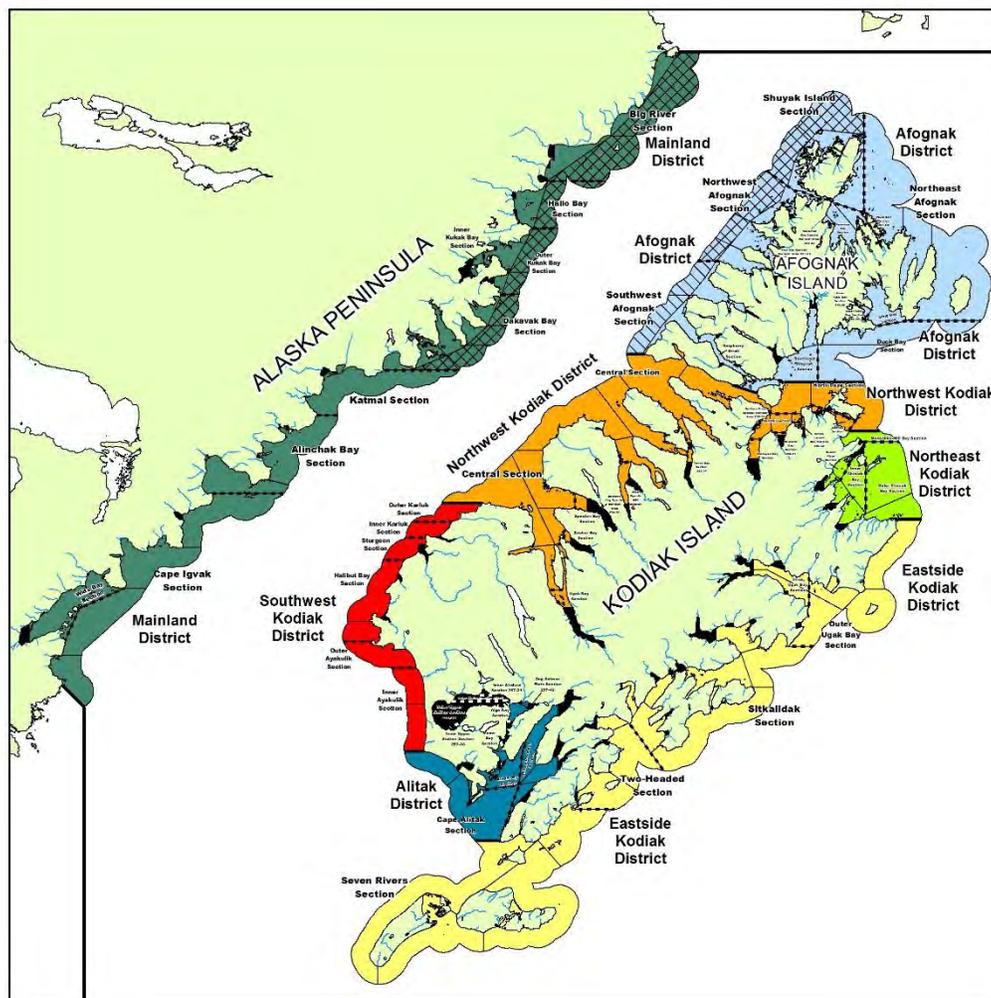
The UCIDA Agenda Change Request must fail on its face. In addition, the only possible basis for a Board generated proposal regarding the Kodiak/Cook Inlet issue would be an assessment that such a proposal would be in the public’s “best interest”. However, the facts of the issue support the status quo.

1. The Genetic Study likely primarily reflects anomalous ocean conditions in 2015 & 2016.
2. Kodiak’s fisheries are focused on local stocks and the Cook Inlet bound portion of the overall Kodiak catch is relatively small.
3. Economic harm in Kodiak is not balanced by economic gain in Cook Inlet.
4. The genetic study shows large variability and is not a predictor of when and where Cook Inlet bound sockeye may be available in the Kodiak Management Area. Consequently, without a “public interest” basis, a Board Generated Proposal must also fail.

It is the position of the Kodiak Salmon Workgroup that the Alaska Board of Fisheries defer the Kodiak/Cook Inlet issue to your regularly scheduled Kodiak meeting in January of 2020.

Very truly yours,

Duncan Fields, Chairman



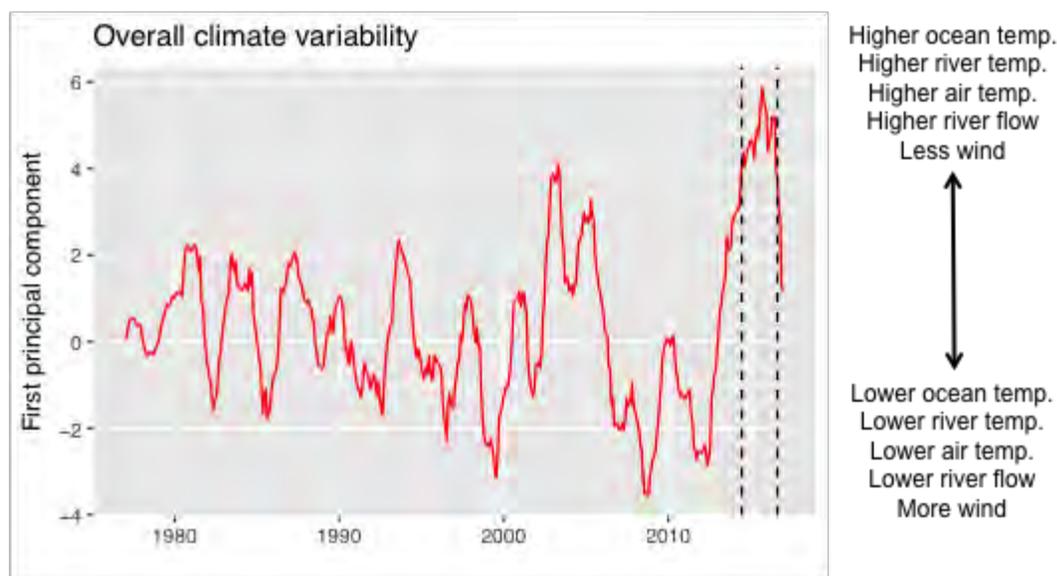
# Highly unusual Gulf of Alaska climate conditions in 2014-2016

Compiled for the Kodiak Salmon Work Group by Mike Litzow, Ph.D.  
10/3/2017

## Highly unusual Gulf of Alaska climate conditions in 2014-2016\*

### Summary

The extremely unusual climate conditions that existed in the Gulf of Alaska during 2014-2016 make it very unlikely that these years were representative for understanding normal patterns of sockeye salmon migration and stock mixing.



**Fig. 1.** First principal component of climate conditions in the Gulf of Alaska. Labels at the right interpret the meaning of positive and negative values in the time series. Dashed vertical lines indicate 2014-16, when the genetics study occurred.

### Background

Completely unprecedented atmospheric conditions that developed over the North Pacific in winter 2013-14 led to the “Warm Blob” – an event of unprecedented warm temperatures across the Gulf of Alaska. The Warm Blob peaked in 2014-2015, and was followed by an El Niño event. As a result, the ADF&G genetics study of Kodiak sockeye catches (Shedd et al. 2016) took place at exactly the same time (2014-2016) that the Gulf of Alaska was being exposed to the *strongest “marine heat wave” ever observed* (Bond et al. 2015, Di Lorenzo and Mantua 2016).

Salmon migration patterns are highly sensitive to physical factors such as ocean temperature, ocean currents, and river volume and temperature. Sockeye runs in Cook Inlet are particularly prone to shared patterns of variability in run timing – in other words, unusual migration behavior tends to affect runs across Cook Inlet as a group (Hodgson et al. 2006).

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\*Compiled for the Kodiak Salmon Working Group by Mike Litzow.



The authors of the ADF&G genetics study note that their research represents environmental conditions only during 2014-2016, and that "...caution must be exercised when extrapolating the results to years, areas, and temporal periods not analyzed because changes in...migratory behavior due to ocean conditions very likely affect distribution of stock-specific harvests among fisheries" (Shedd et al. 2016, p. 23). Because climate conditions were so unusual in 2014-2016, it appears likely that the Shedd et al. study was not representative of migration and stock mixing patterns around Kodiak during more normal climate conditions.

### **Effects of the marine heat wave on Gulf of Alaska climate**

During the marine heat wave, a suite of climate factors that affect salmon migration – both for marine habitat in the Gulf of Alaska, and for freshwater habitat in Cook Inlet – were at either record levels, or at the outside edge of normal variability. The effects of all of these unusual climate conditions can be combined with a simple Principal Components Analysis, which clearly shows how unrepresentative climate conditions were during the genetics study (Fig. 1).

Highly unusual conditions were found in both marine and river habitats. Cook Inlet sea surface temperatures were at record-high levels (Fig. 2). Comparative data on ocean currents are difficult to access. However, winds, a primary driver of currents, showed a prolonged period of unusually low levels during 2014-2016 (Fig. 3). Only limited temperature data are available for Cook Inlet rivers, but the available information shows very unusual temperatures during 2014-2016 (Fig. 4). Air temperature is a good proxy for river temperatures, and the longer air temperature time series that are available clearly show the unusual heat of 2014-2016 (Fig. 5). Finally, during 2014-2016 Cook Inlet river flow was at high, though not record, levels (Fig. 6).

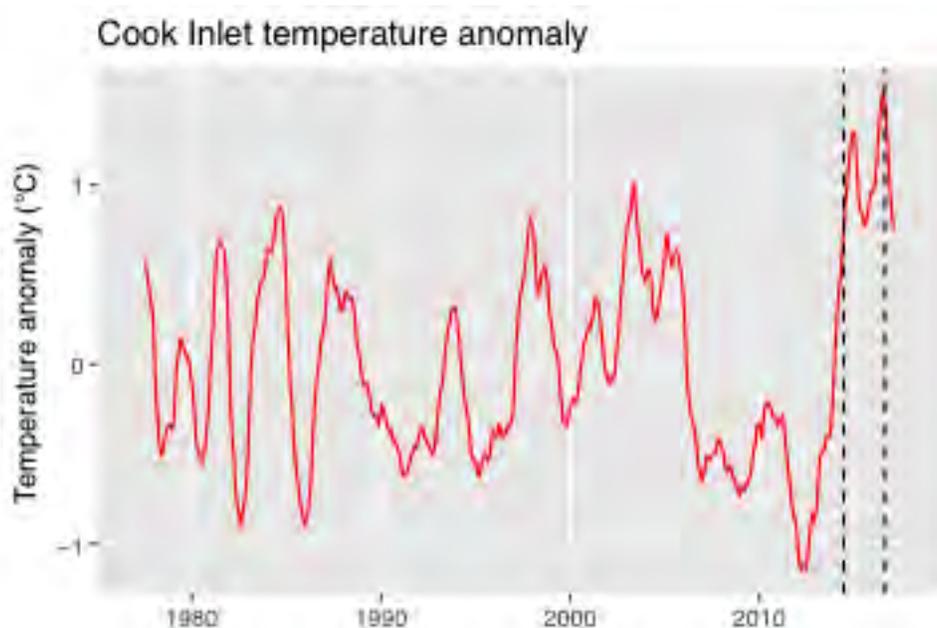
### **Effects on Cook Inlet sockeye migration**

No at-sea distribution data are available for understanding the effects of these severe climate anomalies on sockeye migration patterns during 2014-2016. However, escapement data indicate that 2014-2016 was a period of very unusual run timing for Cook Inlet runs. Kasilof River runs in 2014-2016 had a significantly higher proportion of early returns than the 2002-2011 mean (Fig. 7). Kenai River runs showed mixed patterns of unusually early and late runs during the same period (Fig. 8). The 2014 and 2015 runs both showed an unusual proportion of late returns, while the 2016 run had a significantly higher proportion of early returns than normal. These patterns of unusual run timing demonstrate how the unrepresentative climate conditions of 2014-2016 resulted in unusual run dynamics for Cook Inlet sockeyes, and strongly suggest the possibility of similarly unusual behavior in at-sea migration and distribution.

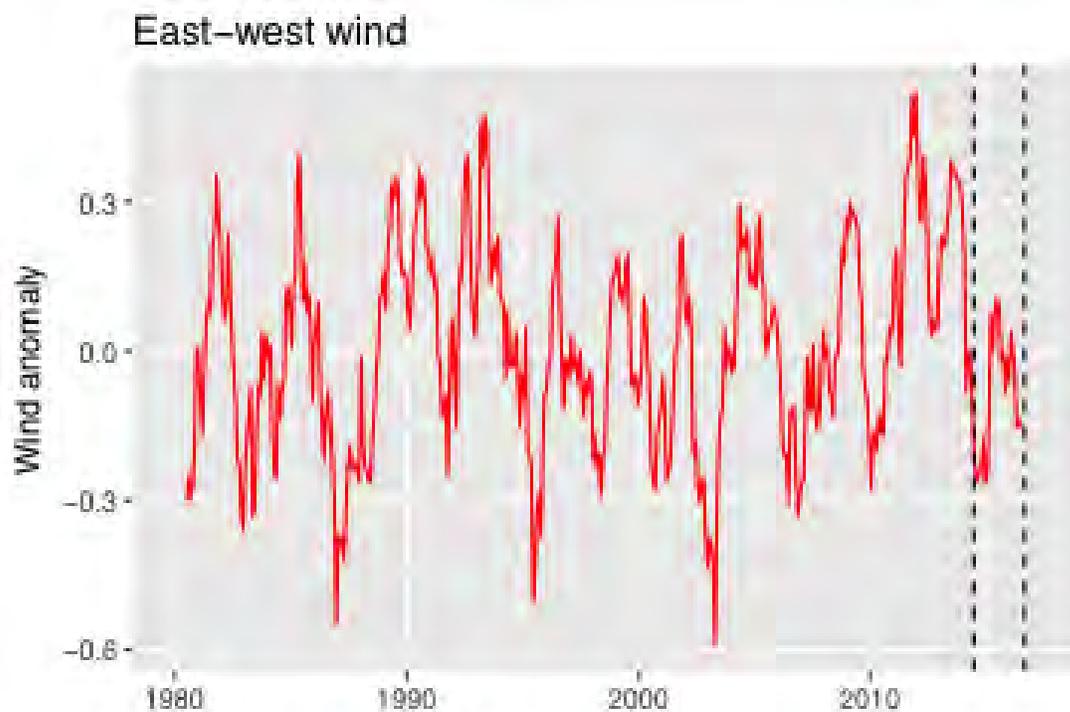
### **Other ecosystem effects**

A number of other extremely unusual events attest to just how unrepresentative the 2014-2016 period was in the Gulf of Alaska. Mass starvation of common murres in the Gulf in 2015-2016 led to the largest seabird die-off ever observed in Alaska (Fig. 9). Unusually high rates of stranding were also observed for whales (Fig. 10) and sea otters (Fig. 11).

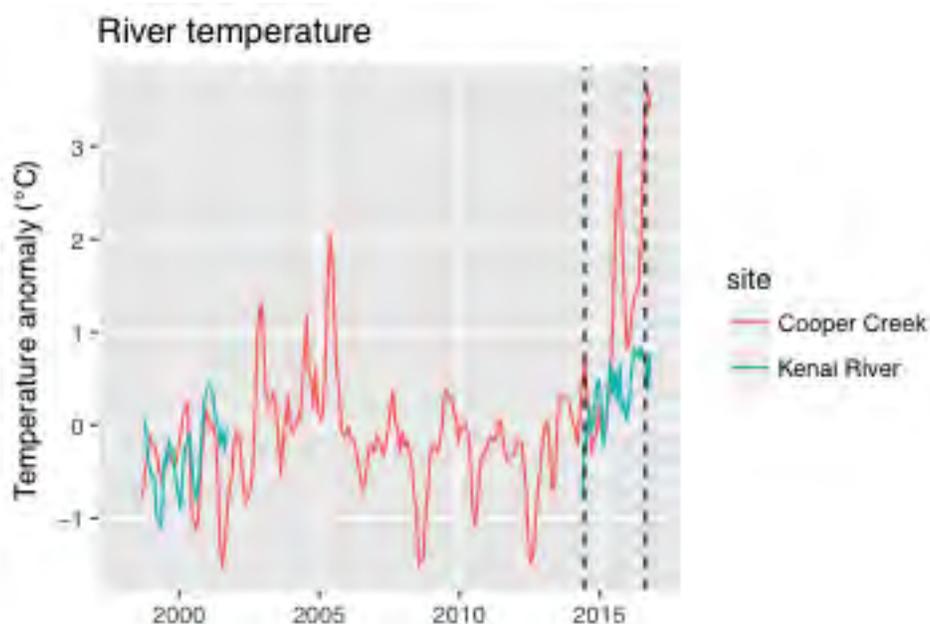
Whale strandings in the Gulf of Alaska have been linked with a massive harmful algal bloom (red tide) that stretched from Baja California to the Alaska Peninsula in 2015 (McCabe et al. 2016). The co-occurrence of such unusual disruptions to the ecosystem offers further confirmation of the completely unprecedented state of the Gulf of Alaska ecosystem during 2014-2016, and the difficulties in using data from this period for making inferences about normal ecosystem dynamics.



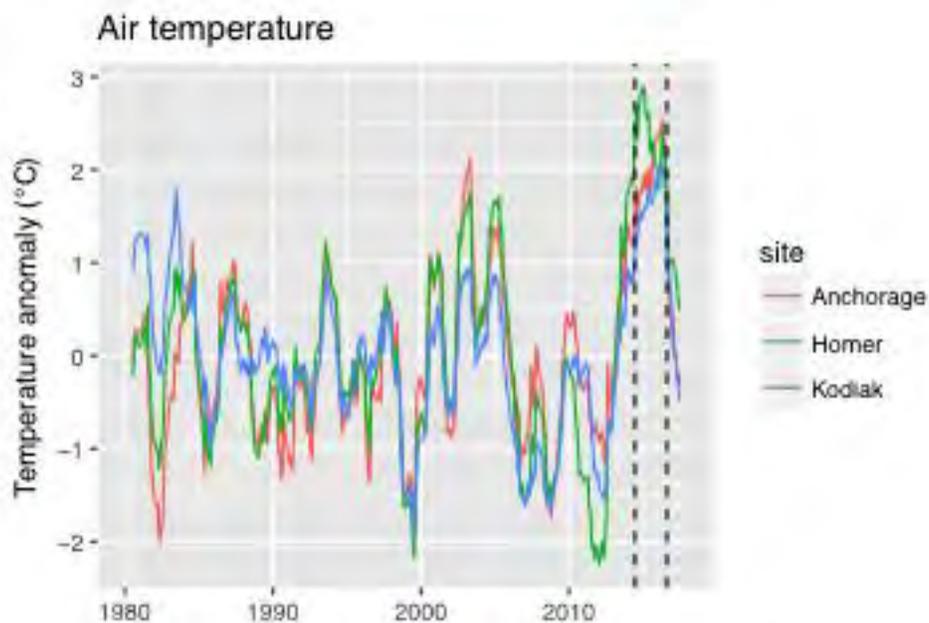
**Fig. 2.** Cook Inlet sea surface temperatures. Data are plotted as temperatures averaged over 13-month windows. Dashed vertical lines indicate 2014-16, when the genetics study occurred.



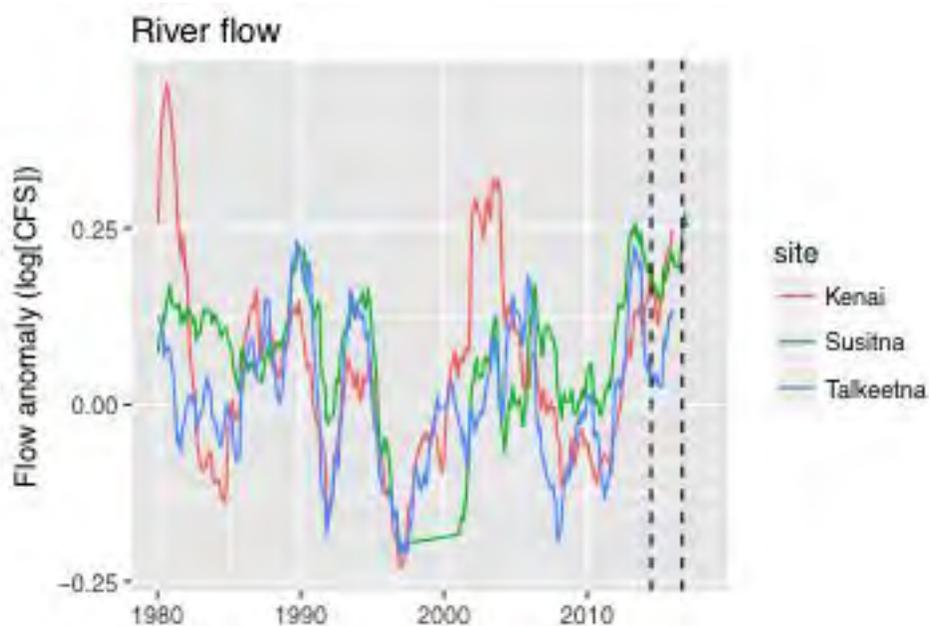
**Fig. 3.** Wind speeds in the east-west direction along the Gulf of Alaska coast. Data are plotted as anomalies averaged over 13-month windows. Dashed vertical lines indicate the 2014-16 sampling period for the genetics study.



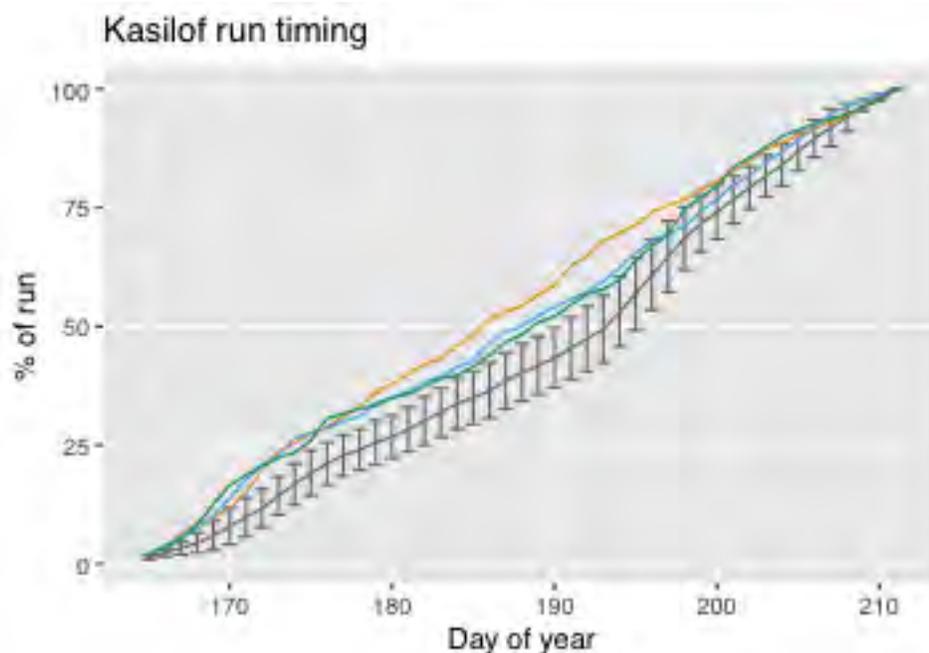
**Fig. 4.** Water temperatures for Cooper Creek and the Kenai River. Data are plotted as 3-month rolling averages. Dashed vertical lines indicate 2014-16.



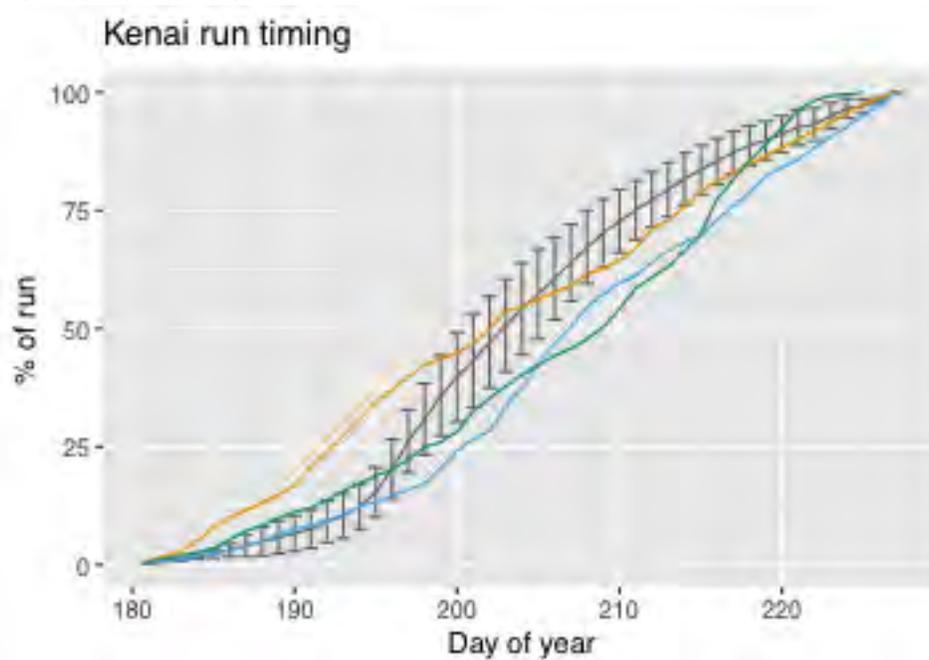
**Fig. 5.** Air temperature for three sites in the Gulf of Alaska and Cook Inlet. Data are plotted as 13-month rolling averages, with 2014-2016 indicated by vertical dashed lines.



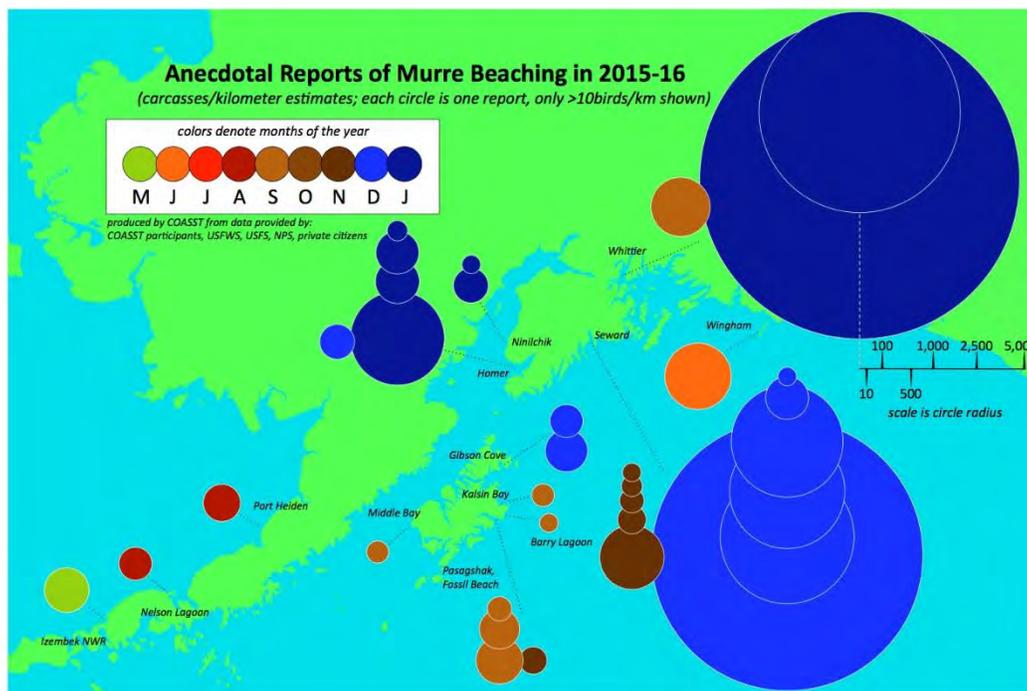
**Fig. 6.** Flow (volume) time series for three Cook Inlet rivers, with 2014-2016 indicated by dashed vertical lines. Data plotted as 25-month rolling averages.



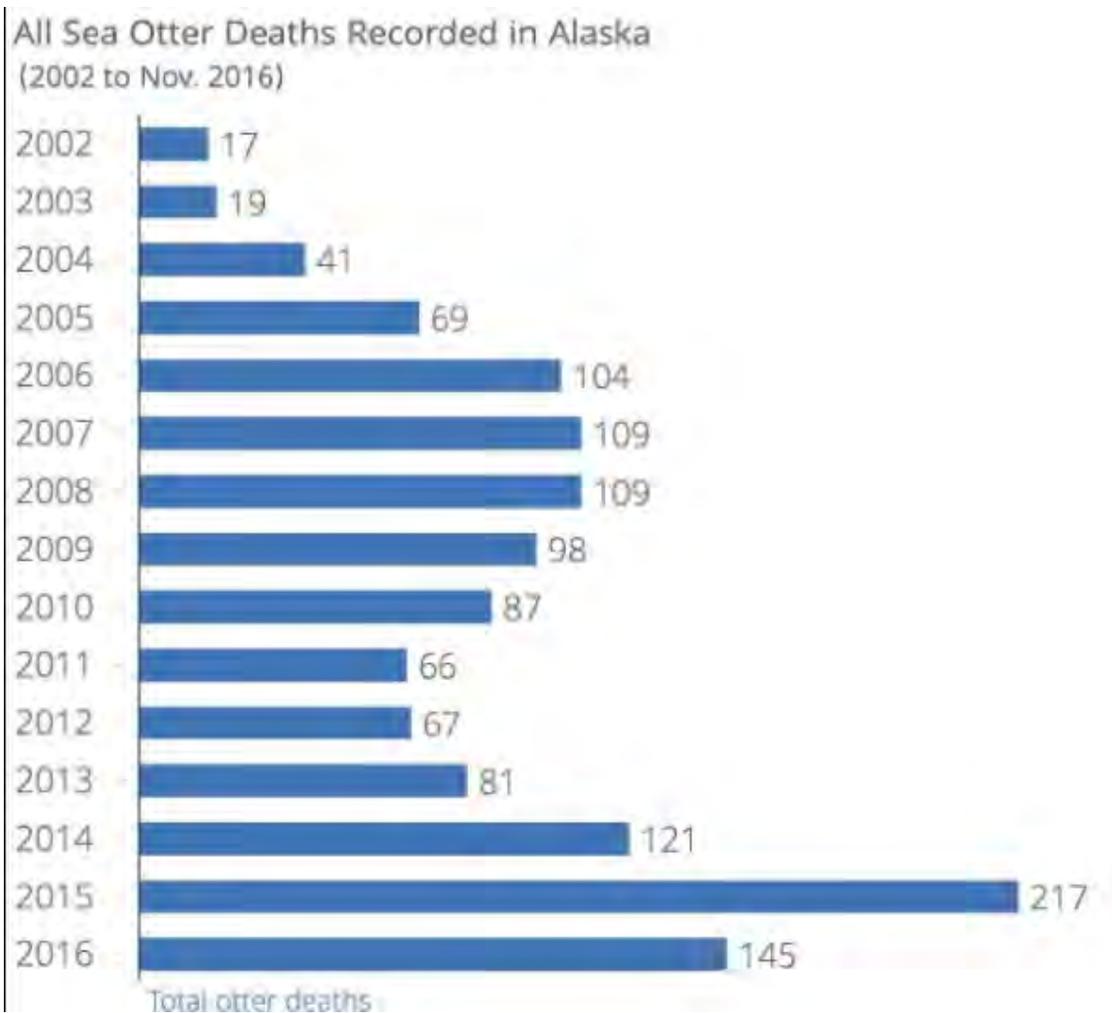
**Fig. 7.** Kasilof River run timing during the June 15-July 31 period for 2014 (green), 2015 (blue), and 2016 (orange), relative to the 2002-2011 mean (gray). Values on the y-axis are the % of the June 15-July 31 run that has returned by a given day of the year. Error bars on the 2002-2011 data are 95% confidence intervals.



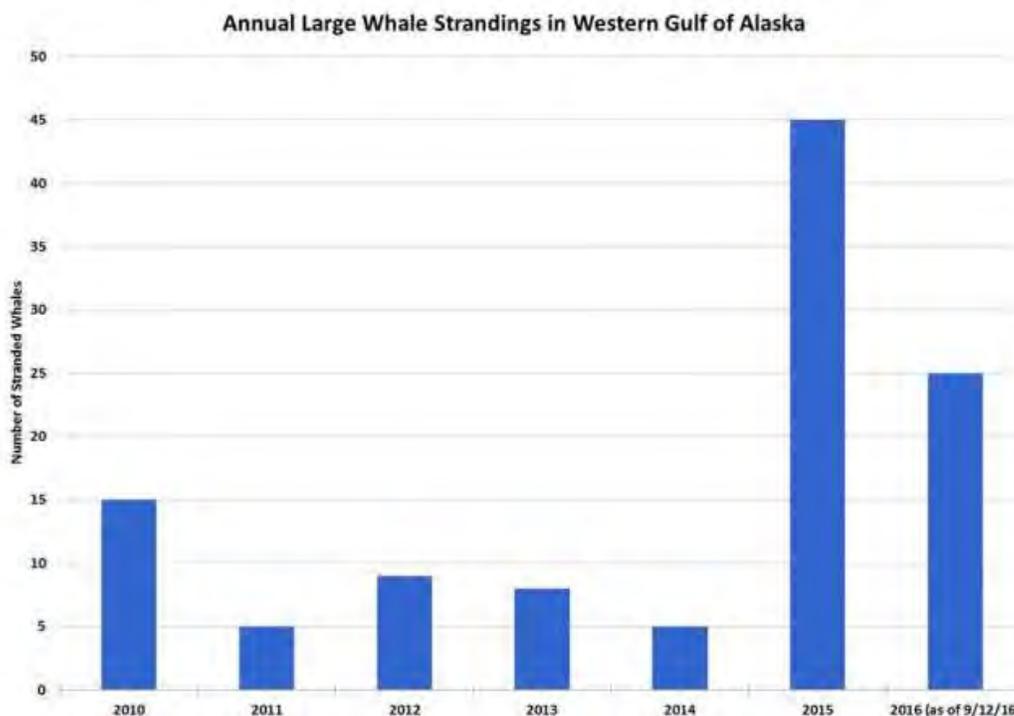
**Fig. 8.** Kenai River run timing for the July 1-August 16 period during 2014 (green), 2015 (blue), and 2016 (orange), relative to the 2002-2011 mean (gray). Values on the y-axis are the % of the July 1-August 16 run that has returned by a given day of the year. Error bars on the 2002-2011 data are 95% confidence intervals.



**Fig. 9.** Common murre carcasses recovered in the Gulf of Alaska, 2015-2016. Figure from University of Washington Coastal Observation and Seabird Survey Team.



**Fig. 10.** Unusual sea otter mortality in 2015. Figure from [alaskapublic.org](http://alaskapublic.org), data from US Fish and Wildlife Service.



**Fig. 11.** Unusual numbers of whale strandings in the Gulf of Alaska in 2015-2016. Figure and data from National Marine Fisheries Service.

### Data sources

Sea surface temperature data were extracted from the NOAA Extended Reconstructed Sea Surface Temperature data set ([ncdc.noaa.gov](http://ncdc.noaa.gov)). Wind data come from the NCEP/NCAR Reanalysis ([esrl.noaa.gov](http://esrl.noaa.gov)). River temperature and river flow data come from the US Geological Survey ([waterdata.usgs.gov](http://waterdata.usgs.gov)). Air temperature data come from the Alaska Climate Research Center ([climate.gi.alaska.edu](http://climate.gi.alaska.edu)). As noted in each figure legend, climate data were averaged across moving windows to separate the lower-frequency signal relevant to salmon dynamics from the higher-frequency noise.

Data on sockeye run timing for the Kenai and Kasilof Rivers come from ADF&G ([adfg.alaska.gov](http://adfg.alaska.gov)). For each year, these data were plotted as the cumulative percentage of total fish returning by a given day, considering only the period for which ADF&G presents historical (2002-2011) data (June 15 – July 31 for the Kasilof, July 1 – August 16 for the Kenai).

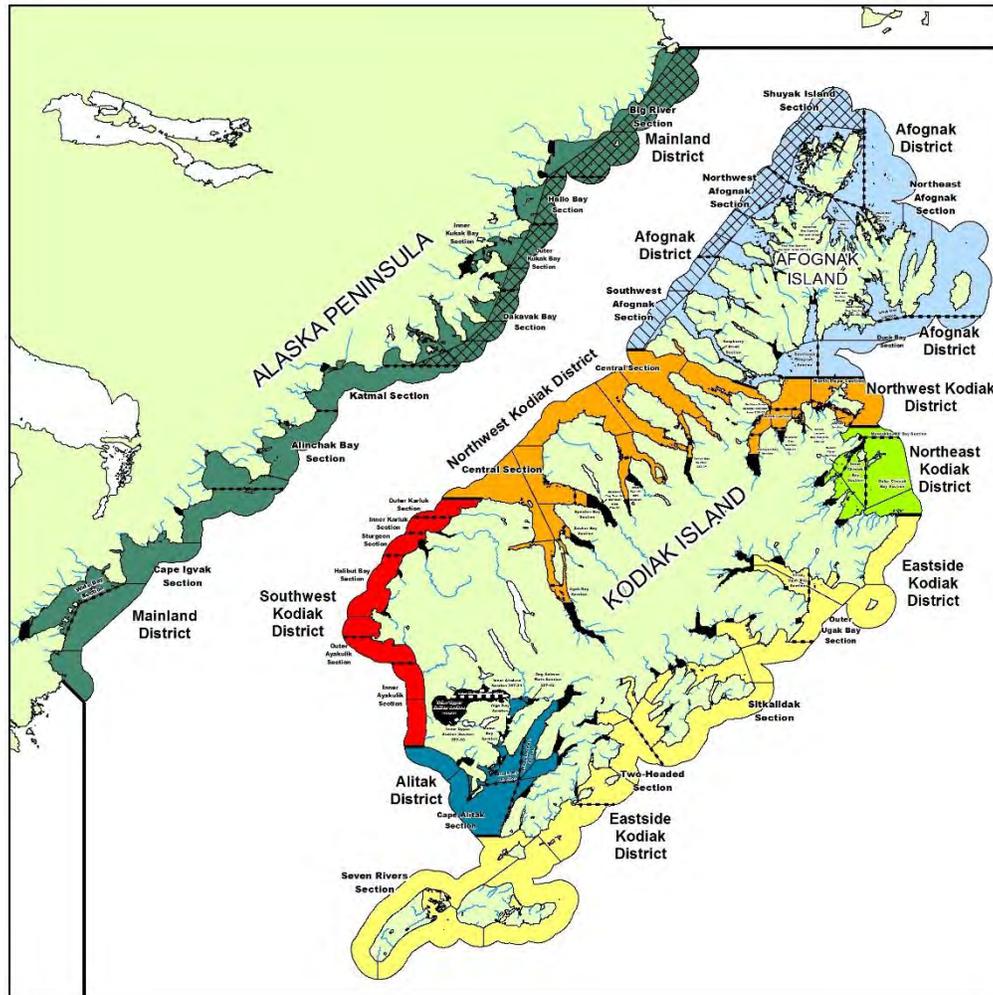
### Biography

Mike Litzow has authored more than twenty scientific papers, many of them focusing on climate effects on Alaskan fisheries. He holds a Ph.D. in Marine Science from the University of Tasmania, a M.S. in Marine Science from the University of California, Santa Cruz, and a B.S. in Biology from the University of Alaska Fairbanks.



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- Shedd, K. R., M. B. Foster, T. H. Dann, H. A. Hoyt, M. L. Wattum, et al. 2016. Genetic stock composition of the commercial harvest of sockeye salmon in Kodiak Management Area, 2014-2016. Alaska Department of Fish and Game.



# Comparing the Salmon Fisheries of Kodiak and Cook Inlet

Kodiak Salmon Work Group

10/2/2017

# COMPARING THE SALMON FISHERIES OF KODIAK AND COOK INLET

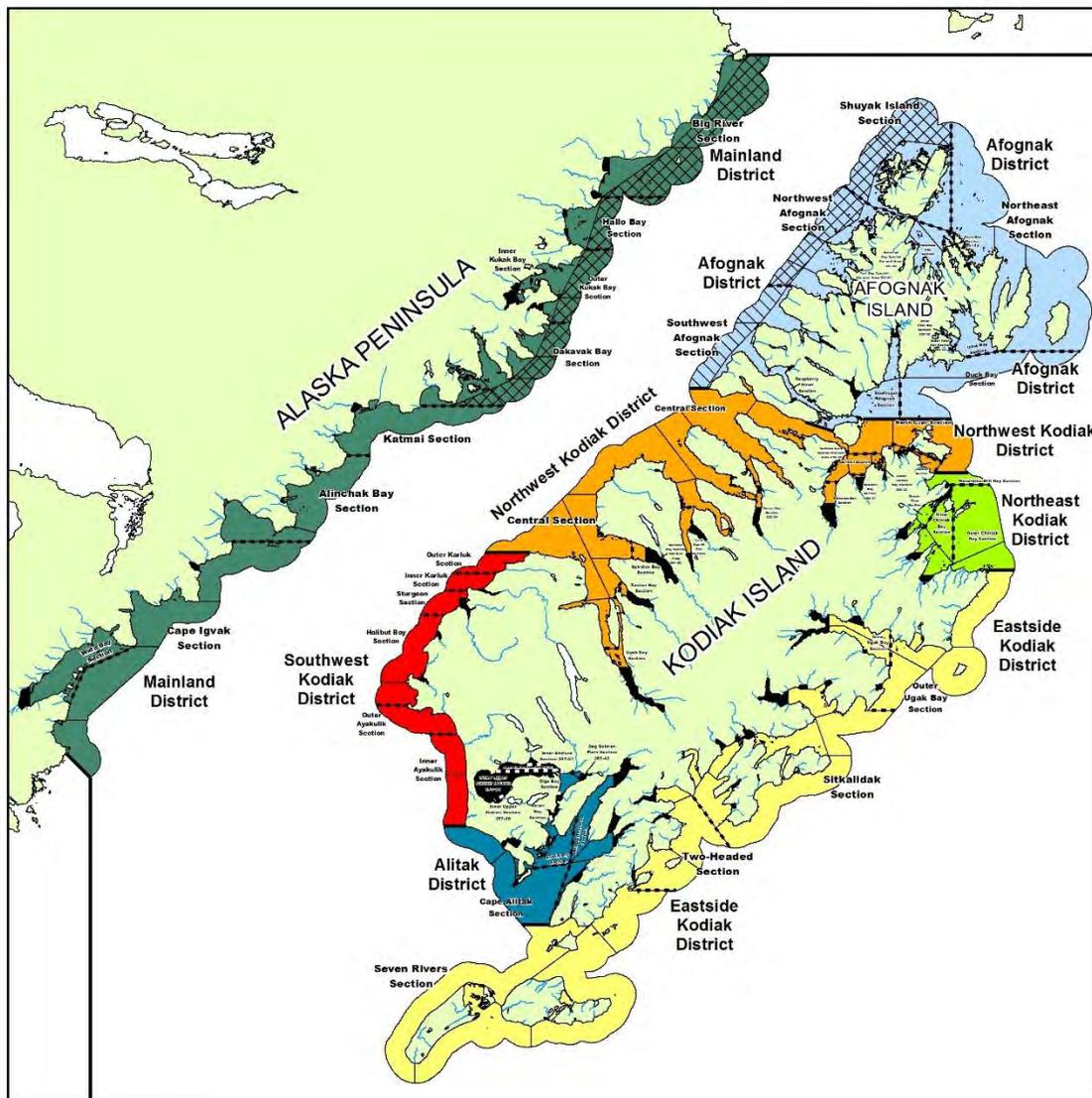
## Kodiak vs. Upper Cook Inlet salmon fisheries

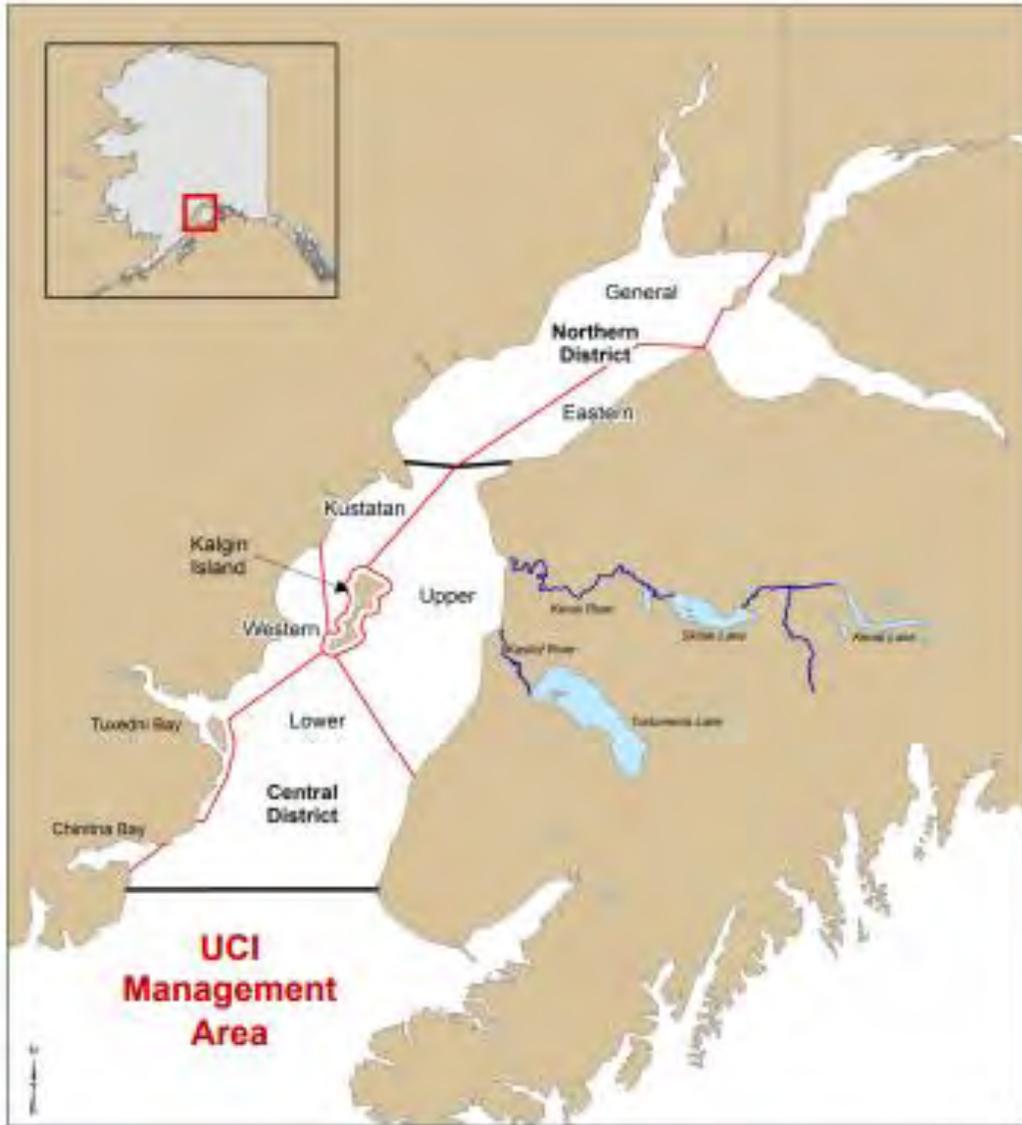
When discussing the relationship between the Kodiak and the Cook Inlet salmon fisheries, it's essential to understand the comparative magnitude and complexity of the two fisheries.



Area salmon harvests in Cook Inlet and Kodiak. Note the difference in scale.

Kodiak and Upper Cook Inlet salmon fisheries have fundamentally different properties. Cook Inlet catches approximately 3 million salmon a year, most of which are sockeye. Kodiak catches approximately 15 million fish, most of which are pinks. Of note, 2016 was the smallest number of fish caught in Kodiak since 1975.





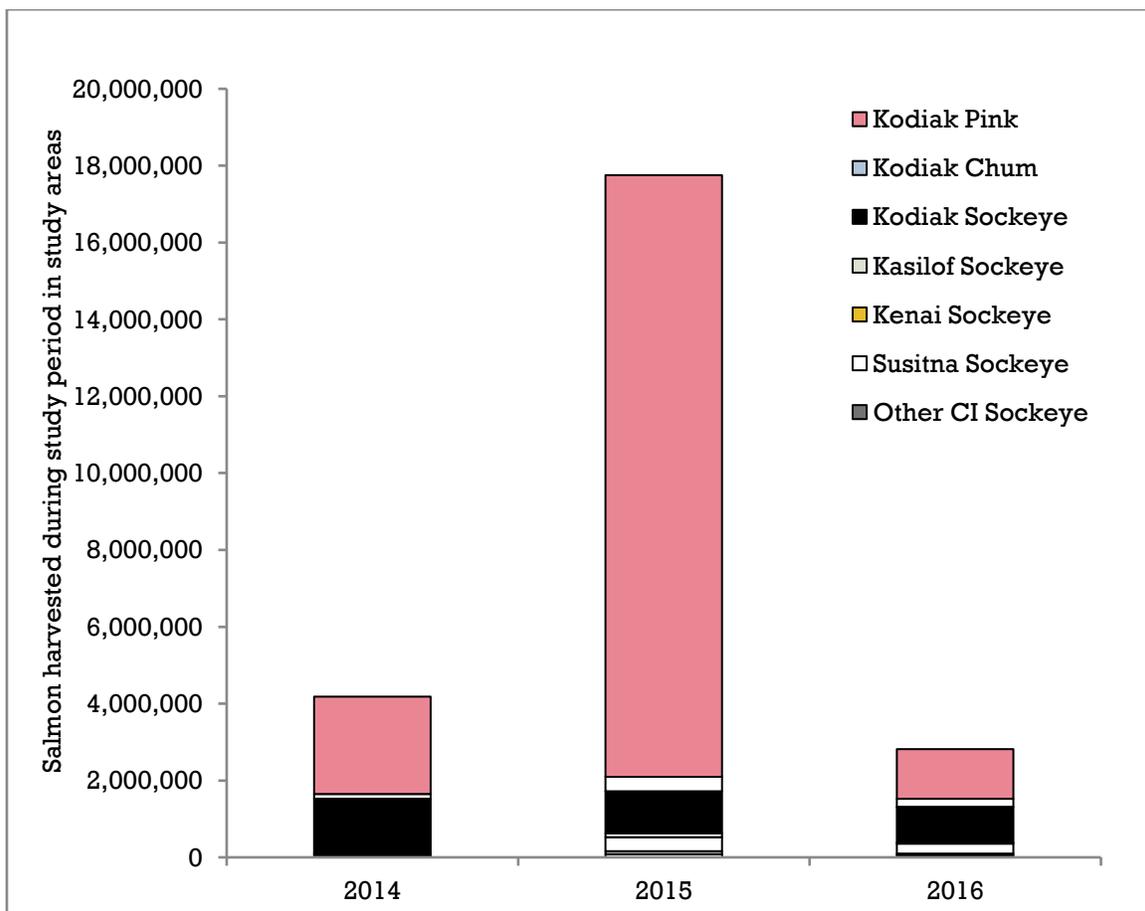
## Geographic contrasts between areas

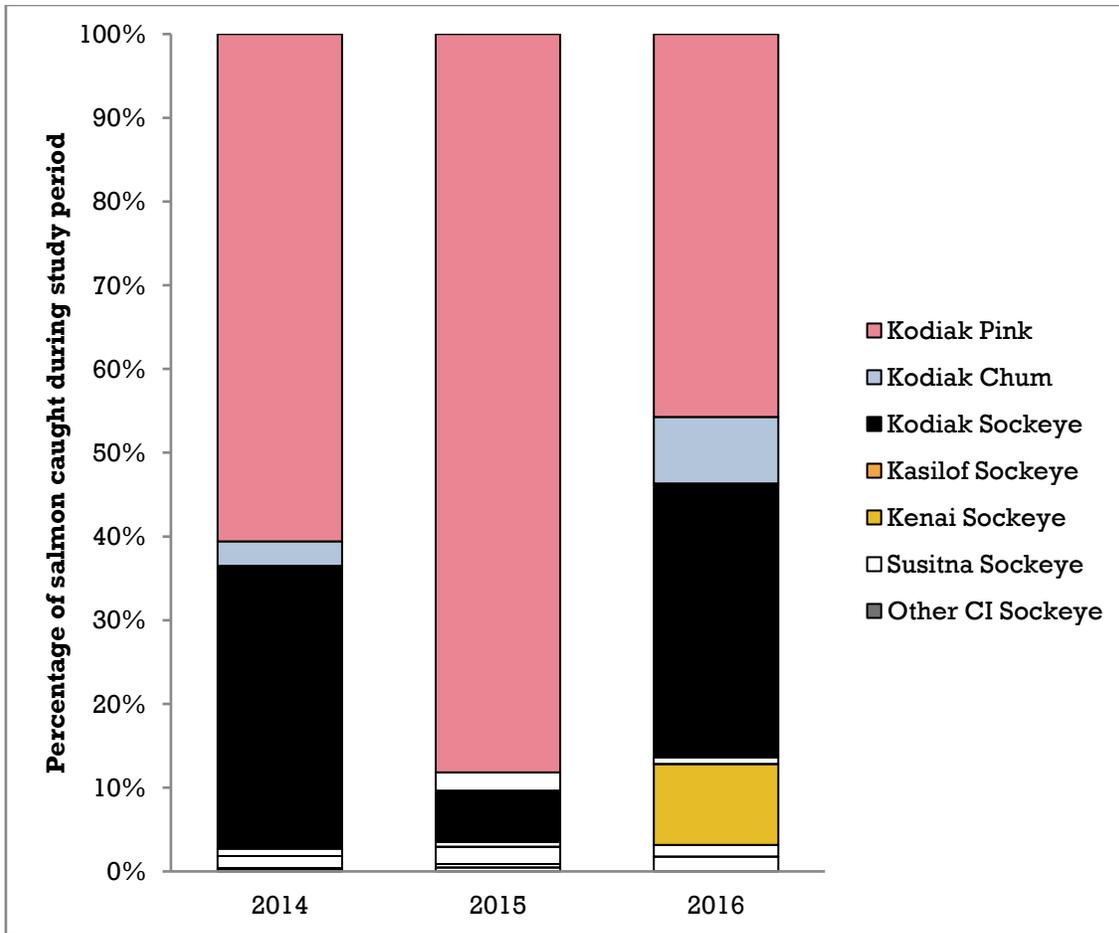
Kodiak has almost 20 sockeye producing systems and more than 150 pink and chum streams. Run timing stretches over three months. The east and west sides of the island as well as the mainland often differ in run strength in any given year and throughout the year. In contrast, the Cook Inlet management area has far fewer salmon producing streams and less variability within the district.

Geographically, the Upper Cook Inlet salmon fisheries are prosecuted in the upper reaches of Cook Inlet while Kodiak fisheries take place in the Gulf of Alaska. Many of Kodiak's major sockeye and pink salmon producing systems are located on outer

shorelines rather than at the heads of bays. The Karluk, Ayakulik, and Little River systems are all on outer shorelines of the Westside of Kodiak.

Except for the Cape Igvak fishery, all salmon fisheries in Kodiak are managed for and directed at local stocks. There is a certain degree of mixed stock fishing and incidental harvest of non-local stocks in almost all areas and time periods of the Kodiak salmon season, but the clear focus of our fisheries, as mandated by the 7 regulatory management plans, is on local harvest. Lower Cook Inlet is also likely to have some mixed stock fisheries but the upper Inlet and Northern District are believed to be harvesting almost entirely local stocks.





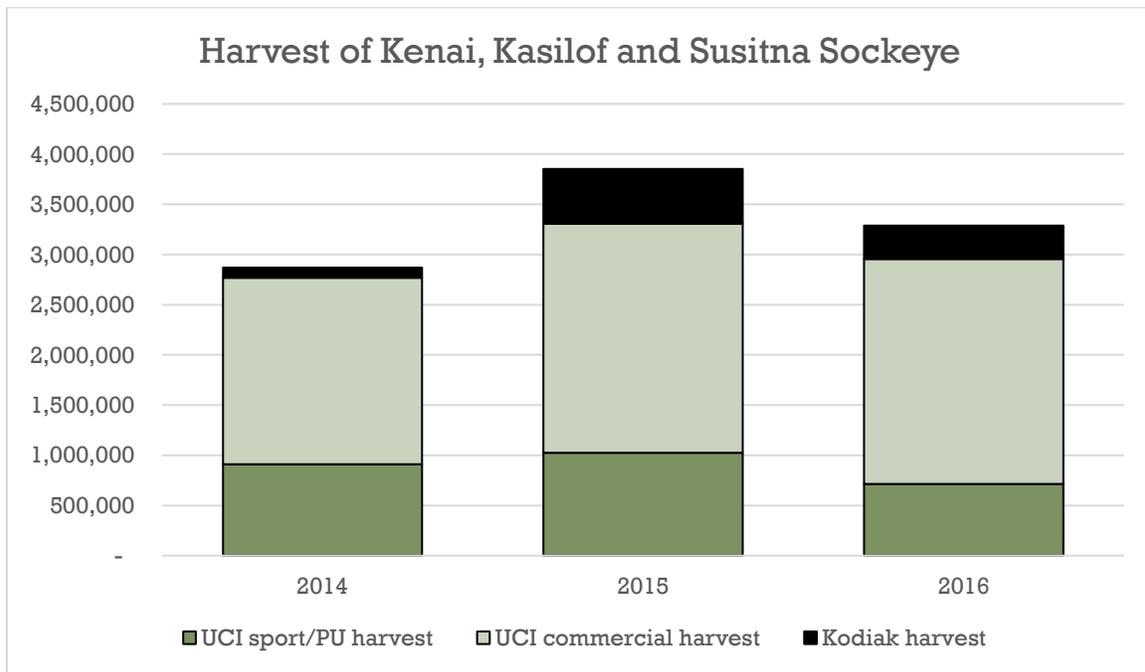
### Kodiak sockeye genetic stock assessment 2014 – 2016

These figures show the magnitude of the incidental harvest of Cook Inlet bound sockeye compared to the Kodiak salmon fishery. In 2014-2016, the harvest of Cook Inlet bound sockeye was 2.7%, 3.5%, and 13.6% respectively, of the total salmon harvest in Kodiak. The number of fish reflects only the time periods and spatial areas covered in the genetic stock separation study. The first figure reflects numbers of fish caught. The second figure represents the percentage of each stock or species harvested. Again, note that the Kodiak salmon harvest in 2016 was the smallest on record. This makes the relative harvest of Cook Inlet bound sockeye appear larger than in a more typical year.

The Shedd et al. genetic reports clarifies that the degree of inter-annual variability in Upper Cook Inlet bound sockeye is astonishing. For example, in 2014 zero Cook Inlet bound sockeye were caught at Cape Igvak and less than 1% of the Cook Inlet bound incidental harvest was caught there in 2015. But in 2016, 45% of Kodiak’s harvest of Cook Inlet bound sockeye was captured at Cape Igvak. The 2014 harvest

of Cook Inlet bound sockeye is only 18% of the 2015 harvest. In many areas and time periods, the catch varies by more than an order of magnitude. For example, in both 2014 and 2016, the harvest of Cook Inlet bound sockeye in Uyak Bay was negligible, but was more than 5 times greater in 2015. There is no predictability to the location or magnitude of the Kodiak’s incidental harvest.

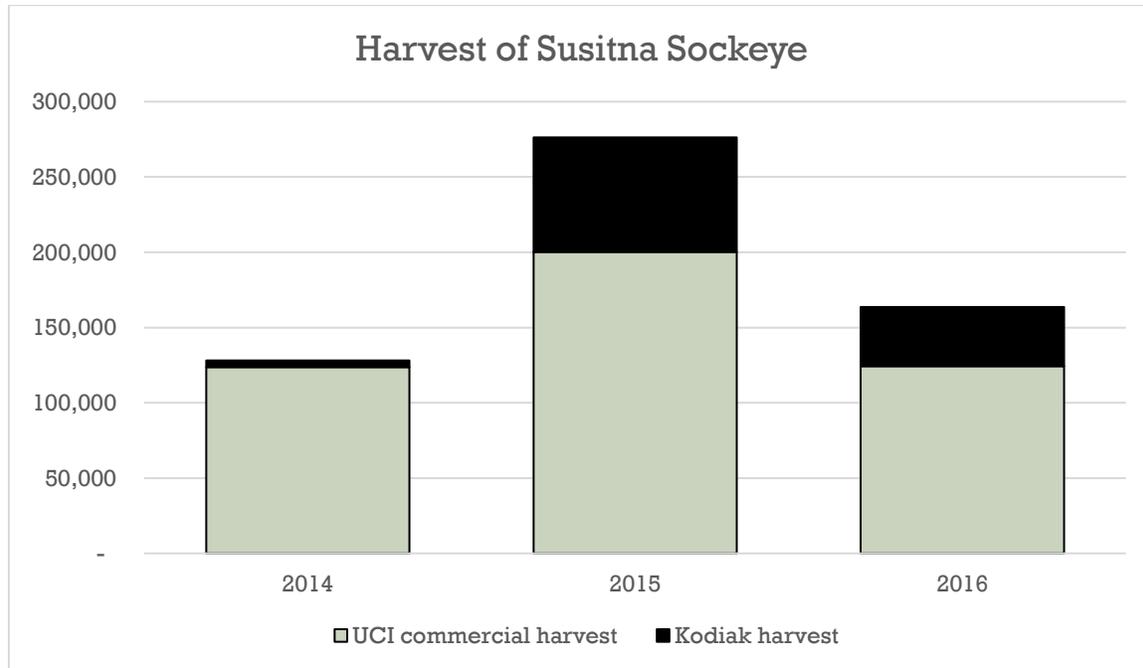
Cook Inlet bound sockeye are harvested incidentally all along the coast of Kodiak Island and the mainland district. As was experienced with the North Shelikof plan, closing any one area to conserve Cook Inlet bound sockeye does not inhibit those sockeye from being caught elsewhere, and the closed areas would likely intensify fishing effort in the remaining open areas. Consequently, when Cook Inlet fish become available, more will be caught in the areas that remain open. In short, given the magnitude of inner-annual variability of availability and random migration patterns of Cook Inlet sockeye in the Kodiak Management Area, the entire area would have to be closed to have an impact on Cook Inlet’s sockeye availability.



### Cook Inlet bound sockeye: Kodiak harvests vs. Cook Inlet

Although the magnitude of the harvest of Cook Inlet bound sockeye in Kodiak has caused concern among some stakeholders, it can be seen that Kodiak’s harvest is dwarfed by the harvest in Upper Cook Inlet. In 2014, when Kodiak incidental harvest was smallest, Kodiak caught 101,000 Upper Cook Inlet bound sockeye, representing

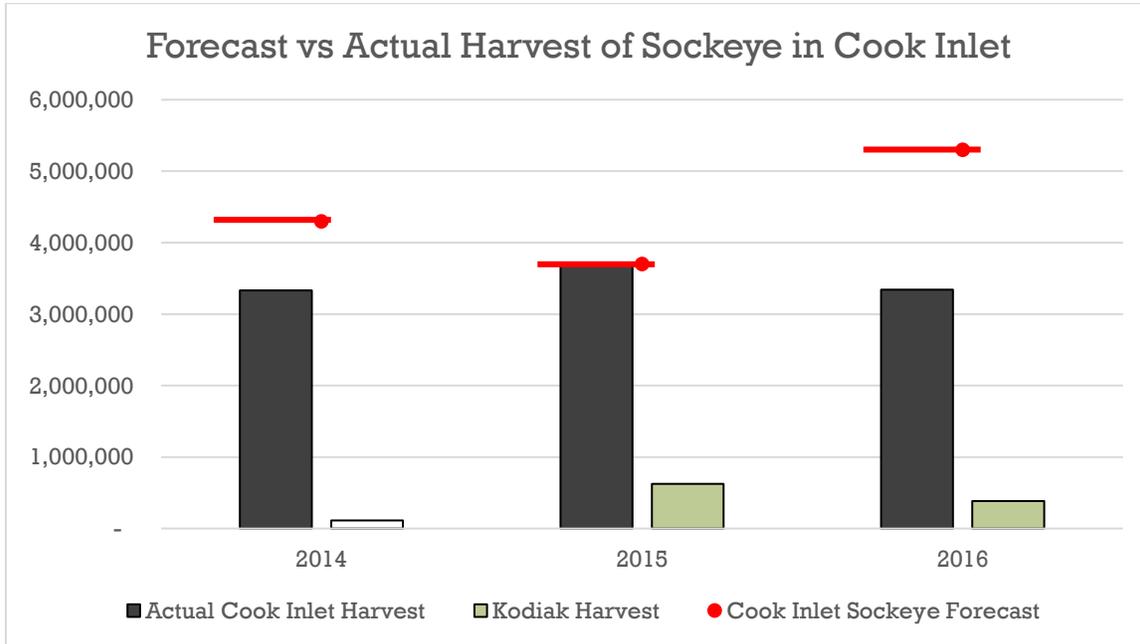
2% of the total runs to the Kenai, Kasilof and Susitna/Yentna systems. In comparison, the Upper Cook Inlet commercial, sport and personal use harvest was 2.8 million sockeye, or 56% of the runs. In 2015, when Kodiak incidental harvest was largest, Kodiak caught 545,000 Upper Cook Inlet bound sockeye, representing 9% of the total runs to the Kenai, Kasilof and Susitna/Yentna systems. In comparison, the Upper Cook Inlet commercial, sport and personal use harvest was 3.3 million sockeye, or 52% of the runs.



### Susitna bound sockeye: Kodiak harvests vs. Cook Inlet

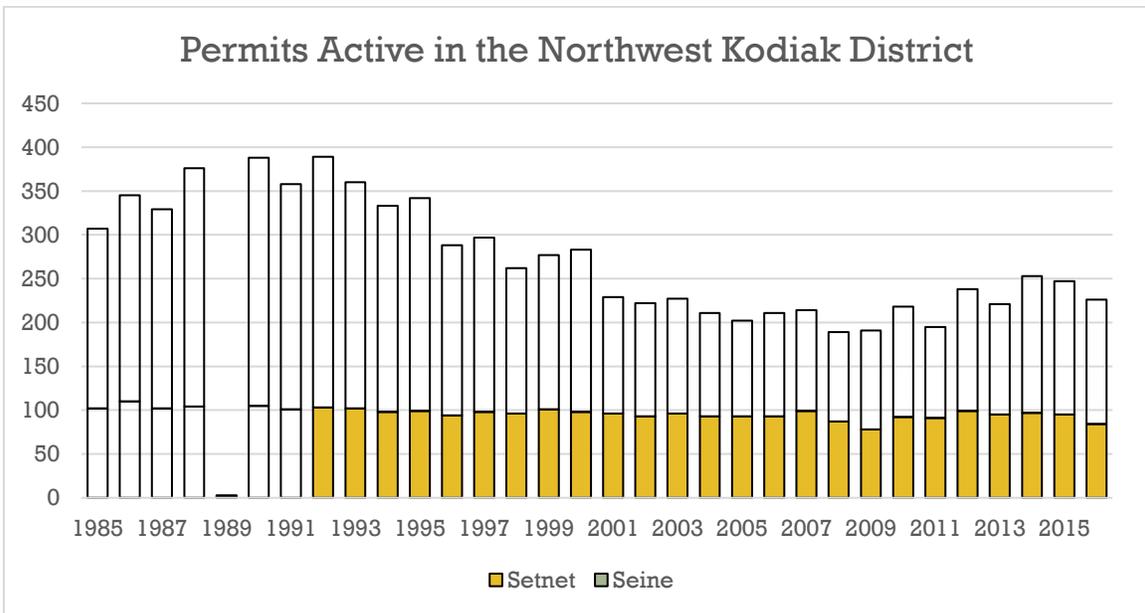
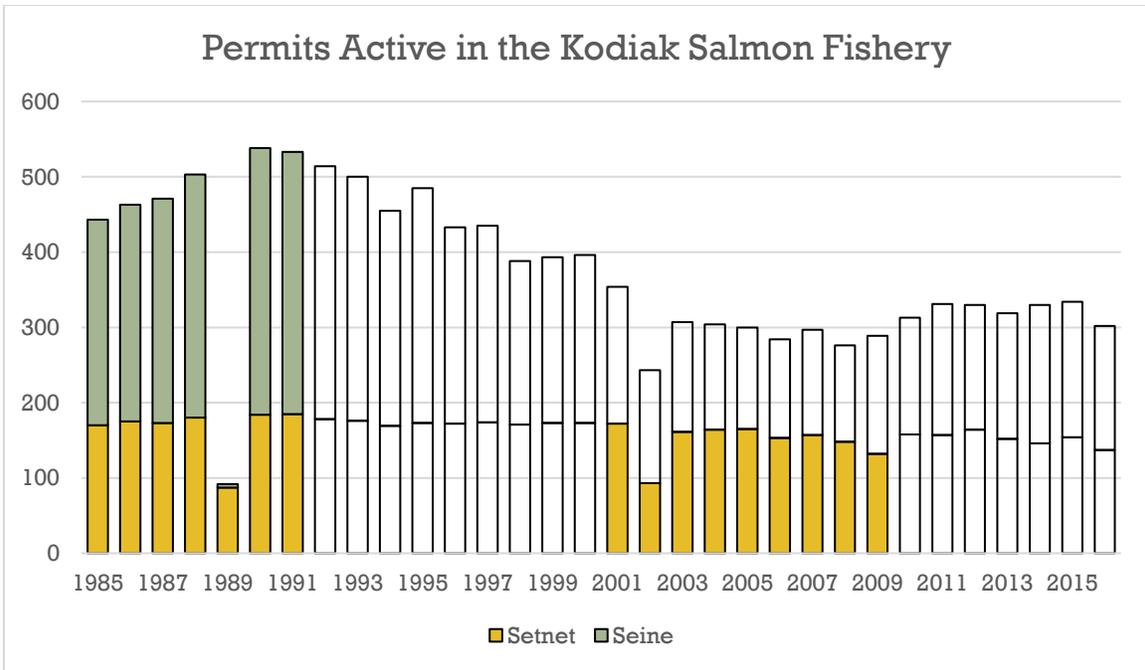
The Susitna/Yentna system represents a particular concern for some people. Again, Kodiak’s harvest of Susitna bound sockeye is dwarfed by the harvest in Upper Cook Inlet. In 2014, when Kodiak incidental harvest was smallest, Kodiak caught 4,000 Susitna/Yentna bound sockeye, representing 2% of the total run. In comparison, the Upper Cook Inlet commercial harvest was 124,000 sockeye, or 49% of the run. In 2015, when Kodiak incidental harvest was largest, Kodiak caught 76,000 Susitna/Yentna bound sockeye, representing 13% of the total run. In comparison, the Upper Cook Inlet commercial harvest was 200,000 sockeye, or 34% of the run. It is likely that a large percentage, perhaps as much as 90% of Susitna bound sockeye “saved” from being caught in the Kodiak Management Area are will be caught in the

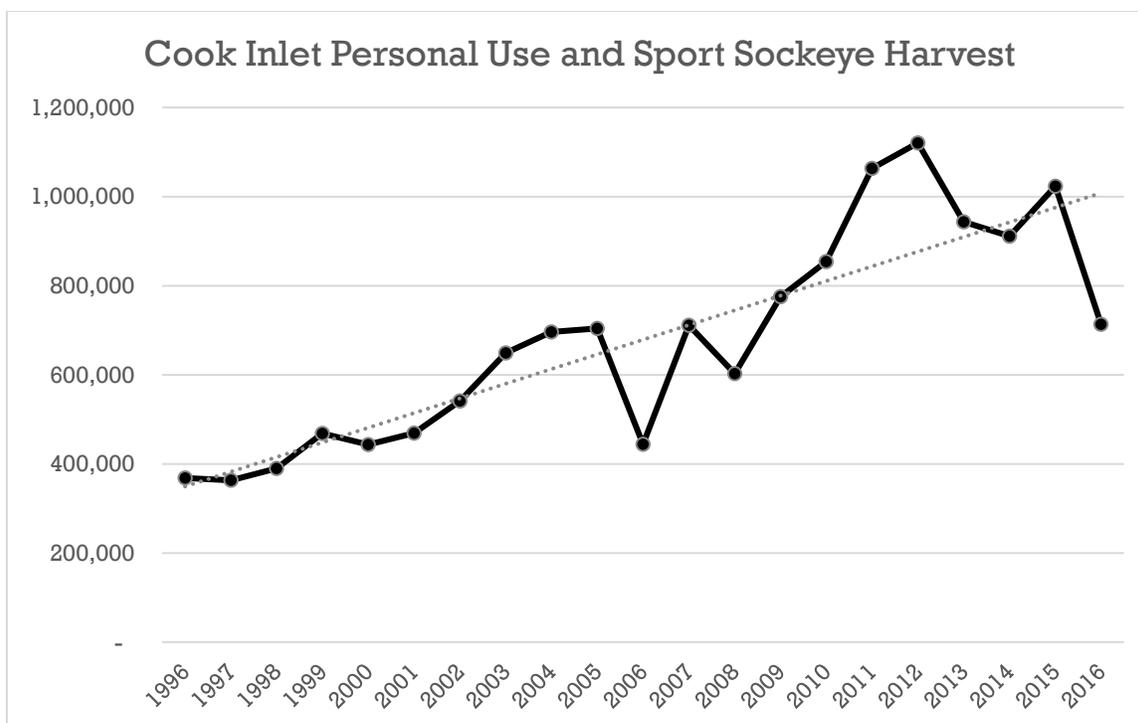
Cook inlet commercial, personal use and recreational fisheries and NOT be available for spawning.



### Kodiak’s impact on Cook Inlet fisheries

If incidental harvest of Cook Inlet bound sockeye was adversely affecting Cook Inlet sockeye runs, there should be a relationship between underperformance of Cook Inlet harvest and high incidental harvest of Cook Inlet bound sockeye in Kodiak. There is no evidence of such a relationship. In fact, in 2014, when Kodiak’s incidental harvest of Cook Inlet bound sockeye was the lowest of the study period, Cook Inlet’s commercial sockeye fishery underperformed the forecast by 23%, or 970,000 fish. In 2015, when Kodiak’s incidental harvest of Cook Inlet bound sockeye was the highest of the study period, Cook Inlet’s sockeye harvest performed exactly as forecast, coming in at 3.7 million fish. In 2016, when Kodiak’s incidental harvest of Cook Inlet bound sockeye was between the 2014 and 2015 levels, the Cook Inlet sockeye fishery underperformed the forecast by 37% or 1.9 million fish. This total lack of correlation between Kodiak harvest and the performance of the Cook Inlet fishery tells us that other factors, such as lake rearing conditions, spawning habitat, ocean feeding conditions, and marine predation are the driving forces behind returns to Cook Inlet.





### Expanding fisheries

One consideration when creating fishery policy is the examination of new and expanding fisheries. Looking at the pattern of actively fished permits in both the entire Kodiak Management Area and in just the Northwest District, we see that there is no evidence of an expanding salmon fishery in Kodiak. The number of actively fished permits is based on local management of salmon stocks and price fluctuations. A very similar pattern of permit participation can be seen in the Upper Cook Inlet commercial salmon fishery. On the other hand, there has been dramatically increasing usage in the sport and personal use salmon fisheries in Upper Cook Inlet.

### Summary:

Kodiak’s salmon fishery is multifaceted and complex. The seven regulatory management plans, approved by the Alaska Board of Fisheries more than 20 years ago insure that the Kodiak fishery is focused on the harvest of local salmon stocks. Moreover, Kodiak annually catches about 400% more salmon than are captured by Cook Inlet fishermen. Consequently, regulatory changes to the Kodiak Management Area potentially have orders of magnitude more impact because of the amount of fish at stake.

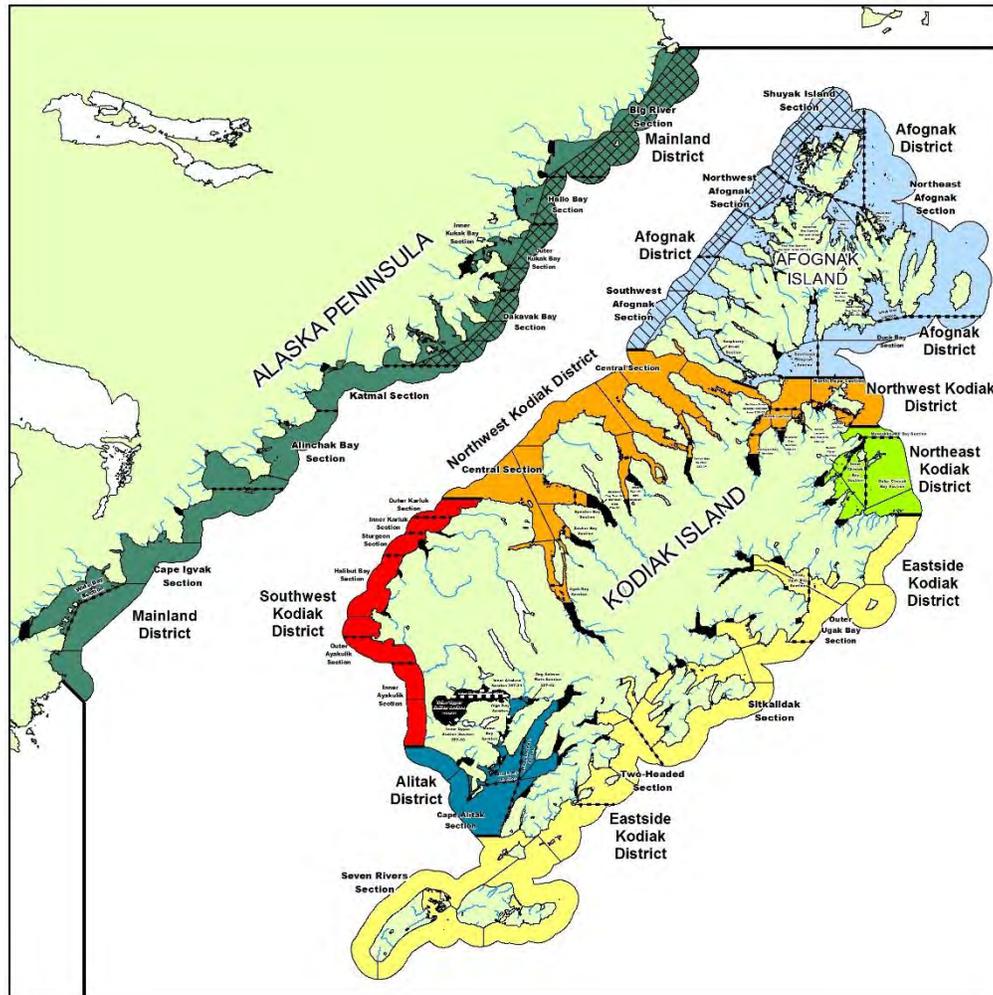
Although Cook Inlet bound sockeye are captured incidentally in the Kodiak Management Area, the recent genetic information confirms that patterns are hard to find and that there is substantial year-to-year variability in amount of Cook Inlet sockeye in the Kodiak area. Moreover, there is no correlation between the genetic information regarding incidental catch of Cook Inlet sockeye and the realization of the annual Cook Inlet run prediction. Cook Inlet was very close to their prediction in a year with relatively high incidental catches in the Kodiak area.

The magnitude of the impact of Kodiak's incidental catch of Cook Inlet sockeye on Susitna stocks has been established for the three study years. However, the study itself indicates that these years may not be representational of a longer time sequence and a comparison of impacts illustrates that Kodiak's impacts on Susitna socks are substantially less than the other user groups.

If closures or fishing restrictions were enacted in the Southwest District, East Side or NW Kodiak Districts as UCIDA has proposed, those fish would very likely be caught in the Northwest District and the Afognak District. There is no single or predictable Cook Inlet bound sockeye "hot spot" that could be closed without pushing the harvest of those same fish further up the coast or around the east side of the island. Therefore, to truly be certain of conserving Cook Inlet bound sockeye for harvest by Cook Inlet users, the entire Kodiak Management Area would need to be closed.

And what would be the tradeoff for gutting Kodiak's salmon fishery and devastating the economies of our 8 island communities? Would all 5,000 or 75,000 or 40,000 sockeye return to the Susitna? How many would be harvested in the fisheries of Lower Cook Inlet? What would be the natural mortality due to predation and other factors? The sockeye would have to pass 13 sea lion haul outs and two major rookeries on Marmot and the Barren Islands. They would have to escape pods of orcas and porpoise and the notorious legion of seals in Cook Inlet. Let's assume a 20% natural mortality. That leaves 3,500 or 62,000 or 32,000 arriving in Cook Inlet, depending on the year. If we apply the same harvest rate to those fish as to the fish that were actually caught in the Upper Cook Inlet commercial fishery (49%-33%), we arrive at 1,800, 24,000 and 10,000 sockeye arriving to the Susitna/Yentna area in 2014-2016, respectively. In addition, recreational harvests in Upper Cook Inlet as well as the Susitna drainage will further reduce Susitna River spawners.

The North Shelikof Salmon Management Plan already places a proportional share of the conservation burden for Cook Inlet stocks on the Kodiak fishery. Should further restrictions or closures be enacted, the magnitude of impacts to Kodiak will far outweigh incremental gains to Cook Inlet fishermen and conservation concerns. Under the standards of either the Alaska Board of Fisheries' Mixed Stock Policy or their Allocation Criteria, balancing of gains and impacts must occur. The information above indicates clearly that the balance weighs heavily in favor of continuing Kodiak's current management plans.

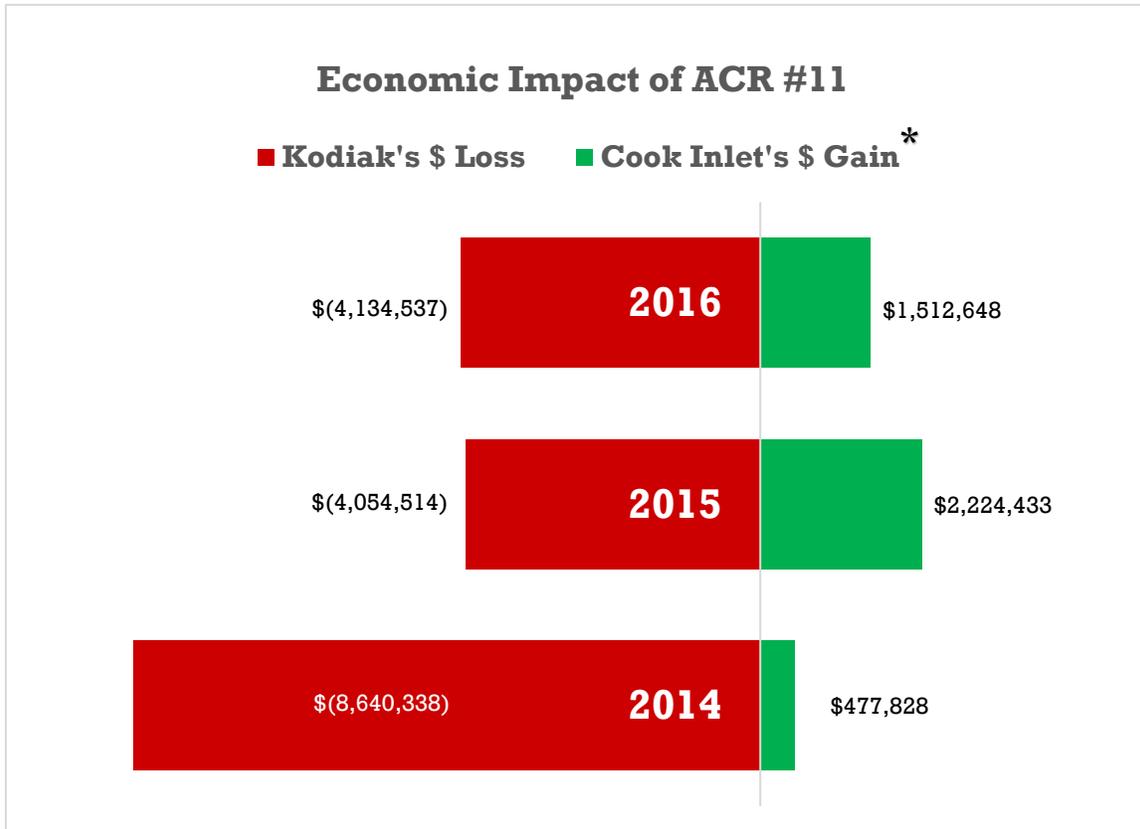


# Economic Impact of ACR # 11

Kodiak Salmon Work Group

10/2/2017

# ECONOMIC IMPACT OF ACR #11



\*based on assumption of NO ocean mortality and that 100% of Cook Inlet fish survive to enter that fishery

Although it is difficult to accurately assess the economic tradeoffs that occur as a consequence of allocative policy, ACR #11 provides us with a draft policy to examine. It is important to understand that any allocative policy the Board may choose to enact would have similar far-reaching consequences to ACR #11. It is simply impossible to successfully forego incidental harvest of Upper Cook Inlet bound sockeye without dramatically restricting much of Kodiak's salmon fishery.

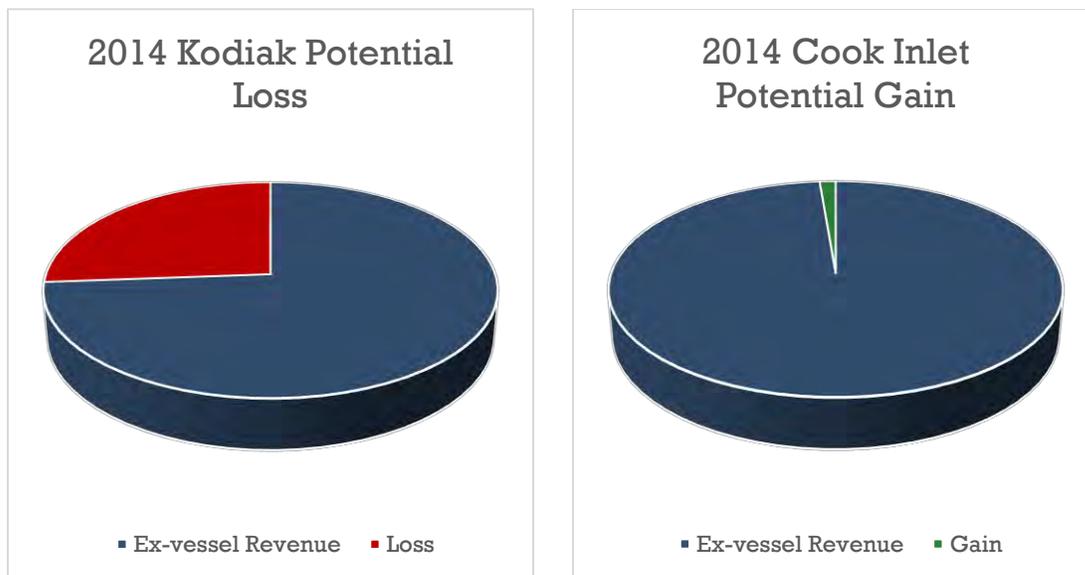
Kodiak Salmon Work Group analyzed the economic effects that UCIDA's proposed umbrella plan would have both on Kodiak and Cook Inlet's salmon fisheries. Simply put, the effect on Kodiak's salmon fishermen would be devastating. Applying the policies proposed in ACR #11 to the Kodiak area fisheries in 2014, 2015 and 2016 would have caused tremendous costs to Kodiak. These losses are not balanced by potential gains in Cook Inlet.

## 2014

### *Total Effect of the Umbrella Plan in 2014*

If enacted, the weekly and seasonal caps of the umbrella plan could cost Kodiak \$8.6 million. We could lose 23% of the annual, island-wide sockeye harvest and 15% of the pink salmon harvest, or 2.4 million fish.

On the other hand, if none of the Upper Cook Inlet bound sockeye were caught in Kodiak, those fish would then have to run a gauntlet of Lower Cook Inlet commercial fishing and heavy predation by sea lions, porpoise, and seals. If every fish survived that gauntlet and arrived in Upper Cook Inlet, approximately 44% might be caught in the Cook Inlet commercial fisheries. That 44% represents 43,000 sockeye valued at approximately \$480,000. **So, in 2014 Kodiak would lose \$8.6 million and 2.4 million fish for Cook Inlet’s gain of \$480,000 and 43,000 fish. Kodiak would lose 26% of our annual ex-vessel salmon revenue, while Cook Inlet would increase theirs by 1%.**



### *Westside*

In 2014 the Westside of Kodiak was open for 24 days between June 26<sup>th</sup> and July 23<sup>rd</sup> in the Northwest District and the Southwest District. The total salmon harvest was 2 million fish, 626,000 of which were sockeye. The value of the harvest of all species was \$7.2 million.

The total effect of the weekly and seasonal caps would have been 22 days of restricted fishing when the fishery would have been open based on normal local management. This represents forgoing as many as 485,000 sockeye, 665,000 pink

salmon, and 63,000 chum salmon. The value of this potential loss is \$5.3 million or 19% of the annual Westside revenue. During the umbrella plan period, Westside fisherman would forego 77% of their sockeye catch, 54% of their pink salmon catch and 74% of their revenue.

### *Eastside*

In 2014 the Eastside District of Kodiak was open for 22 days between June 26<sup>th</sup> and July 30<sup>th</sup>. The total salmon harvest was 480,000 fish, 91,000 of which were sockeye. The value of the harvest of all species was \$1.3 million.

The total effect of the weekly and seasonal caps would have been 19 days of restricted fishing when the fishery would have been open based on normal local management. This represents forgoing as many as 89,000 sockeye, 317,000 pink salmon, and 48,000 chum salmon. The value of this potential loss is \$1.3 million or 95% of the annual Eastside revenue. During the umbrella plan period, Eastside fisherman would forego 99% of their sockeye catch, 100% of their pink salmon catch and 99% of their revenue.

### *Alitak*

In 2014 the Alitak District of Kodiak was open for 24 days between June 26<sup>th</sup> and July 23<sup>rd</sup>. The total salmon harvest was 880,000 fish, 226,000 of which were sockeye. The value of the harvest of all species was \$2.7 million.

The total effect of the weekly and seasonal caps would have been 20 days of restricted fishing when the fishery would have been open based on normal local management. This represents forgoing as many as 177,000 sockeye, 483,000 pink salmon, and 10,000 chum salmon. The value of this potential loss is \$2 million or 74% of the annual Alitak revenue. During the umbrella plan period, Alitak fisherman would forego 78% of their sockeye catch, 76% of their pink salmon catch and 77% of their revenue.

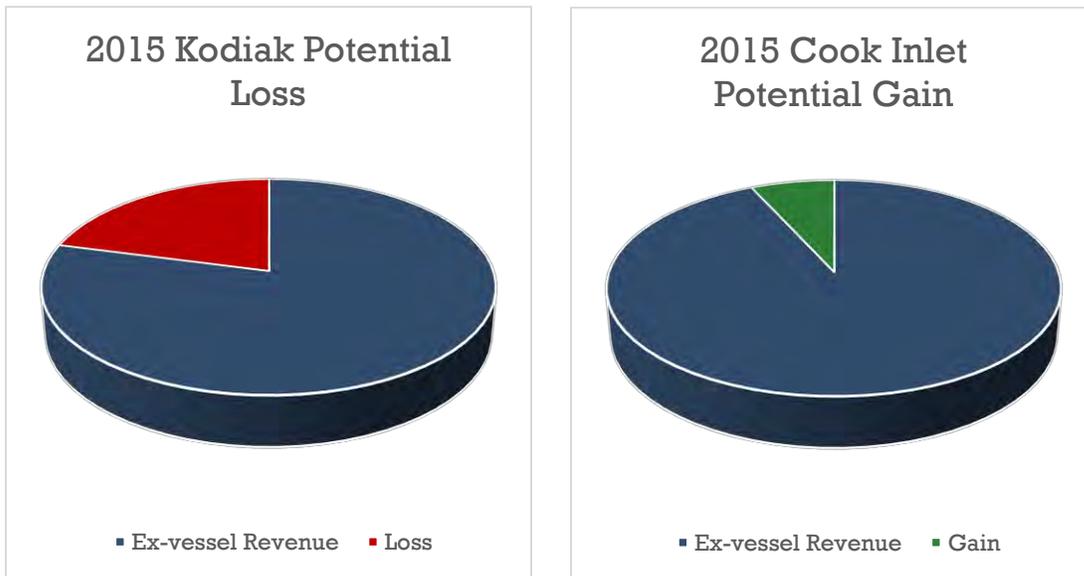
## **2015**

### *Total Effect of the Umbrella Plan in 2015*

If enacted, the weekly and seasonal caps of the umbrella plan could cost Kodiak \$4 million. We could lose 17% of the annual, island-wide sockeye harvest and 9% of the pink salmon harvest, or 3 million fish.

On the other hand, if none of the Upper Cook Inlet bound sockeye were caught in Kodiak, those fish would then have to run a gauntlet of Lower Cook Inlet commercial fishing and heavy predation by sea lions, porpoise, and seals. If every fish survived that gauntlet and arrived in Upper Cook Inlet, approximately 43% might be caught in the Cook Inlet commercial fisheries. That 43% represents 266,000 sockeye valued at approximately \$2.2 million. **So, in 2015 Kodiak would lose \$4 million and 3**

**million fish for Cook Inlet’s gain of \$2.2 million and 266,000 fish. Kodiak would lose 21% of our annual ex-vessel salmon revenue, while Cook Inlet would increase theirs by 7%.**



**Westside**

In 2015 the Westside of Kodiak was open for 22 days between June 26<sup>th</sup> and July 23<sup>rd</sup> in the Northwest District and the Southwest District. The total salmon harvest was 2.9 million fish, 507,000 of which were sockeye. The value of the harvest of all species was \$4.4 million.

The total effect of the weekly and seasonal caps would have been 13 days of restricted fishing when the fishery would have been open based on normal local management. This represents forgoing as many as 268,000 sockeye, 1.3 million pink salmon, and 146,000 chum salmon. The value of this potential loss is \$2.4 million or 19% of the annual Westside revenue. During the umbrella plan period, Westside fisherman would forego 53% of their sockeye catch, 64% of their pink salmon catch and 56% of their revenue.

**Eastside**

In 2015 the Eastside District of Kodiak was open for 17 days between June 26<sup>th</sup> and July 30<sup>th</sup>. The total salmon harvest was 297,000 fish, 20,000 of which were sockeye. The value of the harvest of all species was \$311,000.

The total effect of the weekly and seasonal caps would have been 3 days of restricted fishing when the fishery would have been open based on normal local management. This represents forgoing as many as 7,000 sockeye, 121,000 pink salmon, and 13,000

chum salmon. The value of this potential loss is \$125,000 or 13% of the annual Eastside revenue. During the umbrella plan period, Eastside fisherman would forego 35% of their sockeye catch, 52% of their pink salmon catch and 40% of their revenue.

### ***Alitak***

In 2015 the Alitak District of Kodiak was open for 18 days between June 26<sup>th</sup> and July 23<sup>rd</sup>. The total salmon harvest was 1.7 million fish, 275,000 of which were sockeye. The value of the harvest of all species was \$2.2 million.

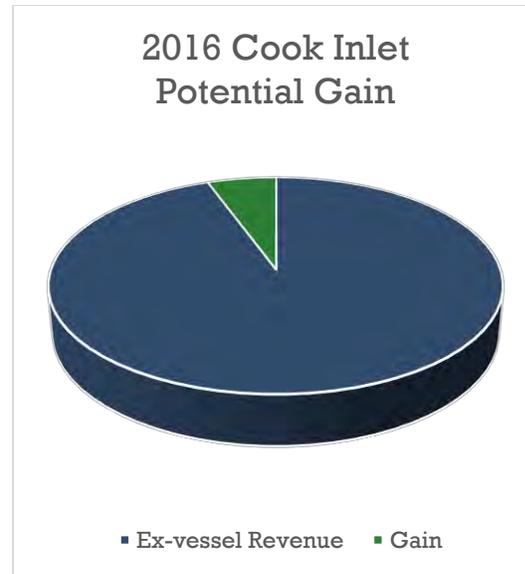
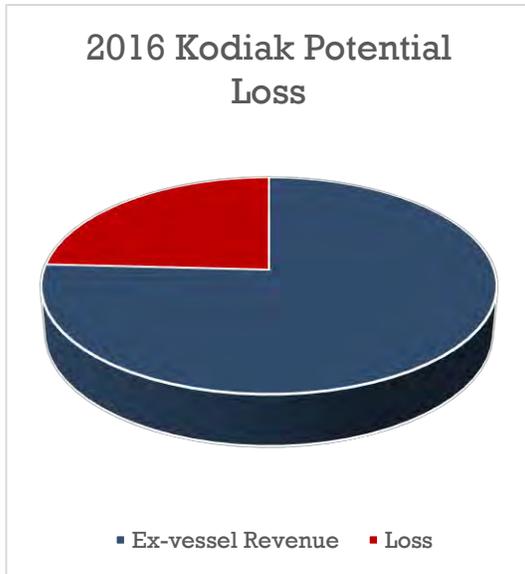
The total effect of the weekly and seasonal caps would have been 16 days of restricted fishing when the fishery would have been open based on normal local management. This represents forgoing as many as 189,000 sockeye, 906,000 pink salmon, and 15,000 chum salmon. The value of this potential loss is \$1.5 million or 63% of the annual Alitak revenue. During the umbrella plan period, Alitak fisherman would forego 69% of their sockeye catch, 67% of their pink salmon catch and 68% of their revenue.

## **2016**

### ***Total Effect of the Umbrella Plan in 2016***

If enacted, the weekly and seasonal caps of the umbrella plan could cost Kodiak \$4.1 million. We could lose 22% of the annual, island-wide sockeye harvest and 14% of the pink salmon harvest, or 930,000 fish.

On the other hand, if none of the Upper Cook Inlet bound sockeye were caught in Kodiak, those fish would then have to run a gauntlet of Lower Cook Inlet commercial fishing and heavy predation by sea lions, porpoise, and seals. If every fish survived that gauntlet and arrived in Upper Cook Inlet, approximately 46% might be caught in the Cook Inlet commercial fisheries. That 46% represents 174,000 sockeye valued at approximately \$1.5 million. **So, in 2016 Kodiak would lose \$4.1 million and 930,000 fish for Cook Inlet's gain of \$1.5 million and 174,000 fish. Kodiak would lose 24% of our annual ex-vessel salmon revenue, while Cook Inlet would increase theirs by 6%.**



***Westside***

In 2016 the Westside of Kodiak was open for 28 days between June 26<sup>th</sup> and July 23<sup>rd</sup> in the Northwest District and the Southwest District. The total salmon harvest was 1.1 million fish, 426,000 of which were sockeye. The value of the harvest of all species was \$4 million.

The total effect of the weekly and seasonal caps would have been 12 days of restricted fishing when the fishery would have been open based on normal local management. This represents forgoing as many as 274,000 sockeye, 261,000 pink salmon, and 65,000 chum salmon. The value of this potential loss is \$2.5 million or 28% of the annual Westside revenue. During the umbrella plan period, Westside fisherman would forego 64% of their sockeye catch, 47% of their pink salmon catch and 63% of their revenue.

***Eastside***

In 2016 the Eastside District of Kodiak was open for 22 days between June 26<sup>th</sup> and July 30<sup>th</sup>. The total salmon harvest was 235,000 fish, 134,000 of which were sockeye. The value of the harvest of all species was \$1.2 million.

The total effect of the weekly and seasonal caps would have been 15 days of restricted fishing when the fishery would have been open based on normal local management. This represents forgoing as many as 104,000 sockeye, 64,000 pink salmon, and 13,000 chum salmon. The value of this potential loss is \$1 million or 73% of the annual Eastside revenue. During the umbrella plan period, Eastside fisherman would forego 78% of their sockeye catch, 94% of their pink salmon catch and 80% of their revenue.

### **Alitak**

In 2016 the Alitak District of Kodiak was open for 12 days between June 26<sup>th</sup> and July 23<sup>rd</sup>. The total salmon harvest was 192,000 fish, 117,000 of which were sockeye. The value of the harvest of all species was \$1 million.

The total effect of the weekly and seasonal caps would have been 9 days of restricted fishing when the fishery would have been open based on normal local management. This represents forgoing as many as 82,000 sockeye, 37,000 pink salmon, and 4,000 chum salmon. The value of this potential loss is \$665,000 or 50% of the annual Alitak revenue. During the umbrella plan period, Alitak fisherman would forego 70% of their sockeye catch, 54% of their pink salmon catch and 69% of their revenue.

### **Summary**

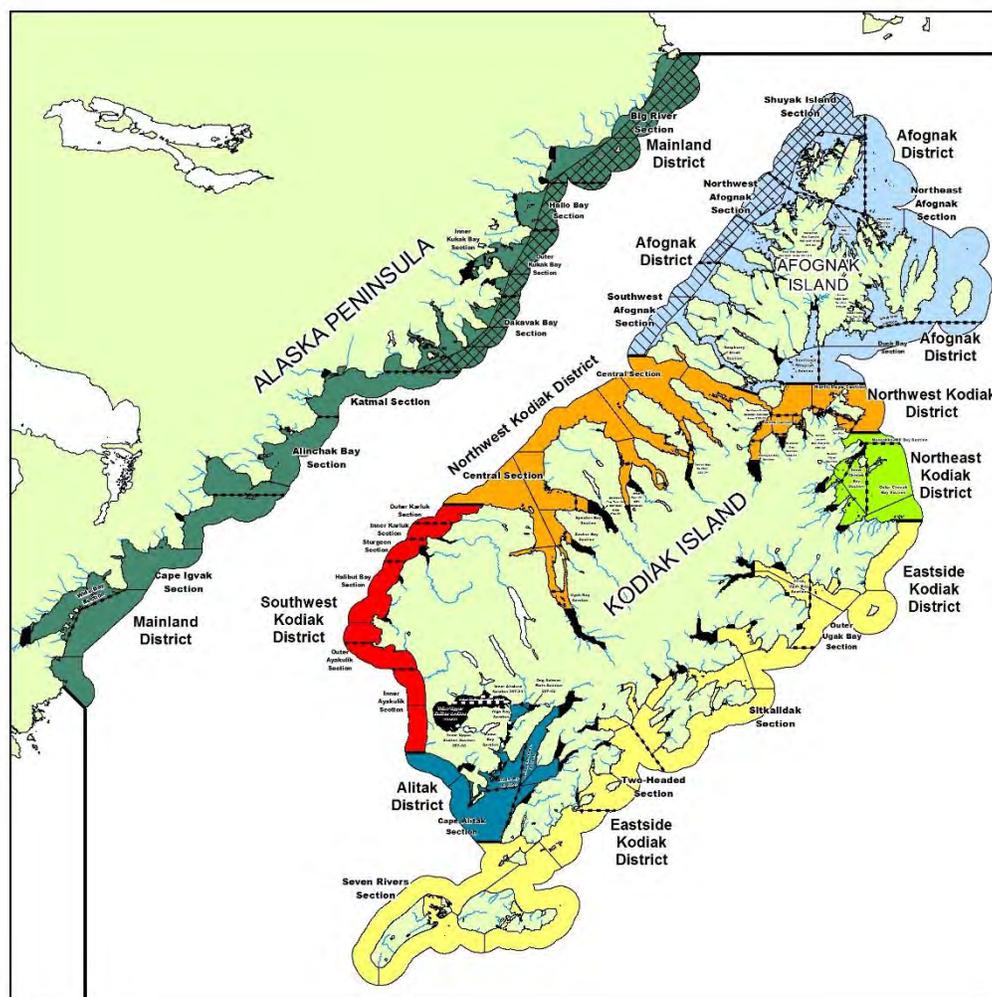
The policies proposed in UCIDA's ACR would be devastating to Kodiak's salmon fishery and economy. **Over the three year period, 2014-2016, the net loss to state salmon fisheries would be \$12.6 million.** That represents about \$440,000 in lost tax dollars for the State. Additionally, the Kodiak Island Borough would lose about \$136,000 in tax revenue.

This policy would have far-reaching effects beyond the direct loss in ex-vessel revenue. In many of the weekly periods covered by the proposal, the cap would be achieved in just a day or two of fishing. The proposed closures would gut our salmon fisheries at the end of June and throughout July. Without that fishing opportunity, many vessels, setnet sites and processors would find it economically unmanageable to operate at all. Permit prices would plummet, permits would go unfished, businesses would close and Kodiak communities would suffer. The small gains realized by Cook Inlet fishermen could not offset the economic devastation in Kodiak. You'll find below a concise summary of the impacts of ACR 11 on Kodiak's fisheries.

Additionally, it must be understood that by foregoing the harvest of large numbers of local salmon stocks, those systems will experience dramatic, sudden overescapement. The consequence of that overescapement would be a complete collapse of Kodiak's natural salmon runs and the fisheries that depend on them. The economic impact of that collapse would dwarf any direct impact from foregone harvest.

**If the Cook Inlet proposal had been in effect  
in 2014, 2015 and 2016, Kodiak fishermen  
could have lost:**

| Year | Salmon Revenue | Percentage of Kodiak's Annual Revenue | Annual Fish Harvest | Percentage of Kodiak's Annual Harvest |
|------|----------------|---------------------------------------|---------------------|---------------------------------------|
| 2014 | \$8.6 million  | 26%                                   | 2.4 million fish    | 23%                                   |
| 2015 | \$4.1 million  | 21%                                   | 3 million fish      | 17%                                   |
| 2016 | \$4.1 million  | 24%                                   | 930,000 fish        | 22%                                   |



## Review of Shedd et al. (2016): Genetic Stock Composition of the Commercial Harvest of Sockeye Salmon in Kodiak Management Area, 2014-2016

Harold J. Geiger and Terrance J. Quinn II

9/11/2017

# Review of Shedd et al. (2016): Genetic Stock Composition of the Commercial Harvest of Sockeye Salmon in Kodiak Management Area, 2014-2016

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Harold Geiger, Ph.D. and Terrance Quinn, Ph.D. prepared a scientific review of the report by Shedd et al. (2016) which follows this summary. Additionally, a letter from James Seeb, Ph.D. commenting on the ADF&G genetic lab is attached.

## **KSWG's summary of the review of the MSA study by Hal Geiger and Terry Quinn**

1. Speaking to policy issues and stated goals of the study, the authors confirm, "This report did not have the express purpose of making arguments regarding allocation decisions by the Alaska Board of Fisheries."

Regardless, the study does conclusively demonstrate that sockeye salmon bound for Cook Inlet were caught in some times and in some areas in the fishing years studied. **"In the case of the Kodiak Area, there really was no reason to believe that the commercial harvest was made up of only single stocks that originated in the Kodiak Management Area."**

Further, the authors note: "Summarizing historical tagging studies, Barrett and Swanton (1991) report that sockeye harvests in the North Shelikof Strait in the 1940s, 1970s, and 1980s ranged from 30% to 100% Kodiak fish and 0% to 59% Cook Inlet-origin fish. Moreover, Barrett and Swanton concluded there were large numbers of Cook Inlet bound fish in the North Shelikof Strait fishery in July of 1990."

2. "From the point of view of fishery policy, the most important statistic is the *stock-specific harvest rate*, which is not reported in the Shedd et al. (2016) document for stocks outside the Kodiak Management Area. What is reported is the *stock-specific contribution rate*. Stock composition estimates represent the proportions of a catch that was made by various stocks in a particular spatial and temporal stratum or groups of strata. In contrast, the harvest rate describes the proportion of an annual return that

was harvested in a fishery or group of fisheries. **Consequently, a fishery may show a large contribution rate for a stock, but the total effect on that stock may be quite small.**"

The authors note: "when summing over time and area, in all study years fish of Kodiak area origin dominate the catch, although catches of Cook Inlet-origin fish increased in 2015, and to a lesser extent, remained high in 2016, when compared to 2014 (Figure 20 in Shedd et al. (2016))."

And: "Another important question: were the harvests of Cook Inlet-bound sockeye salmon excessive? Though this is a policy judgment, rather than a scientific question, we note that in the years 2014-2016, **the estimated harvest rate ranged from 2% to 9%, and did not reach or exceed 10% in any year in the study (Table 1).**"

The authors conclude, "We note that the estimated harvest rate on Cook Inlet-bound sockeye salmon were below 10% in each year, and substantially below 10% in one year. **These harvest rates generally agree with what previous, less accurate studies, have suggested.** However, with only three years of measurements, with a large fraction of the catch not sampled, and with large annual variation in those measurements (much larger than the error obtained from the credible intervals), it is very hard to conclude that these results bracket the range of what to expect if the study were to be repeated, or to conclude that these results represent what would happen in a "typical year" (if there ever is such a thing)."

3. "The new genetic stock composition approach used in this study is superior to other approaches used in the past, because the real stock composition is estimated rather than inferred from less reliable measurements (e.g., length composition)."

4. "The stratified sampling design used is appropriate with respect to accuracy and precision of stock composition (relative and absolute). It is clear that the authors devoted substantial attention to implementing the sampling design with the intent of obtaining a random or representative sample within combinations of major regional and temporal strata. Further information would be desirable about how the implementation was conducted on finer spatial and temporal scales to justify the assumption of a random or representative sample. For example, how was an individual fish selected for genetic sampling and were there protocols established to prevent selecting fish with particular physical characteristics, such as size?"

The authors further note: "We could not determine if sampling was representative within spatial strata, although the intent of the authors appears to be sampling proportional to harvest, a reasonable goal. It would be helpful to have a brief description elaborating the protocol used to achieve this goal."

5. **“Similar to past studies, results from the study revealed substantial variability in stock composition across years, among spatial strata, and among temporal strata.** Further study may be desirable to determine if there are consistent patterns in this variability across years, spatial strata, and temporal strata. Continued genetic sampling and analysis in the future would thus be desirable.”



**Review of Shedd et al. (2016): *Genetic Stock Composition of the Commercial Harvest of Sockeye Salmon in Kodiak Management Area, 2014-2016***

***Report to the Kodiak Salmon Workgroup***

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September 11, 2017



## Executive Summary

The Kodiak Salmon Workgroup contracted us<sup>1</sup> to provide a scientific review of the report by Shedd et al. (2016) entitled *Genetic Stock Composition of the Commercial Harvest of Sockeye Salmon in Kodiak Management Area, 2014-2016*. This review consists of an examination of the scientific merit of the study, its utility compared to previous studies, an interpretation of how the results should be viewed in terms of the magnitude of interceptions of Cook Inlet sockeye salmon in the Kodiak Management Area's commercial fisheries, and thoughts about further investigations that may shed additional insight into Kodiak and Cook Inlet stock compositions of sockeye salmon.

Our primary findings:

1. From the point of view of fishery policy, the most important statistic is the *stock-specific harvest rate*, which is not reported in the Shedd et al. (2016) document for stocks outside the Kodiak Management Area. What is reported is the *stock-specific contribution rate*. Stock composition estimates represent the proportions of a catch that was made by various stocks in a particular spatial and temporal stratum or groups of strata. In contrast, the harvest rate describes the proportion of an annual return that was harvested in a fishery or group of fisheries. Consequently, a fishery may show a large contribution rate for a stock, but the total effect on that stock may be quite small. We illustrate this phenomenon below.
2. The new genetic stock composition approach used in this study is superior to other approaches used in the past, because the real stock composition is estimated rather than inferred from less reliable measurements (e.g., length composition). The use of a Bayesian modeling approach to estimate stock composition is state-of-the-art and allows for the appropriate treatment of random variability due to both random error caused by sampling the fishery mixture and also from the sampling of the contributing stocks.
3. The stratified sampling design used is appropriate with respect to accuracy and precision of stock composition (relative and absolute). It is clear that the authors devoted substantial attention to implementing the sampling design with the intent of obtaining a random or representative sample within combinations of major regional and temporal strata. Further information would be desirable about how the implementation was conducted on finer spatial and temporal scales to justify the assumption of a random or representative sample. For example, how was an individual fish selected for genetic sampling and were there protocols

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<sup>1</sup> See brief biographical statement in Appendix A



established to prevent selecting fish with particular physical characteristics, such as size?

4. Similar to past studies, results from the study revealed substantial variability in stock composition across years, among spatial strata, and among temporal strata. Further study may be desirable to determine if there are consistent patterns in this variability across years, spatial strata, and temporal strata. Continued genetic sampling and analysis in the future would thus be desirable.

### **Introduction and Overview**

We were asked to provide a scientific review of the Shedd et al. (2016) titled *Genetic Stock Composition of the Commercial Harvest of Sockeye Salmon in Kodiak Management Area*. This complex 154-page report describes an extensive genetic analysis followed by a statistical analysis of the genetic data for Kodiak area fisheries in catch years 2014, 2015, and 2016. The principal genetic tools that were used for this study were the single nucleotide polymorphism, or SNP, approach. Here we will comment on scientific criticisms of the study that appear relevant, we will briefly comment on the various methods and techniques that were used, and we will offer a broad assessment of the significance of the major findings. As we will explain in more detail below, the study appears to have been carefully conducted and the numerical estimates appear to be well crafted and reliable.

The Alaska Department of Fish and Game had previously tried to use scale pattern analysis and an analysis of fish size to estimate the proportion of non-local stocks in the Kodiak Management Area. For various technical reasons neither of these techniques were very successful. In one of the last reports on the attempts to use fish size for this purpose, Vining (1996) wrote, "As the 1995 analysis indicates, this methodology continues to generate only rough estimates, some with little confidence." It is the opinion of Vining that "other techniques, such as genetic stock identification, tagging or scale pattern analysis should be evaluated for use in the future, if more precise estimates of stock composition for sockeye salmon caught within the [Kodiak Management Area] are desired." This leads us to the present genetic study by Shedd et al. (2016).

The genetic analysis of stock mixtures rests on several assumptions. The analysis starts with the definition of a *catch mixture*, because the catch is presumably made up of a mix of stocks. Importantly, the number of contributing stocks must be known, they all must be sampled, and the genetic character of each stock must be established. Next, a representative sample of the catch mixture must be drawn and the genetic character of each specimen in the catch sample must also be established. Finally, a complicated statistical algorithm can then be used to produce an estimate of the proportion of each of the stocks in the mixture by comparing the genetic characterizations of each fish in the catch mixture to the previously established genetic characterization of the contributing stocks.



A complete analysis must include a study of both the accuracy and the precision of the estimates. In this context, *accuracy* refers to the absence of any statistical bias or other kinds of systematic errors that would consistently cause specific stock estimates to be too high or low. Here *precision* refers to errors that are caused by using only a sample from the stock of origin and the catch mixture, rather than an examination of every single fish in the fishery and every single fish in the spawning stocks. Generally, accuracy is harder to study, detect, and control, while precision can generally be controlled by increasing the sample size. Also, precision is usually studied by looking at the variation from one specimen to another in the samples. Precision measures are usually offered in the form of confidence intervals, standard errors, or coefficients of variations.

### Sampling Design

The goal of the study by Shedd et al. (2016) is to determine stock compositions of sockeye salmon within the Kodiak Management Area. Consequently, sampling was restricted to the Kodiak Management Area, rather than to the overall range of sockeye salmon in the western Gulf of Alaska. The authors defined six Kodiak spatial strata of interest (called subregional sampling groups) for *sampling* genetic tissues, comprised of (1) Uganik-Kupreanof, (2) Uyak, (3) Karluk-Sturgeon, (4) Ayakulik-Halibut Bay, (5) Alitak, and (6) Igvak. The first five are located around Kodiak Island, while Igvak is part of the mainland district. The Chignik regional reporting group had combined estimates from subregions Black Lake and Chignik Lake. Four other regional spatial strata outside of Kodiak and Chignik were West of Chignik, Cook Inlet, Prince William Sound, and South of Cape Suckling. The report did not contain justification for this particular choice of spatial strata, but suggests that considerations included areas with active management and those that are used in run reconstructions to aid management.

One confusing area is that several spatial scales are referred to in the report. For *reporting* purposes (instead of *sampling*), there are a total of 14 subregional *reporting groups* listed on page 2 that constitute the entire western Alaska area. The report designates ten of these groups as *subregional reporting groups* within the Kodiak (8 subregions) or Chignik (2 subregions) *regional reporting groups*. Six regional reporting groups including those outside of Kodiak and Chignik are listed in the tables, with subregional breakdowns for the 8 Kodiak subregions and the 2 Chignik subregions. In the end the system does seem to be consistent; however, we recommend a simpler and clearer description of spatial divisions. *These definitions of spatial strata must be understood to understand the tables and figures of results, which include both regional reporting groups and subregional reporting groups.*

The report indicates that temporal strata are also considered in combination with the spatial subregional strata: Early, Middle, and Late (see page 3 in the Shedd et al.



(2016) report. The temporal strata are consistent with patterns that have been observed in past studies.

The sample size goal was to extract 380 tissue samples from each time-area stratum; no reference was provided for this number. The sampling within temporal strata was intended to be proportional to daily abundance. When this was not possible, the total sample size was obtained by sampling days with sufficient additional samples at random until the total of 380 was achieved, a reasonable approach.

We could not determine if sampling was representative within spatial strata, although the intent of the authors appears to be sampling proportional to harvest, a reasonable goal. It would be helpful to have a brief description elaborating the protocol used to achieve this goal.

The sampling design most appropriate for multiple strata with high variation among strata, to obtain high precision and accuracy, is stratified random sampling (Thompson 2016). In the future it would be desirable to show that high variation is present and the improvement in precision by using stratification over simple random sampling. One advantage to using a proportional allocation of sample size with respect to within stratum variation is that different choices for strata are not likely to produce inaccurate estimates. Nevertheless, it is not necessary to use proportional sampling to justify the use of stratified sampling in terms of accuracy, as long as a representative sample is obtained within each stratum. In particular, the use of a fixed sample size of 380 for all spatio-temporal strata is completely acceptable. (Although it may not be the most efficient allocation scheme, it does not induce estimation bias.)

The use of stratified random sampling also has a desirable product in that both relative and absolute stock compositions can be estimated both for individual strata and for combinations of strata, including that portion of the entire Kodiak Management Area that was sampled (not every single fishery was sampled). The main reason for this ability is that catches are known for all spatio-temporal strata. This is one fundamental principle that makes estimation across strata intuitive, accurate, and precise, because relative stock compositions are projected to the total catch to get absolute stock compositions by strata that can then simply be summed across a set of strata of interest.

An additional feature of the sampling design is a set of data quality control procedures regarding the genetic data to avoid the inclusion of erroneous data into the analysis (pages 8–9). Thus, we were unable to uncover any appreciable flaws in sampling, genetic data processing, or genetic analyses in the study.

In summary, we believe that the overall sampling design of using stratified random sampling is appropriate for the genetic analysis of estimating stock composition of sockeye salmon in the Kodiak Management Area. Further studies should be done to



consider alternative stratification choices both within space and time and to justify the sample size goal of 380 samples per stratum.

### **Policy Issues and Stated Goals for the Study**

In the introduction of the Shedd et al. (2016) report, the reader finds that the stated purpose of the study was to “sample the major sockeye salmon commercial fisheries in marine waters of [the Kodiak Management Area] from June through the end of August and use genetic mixed stock analysis (MSA) to estimate stock compositions and stock-specific harvests.” Later in the report, the reader finds this statement about the goal of the project: “The overall goal of this project is to provide information that will be useful for reconstructing runs, building accurate brood tables to define escapement goals, and refining management by identifying spatial and temporal harvest patterns of *local* and *nonlocal* stocks (emphasis in the original).” Later, the reader finds four stated objectives, including “report [genetic mixed stock analysis] results of stock-specific harvests of sockeye salmon sampled from *selected* commercial fisheries in [the Kodiak Management Area], 2014—2016 (emphasis added),” and “characterize where stocks were harvested from *select* commercial fisheries (again, emphasis added).” This report did not have the express purpose of making arguments regarding allocation decisions by the Alaska Board of Fisheries.

Regardless, the study does conclusively demonstrate that sockeye salmon bound for Cook Inlet were caught in some times and in some areas in the fishing years studied. In the case of the Kodiak Area, there really was no reason to believe that the commercial harvest was made up of only single stocks that originated in the Kodiak Management Area. That is, a finding of rich stock mixtures in at least some times and areas should not have been surprising. There have been many long-standing questions about the degree to which stocks are mixed in the Kodiak Management Area. Summarizing historical tagging studies, Barrett and Swanton (1991) report that sockeye harvests in the North Shelikof Strait in the 1940s, 1970s, and 1980s ranged from 30% to 100% Kodiak fish and 0% to 59% Cook Inlet-origin fish. Moreover, Barrett and Swanton concluded there were large numbers of Cook Inlet bound fish in the North Shelikof Strait fishery in July of 1990.

### **Contribution Rate Versus Harvest Rate**

There are two important rates or proportions that can be derived from stock composition analysis and discussed before policy-making bodies, such as the Alaska Board of Fisheries: the *contribution rate* and the *harvest rate*. These two statistics have very different significance to management. These two rates have often been confused in conversations among fishermen, in testimony before the Alaska Board of Fisheries, and in conversations with members of the press. The percentage that each stock makes up in a mixture of stocks is called the *contribution rate* (or



sometimes the *stock proportion*). For example a fishery may have harvested 50 fish, and 40 of those fish might be from Stock A, with 10 fish from Stock B. Then the *contribution rate* of Stock A is  $80\%=(40/50)100\%$ . For the purposes of management that could be either high or low. But if the contribution rate was 80%, then this does *not* mean that 80% of the stock was harvested; a harvest rate can be estimated only with abundance or run-size information for the stock of interest.

A large number for the contribution rate is not necessarily important to management, but it could be. If the original size of Stock A was 10,000 fish before this harvest, then the *harvest rate* on Stock A in the catch mixture would be  $40/10,000 = 0.4\%$ —which may be considered insignificant. Alternatively, if the original size of stock A was only 150 fish before the harvest, then the harvest rate would be  $40/150 = 27\%$ —which would usually be considered significant from a management perspective. Although moderate-to-large contribution rate statistics can lead to misplaced anxiety or even outrage, the most important statistic for management policy is the harvest rate, which is the rate that is most clearly related to the population dynamics of a stock.

### **Technical Comments on Bayesian Analysis and Uncertainty Measures**

The statistical analysis was carried out using the Bayesian method of Pella and Masuda (2001). We contend that this method is a reasonable approach with several advantages over the more traditional *maximum likelihood* approach. As this is a Bayesian approach, there are some differences between the interpretations of the measurements that may be confusing and unnecessarily tedious to some readers of the Shedd et al. (2016) report. In the method of Pella and Masuda (2001), the unknown contribution rates (or stock mixing proportions, as they call them) are treated as unknown random variables rather than constant and unknown parameters in the maximum likelihood approach. The analysis proceeds by simulating the probability distributions of these random quantities, with the genetic data used to help develop these distributions.

In a Bayesian analysis, uncertainty in stock contribution rates is frequently displayed by the use of *credible intervals* rather than *confidence intervals*. For example, in Table 3 of the Shedd et al. (2016) report, for the Kodiak reporting group the 90% credible interval runs from 80.9% to 88.1%. The correct interpretation of this interval is that given all of the stated assumptions, *the probability is 90%* that the true value is found between 80.9% and 88.1%, given a list of assumptions. Many people, incorrectly, think this is exactly what a 90% confidence interval is, but this is a mistake for some technical, statistical reasons. For the purposes of readers of this report, we note that the Bayesian results will often closely approximate the more traditional results (Pella and Masuda 2001), so that there should be no harm in simply interpreting the Shedd et al. (2016) credible intervals as the more familiar 90% confidence intervals to investigate uncertainty in the stock composition estimates. While every one of the assumptions that underpin the analysis is

probably not strictly true, these intervals do seem to be a very reasonable guide to the precision in the estimates. Based on the reported credible intervals and based on the assumptions stated in the report, the Shedd et al. (2016) estimates appear to be both accurate and precise enough for the purposes of the study.

## The Results

In trying to understand the results of the analysis, readers of the Shedd et al. (2016) report may find Figures 8 through 19 helpful, especially when paired with the maps provided in Figures 1–7. Figures 8, 10, 12, etc. (the even-numbered figures) show the estimated contribution rates (or stock mixing rates) for stocks using two levels of detail for the authors' *subregional* and *regional reporting groups* mentioned above. These estimates are then reported by specific time-area catch strata. At the highest level of aggregation there are six regional reporting groups, or what might be considered stocks in the broadest sense: (1) West of Chignik, (2) Chignik, (3) Kodiak, (4) Cook Inlet, (5) Prince William Sound, and (6) South of Cape Suckling. These groups may be the most useful for discussions about fishery management policy. Additionally there are estimates for 10 specific subregional reporting groups, or what might be considered stocks in a more narrow sense, in the Westward Region, and these estimates may be more useful for actual managers or to look at the reasonableness of some of the estimates. Similarly, the odd-numbered figures (Figures 9, 11, 13, etc. in Shedd et al. (2016)) have the stock contribution rates re-expressed as the stock-specific *number of fish harvested* (compared to rates in the previously mentioned figures) in the mixtures.

The usual pattern in these figures is that the majority of the fish harvested in each time-area grouping originated in the Kodiak management area. There are some notable exceptions, especially in 2015. For example, in the Ayakulik-Halibut Bay area, a large fraction of the fish were classified to be of Cook Inlet origin, especially in 2015 during the July 4 to August 1 period (Figure 14 in the report by Shedd et al. (2016)). When viewed in terms of numbers of fish, rather than proportions, the effect looks even stronger (Figure 15). In the Alitak district the catches of fish classified to Cook Inlet exceed the number of fish classified to the Kodiak area in two years: 2015 and 2016. Here too, the effect looks even stronger when views as the number of fish harvested 2015 (Figure 17). However, when summing over time and area, in all study years fish of Kodiak area origin dominate the catch, although catches of Cook Inlet-origin fish increased in 2015, and to a lesser extent, remained high in 2016, when compared to 2014 (Figure 20 in Shedd et al. (2016)).

Questions about why the harvest of Cook Inlet fish might be higher or lower in specific times or areas are beyond the scope of this review. One obvious question is could this variation in the proportion of Cook Inlet-origin fish be due to variation in the sizes of sockeye salmon runs in Cook Inlet?



To get at this question we simply ignored Lower Cook Inlet and brought together run size estimates for Upper Cook Inlet (Alaska Department of Fish and Game, retrieved August 17, 2017), together with the Shedd et al. (2016) estimates of the harvest of Cook Inlet bound fish in the Kodiak Management Area (taken by eye from Figure 20 or from Tables 67–69). As a point of reference, Stopha (2017) projected that approximately 0.3 million sockeye salmon would be returning to hatcheries in Lower Cook Inlet 2017. We assume that the times and areas sampled by Shedd et al. (2016) represent areas where interceptions of Cook Inlet fish would have been considered to be most likely, although we do not know that is true. Here again, as a point of reference, the total fish accounted for by the six Regional Reporting Groups in Tables 67–69 was about 50%–60% of the total reported harvest for the Kodiak Management Area for the three study years (catch numbers from Munro 2015 and later reports in this series). Even though not all times and areas in Kodiak Management Area were sampled and even though there was some sockeye salmon production in Lower Cook Inlet, we expect that the Shedd et al. sockeye salmon catch estimates of Cook Inlet bound fish caught in the Kodiak Management Area divided by the estimated Upper Cook Inlet run size to provide a crudely reasonable—even if slightly too low—approximation to the harvest rate on Cook Inlet-origin fish harvested in the Kodiak Management Area (Table 1).

Although there are only three years available for comparison, it does not appear that changes in run size explain the difference in harvest rates on the Cook Inlet stocks. The highest harvest rate on Cook Inlet stocks was in 2015, the year with the highest in-Inlet run size among the three study years, but the second highest harvest rate is on the year with the lowest run size (Table 1 below).



Table 1. Upper Cook Inlet run size in millions of sockeye salmon **(A)** (from ADF&G), the estimated harvest of Cook Inlet-origin sockeye salmon caught in the Kodiak Management area in millions of fish **(B)** (From 67–69 in the Shedd et al. (2016) report), and the approximate harvest rate (estimated harvest in the Kodiak Management Area divided by the in-Inlet run size plus the harvest in the Kodiak Management Area) on Cook Inlet-origin sockeye salmon in the Kodiak Management Area **(C)**.

|      | <b>(A)</b> | <b>(B)</b>   | <b>(C)</b>   |
|------|------------|--------------|--------------|
|      | Cook Inlet | Cook Inlet   | Approximate  |
|      | run size   | catch in KMA | harvest rate |
| Year | (millions) | (millions)   | in KMA       |
| 2010 | 5.71       |              |              |
| 2011 | 8.68       |              |              |
| 2012 | 6.46       |              |              |
| 2013 | 5.74       |              |              |
| 2014 | 5.54       | 0.1          | 2%           |
| 2015 | 6.29       | 0.6          | 9%           |
| 2016 | 5.04       | 0.4          | 7%           |



Another important question: were the harvests of Cook Inlet-bound sockeye salmon excessive? Though this is a policy judgment, rather than a scientific question, we note that in the years 2014-2016, the estimated *harvest rate* ranged from 2% to 9%, and did not reach or exceed 10% in any year in the study (Table 1). Some might point out that the way we calculated the harvest rate under-represents its true magnitude—and the estimates in Table 1 very well may be too low. Even so, it would be highly unlikely we have underestimated it by a factor of 2, meaning that the median harvest rate over the three study years would have been almost surely less than 15%, and probably considerably less.

Are there areas where the proportion or numbers of Cook Inlet-origin sockeye salmon are higher than in other areas? Figures 22, 23, and 24 in the Shedd et al. (2016) report are useful for speculating about this question—although it is really impossible to establish a trend with only three years of data. Notice that the area with the highest number of Cook Inlet-origin fish was Ayakulik-Halibut Bay in 2014 and again in 2015. However, in 2016 the number of Cook Inlet-origin fish in this district was much reduced from the previous year, and a larger number of Cook Inlet-bound sockeye salmon was caught in the Igvak area—which had previously been an area with very few Cook Inlet-origin fish harvested.

When time is brought into the discussion the situation also appears murky. The proportion of Cook Inlet-origin fish caught in the Uyak area is relatively low in all sampling periods in 2014 (Tables 15, 16, and 17 in the Shedd et al. (2016) report, yet the proportion rises to relatively high levels (54% and 32%) in the second and third sampling periods in 2015 (Tables 20 and 21). Then in 2016, the proportion was much reduced, with over 80% of the fish harvested in each period in this catch area belonging to the Kodiak reporting group (Tables 23, 24, and 25). This observed variation shows the danger in looking at just three years and thinking that one sees a trend. Further sampling and study is warranted to understand patterns of temporal variation.

The proportion of Cook Inlet-origin fish in the Ayakulik-Halibut Bay area is relatively low (less than 8%) in the first sampling period (June 1 to June 27) in 2014, but that this rises to 24% in the second period (June 28 – July 25) of that year, and then falls to about 5% in the last sampling period of that year (Tables 39, 40, and 41). However, in the next year this proportion starts high in the first period (28%), rises to 48% in the second period, and then drops to less than 10% in the last period (Tables 43, 44, and 45). In 2016, the first period contains essentially all fish originating from the Kodiak Management Area (>99%; Table 47), but the proportion of Cook Inlet-origin fish again rises in the second period to nearly 42%, and remains high at 28% in the third period (Tables 47, 48, and 49). A person focusing on the similarities would note that the second sampling period for this district was consistently high in all three sampled years, and that is correct. However, someone focusing on the large year-to-year variation in the proportion of Cook Inlet-origin fish would correctly point out that with three data points it is premature to speculate that this pattern will continue into the future.



## Final Comments

The Shedd et al. (2016) report is generally well written, organized, and it offers a reasonable amount of specific details about the actual genetic and statistical analyses. While it is impossible to judge the care, attention to detail, and technical skill that actually went into actual genetic analysis from the written page, the report demonstrates a great deal of technical sophistication. The sections on “Laboratory Quality Control” appears to demonstrate that the authors did take reasonable care to detect and report on obvious mistakes. The Alaska Department of Fish and Game’s Gene Conservation Lab has an excellent reputation for this kind of work. It would be extremely surprising to find that many, if any, outright mistakes were made in either the genetic or the statistical analyses.

The estimates in the Shedd et al. (2016) report seem quite reasonable. Catches were generally dominated by fish that originated within the Kodiak Management Area. Although there are some exceptions, a finer-scale examination shows catches were generally dominated by stocks that originated near the area of harvest. The Shedd et al. (2016) report is technically sophisticated and it contains features that we have found are indicative of a study that is carefully conducted. We found no reason to think that there were any large inaccuracies in the study, and the reported measures of precision provide evidence that the reported estimates are trustworthy and suitable for their intended purposes.

Finally, we note that the estimated harvest rate on Cook Inlet-bound sockeye salmon were below 10% in each year, and substantially below 10% in one year. These harvest rates generally agree with what previous, less accurate studies, have suggested. However, with only three years of measurements, with a large fraction of the catch not sampled, and with large annual variation in those measurements (much larger than the error obtained from the credible intervals), it is very hard to conclude that these results bracket the range of what to expect if the study were to be repeated, or to conclude that these results represent what would happen in a “typical year” (if there ever is such a thing). We recommend that the genetic analyses in this study be conducted to better understand the apparently real variation in stock contribution estimates (both rates and harvests).

These estimates in Shedd et al. would have been more useful for policy discussions if they could be recast in terms of harvest rate rather than contribution rate. In fairness, we note that this was not one of the stated goals for the study, but this appears to be a subject that needs to be addressed in the future. We have tried to crudely approximate the harvest rate using information that was easily accessible to us. While our specific harvest rate estimates can be easily criticized, it is clear that the harvest rate was probably much less than 10% in most study years and almost surely less than about 15% in each year of the study. In the future, we recommend sampling in some of the time and area strata that were not sampled in 2014–2016, or else we recommend some discussion of why specific time-area strata can be



assumed to have very low contribution rates for stocks outside the Kodiak Management Area.

### **Acknowledgments**

We thank Heather McCarty for her help in proposing this review and guidance into the scientific and management issues involved.

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## **Appendix A – Biographical Statements for the Authors**

Harold J. Geiger is the chief scientist for the St. Hubert Research Group, a small consulting company in Juneau, Alaska. He previously worked for the Alaska Department of Fish and Game, holding several positions on the salmon research staff of the Division of Commercial Fisheries before retiring in 2007. He held the position of Chief Biometrician in the late 1990s and was the Salmon Research Supervisor for the Southeast Region in the early 2000s. He holds a Master's degree in Statistics from Oregon State University and a PhD from the College of Fisheries and Ocean Sciences at the University of Alaska Fairbanks.

Terrance J. Quinn II, Ph.D. has been Professor of Fish Population Dynamics in the Fisheries Department, College of Fisheries and Ocean Sciences, University of Alaska Fairbanks for 32 years. He obtained his Ph.D. in Biomathematics from the University of Washington in 1980. Dr. Quinn's research focuses on fish population dynamics; estimation of fish and whale abundance; sampling theory; and renewable resource management systems. He is the co-author or co-editor of 4 books and over 100 scientific publications and has shepherded about 40 students through their post-graduate careers. He has been a member of the Statistical and Scientific Committee of the North Pacific Fishery Management Council since 1986 and was a former chair of that body. He is a former member of the Ocean Studies Board of the National Academy of Sciences and served on five of their committees, including two as chair or co-chair. He is an Associate Editor of the Canadian Journal of Fisheries and Aquatic Sciences.



## Appendix B: Some Comments on Stock Mixture Analysis

The earliest techniques for developing these estimates were based on simply capturing migrating salmon, tagging them with a visible tag, and then looking for the tags on spawning fish. By comparison, this is a crude technique as it is hard or even impossible to control for how much effort went into looking for tags. That is, a stock with a small contribution to the mixture could result in a large fraction of the recovered tags if, for example, there was a counting weir on the spawning stream of that stock.

A technique that is somewhat more sophisticated is based on an analysis of scale patterns, and this technique was used extensively in the 1980s and 1990s. The technique was based on the assumption that fish originating from different systems had different growth patterns, which would be represented on the scales of the fish. A large sample of scales needed to be collected for each stock, each year. Then a very large (often over 100 measurements) can be used to characterize the scale pattern for that stock, as the growing conditions that affect the scale patterns change from year to year. A complex statistical algorithm (called a linear discriminate function) is used to look for the specific measurements that show the most differences among stocks. The results from this discriminate function can then be used to classify fish in the fishery mixture to the stock that most likely produced it.

In Lynn Canal in Southeast Alaska, scale patterns were used to estimate the proportions of Chilkat and Chilkoot Lake sockeye salmon in a mixture to both actively manage a gillnet fishery during the fishing season and to study the productivity of the stocks after the fishing season. This was an ideal situation as the number of stocks was small and the patterns were quite different. As the number of stock in the mixture increased beyond just a few, or as the growing conditions among the stocks were more similar, scale pattern analysis estimates become uncontrollably imprecise, and the accuracy of the estimates would also degrade.

In the 1990s, genetic tools showed obvious advantages over other techniques. The first genetic techniques are sometimes called the allozyme techniques. Although these were time consuming and expensive, one of the main advantages was the individual stocks no longer needed to be characterized each year, as the genetic character of the stock changed slowly, if at all. Later, microsatellite techniques replaced allozyme techniques for a number of technical reasons. Finally, the SNP (Seeb et al. 2011) approach, used in this study, is usually thought of as the current state of the art and most cost-effective method of conducting a complex stock mixture analysis.



## Reference

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*International Program for the study of Salmon Ecological Genetics*

Kodiak Salmon Work Group  
Kodiak Regional Aquaculture Association  
104 Center Avenue  
Kodiak, Alaska 99615

September 8, 2017

Attention: Heather McCarty

To whom this may concern,

Thank you for the offer of a contract to conduct a detailed evaluation of the recent ADFG report on the stock composition of sockeye harvested in the KMA. I decided not to accept the offer, partially because the questions asked were slightly outside of my area, but I'm happy to provide my thoughts on the genetics aspects of research.

First I'll comment on the veracity of the ADFG lab and the analyses used in the report. The ADFG lab continues to be the lead scientific entity doing this sort of applied research in North America and probably the world. This is an unbiased statement that I can make after working with similar agencies in other NPAFC and European nations as well as with (and sometimes against) numerous other state and federal labs in the USA. ADFG publishes more papers through the public peer review process than do other agencies (especially federal agencies in Alaska), demonstrates leadership in quantitative and laboratory analyses, and goes to more effort than other labs to incorporate spatio/temporal standardization in sample selection as well as a blind QC through paired sample reruns.

There are reasons for this veracity that date back to spread sheet errors made by ADFG scientists decades ago; these errors brought agony to various stakeholders during the BOF process. Also, the ADFG geneticists developed experience by successfully working with ten or more diverse-thinking stakeholders during the contentious WASSIP process (that probably took a decade). The ADFG geneticists prefer to work doubly hard to get things right the first time rather than to spend efforts to explain spreadsheet errors later.

As a result, and after a scan of methods and results, I have no doubt that the genetics results faithfully report the stock composition of the samples analyzed. The samples analyzed appear to be reasonably selected to best represent the samples taken during prosecution of the fisheries.

However, all salmon fisheries like this have annual and seasonable variables that can change stock composition of the harvest: tides, temperatures, and/ or relative abundance and migration routes of the contributing stocks. The KMA fisheries appear to have these and other variables including the timing and duration of pink salmon opportunities. ADFG has generally adopted a three year acceptable minimum timespan for studies like this in order to best document trends. But this report estimates

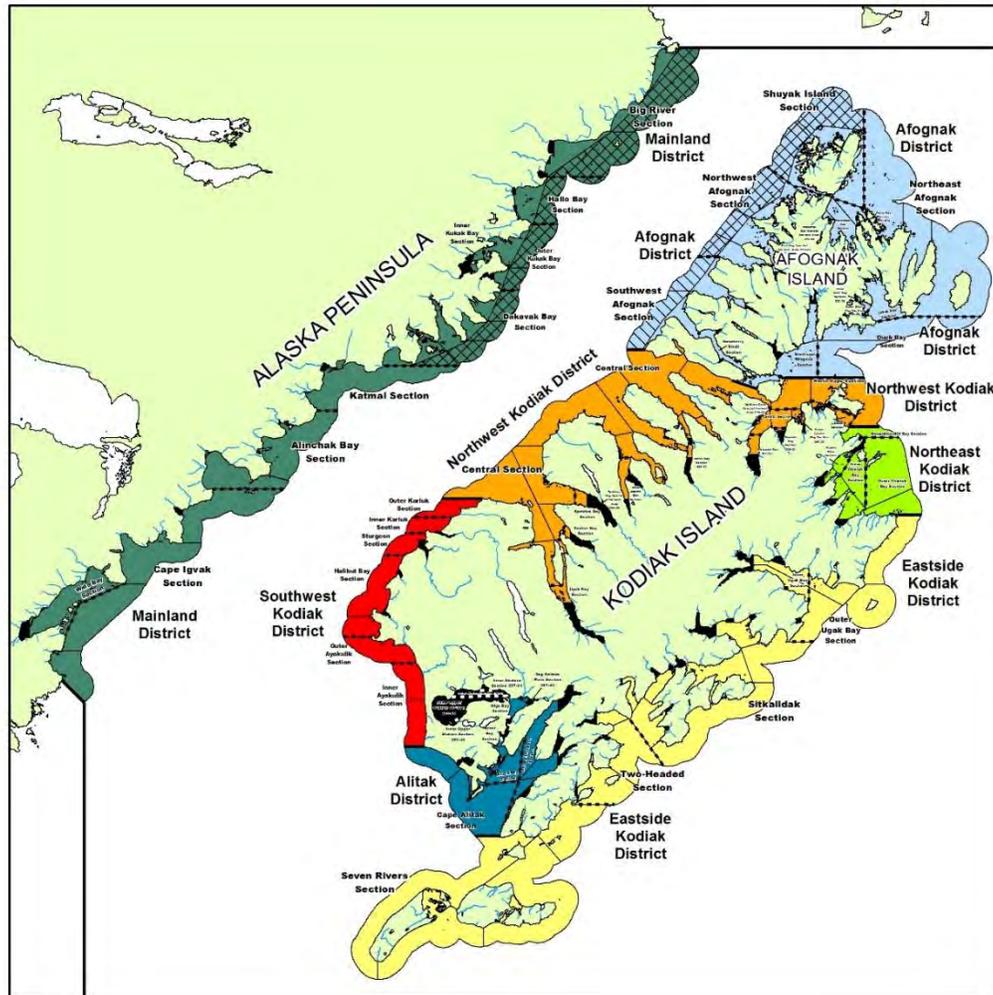


substantially variable interception of out-of-area stocks during the years 2014-2016. No trend is apparent, and more years of study are needed to distinguish factors that might explain the low interception of Cook Inlet stocks observed in 2014 compared to the high interception of Cook Inlet stocks in 2015.

I'll leave it to others to evaluate the best possible sampling strategies and evaluate the need for further study. But I have no doubt that these genetics results faithfully characterize the composition of the samples.

Sincerely,

*James E. Seeb, PhD  
Research Professor  
School of Aquatic and Fishery Science  
University of Washington  
206 685 2097*



# Kodiak's Salmon Fishery and ACR #11

Kodiak Seine Association in conjunction with the Kodiak Salmon  
Work Group

10/2/2017



Kodiak Seiners Association  
P.O. Box 8835  
Kodiak, AK 99615

October 2, 2017

Chairman John Jensen  
Alaska Board of Fisheries  
Boards Support Section  
P.O. Box 115526  
Juneau, AK 99811-5526

RE: UCIDA Agenda Change Request and  
Genetic Stock Composition of Sockeye Salmon in  
the Kodiak Management Area

Dear Chairman Jensen and Board Members:

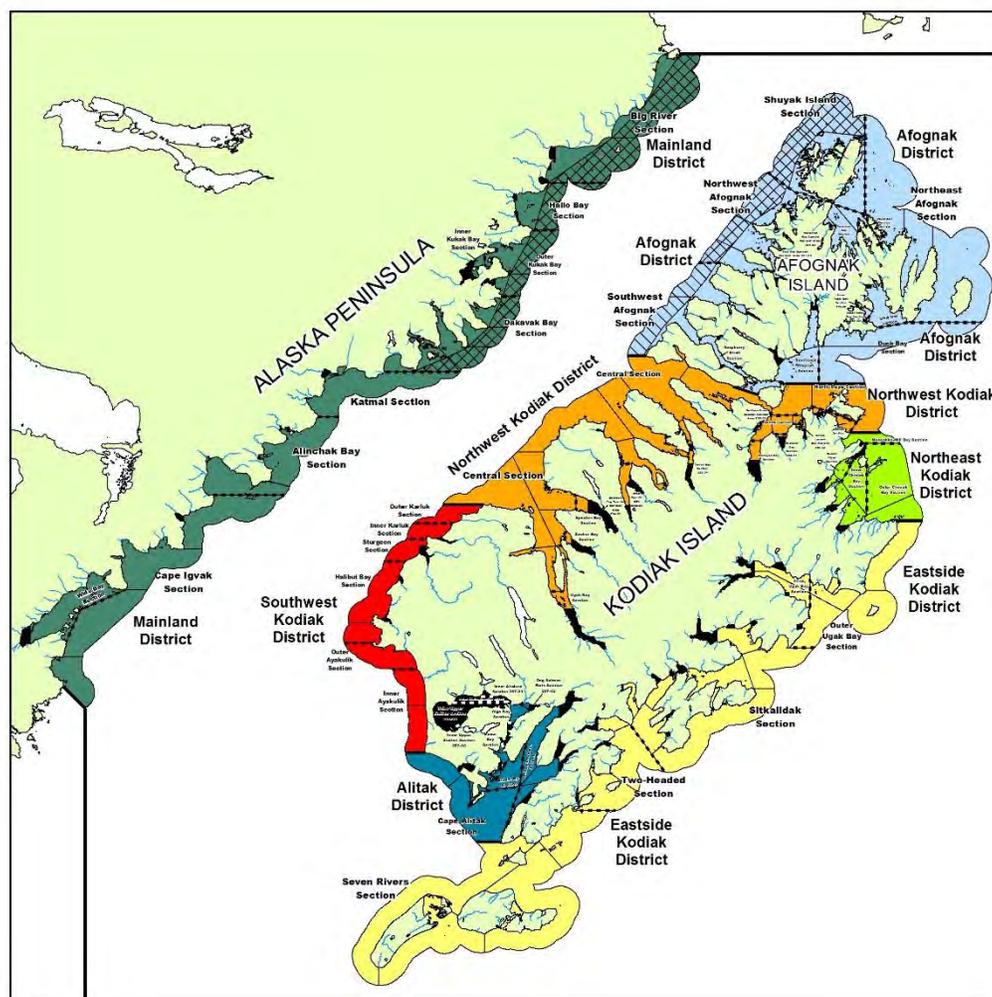
In conjunction with the Kodiak Salmon Workgroup's efforts to provide context and information about the recent Genetic Composition of Sockeye in the Kodiak Management Area report, the Kodiak Seiners Association is submitting the executive summary and primary text of a comprehensive review of the historical development of Kodiak's commercial fisheries, the implementation of area management plans and the complications of managing Kodiak's multitude of salmon producing streams and 5 species. The review is written by former Kodiak Area management biologist Kevin Brennan. (We understand that the appendix to Brennan paper will be submitted by the Northwest Setnetters Association.)

The Brennan paper is lengthy and detailed. Nevertheless, the paper illustrates how complicated management of the Kodiak area can be and it establishes three overarching facts for the Board's consideration. Kodiak fishermen have captured Cook Inlet bound sockeye since the beginnings of the fishery and the yearly history shows that the catches of Cook Inlet bound sockeye vary substantially in magnitude, location and time. Kodiak's management plans are based on the availability of local stocks and work well together to provide both escapement and fishing opportunity. And finally, Kodiak salmon fisheries are not expanding and they are not targeting Cook Inlet fish.

It is apparent, based on the ACR 11 submission and informal conversations, that many Cook Inlet fishermen and advocates simply don't understand the Kodiak fishery. For those that want to constructively assess the issue at hand, the Brennan paper is the foundation for developing a working knowledge of how salmon management works in Kodiak.

Sincerely yours,

Nathaniel Rose, President



A Review of Agenda Change Request #11  
and the ADF&G Kodiak 2014-2016  
Sockeye Genetic Mixed Stock Analysis  
technical Fishery Manuscript, with  
recommendations to the BOF.

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Kevin Brennan, Dave Prokopowich, and Larry Malloy

9/25/2017

## Summary of Brennan et al. by the Kodiak Salmon Work Group

### Conclusions

- The new Mixed Stock Analysis for Kodiak sockeye salmon fisheries has limited applicability, and is not sufficient reason to change current KMA management. The salmon fisheries in the KMA are long-standing Mixed Stock Fisheries, with an unpredictable component of nonlocal salmon.
- There are no conservation emergencies for salmon fisheries within the KMA, including nonlocal fish bound for Cook Inlet or Chignik.
- The 2014-2016 KMA sockeye genetic MSA report does not provide sufficient cause to accept ACR#11 and schedule an out-of-cycle regulatory meeting for the KMA. ACR#11 does not meet any of the three BOF criteria for acceptance.
- The BOF deliberation of any action pertaining to the KMA salmon fisheries should next occur during the regular BOF Kodiak Finfish meeting cycle. Sufficient time is required for complete evaluation of the data and findings in the report, and for continued research and discussion.

**The mixed stock nature of KMA salmon fisheries and the KMA harvest of nonlocal Cook Inlet sockeye salmon are well known, not new.**

### Part 1: Mixed Stock Fishery (Page 8)

Based on location and oceanography, mixed Pacific salmon migrate through the Kodiak Management Area, and are harvested in KMA salmon fisheries. The mixed stock nature of KMA salmon fisheries and the KMA harvest of nonlocal Cook Inlet sockeye salmon are well known, not new.

### Part 2: Development of Kodiak Salmon Management of a Mixed Stock Fishery (Page 13)

Allocation issues have at times dominated Kodiak finfish BOF actions. Current management plans for the KMA were formed within this allocative crucible.

KMA commercial salmon fishery management plans are complex and were developed with the potential for harvest of nonlocal sockeye as a known issue. With early-run sockeye, pink and chum, late-run sockeye and coho salmon runs showing at different systems at different times through a long fishing season, a blended management approach was formed. Targeting of nonlocal salmon was minimized by focusing fishing opportunity only on the abundance of local salmon.

**Targeting of nonlocal salmon was minimized by focusing fishing opportunity only on the abundance of local salmon.**

In **1978**, the Board of Fisheries passed the first Kodiak salmon management plan, the allocative *Cape Igvak Salmon Management Plan* (5 AAC 18.361). In **1987**, based on increasing allocative disputes among set gillnet fishermen in the Alitak District, the Kodiak area management team wrote up and brought to the BOF a local stock management plan for the Alitak District.

In March **1990**, the BOF considered two main Kodiak management plans. The first was the *Westside Kodiak Salmon Management Plan* (5 AAC 18.362); adopted into regulation was the blended management chronology of the major salmon fisheries in the Northwest Kodiak and Southwest Kodiak Districts. The *North Shelikof Strait Sockeye Salmon Management Plan* (5 AAC 18.363) is an allocative plan meant to contain KMA salmon fisheries in the North Shelikof yet still provide for traditional opportunities to harvest high quality local pink and chum salmon.

Mixed Stock Analysis continued on the July North Shelikof sockeye harvest and, in **1993**, MSA was expanded to include the entire KMA except for the Cape Igvak fishery. The result was estimates of extremely variable numbers of nonlocal Cook Inlet sockeye stocks to KMA sockeye harvests.

Between **1990** and **1999**, five more Regulatory Management plans were developed by the Kodiak area management team and adopted by the BOF. **During those deliberations, the mixed stock nature of KMA sockeye harvests and the potentially large harvest of Cook Inlet sockeye in various places around the KMA were known facts and often discussed.**

### Part 3: Agenda Change Request Criteria and ACR#11 (Page 23)

#### ***Criteria 1(A): The BOF may accept an ACR for a fishery conservation purpose or reason.***

There isn't a Conservation Concern for any sockeye salmon stock in the Cook Inlet or Kodiak Management Areas. Harvestable surplus for Upper Cook Inlet (UCI) sockeye stocks are consistently forecast.

#### ***Criteria 1 (B): The BOF may accept an ACR to correct an error in a regulation.***

There are no errors in current regulations governing the KMA salmon fisheries.

#### ***Criteria 1 (C): The BOF may accept an ACR to correct an effect on a fishery that was unforeseen when a regulation was adopted.***

There hasn't been any 'effect on a fishery' demonstrated by ADF&G's new MSA study. The KMA harvest of nonlocal sockeye is not new or unknown. It has not been demonstrated that KMA harvest of nonlocal sockeye has in any negative way affected or endangered any UCI sockeye stocks.

#### ***Criteria (2): The board will not accept an agenda change request that is predominantly allocative in nature in the absence of new information found by the board to be compelling.***

UCIDA states in ACR #11 that "This ACR is regionally allocative." Is there compelling new information? The new genetic MSA contains recent nonlocal sockeye harvest estimates, yet they are very similar to estimates provided to the Board in 1994, 1995 and 1996.

The negative effects of adopting the UCIDA umbrella plan are not discussed, in the ACR or the new genetic MSA report. These would include extensive KMA fishery closures from late June through July and resulting lost harvest opportunity, reduced salmon product quality, increased gear conflicts, and ultra-conservative management in the face of loss of traditional fishing patterns. **The economy of Kodiak would be severely, negatively impacted.**

### Part 4: Concerns for Upper Cook Inlet Sockeye (Page 30)

Susitna is a Stock of YIELD concern, and is not a conservation concern under present day management of Cook Inlet and KMA fisheries. The Action Plan for Susitna sockeye has not included reducing the harvest from Lower Cook Inlet or KMA fisheries, though it does identify many other sources of concern, such as invasive

species (Northern Pike), loss or alteration of freshwater habitat, change in water quality and quantity, pathogens and freshwater fisheries.

### **Part 5: Limitations of the Genetic Study** (Page 36)

The genetic MSA report shows a snapshot of events, with some significant limitations. The limits are suggested by the authors of the report, and should be heeded. Limited funding limited the scope of the study.

### **Part 6: An Imperfect Design** (Page 41)

The study design was 'imperfect' to answer many biological and allocative questions regarding KMA bycatch of nonlocal sockeye.

Temporal strata failed to recognize important dates within KMA fisheries management; three temporal strata were too few since monthly estimates of stock compositions may not be representative and stock composition is not static as salmon migrate through the KMA. In addition, changing time strata among the three study years confounds the results.

**Temporal strata failed to recognize important dates within KMA fisheries management and the geospatial strata used are overly broad**

Similarly, the geospatial strata used are overly broad. The way data was pooled may also obscure important or essential information. The manner in which samples were later subsampled and data was pooled to fit temporal strata will affect how the sample data can be used.

### **Part 7: More Uncertainty** (Page 44)

The information provided by the new KMA sockeye genetic MSA may be misused, and it may create more uncertainty rather than less.

Some may believe that KMA local salmon stocks could all be harvested within 'terminal' fishing areas or 'inside the capes'. Long experience has shown that allowing salmon to enter the fresher (less saline), warmer, inside waters of the KMA will very quickly lead to loss of quality, or to complete loss to the fishery as the fish home-in and refuse to move out of closed water sanctuaries.

**Part 8: Evaluation of Application of BOF Policies and Criteria** (Page 45)

Considering the *Policy for Management of Mixed Stock Salmon Fisheries*:

- The stated goal of the policy include not only conservation of salmon and habitat, it also seeks to ensure “the sustained economic health of Alaska’s fishing communities”. **The proposed UCIDA umbrella plan would devastate the Kodiak economy.**
- KMA commercial salmon fishermen already bear a disproportionate Conservation Burden for Cook Inlet sockeye stocks through the regulations for the *North Shelikof Strait Sockeye Salmon Management Plan*. The burden of conservation for relatively ‘healthy’ Cook Inlet salmon stocks should not be prioritized above that of KMA local salmon stocks.

**KMA commercial salmon fishermen already bear a disproportionate Conservation Burden for Cook Inlet sockeye stocks through the regulations for the *North Shelikof Strait Sockeye Salmon Management Plan*.**

- The KMA incidental harvest of nonlocal sockeye is neither new nor expanding. In fact, the **participation by gear groups has decreased substantially.**
- BOF findings regarding the Mixed Stock Policy states that Alaska's salmon industry appropriately relies upon stable existing fisheries, most of which harvest mixed stocks. **Kodiak's established management program for the harvest and conservation of mixed stocks has been successful in sustaining and promoting Kodiak's century-old industry.**

Considering the *Policy for the Management of Sustainable Fisheries*:

- The stated goals of the policy include not only conservation of salmon and habitat, but it also seeks to ensure “the sustained economic health of Alaska’s fishing communities.” **There is little doubt that significant changes to KMA’s long-standing salmon management plans would negatively change the economic health of Kodiak communities.**
- Definitions of Stocks of Concern and associated Action Plans inform our conclusion that **there is no concern for the health of Susitna sockeye based on nonlocal harvest.**



## **A Review of Agenda Change Request #11 and the ADF&G Kodiak 2014-2016 Sockeye Genetic Mixed Stock Analysis technical Fishery Manuscript, with recommendations to the BOF.**

### **EXECUTIVE SUMMARY:**

Introduction: This report is written in response to the December 2016 publication of the report *Genetic Stock Composition of the Commercial Harvest of Sockeye Salmon in Kodiak Management Area, 2014–2016* (Shedd, et al, 2016), and to the UCIDA Agenda Change Request (ACR #11) and proposed umbrella management plan for Kodiak Management Area (KMA) salmon fisheries. Additional restrictions are being sought, to further limit the potential incidental harvest of Cook Inlet sockeye stocks in KMA salmon fisheries.

This review was authored by former ADF&G Kodiak salmon Area Management Biologists Kevin Brennan, Dave Prokopowich and Larry Malloy, who were part of the Kodiak Area management team for commercial and subsistence salmon fisheries from about 1972 through 2005. In those 34 years, in addition to the duties that accompany management of an Alaska commercial salmon fishery, we consistently participated in Advisory Committee meetings, Board of Fisheries (BOF) regular and special meetings, BOF committee work, BOF approved Work Group or Task Force meetings, etc. We were actively involved in Kodiak salmon management from before Limited Entry, and we witnessed or participated in the development of many important BOF Policies and Criteria. We witnessed first-hand many allocative disputes, including the fish fight between Upper Cook Inlet and Kodiak salmon fishery stakeholders.

We were tasked with reviewing both the new KMA sockeye genetic Mixed Stock Analysis (MSA) and the subsequent ACR from UCIDA. We were asked to provide a historical look at the development of current KMA salmon management plans, issues regarding directed or incidental nonlocal salmon harvests in KMA salmon fisheries, the issues or subjects discussed in the new MSA report and in ACR #11, our perspective on the MSA report and ACR, and our suggestions for research, management and BOF actions. This review is not intended to be comprehensive or statistically robust. Our review is not written as a scientific report. We offer a review with insights on the past and ideas for the future.

For the reader's ease, we begin with brief conclusions and reasons; we then discuss ACR #11 both generally and specifically, and then provide additional discussion of the new Kodiak sockeye genetic Mixed Stock Analysis (Shedd, et al, 2016a) and relevant topics.

### **CONCLUSIONS OF OUR REVIEW**

The new MSA for Kodiak sockeye salmon fisheries has limited applicability, and is not sufficient reason to change current KMA management. The salmon fisheries in the KMA are long-standing Mixed Stock Fisheries, with an unpredictable component of nonlocal salmon. There are no conservation emergencies for sockeye salmon fisheries within the Cook Inlet Management Area (CIMA), including nonlocal harvest of sockeye bound for Cook Inlet. There is limited new data.

Sufficient time is required for complete evaluation of the data and findings in the report, for the Department to use the report finding as the study planners intended, and for continued or



additional research, study and discussion as needed to clarify issues, background, problems, goals and objectives or possible regulatory or non-regulatory solutions.

Sufficient time is required to fully and fairly address any stakeholder concerns that have arisen based on the new MSA study. The BOF deliberation of any action pertaining to the KMA salmon fisheries should next occur during the regular BOF Kodiak Finfish meeting cycle (fall/winter 2019/2020). We encourage additional use of these and new genetic studies to further inform the BOF and ADF&G.

We recommend and encourage the BOF to give stakeholders the opportunity to meet, get educated, ask questions, define information needs, discuss and thereby inform ADF&G and the BOF, at the regular meeting cycle as they have in the past. We feel it is most appropriate to shortstop three years of ACRs by conforming with previous BOF action to deny the consideration of ACR #11 at a special out-of-cycle BOF meeting. Instead all such ACRs with allocative proposals for KMA salmon fisheries should be deferred for further study and reporting during the regular BOF Kodiak Finfish meeting cycle.

Additional points:

- The 2014-2016 KMA sockeye genetic MSA report does not provide sufficient cause to accept ACRs and schedule an Out-of-Cycle regulatory meeting for the KMA. ACR #11 does not meet any of the three BOF criteria for acceptance. BOF movement toward immediate regulatory action to limit KMA commercial salmon fisheries based on this report would be hasty and unfounded.
- We believe that the BOF should authorize additional analysis and study of all Mixed Stock Analyses that have been conducted in the KMA. A focused report concerning nonlocal salmon in the KMA should be available to the BOF and stakeholders prior to consideration of possible regulatory action on KMA commercial salmon fisheries.
- We feel the State of Alaska and stakeholders will be best served by allowing sufficient time for a thorough review and analyses of the issue by ADF&G and the BOF. The issue of nonlocal harvest of salmon is a statewide concern, and any actions regarding the Kodiak incidental harvest of nonlocal salmon will reflect on ALL salmon fisheries within the State. ADF&G could report on their progress and problems to the Board at scheduled fall work sessions.
- We believe that this issue, along with any allocatively-based ACRs that may be submitted during the BOF's 2017-2019 fall Work Sessions, should be tabled by the BOF for consideration during the regularly scheduled BOF cycle for consideration of Kodiak Finfish issues and proposed regulatory changes.

Nature has 'allocated' nonlocal salmon to Kodiak salmon fisheries. It is known that nonlocal sockeye migrate through the KMA. The location, timing, and magnitude of KMA incidental harvest of nonlocal Cook Inlet-bound sockeye salmon can't be forecast. It currently can't be identified or tracked inseason. The positive effects for Cook Inlet sockeye stocks escapement or harvest from restricting KMA fisheries to limit nonlocal sockeye harvests cannot be identified or quantified.

**Part 1 - KMA salmon fisheries are Mixed Stock Fisheries, with nonlocal sockeye as an expected component of KMA sockeye harvests.**



Based on location and oceanography, mixed Pacific salmon must migrate through the Kodiak Area. The KMA is juxtaposed between the Prince William Sound, Cook Inlet, and Chignik management areas. Predominant ocean currents bring Pacific salmon to the KMA annually during their juvenile migrations and during their inshore, spawning migrations. The Shelikof Strait is a major migratory pathway.

Nonlocal salmon swim around and through KMA waters, and are harvested in KMA salmon fisheries. And Kodiak-bound salmon are undoubtedly harvested in fisheries within other Management Areas.

Limited migratory information can be gleaned from the new genetic MSA. During the study, more Cook Inlet salmon than perhaps expected bypassed the more northern Kennedy Entrance to Cook Inlet, instead swimming south along the eastside of Kodiak and rounding the southern tip of Kodiak Island to be found in south Shelikof area salmon fishery harvests. There is no answer to why, how many, or when nonlocal stocks will appear in KMA fishery locations.

The mixed stock nature of KMA salmon fisheries and the KMA harvest of nonlocal Cook Inlet sockeye salmon are known, not new. Determining Stock of Origin was a goal of early tagging studies and research. It was observed in the 1920s that commercial sockeye harvests attributed to Karluk were strong throughout July but there was a definite lull between early escapement (June) and late escapement (August and September) of sockeye (or bimodality). For many years, a group of Federal researchers and managers believed that the Karluk sockeye run was actually uni- or trimodal, with a large Karluk middle run (or large portion of the single run) in mid-season (July). Since the 1970s, local salmon managers have known that the harvest of nonlocal Cook Inlet sockeye near Karluk was the likely explanation for the 'lost middle run' to Karluk.

## **Part 2 - Development of Kodiak Salmon Management: The Allocative Crucible**

Nonlocal salmon harvest is an allocative issue, intensified by Limited Entry and Area Registration for Alaska salmon fisheries. Both caused a "them against us" attitude. Allocation issues have at times dominated, and have been a dominant feature of Kodiak finfish BOF actions. Current management plans for the KMA were formed within this allocative crucible. KMA commercial salmon fishery management plans are complex and were developed with the potential for harvest of nonlocal sockeye as a known issue. Harvest strategies employed since the 1970s became more complicated. Limited Entry permits were based on restricting the holder to fishing within a geographic area, not to fishing only on salmon stocks local to that area. In 1980 Limited Entry permits for Kodiak salmon fisheries stabilized to near the present numbers: 375 purse seine, 188 set gillnet, and 31 beach seine permits are available. Participation varies; not all permits are fished each year.

With early-run sockeye, pink and chum, late-run sockeye and coho salmon runs showing at different systems at different times through a long fishing season, a blended management approach was formed. Certain locations were fished to target certain local salmon species at certain times of the year. Targeting of nonlocal salmon was minimized by focusing fishing opportunity only on the abundance of local salmon. An area-wide pink salmon harvest strategy was developed through the 1970s and 1980s. It utilized an early pink salmon fishery period from July 6 to 25. Mixed early returns are found in outside waters and they are high quality, ocean-bright salmon. Early pink salmon returns build quickly, almost exponentially, through July.



Pink salmon fisheries in the KMA are weekly ‘pulse’ style fisheries. Based on the preseason forecast for pink salmon run strength, weekly fishing periods of 2½ to 4½ days duration are pre-announced. After July 25, there is escapement and buildup estimates along with harvest data to determine if weekly fisheries in various locations require more or less fishing time. Pulse fishery management for KMA pink salmon during the mid-season time period reduces potential bycatch of nonlocal sockeye. We feel that is an important consideration.

In 1978, the Board of Fisheries adopted the first Kodiak salmon management plan, the allocative *Cape Igvak Salmon Management Plan* (5 AAC 18.361). The Cape Igvak area was historically used by Kodiak and Chignik fishermen prior to limited entry. After Chignik fishermen were not allowed to cross Area boundaries, they complained to the BOF that Cape Igvak fish were likely Chignik-bound sockeye salmon. Because of the long tradition of fishing Cape Igvak, the BOF did not close the fishery. Instead an allocation plan was developed, based first on the size of forecasted sockeye runs to Chignik. Defined biological (escapement at Chignik) and allocative (Chignik sockeye harvests) requirements must be achieved before Kodiak fishermen are allowed opportunity to fish at Cape Igvak. Escapement must be assured, then minimum Chignik harvests must be assured, then Cape Igvak can open. The Cape Igvak management plan covers only a small portion of the KMA and is only in effect from June through July 25 (after, fishing time is only allowed on local pink, chum or coho stocks). The Cape Igvak plan was unpopular with Chignik fishermen and change or abolishment of the plan has been the subject of proposals and discussion at nearly every Kodiak finfish BOF meeting since 1978, though with few, relatively minor changes occurring.

In 1987, based on increasing allocative disputes among set gillnet fishermen in the Alitak District, the Kodiak area management team wrote up and brought to the BOF a local stock management plan for the Alitak District. Thus began the process of ‘institutionalizing’ current KMA salmon harvest strategies and management plans for each District and Section of the KMA, by identifying the dominant (targeted) local salmon stock that can drive salmon fishery management throughout the fishing season. These plans provide transparency as to why a section may open during any time period during the season, so that processors and fishermen might better understand the complicated management schemes that had developed over the prior 20 to 30 years. The important ‘general’ weekly pink salmon openings between July 6 and 25 were incorporated into these blended management plans.

In 1988 there was an unusual fishery that developed in the northern half of Shelikof Strait. KMA purse seiners were able to see north-bound sockeye salmon jumping and moving far offshore. Weather along the Shelikof Strait was good enough for long enough that purse seiners operated far offshore. In a period of 2-3 weeks in July, hundreds of thousands of large size sockeye salmon were caught and delivered to Kodiak processors. Stock of Origin quickly became an issue, and there was a call for Mixed Stock Analysis and potential KMA fishery restrictions if the harvest proved to be of nonlocal, Cook Inlet origin. 1989 was a lost year because of the Exxon Valdez oil spill. There were no salmon fisheries allowed in the oil polluted waters of the Shelikof, so there was no repeat of the unusual fishing pattern of July 1988.

In March 1990, the BOF had two main Kodiak management plans to consider. The first was the *Westside Kodiak Salmon Management Plan* (5 AAC 18.362). The blended management chronology of the major salmon fisheries in the Northwest Kodiak and Southwest Kodiak Districts was adopted into regulation. There are multiple strong salmon stocks in 17



management units (Sections), with some sections designated seine only and some mixed seine/set gillnet fishing sections. Again, clarity was desired and the plan provides a management framework for the various local stocks within these large, complicated fisheries.

The *North Shelikof Strait Sockeye Salmon Management Plan* (5 AAC 18.363) was also created in March 1990. Through the North Shelikof SMP, KMA fishermen bear a substantial burden of conservation concerning UCI sockeye stocks. This allocative plan, in effect from July 6-25, was meant to contain KMA salmon fisheries in the North Shelikof yet still provide for traditional opportunities to harvest high quality local pink and chum salmon. The plan was created with sockeye harvest ‘triggers’ for eight sections bordering North Shelikof Strait; when managers determine that the sockeye harvest trigger would be exceeded, then further salmon fisheries in that management unit would be restricted to inshore “Shoreward Zones” and the offshore “Seaward Zone” would remain closed through July 25. In contrast to the Cape Igvak plan, there is no consideration of Cook Inlet run strength. Based on Mixed Stock Analysis using run timing, age composition markers and fish lengths, 90-95% of the 1988 North Shelikof harvest of sockeye was assigned as Cook Inlet sockeye. When determining if sockeye harvest triggers will be achieved, all sockeye are counted, as if the entire North Shelikof sockeye harvest are Cook Inlet fish.

Cook Inlet-Kodiak allocative squabbles continued, despite the passage of a restrictive, allocative management plan. The Board discussed the North Shelikof fishery at every regular and some special meetings through at least 1996, and ever since at most regular Kodiak finfish BOF meetings. Mixed Stock Analysis continued to be conducted on the July North Shelikof sockeye harvest and, in 1993, MSA was expanded to include the entire KMA except for the Cape Igvak fishery. Various methods were used for the 1990-1993 MSA and, with agreement by ADF&G staff at Headquarters, Kodiak and Cook Inlet, analyses using comparative Average Weights was chosen. There are significant differences in average weights of Kodiak, Cook Inlet and Chignik. This method allowed ADF&G to look back at past KMA harvests and estimate the proportions and numbers of nonlocal sockeye in KMA commercial harvests. ADF&G could also deduct the exact stock of origin, based on weights, timing, etc. It was the best science available and multiple studies were presented to the BOF between 1993 and 1996. And the common result was estimates of sometimes substantial but extremely variable numbers of nonlocal Cook Inlet sockeye stocks in KMA sockeye harvests.

Between 1990 and 1999, five more Regulatory Management plans were developed by the Kodiak area management team, and deliberated upon and adopted by the BOF. During those deliberations, the mixed stock nature of KMA sockeye harvests and the potentially large harvest of Cook Inlet sockeye in various places around the KMA were known facts and often discussed. However, the management plans dictate that only LOCAL salmon stocks will drive possible KMA fishing time (except in the Cape Igvak and the North Shelikof fisheries). KMA salmon management recognizes but doesn’t focus on incidental nonlocal salmon harvests.

### **Part 3 – Agenda Change Request Criteria and ACR #11**

United Cook Inlet Drift Association has submitted an Agenda Change Request (ACR #11), based on the ‘new’ information in the recent KMA genetic MSA. ACR #11 asks the BOF to consider an out-of-cycle proposal for a new salmon management plan in the Kodiak Management Area, to



limit nontraditional harvest of nonlocal sockeye in KMA commercial salmon fisheries. There are criteria for changing the Board of Fisheries agenda (5 AAC 39.999):

Criteria 1(A): The BOF may accept an ACR for a fishery conservation purpose or reason.

- There isn't a Conservation Concern for any sockeye salmon stock in the Cook Inlet or Kodiak Management Areas. Harvestable surplus for Upper Cook Inlet (UCI) sockeye stocks are consistently forecast. Commercial fisheries have been annually prosecuted in Lower and Upper Cook Inlet. There is no chronic inability to meet UCI sockeye escapement goals.

Criteria 1 (B): The BOF may accept an ACR to correct an error in a regulation.

- We feel there are no errors in current regulations governing the KMA salmon fisheries. The KMA salmon fishery has been identified as a Mixed Stock Fishery, and past studies have revealed similar numbers/percentages of CI sockeye present in KMA harvests, as did the new Kodiak sockeye genetic MSA study. KMA regulatory Salmon Management Plans (SMP) were written, discussed, and passed by the BOF with that knowledge. An error in regulation is more likely with hasty, ill-prepared, unjustified or politically-motivated proposed regulation changes. An issue of this importance and complexity deserves adequate consideration prior to changes to traditional and historical fisheries, changes which would also bring severe economic consequences to the Kodiak salmon fishery

Criteria 1 (C): The BOF may accept an ACR to correct an effect on a fishery that was unforeseen when a regulation was adopted.

- There hasn't been any 'effect on a fishery' demonstrated by ADF&G's new MSA study or report. There was a lot of data, yet little to no analyses. The KMA harvest of nonlocal sockeye is not new or unknown. The presence of relatively large numbers of Cook Inlet salmon within KMA commercial salmon harvests during any year cannot be categorized as "unforeseen", for the reasons stated throughout this review. It has not been demonstrated that such harvests have in any negative way affected or endangered any UCI sockeye stocks. In the absence of any KMA fishery, the actual effect on UCI stocks is unknown and in our opinion is undeterminable.

Criteria (2): The board will not accept an agenda change request that is predominantly allocative in nature in the absence of new information found by the board to be compelling. (emphasis added).

- UCIDA states in ACR #11 that "This ACR is regionally allocative." So, is there compelling new information? The new genetic MSA contains recent nonlocal sockeye harvest estimates, yet they are very similar to estimates provided to the Board in 1994, 1995 and 1996. We do not believe that the use of a different method for an MSA is compelling enough to consider this allocative ACR out of the regular BOF meeting cycle.

We have issues with the issues presented by UCIDA in ACR #11. Additional questions are asked on the official Board of Fisheries Agenda Change Request Form, and there are misstatements and untruths contained in the given explanations and descriptions.

- The "problem" stated appears to be "the harvest of Cook Inlet or other non-local salmon stocks in the Kodiak Area" (from ACR #11, question 2). Yet, in no way was there evidence given of an actual problem. It appears the problem is that there's never enough salmon.

A defined purpose for a restrictive management plan is given by UCIDA, "allowing traditional fisheries on local stocks while minimizing directed harvest of Cook Inlet or other



nonlocal salmon stocks” (ACR #11, question 3; emphasis added). There are no directed harvests on nonlocal salmon in the KMA, except for the long-standing Cape Igvak fishery. All other KMA salmon fisheries are directed toward the harvest of local salmon runs.

UCIDA recognizes that “incidental harvest” will occur during fisheries managed for local KMA stocks. However UCIDA also seeks to “prevent a repetition of nontraditional harvest patterns which occurred during 1988, and during the past few years” (emphasis added).

The ACR seeks to prevent the repetition of something that has not occurred since 1988. There is no evidence of any repetition of 1988 fishing patterns, nor is there any evidence of nontraditional harvest patterns in KMA salmon fisheries in the past few years.

- The fishery Conservation purpose or reason appears to be that currently ADF&G does not use precise genetic stock estimates in development of escapement goals, management plans or brood tables (ACR #11, question 4a). However, the KMA genetic MSA was just finished and published. TIME is needed to attempt to use data from the recent MSA.
- The error in regulation seems to be ‘the inaccurate or unfair burden of conservation’ (ACR #11, question 4b). UCI sockeye escapements are being met, Cook Inlet salmon fisheries are allowed, so the conservation burden is minimal. There is not a known conservation problem; Susitna sockeye are a Stock of Yield Concern only.

There is already a very LARGE conservation burden on KMA fishermen, the *North Shelikof Strait Sockeye Salmon Management Plan* (5 AAC 18.363), for which no positive net effect on UCI stocks has ever been demonstrated. Over half of the Mainland and Afognak Districts are subject to fishery closures in July based on the 1988 KMA harvest of nonlocal Cook Inlet salmon. Many KMA stakeholders would say that the conservation burden is currently unfairly slanted against KMA fishermen.

- As an effect that was unforeseen, UCIDA states that “It was only recently, as a result of genetic testing and analysis, that the real magnitude of the harvest of Cook Inlet and other non-local salmon stocks in the Kodiak Management Area became known” (ACR #11, question 4c). Just because they may have forgotten about, or were too young to know about, the Mixed Stock Analyses of KMA sockeye harvests in the 1990s, doesn’t mean that that information doesn’t exist. The magnitude of nonlocal salmon harvests was known and was before the Board when KMA management plans were deliberated and adopted, but a new MSA has inspired a new round in the ongoing Cook Inlet-Kodiak fish fight.
- ACR #11 states that, should this issue not be solved prior to the 2019/2010 regular BOF meeting cycle (the next in-cycle BOF meeting to consider Kodiak finfish issues) then the issue will lead to “increased conflicts, inappropriate biological assessments (escapement goals), economic stress, perhaps inappropriate management plans and inappropriate use of Emergency Order authority” (ACR #11, question 5). Solving the issue of nonlocal salmon harvest within an area may be a completely different thing than massive area-wide restrictions and complete change to KMA’s traditional salmon fishery management and harvest opportunities, which would result from adoption of the proposed UCIDA umbrella plan. Should the proposed UCIDA ‘Solution’ be adopted, there would still be increasing conflict, increased economic stress and the potential for inappropriate assessments, management plans, or fishery actions (EOs).



- This was not a ‘first opportunity to look’ at KMA incidental harvests of nonlocal, Cook Inlet sockeye, as suggested by UCIDA (ACR #11, question 7). MSA estimates were conducted and reported to the BOF and public. We do not know much more about the timing, location, extent and magnitude of the harvests of Cook Inlet origin salmon stocks. There’s just not enough information. The current MSA study and report has provided limited results from a limited sampling plan that was NOT intended to provide nonlocal salmon harvest rates, but rather the sockeye stock components of selected KMA fisheries during limited time periods. The study cannot infer an absolute or precise harvest rate of nonlocal sockeye in KMA fisheries.
- UCIDA clearly states that theirs is NEW proposal, “not previously... before the board” and that it was “modeled after existing portions of both the Kodiak and Cook Inlet Alaska Administrative Code themes and regulations” (ACR #11, question 9). The proposed UCIDA restrictive umbrella plan from ACR #11 is not a new proposal. It is modeled after proposals from the November 1995 Kodiak Finfish BOF meeting and prior BOF meetings (Appendix E).

At the November 1995 Kodiak Finfish meeting, there were several such proposed changes to KMA fisheries based on the Average weight MSA conducted by ADF&G. And the Board did not adopt any further restrictions. In the Summary of Actions taken at that meeting (Appendix E), it clearly states that “the past Board had pretty much resolved the issue in 1989 utilizing the best information available. And that information has not changed to this point. The effort and catch has increased in the disputed areas due to local management practices in other areas of Kodiak. And it is difficult to determine if this (is) a new and expanding fishery when both this area and Cook Inlet fisheries are at an all-time high. The overriding reason for apparent increase in intercept of Cook Inlet stocks seems to be directly related to the density and strength of that run” (emphasis added).

The results of the 2014-2016 Kodiak GSI could be misused to try to determine specific harvest rates or trends in improperly determined temporal or spatial fishery strata harvests.

The negative effects of adopting the UCIDA umbrella plan are not discussed in the ACR or the new genetic MSA report. The negatives would include extensive KMA fishery closures from late June through July and resulting lost harvest opportunity, reduced salmon product quality, increased gear conflicts, increased likelihood that Kodiak sockeye and pink salmon escapements would exceed the appropriate levels that have been determined by ADF&G and the BOF, and ultra-conservative management in the face of loss of traditional fishing patterns. The economy of Kodiak would be severely, negatively impacted.

#### **Part 4 - Concerns for Upper Cook Inlet Sockeye?**

The KMA harvest of nonlocal salmon has not created a biological problem with Cook Inlet sockeye production. It is most likely that there is a variable and unpredictable ‘background’ level of nonlocal sockeye in KMA waters that has occurred since salmon returned to Kodiak following the last ice age. The incidental mortality of Cook Inlet stocks that migrate through the southern Shelikof has been included in KMA commercial salmon fisheries since they began at Karluk Spit in 1882. There is some new data, but not new information compelling enough to force BOF out-of-cycle action.



There is no chronic inability to achieve UCI sockeye escapement goals, and there have been commercial salmon fisheries and sockeye salmon harvest in recent (2014-2017) years. Average UCI salmon runs have increased over time.

There is one Stock of Concern among Upper Cook Inlet Sockeye salmon, Susitna sockeye... Susitna is a Stock of YIELD concern, and is not a conservation concern under present day management of Cook Inlet and KMA fisheries. The Action Plan for Susitna sockeye has not included reducing the harvest from Lower Cook Inlet or KMA fisheries, though it does identify many other sources of concern, such as invasive species (Northern Pike), loss or alteration of freshwater habitat, change in water quality and quantity, pathogens and freshwater fisheries.

Neither ACR #11 nor the 2014-16 Kodiak genetic MSA report present significantly or substantially new information, previously unknown to the BOF. There were many previous stock separation studies the KMA, specifically focused on nonlocal, Cook Inlet sockeye incidental harvests. The report does not fully discuss prior MSA of KMA salmon harvests, which could lead some to think this recent genetic MSA is the first quantification of nonlocal salmon within KMA fisheries, and a new issue. The magnitude of estimated nonlocal harvests is similar, while perhaps much more accurate (using GSI) than prior MSA studies.

With the genetic MSA nonlocal harvest estimate, one can estimate a rough ‘harvest rate’ or percentage of UCI sockeye runs harvested in KMA fisheries, which may be more helpful in determining “effects” on UCI sockeye stocks. However the new genetic MSA was not planned or conducted to determine specific time or area harvest rates. The genetic MSA is not finely discriminating, by area or timing, for determination of trends or accurate harvest rates for specific temporal or spatial strata. Using an overall estimate, it appears that less than 15% of Cook Inlet sockeye runs are harvested in KMA fisheries. It is interesting to note that the other KMA allocative plan, the Cape Igvak plan, allows KMA fishermen to harvest up to 15% of the Chignik sockeye runs.

## **Part 5 - Limitations of the Genetic Study**

The genetic MSA report shows a ‘snapshot’ of events, with some significant limitations. The limits are suggested by the authors of the genetic MSA report, and should be recognized and heeded. Limited funding in turn limited the scope of the genetic MSA. For example, the North Shelikof fisheries were not included despite the fact that this fishery represents the conservation burden that KMA salmon fishermen must bear, with 100% of the sockeye harvested during the SMP time period counted against harvest triggers, as if all were known to be of Cook Inlet origin.

In addition, critical dates and time periods for current management were ignored, and some stocks are so closely genetically ‘related’ that GSI can’t separate the stocks (engendering concern for all the stock distinctions).

The report is long on data and short on analyses, by design. It is a technical writing summarizing methods and results of three years of data collection and genetic MSA. It includes only very limited discussion or conclusions, and we feel that it may suggest erroneous conclusions. The genetic MSA results alone are not sufficient for restricting KMA fisheries to potentially re-allocate sockeye salmon harvests. A much more comprehensive report on the issues should be generated for BOF review, to educate and inform stakeholders, and begin discussions prior to Board action.



It is beyond the intent and focus of the study and the report to force the data toward one-sided conclusions or bigger issues. The intent was to use newly provided funding to address a knowledge gap, which was defined as the use of ‘modern’ genetic MSA method in selected major, directed KMA sockeye commercial fisheries. It was hoped that the study would provide information that was useful. ADF&G felt that such precise genetic stock-specific KMA harvest estimates were lacking for KMA fisheries, which is certain. This was the first time genetics were used for stock identification of KMA sockeye; however, it was not the first sockeye stock identification work in the KMA. Interestingly, there were specific ‘reporting objectives’ also given (basically, to describe sampling and subsampling, report stock proportions and stock-specific harvests, and to characterize where stocks were harvested. For the limited data collected, we feel the authors’ report objectives were met.

The stated goal in the genetic MSA was to provide information useful for run reconstruction, accurate brood tables, escapement goal determination and ‘refined’ management. MSA data can be used to test run-reconstruction and prior run forecast models, though with such wide annual variability it may be difficult to do so. Sufficient time should be given for ADF&G to use the results of this MSA toward completion of the stated goals and objectives. ADF&G may then be able to refine pre-season management by providing better predictors of stock productivity and anticipated run strengths (forecast). Inseason fishery management will not be improved.

It truly seems that there is a desire to reverse the order and to change management based on a limited study, rather than explore the statistics to see if solid, scientifically valid results point to needed changes in established, stable management. The possibility exists for future analysis and study, additional research, discussions between stakeholders and managers, researchers, and the BOF. We encourage the BOF to take this opportunity, and to use this study as intended. We fear a hasty, knee jerk reaction to an emotional issue.

### **Part 6 - An Imperfect Design**

The new MSA and report may have been proper for the overall goal of the study but, surprisingly, it left many pertinent questions unanswered and many data needs unmet... the study design was ‘imperfect’ to answer many biological and allocative questions regarding KMA bycatch of nonlocal sockeye.

At the beginning of the Board’s Cook Inlet-Kodiak Inter-Area Work Group in 1994, members (including ADF&G researchers and managers, stakeholders, and the BOF members) mutually agreed upon several key ‘facts’(Appendix E):

- The bycatch of Cook Inlet-bound sockeye in KMA fisheries is directly proportional to Cook Inlet sockeye run strength;
- The incidence of Cook Inlet sockeye in KMA fisheries varies widely. It is inconsistent as to area, annual timing, and between years;
- The incidence of Cook Inlet salmon in KMA fisheries is ‘insignificant’ if the Cook Inlet sockeye run is less than 4 million;
- The July 6-25 period is not only an important time period in KMA salmon fisheries management, it is the period of PEAK abundance of Cook Inlet-bound sockeye salmon in KMA waters;
- Within that period, the majority of bycatch occurs within a narrower, 7-10 day period.

Does the new genetic MSA data prove or disprove any of these ‘facts’? We feel these kinds of questions should be answered, and it will take time and cooperation between ADF&G staff and fishermen from Cook Inlet and Kodiak, ADF&G headquarters, and the BOF to guide further use of the genetic MSA.

Within two significant geospatial strata, Uganik/Kupreanof and Uyak, though both seine and set gillnet gear fish the same areas. However, the genetic MSA used only set gillnet harvested sockeye for the genetic stock separation. Gillnet gear is inherently biased for size, selecting for larger (nonlocal?) sockeye.

Temporal strata failed to recognize important dates within KMA fisheries management and we feel that three temporal strata were too few; monthly estimates of stock compositions may not be representative since stock composition is not static as salmon migrate through the KMA. And changing time strata among the three study years confounds the results.

Similarly, we feel the geospatial strata used are overly broad. The ability to determine potential offshore or cape fishery “hot spots” was lost, which could lead to misrepresentation. Even limited information about more specific harvest location is of interest and could be important in understanding stock composition, timing and migratory patterns in KMA mixed stock fisheries.

The way that data was pooled may also obscure important or essential information. The manner in which samples were later subsampled and data was pooled to fit temporal strata will affect how the sample data can be used.

### **Part 7 – More Uncertainty**

The information provided by the new KMA sockeye genetic MSA may be misused, and it may create more uncertainty rather than less. There are many additional considerations when attempting to explain harvest levels or rates or numbers, which we point out throughout our review. The data should be analyzed to try to answer pertinent questions. For example; is it possible to discern if there were any targeted interception fisheries or unusual environmental factors that were in play during the study years?

Some may believe that KMA local salmon stocks could all be harvested within ‘terminal’ fishing areas or ‘inside the capes’. Long experience has shown that allowing salmon to enter the fresher (less saline), warmer, inside-waters of the KMA will very quickly lead to loss of quality, or to complete loss to the fishery as the fish home-in and refuse to move out of closed water sanctuaries. Major Kodiak systems, Karluk and Ayakulik, empty directly into Shelikof Strait.

Without consideration of all factors that all users think may be important, we may miss or ignore possible solutions. The depth and complexity of the issues involved require extensive analyses and discussions between ADF&G authors and managers and interested stakeholders, just to set the ground rules for further review and evaluation of proposed restrictive BOF actions. We feel this cannot occur in a few months, but will require additional time for all parties to become apprised of important considerations which may not be apparent to someone not intimately familiar with both KMA and Cook Inlet fisheries and the issues at hand. With no biological emergency facing the KMA or CIMA, there is no need for immediate BOF actions. And, there are many considerations that the new MSA and report did not address, which may require combining the new MSA data with existing fishery factors or additional review or research.



KMA is a mixed stock fishery with some level of nonlocal sockeye salmon harvests. This is an annual part of the KMA salmon fishery harvest, not an aberration, nor an unanticipated consequence, nor a new and expanding targeted ‘interception’ fishery. If ‘reallocation’ of some portion of the KMA salmon fishery harvest is to occur (restricting KMA fisheries with the HOPE to positively influence the sockeye harvest in Cook Inlet) then new and old questions need to be clearly stated and answered in a comprehensive report to the BOF. We suggest some such questions and data needs.

## **Part 8 - Evaluation of Application of the Policies of the Alaska BOF**

Deferral of ACR #11 and potential BOF regulatory action until the next regularly scheduled, on-cycle KMA Finfish BOF meeting is supported by our analysis of application of other BOF policies and criteria.

Considering the *Policy for Management of Mixed Stock Salmon Fisheries*:

- The stated goal of the policy include not only conservation of salmon and habitat, and protection of subsistence and other customary and traditional uses, it also seeks to ensure “the sustained economic health of Alaska’s fishing communities”. The proposed UCIDA umbrella plan would devastate the Kodiak economy.
- As previously discussed, KMA commercial salmon fishermen already bear a disproportionate Conservation Burden for Cook Inlet sockeye stocks through the regulations for the *North Shelikof Strait Sockeye Salmon Management Plan*. The burden of conservation for relatively ‘healthy’ Cook Inlet salmon stocks should not be prioritized above that of KMA local salmon stocks.
- The KMA incidental harvest of nonlocal sockeye is neither new nor expanding. In fact, the participation by gear groups has decreased substantially. For the 2014-2016 MSA study period, KMA set gillnet permit participation was down 22.5%, KMA purse seine participation was down 52.6%, and KMA beach seine participation was down 92.4% from the number of available permits to fish during those same three years.
- BOF finding regarding the Mixed Stock Policy states that Alaska's salmon industry appropriately relies upon stable existing fisheries, most of which harvest mixed stocks. Kodiak's established management program for the harvest and conservation of mixed stocks has been successful in sustaining and promoting Kodiak's century-old industry. The findings also speak to harvest of many mixed stocks with an eye towards QUALITY of the harvest, and management of KMA fisheries has promoted protection, rebuilding and high-quality harvests of a large number of stocks of salmon.

Considering the *Policy for the Management of Sustainable Fisheries*:

- The stated goals of the policy include not only conservation of salmon and habitat and protection of subsistence and other customary and traditional uses, it also seeks to ensure “the sustained economic health of Alaska’s fishing communities.” There is little doubt that significant changes to KMA’s long-standing salmon management plans would negatively change the economic health of Kodiak communities.
- Definitions of Stocks of Concern and associated Action Plans inform our conclusion that there is no concern for the health of Susitna sockeye based on nonlocal harvest.

**Final thoughts:**

- The incidental harvest of KMA sockeye salmon in Cook Inlet or Chignik salmon fisheries must be estimated, to help balance any allocative decision or actions.
- KMA management plans were developed by stakeholders, Management Biologists at ADF&G, concerned representatives of government and scientific agencies, and many prior Alaska Board of Fisheries, over the course of many years. Discussions and decisions were made with full knowledge that KMA was a mixed stock fishery and that significant numbers of both Chignik and Cook Inlet sockeye will be found and may be harvested in KMA fisheries.
- The establishment of BOF findings may be needed, clarifying the extent to which Inter-Area allocative disputes may be used to modify long standing regulatory structure.
- It is impossible to maintain the economic success of a fishery that is subject to capricious reduction based on limited information or colloquial opinion. A Board finding that historic KMA harvest may contain, for example 15% of salmon from Cook Inlet and 15% of Chignik salmon will allow determination of new or expanded fisheries and sound allocative decisions.
- Nature has ‘allocated’ nonlocal salmon to Kodiak salmon fisheries. It occurs but it can’t be predicted. It currently can’t be identified inseason or postseason, without a recurring annual genetic MSA of KMA harvests. The positive effects for Cook Inlet sockeye stocks of restricting KMA fisheries to limit nonlocal sockeye harvests on CIMA sockeye escapement or harvest cannot be identified or quantified.



**A Review of Agenda Change Request #11 and the ADF&G Kodiak 2014-2016  
Sockeye Genetic Mixed Stock Analysis technical Fishery Manuscript, with  
recommendations to the BOF.**

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September 25, 2017



## Table of Content

|                                                                               |    |
|-------------------------------------------------------------------------------|----|
| Introduction.....                                                             | 1  |
| Summary of Conclusions of our Review .....                                    | 3  |
| Brief Reasons .....                                                           | 5  |
| Discussion:                                                                   |    |
| Part 1 – A Long-Standing Mixed Stock Fishery.....                             | 8  |
| Location of the KMA.....                                                      | 8  |
| Physical Processes and Oceanography .....                                     | 9  |
| Migratory Patterns .....                                                      | 10 |
| Mixed Stocks .....                                                            | 11 |
| The ‘Middle Run’ .....                                                        | 12 |
| Part 2 – Development of KMA Salmon Fisheries .....                            | 13 |
| Area Registration and Limited Entry.....                                      | 13 |
| KMA Management Evolved.....                                                   | 14 |
| Blended Management .....                                                      | 14 |
| General Pink Salmon Harvest Strategy.....                                     | 15 |
| The First Kodiak Salmon Management Plan .....                                 | 15 |
| The Process of ‘Institutionalizing’ KMA Salmon Harvest Strategies .....       | 16 |
| The KMA Conservation Burden.....                                              | 19 |
| Ten Regulatory Salmon Management Plans.....                                   | 21 |
| Part 3 – BOF Agenda Change Request Criteria and Consideration of ACR #11..... | 23 |
| The Criteria for an Agenda Change Request .....                               | 23 |
| Criteria (1)(A).....                                                          | 23 |
| Criteria (1)(B) .....                                                         | 24 |
| Criteria (1)(C) .....                                                         | 24 |
| Criteria (2).....                                                             | 24 |
| Issues with UCIDA Statements in Agenda Change Request #11 .....               | 25 |
| ACR#11 Question 2.....                                                        | 25 |
| ACR#11 Question 3 .....                                                       | 25 |
| ACR#11 Question 4A.....                                                       | 26 |
| ACR#11 Question 4B .....                                                      | 26 |
| ACR#11 Question 4C .....                                                      | 27 |
| ACR#11 Question 5.....                                                        | 27 |
| ACR#11 Question 6.....                                                        | 27 |
| ACR#11 Question 7.....                                                        | 27 |



ACR#11 Question 9.....28

Part 4 – Is there an Emergency or Compelling New Information?.....30

    Biological Concerns.....30

        Escapement to UCI .....31

        Harvestable Surpluses of UCI Sockeye .....31

    A Stock of Concern.....32

    Earlier MSA Studies were Conducted in the KMA.....33

    The New Genetic MSA Report.....34

Part 5 – Limitations of the KMA Genetic MSA .....36

    Cautions .....36

    Funding Limits.....36

    Other Limits .....37

    Intent .....38

    Study Goal or Principle Objectives.....40

    Objectives of the Report .....41

Part 6 – An Imperfect Design .....41

    1994 Kodiak/Cook Inlet Work Group .....42

    Gear Selectivity.....43

    Temporal Strata.....43

    Geospatial Strata .....43

    Data Pooling.....43

Part 7 – More Uncertainty or Less? .....44

Part 8 – Evaluation of Application of the Policies of the Alaska BOF.....45

    Mixed Stock Salmon Fishery policy.....45

    Sustainable Salmon Policy.....48

Final Thoughts .....49

References Cited .....52

**List of Tables**

Table 1. Alaska Board of Fisheries-approved salmon management plans for the Kodiak Management Area, 2016.....22

Table 2. Upper Cook Inlet sockeye salmon escapement goal ranges and recent escapement estimates, 2010 – 2017.....31



Table 3. Forecast, commercial harvest, and estimated total run of sockeye salmon in the Cook Inlet Area, 2014 – 2016.....31

Table 4. Total UCI sockeye run averages .....31

Table 5. Estimated KMA nonlocal Cook Inlet sockeye harvest in select KMA commercial fisheries, 2014 – 2017 .....35

**List of Figures**

Figure 1. Map of Alaska showing the location and approximate boundaries of 11 Alaska salmon fisheries .....5

Figure 2. Juxtaposition of the Kodiak Management Area, between the Cook Inlet and Chignik management areas .....8

Figure 3. Net surface currents in the Gulf of Alaska.....9

Figure 4. Net surface circulation in Lower Cook Inlet, based primarily on data collected during the spring and summer seasons .....10

Figure 5. Kodiak Management Area salmon fishery chronology, by species of management focus, 2016 .....14

Figure 6. Statistical Area Chart of the Kodiak Management Area .....18

Figure 7. The location of the North Shelikof Sockeye Salmon Management Plan.....19

Figure 8. Map of Cook Inlet’s commercial salmon fishing districts.....32

Figure 9. Kodiak Area management units sampled for genetic stock identification, 2014-2016.....36

Figure 10. The number of Limited Entry permits actually fished for Kodiak commercial salmon fisheries, by gear type, 1980-2016. ....47

**List of Appendices**

Appendix A.1. Map of the Kodiak Management Area commercial salmon fishing districts .....56

Appendix A.2. Map of the Alitak District commercial salmon fishing sections and statistical areas .....57

Appendix A.3. Map of the Northwest Kodiak District commercial salmon fishing sections and statistical areas .....58

Appendix A.4. Map of the Southwest Kodiak District commercial salmon fishing sections and statistical areas .....59

Appendix A.5. Map of the Mainland District commercial salmon fishing sections and statistical areas .....60

Appendix A.6. Map of the Afognak District commercial salmon fishing sections and statistical areas .....61



Appendix A.7. Map of the Eastside Kodiak District commercial salmon fishing sections and statistical areas .....62

Appendix A.8. Map of the Northeast Kodiak District commercial salmon fishing sections and statistical areas .....63

Appendix A.9. Map of the Kodiak Management Area and the 3 mile limit (State vs. Federal waters).....64

Appendix A.10. Migratory patterns of North Pacific sockeye salmon.....65

Appendix B.1. Alitak District basis for commercial salmon fisheries actions, by Section and time period .....67

Appendix B.2. Westside Kodiak districts basis for commercial salmon fisheries actions, by Section and time period .....68

Appendix B.3. Eastside Kodiak districts basis for commercial salmon fisheries actions, by Section and time period .....70

Appendix B.4. North Afognak/Shuyak basis for commercial salmon fisheries actions, by Section and time period .....71

Appendix B.5. Eastside Afognak basis for commercial salmon fisheries actions, by Section and time period .....72

Appendix B.6. Mainland District basis for commercial salmon fisheries actions, by Section and time period. ....73

Appendix C.1. Pink salmon fishing periods for the 2017 Kodiak commercial salmon fishing season, announced preseason in the Kodiak Management Area Harvest Strategy for the 2017 Commercial Salmon Fishery .....75

Appendix D.1. Alitak District commercial salmon harvests during the ACR #11 proposed weekly sockeye salmon harvest limit periods, 1985-2017, from the UCIDA Agenda Change Request (#11) and proposed new 'umbrella' Kodiak salmon management plan .....77

Appendix D.2. Westside Kodiak District commercial salmon harvests during the ACR #11 proposed weekly sockeye salmon harvest limit periods, 1985-2017, from the UCIDA Agenda Change Request (#11) and proposed new 'umbrella' Kodiak salmon management plan.....80

Appendix D.3. Eastside Kodiak District commercial salmon harvests during the ACR #11 proposed weekly sockeye salmon harvest limit periods, 1985-2017, from the UCIDA Agenda Change Request (#11) and proposed new 'umbrella' Kodiak salmon management plan.....83

Appendix D.4. North Shelikof Management Unit commercial salmon harvests during the ACR #11 proposed weekly sockeye salmon harvest limit periods, 1985-2017, from the UCIDA Agenda Change Request (#11) and proposed new 'umbrella' Kodiak salmon management plan.....86



Appendix D.5. Southwest Afognak Section commercial salmon harvests during the ACR #11 proposed weekly sockeye salmon harvest limit periods, 1985-2017, from the UCIDA Agenda Change Request (#11) and proposed new 'umbrella' Kodiak salmon management plan.....89

Appendix E.1. Excerpt from the Alaska Board of Fisheries Summary of Actions taken at their March 1995 Work Session, regarding Kodiak/Cook Inlet sockeye salmon .....93

Appendix E.2. Alaska Board of Fisheries' formation framework for the Kodiak/Cook Inlet Inter-Area Work Group, March 1994 .....95

Appendix E.3. Summary memo from first meeting of the Alaska Board of Fisheries' Kodiak/Cook Inlet Inter-Area Work Group, May 1994 .....96

Appendix E.4. Summary memo from second meeting of the Alaska Board of Fisheries' Kodiak/Cook Inlet Inter-Area Work Group, November 1994.....98

Appendix E.5. Summary memo from third meeting of the Alaska Board of Fisheries' Kodiak/Cook Inlet Inter-Area Work Group, January 1995 .....101

Appendix E.6. Summary memo from fourth meeting of the Alaska Board of Fisheries' Kodiak/Cook Inlet Inter-Area Work Group, February 1995 .....103

Appendix E.7. Excerpt from the 1995/1996 Alaska Board of Fisheries Proposal Booklet, showing Kodiak Finfish proposal #138 .....105

Appendix E.8. Excerpts from the Alaska Board of Fisheries Summary of Actions taken at the on-cycle November 1995 Kodiak Finfish meeting, regarding Kodiak/Cook Inlet sockeye salmon issues.....109





## **A Review of Agenda Change Request #11 and the ADF&G Kodiak 2014-2016 Sockeye Genetic Mixed Stock Analysis technical Fishery Manuscript, with recommendations to the BOF.**

*“A little learning is a dangerous thing; drink deep, or taste not...” (Alexander Pope, From ‘An Essay on Criticism’, 1709).*

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In December 2016, the Alaska Department of Fish and Game (ADF&G) released the report *Genetic Stock Composition of the Commercial Harvest of Sockeye Salmon in Kodiak Management Area, 2014–2016* (Shedd, et al, 2016a)<sup>1</sup>. This report documents a three year salmon stock separation study, or Mixed Stock Analysis (MSA) of Kodiak Management Area (KMA, or Kodiak) salmon harvests.

This report was presented to the Alaska Board of Fisheries (BOF, or Board) at both the regular scheduled Kodiak Finfish meeting (January 2017) and the Upper Cook Inlet (UCI) Finfish meeting (February 2017). At the UCI 2017 BOF meeting, there were several public comments arguing for further restriction of the salmon fisheries within the KMA. The Central Peninsula Fish and Game Advisory Committee submitted a resolution asking for a “special regulatory meeting” to discuss the recent studies and Chignik, Kodiak and Cook Inlet management to reduce this “interception”; that resolution was in turn adopted and supported by the Homer Fish and Game Advisory Committee.

The Board of Fisheries responded. Further discussion of this issue was placed on the agenda for the BOF October 2017 Work Session. And, the Board has asked ADF&G staff to attempt to re-analyze some of the Kodiak sockeye GSI samples and /or raw data, to distinguish (if possible) if Susitna sockeye salmon were found within the 2014-2016 Kodiak genetic samples, and at what level (Susitna sockeye were designated by the BOF as a Stock of Concern in 2008; more in subsequent parts of this review).

There was an Agenda Change Request submitted to the Board of Fisheries on August 17, 2017 (ACR #11), by concerned the United Cool Inlet Drift Association (UCIDA), based on the 2014-2016 MSA and report. This ACR proposes an entirely different management strategy for the KMA salmon fisheries. We believe that the UCIDA Agenda Change Request and the 2014-2016 KMA sockeye genetic MSA report should be reviewed and that any potential shortcoming in the study planning or execution, the data and its presentation, or any analyses therein, will be helpful and necessary for BOF deliberations and discussion of possible future BOF actions.

The Kodiak Salmon Workgroup (KSW), a committee of KMA salmon fisheries stakeholders, also wanted further review of ACR #11 and the 2014-2016 KMA sockeye genetics MSA for the upcoming Work Session. They’ve asked three retired ADF&G employees, all former Kodiak Area Management Biologists (AMBs) who reside in Kodiak, to review the report, compile pertinent and background information, describe the evolution of salmon fisheries management (especially as it pertains to nonlocal salmon harvests), and provide recommendations. Former

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<sup>1</sup> Other reports were presented to the Board of Fisheries, including *Genetic Baseline of North American Sockeye Salmon for Mixed Stock Analyses of Kodiak Management Area Commercial Fisheries, 2014–2016* (Shedd, et al, 2016b), and *Genetic Stock Composition of the Commercial and Sport Harvest of Chinook Salmon in Westward Region, 2014–2016* (Shedd, et al, 2016c). We do not comment on the Chinook MSA.



ADF&G fishery biologists Kevin Brennan, Larry Malloy and Dave Prokopowich are the primary compilers of the following informational review and discussion.

As ADF&G salmon fishery biologist-managers and part of the Kodiak salmon area management team, we were actively involved in managing KMA salmon fisheries from 1972, before Limited Entry into the new millennium, to 2005, and we've worked extensively with previous BOFs. During our tenure, many significant policies of the BOF were formulated and placed into regulations, including *Changing the Board of Fisheries Agenda* (5 AAC 39.999, effective 7-25-1982), the *Allocation Criteria* (AS 16.05.251; effective 6-10-1987), the *Policy for the Management of Mixed Stock Salmon Fisheries* (5 AAC 39.220; effective 5-29-1993), and the *Policy for the Management of Sustainable Salmon Fisheries* (5 AAC 39,222; effective 9-30-2000). During our 'watch', regulatory Salmon Management Plans (SMPs) for the salmon fisheries of the KMA, specific to all Kodiak commercial salmon areas and fisheries throughout the entire salmon fishing season (June 1 through October 31), were developed, drafted, reviewed, deliberated upon by the BOF and passed into regulation.

Unfortunately, we've also witnessed many prior allocative disputes between KMA salmon fishermen (Intra-Area) and between KMA fishermen and those from the Cook Inlet and Chignik salmon management areas (Inter-Area), and participated in resulting meetings of the BOF or BOF committees and work groups.

Based on our education, background and experiences, we hope to provide credible review and analysis, give insights into past fishery management development and implementation, and will offer sound options, for BOF review.

We know that in the past there has been a tremendous amount of study, discussion and Board deliberation on the subject of nonlocal sockeye harvested in KMA commercial salmon fisheries. There was a tremendous amount of data presented in the 2014-16 KMA sockeye genetic MSA report. Integrating any pertinent new information with previous studies, findings and facts, is essential. This document will attempt to do so, though only briefly.

In this document, we will review ACR #11 and the new KMA sockeye GSI report, and we'll discuss the potential application of some Board of Fisheries policies. As one reads through this review, it shall become apparent that this issue is long-standing and very complex, and is not an unexpected discovery of new information that the BOF must act upon. This is an old issue with limited new information.

Ours was not a robust scientific or statistical analysis of the new 2014-2016 KMA sockeye genetic MSA report. Rather, we looked at this through the lenses of management biologists that have been involved with Alaska salmon fisheries, and particularly KMA fisheries, for 35 years. Since we are no longer limited by the reporting policies of ADF&G, this review will be more informal and hopefully more easily digested and understood.

In the interest of readability and brevity, for this review we prefer to begin with a summary of our conclusions and brief reasoning, and then we will provide more explanations and justification for our opinions in the discussion that follows. In this manner we'll cover the points we feel are most pertinent to BOF deliberations, right up front in this review. Finally, we'll look briefly at how some existing BOF criteria and policies may or may not be applicable to the issue of nonlocal sockeye harvests in the KMA commercial salmon fishery (for this review, often abbreviated as 'KMA fisheries'; referral to other fisheries will be clearly defined).



As stated, this review is not intended to be comprehensive. At this stage, only basic information, simple assertions and logical conclusions are given. This review is more descriptive than comprehensive. This is a complex issue, with many varied and staggeringly different viewpoints. BOF actions could range from NO ACTION to massive changes to long-standing, stable management with significant, negative economic repercussions from the ‘re-allocation’ of KMA sockeye salmon harvests.

Much of this review will represent our opinions... and we shall try to clearly show when we are presenting the findings or opinions of others. We include direct quotes from the 2014-16 KMA sockeye genetic MSA report, followed by the page number on which it was found. Quotes from other sources will be cited to author, date and publication. Since the 2014-16 KMA sockeye genetic MSA report is the subject of this review, we’ll often refer to preparation and data collection as ‘the study’ or the ‘new MSA’, and we may refer to the actual publication or the results as ‘the report’ or ‘the 2014-16 report’ or the ‘new MSA’; reference to other studies or reports will be more specifically cited.

Also, this review focuses on specific issues and is intended for a specific audience. Therefore, there is less explanation and more expectation that readers have a familiarity with the subjects discussed.

#### SUMMARY of CONCLUSIONS of our REVIEW:

We feel that the 2014-16 report is not a comprehensive evaluation of any biological or allocative issues; the authors report data from a specific and limited study. It will take time and discussion to identify and more clearly define issues, problems, goals and objectives. The 2014-16 KMA sockeye genetics report is long on data and short on analyses, which we will show throughout this review.

The new MSA for Kodiak sockeye salmon fisheries has limited applicability, and is not sufficient reason to change current KMA management. The salmon fisheries in the KMA are long-standing Mixed Stock Fisheries, with an unpredictable component of nonlocal salmon. There is virtually no new information, nor any biological or conservation emergencies for sockeye salmon fisheries within the Cook Inlet Management Area (CIMA), including nonlocal harvest of sockeye bound for Cook Inlet. There may be increase or decreases in nonlocal sockeye harvest in KMA fisheries, which are based on the natural fluctuation of abundance for such stocks. Abundances, migratory patterns, and incidental harvest are all variable and unpredictable. There have been no new or expanded intercept fisheries in the KMA.

Sufficient time is required for complete evaluation of the data and findings in the report, for the Department to use the report finding as the study planners intended, and for continued or additional research, study and discussion as needed to clarify issues, background, problems, goals and objectives or possible regulatory or non-regulatory solutions. Sufficient time is required to fully and fairly address any stakeholder concerns that have arisen based on the new MSA study.

The BOF deliberation of any action pertaining to the KMA salmon fisheries should next occur during the regular BOF Kodiak Finfish meeting cycle. We encourage additional use of these and new genetic studies to further inform the BOF and ADF&G. We recommend and encourage the BOF to give stakeholders the opportunity to meet, get educated, ask questions, define information needs, discuss and thereby inform ADF&G and the BOF, at the regular meeting



cycle, as they have in the past. We feel it is most appropriate to shortstop three years of ACRs by conforming with previous BOF action to deny the consideration of ACR #11 at a special out-of-cycle BOF meeting. Instead all such ACRs with allocative proposals for KMA salmon fisheries should be deferred for further study and reporting during the regular BOF Kodiak Finfish meeting cycle.

- The 2014-2016 KMA sockeye genetic MSA report does not provide sufficient cause to accept ACRs and schedule an Out-of-Cycle regulatory meeting for the KMA. BOF movement toward immediate regulatory action to limit KMA commercial salmon fisheries based on this report would be hasty and unfounded.
- We believe that the BOF should authorize additional analysis and study of all Mixed Stock Analyses that have been conducted in the KMA. A focused report concerning nonlocal salmon in the KMA should be available to the BOF and stakeholders prior to consideration of possible regulatory action on KMA commercial salmon fisheries.
- We feel the State of Alaska and stakeholders will be best served by allowing sufficient time for a thorough review and analyses of the issue by ADF&G and the BOF. The issue of nonlocal harvest of salmon is a statewide concern, and any actions regarding the Kodiak incidental harvest of nonlocal salmon will reflect on ALL salmon fisheries within the State. ADF&G could report on their progress and problems to the Board at scheduled fall work sessions.
- We believe that this issue, along with any allocatively-based ACRs that may be submitted during the BOF's 2017-2019 fall Work Sessions, should be tabled by the BOF for consideration during the regularly scheduled BOF cycle for consideration of Kodiak Finfish issues and proposed regulatory changes.

It is a broad truth that "Nature has allocated nonlocal salmon to Kodiak salmon fisheries." It is known that nonlocal sockeye migrate through the KMA. The location, timing, or magnitude of KMA incidental harvest of nonlocal Cook Inlet-bound sockeye salmon can't be forecast. The number or movement of nonlocal salmon in the KMA currently can't be identified or tracked inseason. We cannot identify or quantify the effects of restricting KMA fisheries to limit nonlocal sockeye harvests on Cook Inlet sockeye escapement or harvest.

While it is within the BOF's purview to use any information, even poor information, to make decisions, the thoughtful and thorough Policies and Criteria of the BOF show that its intent is usually otherwise, instead drawing information from many sources, including stakeholders and others concerned, ADF&G, past and present research studies, et cetera.

In general, we feel that there were some positive results from the new MSA study... we believe the researchers used what they felt were the best genetics sampling, processing procedures, and techniques. While not a stated objective, it has also perhaps begun the task of identifying 'natural', background levels of nonlocal harvests within the KMA. Once established, unusual or new harvest patterns can then be determined.

However, there were also limitations to the Kodiak sockeye genetic MSA study and report that should be known, understood and emphasized when determining the potential for BOF action on ACRs or proposed changes to KMA regulatory Salmon Management Plans, which are or will be based on results of this genetic MSA study.

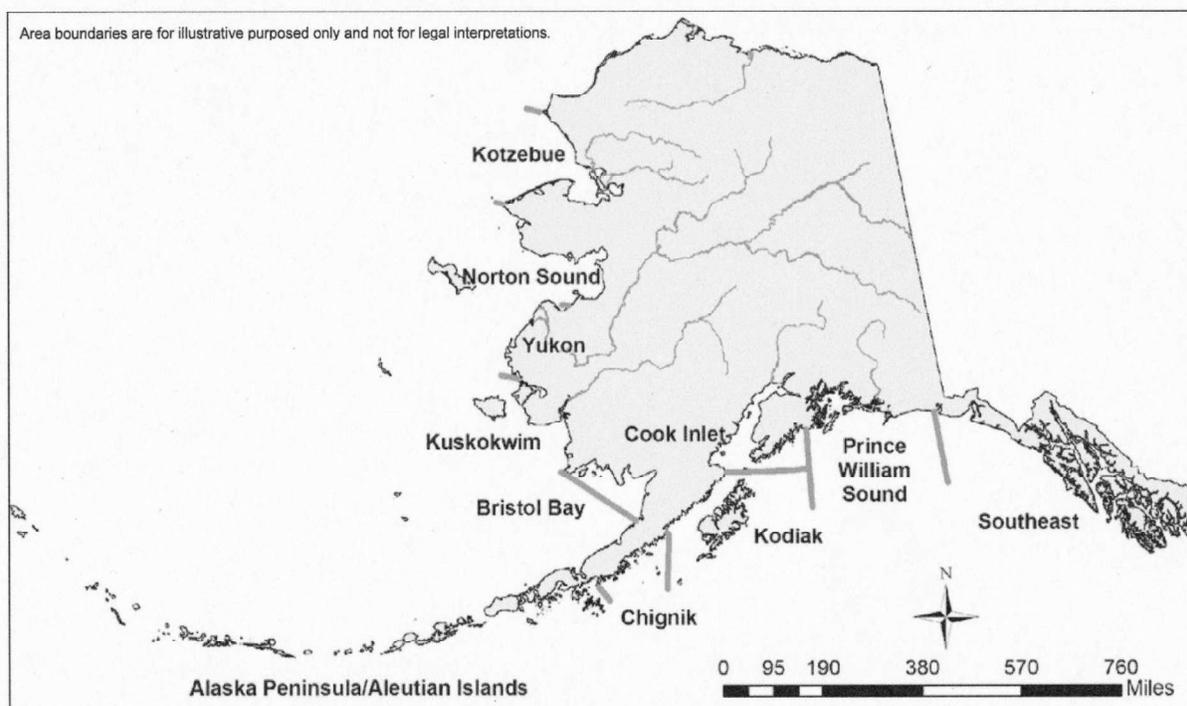


Figure 1. Map of Alaska showing the location and approximate boundaries of 11 Alaska salmon fisheries. *Figure taken from Clark, et al, 2006.*

Brief reasoning (and the location of additional discussion within this review):

1. Based on its location and the oceanography of the North Gulf of Alaska and waters surrounding the Kodiak archipelago, Pacific salmon migrate through the KMA (see Maps in Appendix A). It may be controversial, but it's well-known that nonlocal salmon swim around and through KMA waters, and are harvested in KMA salmon fisheries. The mixed stock nature of KMA salmon fisheries and the KMA harvest of nonlocal Cook Inlet sockeye salmon are known, not new. And Kodiak-bound salmon are undoubtedly harvested in fisheries within other Management Areas. Kodiak salmon fisheries are well known to be Mixed Stock Fisheries.
2. The harvest of nonlocal salmon is an allocative issue, intensified by the imposition of Limited Entry on Alaska salmon fisheries. Further, KMA commercial salmon fishery management plans are complex and were developed with the potential for harvest of nonlocal sockeye as a known issue. Modern KMA management was forged over time and placed in regulation within the BOF allocative crucible (pages x-xx).
3. United Cook Inlet Drift Association submitted an Agenda Change Request on August 17, 2017, asking the BOF to consider an out-of-cycle proposal for a new salmon management plan in the Kodiak Management Area, to limit nontraditional harvest of nonlocal sockeye in KMA commercial salmon fisheries. The guidelines for Changing Board of Fisheries Agenda have not been met, so the UCIDA Agenda Change Request (ACR #11) should be denied. Based on Alaska Board of Fisheries policies and criteria, allocative concerns



should be addressed during the regular Board meeting schedule, not at special meetings (pages x-xx).

We have issues with the issues presented by UCIDA in ACR #11. There are misstatements and untruths contained in the ACR explanations and descriptions. This type of proposal is not new, and the KMA genetic MSA was not a ‘first look’ at KMA incidental harvests of nonlocal, Cook Inlet sockeye. Also, the negative effects of adopting the UCIDA umbrella plan include extensive fishery closures from late June through July and resulting lost harvest opportunity, reduced salmon product quality, increased gear conflicts, and ultra-conservative management in the face of loss of traditional fisheries. The economy of Kodiak salmon fisheries would be devastated. The results of the 2014-2016 Kodiak GSI could be misused to try to determine absolutes or trends in nonlocal sockeye bycatch for specific areas during specific time periods, which is basically what the UCIDA ACR does (pages x-xx).

4. The KMA harvest of nonlocal salmon has not created a biological problem with Cook Inlet sockeye production. There is some new data, but the new information is not compelling enough to force out-of-cycle BOF action. There is no chronic inability to achieve UCI sockeye escapement goals, and there have been commercial salmon fisheries and sockeye salmon harvest in recent (2014-2017) years. There is one Stock of Concern among Upper Cook Inlet Sockeye salmon, Susitna sockeye... Susitna is a Stock of YIELD concern, and is not a conservation concern under present day management of Cook Inlet and KMA fisheries. Neither ACR #11 nor the 2014-16 Kodiak genetic MSA report have given significantly or substantially new information, previously unknown to the BOF. There were many previous stock separation studies of the KMA, specifically focused on nonlocal, Cook Inlet sockeye incidental harvests. The report does not fully discuss prior MSA of KMA salmon harvests, which could lead some to think this study is the first quantification of nonlocal salmon within KMA fisheries, and a new issue. The magnitude of estimated nonlocal harvests, while perhaps much more accurate (using GSI) than prior MSA studies, is similar. We feel that there is no biologically-based emergency, nor new information that compels the Board to consider this Allocative Proposal. Therefore, we see no reason for the BOF to take up this issue out of the regular BOF fishery-review meeting cycle (pages x-xx).
5. This report shows a ‘snapshot’ of events, with some significant limitations. The limits to the 2014-16 MSA study suggested by the authors of the report should be recognized and heeded. Limited funding in turn limited the scope of the genetic MSA; the North Shelikof and Eastside Kodiak fisheries were not included, critical dates and time periods for current management were ignored, and some stocks are so closely ‘related’ that GSI can’t separate the stocks (engendering concern for all the stock distinctions), to name a few. The report is long on data and short on analyses, by design. It is a technical writing summarizing methods and results of three years of data collection and genetic MSA; it’s a data dump. It includes only very limited discussion or conclusions, and we feel that it may suggest erroneous conclusions. The study results alone are not sufficient for restricting KMA fisheries to potentially re-allocate sockeye salmon harvests. A much more comprehensive report on this issue should be generated for BOF review, and to educate and inform stakeholders and begin discussions, prior to Board action (pages x-xx).



It is beyond the intent and focus of the study and the report to force the data toward one-sided conclusions or bigger issues. Goals and objectives were given in the report, some of which have not been realized. Time should be allowed for ADF&G to analyze the data toward completion of those goals. Sufficient time should be given for ADF&G to use the results of this MSA as the study planners and report authors intended (pages x-xx).

6. The new MSA and report may have been proper for the overall goal of the study, but the design of the study left many pertinent questions unanswered and many data needs unmet... the study design was 'imperfect' to answer biological and allocative questions regarding KMA bycatch of nonlocal sockeye. We suggest additional questions and factors that could have been considered or should be considered for future research, to more fully and accurately describe the occurrence of nonlocal salmon within KMA waters (pages x-xx).
7. A full picture of issues should be available to stakeholders, ADF&G and the BOF. The depth and complexity of the issues involved requires extensive analyses and discussions between ADF&G authors and managers and interested stakeholders. There are many considerations that the new MSA and report did not address, which may require combining the new MSA data with existing fishery factors or additional review or research (pages x-xx).

KMA is a mixed stock fishery with some level of nonlocal sockeye salmon harvests. This is an annual part of the KMA salmon fishery harvest, not an aberration, nor an unanticipated consequence, nor a new and expanding targeted 'interception' fishery. If 'reallocation' of some portion of the KMA salmon fishery harvest is to occur (restricting KMA fisheries with the HOPE to positively influence the sockeye harvest in Cook Inlet) then new and old questions need to be clearly stated and answered in a comprehensive report to the BOF (pages x-xx).

8. Deferral of ACRs and potential BOF regulatory action until the next regularly scheduled, on-cycle KMA Finfish BOF meeting is supported by our analysis of application of other BOF policies and criteria, such as the Policy for Management of Mixed Stock Salmon Fisheries, the Policy for the Management of Sustainable Fisheries, and the Allocation Criteria. This issue should be addressed within the BOF regular schedule for consideration of KMA salmon fisheries, during the 2019/2020 cycle. (pages x-xx)

## DISCUSSION

*“the harvest is always more fruitful in another man's fields” (Ovid, from Ars Amatoria, 2 AD)*

### **Part 1 – KMA salmon fisheries are Mixed Stock Fisheries, with nonlocal sockeye as an expected component of KMA sockeye harvests.**

There are several facts that, because of their importance, must be at the forefront of consideration and discussion of the harvest of nonlocal sockeye in the KMA fisheries.

Based on location, oceanography, and salmon migratory patterns, nonlocal salmon have always passed through Kodiak waters. Kodiak salmon fisheries are well known to be Mixed Stock Fisheries. And Kodiak-bound salmon are undoubtedly harvested in fisheries within Cook Inlet, Chignik, or Prince William Sound salmon management areas.

**The LOCATION of the KMA** is such that mixed stocks of Pacific salmon, at various stages of their life-cycle, must migrate through KMA waters (Figure 1; Appendix A.1 – A.8). The Kodiak Management Area (part of Westward Region) is composed of inland and State marine waters surrounding the Kodiak Archipelago and adjacent to the Alaska Peninsula between Kilokak Rocks and Cape Douglas (5 AAC 27.505). The largest portion of the Shelikof Strait falls outside the three-mile State waters limit, and so cannot open to Alaska commercial salmon fisheries.

The KMA is located in the northwest portion of the Gulf of Alaska (Figure 2). It is bounded to the north by the Cook Inlet Area (Central Region) and to the south by the Chignik Area (Westward Region). The western boundary of the Kodiak area is the Alaska Peninsula, and the eastern boundary lies within the Gulf of Alaska, at the 3-mile limit of State waters (Appendix A.9).

Of note: the Kodiak area also encompasses Shelikof Strait (a major migratory path between the Kodiak Archipelago and Alaska Peninsula) and Stephenson Entrance (fully half of the passage entering Cook Inlet, and also a major migratory path).

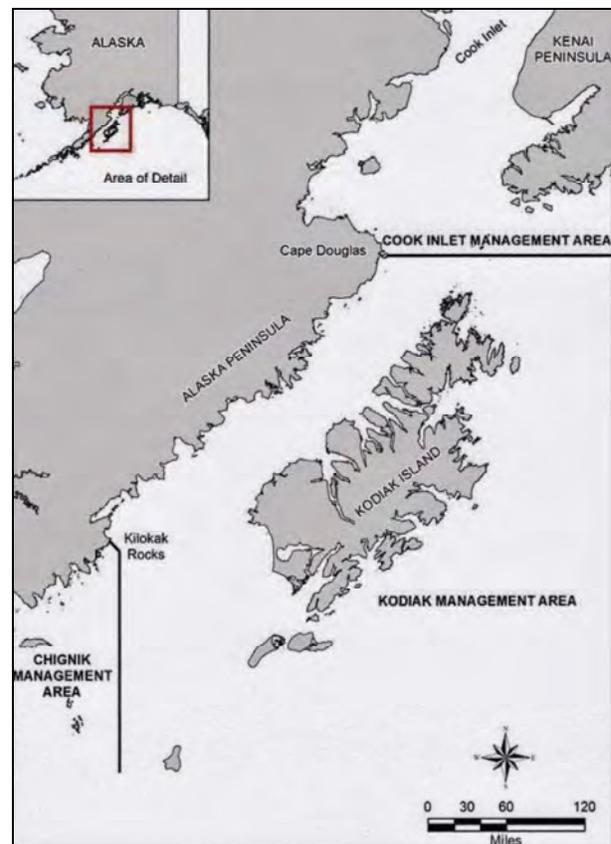


Figure 2. Juxtaposition of the Kodiak Management Area, between the Cook Inlet and Chignik management areas.  
*From Anderson, et al, 2016.*

**PHYSICAL PROCESSES and OCEANOGRAPHY** of the North Pacific Ocean affect salmon migration patterns and timing. The Alaska Current runs north along Southeast Alaska, swings west to pass Prince William Sound and becomes the Alaskan Stream, pushing southwest along the east side of the KMA and Alaska Peninsula (Figure 3). To the south, the Gulf of Alaska is ‘enclosed’ by the North Pacific Current as it moves west to east, back toward the continental US. In the North Gulf, the Alaska Gyre is formed, spinning counterclockwise. North of the Kodiak Archipelago, waters of the Alaska Current and Alaskan Stream push west and north through Kennedy and Stephenson Entrances to enter Cook Inlet, as well as through Shelikof Straits to enter the KMA. Currents also move waters from the Alaskan Stream through the Kodiak Archipelago between Raspberry/Afognak Islands and Kodiak Island (Whale Pass, Raspberry Strait), and push west and north around the southern end of the Archipelago into southern Shelikof Strait.

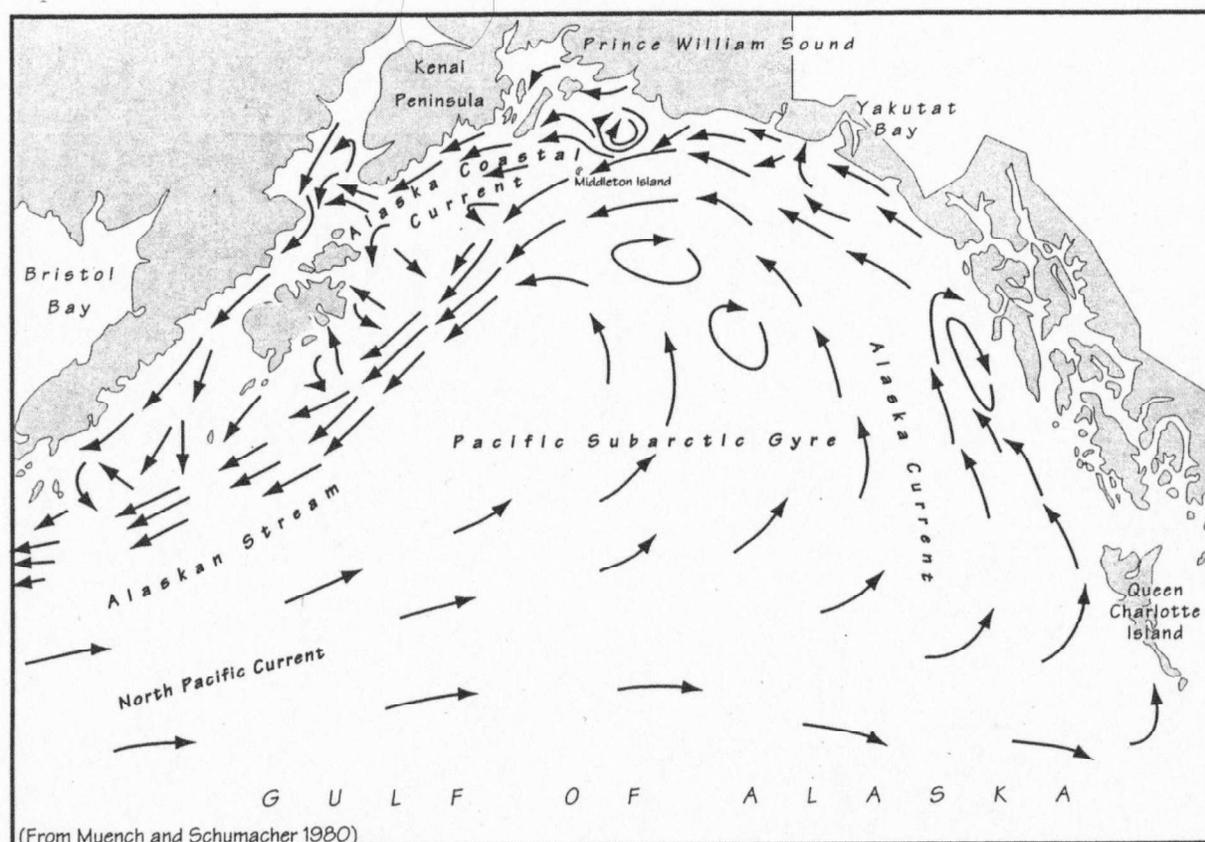


Figure 3. Net surface currents in the Gulf of Alaska. Taken from Muench, et al; 1980.

Within Cook Inlet, ocean currents are complex and tides also play a major role in marine water transport (Figure 4). The tidal change in Upper Cook Inlet is the fourth largest in the world. Incoming tides bring water from the Gulf of Alaska (through Shelikof Strait, and the Kennedy/Stephenson Entrances) into Cook Inlet, as well as Kodiak waters. Other climactic and weather process, primarily wind, will also affect marine transport.

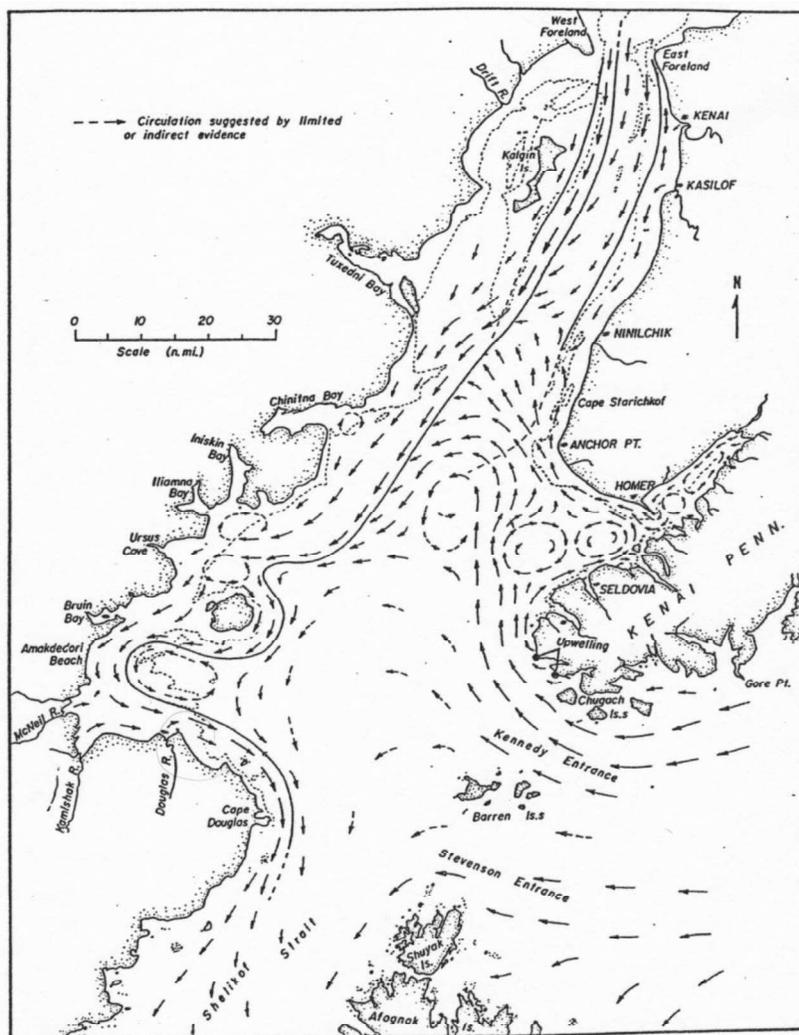


Figure 4. Net surface circulation in Lower Cook Inlet, based primarily on data collected during the spring and summer seasons. *Figure taken from Burbank, 1977*

NOTE: An unknown number of Kodiak-bound sockeye salmon are very likely pushed by currents and tides into Kennedy or Stevenson Entrances. Predominant currents could push them further into Cook Inlet. These KMA sockeye may then be vulnerable to harvest in Cook Inlet salmon fisheries. The question remains, 'How should the burden of conservation be apportioned in any commercial fishery through which nonlocal salmon migrate?' Any 'fair' sharing of conservation burdens must take such balances into account. We feel additional genetic MSA of Cook Inlet commercial harvests of sockeye salmon for Kodiak sockeye stocks is required to appropriately address allocation questions.

Other factors that will affect salmon migrations and timing include, but are not limited to, climatic or weather changes, fresh water influx (from Southeast Alaska, Prince William Sound, Cook Inlet, and Kodiak) and salinity, water temperatures and thermoclines, and water chemistry (smell!).

**MIGRATORY PATTERNS** of salmon in the Gulf of Alaska, if following currents, are likely to swim through KMA waters. Even early studies have shown that Alaska salmon migrate in patterns very similar to the dominant North Gulf ocean currents (Appendix A.10). Generally, Kodiak and Cook Inlet juvenile Alaska salmon pass north to south along the western Gulf, by and through KMA waters, then annually travel east to west paralleling the North Pacific current to the US Mainland, swing north then west to migrate along Southeast Alaska, Icy Bay and Prince William Sound, and then, when mature, will swing out of the major currents as they approach the region of their natal streams. Lesser known processes likely greatly affect salmon migration patterns, and there is likely a lot of variability.



Only limited migratory information was garnered from the 2014-2016 MSA study; this was not a robust analysis in this study. It affirmed the importance of the Shelikof Strait as a major migratory pathway for Cook Inlet sockeye salmon. It also demonstrated that migration of sockeye stocks occurs in both a clockwise and counterclockwise fashion around Kodiak Island. Perhaps more so than previously believed, the data also shows migrating Cook Inlet-bound sockeye may follow the Alaskan Stream past Kennedy and Stevenson Entrances, past Afognak and Kodiak Islands, and around the south end of Kodiak Island to move west into the southern reaches of Shelikof Strait before heading north again, toward their natal streams.

However, it is unknown what percentage of returning Cook Inlet sockeye salmon may bypass the northern route, through Kennedy/Stevenson Entrances for the southern, Lower Shelikof Strait route, or what factors may influence this migratory choice. It is unknown if those Cook Inlet sockeye are migrating juveniles or maturing spawners. It is unknown what the survival rate maybe, in the absence of KMA fisheries, for Cook Inlet-bound sockeye that choose the longer and more physically demanding southern route.

Migrating Cook Inlet sockeye haven't been forced across a fence into the KMA... there are no border walls for either Cook Inlet of Kodiak salmon to follow 'home'. And KMA fishermen are not 'rustlers', crossing into another's territory to steal fish. Nature has 'allocated' an unknown portion of Cook Inlet sockeye and other nonlocal salmon stocks to possible commercial fisheries pressures in the KMA. Fish swim and historically KMA salmon fisheries harvest some of those fish. The study and report cannot answer the crucial questions of 'When and Why' Cook Inlet sockeye appear in KMA waters at widely variable rates, nor 'Where' in any year or within any fishing season. Nonlocal salmon harvests may occur in widely varied locations.

**MIXED STOCKS** of Kodiak, Chignik and Cook Inlet sockeye were documented in early Kodiak salmon fishery observations, studies and research. KMA salmon fisheries are, and likely have always been, mixed stock fisheries with nonlocal salmon harvests. During July, when major sockeye producing streams in Kodiak are in a 'lull' between early and late runs, KMA fisheries may see a bump in sockeye harvests (not attributable to local production).

Though commercial salmon fisheries began in the KMA in or before 1882, the exact 'Stock of Origin', along with migratory routes and timing, were unknowns during those early years. Alaska salmon research was almost nonexistent before the 1920s and, as decades passed, research became more focused on localized natural production. As shown in the new MSA report, tagging studies that occurred within KMA waters, from before statehood through the 1980s (including many that demonstrate the general salmon migration patterns previously mentioned), have documented nonlocal sockeye salmon in Kodiak fisheries.

Tagging studies and early MSA also found that Kodiak-bound salmon were taken in Cook Inlet and Chignik salmon harvests. In 1957, one major tagging study found that almost 26% of sockeye tagged and released at Chisik Island (Upper Cook Inlet) were later caught south of Cape Douglas along the Alaska Peninsula. Releases from south of Anchor Point resulted in "substantial" returns from areas outside of Cook Inlet (Tarbox 1983).



Sockeye salmon stray and migrate in unpredictable manners. Any ‘Natural, Background Levels’ of nonlocal vs. local harvest in adjacent Management Areas should be determined to portray a full Inter-Area Mixed Stock salmon fishery picture. Genetic MSA is a valid method to actually study Inter-Area salmon migratory patterns and timing.

**The ‘MIDDLE RUN’** of KMA sockeye has intrigued scientist for many decades. In a very complete publication regarding the fisheries research on Kodiak’s Karluk River sockeye stock, regarding mixed stock analysis Gard and Bottorf wrote (2014): “Prior to 1889, sockeye were harvested in Karluk Lagoon and River, so their true origin was known. In 1889 commercial fishing moved to the ocean off Karluk Spit, and, gradually, harvests came from areas further removed from the Karluk River. Sockeye salmon homing to other Kodiak Island rivers and to Upper Cook Inlet are now known to pass through Shelikof Strait and along Kodiak Island’s west coast during midseason fishing periods. The true origins of these fish were not appreciated for many years (Rich and Morton, 1930; Bevan, 1959, 1962; Barrett, 1989; Malloy, 1988; Barrett and Nelson, 1994).”

There was a lot of early fisheries research that centered on stock identification of sockeye salmon harvested during July in ‘Karluk’ sockeye fisheries (westside Kodiak). Early harvest records showed a massive decline in the reported Karluk sockeye salmon catch, from 1888-1908 averages of over 2.5 million sockeye per year to less than a half million in 1945-1950 (Gard and Bottorf, 2014). In 1950, William F. Thompson, the founder and Director of the University of Washington’s Fisheries Research Institute (FRI), proposed that Karluk’s original sockeye run reached maximum abundance in the midseason (July). He felt that a ‘Middle Run’ to Karluk had been over-exploited and almost extirpated.

Thompson directed the Karluk field studies of other FRI biologists working on solving the problem of Karluk’s declining sockeye runs. He studied 1895-1899 sockeye salmon Case Pack information from one cannery and compared that to cannery records from 1900-1919. Commercial catches at Karluk from 1882 through 1920 remained stable or increased during July, but after escapement counts began at Karluk (1920), the actual escapement at Karluk showed a definite ‘bimodal’ pattern, with a peak in June (early run) followed by a significant decrease in Karluk escapements in July, followed by a rebound in August escapements (late run).

This was the case of the ‘lost Middle Run’ of sockeye salmon to the Karluk Lake system, an infamous case study to determine stock of origin of west side Kodiak sockeye harvests. Perhaps it was unfounded assumptions or inaccurate use of harvest data, but many researchers and Federal fishery managers believed in a lost middle run at Karluk for over twenty years..

In 1955, Thompson recommended an ‘alternative’ to then current Federal management, advocating for more restriction of July fisheries at Karluk to increase the Karluk return to historical levels (Thompson and Bevan, 1955). And Federal salmon fishery managers did restrict KMA mid-season Karluk salmon fisheries for many years to rebuild the lost middle run to Karluk. No mid-season escapement rebound occurred and escapements have continued to show that Karluk sockeye are bimodal, with early (June to mid-July) and late (mid-August through September) runs.



After Federal management of Alaska fisheries, salmon fishery managers and researchers conducted many westside Kodiak salmon tagging studies (as shown in Shedd et al, 2016). ADF&G researchers and managers now support a conclusion opposite from that of Thompson, FRI and federal managers; the hypothetical middle run at Karluk was actually sockeye harvested from other Kodiak systems (particularly Uganik, Ayakulik and Alitak) and nonlocal sockeye (Cook Inlet) that had been incorrectly thought to be Karluk-bound sockeye.

As fishery managers in Kodiak, we knew that the mid-season ‘bump’ of sockeye likely included a significant component of nonlocal sockeye as well as stocks bound for KMA sockeye systems. And because of this, it was even more important to demonstrate that KMA salmon fishery management was based on local stocks, and to clearly delineate this local stock management in KMA commercial salmon fishery harvest strategies and management plan regulations.

Harvest of nonlocal, Cook Inlet-bound sockeye in Kodiak salmon fisheries is a long-standing fact. Perhaps, genetic study of salmon remains found in Kodiak’s ‘prehistoric’ Alaska Native middens is needed to provide the proper historical context for nonlocal salmon harvests in the KMA.

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## **Part 2 - Development of KMA commercial salmon fishery management: The Allocative Crucible...**

**AREA REGISTRATION and LIMITED ENTRY** requirements have restricted fishermen’s movement among commercial fishery administrative areas and fisheries. Beginning in 1974, Limited Entry, while essential for the sustained yield management of Alaska’s fishery resource and the economic health and stability of commercial fishing in Alaska, completely divided fishing brethren of adjacent management areas, such as Chignik, Kodiak and Cook Inlet.

After the inception of Limited Entry, with a “Them against Us” mentality becoming institutionalized, allocative disputes and fish fights became more common for the Alaska BOF. It was within this early allocative crucible that KMA modern fishery management was discussed, developed, and placed into regulation by the BOF, with input from stakeholders and ADF&G.

By 1980, the number of individual limited entry participants in KMA commercial salmon fisheries had stabilized. Legal gear in the KMA fisheries includes Purse Seine, Set Gillnet, and Beach Seine. The past 10-year average numbers of available Limited Entry permits (2007-2016), by gear type, are: 375 purse seine, 188 set gillnet, and 31 beach seine permits.

It should be noted that the fishery restrictions mandated by the SOA and Limited Entry Commission and the Alaska BOF were geographic limits on where a permittee or vessel could participate in commercial fisheries for salmon. There was no separation of fisheries by Stock of Origin or mandates that any salmon stock must only be harvested by commercial fishermen of the Region or Management Area from which those salmon originated or to which they returned. Allocation disputes came as management stabilized, salmon fisheries rebounded statewide from record-low production during Federal management, and ADF&G rebuilt and enhanced salmon stocks within each region.

**KMA MANAGEMENT EVOLVED** from basic Harvest Strategies to Board-approved Salmon Management Plans (SMP), while allocative conflicts occurred. KMA fishermen have faced allocative battles at almost every BOF regular meeting and many out-of-cycle BOF meetings. Books could be written on KMA management plan development and Board of Fisheries actions; this review will focus on early years of management plan development, through the allocative conflicts between Cook Inlet and Kodiak salmon fisheries.

It is important to remember that after Federal management, the Kodiak sockeye stocks were very depressed and it was pink salmon that were the ‘bread and butter’ of KMA commercial salmon fisheries. During the 1960s, ADF&G developed area fishing patterns based on local, inseason experiences. Through the 1970s and 1980s, KMA salmon fisheries followed annual Harvest Strategies developed pre-season by Kodiak Area salmon fishery managers.

**Blended Management:** With early-run sockeye, pink and chum, late-run sockeye and coho salmon runs showing at different systems at different times through a long fishing season, a blended management approach was formed, recognizing the overlap of early-run sockeye, pink and chum, late-run sockeye, and coho run timing (Figure 5). Certain locations were fished to target certain local salmon species at certain times of the year. These harvest strategies outlined the forecasted KMA salmon runs and the expected management actions that KMA managers would take to assure the desired escapement levels. Strategies were developed, by district or areas with common management, to target the dominant local stocks during various local salmon run timing (Appendix B). Targeting of nonlocal salmon was minimized by focusing fishing opportunity only on the abundance of local salmon.

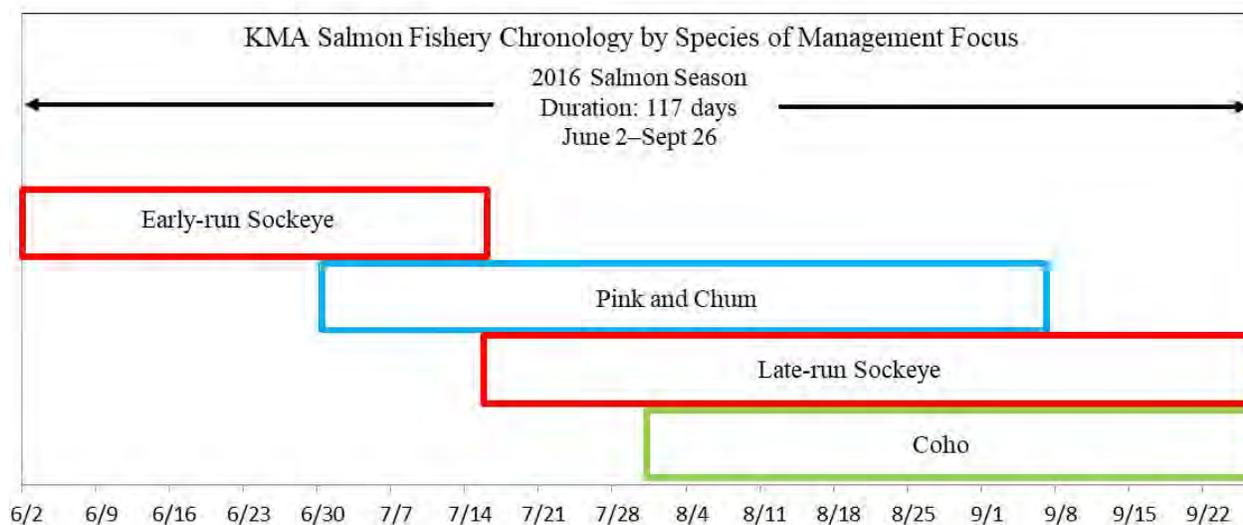


Figure 5. Kodiak Management Area salmon fishery chronology, by species of management focus, 2016. From Anderson, et al, 2016.

Several basic management criteria were formed for KMA fisheries. Management works to ensure that escapement occurs in the proper magnitude and distribution so that the potential for maximum production for subsequent returns is established (maximum sustained yield). Management wanted to provide for an orderly harvest while maximizing harvest opportunities on the highest quality salmon. And, KMA salmon managers worked to adhere to the biological and



allocative requirements of all Board of Fisheries Management Plans and to ensure that traditional fishing opportunities occur for all commercial gear types. These basic tenets of KMA salmon management have changed little and are still used today (Anderson and Jackson, 2017).

**GENERAL PINK SALMON HARVEST STRATEGY** developed in the early 1970s. At that time, there was a need to limit June fisheries in order to rebuild the Kodiak sockeye runs, and pink salmon became more important to KMA seine and set gillnet fishermen. An area-wide harvest strategy developed for KMA pink salmon fisheries. Within the KMA pink salmon harvest strategy, July 6-25 became an important time period. This period is near the end of early sockeye runs and Kodiak pink salmon returns are rapidly building. Initial pink salmon fishing time has to be allocated based on preseason assessments of run strength (Appendix C). Mixed early returns are found in outside waters and they are high quality, ocean-bright salmon.

Early pink salmon returns build quickly, almost exponentially, through July but fish QUALITY remains good. Unfished, pink salmon will begin to move in and out of the deep bays of the Kodiak Archipelago, will become unavailable to Westside set gillnet fishermen, and salmon product quality diminishes rapidly as fish begin to stage in river mouths and estuaries. After July 25, there is sufficient harvest data and early escapement estimates to allow for modification of fishing periods, based on actual pink salmon run strength. Aerial surveys and weir counts provide escapement data which is used to justify any additional fishing periods or extensions of weekly periods. As the season progresses after July 25, fishing time may be extended from the weekly fishing periods established preseason and shown in the Harvest Strategy (Appendix C).

Pink salmon fisheries in the KMA are weekly ‘pulse’ style fisheries with limited hours of fishing time allowed each week. Based on the preseason forecast for pink salmon run strength, weekly fishing periods of 2½ to 4½ days duration are pre-announced. Pulse fishery management for KMA pink salmon during the mid-season time period reduces potential bycatch of nonlocal sockeye. We feel that is an important consideration.

After July, there are local salmon escapement and buildup estimates, along with harvest data, to determine if the pink runs are coming in as forecast. After July, more or less fishing time may be allowed.

**The FIRST KODIAK SALMON MANAGEMENT PLAN** that was adopted into commercial salmon regulations by the BOF, in 1978, was an allocative management plan, the *Cape Igvak Salmon Management Plan* (5 AAC 18.360). In the late 1970s, the full effects of Area Registration and Limited Entry were being felt. Purse seine fishermen had targeted sockeye at Cape Igvak for decades, but it wasn’t until 1978 that this became an issue before the BOF. Because the Cape Igvak fishery was such an important part of Kodiak salmon fisheries and harvests, the Board did not close this sockeye fishery. The harvest of nonlocal sockeye salmon at Cape Igvak by Kodiak seine fishermen was acknowledged as a historical, traditional harvest of mixed stocks. An allocative salmon management plan was developed, based first on the size of forecasted sockeye runs to Chignik. Defined biological (escapement at Chignik) and allocative (Chignik sockeye harvests) requirements must be achieved before Kodiak fishermen are allowed opportunity to fish at Cape Igvak. The Cape Igvak SMP covers only a small portion of the KMA and is only in effect from June through July 25 (after, fishing time is only allowed on local pink,



chum or coho stocks). This BOF allocative plan has not been popular with Chignik fishermen; the Cape Igvak plan has been re-addressed at almost every BOF meeting since 1979, though very few changes have been made to the Cape Igvak SMP.

In the 1980s, the KMA Alitak District fisheries were expanding as Frazer Lake enhancement to support sockeye salmon was more successful. With more sockeye production from Alitak, there was more effort and, unfortunately, more conflict between KMA salmon fishermen. As ADF&G salmon fishery managers, we were often accused of bias and capriciousness as fishing time and patterns changed to harvest increased numbers of enhancement project sockeye salmon.

Thus began **the PROCESS OF 'INSTITUTIONALIZING' KMA SALMON HARVEST STRATEGIES**. To provide clarity and transparency, and to stabilize management, the Kodiak management team began to write up District-wide management plans that followed the basic Harvest Strategy by which we had been managing Kodiak salmon fisheries. For each District and Section of the KMA, we worked to identify the dominant (targeted) local salmon stock that can drive salmon fishery management throughout the June 1 to October 31 commercial salmon fishing season. Such plans provide transparency as to why a section may open during any time period during the season, so that processors and fishermen might better understand the complicated management schemes that had developed over the prior 20 to 30 years. The important 'general' weekly pink salmon openings between July 6 and 25 were incorporated into these blended management plans.

In 1987, based on increasing allocative disputes among set gillnet fishermen in the Alitak District, and after years of discussion by local fishermen, the local F&G Advisory Committee, ADF&G and the BOF, the Kodiak ADF&G management team presented a proposed Alitak regulatory management plan to the BOF. The annual Harvest Strategy for Alitak was adopted by the BOF. This plan was submitted as a proposed regulation to the Board of Fisheries by the Kodiak management staff in order to allow stakeholders and industry an opportunity to comment on existing harvest strategies and in order to clarify the BOF's intent.

Management affects traditional harvest opportunities between fixed (set gillnet) and mobile (seine) gear. The annual harvest strategies had traditionally invoked "blended management" of fishing time between local salmon stocks within the management units covered by this plan. At times this "blended management" was not totally understood by industry and resulted in enough allocative uneasiness that future management stability could be jeopardized. Guidelines for salmon fishery management needed to occur in regulatory form to clarify inseason harvest strategies and, hopefully, to dispel concern and confusion. Again, the previous regulatory structure did not seem transparent enough for stakeholders to evaluate inseason management decisions that influence allocation concerns of the three gear types affected.

Again, based on continuing allocative squabbles between KMA fishermen, the Alitak plan has been brought before the BOF for potential changes at almost every subsequent KMA finfish meeting, and at many out-of-cycle BOF meetings. Changes that have been made reflect desires to tweak the basic harvest strategy to affect allocation of opportunity among various groups of Alitak salmon fishermen on local Alitak District stocks.



After Alitak, we focused on a Westside Kodiak salmon management plan.

However, during the 1988 salmon season, there was an unusually calm, clear weather period in July, and Kodiak salmon seiners were able to safely fish further offshore than previously known. During mid-July, sockeye were found jumping further offshore and KMA seine fishermen targeted these offshore, north-bound sockeye salmon. At that time the State regulations stated that KMA fishing districts and sections along the Mainland and west side of the Kodiak Archipelago extended to mid-stream Shelikof.

After the 1988 season, there were complaints from Cook Inlet salmon fishermen regarding the harvest of offshore north-bound sockeye in the northern portion of Shelikof Strait. The United Cook Inlet Drift Association (UCIDA) submitted a proposed regulation change for Statewide regulations, to limit 'new interception fisheries' across the State, with the 1988 North Shelikof fishery as an example. However, the BOF did not choose to pass a Statewide regulation, preferring local area management plans.

Before the 1989 season, it was clarified by Emergency Order (EO) that all waters in Shelikof Strait outside the "3 mile" limit were Federal, not State waters and so never open to State commercial salmon fisheries. In 1989 and 1990, fisheries outside three miles were prohibited by EO and the Statistical chart was re-drawn to show that limit. Due to EVOS, the 1989 season was severely restricted in the KMA; there was no repeat of the July 1988 North Shelikof harvest pattern.

At a December 1989 meeting in Kodiak, the BOF adopted into regulation the management chronology for major Westside Kodiak salmon stocks, the *Westside Kodiak Salmon Management Plan* (5 AAC 18.362). The goal of this SMP was to achieve escapement and harvest objectives of sockeye salmon returning to the Karluk, Ayakulik, and other Westside minor systems, and of pink, chum, and coho salmon returning to systems in the Southwest Afognak Section, the Northwest Kodiak District and the Southwest Kodiak District (17 sections). It was the intent of the Board to insure that salmon bound to these systems is harvested to the extent possible by the traditional fisheries located in all 17 sections (ADF&G 1990).

The Westside Kodiak salmon SMP reflected the realization of long-term management goals and identified current management practices that were initially implemented in 1971. The basis for these goals and practices was primarily to rebuild depleted Karluk and depressed Ayakulik sockeye stocks. The new SMP provided a predictable management framework for these rebuilt stocks, as well as pertinent major pink, chum and coho stocks, and helped to stabilize fishing opportunities between the three gear types on the highest quality fish in these districts and sections.

Further, we worked with the BOF to delineate the current individual districts (7) and sections (52) by which intra-Area KMA salmon fisheries are controlled (Figure 6).



then further salmon fisheries in that management unit would be restricted to inshore “Shoreward Zones” and the offshore “Seaward Zone” would remain closed through July 25.

**The KMA Conservation Burden:** The *North Shelikof Strait Sockeye Salmon Management Plan* (5 AAC 18.363) restricts fishing in these areas during a specific time period (July 6-25), based on concern that KMA fishermen had newly begun targeting nonlocal (Cook Inlet) sockeye in the northern portions of KMA fisheries bordering Shelikof Strait during a single year, 1988. It was considered a new and /or expanding fishery within the KMA.

Currently, KMA’s North Shelikof fisheries will be closed or restricted to within ½ mile of a baseline if, and only if, specific July 6-25 sockeye harvest levels occur (harvest triggers) in either of two defined locations, the Mainland/North Afognak management unit (the northern half of the Mainland District, from the Dakavak Section to Cape Douglas, plus the Northwest Afognak and Shuyak Island Sections of the Afognak District) and the Southwest Afognak Section management unit (Figure 7). These areas are managed based on KMA pink salmon returns.

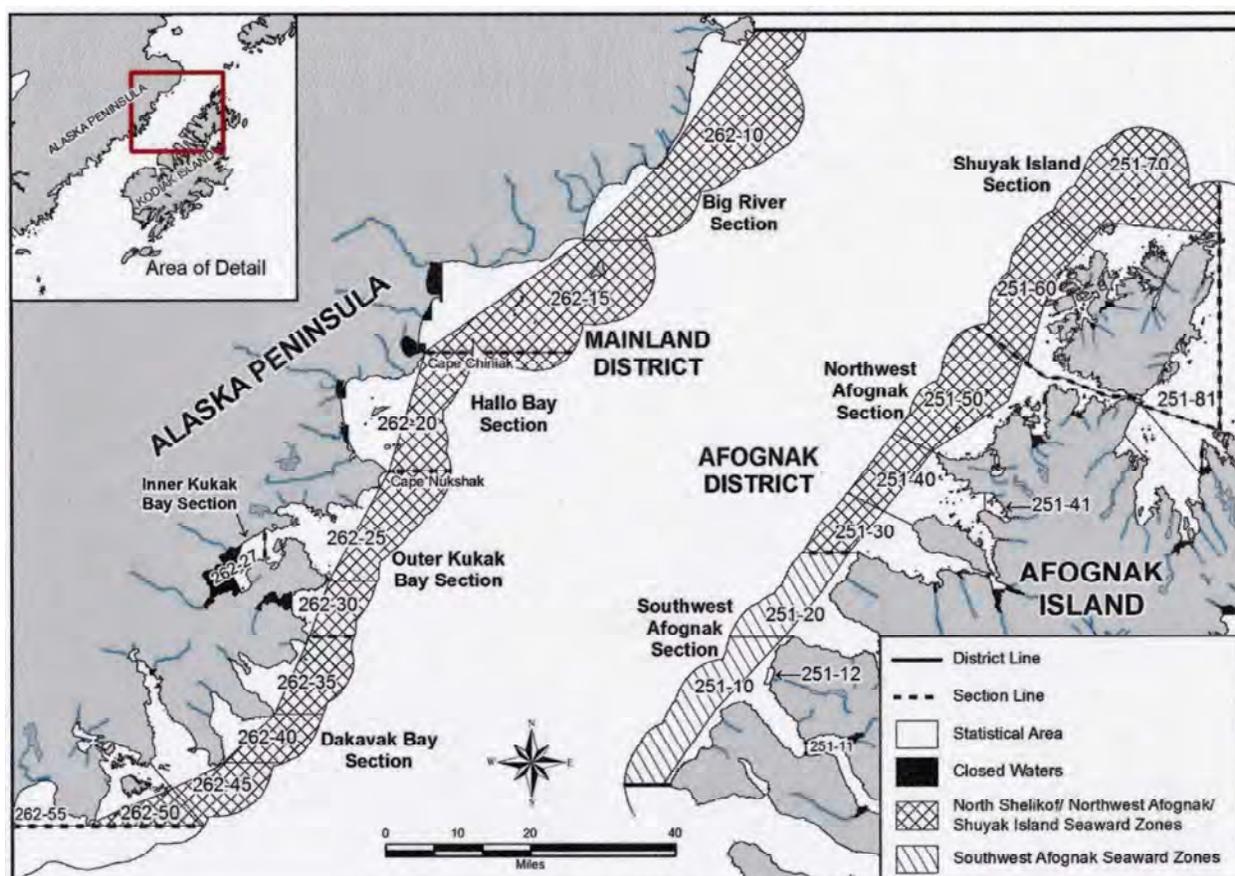


Figure 7. The location of the North Shelikof Sockeye Salmon Management Plan

Figure taken from ADF&G (Anderson, et al, 2016).

Pre-1988 KMA fishing patterns are no longer legal. Harvest triggers were based on some factor of pre-1988 July 6-25 sockeye harvests within the two management units (to allow some level of traditional and historic harvests). Should a harvest trigger be expected to be met, then further commercial fisheries are restricted to inside waters and “Seaward Zones” are closed until after



July 25. Please note that in most of the KMA, including the Mainland/North Afognak management unit, fisheries during the July 6-25 mid-season time period, commercial openings are ‘pulse’ fisheries, with limited 2½ to 4½ day fishing period per week, to allow movement of migrating mixed salmon stocks.

The westside of the Kodiak Archipelago is a known migratory pathway of south-bound KMA sockeye stocks and north-bound Cook Inlet sockeye stocks. While average weight studies found that a majority of the 1988 North Shelikof fishery sockeye harvest were likely of Cook Inlet origin, genetic MSA would have revealed much about this controversial allocative plan. The new MSA does not provide a genetic measure of the actual stock composition of any sockeye harvested at any part of the season in this ‘known’ area of KMA nonlocal bycatch. Undoubtedly, many KMA sockeye stocks are present and harvested and then are counted against the harvest triggers. After a Seaward Zone closure, many KMA salmon (primarily pink salmon but also local sockeye) and large areas of the KMA (hundreds of miles of coastline and thousands of square miles of KMA waters) are unavailable to KMA fishermen.

Based on results from all Kodiak MSA studies we know that levels of nonlocal sockeye are extremely variable in occurrence (time period), numbers and locations, as those fish migrate through KMA waters and fisheries. In contrast to the Cape Igvak plan, for the North Shelikof SMP, there is no consideration of Cook Inlet run strength. Based on Mixed Stock Analysis using run timing, age composition markers and fish lengths, 90-95% of the 1988 North Shelikof harvest of sockeye was assigned as Cook Inlet sockeye. When determining if sockeye harvest triggers will be achieved, all sockeye are counted, as if the entire North Shelikof sockeye harvest are Cook Inlet fish.

The adoption of the North Shelikof plan in 1990 had “unforeseen effects”. We know that, based on MSA conducted from 1990 to 1995, allocation battles continued. UCI stakeholders tried to justify additional closures throughout the KMA or in suspected ‘hot spots’ of KMA nonlocal sockeye harvest in other portions of the KMA (i.e. the Katmai/Alinchak, Halibut Bay, and the Sitkalidak Sections).

The passage of the North Shelikof SMP did not stop the concerns of Cook Inlet salmon fishermen and the Cook Inlet-Kodiak allocative dispute continued. Between 1990 and 1996, there were many proposed modifications or expansions of the North Shelikof plan, with few changes accepted. To support the efforts of the BOF to understand historical KMA salmon fisheries and the harvest of nonlocal salmon, ADF&G conducted Mixed Stock Analyses for stock identification of sockeye in KMA harvests (Barrett 1989; Barrett and Swanton 1991; Barrett and Swanton 1992; Vining and Barrett 1994; Vining and Barrett 1995; Vining 1996). We feel it is unfortunate that these MSA were downplayed by the UCIDA ACR and the new KMA sockeye genetic MSA.

The method developed by ADF&G and presented to the BOF involved comparison of average weights of local Kodiak salmon stocks with larger, nonlocal, primarily Kenai River sockeye salmon. Proportions of larger, nonlocal sockeye salmon were estimated in KMA sockeye salmon harvests. While many may have felt that average weight MSA was not a very robust methodology, it was the best science available at the time. There are significant differences in



average weights of Kodiak, Cook Inlet and Chignik. This method allowed ADF&G to look back at past KMA harvests and estimate the proportions and numbers of nonlocal sockeye in KMA commercial harvests. ADF&G could also deduct the exact stock of origin, based on weights, timing, etc. It was the best science available and multiple studies were presented to the BOF between 1990 and 1996. And the common result was estimates of sometimes substantial but extremely variable numbers of nonlocal Cook Inlet sockeye stocks in KMA sockeye harvests. The 1993-1996 MSA were not confined to the North Shelikof fishery but also included areas on the east and southwest sides of Kodiak, based on the regulatory restrictions proposed by Cook Inlet stakeholders (Vining 1996). More will be discussed concerning early Mixed Stock Analyses of KMA sockeye harvests in the subsequent portions of this review.

**TEN REGULATORY SALMON MANAGEMENT PLANS** (SMPs) for KMA salmon fisheries have been discussed, deliberated on, and approved by the BOF (Table 1). Between 1990 and 1999, an additional 5 Kodiak salmon fishery harvest strategies were taken to the BOF, deliberated, and then adopted into KMA commercial salmon fishery regulations. At all the associated BOF meetings, the variable incidental harvest of nonlocal sockeye salmon in KMA salmon fisheries was a known factor.

The KMA's 10 SMPs basically cover all districts and sections for the entire salmon season. Through the 1980s and 1990s when these SMPs were deliberated and adopted, as ADF&G managers we sought to explain more than determine the timing of traditional local stock salmon fisheries of the KMA. The majority of SMPs describe how KMA fisheries are prosecuted on local stocks.

Though nonlocal sockeye harvests likely always have occurred in the KMA, and do so in a seemingly unpredictable manner, Kodiak fisheries are prosecuted only when the abundance of LOCAL sockeye is sufficient.

Some people may expect that Cook Inlet-bound salmon should only be harvested in Cook Inlet salmon fisheries. And, the new scientific and technical MSA report freshly estimated KMA harvest levels of nonlocal, Cook Inlet sockeye salmon in commercial fisheries of the KMA. As has happened many times in the past, the reported harvest of nonlocal salmon within KMA commercial fisheries has re-ignited a long-running, Cook Inlet versus Kodiak, allocative 'fish fight'.



Table 1. Alaska Board of Fisheries-approved salmon management plans for the Kodiak Management Area, 2016. *From ADF&G, 2017*

| Regulatory Management Plan           | Year initiated | Management units affected                                                                                                                                                | Dates in effect |
|--------------------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Cape Igvak Salmon                    | 1978           | Cape Igvak Section<br>Wide Bay Section                                                                                                                                   | 6/5–7/25        |
| Alitak District Salmon               | 1987           | Alitak District                                                                                                                                                          | 6/1–10/31       |
| Westside Kodiak Salmon               | 1990           | NW Kodiak District<br>SW Kodiak District<br>SW Afognak Section                                                                                                           | 6/1–10/31       |
| Crescent Lake Coho Salmon            | 1990           | Special Harvest Area in the Central Section near Port Lions                                                                                                              | 7/15–10/31      |
| North Shelikof Strait Sockeye Salmon | 1990           | SW Afognak Section<br>NW Afognak Section<br>Shuyak Island Section<br>Big River Section<br>Hallo Bay Section<br>Inner and Outer Kukak Bay Sections<br>Dakavak Bay Section | 7/6–7/25        |
| Spiridon Bay Sockeye Salmon          | 1993           | Special Harvest Area in Spiridon Bay Section                                                                                                                             | 6/9–10/31       |
| Eastside Afognak Salmon              | 1993           | SE Afognak Section<br>Kitoi Bay Section<br>Izhut Bay Section<br>Duck Bay Section<br>Raspberry Strait Section                                                             | 6/1–10/31       |
| Eastside Kodiak Salmon               | 1995           | Eastside Kodiak District<br>NE Kodiak District                                                                                                                           | 6/14–10/31      |
| Afognak Shuyak Salmon                | 1995           | Perenosa Bay Section<br>Shuyak Island Section<br>NW Afognak Section                                                                                                      | 6/1–10/31       |
| Mainland District Salmon             | 1999           | Mainland District                                                                                                                                                        | 6/14–10/31      |



### Part 3 – BOF Agenda Change Request Criteria and Consideration of ACR #11

United Cook Inlet Drift Association has submitted an Agenda Change Request (ACR #11), asking the BOF to consider an out-of-cycle proposal for a new salmon management plan in the Kodiak Management Area, to limit nontraditional harvest of nonlocal sockeye in KMA commercial salmon fisheries.

Normally, Kodiak Finfish issues are addressed during regularly scheduled (on-cycle) BOF meetings; only if the BOF accepts a properly submitted Agenda Change Request (ACR) will unscheduled (off-cycle) BOF consideration be approved. ACRs, reviewed at fall BOF work sessions, must meet the criteria for the BOF's *Policy for Changing Board of Fisheries Agenda* (5 AAC 39.999). Importantly, subsection (2) of that policy states that "the board will not accept an agenda change request that is predominantly allocative in nature in the absence of new information found by the board to be compelling".

ACR consideration usually requires clear and concise biological concerns. Subsequent allocative considerations receive a lower priority. Application of BOF Criteria and Policies requires that unless there is compelling NEW information, then any allocatively-based ACRs would be denied. Such issues would then come up at the next on-cycle BOF meeting (for Kodiak Finfish that would be the 2019/2020 cycle).

**The Criteria for an Agenda Change Request** are found in the Alaska Administrative Code (regulations). For this discussion, the pertinent portions of that regulation are as follows:

5 AAC 39.999. POLICY FOR CHANGING BOARD AGENDA. (a) The Board of Fisheries (board) will, in its discretion, change its schedule for consideration of a proposed regulatory change in response to an agenda change request, submitted on a form provided by the board, in accordance with the following guidelines:

- (1) the board will accept an agenda change request only
  - (A) for a fishery conservation purpose or reason;
  - (B) to correct an error in a regulation; or
  - (C) to correct an effect on a fishery that was unforeseen when a regulation was adopted;
- (2) the board will not accept an agenda change request that is predominantly allocative in nature in the absence of new information found by the board to be compelling.

Based on our review of the new MSA report and ACR #11, our brief responses to these criteria are:

**Criteria 1(A)**: The BOF may accept an ACR for a fishery conservation purpose or reason:

There isn't a Conservation Concern for any sockeye salmon stock in the Cook Inlet or Kodiak Management Areas. Published ADF&G forecasts for the 2014 to 2016 (GSI study years) and 2017 for Cook Inlet salmon fisheries predicted harvestable surplus for all sockeye stocks. Commercial fisheries were prosecuted in Upper Cook Inlet from 2014-2017, and there is no chronic inability to meet UCI sockeye escapement goals (more detail is given in Part 4, below). Susitna sockeye are a Stock of Yield Concern, not a Conservation Concern.



A BOF approved Action Plan was developed in 2008 and has been modified with BOF review (more detail is offered below).

Criteria 1 (B): The BOF may accept an ACR to correct an error in a regulation.

We feel there are no errors in current regulations governing the KMA salmon fisheries. This salmon fishery has been identified as a Mixed Stock Fishery, and past studies have revealed similar numbers and percentages of Cook Inlet sockeye present in KMA harvests, as did the new Kodiak sockeye genetic MSA study. KMA regulatory Salmon Management Plans (SMP) were written, discussed, and passed by the BOF with that knowledge.

Should that fact then dictate that nonlocal salmon in KMA harvests should never be discussed by the BOF? Not necessarily... if the allocation question is sufficient to interest the Board to further discussion of possible change to KMA commercial salmon fishing regulations, then the BOF may schedule the issue for the on-cycle, regularly scheduled Kodiak finfish meeting. That option also allows for continued study, education, discussion and potential agreement or acceptance by stakeholders. Options and possible courses of action could be discussed among ADF&G researchers and managers.

An error in regulation is more likely with hasty, ill-prepared, unjustified or politically motivated proposed regulation changes. An issue of this importance and complexity deserves adequate consideration prior to changes to traditional and historical fisheries, changes which would also bring severe economic consequences to the Kodiak salmon fishery.

Criteria 1 (C): The BOF may accept an ACR to correct an effect on a fishery that was unforeseen when a regulation was adopted.

There hasn't been any 'effect on a fishery' demonstrated by ADF&G's new MSA study or report. There was a lot of data, yet little to no analyses. The net 'effect' of the KMA harvest of nonlocal sockeye is not new nor has it been demonstrated that it is endangering any sockeye stocks. Perhaps an ADF&G evaluation of the 'effect' of KMA harvest of nonlocal sockeye is needed, and we suggest taking the time to ask the Department that, and other germane questions.

The presence of relatively large numbers of Cook Inlet salmon within KMA commercial salmon harvests during any year cannot be categorized as "unforeseen", for the reasons stated throughout this review. As previously shown, even a measure of the magnitude of the KMA commercial harvest of Cook Inlet sockeye estimated by the new MSA study was clearly demonstrated and reported to the BOF in the early to mid-1990s (over 20 years ago). No negative effects on the nonlocal sockeye stocks have been shown. Unfortunately, many UCI fishermen may hear of the NEW study and expect that the Mixed Stock nature of KMA salmon fisheries was an unforeseen effect.

Criteria (2): The board will not accept an agenda change request that is predominantly allocative in nature in the absence of new information found by the board to be compelling.

Does this new MSA study and report show that there should be new concern for the sustainability or conservation of any Cook Inlet sockeye stock? In the absence of a



Biological Concern, what remains are Allocative Concerns. Based on our experiences, we do not believe that the new MSA is new and compelling.

We feel that the BOF should not accept any ACRs regarding KMA nonlocal salmon harvest at fall Board of Fisheries work sessions. Board review of KMA commercial salmon fishery regulations should remain ON-CYCLE, to next occur during the BOF's 2019/2020 meeting cycle.

We have **ISSUES with the ISSUES PRESENTED** by UCIDA in ACR #11. There are misstatements and untruths contained in the ACR explanations and descriptions. For clarity, we comment on the UCIDA responses to the questions posed on the Agenda Change Request Form:

ACR #11 - Question 1: UCIDA asks for the adoption of a new regulatory management plan for the KMA.

As stated, we do not believe that the Criteria for an Agenda Change request have been met.

ACR #11 – Question 2: UCIDA states that the problem is “the harvest of Cook Inlet and other non-local salmon stocks in the Kodiak Area”.

No evidence of harm or any problem with UCI sockeye stocks is shown or postulated. It appears that UCIDA feels that ANY harvest of nonlocal salmon in the KMA is a ‘problem’, despite the fact that Cook Inlet salmon have historically been present in the KMA and were identified in KMA salmon harvests in virtually all KMA MSA studies. Nonlocal sockeye salmon are a natural occurrence in the KMA, the magnitude of which may be related to overall abundance. Many uncontrollable factors are involved such as weather, ocean conditions, and migratory patterns.

ACR #11 - Question 3: UCIDA seeks a new ‘umbrella’ KMA salmon management plan. Further, UCIDA seeks to provide ADF&G with long-term direction regarding management of the harvest of nonlocal and local salmon stocks, in this case within KMA commercial salmon fisheries, and asks the BOF to define the BOF's long-term management objectives for such mixed stock fisheries. The purpose for a restrictive management plan is defined by UCIDA as “allowing traditional fisheries on local stocks while minimizing directed harvest of Cook Inlet or other nonlocal salmon stocks” (emphasis added).

There are no directed harvests on nonlocal salmon in the KMA except for the long-standing Cape Igvak fishery. All other KMA salmon fisheries are directed toward the harvest of local salmon runs. Even the July North Shelikof fisheries are managed for local Kodiak salmon stocks (mainly based on KMA pink and chum salmon). There's been no new intercept fisheries or expansion of targeting nonlocal sockeye salmon in KMA fisheries.

Under Question 3, UCIDA recognizes that “incidental harvest” will occur during fisheries managed for local KMA stocks. However UCIDA also seeks to “prevent a repetition of nontraditional harvest patterns which occurred during 1988, and during the past few years” (emphasis added).

The ACR seeks to prevent the repetition of something that has not occurred since 1988. There is no evidence of any repetition of 1988 fishing patterns, nor is there any evidence of nontraditional harvest patterns in KMA salmon fisheries in the past few years.



The UCIDA proposal also seeks to modify the North Shelikof SMP to change the current harvest triggers into strict harvest limits, further limiting the ability of KMA salmon fishermen to use traditional fisheries to harvest local salmon stocks.

ACR #11 - Question 4A: The fishery conservation purpose or reason appears to be that currently ADF&G does not use precise genetic stock estimates in development of escapement goals, management plans or brood tables.

ADF&G will use the best science available, and has successfully managed UCI and Kodiak sockeye stocks without precise genetic stock composition estimates. The KMA genetic MSA was just finished and published. TIME is needed to attempt to use data from the recent MSA. The new Kodiak sockeye genetic MSA was not designed or analyzed to determine appropriate limits on nonlocal, Cook Inlet sockeye harvest in KMA fisheries. Additional genetic studies, such as that conducted annually in Upper Cook Inlet, would be necessary.

ACR #11 - Question 4B: The error in regulation given by UCIDA seems to be the inaccurate or unfairly applied burden of conservation.

The *Policy for the Management of Sustainable Salmon Fisheries* (5 AAC 39.222), in subsection 4) D), states “in the absence of a regulatory management plan that otherwise allocates or restricts harvests, and when it is necessary to restrict fisheries on salmon stocks where there are known conservation problems, the burden of conservation shall be shared among all fisheries in close proportion to each fisheries' respective use...” (emphasis added). UCI sockeye escapements are met, Cook Inlet salmon fisheries are allowed, so the conservation burden is minimal. There is not a known conservation problem; Susitna sockeye are a Stock of Yield Concern only.

KMA already shares the burden of conservation with Cook Inlet. In December 1989, the Board passed a regulatory plan for the harvest of Cook Inlet sockeye salmon in the KMA, the North Shelikof Strait Sockeye SMP, which:

- is located to afford the most protection for UCI sockeye as they migrate through the KMA commercial salmon fisheries (the North Shelikof);
- is timed to cover the estimated peak timing of nonlocal sockeye presence in the KMA (July 6-25);
- provides for weekly ‘pulse’ fisheries based solely on local Kodiak salmon forecasts and run strength indicators, with designated 2½ to 4½ day fishery closures each week;
- has sockeye harvest ‘triggers’ based on estimated pre-1988 historical sockeye harvest levels in the affected areas; and,
- protects KMA’s traditional fishing opportunities when a sockeye harvest trigger is met by only allowing continued fishing in inshore waters (Shoreward Zones; offshore Seaward Zones, from the baseline to the 3 mile limit, are closed).

This is already a very large conservation burden on KMA fishermen, for which no positive net effect on UCI stocks has ever been demonstrated. Over half of the Mainland and Afognak Districts are subject to fishery closures in July, based on the 1988 KMA harvest of nonlocal Cook Inlet salmon. Many KMA stakeholders would say that the conservation burden is currently unfairly slanted against KMA fishermen.



ACR #11 - Question 4C: As an effect that was unforeseen, UCIDA states that “It was only recently, as a result of genetic testing and analysis, that the real magnitude of the harvest of Cook Inlet and other non-local salmon stocks in the Kodiak Management Area became known”.

Just because they may have forgotten about, or were too young to know about, the Mixed Stock Analyses of KMA sockeye harvests in the 1990s, doesn’t mean that that information doesn’t exist. The magnitude of nonlocal salmon harvests was known and was before the Board when KMA management plans were deliberated and adopted, but a new MSA has inspired a new round in the ongoing Cook Inlet-Kodiak fish fight.

This type of proposal is not new. In the past, UCIDA and UCI stakeholders have submitted many proposals for changes in management of the KMA fisheries. Very similar proposals were submitted to the BOF in the mid-1990s. With dozens of meetings and hundreds of hours of BOF discussions, committee discussions, as well as 2 years of work by a BOF-ADF&G-Stakeholder Cook Inlet-Kodiak Inter-Area Work Group, it is clear to us that the BOF has been informed, has reviewed the KMA nonlocal salmon issue, and has deliberated on such restrictive management plan proposals.

ACR #11 - Question 5: UCIDA states that, should this issue not be solved prior to the 2019/2010 regular BOF meeting cycle (the next in-cycle BOF meeting to consider Kodiak finfish issues) then the issue will lead to “increased conflicts, inappropriate biological assessments (escapement goals), economic stress, perhaps inappropriate management plans and inappropriate use of Emergency Order authority”.

Solving the issue of nonlocal salmon harvest within an area may be a completely different thing than massive area-wide restrictions and complete change to KMA’s traditional salmon fishery management and harvest opportunities, which would result from adoption of the proposed UCIDA umbrella plan. Should the proposed UCIDA ‘Solution’ be adopted, there would still be increasing conflict, increased economic stress and the potential for inappropriate assessments, management plans, or fishery actions (EOs).

ACR #11 - Question 6: UCIDA rightly admits that their ACR (#11) is allocative. We concur.

ACR #11 - Question 7: This is a complex question. The BOF asks for the “new information that compels the Board to consider an allocative proposal outside of the regular cycle. UCIDA claims that “Now, years later, with the aid of genetics, we know much more about the timing, location, extent and magnitude of the harvests of Cook Inlet origin salmon stocks. This ACR is the first opportunity to look at the harvest of Cook Inlet stocks in the Kodiak Management Area.”

We consider this a very serious misstatement of fact. This is not the ‘first opportunity to look’ at KMA incidental harvests of nonlocal, Cook Inlet sockeye, as suggested. This is NOT the first look at harvests of Cook Inlet salmon in the KMA. Beginning in the 1920s, salmon researchers have studied KMA salmon stocks composition and shown that Cook Inlet salmon contribute to KMA commercial fisheries. The magnitude of nonlocal sockeye in KMA commercial fishery harvests has been previously studied extensively by ADF&G. MSA estimates were conducted and reported to the BOF and the public between 1989 and 1996, with similar results as the new genetic MSA.

The recent 2014-16 Kodiak genetic MSA has indeed added to the data available, however it gives little to NO definitive answers to migratory timing, location, extent or magnitude of



nonlocal salmon passing through the Kodiak Management Area. It was a limited, short term study that looked at only some parts of June-August KMA salmon fisheries for only three years (three data points for each temporal/spatial stratum). Data was pooled into three fairly long temporal periods and six fairly large geo-spatial strata. For any temporal/spatial strata, there are only three annual data points. Three data points will show a false trend more often than a true trend. Three data points are most likely to show no trend.

The study cannot infer an absolute or precise harvest rate of nonlocal sockeye in KMA fisheries. There's just not enough information. The current MSA study and report has provided limited results from a limited sampling plan that was NOT intended to provide nonlocal salmon harvest rates, but rather the sockeye stock components of selected KMA fisheries during limited time periods.

UCIDA claims that the Kodiak sockeye genetic MSA is new information that should prompt the BOF to "look at the harvests of Cook Inlet sockeye stocks in the Kodiak Management Area". We strongly disagree. Again, more will be discussed regarding these point, in subsequent parts of this review.

ACR #11 - Question 9: UCIDA clearly states that there is NEW proposal, "not previously... before the board" and that it was "modeled after existing portions of both the Kodiak and Cook Inlet Alaska Administrative Code themes and regulations."

The proposed UCIDA restrictive umbrella plan form ACR #11 is not a new proposal. It is modeled after proposals from the November 1995 Kodiak Finfish BOF meeting and prior BOF meetings (Appendix E).

At that meeting, there were several such proposed changes to KMA fisheries. And the Board did not adopt any further restrictions. In the Summary of Actions taken at that meeting (Appendix E), it clearly states that "the past Board had pretty much resolved the issue in 1989 utilizing the best information available. And that information has not changed to this point. The effort and catch has increased in the disputed areas due to local management practices in other areas of Kodiak. And it is difficult to determine if this (is) a new and expanding fishery when both this area and Cook Inlet fisheries are at an all-time high. The overriding reason for apparent increase in intercept of Cook Inlet stocks seems to be directly related to the density and strength of that run" (emphasis added).

The 1995 Board of Fisheries reviewed MSA and harvest information and determined that shifts in effort levels could be fishermen movement due to closures of North Shelikof fisheries SMP, not new or expanded targeting of Cook Inlet stocks. They recognized that nonlocal salmon harvests occur in KMA fisheries and the relative level of such harvests were related to run strength. No biological concerns and no allocative concerns meant no change to Kodiak SMPs.

In both 1995 and 1988, Kodiak salmon fishermen submitted proposals to increase the harvest triggers used in the North Shelikof July 6-25 fisheries. They did so because the number of local Kodiak sockeye had increased since 1988, due to both an increase in natural production and increased enhancement of Kodiak sockeye. This would have increased the number of local sockeye salmon available in the North Shelikof fisheries. However, because of the complexity of the situations involved, the BOF did not accept either proposal.



There were subsequent changes to the North Shelikof SMP. In 2002, the Ouzinkie Native Corporation, representing tribal commercial fishermen from Ouzinkie and Port Lions, proposed a less restrictive plan for Southwest Afognak section commercial salmon fisheries during the North Shelikof SMP mid-season time period (July 6-25). The BOF allowed KMA fishermen to continue to fish traditional seine hauls in the Southwest Afognak Section out to within ½ Mile of the baseline (a reduction of the Seaward Zone). And at a regular Kodiak Finfish meeting in January 2008, the Board accepted an amended version of the Ouzinkie proposal, reducing the Seaward Zone in the Northwest Afognak Section to allow KMA fishermen to continue to fish traditional seine hauls.

The BOF, despite multiple considerations of the KMA salmon fisheries and the North Shelikof plan, has not accepted proposals for increased restriction of KMA fisheries based on Cook Inlet sockeye salmon harvests within the KMA.

Concern is expressed in the ACR that if the proposed plan is not adopted, KMA salmon fisheries continue to incidentally harvest nonlocal Cook Inlet sockeye salmon, and then there will be detrimental biological or ecological effects. Yet there are no examples given of what detriments have been experienced in Cook Inlet due to recent KMA salmon fisheries or fishing patterns. Nor was any potential biological or ecological harm identified in the ACR #11.

Since 1989, the Board of Fisheries has addressed dozens of proposals from Cook Inlet salmon fishery stakeholders, for KMA management plans or regulatory restrictions. And very few changes have been made to the existing Cook Inlet-Kodiak allocative SMP by the BOF, and the BOF has not deemed it necessary to expand the regulatory KMA fishery restrictions by time (before or beyond 7/6-25) or location (North Shelikof vs. other major fishing areas of the KMA such as the east side or southwest sides of Kodiak Island).

UCIDA's proposal would establish a complicated plan covering an expanded time period (5 weeks, from 6/25 to 7/29) and newly expanded locations to include most of the KMA wild stock salmon fisheries. Within the identified time period and locations, there would be weekly and "seasonal" (6/25 to 7/29) commercial harvest limits for sockeye salmon.

This proposed plan would completely change the nature of KMA commercial salmon fisheries, and the opportunity for KMA salmon fishermen to harvest millions of local salmon would be uncertain or lost due to shifting of fisheries to only inner bays and terminal harvest areas.

Long-standing harvest strategy criteria by which KMA managers have operated could be more difficult to assure or complete. For example, since about 1971, the KMA general pink salmon fishery has been managed to coordinate multiple fishery openings whenever possible, (several locations over a wide area opening to the salmon fishery during the same time periods) to disperse the purse seine fleet. More restriction of fishing areas means more boats in smaller places, increasing the likelihood of conflict. And since about 1980, managers have attempted to maximize harvest opportunities on the highest quality salmon during orderly fisheries. More restrictions and a completely new harvest management plan would reduce opportunities, and



would likely lead to poorer quality salmon products (brighter, fresher salmon are found outside of bays and in early pink salmon fisheries) as well as the potential for more gear conflicts.

Managers would be forced to be ultra-conservative in order to meet the proposed new plan's expectation that fishery managers would make closure announcements if they EXPECT a limit to be reached or if the current harvest is within 15% of that limit. The weekly and seasonal sockeye harvest limits given in the UCIDA proposal are vastly lower than actual harvest in the past. For example, for the Westside Districts the proposed weekly limit is 12,500 sockeye, yet over the past ten years (2008-2017) the weekly Westside sockeye harvest during the 6/25 to 7/29 plan duration has averaged over 61,000 sockeye (Appendix D).

In our opinion, such widespread KMA fishery restrictions in late June through July (five weeks in the middle of the KMA salmon season) would greatly reduce ADF&G's management precision (more uncertainty means more conservative management) and increase the likelihood of 'lost' harvest opportunities, reduced quality of the pink salmon harvested and increase the likelihood that Kodiak sockeye and pink salmon escapements would exceed the appropriate levels that have been determined by ADF&G and the BOF.

And, the proposed sockeye harvest limits are substantially below the recent or historical sockeye harvests in those fisheries. The vast majority of past KMA salmon fisheries (1985-present) would have been restricted had this proposed umbrella plan been in effect (Appendix D). The proposed management plan's weekly and/or seasonal sockeye harvest limits would have been met, forcing restriction of major KMA fisheries to only inshore waters.

This is a long-running fish fight, and one could expect that the KMA stakeholders would follow with their own Agenda Change Requests, proposed management plan adoption or modifications, negative rhetoric, legislative inquiries or legal actions. The effects of the proposed UCIDA umbrella plan on traditional strategies and fishing opportunities would force a substantial negative response by not only the KMA salmon fishermen, but by processors, business owners, local Borough and City governments, and local legislators that would know and experience the negative ramifications to KMA mid-season salmon fisheries.

Based on our knowledge of the KMA commercial salmon fishery, it is expected that should this proposal pass as is, it would severely cripple the Kodiak commercial salmon fishery and devastate the Kodiak economy.

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#### **Part 4 – Is there an Emergency or Compelling New Information?**

We feel there is no biological or conservation-based emergency, nor compelling new information that forces the Board to consider this Allocative Proposal. Therefore, we see no reason to take this issue up out of the regular BOF fishery-review meeting cycle.

**BIOLOGICAL CONCERNS** are mentioned in UCIDA's ACR #11. For a salmon run, escapement and resulting production are known biological concerns that are affected by commercial salmon fisheries.



Escapement estimation for Upper Cook Inlet salmon streams is a complicated and changing process. Based on data obtained from ADF&G, it appears that sockeye salmon escapement goals are generally being met (Table 2), and there is no chronic inability to meet escapement needs.

Table 2. Upper Cook Inlet sockeye salmon escapement goal ranges and recent escapement estimates, 2010 – 2017. *Data from ADF&G, Division of Commercial Fisheries, Anchorage, 8-22-17.*

| Sockeye Escapement Goal Ranges <sup>1</sup> | 2010    | 2011      | 2012      | 2013      | 2014      | 2015      | 2016      |
|---------------------------------------------|---------|-----------|-----------|-----------|-----------|-----------|-----------|
| Kasilof River 160,000 - 340,000             | 267,013 | 245,721   | 374,523   | 489,654   | 439,977   | 470,677   | 239,981   |
| Kenai River 1,000,000 - 1,300,000           | 970,662 | 1,599,217 | 1,581,555 | 1,359,893 | 1,520,340 | 1,704,767 | 1,383,692 |
| Fish Creek 15,000 - 45,000                  | 126,829 | 66,678    | 18,813    | 18,912    | 43,915    | 102,296   | 46,202    |
| Chelatna 20,000 - 45,000                    | 37,784  | 70,353    | 36,736    | 70,555    | 26,212    | 69,897    | 60,792    |
| Judd 15,000 - 40,000                        | 18,466  | 39,984    | 18,715    | 14,088    | 22,229    | 47,934    | No Count  |
| Larson 15,000 - 35,000                      | 20,324  | 12,190    | 16,566    | 21,821    | 12,430    | 23,185    | 14,333    |

1. Escapement goals are those provided by ADF&G following a 2017 Board of Fisheries review.

Harvestable surpluses of UCI sockeye salmon have been consistently realized. ADF&G forecasts for 2014-2017 Cook Inlet salmon fisheries show significant surplus sockeye salmon production, over and above published escapement needs. Harvest records show that recent annual Cook Inlet sockeye salmon commercial harvests were in excess of forecast (Table 3).

Table 3. Forecast, commercial harvest, and estimated total run of sockeye salmon in the Cook Inlet Area, 2014 – 2016. *Data from ADF&G annual run forecast and harvest reports.*

| Year | Upper and Lower Cook Inlet Sockeye Salmon (in number of fish) |                    |                     |
|------|---------------------------------------------------------------|--------------------|---------------------|
|      | Forecast                                                      | Commercial Harvest | Estimated Total Run |
| 2014 | 4.3 million                                                   | 2.6 million        | 5.5 million         |
| 2015 | 3.7 million                                                   | 2.9 million        | 6.3 million         |
| 2016 | 5.3 million                                                   | 2.7 million        | 5.0 million         |

Looking further back, based on decadal averages it appears that recent (2010-16) total Upper Cook Inlet (UCI) sockeye salmon runs are above the previous two decades' average UCI sockeye runs and over twice the average from the 1970s (Table 4). If there has been biological or ecological harm to UCI sockeye salmon stocks from KMA incidental harvest, it does not show in total UCI sockeye run estimates.

Table 4. Total UCI sockeye run averages

| Decade  | Decadal Average |
|---------|-----------------|
|         | UCI Sockeye Run |
| 1972-79 | 2,408,257       |
| 1980-89 | 6,492,479       |
| 1990-99 | 6,052,752       |
| 2000-10 | 5,843,985       |
| 2011-16 | 6,208,675       |

*Data from ADF&G, Division of Commercial Fisheries, Anchorage, 8-22-17.*

Actual Cook Inlet commercial, subsistence or sport harvests may vary and at times may even be lower than in the past. However, commercial fisheries were prosecuted in Lower and Upper Cook Inlet resulting in Cook Inlet commercial salmon fishery harvests of millions of sockeye salmon. Sockeye salmon production seems to be near historical highs, based on data provided by ADF&G.

**A STOCK of CONCERN** designation was placed on the Susitna sockeye stock in 2008. However, the Susitna sockeye stock was categorized as a YIELD concern, not a Management or a Conservation Concern. Even that designation was not without controversy, both for and against. The level of Concern for Susitna sockeye has not changed with almost 10 years of subsequent ADF&G and BOF review.

Based on the *Policy for the Management of Sustainable Salmon Fisheries*, “Yield Concern” means a concern arising from chronic inability, despite the use of specific management measures, to maintain expected yields, or harvestable surpluses, above a stock’s escapement needs (5 AAC 39.222(f)(42)). Based on the Sustainable Salmon Policy, there is an Action Plan for Susitna sockeye salmon as a Stock of Yield Concern, and that plan is reviewed and updated as necessary during salmon area specific BOF meetings. The Action Plan, in part, must contain goals, measurable and implementable objectives, and provisions, including fishery management actions needed to achieve rebuilding goals and objectives, as well as descriptions of new or expanding salmon fisheries.

Within the Susitna sockeye salmon Action Plan, there are NO new or expanding fisheries listed. This is especially surprising when considering the near meteoric rise in sport fishing effort and commercial sport fishing operations (guides, charter operators and lodges) across the State of Alaska in the past 20 years. The Kodiak commercial salmon fishery has not been identified as ‘New and Expanding’, nor have any portion of KMA salmon fisheries.

The Susitna sockeye salmon Action Plan designates that ADF&G Division of Commercial Fisheries will manage the Susitna sockeye stock using commercial fishery regulation of Upper Cook Inlet’s Northern and Central Districts, only (Figure 8). There are no commercial salmon fisheries restrictions in Lower Cook Inlet (5 Districts) based on this Stock of Concern.

It seems like an over-reach to ask for severe commercial fishing restriction in the KMA, so far ‘downstream’, while ignoring Lower Cook Inlet. Especially since all Upper Cook Inlet stocks MUST pass through Lower Cook Inlet.

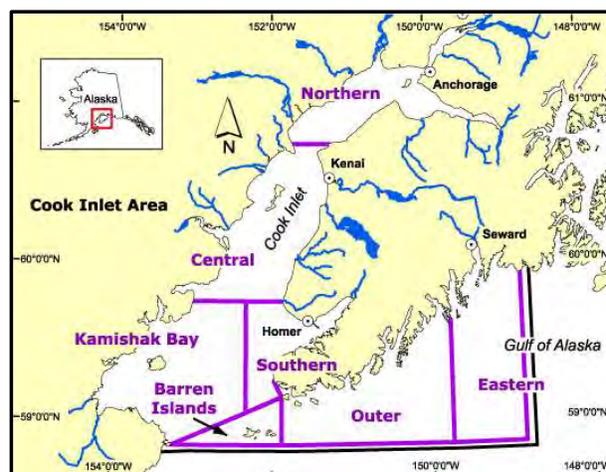


Figure 8. Map of Cook Inlet’s commercial salmon fishing districts. *Figure taken from ADF&G website*

ADF&G has identified several other factors, besides natural or incidental mortality, that may be affecting the survival (yield) of Susitna sockeye salmon in freshwater (spawning and rearing areas), including the introduction of invasive species (Northern Pike), loss or alteration of habitat, changes in water quality or quantity, pathogens, or harvest by sport fishing. Yield Concerns, by definition, are NOT concerns for the sustainability or successful management of the stock, rather it is concern for lower than desired harvestable surpluses, above expected escapement needs. To ‘conserve’ UCI sockeye salmon for harvest by a select group of Alaska fishermen, for only Cook Inlet commercial salmon fishermen or sport fishermen or commercial sport fishing business owners, is based on allocation; it is not a concern for conservation caused by new and expanding fisheries.



We feel confident that no biological reason exists for restricting KMA fisheries in order to protect Cook Inlet-bound salmon, based on the information given in the UCIDA ACR, or in the 2014-16 KMA genetic MSA (more in following part of this review).

Nothing New has been determined with which to accurately determine the impact of KMA sockeye harvests of nonlocal salmon on Cook Inlet sockeye salmon stocks.

Perhaps some people have assumed that the magnitude of the Cook Inlet sockeye component of KMA harvests was an unknown. Perhaps some people assumed that Cook Inlet salmon rarely migrate through the KMA, so the harvest numbers in the report were shocking to them.

However, the 2014-16 MSA report was not an analysis of nonlocal sockeye harvest in the KMA. It is a reporting of recent data collected in yet another MSA in the KMA. In the 2014-16 KMA sockeye genetic MSA, only very limited information from past tagging studies was included, and there is only one citation from several Kodiak MSA reports by ADF&G from 1989-1996.

Without a discussion of ‘How we got here’ it is often difficult to correctly ascertain exactly where we are now. It is unfortunate that, in the new MSA report, Shedd et al (2016) included only very limited information on past Kodiak sockeye MSA studies and published reports.

**Earlier MSA Studies were Conducted in the KMA** using existing fisheries data and samples, such as analyses of run timing, or of scale samples for stock-specific age-markers or patterns, or use of average sockeye salmon lengths or weights from KMA vs CIMA commercial harvests. A quick comparison shows that many data from the new KMA genetic MSA and from previous KMA average weight MSAs are similar. There was no mention or analysis of these facts in the new MSA report

Included in the new MSA report are over 60 tables describing the annual estimates of local and nonlocal sockeye salmon in each of six preselected geographic areas (geospatial strata) during each of three time periods (temporal strata). The middle stratum encompasses the July 6-25 period used in earlier studies, so is most comparable with that earlier data. The 1994 Barrett and Vining report also looked at specific area harvests, some of which approximate the 2014-2016 sampling areas.

Barrett and Vining (1994), using average weights, estimated the stock compositions of KMA July harvests from eight KMA locations (geospatial strata), which are basically the same as the geospatial strata in the recent KMA genetic MSA. For example, in Barrett and Vining (1994), for Ayakulik and Halibut Bay, the nonlocal (Cook Inlet) sockeye harvests for July, 1988-1992, ranged from 103,900 to 444,400 fish. In the recent KMA genetic MSA report, the mid-season (basically July) 2014-2016 KMA harvest of nonlocal sockeye in the Ayakulik/Halibut Bay strata ranged from 41,300 to 185,100 fish. From this comparison it is obvious that the earlier studies not only showed that Cook Inlet sockeye were present and were caught in July Ayakulik –halibut Bay fisheries, but that the magnitude of the incidental harvest was greater than in 2014-2016. Should the NEW information be touted as a decline in nonlocal salmon harvests, or only annual variability?



Using another example, the 1988-1992 MSA (Barrett and Vining 1994), the July (mid-season strata) Cape Alitak nonlocal (Cook Inlet) sockeye salmon harvest was estimated at 46,400 to 63,200 fish, and in the 2014-2016 KMA genetic MSA (Shedd et al, 2016) the harvest of nonlocal sockeye in the Alitak District ranged from 37,500 to 127,700 fish. The average weight MSA estimated significant harvest of nonlocal sockeye in the Alitak District, which was confirmed by the KMA genetic MSA. However, does the new MSA study point out an increase in nonlocal salmon harvest in the Alitak Bay District, or annual variability?

**There is simply no truthful way to claim that the harvest of nonlocal, Cook Inlet salmon is new information, or that the magnitude of those incidental harvests is new information, or that the timing and estimated number of incidental sockeye harvested is anything but unpredictable and widely variable between and among years.**

**The New Genetic MSA Report**, by presenting seemingly new MSA data with high numbers and percentages of nonlocal salmon in KMA salmon harvests, without comparing that to past study data and results (such as previously determined bycatch levels of Cook Inlet sockeye in KMA harvests), has led to unfounded conclusions and has created an emotional response by stakeholders from Cook Inlet fisheries. Vital information is not included, again pointing to the need for development of a comprehensive document or set of data, for review by stakeholders and the BOF prior to deliberating on any proposed change to KMA salmon management.

In the new 2014-2016 Kodiak sockeye genetic MSA report, authors show the number of nonlocal, Cook Inlet sockeye salmon estimated to be harvested in KMA commercial fisheries as a percent of the KMA commercial harvests during selected time periods and within selected portions of the area. This shows the estimated stock contribution rate (stock proportions) of the KMA harvest. We feel this has been misleading for some people.

The Kodiak genetic MSA provides nonlocal harvest data as a percentage of the KMA harvest. It does not attempt to show the potential impact to Cook Inlet stocks. It is understandable (and should have been expected) that some people, upon seeing tables of numbers demonstrating large percentages of nonlocal salmon, may jump to the conclusion that there is a danger to the sustainability of any seemingly fully utilized stocks. The new MSA report does not provide a comparison of the estimated KMA nonlocal Cook Inlet harvest to the total Cook Inlet sockeye harvest or run, or to individual CI sockeye runs (a harvest rate).

But again, as with number of salmon, similarity between the nonlocal stock contribution proportions from earlier and recent KMA sockeye MSA is quickly evident.

Within the new MSA report, the 2014-2016 estimates of overall nonlocal contribution to KMA harvests ranged from 12% (2014) to 42% (2015 and 2016); this is within the ranges determined by earlier studies... it is not new information. In 1996, ADF&G estimated that overall, during July 6-25 sockeye salmon harvest for 1983-1995 (excluding 1989), nonlocal sockeye salmon were from 10.6% to 76.2% of the KMA harvest (excluding Cape Igvak; Vining 1996).



The average weight studies were a rigorous scientific statistical analysis, much discussed, agreed to by ADF&G headquarters, Cook Inlet and Kodiak ADF&G staffs, edited by ADF&G, and the various authors thoroughly discussed the limitations of such a study and cautioned against misapplication of results. Vining (1996) wrote, “Each time the average weight method has been used as a sole approach, the public... and BOF members have voiced strong concerns about the estimates, due to low confidence in some of the estimates”.

Comparing the estimated number of nonlocal Cook Inlet sockeye harvested in sampled KMA commercial salmon fisheries against the total Cook Inlet harvest or total run, gives a look at the harvest rate of Cook Inlet salmon in KMA fisheries. This is an important distinction, if one is trying to gauge the potential biological impact of bycatch of Cook Inlet sockeye salmon (Table 5). Still, great caution must be employed when trying to determine accurate harvest rates for Cook Inlet sockeye in KMA fisheries. We can only generate very rough estimates of harvest rates from the available data. The 2014-2016 KMA sockeye genetic MSA was not intended or designed to provide accurate harvest rates of Cook Inlet-bound sockeye in KMA fisheries.

Table 5. Estimated KMA nonlocal Cook Inlet sockeye harvest in select KMA commercial fisheries, 2014 – 2017. *Data from ADF&G Anchorage, 8-22-17.*

| Year | Estimated<br>KMA Harvest<br>of CI Sockeye | Cook Inlet Sockeye Salmon |                         |                     |
|------|-------------------------------------------|---------------------------|-------------------------|---------------------|
|      |                                           | % of KMA harvest          | % of Cook Inlet Harvest | % of Cook Inlet Run |
| 2014 | 113,972                                   | 7.5%                      | 4.2%                    | 2.1%                |
| 2015 | 626,473                                   | 36.6%                     | 17.9%                   | 9.1%                |
| 2016 | 384,089                                   | 29.6%                     | 12.4%                   | 6.9%                |

Table 5 (above) shows that current estimated harvest percentages are also in agreement with Vining (1996); he showed the estimated percent of the UCI sockeye runs (in the Kodiak Management Area harvest) from 1983-1995 ranged from 1% to 12.1%. Using an overall estimate, it appears that less than 15% of Cook Inlet sockeye runs are harvested in KMA fisheries. It is interesting to note that the other KMA allocative plan, the Cape Igvak plan, allows KMA fishermen to harvest up to 15% of the Chignik sockeye runs. Annual variability is again perhaps the only fact that is clearly demonstrated.

The study and report document only numbers and percentages. Authors (Shedd et al, 2016a) do not comment on whether nonlocal sockeye presence and levels were an affirmation of historical migration patterns and natural background levels of historic bycatch in commercial salmon fisheries targeting Kodiak salmon stocks in this known Mixed Stock fishery.

## Part 5 – Limitations of the KMA Genetic MSA

*“Forcing a round peg into a square hole” ... Edward Bulwer-Lytton, 1834 (based on an Ancient Idiom)*

The recent MSA study was only the first look at a KMA mixed stock fishery using modern stock separation methods (Genetic Stock Identification). And, the report clearly informs readers that it only provided new harvest statistics for some fisheries for a limited set of years, for limited time periods. The lack of analyses or any further interpretation of this data and the lack of comparisons with previous sockeye stock composition estimates, within the KMA genetic MSA report or in a separate report, has led some people to draw their own conclusions.

**CAUTIONS:** However, the authors (Shedd et al, 2016a) did specify that, since the study was limited, caution must be exercised when trying to extrapolate limited results to wider questions or if trying to fit the data to other issues: “However, while this 3-year data set provides some measure of interannual variability in environmental and fishery conditions, some caution must be exercised when extrapolating the results to years, areas, and temporal periods not analyzed because changes in relative abundance among reporting groups, prosecution of fisheries, or migratory behavior due to ocean conditions very likely affect distribution of stock-specific harvests among fisheries.” (Shedd, et al, 2016a, page ; emphasis added).

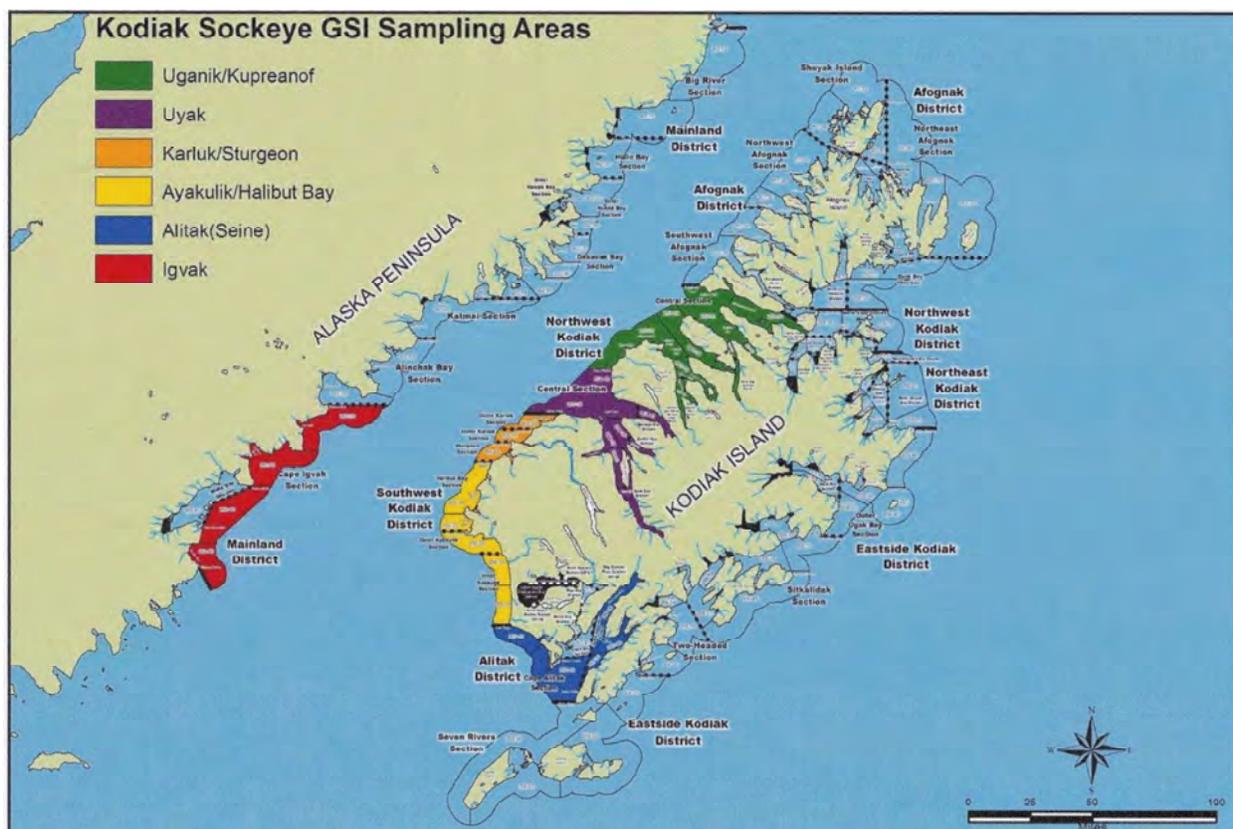


Figure 9. Kodiak Area management units sampled for genetic stock identification, 2014-2016.  
*Figure taken from Shedd, et al, 2016.*



**Funding Limits** are very real constraints. Authors of the 2014-16 MSA report also found that “funding constraints limited the scope of this project to specific sampling areas and time periods”. The genetic sockeye MSA study planners had to limit both the study area (number of geospatial strata) and the time periods (temporal strata within the June 1 to October 31 KMA commercial salmon fishing season). Though the initial objective of this project was to sample the major directed sockeye salmon commercial fisheries in marine waters of KMA, only eight locations were selected, with all of them in the west and southwestern part of the KMA (Figure 9). Only three sampling time periods were used, spanning June 1 through August. Significant harvests of sockeye salmon can occur in September and October.

**Other Limits:** It’s clear that the new MSA study is a “snapshot”, showing results of samples collected from limited areas during limited time periods over a limited set of years. Not included in this new MSA study were not only the known areas where KMA fisheries may target nonlocal stocks (Afognak and Mainland District sections bordering the North Shelikof), but also areas of prior Board review for KMA harvest of nonlocal sockeye (Eastside Kodiak District). The authors of the new MSA report admit that, succumbing to funding limits, they sampled less than they intended, both in areas covered and time periods sampled.

The authors admit that GSI techniques are not robust enough to distinguish between Ayakulik and Frazer sockeye stocks; they did not attempt to distinguish between local Saltery stock sockeye salmon (Eastside District) and enhancement project production at Spiridon Lake (NW Kodiak District; west side). Are there other stocks that are difficult to distinguish? ADF&G also published a KMA Genetic Baseline report that contains many such statistics and graphic presentations. However, it is not clear to me, and may not be to any but the initiated, if there are KMA and UCI sockeye stocks that are so closely ‘related’ genetically, that there could be overlap or misidentification (i.e. Horse Marine sockeye salmon).

The study does not speculate on reasons for the observed variability in harvests between the three years. There are factors that could influence this and research could be directed at answering other important questions beside ‘How many?’ Funding has limited sampling by time and area, and stock similarity has limited the separation of at least three stocks, so this study cannot reveal the full picture over a robust set of years.

Do the results clarify or obfuscate issues relating to the use of this data or the controversy regarding KMA harvest of nonlocal sockeye?

The new KMA genetic MSA report authors believe that the study was successful: “These results represent a majority of sockeye salmon commercial harvests in KMA and should improve our understanding of stock productivity and migratory patterns, and provide information to evaluate assumptions built into management plans.” (Shedd, et al, 2016a, page 23; emphasis added).

Sufficient time should be given for ADF&G managers and researchers to utilize the limited data they’ve collected to discover its usefulness to actual fishery management needs.

We note that the 2014-2016 MSA report may seem incomprehensibly technical to some, but it’s easy to seize on numbers! As written, this report is of questionable utility for BOF members for



the purpose of a specific discussion of issues that could lead to restrictive regulatory changes to KMA salmon fishery management, let alone stakeholder understanding, interpretation, and education. We do not mean to diminish the work done; the report is a fine piece of Scientific Reporting, and meets ADF&G standards for technical publications.

The 2014-16 MSA report is fine for a scientific audience, not as the basis for stakeholder discussions or restrictive BOF actions that would destabilize the KMA fisheries. For concerned stakeholders, and the BOF, it is more likely to lead to misunderstanding, and raises more questions than answered. People want to jump on numbers, but may miss the limitations.

We feel this technical study and report should only serve to provide limited information on a limited study. It should be the impetus and basis for a further report to BOF, if the BOF determines that further review is needed at this time.

The study results alone are not sufficient for restricting KMA fisheries to potentially re-allocate sockeye salmon harvests; an additional more comprehensive report on the specific issue of Cook Inlet salmon within the KMA should be considered to educate and inform stakeholders and begin discussions, prior to Board action.

Any such additional document would need to include a thorough discussion of issues (not stats, not methods, etc.) in more digestible form. A more colloquial summarization, perhaps formulated by a joint stakeholder committee, would best serve if further discussion of nonlocal salmon harvest in the KMA is to become a Board of Fisheries agenda item at ‘Special’ meetings or the next regular Kodiak Finfish meeting.

The intent, goals and objectives of the new MSA study and report are shown within the report. Caution must be taken against misuse the data provided based on personal concerns.

It was not the intent and goal of the new MSA to produce specific information for a BOF review of KMA fisheries, nor was it to suggest restriction of the KMA fishery due to reported UCI sockeye harvest numbers. And the new MSA study and report’s goal was certainly not to open another allocative dispute, though that outcome could have been predicted and may have been prevented by additional analyses.

**INTENT:** When reviewing a scientific study, it is vital to bear in the forefront of one’s mind the general intent or purpose of that study, its specific goals and objectives, as well as the assumptions and limitations that encompass any analyses. It may be difficult, even dangerous, to try to draw answers or conclusions from information that was not collected specifically to answer that question, or which has many poorly founded assumptions. The possibility for misinterpretation, misuse and mistakes are increased. False assumptions or misinterpretation of data can lead to completely inaccurate conclusions.

The KMA sockeye genetic MSA study (or indeed any study) and the report should primarily be viewed through the lenses of the intent, or purpose, of the study. What was the intent of study planners and report authors? What was it needed for and why? What did it seek to show or do?



What issues or what answers were beyond the scope of the study? Attention to intent, goals and objectives will inform us what the results may actually demonstrate.

Unfortunately, the intent of the new MSA study is not clearly defined in the early portions of the report, but rather is found scattered throughout the report. In the acknowledgements comes the most basic purpose of this study. Authors thank a former ADF&G Director for “prioritizing department resources to address this knowledge gap in KMA” (Shedd, et al, 2016a, page 27; emphasis added).

Genetic stock identification for Mixed Stock Analysis has been completed for much of Western Alaska (WASSIP), and GSI has been used in Cook Inlet since 2005, to identify the mixed stocks within UCI fisheries. No such genetic data existed for the KMA (a knowledge gap), so a Kodiak salmon genetic MSA was funded. In the abstract, authors wrote: “Precise, accurate estimates of stock-specific harvests of sockeye salmon (*Oncorhynchus nerka*) are lacking for commercial fisheries in KMA” (Shedd, et al, 2016a, page 1).

Again, an identified knowledge gap was the only ‘problem’ this study was attempting to ‘solve’.

PLEASE NOTE: the MSA of Cook Inlet fisheries show NO nonlocal salmon, not because only local stocks are present... it appears that nonlocal stocks are NOT part of the UCI MSA model. That is, researchers assume that there are NO nonlocal salmon in Cook Inlet fisheries; nonlocal sockeye are not looked for! You can’t find what you don’t look for.

In other places in the new MSA report we find additional comments regarding intent. The authors state that: “The impetus for this study was to provide analytically sound estimates of stocks harvested in KMA fisheries to better understand stock productivity and address management assumptions. The principal objective of this project was to sample the major directed sockeye salmon commercial fisheries in marine waters of KMA.” (Shedd, et al, 2016a, page 23).

Unfortunately, what the authors meant by ‘management assumptions’ is NOT defined within this report; if that was a serious consideration by study developers and planners, then those assumptions should have been clearly defined. All assumptions of specific scientific research, particularly if they are to be tested in the study, should be clearly stated. The need to address management assumptions, if not defined, should not be a focus for use of data collected.

As former Kodiak Area Management Biologists, we know of no ‘management assumptions’ that would require a three year genetic study. Indeed, as managers we know that limited research is too often misused and is commonly taken ‘too far’ by strongly opinionated people in attempts to prove their point.

In another passage the authors state that: “While nonlocal harvest of sockeye salmon in KMA commercial fisheries has been assumed in regulation and demonstrated in previous studies based on tagging..., scale pattern analysis (Barrett and Swanton 1991, 1992), or average weight (Vining 1996), this project represents the first effort to use modern MSA techniques to quantify that harvest.” (Shedd, et al, 2016a, page 26; emphasis added).



The primary intent was to use newly provided funding for a ‘first effort’ to try genetic stock identification methods in a Kodiak MSA, since no GSI had been attempted prior to 2014.

**STUDY GOAL or PRINCIPLE OBJECTIVES:** The report authors specifically define their goal: “The overall goal of this project is to provide information that will be useful for reconstructing runs, building accurate brood tables to define escapement goals, and refining management by identifying spatial and temporal harvest patterns of local and nonlocal stocks...” (Shedd, et al, 2016a, page 5, emphasis added).

Unfortunately, this goal has NOT yet been met. Satisfactory completion of the stated goal will require additional time and analysis of the gathered information.

Can the data collected in the 2014-2016 KMA genetic MSA actually improve run reconstruction, make for more accurate brood tables, define escapement goals, and thereby ‘refine’ management?

It is important to give ADF&G time to actually apply these results to run reconstructions and brood table development. ADF&G may then be able to refine pre-season management by providing better predictors of stock productivity and anticipated run strengths (forecast). Inseason fishery management will not be improved.

It truly seems that there is an intent to reverse the order and to change management based on a limited study, rather than explore the statistics to see if solid, scientifically valid results point to needed changes in established, stable management. The possibility exists for future analysis and study, additional research, discussions between stakeholders and managers, researchers, and the BOF. We encourage the BOF to take this opportunity, and to use this study as intended. We fear a hasty, knee-jerk reaction to an emotional issue to appease a vocal user group.

The principle objective has been addressed, yet not fully met. “The principal objective of this project was to sample the major sockeye salmon commercial fisheries in marine waters of KMA from June through the end of August and use genetic mixed stock analysis (MSA) to estimate stock compositions and stock-specific harvest” (Shedd, et al, 2106a, page 2).

The study only partially accomplished this objective... KMA harvest samples have been collected and analyzed using the most current genetic MSA techniques. However, the project was not able to sample all KMA commercial fisheries, and so was limited to specific geographic areas, within specific time strata, for a limited number of years.

ADF&G study planners and authors agreed, with authors stating that: “these results may only have limited utility in formal run-reconstructions for 2 primary reasons. First, not all fishing areas were sampled, and sampling did not include harvest after August 29, when substantial numbers of Karluk and Upper Station late-run fish can be harvested. Second, the genetic baseline was unable to adequately distinguish between Ayakulik and Frazer stocks for the purposes of MSA.” (Shedd, et al, 2016a, page 26).



To meet the study’s goals, it would appear that there is a need to work further with the information gathered, in run reconstruction (back-casting, to improve fit of forecasting models) and escapement goal review. Authors caution: “Management would benefit from estimates of stock-specific harvest of Ayakulik and Frazer stocks and future research should explore means to accomplish this objective” (Shedd, et al, 2016a, page 24).

To realize the study’s goals, there needs to be further analysis of the Ayakulik/Frazer samples to either separate or determine and apply additional information needed to split this grouping into the two distinct stocks.

**OBJECTIVES of the REPORT:** In a specific ‘Objectives’ section, the report states that the study overall goal was “to provide information that will be useful...” (Shedd, et al, 2016a, page 5).

Four (4) objectives are then specifically listed, 1 through 4, yet these objectives address the report, not the study. The stated objectives for the report that describes the study are:

- “1) Describe sampling of genetic tissues from sockeye salmon caught from June through August in select commercial fisheries in the KMA, 2014–2016;
- 2) Describe subsampling of genetic tissues in proportion to catch within sampling areas and temporal strata;
- 3) Report MSA results of stock proportions and stock-specific harvests of sockeye salmon sampled from select commercial fisheries in the KMA, 2014–2016;
- 4) Characterize where stocks were harvested from select commercial fisheries in the KMA, 2014–2016” (Shedd, et al, 2016a, page 5)

These ‘report objectives’ are clearly stated and we feel were clearly met by the new MSA report.

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## **Part 6 – An Imperfect Design**

The new MSA study design left many pertinent questions unanswered and many data needs unmet. The study design was ‘imperfect’ to answer biological and allocative questions regarding KMA bycatch of nonlocal sockeye.

The study design seems practical for the general overall goal; that is, during some portion of KMA commercial salmon fishery, to collect samples from some portion of the KMA salmon fisheries and analyze for genetic MSA stock identification, over three years.

Unfortunately, it was not designed to address or answer some very fundamental questions that could enlighten the issue of variable incidental harvest of Cook Inlet sockeye in KMA fisheries. As shown previously, the study did not include the North Shelikof Straits, and so important information on nonlocal sockeye salmon harvests in the KMA was ‘lost’.

Such ‘lost opportunities’ limit the usefulness of the study and report. However, it is possible that, with additional sampling, analyses or interpretation of results, more definitive answers or



conclusions could be made that would be helpful to the BOF during their consideration of this ongoing fish fight.

The BOF has attempted to ‘solve’ this issue in the past. After 4 years of ACRs and proposals at every Kodiak Finfish BOF review, in 1994 the BOF formed a Work Group to determine possible solutions.

**In 1994, a Kodiak / Cook Inlet Inter-Area Work Group** (hereafter referred to as the IAWG or the Work Group) was formed by the BOF. As previously stated, in 1988 following the occurrence of a large harvest of nonlocal sockeye salmon in mid-stream Shelikof Strait, the active allocative dispute between Cook Inlet and Kodiak fishermen gained strength. From 1988 through 1996, Kodiak ADF&G conducted sockeye stock identification studies (MSA). Cook Inlet-Kodiak allocative conflicts were the subject of many meetings with the Board of Fisheries. The IAWG met several times prior to reporting to the BOF at a Special Meeting in March 1995 (Appendix E).

At the beginning of IAWG discussions, ADF&G researchers and managers, Work Group stakeholder members, and the BOF members mutually agreed upon several key ‘facts’:

- The bycatch of Cook Inlet-bound sockeye in KMA fisheries is directly proportional to Cook Inlet sockeye run strength;
- The incidence of Cook Inlet sockeye in KMA fisheries varies widely. It is inconsistent as to area, annual timing, and between years;
- The incidence of Cook Inlet salmon in KMA fisheries is ‘insignificant’ if the Cook Inlet sockeye run is less than 4 million;
- The July 6-25 period is not only an important time period in KMA salmon fisheries management, it is the period of PEAK abundance of Cook Inlet-bound sockeye salmon in KMA waters;
- Within that period, the majority of bycatch occurs within a narrower, 7-10 day period.

These facts were established by ADF&G and stakeholders on the IAWG, based on the 1988-1995 Kodiak MSA studies and fisheries. These facts served the BOF and ADF&G by focusing the scope of research and discussions to a manageable level and by focusing any potential Board action on the most effective time period within the fishing season.

The 1994-95 Inter-Area Work Group also recommended that ADF&G undertake additional inseason stock-separation studies and develop inseason indices or markers to determine when Cook Inlet salmon are present in KMA fisheries. The IAWG asked that Kodiak and Cook Inlet ADF&G staff agree upon “the estimated timing and percentage of Cook Inlet run present in the Kodiak Area by time period during small, medium, and large Cook Inlet runs” (Appendix E2, IAWG memos).

It appears that the planners of the recent genetic MSA study did not seek to test the IAWG’s 4 facts, neither to confirm nor deny. Questions regarding UCI sockeye run strength and timing were not answered by the new genetic MSA report.

Other serious limits to the Kodiak sockeye genetic MSA include:



**GEAR SELECTIVITY** could have biased many of the genetic MSA samples. The geospatial strata included 2 location in the Central Section (Uyak and Uganik/Kupreanof), where both Set Gillnet and Seine gear are legal to operate. Based on concerns for getting ‘pure’ samples from these specific locations, the samples were collected from fixed set gillnet gear. Gillnets will select for the larger fish. In both 2015 and 2016, average sockeye sizes were lower than average, which would further bias against the smaller, local Kodiak sockeye. Karluk sockeye are the dominant stock, so these locations represent the major sockeye fishery of the KMA. Yet, the MSA study does not even mention gear type in the discussion of genetic sampling.

**TEMPORAL STRATA** used in the 2014-16 KMA genetic MSA do not readily correspond with actual KMA management plan fishing periods, which includes an important mid-season management period (July 6-25). We also feel the time periods used for this study are not sufficiently narrow to define periods when Cook Inlet sockeye stocks may be in the KMA and vulnerable to harvest.

Temporal strata were not consistent among the three years of the study, and the use of different and changing mid-season temporal strata effectively muddles the comparative usefulness of the data presented. During 2014 and 2016 the middle strata dates were June 28 through July 25, and in 2015 this was shifted to July 4 through August 1. While we recognize that, in some years, run timing may be delayed, pushing the mid-season temporal stratum by 7 days based on someone’s perception of run timing also confounds interpretation of the study results and their potential use for regulatory discussions. The KMA regulatory Salmon Management Plans all use calendar DATES that do not shift based on perceived run timing.

Anecdotal, first-hand knowledge shows that the location of harvest of larger, suspected Cook Inlet sockeye are almost ephemeral... here today, gone tomorrow. More relevant to CIMA-KMA allocative issues might be the selection and achievement of specific numbers of genetic samples during narrower time periods that correspond to how KMA fisheries are actually prosecuted, particularly during the July 6-25 time period.

**GEOSPATIAL STRATA** employed in the KMA genetic MSA report are overly broad, and the ability to determine potential offshore or cape fishery “hot spots” was lost. This could lead to misrepresentation. For example, Alitak sampling did not include set gillnet areas and combined the inside (inner bay) and outside (cape or offshore) seine fisheries; it was meant to be representative of the entire Alitak District harvests. However, even limited information about more specific harvest location is of interest and could be important in understanding stock compositions, timing and migratory patterns in KMA mixed stock fisheries.

**DATA POOLING** may also obscure important or essential information. The manner in which samples were later subsampled and data was pooled to fit temporal strata affects how the sample data can be used. Within the 2014-16 KMA genetic MSA report, there is no commercial fishery data given beside sample date, sample and subsample size, and the reported KMA sockeye catch from that particular geospatial and temporal strata. We don’t know if a sample that was analyzed for GSI was from single or multiple deliveries. We don’t know if the sampled harvest was from



a cape or offshore location or from inside more protected waters. And we don't know if a sample was from a Seiner or Gillnetter. Effort data is lost.

Caution must be taken in use of the KMA genetic MSA data. Again, we feel that since the study was limited by its intent and goals, by funding, by MSA and study design shortcomings, and was not designed to answer the known and important questions regarding Cook Inlet sockeye in KMA salmon harvests, such as above, then it would be very unwise to apply this new data other than as intended.

### **Part 7 - Does the genetic MSA create more uncertainty or less?**

The 2014-16 MSA report provides good presence/absence data, and provides MSA composition estimates for some geographic strata and/or time periods previously either unsampled or found to have insignificant or undiscernible levels of nonlocal sockeye. The report simply presents data, with little interpretation, leaving that to the readers. However, to fully explain the harvest numbers, there are many additional considerations (which we hope are becoming clearer after our review).

Presenting snapshots of fishery harvest stock compositions does not elucidate why or how those levels of harvest may have occurred. Is it due to targeting, or some unusual environmental factors? The 2014-16 MSA report does not show actual fishing time during periods in question... Was commercial fishing effort in high catch stratum due to targeting? Did participation increase following some initial 'event'? Would the effects of actual 2014 to 2016 management actions (Emergency Order-based fishing time) and commercial fishing effort point to a 'problem area'?

It should be fairly easy to disprove beliefs that there is a targeted interception fishery on Upper Cook Inlet sockeye in KMA fisheries. Yes, salmon fishermen target sockeye salmon, due to market demand and price, but KMA fishery managers and fishermen are not conducting a secret fishery within KMA salmon fisheries. A pairing of sample collection and estimated stock composition data with actual hours of fishing time and number of landings would show the incidental nature of nonlocal sockeye harvests.

The current KMA salmon commercial fishery management 'harvest strategy' relies on a period during July (July 6-25) when fishing periods targeting pink salmon are weekly 'pulse fisheries' with limited hours of fishing time allowed each week. Pink salmon numbers increase almost exponentially during this time period, but fish QUALITY remains good. After July 25, management sections may be opened for longer weekly periods only in sections where production is expected to be in excess of escapement needs. Management during the July 6-25 mid-season time period actually reduces potential bycatch of nonlocal sockeye. We feel that is an important consideration.

Similarly, without consideration of all factors, some may believe that KMA salmon stocks could all be harvested within 'terminal' fishing areas or 'inside the capes'. Long experience has shown that allowing salmon to enter the fresher (less saline), warmer, inside-waters of the KMA will



very quickly lead to loss of quality, or to complete loss to the fishery as the fish home-in and refuse to move out of closed water sanctuaries.

Without consideration of all factors, we cannot answer truly important questions (i.e. Why is there such variability in estimated nonlocal contribution to KMA salmon harvests, between and among years, time strata and geospatial strata?) This could be a topic requiring much study to fully elucidate.

The depth and complexity of the issues involved requires extensive analyses and discussions between ADF&G authors and managers and interested stakeholders, just to set the ground rules for further review and evaluation of proposed restrictive BOF actions. We feel this cannot occur in a few months, but will require additional time for all parties to become apprised of important considerations which may not be apparent to someone not intimately familiar with both KMA and Cook Inlet fisheries and the issues at hand.

We feel that there has always been some level of nonlocal sockeye salmon harvests in KMA salmon fisheries; KMA is a mixed stock fishery. This is an annual part of the KMA salmon fishery harvest, not an aberration or an unanticipated consequence or a new and expanding targeted 'interception' fishery. Identifying the 'natural' background level of harvest of nonlocal salmon would allow for the identification of new or expanding fisheries on nonlocal sockeye salmon versus historical fisheries of the KMA.

If 'reallocation' of some portion of the KMA salmon fishery harvest is to occur (restricting KMA fisheries with the HOPE to positively influence the harvest in UCI) then a lot of information needs to be clearly elucidated in a comprehensive report to the BOF. We offer a limited list of questions that we would like to see addressed prior to any BOF action.

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## **Part 8 - Evaluation of Application of the Policies of the Alaska BOF**

Several policies adopted by the BOF, as well as BOF findings or previous actions, may be used in evaluation of the data presented in the new MSA Report, to determine if action should be taken by the BOF.

### MIXED STOCK FISHERIES POLICY

In March 1993, the Alaska Board of Fisheries (BOF) adopted a significant policy into regulation, *The Policy for the Management of Mixed Stock Salmon Fisheries* (5 AAC 39.220; effective 5-29-1993). The Mixed Stock Fisheries (MSF) policy created a framework through which the BOF could analyze specific Alaska salmon fisheries with the goal of determining if Board action is appropriate and required to conserve and protect the salmon stocks in question. With this policy in regulation, any proposed change in the salmon fishery regulations or Board approved Management Plans, is to be judged against the criteria established in the Mixed Stock policy.

In fact, the 1988-1992 allocative disputes between the sport and commercial fishermen of Cook Inlet and the commercial salmon fishermen of the KMA were the 'backdrop' during the discussion and adoption of the Mixed Stock Policy into regulation.



The first use (test) of the MSF Policy following its adoption by the BOF (March 1993) was yet another petition from Upper Cook Inlet stakeholders seeking to control the harvest of Cook Inlet-bound salmon in KMA salmon fisheries; that petition failed (Appendix E)

It is important to evaluate each of the MSF policy's elements, and those of the associated findings (93-07-FB), against the best available information regarding the Kodiak salmon fishery, the associated take of Cook Inlet sockeye, and the status of Cook Inlet's sockeye stocks.

Pertinent sections of the MSF policy and our evaluation include:

(a) In applying this statewide mixed stock salmon policy for all users, conservation of wild salmon stocks consistent with sustained yield shall be accorded the highest priority”

For UCI sockeye salmon, conservation and sustained yield, the highest priorities under the Mixed Stock Policy, are not threatened. This leaves allocation as the major consideration left, and any BOF actions must abide by established allocation criteria.

“(b) In the absence of a regulatory management plan that otherwise allocates or restricts harvests and when it is necessary to restrict fisheries on stocks where there are known conservation problems, the burden of conservation shall be shared among all fisheries in close proportion to their respective harvest on the stock of concern”.

There is an allocative management plan in place that allocates and restricts harvest, the North Shelikof fisheries management plan. IN ADDITION, the KMA fisheries were viewed as mixed stock fisheries with possible harvest of nonlocal salmon when the KMA's other guiding regulatory Salmon Management Plans were formulated, discussed, and placed into regulation by the BOF.

Further, no conservation problem has been shown for Cook Inlet sockeye stocks (Susitna Sockeye are a Stock of Yield Concern, not Conservation Concern). KMA commercial salmon fishermen currently bear a 'burden of conservation', which protects an unknown proportion of nonlocal salmon within KMA waters and fisheries. Would additional restrictions actually help in possible future conservation concerns? We feel the BOF should not be restricting fisheries and reallocating historic harvests of nonlocal salmon in the absence of a true Conservation Concern. Should the burden of conservation of relatively 'healthy' Cook Inlet salmon stocks be prioritized above that of KMA local salmon stocks? We do not believe so. We feel that much additional discussion is needed to begin to define and answer such questions.

(d) Consequently, the board will restrict new or expanding mixed stock fisheries... Natural fluctuations in the abundance of stocks harvested in a fishery shall not be the single factor that identifies a fishery as new or expanding.

The KMA harvest of nonlocal salmon is neither new nor has it been shown to be expanding. In fact, the number of participants in KMA fisheries has significantly contracted (Figure 10). The KMA salmon fishery is old and contracting!

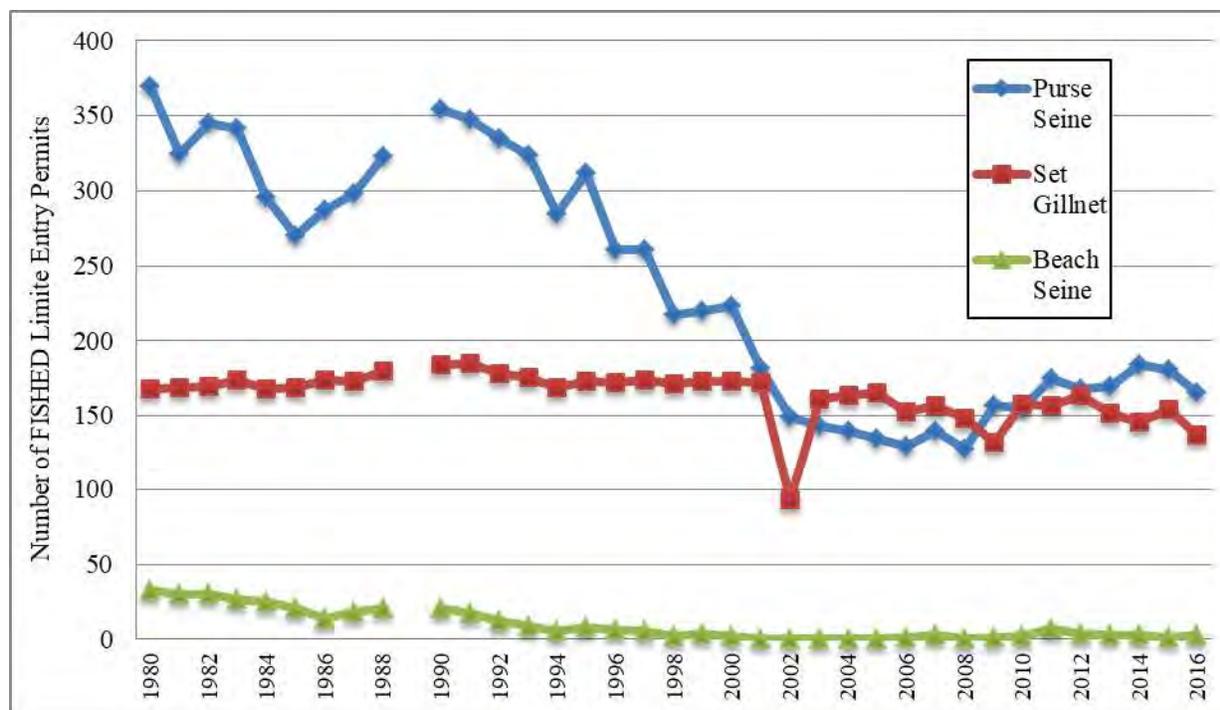


Figure 10. The number of Limited Entry permits actually fished for Kodiak commercial salmon fisheries, by gear type, 1980-2016. (No 1989 fisheries due to EVOS) Data from ADF&G, Kodiak.

For the 2014-2016 MSA study period, KMA set gillnet permit participation was down 22.5%, KMA purse seine participation was down 52.6%, and KMA beach seine participation was down 92.4% from the number of available permits to fish during those same three years.

A determination of the “natural fluctuation of abundance” of nonlocal salmon in the KMA is required in order to define any “new and expanding” fisheries in the KMA that target nonlocal sockeye salmon.

(e) This policy will be implemented only by the board through regulations adopted (1) during its regular meeting cycle; or (2) through procedures established in the... Policy for Changing Board Agenda (5 AAC 39.999).

This issue must be tabled until KMA fisheries come up in the regular BOF meeting cycle. The criteria for changing the BOF agenda have not been met.

Past analyses of the harvest of Cook Inlet sockeye in Kodiak waters, using the accepted MSA at the time, have postulated that such bycatch is negligible when Cook Inlet returns are poor to average (Ruggerone and Rogers, 1994). Under conditions when conservation of Cook Inlet's sockeye returns would be a concern, it is not likely that any significant Kodiak bycatch of those sockeye would occur. You can't catch what isn't there.

The Board's Findings, associated with adoption of the Mixed Stock Fishery policy regulations, not only reiterate specific points of the policy but amplify and clarify the Board's intent outside



of the constraint of regulatory language. Several of these findings apply to consideration of this Kodiak-Cook Inlet sockeye issue.

The Board found that Alaska's salmon industry appropriately relies upon stable existing fisheries, most of which harvest mixed stocks. Kodiak's established management program for the harvest and conservation of mixed stocks has been successful in sustaining and promoting Kodiak's century-old industry. The findings also speak to harvest of many mixed stocks with an eye towards QUALITY of the harvest, and management of KMA fisheries has promoted protection, rebuilding and high-quality harvests of a large number of stocks of salmon. To restrict fisheries to inside 'terminal' areas will lead to a significant decline in salmon quality, thereby significantly reducing the volume and value of KMA salmon fisheries.

KMA salmon fisheries are already managed according to a well-orchestrated series of management plans, none of which need to be amended now to account for harvests of fish that fluctuate on the basis of natural abundance and pose no threat to conservation. There is no indication that 135 years of commercial salmon fishing in Kodiak's waters ever posed any threat to Cook Inlet salmon stocks

**SUSTAINABLE SALMON POLICY:** The *Policy for the Management of Sustainable Salmon Fisheries* (5 AAC 39.222; aka Sustainable Salmon policy), developed by the BOF, was adopted into regulation in September 2000. This policy greatly expands some of the same principles found in the Mixed Stock policy.

The policy updates and strengthens long-standing principles of Alaska's salmon management program. Most importantly, it directs ADF&G and the Alaska Board of Fisheries to follow a systematic process for evaluating the health of salmon stocks throughout the state by requiring ADF&G to provide the Board, in concert with its regulatory cycle, with reports on the status of salmon stocks and fisheries under consideration for regulatory changes (Clark, et al, 2006). The policy also defines a new process for identifying stocks of concern (stocks which have not met escapement goals or yield expectations), and requires ADF&G and the Alaska Board of Fisheries to develop action plans to rebuild these stocks through the use of management measures, improved research, and restoring and protecting habitat.

The Sustainable salmon policy is a long and very complicated policy, and we will not attempt to review KMA nonlocal salmon harvests through all of its many parts. We will instead point out what we consider to be salient points that apply to the current issue.

The stated goal of the policy include not only conservation of salmon and habitat, and protection of subsistence and other customary and traditional uses, it is also to ensure "the sustained economic health of Alaska's fishing communities".

There is little doubt that significant changes to KMA's long standing salmon management plans, restricting fisheries to protect nonlocal salmon, would negatively change the economic health of Kodiak communities to a considerable degree.

The policy also provides many clear definitions for terms commonly used and newly developed terms or classifications. Of note is the definition of Stocks of Concern (SOC). As mentioned



earlier, the Susitna sockeye salmon stock was listed as a Stock of Yield Concern in 2008. Yield concern is defined as “chronic inability, despite the use of specific management measures, to maintain expected yields, or harvestable surpluses, above a stock's escapement needs; a yield concern is less severe than a management concern, which is less severe than a conservation concern”.

Based on that definition, there is NO conservation concern for Susitna sockeye salmon.

The policy dictates that an Action Plan be developed for SOC action. Such plans “should contain goals, measurable and implementable objectives, and provisions” including “fishery management actions needed to achieve rebuilding goals and objectives, in proportion to each fishery's use of, and hazards posed to, a salmon stock” and “a research plan as necessary to provide information to address concerns”.

The Action Plan for Susitna sockeye salmon, as prepared by ADF&G and approved by BOF through at least three BOF meeting cycles (over 9 years), contains NO mention of concern about Susitna salmon harvest in adjacent Areas (Kodiak) nor the need to further investigate (through research) possible nonlocal harvest. There is no concern of sufficient importance to even consider nonlocal harvest, let alone restriction of KMA salmon fisheries.

In fact, restriction to address the SOC status of Susitna sockeye salmon are limited to Northern or Central District salmon fisheries (Figure 7). No ADF&G management actions are taken in Cook Inlet salmon fisheries in the more southerly districts of the Cook Inlet Area (including Kamishak, Southern, Eastern and Outer Districts). The VAST majority of Susitna salmon MUST migrate through those southerly districts.

How could a restriction to KMA salmon fisheries, where some unknown portion of the Susitna sockeye run may sometimes migrate in unknown patterns) even be considered?

Deferral of ACRs and potential BOF regulatory action until the regular meeting cycle for KMA (and UCI) salmon fisheries is supported by our analysis of application of other BOF policies and criteria. This issue should be addressed within the BOF regular schedule for consideration of Alaska salmon fisheries, during the 2019/2020 cycle.

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### **Final Thoughts:**

*“I hate to be a kicker, I always long for peace, but the wheel that squeaks the loudest, is the one that gets the grease” - Josh Billings (AKA Henry Wheeler Shaw; c 1870)*

Importantly, not included in the new 2014-16 MSA report is any discussion of the incidence of KMA sockeye salmon in Cook Inlet or Chignik salmon fisheries. We learn in elementary school that we should first balance an equation in order to solve it, and working with unequal factors will lead to skewed solutions. The KMA is nestled between the Cook Inlet and Chignik management areas (Figures 1 and 2). Early tagging studies sought information on stock of origin as well as migration patterns and timing.



Management plans defining fishing opportunities on KMA local stock were developed by stakeholders, Management Biologists at ADF&G, concerned representatives of government and scientific agencies, and many prior Alaska Boards of Fisheries, over the course of many years. Discussions and decisions were made with full knowledge that KMA was a mixed stock fishery and that significant numbers of both Chignik and Cook Inlet sockeye will be found and may be harvested in KMA fisheries.

Nowhere in existing Alaska Statute, regulation, policy, or management plan does it allow for decisions based on political expediency or personal bias. Allocative pressures within Cook Inlet salmon fisheries are very real, very large, and are growing. The establishment of BOF findings is needed, clarifying the extent to which Inter-Area allocative disputes may be used to modify long standing regulatory structure. Without a definitive pronouncement that x number or percent of nonlocal salmon are harvested, either generally or by stock of origin, then allocative fish fights will be waged.

It is impossible to maintain the economic success of a fishery that is subject to capricious reduction based on poor information or colloquial opinion. A Board finding that historic KMA harvest may contain x% of salmon from Cook Inlet and x% of Chignik salmon will allow determination of new or expanded fisheries and sound allocative decisions.

The 2014-2016 MSA report is a technical report and maximum opportunity needs to be given for this report, and all other pertinent data, to be interpreted for stakeholders and interested parties. It's written in a format that makes ready understanding difficult for those uninitiated in modern genetics research. The format of the report does not lead to easy consumption. It's long on methods, techniques, statistics and data (a data dump from a three year project) and short on analysis.

All parties would benefit from time spent discussing the report, finding answers to questions that it brings up, seeking information from ADF&G or others, educating and discussing pertinent issues with as many stakeholders as possible, defining problems (from the most obvious to the minute), defining possible and favored BOF actions, refining arguments (both for and against), and educating the public. All this should occur PRIOR to full BOF review and deliberation on potential regulatory actions. Another document, more comprehensive and written for BOF and Stakeholder consideration, would be helpful and should be drafted with clearly defined issues and goals, all available data, lists of possible actions and repercussions, as well as the potential of success of proposed actions under the defined goals.

This issue, while not new, is unique and very complex. The new 2014-16 MSA only represents another piece of the larger puzzle. Representative and informed decision will require different /more information and involves further discussions with and between ADF&G and stakeholders. Stakeholders need background and education. They need to narrow their concerns, look for common ground, identify issues and potential problems, review possible actions to deal with the identified issues, and then suggest to the BOF a range of possible actions and recommendations, if needed.



There is potential for additional analyses or even additional research studies that would better inform the issue. We urge caution, and with no immediate biological conservations issues we urge the BOF to postpone or deny any regulatory limitations to the KMA salmon fisheries at this time.

It is a broad truth that 'Nature has allocated nonlocal salmon to Kodiak salmon fisheries'. It can't be predicted. It currently can't be identified inseason or postseason, without a recurring annual MSA. The effects of restricting KMA fisheries to limit nonlocal sockeye harvests on CIMA sockeye escapement or harvest cannot be identified or quantified.



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October 2, 2017

John Jensen, Chairman  
Alaska Board of Fisheries  
Boards Support Section  
P.O. Box 115526  
Juneau, AK 99811-5526

**RE: UCIDA Agenda Change Request and Genetic Stock Composition of Sockeye Salmon  
in the Kodiak Management Area**

Dear Chairman Jensen,

Koniag, Inc. is a regional Alaska Native Corporation formed under the terms of the Alaska Native Claims Settlement Act of 1971. Koniag, Inc. has approximately 3,900 Alutiiq Shareholders. Our region encompasses the Kodiak Archipelago in the Gulf of Alaska and a portion of the Alaska Peninsula. The communities in our region have traditionally been dependent on fisheries resources for subsistence and commercial purposes for centuries. Koniag, Inc. has been working diligently on issues affecting the viability and sustainability of the village communities of the Kodiak Archipelago and access to fisheries is a critical component of this effort.

Koniag, Inc. opposes the UCIDA Agenda Change Request because it does not meet the Board's agenda change request criteria. The basis for the request is the 2016 Kodiak Management Area genetic stock composition study. However, the study does not present any "new information" that "corrects an effect on the fishery that was unforeseen when the regulation (management plan) was adopted" nor does Cook Inlet sockeye caught in the Kodiak create a conservation concern or have conservation purpose or reason. Moreover, there is no error in regulation that needs correcting.

Furthermore, the ACR does not address the natural variability of either Kodiak or Cook Inlet Sockeye runs (ie, Karluk in 2017). In addition, the changes advocated in the ACR does not consider the fact that shutting down areas in the Kodiak management area will cause over-escapement into local systems causing harm to local runs, not to mention the impact fleet redistribution will have on seine and gillnet operations. This proposal will completely disrupt

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the Kodiak area fishery, causing significant economic harm to its fishermen, processors and communities while only slightly advantaging Cook Inlet's harvest.

The Kodiak Management Plans are working. They are focused on the availability and harvest of local stocks versus fishing in new areas or targeting fish destined for Cook Inlet. This has been the case for generations and continues to be a model that provides for healthy spawning systems and sustainable harvest.

Again, the UCIDA Agenda Change Request does not meet the Board of Fisheries ACR criteria. The Kodiak Management Area genetic stock composition study does not present any "new information" that "corrects an effect on the fishery that was unforeseen when the regulation (management plan) was adopted" nor does Cook Inlet sockeye caught in the Kodiak area create a conservation concern. Moreover, there is no error in regulation that needs to be corrected.

Therefore, Koniag, Inc. requests that the Board of Fisheries reject the UCIDA Agenda Change Request and follow the board's normal three-year cycle for considering respective management areas which would place the Kodiak Area Management Plan in front of the board again in January 2020.

Sincerely,

A handwritten signature in blue ink that reads "Elizabeth Perry".

Elizabeth Perry, PhD  
CEO

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Submitted By  
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Submitted On  
10/3/2017 10:37:39 PM  
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Kristie Wall  
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September 29, 2017

Chairman John Jensen  
Alaska Board of Fisheries  
Boards Support Section  
P.O. Box 115526  
Juneau, AK 99811-5526

Dear Chairman and Fisheries Board Members:

I'm writing to oppose the Agenda Change Request put forth by the United Cook Inlet Drift Association. As a fellow fisher I can certainly empathize with this group. As their region's dense and growing population places ever increasing pressure on their resources, everyone's piece of the "pie" continues to erode. It is a hard situation that we here in Kodiak are also facing as lodges, commercial and substance users hunt "their" portion of our once seemingly abundant resources.

HOWEVER, from the information available to me at this time, the request does meet the Boards own criteria for consideration. The fact that Cook Inlet and Kodiak sockeye frequently swim the same ocean routes along Kodiak's coast line is not "new information," but traditional knowledge that has been verified in studies since the 1940's. I can't understand how the confirmation of this situation creates a "conservation concern" overwhelming enough to ignite an out of cycle regulation change.

My family came to Kodiak in the late 1950's, a time of abundant resources and limited population, to help pioneer our once prosperous King Crab fisheries. Since then all members of my family have worked a variety of fisheries from crab and shrimp to herring and salmon in a variety of capacities from skippers to cannery workers. Salmon fishing in particular has been several family members main source of income. One constant and significant source of income, as well as traditional familial connectivity, however, has been the salmon set net site my family has operated in Uyak Bay since 1960, the year my young mother of four tried her hand at set netting while her husband worked days as a mechanic in the nearby cannery. Compared to others around us, we are a small operation working only one permit. However this one site has been the entry fisheries for my brothers who now seine and gillnet, myself and sister who paid our college tuitions, myself who supported a young family for five years, and now my eighty-two year old mother who runs the site with grandchild as crew. This income has been a critical supplement to her Social Security in our high cost of living state for at least a decade. **Please believe that I not exaggerate when I predict that the proposed allocation restrictions, if put into regulation, will put my family setnet site out of operation...**the July fishing periods selected for shutdown have always been our "cross your fingers and pray we break even" openings. To reduce our tiny slice of the Kodiak salmon "pie" by 20-30% might well cut the final thread in this family's 57 year traditional and financial fabric.



So as you can see I have great empathy for the Cook Inlet fishers. We have all witnessed, with an ominous eye to our own shores, their once ample percentage of returning sockeye be steadily sliced off and shared amongst their region's ever densifying population with its new users groups increasingly demanding their fair share of this natural, but limited resource. I even understand UCIDA's desperate attempt to use recent data from the 2014-2016 sockeye genetic stock composition study to justify enlarging their traditional portion by pulling from Kodiak's pool. **However, this desperate action does not make sense for several reasons.** Firstly, some questions arise when I examine the collection, interpretation and usage of data from the study. For example, it is my understanding that samples were not collected from the East side of the island. If so, what justifies the 5,000 weekly/20,000 limit to Eastside Kodiak, AAC 18.36. Also, is it sound scientific practice to propose new policy on such a narrow range of data? Three years may seem like an extended time in our human history but is nothing to the ancient species of salmon. Was information from other related studies used to inform this request? According to independent 3rd party analysis of studies dating from 1940 to present ( Barrett and Swanton, 1991), Kodiak's slice of the Cook Inlet sockeye "pie" has historically averaged well below 10 % — So how does this information justify proposed limits which between 22%-27% (A number that does not take into account the 10%-23% of pink harvest we would also miss during the proposed sockeye closures)? Furthermore, a wealth of information exists to show that 2 of the 3 seasons used in the ADF&G's Genetic study had notable climactical and natural anomalies likely to effect "typical" animal behavior. Were these conditions taken into consideration? Too many questions involving data collection and interpretation remain before reallocations of sockeyes should be considered.

And finally, the overall intention of this Agenda does not seem to justify the effect. The small potential increase to the Cook Inlet fisheries does not justify the potential economic tailspin these limits would bring our island community. Unlike the more diversified of the mainland, fisheries is Kodiak's economy, of which salmon is a huge part.

In short In summary, the one constant in our current scenario seems to be that sockeye salmon bound for Cook Inlet have be swimming past our Island since long before humans have been fighting over them. So, to spontaneously rework regulations and allocations for Kodiak based on a such a single narrow, possibly skewed, set of data seems contrary to the thoughtful work for which the board is renowned, especially considering the potential drastic economical effects such a decision will incur upon my family and my community.

Thank you for your thoughtful consideration of my hopefully accurate interpretation, and most humble input,

Kristie Wall



Submitted By  
Chariton Epchook  
Submitted On  
9/29/2017 8:57:34 AM  
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The Kwethluk Joint Group submitted an ACR 01.270 (n) (1) (B) Lawful Gear and specifications and operation, requesting to change the use of 4" gillnets during times of low chinook salmon runs on the Kuskokwim River. I actually forgot to change the 5 1/2" language on this proposal to 7 1/2" when I was requested to submit a copy in the word format of your proposal forms. This proposal will be in line with the Chum salmon regulation in times of low abundance.



Submitted By  
Richard Berezkin  
Submitted On  
8/29/2017 3:15:38 PM  
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Tribal Administrator

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The Kwethluk Joint Group submitted an AR Request Form to the Board of Fisheries and in its submission the section where the request was submitted for gill net size or measurement was 6'. We are asking to change the gillnet size from 6' inches to 7 1/2' inches. If any questions please call (907) 757-6714/6715 and ask for Richard. Thank You



Submitted By  
Boris L. Epchook  
Submitted On  
10/2/2017 2:31:03 PM  
Affiliation  
City of Kwethluk

The Kwethluk Joint Group submitted an ACR 01.270 (n) (1) (B) Lawful Gear, specifications and operations. Requesting to change the use of 4" gillnets during times of low Chinook Salmon runs on the Kuskokwim River.

The City of Kwethluk, a member of the Kwethluk Joint Group, is in support of the ACR. Thank you.

Regards,

Boris L. Epchook

City Manager



Submitted By

Tanya Epchook

Submitted On

10/3/2017 2:54:45 PM

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The Organized Village of Kwethluk

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The Kwethluk Joint Group submitted an ACR 01.270 (n)(1)(B) Lawful Gear and specifications and operation, requesting to change the use of 4" gillnets during times of low chinook salmon runs on the Kuskokwim River. We had forgotten to change the 5 1/2" language on this proposal to 7 1/2", which the group as a whole had agreed upon for this ACR. This proposal will be in line with the Chum Salmon regulation in times of low abundance.



October 1, 2017

Chairman John Jensen  
Alaska Board of Fisheries  
Board Support Section  
PO Box 115526  
Juneau, AK 99811-5526

RE: UCIDA ACR 11

I have been commercial salmon fishing for forty years on the west side of Kodiak Island- spending each summer raising our children at eight different setnet sites in Uganik and Viekoda Bays. When I began setnetting in 1977 it was a 5 or 6 week season targeting pinks, beginning July 6th until the third week in August. The following season, 1978, the partial recovery of the early Karluk sockeye run allowed 2 days of fishing in June. I have observed the recovery of our sockeye fishery for forty years---this careful management has resulted in some seasons like 2017--open from June 1st with a mandatory closure in July, then fishing until the canneries quit buying.

My twin sons, Edin and Galen ran my site for the first time this summer. They have grown up on this beach for nineteen summers. My husband, Chris Berns and I, have also owned 4 different salmon seiners over the years and have been involved in fishery issues since the late 80s, after the EVOS. We received the Chamber of Commerce's Cornerstone Award in 1992 for our advocacy against IFQs. After the experience following the Exxon Valdez Oil Spill, I began advocating for our local small boat fisheries and involved on many boards, the Kodiak Maritime Museum, Northwest Setnetters, United Salmon Association, as a legislative aid to former Senator Jerry Mackie. I worked successfully with the State of Alaska to allow salmon fishermen into the Trade Adjustment Assistance program for retraining (TAA) as well as the DCED Quality Initiative in 2003, as a recipient of 2 quality grants. For the past fourteen years, I have been selling a portion of our own wild salmon into markets in Northern California as "Kodiak Catch"--I have witnessed first hand, the growth of popularity of Alaskan wild salmon.

Nearly 30 years ago, we were forced to defend our decades-old mixed stock fishery against accusations of a "new and expanding" effort of targeting Cook Inlet sockeye. In response the North Shelikof was created and has worked successfully since then. Then in 1992 KPRA once again, forced us before the BOF. In an effort to mitigate potential damage to our historic fishery, the Kodiak Salmon Work Group was formed. It became a successful, volunteer union of both seine and salmon fishermen, generously supported by both the City of Kodiak and the Kodiak Island Borough (travel, postage, office help).

I coordinated the efforts of the volunteer group over the following months, resulting in the production of several reports submitted to the BOF, including the Kodiak Management Area's "Kodiak Island Borough Salmon Work Group Report #5." There was tremendous community support for this endeavor, as the salmon fishery is the "life blood" of Kodiak's diverse fisheries; the State's largest diversified fishing community.

When faced with this radical attempt to change our salmon fishery, the BOF wisely decided upon the formation of an interarea workgroup. Ultimately, with Board of Fisheries approval, we reached a conclusion approved by all parties. No action. The "corridors" are working. The triggers are working. Again, rate of harvest of CI sockeye is directly proportional to the strength of the run and there is not a growing, expanding fishery as charged. (See Kodiak Island Borough Salmon Work Group Report #5)



Once again, over 20 years later, with no credible rationale, the Kodiak Management Area, community and its salmon fishermen are thrust into an out-of-cycle appearance before the Board of Fisheries. Not only is there no conservation emergency, but the UCIDA ACR proposes to *dismantle* the KMAs carefully managed fishery. ***Dismantle the KMA, jeopardizing the 5 to 6 week time-frame that was our season prior to 1978, in its crippled state?***

The Kodiak Management Area's salmon fishery is a model of success in post-limited entry Alaska. The KMA operates under ten, carefully-crafted, Board of Fisheries approved, management plans. The KMA has detailed strategies to manage for sustainability--on local mixed stocks. Because there are over 400 salmon-bearing streams it is an intricate playbook for salmon managers. Our fishery is a mixed stock fishery and has been for over 120 years (and centuries before that with Alutiiq fishermen). The historic, centuries-old incidental harvest of non-local salmon stocks is detailed in Report # 5 (page 70)

The five proposed weeks, from the end of June and beginning of August encompass a carefully managed mixed stock salmon fishery. What this umbrella plan suggests would cap weekly harvests of sockeye at levels that would *arbitrarily impact our own local pink, sockeye, chum, and coho fishery*. For example, on the "Westside" of Kodiak, the harvest of 12,500 local sockeye could easily occur within an hour of an opening, with two or three sets off Miner's Point or within Viekoda Bay setnetters shutting down the directed harvest of local stocks within a few hours. (see the map of the island). It would allow buildup of salmon into terminal areas with reallocation and quality issues by diverting cape fishing for ocean-bright salmon. The "real life" repercussions of this ACR are disastrous. The consequences would mean pulling our nets within a few hours of setting them, and sitting for a week while salmon pour by. Another note on the drive toward quality since 2003--we are now paid .11 cents/pound for bleeding our fish, plus .05 for chilling. Pushing salmon into terminal areas is a loser and will send us back two decades as far as what the market demands.

Nearly fifty years of carefully crafted management plans have evolved into a balanced 'system' of escapement and harvest. This equilibrium within this salmon "system" would be jeopardized; throwing all user groups and four hundred salmon-bearing streams into serious jeopardy. We saw what happened during the Exxon Valdez Oil Spill with island-wide closures. This graph illustrates the "species management" over the salmon season, showing that late run sockeye, blends into pink and chum management, which flows into late-run sockeye management, all local stocks. It also demonstrates that the ACR as proposed would have further decimated an already disastrous salmon season in 2016. **This graph shows the chornology of the KMA Speciest Management Focus- note between June 25th and August 1st, encompasses 90% of the harvest for 2016**

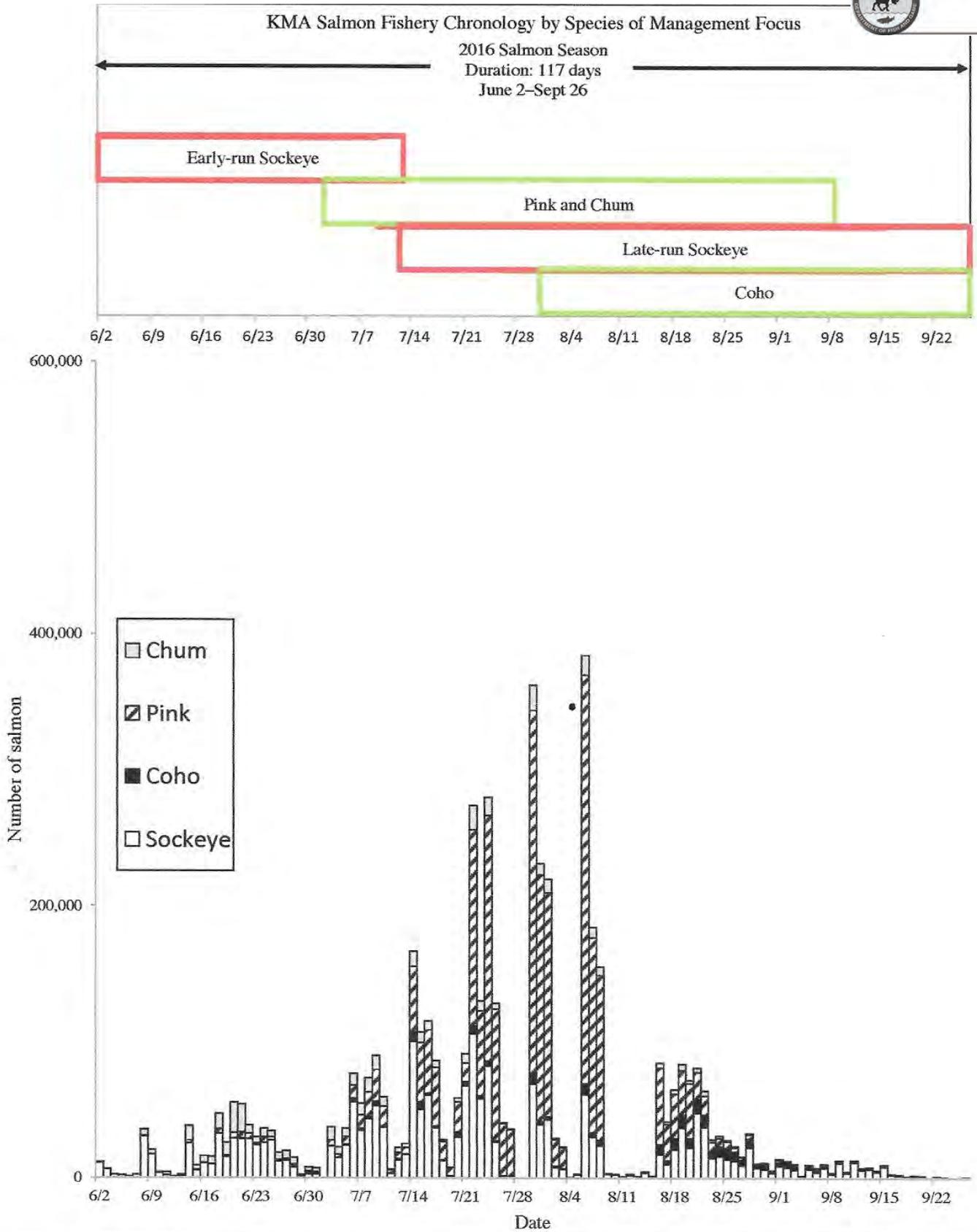


Figure 3.—Commercial salmon fishery chronology and daily harvest by date and species management focus, Kodiak Management Area, 2016.

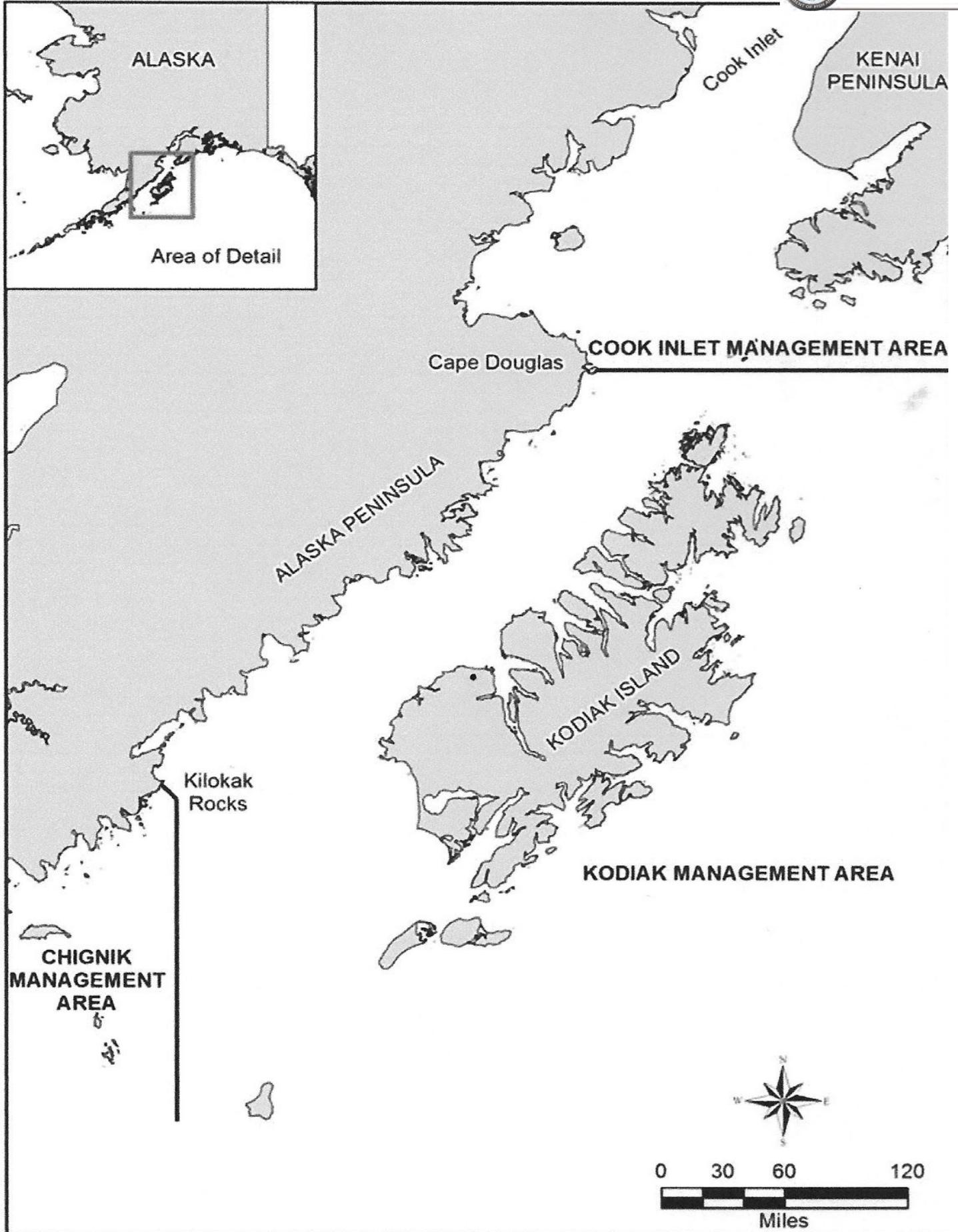
### **The ACR Casts Too Broad a Net**

Clearly, the real issue of “who is catching Cook Inlet sockeye?” should be squarely placed upon the thousands of stakeholders in that management area..is it possible that there are too few fish and too many fishermen to maintain a viable sockeye fishery into the future? Between Kachemak Bay and Upper Cook Inlet is the largest population base in the state. Not only are thousands of resident commercial and sport fishermen pursuing those stocks, nonresidents by the hundreds leave the Anchorage airport every year, toting an ever-expanding army of coolers bound for the Lower 48. Tourism is booming during the summer.

This ACR casts too broad a net, attempting to place the conservation burden on the KMA, hundreds of miles away. The onus, the responsibility of the health of their fishery must be placed upon those closest to the vulnerable stocks. Starting with salmon habitat protection, then with the fundamental principle of “escapement” there must be a clear accounting of the number of sockeye caught in and around salmon-bearing creeks and rivers. Cook Inlet stakeholders must come to terms with the politics of their region, their multi-week BOF meetings, the propensity for potential overfishing, the impact of thousands of fishermen of all types and the predictable consequences from this scenario. They must protect their own vulnerable stocks. Start first in your backyard. Be stewards of the resource, just as all Alaskans did in the late 50s with statehood. In Kodiak, we were stewards of the local salmon fishery through its recovery into the late 1970s.

This ACR is a radical set of ideas that should not form the basis of any kind of proposal or action at the October Board of Fisheries meeting.

To put this into perspective, Kodiak is situated in the Gulf of Alaska, the concerns are in the upper reaches of Cook Inlet, hundreds of miles away (chart of Kodiak Island)  
(\_\_\_\_\_)





(ATTACHED of chart of Kodiak and Cook Inlet

## **Community Stability & Salmon Infrastructure & Investment**

An ACR, if accepted, would be catastrophic to the Kodiak community “equilibrium” which depends on the stable influence of the local salmon fishery. Since the salmon fishery recovery in the late 1970s, a balance between escapement and harvest has been reached, with careful ‘fine tuning’ of fish managers, professional biologists. Over the summer, ten management plans come into play which manage and control the fleet, dispersion and harvest of salmon for five hundred permit holders. Local processors plan their seasons based on the forecast, and stable management. This is a complex series of interlocking plans; a finely-tuned machine that depends on professional staff to execute the “dynamic play” that unfolds each summer around June 1st.

For the past 13 years, we have struggled to emerge from the devastating impact of low prices when fewer than 100 out of 350 seiners participating, finally recovering the past few years, but has never returned to the full number of permits. This ACR would throw the KMA into chaos and disrupt the three and a half month salmon fishery, also impacting villages and businesses which depend upon the long processing season.

We have all invested in our local salmon fishery. Each of us, hundreds of thousands of dollars, purchasing vessels, permits, and sites, gear over the years. In Viekod Bay, all of the site owners have been there for over 35 years, as families! As a setnetter, our sets are old sites of pre-statehood days, having been fished for many decades. We are stationary gear. This ACR proposes to shut us down, on a weekly basis. Kodiak fishermen make a four month commitment to fish the complicated KMA-- We depend on the entire, 4 month season: if we have a weak early run going to Karluk, we look forward to the major influx of pinks, chums, and local sockeye in late June, early July, throughout August. We do not quit fishing until ADFG closes it, sometimes until September 20th. Our family depends on the summer income for the rest of the year.

### **Our 2% annual investment, funds our future**

The map of the Kodiak Archipelago shows our island-wide “salmon infrastructure” *just out of town: weirs, communities, hatcheries, enhancement projects, villages, fish processing facilities.*

This chart represents the projects paid by the 2% investment all permit holders pay to KRAA, the enhancement of stocks. We have been paying this since the early 1980s, investing millions of dollars, adding a buffer to our wild salmon fishery. It shows the villages that have their small, local fleets and harbors, and processing facilities in Alitak, as well as the City of Kodiak (5). Thus, any potential closures, as suggested in the ACR would sever our participation into our “natural resource-based” community. We would lose access to this production and investment.

Kodiak Island has the largest most diversified fishing port in the State of Alaska. Fishermen pay a resource-based tax on our deliveries, to the Kodiak Island Borough. The salmon fleet’s investment in boats, nets, and sites is another level of asset development--physical capital. Then there is the processing industry in Kodiak, who not only invest in, develop and operate the canneries that keep the town ticking, but also its work force--hundreds of resident workers. The community is fisheries-dependent for processing jobs, marine, grocery and fuel businesses. There is a large resident cannery worker force; the salmon season is typically the longest during the year. For example, this year there were well over ninety processing days, often operating at full-speed, 24 hours a day.



The 2016 season, (ADFG Season Summary 2016) had the lowest pink salmon return and harvest in 40 years, a disaster for Kodiak salmon fishermen:

*The estimated total exvessel value of the 2016 KMA commercial salmon fishery (not including cost recovery) was \$14,509,665 (Table 11), which was well below th 10-year (2006–2015) average exvessel value of \$36,258,483*

Rough estimates of the impact of the UCIDA proposal, had it been in effect in 2016, Kodiak fishermen would have lost close to \$4,876,000 OUT OF a total ex-vessel value of \$14,509,665, one third of the salmon season. Seiners would have averaged, \$44,000 instead of \$66,243, setnetters,s \$18,000. (ADFG)

In summary, if CI is worried about conservation, start with your rivers, habitat, escapement, and go downstream from there...slowly...don't attack a fishery that is several hundred miles away. Kodiak's salmon management is a complex set of tasks and decisions, based on on the grounds information, compiled into ten management plans, over the past 40 years.. most of which depend on in-season management actions; it is the largest and longest fishery in the Archipelago..possibly the longest season around the state (salmon). It employs more harvesters than any other. The processors and their workers count on a 3 month season to shore up other fisheries or add a bonus to a good year. We have recovered from the decade-long price collapse, and have just the past few years, begun to have harvest, price, run, all in synch, increasing our ex-vessel value. This ACR would throw a wrench into a finely-tuned operation, for what? To forego millions of local salmon to "potentially" guess that it might address UCI's problems? It is not only a poorly thought out 'wrench' -- it has very little chance of fixing UCI's problems with sockeye. Let's not 'roll the dice' on a gamble will gum up the works for hundreds of Kodiak fishermen, the community, and would have a detrimental impact on future generations of both people and salmon.

Sincerely

Lacey J Berns  
Kodiak salmon fisherman/family since 1977  
1620 Kristin Way  
Mckinleyville, CA 95519  
707 839.8009



Alaska Board of Fisheries  
C/ O ADF&G Boards Support  
P.O. Box 115526  
Juneau, Alaska 99811-5526

Dear Board Members;

Attached is a document being conveyed to your Board per the wishes of Kodiak's Salmon Work Group (KSWG) regarding an historical perspective of the Kodiak Management Area's (KMA) Commercial Net Fisheries (CNF).

This document was authored by three retired former KMA Area Management Biologist and as was deemed by the KSWG to be an important historical perspective about KMA's CNF.

Please accept this document for consideration during your deliberations of the Agenda Change Request submitted by the United Cook Inlet Drifter Association.

This document submittal is on behalf of its three authors: Lawrence Malloy, Dave Prokopowich and Kevin Brennan, all ADFG KMA incumbent Area Management Biologists during the 1972-2006 ~34year period.

Thank you!

A handwritten signature in black ink that reads "Lawrence Malloy".

Lawrence Malloy  
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Kodiak, Alaska 99615

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Cell: (907) 942-2221

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10.02.17a

## **KODIAK MANAGEMENT AREA (KMA).** **History Of Applied Salmon Management**

(Authored by retired ADFG KMA Biologists, incumbent as Area Mgmt. Biologists for the ~34 year period of 1972-2006; Larry Malloy, Dave Prokopowich and Kevin Brennan)

### **ABSTRACT:**

*This document provides a brief discussion of Kodiak's salmon commercial net fishery (CNF), its developmental history during Territorial oversight (~78 years) through to its current Statehood regulatory history (~57 years). Evolving from an initial chaotic discovery phase (from ~ 1882+) through a heavy exploitation period coupled with elementary regulatory controls (to ~1959) and then culminating in today's strictly regulated, sustainable, stabilizing major economic engine for Kodiak Island Borough's fishing industry (~ 2017+).*

*Alaskan salmon fisheries explicitly target local production via ADFG's local 'Mgmt. Area' oversight. Many of Ak.'s salmon fisheries have historically identified that portions of their respective area's total harvests are incrementally comprised of incidental harvests on migrating non-local stocks. Salmon homing migration patterns, mostly olfactory driven, can commonly yield unpredictable deviant migration routes.*

*For example, portions of CIMA waters, primarily flushing through Kennedy & Stevenson Entrances, can ebb extensively through KMA waters, depending upon the size/duration of a prevalent tidal series. As KMA's CNF became aware of sporadic deviantly migrating sockeye during its directed fisheries on local salmon stocks, these phenotypically larger-bodied sockeye were anecdotally identified as being a non-KMA stock. Thus, an incidental sockeye harvests (ISH) was identified as occurring on suspected CIMA-bound sockeye. Various stock I.D. efforts strived to clarify the somewhat unpredictable presence of this non-local stock and to better understand related ISH biological impacts for other non-local 'stocks of concern' and/or any potential allocation issues.*

*Subsequently, for KMA, existing BOF regulatory INTER-AREA PLANS do now address biological and/or allocative impacts affecting non-local stocks/fisheries as they are exposed to local KMA fisheries. KMA has 2 such INTER-AREA PLANS which have been successfully implemented, both with full regulatory compliance as intended. The oldest Plan being the Cape Igvak Sockeye Mgmt. Plan (CISMP) that addresses a 'targeted sockeye harvest' (TSH) on 'definitive portions of defined sub-stocks' of Chignik-bound sockeye during KMA's Phase I & II fisheries. The newest Plan being the North Shelikof Sockeye Mgmt. Plan (NSSMP) that addresses an "incidental sockeye harvest" (ISH) sporadically occurring upon 'an unknown portion of some Cook Inlet-bound sockeye stocks' primarily during KMA's Phase II Fisheries.*

*The CISMP is an ~50 year plan, documented as regulatory-compliant with defined biological and allocative criteria for the plan's TSH 'capped harvest rate' and related 'un-capped harvest level'. The NSSMP is an ~28 year plan, also documented as regulatory-compliant within the plan's designated ISH 'capped harvest level' per only those plan-identified mgmt. units, whose seaward portions are hence restricted. Respectively, the CISMP has been structured by reasonably defined ADFG stock I.D. data analysis while the NSSMP has been initially structured by historical phenotypic stock I.D. data; it is currently proposed to be modified by contentious CIMA ACR-submittals based upon a recent ADFG Genetic Study's stock I.D. questionable extrapolations.*

*Additionally and note-ably, Kodiak's overall regulatory umbrella for local stock mgmt. further includes 6 such INTRA-AREA PLANS, on KMA's Phases I, II & III fisheries.*

*All of these BOF approved regulatory mgmt. plans have annually withstood heavily scrutinized Plan compliance by a multitude of KMA stakeholders, i.e. State & Federal agencies, competitive salmon user-groups, private land*



*owner corporations, concerned environmental citizenry, etc! These Plan's remain functionally very successful for KMA achieving salmon MSY goals, and subsequently are essentially supported by the aforementioned cross-section of critically pertinent scrutiny.*

*Regarding variations in non-KMA's sockeye production, environmentally induced or otherwise, ADFG's current extrapolations of potential KMA ISH impacts, to be valid, should require greater, more Agency-worthy, detailed explanations of such analysis. KMA's Annual Management Plans (AMP), being aggressively implemented, are structured to benefit KMA's local sockeye and pink fisheries. Seemingly so, without identifiably documented impacts upon portions of non-local sockeye migrants being a sporadic ISH in targeted local stock fisheries. This could suggest that the sporadic ISH during KMA local salmon fisheries may not be accountable for any perceived diminishment of certain non-local stock-specific production. Interestingly, it could further suggest the existence of non-KMA AMP operational deficiencies, environmental impacts notwithstanding.*

*KMA stakeholders continue to strongly support KMA's AMP's, and they exhibit a keen awareness of properly applied ADFG mgmt. procedures. They strongly cherish regulatory stabilities that they, as active stakeholders, have helped create and promote. Importantly, while remaining imperfect, KMA's ADFG/stakeholder regulatory interface-bond continues to support definitive mgmt. actions that annually "create the potential for KMA's MSY salmon production". A structured BOF evaluation of both KMA and CIMA AMPs should be seriously required to properly understand definitive impacts of KMA's Inter-Area ISH vs it's Intra-Area AMP implementations.*

*Pointedly, local ADFG Area Mgmt. annual reports to the BOF, should be explicitly structured, accurately presented and orally conveyed/defended and further, should require exclusive authorship/presentations by the incumbent Area Mgmt. Biologist. Categorically, these individuals should be the most knowledgeable ADFG staff regarding salmon production and stock status in their mgmt. areas. Responsible BOF agendas should continue to prioritize Area Manager presentations over other ADFG concurrently presented pertinent technical reports. The BOF will thus 'Fully Acquire The Area Manager's Best Salmon Management Practices' perspective from having been exposed to broad CNF experiences and from having developed explicitly defensible explanations for a multitude of pertinent 'Area-Specific salmon issues.*

#### **INTRODUCTION:**

Kodiak's commercial salmon net fisheries (CNF) have an 135 year history, extending annually from ~ 1882 to 2017. Management of KMA's fisheries pre-statehood was Federally Territorial Bureau of Fisheries and post-statehood was the State's ADFG. Historical harvest data. It identifies regulatory 'cause and effect' for the respective jurisdictions of Territorial Federal Wardens vs Statehood ADFG Biologists.

Authorship of this historical narrative is from three retired ADFG biologists actively involved with KMA's commercial net fisheries (CNF) as salmon area mgmt. biologists (AMB). Their combined 'mgmt. watch' occurred over an ~34 year period, from 1972 to 2006, an identified tumultuous period of KMA regulatory evolution. Noteworthy is that since statehood, KMA has had 11 AMB's, of which 3 are deceased, and the remaining 8 continue to be domiciled in Kodiak city, of which 2 are active ADFG KMA salmon AMBs.

KMA's harvest strategies have evolved since statehood when ADFG mgmt. initiated control. Subtly at first, but noticeably aggressive since the early 1970's, an ~45 year period, ADFG implemented major regulatory changes structured to best achieve the statutorily required Maximum Sustained Yield (MSY) salmon CNF required of ADFG. Most changes, having been BOF reviewed and approved, are identified in ADFG's CNF Annual Regulatory Booklet. Other changes have yielded Regional ADFG approved evolving mgmt. actions. All of which, pending proven functional utility, are identified in KMA AMPs for eventual ADFG submittals for BOF review and approval.. Additionally, several local ADFG inspired in-season regulatory adjustments have been initiated to create enhanced mgmt. efficiency, by either having been blended into current AMP's narratives or else does exist as identified in-



season evolving perspectives for further enhancement of in-season mgmt. actions. These mgmt. adjustments have mostly remained in former ADFG AMB dead files. However, both the former and latter enhanced mgmt. perspectives have been included into aspects of this narrative of KMA's CNF history.

An excellent well researched book on Kodiak's CNF is Pat Roppel's "Kodiak Salmon" copyright 1985?. It thoroughly documents developmental events that track this fisheries evolution from pre- to early post- statehood. This book remains the premier desk reference document of Kodiak's salmon CNF development. It functions excellently as a prioritized reference for Alaskan salmon stakeholders and especially BOF members.

As Alaska's salmon fisheries developed, a series of conservation measures were initiated to address sustainability during the heavily exploited early phases of the state's salmon fisheries. Each of the state's salmon mgmt. areas, as they are currently defined, individually evolved regulatory measures to address each area's salmon sustainability issues and the importance of related salmon fisheries economics supporting the many pertinent coastal communities.

The KMA as currently defined, includes the entire Kodiak Archipelago plus that portion of the Alaska Peninsula draining into the Shelikof Straits between the latitude of Cape Douglas south to the southern entrance of Imuya Bay at Kilokak Rocks.

#### **SALMON INDUSTRY HISTORY:**

Some of Alaska's earliest salmon industry's development occurred in the KMA, with major processing canneries clustered near the terminus of major sockeye production systems, e.g. the Karluk and Ayakulik Rivers that empty into Shelikof Straits and the Upper Station and Akalura Rivers that empty into Olga/Moser Bay portion of Alitak Bay. As CNF harvests developed in KMA, and in the adjacent mgmt. areas of Chignik and Cook Inlet, those early sockeye harvests, were initially 'tendered' to KMA's existing processing canneries, prior to non-KMA processing facilities being developed.

Initially, KMA salmon harvests involved primarily extensive company sponsored beach seining operations at the mouths of major river systems, gradually evolving to expanding gear-type efficiencies, sorted by company-sponsored geographical locations and eventually to more individually owned/operated mobile purse seine vessels and fixed set gill-net sites and eventually to gear-type ownership currently common to KMA fisheries. Noteworthy, was that historical, company-sponsored gear included an array of mobile purse seine vessels, beach seine operations and fixed set gill-net sites along with the notorious fish traps, all strategically located to target KMA's high valued sockeye stocks coupled with its large volumed pink salmon returns.

Statewide, today's salmon fishing gear-types reflect state of the art technology for harvesting efficiency, per respective gear-types. In the early 1970's, Alaska's Commercial Fisheries Entry Commission (CFEC) statutorily implemented gear-numbers restrictions, containing them to levels historically active in their respective areas and capable of harvesting historically noted maximum returns. Some interesting KMA trends from the CFEC's 'gear-capping' event are that, KMA's current purse seine (S01K) effort levels have plunged significantly downward since CFEC S01K purse seine permits were issued and that their values have recently reached record low levels; a seller recently advertised his S01K permit @ \$28k (08.25.17. in the KDM). The S02k beach seine gear is essentially a non-existent economic unit, while the S04K set gill-net active gear levels have remained relatively stable. Because of S04K gear's non-mobile status, it's value remains heavily reliant upon ADFG's in-season mgmt. regulatory consistency as annually identified in KMA's AMP.

Notably, CFEC Permits issued, by gear-types, for each mgmt. area, involve commerce on oscillating permit values generally related to a mgmt. area's sustainable salmon production potential and specific gear-type economic efficiencies. KMA's trends in CFEC Permit commerce exemplify those points, as previously mentioned.

KMA mgmt. strongly stresses using the mobile S01K fleet as an important mgmt. tool to efficiently maximize high quality harvests utilizing traditional salmon harvest patterns developed and refined over the past ~85+ years (early 1930's through 2017). KMA's fixed set gill-net gear (S04K), is confined to two specific geographical areas. One of



which, the Moser/Olga Bay Section of the Alitak District, is exclusive to S04K gear and is regulated as an 'explicitly terminal fishery' targeting Olga Bay salmon production. The other of which, the Central section of the Northwest Kodiak District, is where S01K and S04K gear fish concurrently without differential fishing periods by gear-type, essentially regulated as a wholly undivided mgmt. unit., and structurally regulated as 'blended far-terminal, near-terminal and an explicitly terminal CNF'; specifics of which are identified later in this document or in KMA's Salmon Regulation Booklet.

Again, a noteworthy reminder is that KMA's active S01K gear levels have experienced significant downward participation trends, from potential to documented active numbers, respectively. Whereas, active S04K gear levels have remained relatively stable from potential to documented active numbers, respectively. A third gear-type, Beach Seine S02K gear, has historical documentation, but is essentially inactive in today's KMA salmon fishery.

KMA CNF's general economics, by gear-type, continue to exhibit oscillating trends in ex-vessel values during recent years of increasing annual harvesting costs. Reduced levels of active seine gear reflect current economic issues confronting KMA's S01K gear. Economic reality increasingly requires S01K gear's participation in multiple longline and pot fisheries, when available. Importantly, the vessels of the S01K fleet, with their multiple fisheries participation, continue to represent a key KMA stable economic engine per it's major fisheries. Those vessels remain significant contributors to Kodiak Island Borough's (KIB) fishery's economics, specifically through their multiple fisheries production for the Borough's 9+ shore-based fish processing plants. That economic significance to KIB's CNF manifests itself through the 'processor's first wholesale value', the CFEC permittee's 'ex-vessel values', raw-fish landing tax, KIB's severance tax and CFEC permittee's enhancement taxes. Importantly, this fleet further yields derivatively extensive multiplier economic effects throughout KIB's many fishery-related service industries

### **CHARACTERIZING KMA COMMERCIAL NET FISHERIES (CNF)**

#### **Economics:**

KMA's salmon CNF is annually characterized by a dedicated communities preordained rituals of:

- Island-wide pre-season accelerated readiness activities;
- Followed by tremendous grinding in-season harvesting and processing activities;
- Culminating in early post-season activities of harvesting deceleration, gear repair/storage, earnings/PAF discussions and ADFG AMP regulatory reviews;
- Definitive late post-season assessments of the past salmon season's CNF that had just consumed an approximate five month period, from early May to early October.
- Other fisheries will occur concurrently, but this salmon fishery has the crucial stabilizing persistence needed to maintain the healthy economics of Kodiak's fishery's communities, for all 8 outlying KMA villages and especially for their supporting hub of Kodiak City proper.

Recent KIB demographic data identifies KIB-community population distributions and the KMA CFEC permit holder distributions within those communities. Also, recent ADFG data further identifies ex-vessel values by gear type as derived from post-harvest 'fish ticket receipt' summaries. A Kodiak Salmon Work Group (KSWG) document submittal to the October 2017 BOF meeting contains that data.

ADFG annually distributes AMPs to all KMA CNF stakeholders prior to season openings. Since the early 1970's, this document has provided 'regulator' explanations to 'regulated' stakeholders for anticipated 'regulatory guidance' throughout the forthcoming salmon season. It identifies projected harvests by species and by geographical areas. These projections are either formally structured harvest forecasts or else extrapolated harvest expectations, all to occur within grouped mgmt. units for the various Phases I, II or III Fisheries and as are further implied to be 'Far-Terminal', 'Near-Terminal' or 'Explicit-Terminal' harvesting opportunities. Sporadically, KFGAC will need to provide special preseason forums for industry needed AMP regulatory clarifications required for anticipated potential in-season issues.



**Regulatory Mgmt. Evolution:**

Prior to issuance of ADFG's AMP's, during transitional Territorial to statehood years, seasonal regulatory guidance was confined to annually printed Commercial Fishing Regulations Booklets distributed from agency HQ's and by local fishery wardens. Essentially, pre-season harvest strategies were 'regulatory fixed' per determinations by either distant Federal bureaucrats or Juneau-based State agency personnel. These 'Regulatory Booklets', along with simple 'Fisherman Charts' depicting many important salmon streams and some few mgmt. districts, were ADFG's early distributions during that early Territorial to State transitional period.

Subsequently, specific post-statehood salmon wild stock rehabilitation efforts did initially require remedial actions as ADFG became established and entrenched. Pre-statehood In-season mgmt. actions for time and area adjustments had been extremely cumbersome. Emergency Order (E.O.) field announcements lacked distribution efficiencies needed for expeditious conveyance to active CNF stakeholders. Pertinent geographical locations needing rapid regulatory adjustments yielded difficult, precise transmittal descriptions. An 'agency transitional period' driven by a strongly desired aggressive ADFG mgmt. was deemed necessary and was subsequently initiated extending from the 1970's pre-cyber electronics period and annually enhanced through to today's near instant communication society.

Historically noteworthy was a persistent, but publicly shielded, residual animosity that somewhat chilled relationships between the older 'regulated' Territorial industry and the State's younger 'regulators' who, full of "piss and vinegar ideas", were aggressively poised to create positive changes to rebuild Alaska's and especially KMA's fragile, injured salmon resources.

Record species-specific low salmon returns in the late 1960's and early 1970's, necessitated aggressively rapid regulatory adjustments to achieve escapement requirements. That issue, when coupled with subsequent production deficiencies from a 'territorial days' carryover period, a persistently exasperated industry's sense of economic instability and it's related future uncertainty swept through many ADFG mgmt. areas; again, it was especially noted throughout KMA's salmon fishery.

Consequently, ADFG initiated pivotal changes to the regulatory process during the 1970's. Rehabilitating KMA's post-statehood 'regulator'/'regulated' interface relationships between ADFG and industry became a prioritized mgmt. goal. The importance of rapid in-season information exchanges between all salmon 'regulators and regulated stakeholders' was promoted as being critical and prioritized as such. Accomplishing this process without compromising industry's cherished competitive aspects of acquired confidential harvesting/purchasing/tendering/processing logistical knowledge of industry participants was challenging but deemed critically necessary for ADFG's required education to achieve mgmt. improvements, especially the strict application of in-season "Conservation Burden" regulatory adjustments.

Multiple ADFG daily phone contacts identifying in-season 'salmon tender' reporting summaries between ADFG and processors often identified critical trends in species-specific returns which could require rapid regulatory adjustments, as needed. A 'fish ticket' rapid summarization process was efficiently implemented to confirm harvest precision as needed. Season's with near record harvests yielded up to ~20,000+ fish tickets requiring timely review.. KMA ADFG's well advertised 'public open door policy' further enhanced development of stakeholder personal relationships whereby industry's conveyed personalized accumulated knowledge proved extremely beneficial for developing ADFG's best mgmt. practices for applying the best technologically based biology.

ADFG's most significant changes at that time were to issue progressively detailed annual AMP's developed at KMA's ADFG office, along with an improved KMA Regulatory Booklet from ADFG HQ.. Most importantly, a super-enhanced KMA salmon 'Fisherman's Chart' depicting all 7 mgmt. districts encompassing newly defined 52 sections identified as 'need-to-know' mgmt. units, were 'forcefully distributed' to industry. Additionally, all ~400+ salmon streams, all Inner Bay and Estuarine post-fishery pre-escapement marine sanctuaries, all designated 'seaward' and



'shoreward' zones specific to the BOF regulatory NSSMP and a narrative-legend for aiding confusing interpretations of salmon stream terminus closed waters boundaries were well identified on these important stakeholder educational charts.

**Industry Production:**

Again, Roppel's book on Kodiak's salmon fishery thoroughly documents the evolution of KMA's commercial salmon fishing industry. Paralleling Ak's salmon industry's development, Roppel further, identifies KMA's evolving fishery corporations from initially localized buyer/processing seasonal entities to current global year around economic engines equally benefitting pertinent localized communities and their domiciled inhabitants.

KMA's fishing industry evolved with the normal chaotic initial development issues, i.e. poorly regulated harvesting issues yielding biologically damaging over-exploitation, followed by Agency applied sustainability concern-based regulatory restrictions. Eventually, KMA's salmon history evolved to be intimately intertwined with its diverse multi-species-fishery development, primarily through its multiple-species year around fish-processing facilities so important for competitive harvester relationships among salmon CFEC Permit holders.

**Agency Protection:**

A 'Mgmt. Area' BOF regulatory review was initially an annual exhaustive logistical process which eventually required implementing the efficiently evolved schedule of today's rational three-year regulatory cycle. Characteristically, this important regulatory review begins with ADFG AMP post-season summary reports presented at local KFGAC's public meetings, commonly followed by stakeholder/ADFG ad hoc interchanges and as needed, subsequent proposed regulation changes. Systematically scheduled BOF meetings address those proposals, only to be considered off-schedule by Agenda Change Requests (ACR) to address aberrant biological/allocative emergency situations and/or BOF Policy contradictions. The

**KMA'S APPLIED SALMON RESEARCH:**

**Escapement:**

Of KMA's 22+ sockeye salmon systems, several major producer's stock-status statistics have been sequentially added to KMA's evolving sockeye stock database. Documented indexed total escapements for all tallied salmon species is collected from the fish-weir stations, per funding availability. Initially installed for compliance with federal regulations of the 1920's, e.g. the White Act, these fish-weir stations evolved to become the cornerstone for KMA's post-statehood progressive sockeye management program.

Specific fish weir station installations, primarily for KMA's sockeye salmon mgmt., have been located at the following systems:

Karluk, Ayakulik, Dog Salmon, Upper Station, Akalura, Uganik, Saltry, Pasagshak, Buskin, Litnik, Little Kitoi, Thorsheim, Paul's and, Malina lake-supported systems.

Adult upstream in-migrants and juvenile downstream out-migrants can be accurately tallied/sampled at these fish-weir stations, per funding availability. These sites are crucial for stock-status database development which provides a myriad of system-specific research on analyzed data and for public scrutiny of KMA's AMP's functional utility.

All other targeted salmon species and steelhead indigenous to these systems are also tallied at these fish weir sites. ADFG's KMA's escapement database contains all such historical information.

Critically Important for acquiring all other KMA escapement data, for all species on all un-weird systems is the required funding for collection of indexed aerial survey data for inclusion into KMA's mgmt. salmon escapement database. ADFG mgmt. staff must aggressively conduct frequent, multiple KMA-inclusive aerial surveys. These surveys evaluate a standardize consistency for observed salmon run-timing, migration patterns, respective pre-escapement build-up locations, address comparative aerial visibility conditions and document consistency of staff observer experience issues. These remain crucial correlating factors for progressively achieving escapement goals. Subsequent in-season regulatory adjustments, aggressively implemented, commonly results from aerial survey



data that requires knowledgeable proper assessments of temporal escapement trends. This has been emphasized in KMA's AMP's and through extensive KMA stakeholder discussions. Approximately 30+ aerial survey sorties are conducted annual by AMB staff.

**Stock Identification:**

KMA's MSF mgmt. considerations requires the rapid accumulation of in-season intra-area stock-specific production potential, i.e utility of acquired knowledge by AMBs.. Ideally, detailed complete brood tables would be developed, especially for KMA's major sockeye systems. However, condensed brood tables, cursorily structured upon historically documented 2 or 3 brood year escapements, coupled with accumulated out-migrant smolt numbers and condition, along with pertinent environmental data, have yielded subsequent forecasted returns of sufficient utility for inclusion into AMP's. Additionally, historical mgmt. knowledge, actively promoted within evolving Area Mgmt. teams, remains functionally critical for achieving required MSY goals and the related consistency in AMP development and applications.

Furthermore, as mentioned, KMA's intra-area CNF requires astute mgmt. vigilance that aggressively monitors daily geographical MSF harvests and subsequent pertinent stock-specific escapement trends. Several aforementioned stock identification studies, relating stock-specific contributions to KMA's MSF, have successfully guided in-season mgmt. towards achieving escapement goals and thus "creating the potential for sustained maximum production".

Historically, KMA has had several species-specific stock identification studies, some of which are listed below:

• **Sockeye:**

- Peterson Disc adult sockeye tagging in KMA's MSF delineating stock-specific contributions (1970's, 1980's);
- Peterson Disc/surveyor ribbon adult sockeye tagging at KMA weir sites for in-system sub-stock identification/habitat use (1980's);
- KMA's Fraser Lake Sockeye donor stock Genetics Study by NMFS investigations into non-indigenous stock straying into adjacent indigenous stocks of Olga Bay Sockeye systems (1980's)
- KMA juvenile sockeye hatchery stock-specific thermo-marked fish (2015);
- KMA adult Sockeye genetics studies for intra- and inter-area MSF stock identifications (2014-2016);

• **Pinks:**

- Peterson Disc adult pink tagging in KMA's MSF delineating stock-specific contributions (1960's);
- KMA wild pink salmon adult genetic study by FRI (U of W) for geographically defined KMA stocks (1970's);
- KMA hatchery pink salmon adult Peterson Disc/Floy tagging within hatchery specific mgmt. units 1980's);
- KMA wild pink salmon adult tagging stream-life studies by ADFG for EVOS indexed total escapement determinations (late 1980's-early -1990's)

• **Chinook:**

- KMA wild chinook adult radio-tracked tagging at weir sites for in system sub-stock identifications/habitat use ( 1980's);
- Gulf-wide coded-wire juvenile chinook stock-specific tagging (1990's).
- KMA juvenile chinook hatchery stock-specific thermo-marked fish (~2010's+)

• **Chums and Coho:**

- Gulf-wide genetic studies for wild adult coho and chum stock identification. (1980's, 1990's);
- KMA juvenile coho hatchery stock-specific thermo-marked fish ( ~2015's+);

**KMA'S APPLIED SALMON MANAGEMENT**

**Regulatory Issues:**

ADFG's Commercial Fishing Regulations booklet provides BOF approved regulations that have guided local ADFG staff's development of AMP's, e.g. KMA's AMP. Historically, these booklets, along with a simple chart depicting some salmon streams and large mgmt. districts were the exclusive written documents distributed to industry. Fishing opportunities, as seasonally published, often lacked responsive flexibility to efficiently address in-season biologically-based applied "Conservation Burden" issues.



Following statehood, a period of adjustment between federal and state regulators evolved, as did subsequent interactions between new state regulators and existing regulated industry. Some territorial personnel, as needed, transitioned to become ADFG staff, initially helping blend sluggish historical management with aggressive State localized in-season actions for needed regulatory stability.

Curtailing pre-statehood 'trap fishing operations' importantly allowed for ADFG-initiated 'pulse fishing' upon KMA's mixed stock fisheries (MSF). Intensive stock-specific mgmt. resulted whereby escapement goals were more likely to be achieved. Thus, ADFG's mgmt. annually created an improved potential for achieving maximum' production of all KMA's salmon stocks.

KMA's ADFG staff's 'aggressive development of' and BOF 'subsequent approval of' an historically based quasi-algorithmic structured regulatory guidelines, beginning sequentially in the late 1970's, has been successful in achieving statutorily required MSY goals. Past BOF members and CNF representatives familiar with independently evolved statewide regulatory diversity have praised KMA's regulatory structure, identifying its many aspects as an important template for consideration statewide.

#### **Mgmt. Strategies:**

Following statehood as fisheries management transitioned exclusively from Federal to State authority, ADFG developed an evolving strategy of accumulating functional in-season salmon management actions. Especially noteworthy are those structured aspects, initiated in statehood's second decade and enhanced annually through to today, have guided KMA's CNF through that difficult transitional period. Broad CNF support of KMA's prevailing salmon management strategy characterizes today's regulatory stability culminating with it's very functional AMPs..

Today, a KMA CFEC permit holder, who becomes a well informed CNF participant, can expect ADFG's annual salmon management plans to be structured as follow::

#### **# Fishery Phases and respective targeted species:**

- **Phase I:** (June 01 to July 05)
  - Early Sockeye: Wild and Enhanced;
  - Early Chums: Wild and Enhanced;
- **Phase II:** (July 06 to July 25)
  - Early-Mid Pinks: Wild;
  - Early-Mid Sockeye: Wild and Enhanced;
  - Early-Mid Chums: Wild and Enhanced;
  - Early Coho: Wild;
- **Phase III:** (July 26 to Oct 15)
  - Mid-Late Pinks/ Wild and Enhanced;
  - Mid-Late Sockeye: Wild and Enhanced;
  - Mid-Late Chums: Wild
  - Mid-Late Coho: Wild and Enhanced.

#### **# Mixed Stock Fisheries (MSF) 'Blended Mgmt. By Species'**

Essentially, in-season mgmt. actions focus on conducting orderly fisheries on highest quality salmon within expected traditional harvesting patterns, where possible;

Specifically, this provides for pulsed fisheries to yield pulses of escapement-bound salmon. As harvest opportunities occur, pertinent mgmt. units, with their perceived degree of MSF, are regulated accordingly and are identified below:

#### • **Far-Terminal Fisheries**

- Potentially where maximum heterogenous mixed-stock salmon populations occur in 'far' proximity to their indigenous 'terminal' locations;



• **Near-Terminal Fisheries**

-Potentially where minimum heterogeneous mixed-stock salmon populations occur in 'near' proximity to their indigenous 'terminal' locations;

• **Explicit Terminal Fisheries**

-Potentially where mostly homogenous single stock salmon populations occur in essentially their 'terminal' locations.

**# Fishing Period Descriptions and Expectations:**

- Structured regulatory quasi-algorithms identifying **which** mgmt. units, **may be** opened per a specified E.O. which also identifies an "**openings duration**", by further defining **when** those openings would begin and end, and **what** gear types would be affected;
- Operational details are provided in-season via field announcement Emergency Orders (**E.O.'s**);
- Commonly, the frequency of **E.O.'s issued** annually are: Phase I Fisheries **~ 8+**, Phase II Fisheries **~ 10+** and Phase III Fisheries **~ 24+**;
- Specific **Regulatory Guidelines** for these E.O.'s are documented in KMA's CNF Annual Regulatory Booklet.

**# BOF Management Plans:**

- Regulatory guidelines, developed through a rigorous public process, do document the structure needed to address **Biological and Allocative considerations** for stock(s)-specific issues;
- Specifics for all of KMA's CNF BOF Regulatory mgmt. plans are documented in Its Annual Regulatory Booklet;
- KMA has **6 INTRA-AREA** mgmt. plans addressing local stocks for Fisheries Phases I, II and III;  
-These were developed from ~ 1978-1996 and are detailed in the BOF CNF Regulatory Booklet.
- KMA has **2 INTER-AREA** mgmt. plans addressing non-local stocks;  
-The Cape Igvak Sockeye Management Plan (**CISMP**) was initially developed in the late 1960's, and has persisted annually for an ~50 year period for KMA's Phases I and II Fisheries;  
\*This plan addresses a targeted sockeye harvest (**TSH**) on Chignik Management Area (**CMA**)-bound stock-specific sockeye;  
\* It includes a 'capped harvest rate' and an 'uncapped harvest level' influenced by the 'harvest rate' on actual total CMA sockeye returns;
- The North Shelikof Sockeye Management Plan (**NSSMP**) was initially developed in 1989, remaining annually pertinent for an ~38 year period for KMA's Phase II Fisheries;  
\*This plan addresses an incidental sockeye harvest (**ISH**) on some portion of some Cook Inlet (**CIMA**)-bound sockeye stocks;  
\* It includes a 'capped harvest level' tallied for all sockeye harvested within selected KMA mgmt. units adjacent to the north Shelikof Straits whereby related 'seaward zones' can be closed as harvest level caps are achieved in those pertinent mgmt. units.  
\*This plan's **ISH** will be addressed at an Oct. 2017 BOF meeting per ACR submittals..

**# KMA's Special Harvest Areas**

- KMA's Kodiak Regional Aquaculture Association (KRAA), established in the mid-1980's, supports two hatchery facilities and funds an ADFG Bio-rehabilitation project. The Kitoi Bay Hatchery (**KBH**) functions as a Commercial Production facility and the Pillar Creek Hatchery (**PCH**) functions as a Central Incubation Facility. The bio-rehab project conducts system-specific applied salmon research needed for all KRAA funded salmon rehabilitation and enhancement projects to successfully occur.
- **KBH** incubates, rears and releases juvenile early-sockeye and late-coho smolt and early-chum and late-pink fed fry. All are released into Kitoi Bay proper, except for relatively minor coho releases into Ouzinkie village rearing lake. Common property fisheries on returns from these releases occur in mgmt. units adjacent to KBH or near Ouzinkie harbor as identified in KMA's CNF Regulatory Booklet and during in-season fisheries by E.O.'s.



- **PCH** incubates, rears and out-stocks several early-sockeye stocks of fed fry for barren lakes enhancement and for anadromous lake back-stocking rehabilitation projects. Additionally, **PCH** incubates, rears and out-stocks Chinook smolt and Coho fed fry and smolt into important road system and village stocking locations. Common property fisheries on returns from these releases occur in various mgmt. units as identified both in the CNF Regulatory Booklet and during in-season fisheries by E.O.'s.
- All SHA's associated with these hatchery releases are identified in KMA's CNF Regulatory Booklet.

#### **KMA's DISTRIBUTED INFORMATIONAL DATA**

##### **Annual Management Plans (AMP):**

KMA's salmon returns remained sporadically cyclic throughout the 1960's with prioritized harvesting effort targeting early and late sockeye and all pink salmon stock's returns within traditional MSF patterns by a mobile purse seine fleet and fixed set gill-net groups.

These record low salmon returns, resulting from both environmental and over-harvesting issues, had persisted from decades before and to immediately after statehood. Special concerns for escapement deficiencies for major sockeye and most pink salmon systems required ADFG to implement the aforementioned aggressively pro-active mgmt. strategies .

Beginning in the early 1970's, KMA's CNF was introduced to ADFG's newly 'structured mgmt. approach' per existing BOF regulatory guidelines. Most critical was gaining industry support through very active educational explanations as to in-season, "what, why, where, when and how" local ADFG mgmt. actions were to occur. Consequently, development of AMP's that strongly identified expected annual mgmt. actions for KMA's CNF, were broadly distributed and publicly reviewed at pertinent Fish and Game Advisory Committee (KFGAC) meetings, the epitome of 'town hall meetings' for Agency and Public interchanges of fisheries information.

Newly initiated AMP issues were pointedly designed for KMA's transitional CNF to become accustomed to being aggressively regulated by ADFG's 'young idealistic biologists' rather than Territorial's 'geezer wardens' during these transition years. These AMP's functioned to create a smooth transition for development of a credible relationship. Subsequent annual issues were sequentially improved per stakeholder discussion and input coupled with ADFG's compliant considerations stemming from that relationship. Copies of these AMP's have always been made available at KMA's ADFG office from the early 1970's through to today..

Summarily, these AMP's remain locally important, functional templates for guiding:

- ADFG's **pre-season development** of projected salmon returns and expected management actions;
- ADFG/Industries **in-season actions/reactions** of/to the plan's implementation, followed by:
- ADFG/ KFGAC **post-season assessment** of all pertinent aspects of that plan, followed by:
- BOF/ADFG **season-summary reviews/discussions** and adjusted regulatory guidance, as needed

##### **CNF Data Packets:**

These packets were initially included in the original AMP document as briefly identified graphics, but as ADFG became computerized and stakeholder data requests increased and as separate data packets were developed for BOF presentations, there was increasing public demand for these packets. These distributions have been very important for keeping all stakeholders well informed of KMA's CNF mgmt. procedures and especially escapement pattern expectations and correlated mgmt..actions;

##### **Daily Escapement Data:**

Daily escapement observations at ~12+ annually operated weir sites, occur for all species tallied whereby, 10 comparative years data will be documented and distributed daily, all on one sheet of paper for the entire season.. This public distribution occurs via ADFG web site, hardcopy handouts, newspaper publishings, misc. conversations, etc. It provides important educational stock status Information for cultivating stakeholder in-season assessment and support of KMA's ADFG mgmt. activities.



### **Fisherman's Chart/Guide:**

Also, readily available to all stakeholders, as previously mentioned, is an enhanced locally crafted ADFG 'fisherman's chart' depicting the entire KMA, its Area boundaries, its District and Sections 'mgmt. unit' boundaries, its number-identified salmon streams, its stream terminus and estuarine/extended bay closed water 'salmon build-up' sanctuaries, its 'sea-ward and shore-ward zone' locations per a BOF Regulatory Plan, along with a brief narrative describing closed waters interpretations and an associated chart legend. This chart remains an important visual aid for all stakeholders. It is used to ensure that current E.O. announced harvest opportunities are correctly relayed and understood by remotely positioned active CFEC Permit holders. The E.O.s, numerous and frequent, represent somewhat complicated in-season field announcements and these charts provide a depicted geographical aid for each E.O. issued by KMA's ADFG. Specific legal descriptions for all aspects of this chart are included in KMA's Commercial Salmon Fisheries Regulation Booklets.

### **Escapement Databases:**

Annually, ADFG mgmt. budgets prioritize in-season operational efforts to achieve escapement goals. Post-statehood management efforts have been motivated by the local staff's posted 'biblical-like' directive of **"It's the escapement stupid!"** This helps insure that ADFG efforts remain aggressively focused on progressively accumulative escapement data collection, in season, for the vast array of KMA's wild salmon systems.

Interestingly, of KMA's ~400+ documented salmon systems, species-specific distribution by systems are: Kings 3, Reds ~23+, Coho ~65+, Pinks ~400+, Chums ~100+. Noteworthy, ADFG KMA's data summary reports to EVOS litigation evaluations (Barrett, et al) present defensible statistics identifying KMA's MSY salmon **"production potential"**. KMA's non-local deviant harvest components, i.e. CISMP TSH and NSSMP ISH, seemingly occur in quantities that do not yield KMA's **'return per spawner'** levels in excess of normal expectations; food for thought!

ADFG's mgmt. team, which includes the lead mgmt. biologist and assistants, aggressively collects and compiles in-season post-fishery escapement estimates by species by system. ADFG's historical observations provide documented chronological sequences directing in-season data collection. This further facilitates mgmt. actions identified in an AMP promoting structured pulse fisheries, as defined for MSF's 'far-terminal', 'near-terminal' and 'explicitly terminal fisheries'. These actions should yield 'pulsed escapements' into 'closed water sanctuaries' which, as eventual escapement, create the 'potential for MSY' from KMA's salmon production systems.

**Reiterating**, ADFG's aggressive mgmt. approach requires exceedingly current escapement knowledge! KMA's escapement data base is historically extensive both as indexed total escapement data from fish-weirs and as indexed escapement data from aerial surveys and via some foot surveys. As mentioned, significant portions of ADFG's KMA operational budget are allocated to enhancing its salmon escapement database. Fish-weir activity is costly, but extremely cost effective considering the value of sustainably managing local salmon stocks. Likewise, aerial surveys are increasingly costly but are so very critical for successful in-season aggressive mgmt. actions. Proper development of ADFG's defensible escapement database is required for achieving desired MSY goals.

As needed, a conveyed ADFG to stakeholder 'homily' regarding regulatory achievement of escapement goals has seriously, but in good humor, been expressed that, "You hate to love us in-season when fisheries are restricted, and yet you love to hate us post-season if escapements are weak". Accordingly, KMA industry continues to appreciate ADFG's efforts towards achieving MSY salmon production.

## **NOTEWORTHY REGULATORY HISTORY**

### **General Discussion:**

From early post-statehood years to the late 1980's, a ~30 year period, annually occurring BOF post-season regulatory meetings occurred. Since then, this schedule changed to a three-year cycle of regulatory review, current through today, an ~27 year period. ADFG 'Reports To The Board' summarize annual mgmt. activities, regulatory performance, stock status trends and localized industry's economic status. Regulatory issues, as identified by 'proposed regulatory change submittals', are commonly addressed by both public and agency testimony for BOF considerations. Variations from the current three year schedule requires a strictly structured Agenda Change



Request (ACR) submittal allowing the BOF to address 'special situation' considerations deemed regulatory necessary for addressing perceived or factual biological and allocative harvest deviations concerns.

Post-statehood regulatory discussions, transitionally placid, evolved to annually tumultuous events triggered by statehood's localized freedom to aggressively impact pertinent regulatory applications. Specifically identified were ADFG's desires to exercise stricter local mgmt. control and industries attempts to either establish perceptions of gear-type regulatory parity or else to contentiously propose adversarial positions regarding ADFG mgmt. Local KFGAC forums annually yielded 'old style' town hall meetings, with sometimes drama-filled discussions, usually fairly civil, highlighting all such post-season gatherings.

These types of gut-wrenching meetings, in hind-site, can now be characterized as necessary 'bonding events' between and amongst 'Regulators and Regulated' stakeholders. The tumultuous ~20 year decades of the 1970's and 80's, while locally difficult, did yield the relative stable regulatory decades of the 1990's continuing through to today. ADFG's mgmt. actions, while seemingly imperfect, have been strongly supported by most of KMA's well informed stakeholders who continue to responsibly address contentious intra-allocation issues, but do remain strongly united on inter-area allocation issues which, if eventually yield radical regulatory adjustments, could potentially severely impact KMA's well established and managed salmon production.

Pointedly, KMA's historical ISH of non-local stocks (CMA and CIMA-bound sockeye) have been an apparent significant component of KMA's total annual salmon harvest. This factual issue was 'baked into' CFEC considerations for correlating final KMA gear levels with its historical salmon fishery economics. Notwithstanding the need for biological considerations and allocative expectations for ISH of non-KMA stocks, proposed adjustments to existing 'Inter-Area Regulatory Plans' must recognize this ISH's historical contribution to KMA's salmon production. Any proposed Inter-Area regulatory adjustments must be mathematically defensible in a clear and concise manner. Technically summarized scientific data analysis MUST be understandably conveyed to all stakeholders, otherwise it will be prioritized as suspect and even meaningless!

Pointedly, recent CIMA ACR-submittals, to be discussed at the Oct. 2017 BOF meeting, have subsequently suggested alarming KMA regulatory adjustments. Questionably contentious inter-area ISH issues, vulnerable to a cursorily biased genetics study analysis, could egregiously support misguided ACR submittals structured to result in a blatant, unnecessarily destructive impact on KMA's CNF. Severe economic disruption to KMA's salmon industry will definitely and explicitly result if these ACR's intents are adopted as submitted.

**KMA Intra-Area and Inter-Area Mgmt. Plans:**

Factually, as previously mentioned, KMA CNF current regulations address two *inter-area* harvests of non-local sockeye. These are identified as either/or::

- A targeted sockeye harvest (***TSH***) on Chignik Mgmt. Area-bound (CMA) sockeye, managed specifically within KMA's Phase I and II 'far-terminal' Cape Igvak section fisheries (CISMP) but have been historically managed for local stock's 'near-terminal and terminal' Phase III Fisheries;
- An incidental sockeye harvest (***ISH***) on Cook Inlet Mgmt. Area-bound (CIMA) sockeye, managed specifically within KMA's Phase II "far, near and terminal fisheries" identified NSSMP-related mgmt. units, but which have been historically managed for local stocks in Phase II and III fisheries.
- The CISMP was initially developed in the late 1960's and has been further modified into today's ***TSH*** version. It has been in effect continuously for ~48 years. CMA's sockeye stocks have been cursorily identified to comprise of ~90% of CISMP's indexed ***TSH*** sockeye harvest. The CISMP provides both biological and allocative protection of CMA's bi-modal sockeye returns via contained time and area KMA openings and through closely monitored sockeye harvest rates; coordinated with CISMP's time-specific actions during vulnerable CMA sockeye stock's bimodal overlap closures.



- The NSSMP was initially drafted in the late 1980's in response to KMA's *ISH* on a specific phenotypically identified suspected non-local sockeye stock (CIMA-bound Kenai River sockeye) which had been experiencing record sockeye returns throughout the late 1980's. The NSSMP identifies time, area and harvest level restrictions for specific mgmt. units, or portions thereof, to contain that *ISH*; stock-specific harvest levels were cursorily extrapolated without harvest rates being identified. This BOF inter-area plan has remained in effect annually since 1989, an ~28 year period, suggesting that this *ISH* has not convincingly impacted biological requirements or allocative expectations for CIMA-bound sockeye stocks. Pointedly, a further implication is that ADFG CIMA AMP's should provide the primary responsible, defensible in-season intra-area mgmt. actions needed to guide intra-area issues. Consequently, CIMA AMP's must thoroughly be reviewed and screened as needed to maximum rational mgmt. levels before 'chicken little' inter-area ACRs are allowed to be submitted and considered.

Noteworthy, is that both of KMA's inter-area plans have been rigidly subjected to cyclic BOF regulatory review and to annual KMA AMP's scrutiny. Both inter-area plans have essentially maintained their stated regulatory compliance per each plan's respective specific criteria. This fact remains an important consideration for future regulatory review by all inter-area stakeholders and especially ADFG and BOF scrutiny.

KMA's adherence to its AMP-evolved intra-area quest for regulatory predictability, hence its economically anticipated long sought fishery stability, can be considered as exemplary per ADFG's statutory requirements.

**Misc. Historical Agency 'Information':**

Early KMA post-statehood 'factoids' emanating from Territorial agencies and industry 'intelligencia' bemoaned July's diminished sockeye harvests in KMA's 'west side sockeye fishery'. Initially it was conveyed as the loss of Karluk system's over-harvested "middle-run" sockeye production, which likewise accounted for Karluk's diminished sockeye escapement throughout the late-June to early-August period.

KMA's fish-weir escapement database for its sockeye systems, collected annually over an ~35 year pre-statehood history, identified all of KMA's major systems as having bi-modal production, i.e. two defined sub-populations. Fish-weir escapement time-of-entry data identified early- and late-run segments which peaked at ~ mid-June and ~late-August, respectively. KMA's major sockeye stocks, as monitored by fish-weirs at that time, were all noticeable deficient in July sockeye production, even when considering over-lapped 'production tails' between strong returns of early and late run's sub-stocks.

Further investigations identified minor sockeye systems on KMA's Eastside District where sockeye production essentially peaked in mid-July. Subsequent donor stock selectivity from such robust populations has yielded extensive barren lake enhancement sockeye production potential for S01K and S4K gear within Central Section Phase II Fisheries. Namely, KMA's eastside Saltery Lake's sockeye donor stock has provided significant production from KMA's westside's formerly barren Spiridon Lake, annually since the late 1990's, an ~20 year period.

Historically, agency mantra persisted that "KMA's westside lost indigenous July sockeye production" had been over-harvested; probably by pre-statehood fish-traps. Interestingly, post-statehood trap elimination did not yield increased July sockeye escapements into westside systems, even during years of extensive July fishery closures for pink salmon stock rebuilding efforts.

-Essentially, ADFG's investigations in the 1970's yielded a more realistic conjecture regarding KMA's July sockeye escapement deficiencies. Rather than having had resulted from "CNF over-fishing", it appeared to be an obvious mis-guided phantom 'factoid' conveyed via territorial to early statehood agency speculations.

- Specifically, KMA's major sockeye system, Karluk, historically being a closely monitored fish-weir station since 1924, was without a documented July "middle-run" during that ~97 year period when this stock would have been overfished.

- Historically, KMA sockeye harvested in July had averaged ~ 6.0+ lbs while those harvested in June and



August/September averaged ~5.0+ lbs., per ADFG 1980's investigations of industry's historical case pack data.

Post-statehood ADFG mgmt. transitioned from Territorial's cumbersome relatively fixed regulatory structure to Statehood's intense rapidly responding in-season mgmt. actions.. Subsequently, it focused upon CNF quality harvests of projected local stock surpluses, as previous discussed, and it strongly promoted pulse fishery/pulsed escapements as described in AMP's.

-Noticeably, near record CIMA sockeye returns of the late 1980's resulted in a surprising occurrence of ISH of CIMA-bound sockeye in KMA's July directed fisheries upon local stocks. Post-season, this issue was described per well reviewed AMP debriefings at KFGAC meetings. Phenotypically, large-bodied sockeye embellished KMA's July CNF harvest. Especially noteworthy were ISH locations where KMA's AMP aggressively directed CNF effort on local pink salmon stocks occurred in certain northern Shelikof Straits mgmt. units;

-Submitted CIMA proposed regulatory adjustments resulted in BOF adoption of KMA's NSSMP, an inter-area regulatory action intended to contain KMA's specific ISH on suspected CIMA-bound sockeye;

-Subsequent mgmt. actions for the NSSMP yielded 'sockeye harvest-triggered caps' that somewhat correlated with above average Kenai system's sockeye production;

-Of recognized importance, per these late 1980's ISH's, are the harvesting conditions required for incurring favorable probabilities of a KMA ISH on CIMA-bound sockeye, such as:

- \* Pre-announced open fishing periods targeting local stocks where ISH could occur;
- \* Persistent fishable weather conditions where ISH could also occur;
- \* Production of CIMA-bound sockeye at above average levels thus increasing potential ISH in KMA;
- \* Predictability of CIMA-bound sockeye migratory patterns for successful ISH targeting efficiency;
- \* Favorable tidal series for CIMA waters to increasingly ebb through KMA causing increases in deviant CIMA sockeye homing migrations and subsequent increases in ISH by KMA CNF.

-Aforementioned ISH 'opportunities' requires that serious consideration be given to the annual variability of CIMA-bound salmon migration patterns:

- \* CIMA-bound salmon's in-shore migrations generally track them exiting from the Alaska Gyre, primarily traveling northerly through Kennedy and Stevenson Entrances and eventually homing into Cook Inlet waters, as was conjectured in KSWG's 1989 contracted document from Natural Resource Consultants of Washington state.
- \* Unknown portions of CIMA-bound salmon can migrate through KMA waters homing on portions of CIMA waters ebbing through the KMA for extended periods, per anecdotal testimony conveyed by KMA longline and pot fishermen. This conjecture thereby yields observed potential deviant migration patterns for CIMA-bound salmon.
- \* Consequently, any KMA ISH on CIMA-bound salmon, represents an annually variable **unknown impact (rates) of unknown proportions (levels) on unpredictably deviant portions of unknown stock-specific CIMA-bound stocks and their respective unknown total biomasses!!** Mathematical extrapolations notwithstanding, this stated 'cause and effect conjecture' should require comprehensive explanations to all stakeholders if Inter-Area Mgmt. Plans are intended to be adjusted by BOF actions.

-Determining KMA's ISH impact upon CIMA-bound sockeye stocks remains essentially unknown. Poorly conceived future regulatory adjustments to KMA's existing NSSMP, without more precise stock-specific ISH rates and levels, should be concerning and strongly avoided as need be.



Specifically, CIMA biological requirements and allocative expectations must be clearly defined, whereby KMA's ISH **rates and levels** are 'clearly identified and reasonably defensible' and whereby extreme regulatory adjustments, as deemed needed, will not destructively impact KMA's Borough supported salmon fisheries.

*\*Without statistically defensible databases to expeditiously guide in-season mgmt. actions, reactionary economically devastating regulatory actions remains KMA's primary concern with anticipated BOF consideration of related recent ACR submittals;*

\*As previously stated, KMA clearly understands biological and allocative concerns by CIMA Stakeholders, especially as presented by selected print media. Generationally, their exposure to KMA's historical, but not yet fully and clearly defined, ISH of CIMA-bound sockeye persists.

\*However, those concerns could be mitigated by considering KMA's NSSMP-directed mgmt. responses, i.e. harvest caps, during its effective ~28 year existence. CIMA's recently elevated concerns about KMA's ISH have become newsworthy following ADFG's Genetic Studies analysis

\* Summarization of KMA's MSF stock composition, and its ISH on CIMA--bound sockeye stocks along with stock-specific harvest **rates and levels**, needs to be candidly and persuasively discussed in a manner explicitly comprehended by all. Currently, there exists, a strong KMA perception of a questionable 'shade-tree aspect' to ADFG's analysis of their mal-designed Genetic Study. KMA's AMP describes Fishery Specific Phases I, II and III, which is a longstanding mgmt. structure that should have guided this surprisingly uninformed sampling design for ADFG's Genetic Study.

**Misc. Historical BOF Testimony Regarding KMA Salmon Mgmt.:**

Noteworthy to KMA's mgmt. efforts remains its stakeholder's strong support for ADFG's escapement mandates and it's data collection process. This type of 'understanding stakeholder support ' continues to grow as a knowledgeable citizenry actively studies ADFG's KMA CNF mgmt. structure.

Furthermore, KMA ADFG mgmt. staff testimony to KFGAC and BOF regarding KMA's salmon stock status and it's related industries viability, as allowed to be presented, has been the regulatory-gluue that has healed any festering adversarial relationships between agency regulators and industry's regulated entities.

Observed recent trends for conveyance of KMA's mgmt. actions, however, does suggest a retro-grade trend of ADFG HQ 'interference' of local AMP applications. Specifically, HQ guided regulatory 'staff positions' would be noteworthy when suggesting **'politically-induced' directives rather than expected 'policy-guideline adherences.** KMA's in-season mgmt. action specifics need to be honestly and factually conveyed at BOF meetings where defensible decision-making procedures will yield valid 'BOF findings'. KMA's ADFG local staff availability and their comments have always been considered crucial and 'second to none' in that regard. For those uninformed folks about the importance of ADFG's 'Area Mgmt. staff', it must be understood that, these specific 'Area Mgmt. positions', knowingly encompass most precisely the status of **'all things related to the salmon fisheries they manage.** These staff will proficiently possess that knowledge to address industry stakeholder's severe scrutiny of their job performance. These staff positions directly relate to their Area's economic stability as required by initiating proper local salmon stock management. Accordingly, their in-season mgmt. actions are structured to 'create the potential' for MSY of that area's sustainable salmon production and should be evaluated as such.

Quizzically, this attitude contrasts strangely with adjacent CIMA stakeholder's BOF conveyed testimony. Their cherished 'naturalist' approach, as opposed to ADFG's 'scientific' data collection process for determining 'proper and adequate' escapement levels was provided by interesting testimony. Specifically, their enlightened process of determining a **"stink on the bank"** escapement factor, when visiting their favorite streams, reveals a localized 'escapement status factor', i.e. an enlightened 'pheromone-induced' escapement data collection process; further handicapping their credibility-challenged testimony!



Also, lingering recollections persist of CIMA seiner's angry BOF testimony regarding 'KMA's "Viking Management" as related to the ISH issue. Their comparisons of CIMA's extremely restrictive AMP to KMA's aggressive AMP further challenged Inter-Area AMP issues, implying KMA mis-management. This mis-understood historical perspective reflected poorly, then and now, upon ADFG HQ being dutifully required to properly convey to CIMA stakeholders the known specifics about KMA ISH issues. Likewise, an evolving KMA perception developed that CIMA's parochial biases were prevalently ascending within ADFG HQ. Subsequent testimony by CIMA stakeholders was revealing in that regard. CIMA AMP Intra-Area actions were seemingly secondary issues at that time. KMA ADFG responses to CIMA's ISH concerns remained less focused than that of KMA's pertinent remedial local stock mgmt. efforts to address it's historical Intra-Area harvest quality and gear-allocation issues.

Critically disruptive regulatory issues for KMA's CNF were prevalent through-out the early post-statehood decades. However, the aggressive AMP strategies implemented by the late 1970's did successfully address and alleviate both pertinent harvest quality and gear allocation issues. Industry's expressed criticisms of ADFG KMA's post-statehood salmon mgmt. approach was resolved by implementing these aggressive AMPs!

Explicitly, the KMA's pink salmon stock rebuilding and harvesting strategies implemented in the late 1970's were critically important. The General Pink Salmon openings, during Phase II fisheries of late July, were adjusted to occur earlier, specifically on July 6<sup>th</sup>. This remedial mgmt. action has been reoccurring annually for the past ~38+ years. Noticeably, this action eliminated the harvest of 'built-up volumes' of 'watermarked dark & soft humpy shingles' which had been yielding case pack quality downgrades identified as some of the worst statewide. This also stabilized a persistent gear allocation issue in both the Central and Moser/aOlga Bay Sections.

Interestingly, certain 'deviant journalistic entrepreneurs', ill-informed via parochially-biased CIMA stakeholders, unabashedly used their news media forum to 'pimp' their 'journalistically cherry-picked antagonistic opinions'. Their published narratives have been consistently presented as 'self-embellished factual statements' deliberately bent to foment disharmony amongst well intentioned stakeholders struggling to understand ADFG mgmt. truths. Keenly written 'Letters to the Editor' should expose the mental deficiencies of these 'wanton wordsmith's' lusts for inducing regulatory havoc!

Generationally, as exhibited by recent hyper-discouraging public testimony, a 'misinformed, generationally self-limiting understanding and application of both CIMA and KMA's AMP's has presented itself as a flawed character issue'. Serious-minded rational stakeholders have attempted to embrace an honest understanding of both Inter-Area and Intra-Area mgmt. procedures. ADFG regulatory structured AMP's, guided by BOF regulations, are the baseline procedures that must be understood. Increased public interactions coupled with strong discussions about AMP development should be enhanced, as needed. Inter-area issues, likewise, need to be purged of parochially biased anecdotal information. ADFG's role, factually based, will be critical to developing future regulatory harmony for all.

To that end, in the late 1980s, KMA ADFG mgmt. staff provided a public presentation to CIMA stakeholders in Soldotna, per their request, regarding KMA's AMP application and related ISH conjecture associated with KMA's historical salmon fishery. The attending citizenry were graciously inquisitive, appreciative of KMA's staff presence and expressed a keen interest in understanding KMA's salmon management program. KMA staff considered the Soldotna experience a very positive 'regulator agency/ regulated stakeholder' event, certainly worthy of additionally similar interactions. As discussed, the recognition of a 'correlating database' may have regulatory tracking potential, but whereas the quest for a 'causation database' seemingly remains elusive. Again, food for thought!!



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Dear Board of Fish,

Hello, my name is Lee Walters, operator/owner of Cape Uganik setnet site. I've been fishing on Kodiak for 25 years and have owned my site for the past 14 years. I realize that this letter is coming in just under the wire, but I've been agonizing over things like citing sources, format, and proper language. I'm setting all of that aside just to let you know what I think about the UCIDA agenda change. I am all about fairness and equity. We, as fisherman, hopefully share a common goal of doing what is right by the environment so that the return of fish keep coming, and by each other, so that we can all share a piece of the harvest pie. I've sat by as fishermen have squabbled about who deserves what share of the harvest. I have never gotten rich in this industry. I have completely shifted my priorities the rest of the year so that I can offer my family the opportunity to grow in the Alaska bush. And they have thrived in this environment.

We are on a cape on the Shelikof Straight, arguably one of the roughest sites on the Island. Janet Axell, the woman we bought the site from pioneered the site 25 years before we bought it. She traditionally fished it until mid-July as the NW storms become more prevalent. We have extended this season until mid-August and braved the NW storms. So, this is the extent of our fishing season, from June to mid August. Now it seems like this short season is being threatened by a new proposal? How much is history and tradition taken into account in these decisions? We bought into a site 14 years ago where we accepted the management plan of our local fishery. If our streams weren't getting the escapement they needed, we gladly pulled our nets for the sake of longevity. We did not sign up for claims of fish ownership from Cook Inlet, Japan, California, or any other entity looking to make their piece of the pie a little bigger.

You have a big job and a big decision to make. Some people may make a little more or a little less money if in favor of Cook Inlet. In our case, it's an absolute nail in the coffin for our business and way of life. I hope we are allowed to continue our historical way of life.

Thank you for your consideration,

Lee, Christy, Zack Walters

Cape Uganik setnet site



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9-28-17

Chairman John Jensen  
Alaska Board of Fisheries  
Board Support Section  
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Juneau, Ak 99811-5526

My name is Leigh Gorman-Thomet. I've been a commercial fisher in various fisheries for 34 years – predominantly salmon. My family and I have operated a setnet site on Kodiak Island for 28 years. I am writing to oppose the agenda change request no. 11.

In 1992 I remember writing my first letter to the B.O.F. opposing this very same issue. Back then Cook Inlet fishermen were concerned about Kodiak's sockeye interception and the issue is no different now. UCIDA's ACR does not meet the criteria because there's no new information, only new technology providing nuance to what was already known. This sets a dreadful precedent to overwhelmingly disrupt one area's fishery to slightly advantage another area's harvest.

Since the State of Alaska took over the salmon fishery in 1959 salmon have been considered 'common property' and DO NOT belong to the management area where they were born. This is reflected in the B.O.F mixed stock policy. If Kodiak is regulated for the presence of Cook Inlet sockeye, will the BOF also regulate Chignik and Area M for the take of Kodiak sockeye and pink salmon?



The BOF greatly relies on public involvement in their process and because of this, it is considered by many to be the gold standard of fisheries management in the country. Addressing ACR No. 11 out of the normal board cycle disenfranchises the Kodiak community and diminishes the public's confidence in the way the BOF operates.

It is my hope that the BOF members take a considerable amount of time to understand the complexity and long history of the Kodiak region before changing the Kodiak management plan.

Thank you for your valuable time.  
Leigh Gorman-Thomet