February 06, 2024

Dear Chairman Wood and Board of Fisheries members:

I am a lifelong fisherman. I have fished in Alaska for 40 years. I was a drift boat fishing from 1990 until 2006 on the Kenai, Kasilof, and Gulkana rivers. Since then I have continued recreational, and personal use fishing for salmon on the same rivers and also saltwater fishing out of Seward, Homer, and PWS. Over the years there has been a noticable decline of King salmon. The fisheries must be managed for abundance before it's too late to recover a healthy return of Kings.

Large escapements over the last 20 years continue to produce average to large returns of sockeye in the Kenai and Kasilof rivers. More fish in our rivers means more opportunity in sport and personal-use fisheries and likely greater numbers for future years. This is why I support Proposal 112 to increase the Kenai sockeye in river goals.

Available evidence proves shallow gillnets reduce king salmon harvest. We need to change the mesh depth gillnetters use to target sockeye to protect king salmon. This is why I support Proposal 106.

The Board of Fish adopted a Mixed Stock Policy and I support decreasing time, methods and means and other commercial fishery limitations to protect weaker salmon stocks such as late-run Kenai kings and Susitna sockeye.

Commercial fishing near the mouth of the Kasilof and Kenai Rivers is similar to an on/off switch allowing fish to enter the river. I support increasing the commercial fishing closure “window” from 36 hours to 48 hours to increase escapement and increase opportunity for Alaskan residents to harvest sockeye salmon. This is why I support Proposal 90.

Large commercial sockeye harvests come at the expense of other species and stocks in Cook Inlet. The Inlet must be managed to share the burden of conservation among all user groups and no longer prioritize commercial harvest.

I thank the Board for historic actions taken in 2020 to protect late-run Kenai king salmon and other weak stocks of salmon. I support equitable sharing of the burden of conservation among all user groups to protect and rebuild these stocks. Now is not the time to expand commercial fishing or lower escapement goals. In times of low abundance, we must put the fish first and allow more fish onto the spawning grounds.

Sincerely,

David Musgrave
Indian, AK

February 8, 2024

Alaska Board of Fisheries
P.O. Box 115526
Juneau, AK 99811-5526

Dear Board of Fisheries,

Salmon hatcheries support my way of life in many regards. Members of my family, friends and I all depend on the sustainability of salmon returning every year as a food source, a business, and for the wellness of the tourism industry. It sustains my subsistence harvests as I prepare food for my family for the winter. It sustains salmon harvest for me as a commercial fisherman and sustains members of my family and friends as sport fishing guides. The industry of sport fishing for salmon around Seward almost completely relies on hatchery salmon and would destroy the tourism built around salmon fishing here. Guidelines for fishing put forth by fish and game ensures we target hatchery fish instead of the wild runs therefore protecting these wild runs. A decrease in hatcheries would mean harvesting more wild fish unless the plan is to decrease ALL salmon fishing in Alaska. In this current economy, I don't think Alaskans can afford to take a decrease in salmon fishing in any part of the salmon industry. It would be detrimental across the board. Not to mention it would leave fish management to allocate the cutbacks for salmon fishing. That begs the question: would each area of salmon harvesting get cut equally or would one area of industry end up taking an unfair portion of the cut? If so, can you clearly outline which area of salmon fishing will be most negatively affected?

I appreciate your dedication to the conservation and sustainable management of Alaska's salmon fisheries. The Board of Fisheries full consideration is crucial in shaping the future of our salmon resources.

**Support for Removing Proposal 59:**

I support the decision to remove Proposal 59 from the Kodiak meeting agenda because I believe it is essential to distinguish between proposals that modify regulatory changes within specific regions and those with statewide hatchery implications. This was an important action in regards to precedent and process. Statewide hatchery issues, including any regulations with statewide precedent, should be addressed at a statewide venue. This ensures consistency and fairness in the decision-making process.

**Statewide vs. Regional Precedent:**

When addressing statewide hatchery issues that have the potential to establish precedents or modify hatchery regulations impacting multiple regions, it is essential to do so within a statewide venue rather than restricting discussions to regional meetings. Salmon hatcheries are integral to Alaska's fisheries, influencing various regions and user groups. Numerous hatcheries are linked with Pacific Salmon Treaty mitigation obligations. Decisions made solely at the regional level may lack the comprehensive perspective necessary to ensure consistency and fairness in overarching hatchery management decisions. Holding these discussions at a statewide level allows for a more inclusive and well-informed decision-making process, involving stakeholders from all regions. This approach considers the diverse interests and nuances of Alaska's intricate salmon fishery landscape, ultimately contributing to the long-term sustainability of our fisheries and ensuring that hatchery-related regulations align with the overarching goals of responsible resource management. Most hatcheries operate sport, personal use, and subsistence programs that can only exist with the financial support of the PNP organization

**Opposition to Proposal 43:**

We continue to oppose Proposal 43, for the following key reasons.

(1) Lack of Scientific Evidence: Proposal 43 lacks substantial scientific evidence to support claims that hatchery fish have a detrimental impact on wild salmon populations or ecosystems. Decades of research and data show that hatcheries and wild salmon can coexist and even thrive together.
(2) Steady Increase in Wild Salmon Returns: Contrary to the proposal's assertions, regions with hatcheries in Alaska have witnessed steadily increasing wild salmon returns since the early 1970s when these programs were established. Hatcheries have not replaced wild salmon but have provided a stable supply for commercial, sport, and subsistence fisheries, while at the same time wild stock escapements are being met.
(3) Social and Economic Benefits: Hatchery programs have been instrumental in meeting the demand for salmon while preserving wild stocks and their habitats. They support the livelihoods of Alaskans, contribute to local economies, and provide a buffer against the variability of wild salmon runs.

As an Alaskan and supporter of responsible resource stewardship for future generations, I thank the Board for this opportunity to advocate for sustainable fisheries management practices and the long term, science-based decision making when it comes to hatchery resources.

Sincerely,
Jenny Nakao
[redacted]
Seward, AK

Native Village of Tyonek

February 6, 2024

Tyonek Fish and Game Advisory Committee
Attn: Donald Standifer, Jr
Tyonek, Alaska 99682
[redacted]

Re: Support of Proposals

Dear Mr. Standifer and Tyonek Fish & Game Committee members,

The Native Village of Tyonek is writing in support of the Tyonek Fish and Game Advisory Committee on their proposal 131, 142 and 217 in support of the Alaska Board of Fisheries 2023/2024 proposal book.

There was a public Tyonek General Meeting on January 20, 2024 and the proposals were discussed and was unanimously passed in support of these proposals 131, 142 and 217 as amended to closure of Cook Inlet commercial smelt fisheries only and not affect personal/subsistence use.

The Native Village of Tyonek relies upon our native lands and subsistence and commercial fishing as a way of life, to sustain us through the winter months, and are in support of these proposals.

If you have any comments or questions, please feel free to contact me at the contact information below.

Respectfully,

Johann Bartels
President, Native Village of Tyonek
[redacted]

February 12, 2024

Alaska Board of Fisheries
P.O. Box 115526
Juneau, AK 99811-5526

Dear Board of Fisheries,

I commercial fish in Homer, Alaska. The purpose of Proposal 43 is to bankrupt hatcheries and subsequently the fishermen and other businesses that rely on hatcheries. Plain and simple.
We are a three generation fishing family that relies on hatcheries for most of our income. This proposal would be devastating. Please strongly oppose it.

Sincerely,
Jessie Nelson
[redacted]
Homer, AK

**Submitted by:** Thomas Nelson
**Community of Residence:** Homer, AK

I am writing to comment on proposal 43 regarding hatchery operations and egg takes. I STRONGY OPPOSE proposal 43 , firstly this is outside the boards authority to regulated hatchery operations. This is firmly under the authority of ADFG. This proposal lists many so called "studies" that suggest hatchery production is affecting wild fish. There is no evidence of this, and none presented in the studies, merely speculation on the possibility that it could happen. This makes nearly all these white papers nothing more than an op-ed. They do not meet the bare minimum required to make such assertions. You would have to establish that there is overlap between species and if there is overlap are they present in sufficient numbers to have a negative effect. None of these studies even come close to that let alone factoring in all the other juvenile fish in the North Pacific. Hatchery salmon represent a small fraction of salmon in the ocean, and an even smaller fraction when compared to all nektonic species. This Proposal is politically motivated and has no justification being considered.

Thank You Thomas Nelson Homer, AK

Proposal 43: Oppose

NORTHERN SOUTHEAST REGIONAL AQUACULTURE ASSOCIATION, INC.
1308 Sawmill Creek Road
Sitka, Alaska 99835
Office: (907) 747-6850 fax:(907) 747-1470

February 7, 2024

Alaska Dept. of Fish & Game
Alaska Board of Fisheries
PO Box 115526
1255 W. 8th Street
Juneau, AK 99811-5526
[redacted]

RE: **Opposition to Proposal 43**

Dear Chair John Wood and Board of Fisheries Members,

Thank you for the opportunity to comment on salmon enhancement related proposals submitted to the Alaska Board of Fisheries for the 2024 Upper Cook Inlet Board of Fish meeting.

I am the General Manager of The Northern Southeast Regional Aquaculture Association or better known as NSRAA. We are the regional aquaculture association for the northern portion of southeast Alaska and operate the areas salmon enhancement projects. My comments represent our 25 member board, and the fishermen they represent, made up of commercial salmon fishermen, with additional representation on our board by Sport, Subsistence, Processor, Municipal, Tribal Organizations, Conservation and interested persons form our region. Our board has broad representation from our region and at our Fall November 9th, 2023, meeting, our 25 member board passed a **unanimous** resolution, with no abstentions, **strongly opposing** proposal **43**. This proposal is opposed by ADFG in their staff comments and is likely beyond the Board's authority as well, as outlined in the Board's Department of Law comments regarding this proposal.

NSRAA strongly encourages the BOF to take no action on proposal 43. Proposal 43 has been submitted to the BOF with similar language a total of 8 times since 2005, in regions from Southeast to Prince William Sound, to Lower Cook Inlet to Kodiak. The majority of these proposals, five out of the eight, are asking for a significant reduction of hatchery production by 75% or greater. For nearly two decades these proposals have not been acted upon by the Board of Fish and NSRAA encourages the board to take no action on proposal 43. The current proposal before you is the most recent submission, which take up tremendous time by ADFG and BOF staff, hatchery operators, processors, commercial salmon fishermen, and yourselves, the Alaska Board of Fisheries members.

**Summary of BOF proposals submitted by the Fairbanks AC(FAC) or individual members of the FAC.**

| Year | Proposal # | Mtg/Region | Submitted By | Proposal Summary |
|---|---|---|---|---|
| 2005 | 38 | Prince Willam Sound | FAC Member | Reduce chum production 50% of 2003 level |
| 2006 | 155 | Southeast | FAC Member | Reduce chum production 50% of 2003 level |
| 2008 | 81 | Prince William Sound | FAC | Reduce chum production to 24% of 2000 levels |
| 2011 | 115 | Prince William Sound | FAC | Reduce chum production to 24% of 2000 levels |
| 2018 | ACR2 | BOF Work Session | FAC Member | Cap statewide private non-profit salmon hatchery egg take capacity at 75% of the level permitted in 2000 |
| 2021 | 54 | Prince William Sound | FAC Member | Reduce hatchery production to 24% of 2000 levels. |
| 2023 | 43 | Lower Cook Inlet | FAC | Reduce hatchery production to 25% of 2000 levels. |
| 2023 | 59 | Kodiak | FAC | Reduce hatchery production to 25% of 2000 levels. |

At submission Proposal 43 had contradictory language regarding the percentage of hatchery reduction sought in the proposal. It was so unclear that the FAC submitted RC029 at the LCI meeting clarifying their intended percentage reduction of pink salmon.

> **Fairbanks AC Clarifying Comments submitted at LCI (RC029)**
> *"**For clarification**, this should read: Reduce hatchery egg production permitting **to** 25% of the year 2000 production. Further, because each hatchery within the Cook Inlet Aquaculture Association (CIAA) PNP has its own egg permitting limits, the intent is to limit each individual hatchery accordingly. Note: The 2000 "promise" of reduction was only **by** 25%. This would not sufficiently reduce CIAA hatchery stocks. The clear intent of Proposal #43 is to **significantly decrease pink salmon production** [emphasis added] at a time when pinks are threatening entire ecosystems and other salmon and marine species."*

According to BOF Department of law comments provided to the BOF at the LCI meeting regarding proposal 43 the significant reduction in production in proposal 43 is likely beyond the Board's authority.

> **Dept of Law Comments for LCI regarding Proposal 43 (pg 3)**
> *"Proposal 43: This proposal would amend the Basic Management Plan to reduce hatchery production of pink salmon in Cook Inlet to 25% of the year 2000 production level, apparently without defining "production level." As proposed, this is likely beyond the Board's authority, which is limited by AS 16.05.251(f) and AS 16.10.400 - 16.10.440. "*

While the FAC clarifying comment does indicate intent to significant reduce pink production, it still lacks clarity on if this would apply to other salmon species produced at CIAA under each facilities Basic Management Plan. CIAA also produces sockeye and coho salmon at

their facilities. As written it would appear to apply to all salmon produced by CIAA further impacting commercial, sport, personal use and subsistence fisheries.

The ADFG has also submitted comments on proposal 43 and they are in opposition to this proposal.

> **Dept of Fish and Game Comments regarding Proposal 43 (LCI Mtg RC 2 pg 95-98)**
> *"DEPARTMENT COMMENTS: The department OPPOSES this proposal. Hatchery egg take levels are established through an iterative process involving department staff and stakeholders. Hatchery operations are permitted in a way that minimizes impact on wild salmon stocks and the commissioner can amend a permit if conservation concerns arise related to hatchery production. If there is a compelling reason to amend terms of a hatchery permit, the amendment should be based on analysis of data and there should be clear evidence the amendment will have a positive impact on wild salmon stocks. No evidence has been presented in this proposal to support the proposed reduction in permitted pink salmon egg take level."*

The ADFG has completed Bering Sea and Gulf of Alaska salmon genetic studies and is continuing the evaluation of potential enhanced produced salmon affects in ocean basin wide efforts. The Western Alaska Salmon Stock Identification Program (WASSIP) was undertaken from 2006-2009. This study was the first to determine ocean areas where overlap of chum and sockeye salmon stocks occur based upon genetic sampling. This study demonstrated the minimal overlap of chum salmon produced in the Western Alaska region and other regions of Alaska with enhanced production. This information is available at; https://www.adfg.alaska.gov/index.cfm?adfg=wassip.main

The more recent multi-national effort at continuing this type of research is the International Year of the Salmon study (IYS), which is ongoing, yet initial results indicate a confirmation of the WASSIP study showing minimal overlap of Western Alaska produced salmon and enhanced salmon production (including pink salmon) from other regions of Alaska. The BOF received an oral report at the 2023 BOF Hatchery Committee meeting with the results from the 2022 sampling. This report may be found at; https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2023-2024/hatchery/1-overview-of-scientific-understanding-of-salmon-competition-at-sea-and-an-update-on-research.pdf

More recently NOAA issued a report (November of 2023) looking at the recent Bering Sea and Gulf of Alaska heatwaves and their impact on AYK region chum salmon. This study indicated that the collapse of the recent AYK region chum salmon was likely the result of the marine waters warm period of 2014-2019.

> **Excerpt from NOAA November 2023 Marine Heatwave Impacts on Western Alaska Chum Salmon**
> *"After looking at nearly two decades of survey data, scientists found evidence to suggest that recent marine heatwave events in the eastern*

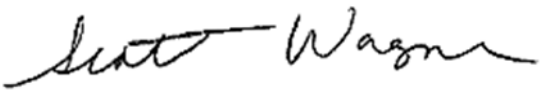
*Bering Sea and the Gulf of Alaska may have played a key role in juvenile chum salmon survival. Scientists also suspect this impacted subsequent adult returns to western Alaska rivers."*

This report may be found at; https://www.fisheries.noaa.gov/feature-story/new-evidence-marine-heatwave-impacts-western-alaska-chum-salmon

Proposal **43** will significantly reduce CIAA pink salmon production, and potentially sockeye and coho salmon, by 75%. This proposal lacks science-based support, is punitive in nature, is opposed by ADFG, beyond BOF authority and does not address an allocation issue in the LCI area. The proposal, whether intentional or not, would have tremendous financial impacts for CIAA and result in a reduction and likely elimination of most enhanced salmon production in the region, including enhanced sockeye and coho production.

Once again thank you for the opportunity to comment and thank you for the work you do on behalf of the subsistence, sport, personal use, and commercial fisheries of the state.

Sincerely,



Scott Wagner
General Manager

February 8, 2024

Alaska Board of Fisheries
P.O. Box 115526
Juneau, AK 99811-5526

Dear Board of Fisheries,

I'm part of the subsistence, commercial, and sport fisheries in Cordova, Alaska. Salmon hatcheries and the way Alaska has approached their development is something to take pride in. I am grateful for the folks before me that helped develop our hatcheries and their impact in preserving wild stocks while maintaining a fisheries economy in lean years.

I appreciate your dedication to the conservation and sustainable management of Alaska's salmon fisheries. The Board of Fisheries full consideration is crucial in shaping the future of our salmon resources.

**Support for Removing Proposal 59:**

I support the decision to remove Proposal 59 from the Kodiak meeting agenda because I believe it is essential to distinguish between proposals that modify regulatory changes within specific regions and those with statewide hatchery implications. This was an important action in regards to precedent and process. Statewide hatchery issues, including any regulations with statewide precedent, should be addressed at a statewide venue. This ensures consistency and fairness in the decision-making process.

**Statewide vs. Regional Precedent:**

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resource management. Most hatcheries operate sport, personal use, and subsistence programs that can only exist with the financial support of the PNP organization.

**Opposition to Proposal 43:**

We continue to oppose Proposal 43, for the following key reasons.

(1) Lack of Scientific Evidence: Proposal 43 lacks substantial scientific evidence to support claims that hatchery fish have a detrimental impact on wild salmon populations or ecosystems. Decades of research and data show that hatcheries and wild salmon can coexist and even thrive together.
(2) Steady Increase in Wild Salmon Returns: Contrary to the proposal's assertions, regions with hatcheries in Alaska have witnessed steadily increasing wild salmon returns since the early 1970s when these programs were established. Hatcheries have not replaced wild salmon but have provided a stable supply for commercial, sport, and subsistence fisheries, while at the same time wild stock escapements are being met.
(3) Social and Economic Benefits: Hatchery programs have been instrumental in meeting the demand for salmon while preserving wild stocks and their habitats. They support the livelihoods of Alaskans, contribute to local economies, and provide a buffer against the variability of wild salmon runs.

As an Alaskan and supporter of responsible resource stewardship for future generations, I thank the Board for this opportunity to advocate for sustainable fisheries management practices and the long term, science-based decision making when it comes to hatchery resources.

Sincerely,
Tracey Nuzzi
[redacted]
Cordova, Alaska

**Submitted by:** Eric Nyce
**Community of Residence:** Homer, Ak

Proposal 178

I strongly support this proposal. The duration of the coho fishery appears to have slipped through the the cracks in regards to the severe conservation restrictions which have already been implemented to protect returning Late Run Kenai River Kings. There is no justifiable reason to have any participation in a fishery that is yet to have any appreciable numbers of the targeted fish in-river. By shortening the coho season to align with the perceived season, it removes the option for sport fishermen to legally but illicitly catch and release chinook salmon.

As the Author of this proposal, my intent is to protect Late Run Kenai River Kings. If the word “Shall” becomes a sticking point as an additional conservation tool for the BOF, I am comfortable removing this to ensure the coho season is reduced to help conserve King Salmon.

Proposal 151

I strongly support this proposal. Regardless of the incredibly restrictive conservation tools which have been placed on commercial fishermen, Early and Late Run Kenai River Kings continue to be distressed stocks. With commercial fishermen not having fished Early Run Kings since the 70’s it is possible that in-river users’ participation in mixed stock fisheries are having an effect on spawning king salmon. Adding an additional day and expanding the waters for drift-only days is a very restrictive conservation tool, however the severity of it is in line with the complete closure of the entire ESSN fishery. Additional conservation efforts are needs to help ensure the viability of future fisheries.

Proposal 88

I strongly support this proposal. When the in-river commercial king fishery closes, the pressure on spawning king salmon from outboard noise pollution and water turbidity maintains or increases. If other regulations are not implemented to restrict motorized activity on the Kenai River, this proposal presents an alternative way to reduce the impact on King Salmon spawning grounds. Additional conservation measures, despite their severity, are needed in river, as the entire abolishment of the ESSN fishery is not producing the desired effect of getting substantially more Kings into the Kenai River. This will obviously have a severe economic impact on the in-river guided commercial fishery, however it is in line with the conservation measures placed on the ESSN fishery. The department states that they oppose this because it limits access to a fishery with a harvestable surplus. However, that is exactly what has been done to the ESSN fishery which sees an exploitation rate of 0.4% of the returning king run when limited openings are allowed. It is duplicitous of the department to support one user group over another with similar impact on the king fishery.

Proposal 86

I strongly support this proposal. This places paired conservation measures to protect Late Run King Salmon on in-river fisheries. The department states that they unilaterally restricted bait until the August 31, 2023 to protect spawning salmon, however this does not go nearly far enough to protect kings. By the departments numbers, there were at a minimum 5,962 Large Late Run Kenai River Kings (43% of the entire run) that were yet to spawn in the Kenai River watershed when bait was opened for the coho fishery in 2023. Eliminating bait in the coho fishery to protect these spawning kings is a proportional conservation tool in-line with other methods already implemented on other user groups.

Proposal 85

I strongly support this proposal. As the study listed in the proposal states, dangerous levels of noise pollution are being directed at Kenai River King spawning grounds. This proposal does not mandate that the Kenai River be drift only for all users, only those engaged in sport fishing. The Department of Fish and Game, dipnetters, sight seeing trips or any other motorized vessels that conforms to the current regulations would be exempt from

this proposal. This proposal solely restricts those vessels engaged in or transporting individuals who will engage in a sport fishery. This would be a very restrictive conservation measure, however the impact on in-river user groups would still be less that what the ESSN fishery has been forced to sacrifice to protect LRKRK's.

As the Author of this proposal, an alternative I considered was to not allow any guided activity in any capacity out of motorized vessels if the ESSN fishery was shut due to paired restrictions. This would avoid having any additional cost for the private person to participate in the fishery.

| | | | |
|---|---|---|---|
| Proposal 2: Oppose | Proposal 3: Oppose | Proposal 4: Oppose | Proposal 75: Support |
| Proposal 76: Support | Proposal 77: Support | Proposal 78: Support | Proposal 80: Support |
| Proposal 81: Support | Proposal 82: Support | Proposal 83: Support | Proposal 85: Support |
| Proposal 86: Support | Proposal 87: Support | Proposal 88: Support | Proposal 90: Oppose |
| Proposal 91: Support | Proposal 94: Support | Proposal 95: Oppose | Proposal 96: Oppose |
| Proposal 97: Support | Proposal 99: Support | Proposal 100: Support | Proposal 101: Oppose |
| Proposal 102: Support | Proposal 103: Support | Proposal 104: Oppose | Proposal 106: Oppose |
| Proposal 107: Oppose | Proposal 108: Oppose | Proposal 110: Support | Proposal 112: Oppose |
| Proposal 114: Support | Proposal 116: Support | Proposal 117: Support | Proposal 119: Support |
| Proposal 120: Support | Proposal 121: Support | Proposal 122: Support | Proposal 123: Support |
| Proposal 124: Support | Proposal 125: Support | Proposal 128: Support | Proposal 129: Support |
| Proposal 130: Support | Proposal 131: Support | Proposal 133: Support | Proposal 135: Oppose |
| Proposal 136: Oppose | Proposal 137: Oppose | Proposal 141: Oppose | Proposal 143: Support |
| Proposal 144: Support | Proposal 145: Support | Proposal 146: Support | Proposal 147: Support |
| Proposal 148: Support | Proposal 149: Oppose | Proposal 150: Oppose | Proposal 151: Support |
| Proposal 152: Support | Proposal 153: Oppose | Proposal 154: Oppose | Proposal 155: Oppose |
| Proposal 156: Oppose | Proposal 157: Oppose | Proposal 158: Oppose | Proposal 159: Oppose |
| Proposal 160: Support | Proposal 161: Support | Proposal 162: Oppose | Proposal 163: Support |
| Proposal 164: Support | Proposal 168: Oppose | Proposal 169: Oppose | Proposal 170: Oppose |
| Proposal 171: Oppose | Proposal 172: Oppose | Proposal 173: Support | Proposal 174: Oppose |
| Proposal 176: Support | Proposal 177: Support | Proposal 178: Support | Proposal 179: Support |
| Proposal 180: Support | Proposal 181: Support | Proposal 183: Oppose | Proposal 185: Support |
| Proposal 186: Support | Proposal 187: Support | Proposal 189: Support | Proposal 190: Support |
| Proposal 191: Oppose | Proposal 192: Oppose | Proposal 193: Support | Proposal 194: Oppose |
| Proposal 195: Support | Proposal 196: Support | Proposal 197: Support | Proposal 198: Support |
| Proposal 199: Support | Proposal 200: Support | Proposal 203: Oppose | Proposal 204: Oppose |
| Proposal 205: Oppose | Proposal 207: Oppose | Proposal 208: Oppose | Proposal 209: Oppose |
| Proposal 210: Oppose | Proposal 211: Support | Proposal 212: Oppose | Proposal 213: Oppose |
| Proposal 214: Oppose | Proposal 215: Support | Proposal 217: Oppose | Proposal 231: Oppose |
| Proposal 232: Oppose | | | |

February 8, 2024

Alaska Department of Fish and Game
Boards Support Section
P.O. Box 115526
Juneau, AK 99811-5526

Re: Opposition to Proposal 43

Dear Chair Wood and Members of the Alaska Board of Fisheries,

OBI Seafoods operates ten shore-based processing plants across Alaska. Our company has over 110 years of history in Alaska seafood processing. Sustainable salmon stocks are the single most important issue to the long-term viability of our company and the ability to maintain our industry's contribution to the state economy. We are steadfast supporters of Alaska's hatchery programs which have provided for Alaska's fisheries for nearly fifty years and appreciate their mission to coincide without adversely affecting salmon stocks.

We are writing to express our strong opposition to Proposal 43, which seeks to significantly reduce pink salmon production. As advocates for sustainable fisheries management and economic prosperity of coastal communities, we believe that Proposal 43 presents substantial risks to Alaska's salmon hatchery programs and the diverse stakeholders they serve.

**Commercial fisheries are not the only benefactors of hatcheries**
Hatchery programs encompass a wide array of benefits that resonate across diverse user groups within Alaska's communities. Whether it be subsistence, personal use, sport, or commercial fishing, hatchery-produced salmon plays an integral role in meeting the needs and preferences of each user group. By ensuring the consistent availability of hatchery-origin salmon, these programs facilitate equitable access to this invaluable resource, regardless of the fishing style or purpose.

**Hatcheries are responsibly managed**
Responsible management lies at the core of Alaska's salmon hatchery program, underlined by stringent oversight and regulation administered by the Alaska Department of Fish and Game (ADFG). Through meticulous attention to detail and adherence to scientific principles, the ADFG ensures that hatchery operations are conducted with the utmost care and consideration for environmental sustainability.

At the heart of this management approach is a commitment to data-driven decision-making, where scientific research and empirical evidence serve as guiding principles in shaping policy and operational protocols. By leveraging cutting-edge research methodologies and monitoring techniques, the ADFG gains valuable insights into the ecological dynamics of salmon populations, allowing for informed assessments of hatchery practices and their broader impacts on marine ecosystems.

Additionally, the ADFG's oversight extends beyond compliance with regulatory standards; it also includes a public process via their hatchery Regional Planning Teams. Through ongoing collaboration with industry stakeholders, community members, and scientific institutions, the ADFG fosters a culture of dialogue and

collaboration aimed at refining management strategies and enhancing the overall effectiveness of hatchery operations.

**Hatcheries reduce pressure on wild stocks**
Hatcheries play a pivotal role in alleviating pressure on wild salmon stocks, especially during periods of reduced abundance or environmental challenges. By supplementing natural populations with hatchery-produced salmon, hatcheries effectively mitigate the strain on wild stocks and help maintain the delicate balance of ecosystems. This supplementation strategy not only bolsters the overall abundance of salmon but also provides a crucial buffer against fluctuations in natural populations caused by factors like habitat degradation, climate change, and predation.

**Salmon produced by hatcheries are sustainable and RFM and MSC Certified**
The certification and sustainability of Alaska's salmon fisheries, encompassing both wild-caught and hatchery-origin salmon, represent a testament to the state's commitment to responsible resource management. This commitment is exemplified by the consistent recognition received from esteemed programs such as Responsible Fisheries Management (RFM) and the Marine Stewardship Council (MSC).

These certifications serve as external validations of Alaska's fisheries management practices, providing a seal of approval that underscores the dedication to sustainable harvesting and environmental stewardship. The acknowledgment of both wild and hatchery-origin salmon within these certifications reflects a comprehensive approach to fisheries management that recognizes the interconnectedness of natural and hatchery-supplemented stocks.

In conclusion, Alaska's salmon hatchery program stands as a shining example of responsible resource management and sustainable salmon harvests that profoundly benefit all Alaskans. Through decades of meticulous oversight and dedication to scientific principles, the state has fostered a robust hatchery system that not only supplements wild salmon populations but also contributes to the economic vitality and cultural heritage of coastal communities. By fostering dialogue and cooperation among industry leaders, government agencies, and local communities, Alaska can chart a course towards a future where salmon populations thrive, and coastal economies flourish.

Thank you,

John Hanrahan
OBI, CEO

February 8, 2024

Alaska Board of Fisheries
P.O. Box 115526
Juneau, AK 99811-5526

Dear Board of Fisheries,

I'm part of the commercial and personal use fisheries in Kodiak, Alaska. Salmon that start their lives in Alaska hatcheries and then return after growing at sea provide one-third of Alaska's salmon catches each year and often the same amount of value. The fish are critical to regions like Prince William Sound and Southeast. Alaska's salmon enhancement program is a wonderful and sustainable program that provides a degree of certainty to salmon fishermen each year - commercial, sport, subsistence and personal users. Many people forget or don't realize that hatchery-reared salmon provides for all users, not just commercial fishermen! The hatchery program should be continued and supported by Alaskans.

I appreciate your dedication to the conservation and sustainable management of Alaska's salmon fisheries. The Board of Fisheries full consideration is crucial in shaping the future of our salmon resources.

**Support for Removing Proposal 59:**

I support the decision to remove Proposal 59 from the Kodiak meeting agenda because I believe it is essential to distinguish between proposals that modify regulatory changes within specific regions and those with statewide hatchery implications. This was an important action in regards to precedent and process. Statewide hatchery issues, including any regulations with statewide precedent, should be addressed at a statewide venue. This ensures consistency and fairness in the decision-making process.

**Statewide vs. Regional Precedent:**

When addressing statewide hatchery issues that have the potential to establish precedents or modify hatchery regulations impacting multiple regions, it is essential to do so within a statewide venue rather than restricting discussions to regional meetings. Salmon hatcheries are integral to Alaska's fisheries, influencing various regions and user groups. Numerous hatcheries are linked with Pacific Salmon Treaty mitigation obligations. Decisions made solely at the regional level may lack the comprehensive perspective necessary to ensure consistency and fairness in overarching hatchery management decisions. Holding these discussions at a statewide level allows for a more inclusive and well-informed decision-making process, involving stakeholders

from all regions. This approach considers the diverse interests and nuances of Alaska's intricate salmon fishery landscape, ultimately contributing to the long-term sustainability of our fisheries and ensuring that hatchery-related regulations align with the overarching goals of responsible resource management. Most hatcheries operate sport, personal use, and subsistence programs that can only exist with the financial support of the PNP organization

**Opposition to Proposal 43:**

We continue to oppose Proposal 43, for the following key reasons.

(1) Lack of Scientific Evidence: Proposal 43 lacks substantial scientific evidence to support claims that hatchery fish have a detrimental impact on wild salmon populations or ecosystems. Decades of research and data show that hatcheries and wild salmon can coexist and even thrive together.
(2) Steady Increase in Wild Salmon Returns: Contrary to the proposal's assertions, regions with hatcheries in Alaska have witnessed steadily increasing wild salmon returns since the early 1970s when these programs were established. Hatcheries have not replaced wild salmon but have provided a stable supply for commercial, sport, and subsistence fisheries, while at the same time wild stock escapements are being met.
(3) Social and Economic Benefits: Hatchery programs have been instrumental in meeting the demand for salmon while preserving wild stocks and their habitats. They support the livelihoods of Alaskans, contribute to local economies, and provide a buffer against the variability of wild salmon runs.

As an Alaskan and supporter of responsible resource stewardship for future generations, I thank the Board for this opportunity to advocate for sustainable fisheries management practices and the long term, science-based decision making when it comes to hatchery resources.

Sincerely,
Elaine O'Brien
[redacted]
Kodiak, Alaska

February 08, 2024

Dear Chairman Wood and Board of Fisheries members:

My wife and I and our three children have fished the Kenai River beginning over 20 years ago. Sportfishing is an important part of our family, allowing us to spend quality time on the most beautiful river in the world. Unfortunately, we have seen a significant decrease in the number and size of Kings over the years.

Large escapements over the last 20 years continue to produce average to large returns of sockeye in the Kenai and Kasilof rivers. More fish in our rivers means more opportunity in sport and personal-use fisheries and likely greater numbers for future years. This is why I support Proposal 112 to increase the Kenai sockeye inriver goals.

Available evidence proves shallow gillnets reduce king salmon harvest. We need to change the mesh depth gillnetters use to target sockeye to protect king salmon. This is why I support Proposal 106.

Commercial fishing near the mouth of the Kasilof and Kenai Rivers is similar to an on/off switch allowing fish to enter the river. I support increasing the commercial fishing closure “window” from 36 hours to 48 hours to increase escapement and increase opportunity for Alaskan residents to harvest sockeye salmon. This is why I support Proposal 90.

The Board of Fish adopted a Mixed Stock Policy and I support decreasing time, methods and means and other commercial fishery limitations to protect weaker salmon stocks such as late-run Kenai kings and Susitna sockeye.

Large commercial sockeye harvests come at the expense of other species and stocks in Cook Inlet. The Inlet must be managed to share the burden of conservation among all user groups and no longer prioritize commercial harvest.

I thank the Board for historic actions taken in 2020 to protect late-run Kenai king salmon and other weak stocks of salmon. I support equitable sharing of the burden of conservation among all user groups to protect and rebuild these stocks. Now is not the time to expand commercial fishing or lower escapement goals. In times of low abundance, we must put the fish first and allow more fish onto the spawning grounds.

Sincerely,

Steven O'Hara
Anchorage, AK

**PC162**

**Submitted by:** Roger Okamoto
**Community of Residence:** Sacramento CA

Pro. 43 should be supported in the strongest possible terms. Commercial interests are destroying the Wild stock fisheries by over stocking Pink smolts. The evidence is in the scientific studies but past Board Members stuck the groups head in the sand and did not acknowledge the science. Too many Pink salmon benefit no one but a few greedy Commercial interests. The fish are of such low value Ex Vessel that millions have to be harvested just to make fuel costs back. Please stop stocking Pink smolts and hold the hatcheries to the reduction on the pre-2000 number quotas.

Proposal 43: Support

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**PC163**

**Submitted by:** Makena O'Toole
**Community of Residence:** cordova alaska

I am writing to oppose Prop 43. I personally am growing tired of this witch hunt. All these anti hatchery proposals saying our fish are out competing wild fish in the ocean while bristol bay has been having back to back record runs is ridicules. The hatchery programs are doing exactly what they were intended to do. Providing coastal fishermen with a reliable source of income to counteract the erratic nature of wild salmon runs. No one is talking about climate change as a possibility or the ever growing number of people chasing these fish around with dipnets in their spawning beds. In PWS our wild pink runs that are in the closest proximity to the hatcheries are as strong as ever. Hatchery fish not only provide the life blood of our costal communities but alleviate fishing pressure on wild stocks.

Proposal 43: Oppose

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**PC164**

**Submitted by:** Paul Owecke
**Community of Residence:** Trempealeau, Wisconsin

Thank you BOF members for the opportunity to comment. I oppose proposal 43. I currently am a permit holder in the PWS setnet fishery and have been since 1983. Prior to set netting I have also been employed by ADFG as a Fish Culturist at several of their former Southcentral hatchery facilities.

I, and all PWS salmon harvesters, have been direct beneficiaries of the tremendous success and ongoing viability of PWS salmon returns both wild and hatchery enhanced. There has been demonstrable and sustained returns of both wild and enhanced stock's throughout PWS that have provided a dependable benefit to harvesters of every gear and user group, including sport, subsistence and commercial.

The current calls to reduce hatchery production, including Proposal 43, are relying on a perception that recent downturns in adult salmon returns, changes in at sea forage populations and a host of other negative consequences are the direct result of Alaskan hatchery releases. There has been undeniable changes in adult returns, forage populations and other consequences. However, there needs to be an honest acceptance that these consequences have developed at a time of the most rapid period of ocean warming to have possibly ever occurred. The extremely compacted period of time in which this warming has occurred has been the driver of many negative consequences, and there has been some significant benefits to certain salmon populations and forage populations as well. There have also been some stabilization of populations since the worst of the upturn in ocean temperatures. To generalize and pin any or all of the negative consequences of what we see in the

ocean environment on Alaskan salmon hatchery releases is not warranted and has the real possibility of being the driver of real negative consequences to those of us who depend on adult hatchery returns that benefit sport, subsistence and commercial harvesters.

Proposal 43: Oppose

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PSPA
PACIFIC SEAFOOD
PROCESSORS ASSOCIATION

To: Alaska Board of Fisheries

***RE: Opposition to Proposal 43***

Dear Chair Wood and Board Members, February 8, 2024

***Pacific Seafood Processors Association (PSPA) strongly opposes Proposal 43.*** PSPA is a seafood industry trade association comprised of major Alaska seafood processing companies that operate 34 facilities in 21 coastal communities across Alaska, from Ketchikan to Unalaska. PSPA member companies purchase, process, and market hundreds of millions of pounds of wild Alaska salmon, Alaska pollock, cod, crab, halibut, and other species of Alaska seafood each year, and they include shore-based processors that have historically participated in and are fully dependent on the federal fisheries off Alaska managed by the Council. They have been at the forefront of supporting management systems based on sound science and sustainability principles, have invested heavily in infrastructure and operations in Alaska's remote communities.

Hatcheries in the Cook Inlet region and across Alaska are critically important to both fishermen (commercial and sport) and processors, especially in times of downturn, to help stabilize the situation for Alaskans that are dependent upon salmon for their living. Processors need the volume of salmon in order to stay viable and operating for all fisheries, and hatcheries were established in Alaska with significant and necessary restrictions in the form of Alaska's Sustainable Salmon Policy and Genetic Policy. These are enhancement programs well supported by the state historically for the benefit of all Alaskans -- personal use, subsistence, sport, commercial. The research that is ongoing through the Alaska Hatchery Research Project is critically important to monitor and understand prior to making any changes.

Opposition to Proposal 43 is grounded in the fundamental need to protect the Cook Inlet Aquaculture Association and sustainable hatchery production in Cook Inlet and around the state. Reducing hatchery production to 25% of the year 2000 levels, as proposed, is short-sighted, will have a significant economic impact, and fails to acknowledge the public process and scientific evaluation, which highlights the complexity and nuance involved in determining hatchery production levels. The purpose of the proposal may be conservation, but the potential unintended consequences necessitate a more comprehensive and informed approach. Opposing Proposal 43 is essential to safeguarding the integrity and viability of hatchery operations and the broader ecological health of the Cook Inlet region. ***PSPA opposes Proposal 43, and the Board should oppose and reject Proposal 43, for the following reasons:***

**Iterative Process:** Hatchery-permitted egg take levels are established through an iterative process involving department staff, hatchery operators and stakeholders. The proposed and arbitrary

reduction of permitted capacity lacks clear evidence supporting that any positive impact on wild salmon stocks will occur, and no compelling reason or scientific evidence has been presented to justify the reduction in permitted pink salmon egg take levels.

**Conservation Concerns:** ADF&G opposes the proposal on the grounds that hatchery operations are permitted to minimize impact on wild salmon stocks, and the commissioner can amend a permit if conservation concerns arise. The proposed reduction in egg take levels lacks a demonstrated conservation benefit and could disrupt the delicate balance between hatchery production and wild salmon populations.

**Department Oversight:** The Commissioner, since 2019 has not allowed increases in the permitted number of pink and chum salmon eggs, reflecting the department's proactive approach to managing hatchery production. This demonstrates the department's commitment to maintaining a careful balance between hatchery production and conservation goals without the need for external regulatory intervention.

**Lack of Evidence:** No definitive evidence has been presented in the proposal to support the proposed reduction in permitted pink salmon egg take levels. The absence of compelling data or analysis supporting the reduction for conservation reasons undermines the proposal's basis and raises questions about its potential impact.

The Alaska seafood industry is facing economic conditions unlike any since the collapse of salmon value in the 1990s, except this time, it is across multiple species. Experts estimate Alaska and its coastal communities lost $2 billion in 2023: $1 billion in lost first wholesale revenues and $1 billion in decreased spending on vessels and facilities. Today's problems are a result of the confluence of multiple global and national economic factors occurring simultaneously, which are outlined in the following attachment. These are factors directly affecting the viability of Alaska's commercial fishing and processing sectors that are outside of BOF authority and control, but they are critical to understanding the fisheries the BOF manages. All fisheries are critical to the viability of fishermen and processors, especially right now, when the culmination of multiple global and national factors has created dire economic conditions.

Many communities across Alaska depend on the seafood industry - this economic crisis has emphasized this point. Removing 75% of the production of salmon hatcheries would add another economic blow to the seafood industry and its fishing-dependent communities.

Thank you for your consideration.

Sincerely,

Julie Decker, President
Pacific Seafood Processors Association

PSPA
PACIFIC SEAFOOD
PROCESSORS ASSOCIATION

***2023: A perfect storm of economic circumstances hits Alaska seafood***

Many coastal communities in Alaska depend on Alaska seafood for food security and for an economic foundation that sustains their economies. Often, the health of the Alaska seafood industry and the health of these communities are interdependent. In 2023, the culmination of multiple economic factors has created dire economic conditions, resulting in a free-fall of seafood prices, millions of dollars in losses and, in some cases, processors had to stop buying fish to reduce further losses.

Experts estimate the state and its coastal communities lost $2 billion in 2023: $1 billion in lost first wholesale revenues and $1 billion in decreased spending on vessels and facilities. Fishermen and processors have borne the brunt of these impacts to date. With conditions unlikely to notably improve in 2024, the effects will continue to affect communities and more businesses and residents across the state. The Alaska seafood industry is facing economic conditions unlike any since the collapse of salmon value in the 1990s, except this time, it is across multiple species.

The higher standards in the U.S., for fisheries management, environmental and social considerations, and worker safety, mean it costs more to produce seafood compared to countries with lower standards. In Alaska, those costs are even higher due to the remote location of most of the fisheries and processing operations. These safeguards help keep our fisheries sustainable and ethical, yet, we face an uneven playing field from countries that harvest seafood without similar regulatory costs.

Today's problems are a result of the confluence of at least a dozen global and national economic factors occurring simultaneously, a few of which include:

1) **Increased costs**
    - Total statewide wages for seafood processing workers increased 30% from 2021 to 2022. They had previously doubled from 2002 to 2020.
    - Operational costs for fishermen and processors increased due to historically high inflation in 2021 and 2022.
    - Shipping - International shipping rates spiked between 100% and 1000% from 2020 to 2022, and have subsequently come down. Domestic shipping rates increased approximately 20% during the same period, 14% of which was attributed to increased fuel costs.
    - Supply chain of custody costs to ensure the sustainability and social responsibility of US fisheries mainly due to other 'bad actors', such as China
    - Cost of compliance with U.S. environmental standards relative to other countries
2) **Excess inventories** of several abundant species harvested in Alaska and other countries in 2022 and 2023, including sockeye and pink salmon, sablefish, and pollock, which will likely continue into 2024.



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3) **Decreasing demand** as consumers react to inflation and post-COVID conditions
4) **Russian war on Ukraine**, leading Russia to sell seafood on the global market at historically low prices in 2023 to secure cash, lowering seafood value overall
5) **Unfair trade policy**, including key trade relationships that reduce the value of Alaska seafood relative to other countries with lower tariffs. This includes Russia's 2014 ban on importing US seafood into Russia, while Russia exports its seafood to the U.S. via China

Clearly, there's much that must be done to stabilize Alaska's seafood industry, beginning with good information about the problems we are facing today. That's why the Board of the Alaska Seafood Marketing Institute explained the "extraordinary circumstances" from a market perspective, and the United Fishermen of Alaska hosted and recorded a webinar with seafood processors to discuss the current challenges of seafood markets. While many must take measures to survive, we need to look beyond today and toward a future in which everyone thrives. Alaskans need to create a public dialogue about the problem and the solutions in Alaska's fishing communities, Juneau, and Washington DC.
At the federal government level, PSPA has identified several changes that would help:

1. **Improve and expand existing agency functions that support US seafood, including:**
   - Improve coordination and collaboration across multiple federal agencies that affect the economic viability of Alaska seafood via the implementation plan for NOAA's National Seafood Strategy
   - Include seafood in USDA Foreign Agricultural Service trade missions
   - Increase government purchases of Alaska seafood
   - Improve government policies to assist in recapitalization, vessel construction, tax structures, workforce accessibility, energy, and infrastructure
   - Increase government funding for new product development, testing, promotion, and marketing of US produced seafood

2. **Integrate US seafood production into national food policy strategies and USDA programs designed to support domestic food production, including:**
   - Create an Office of Seafood Policy and Program Integration within USDA to fully integrate US seafood into USDA policy strategies and programs
   - Expand eligibility of USDA low-interest loans or loan guarantees to fishermen and processors
   - Fully integrate seafood and seafood nutritional guidance into national strategies for improving public health and nutrition

3. **Restore fairness and reciprocity for international trade in U.S. seafood products, including:**
   - Embed seafood expertise and leadership in the office of the U.S. Trade Representative to elevate seafood in trade agreements
   - Improve trade policy via USTR and other agencies to create a more reciprocal tariff structure for seafood exports and imports
   - Develop more effective tools, like harvest certificates, for monitoring supply chain traceability and deterring Illegal, Unreported, and Unregulated (IUU) fishing
   - Resolve the unbalanced and unfair seafood trade relationship between Russia and the U.S., including support for the Alaska delegation's efforts to block imports of Russian seafood processed in China or other countries

# My Comments for the Board Of Fish UCI Meeting February 2024

Submitted by Daniel Page on 7 February 2024

My name is Daniel Page and I appreciate the opportunity to provide my comments and participate in this process. I am pleased to see that Mr. Israel Payton is still part of this process.

I submitted proposals 219, 238 and 239. Additionally I am strongly opposed to proposal 242!

I am a 22 year Army veteran. I retired as a Lieutenant Colonel in 2010, and after I retired my summer job has been sport fishing for salmon. I am not a guide, and I do not use a boat to fish. I am not a Simms wearing, G-Loomis using Fly Fisherman. I am a bank fisherman, and I primarily use vibrix lures and bait when it is permitted. I fish every day June through August when the fish are there, the water is good, and regulations permit. I am also a Certified Six Sigma Master Black Belt.

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## I submitted proposal 219.

**To Close fishing for all species within the confluence of Unit 2 waters when sport fishing for king salmon is closed as follows:**

My cabin is located on the Kashwitna River. I fish the Susitna River Unit 2 creeks for kings and coho. When king fishing is closed on the Parks rivers, I often take my dog swimming at the confluence of Sheep Creek. Over the past 6 seasons I have observed how much fishing is taking place on the Parks Unit-2 creeks during periods were fishing for king salmon is closed.

**Allowing fishing for resident species during periods when closed to king fishing in Unit-2 of the Parks highway Susitna River Drainage.**

**The "Loophole", and how did we get there?**

It looks like it started in 2017, when Joe Mathis submitted Proposal 219. He asked the BOF for permission to fish for resident species on Montana Creek, when the water is otherwise closed to fishing for kings. ADF&G did not support this proposal, and neither did the BOF. The proposal failed 0-7

The Department issued preseason emergency orders closing streams within unit 2 to fishing for king salmon **in 2018 and 2019** to address king shortages. **BUT**, **These emergency orders allowed fishing for fin fish species other than king salmon on days normally closed in regulation**.

Four years ago proposal 222 was submitted by ADF&G. That proposal **Allowed fishing for Resident Species on days closed to king salmon fishing in Parks Unit-2 waters.**

The Board of Fish approved proposal 222 at the 2020 meetings.

**From 2020 Proposal 222:** ..."Currently fishing for rainbow trout and other resident species is closed in the lower sections of streams within unit 2 of the Susitna River drainage (Parks Highway streams) on

days closed to king salmon fishing. **This is a long standing regulation put in place to prevent king salmon being targeted under the guise of trout fishing on days closed to king fishing**.

**And also from Proposal 222:** ….. The Department issued preseason emergency orders closing streams within unit 2 to fishing for king salmon in **2018 and 2019** to address king shortages. **These emergency orders allowed fishing for fin fish species other than king salmon on days normally closed in regulation** to mitigate lost opportunity to fish for king salmon. The result was 20 additional days of fishing opportunity for trout anglers with few enforcement complaints.

**Over the past six seasons**, I have observed how this change has affected the fishing effort on the Susitna River Unit-2 waters. I believe that the changes that resulted from the 2020 proposal **have created a "loophole" for sport fishermen to target and catch king salmon during periods when the rivers are closed for king salmon fishing. The amount of fishing for kings is increasing every year!**

**My proposal 219 will close that "loop hole"**. Proposal 219, if approved, would close fishing for all species within ¼ mile of the confluence of Unit 2 waters when sport fishing for king salmon is closed.

As stated above in the approved proposal 222, I believe that the intent of the 2020 proposal was to allow Simms wearing, G-Loomis using, hard-core Fly Fishermen to target rainbow trout and other resident species. I also believe that any self respecting Simms wearing G-Loomis using hard-core Fly Fisherman would not consider fishing at the confluence of any Susitna River Unit 2 rivers.

Additionally I believe that there is a good reason for the current closures in the regulations for king salmon fishing on the Susitna River Unit 2 water. Specifically the two four-day closures in late June, and the after 4th of July closure. As noted in proposal 222, these closures are in the regulations so that the **spawning king salmon get a break from the fishing pressur**e.

**The current "loop hole" effectively eliminates this desired goal.**

* Willow Creek has four mouths, therefore four confluences, so the distance may not work on Willow.
* Sheep creek is simpler, and a quarter of a mile from the confluence should work well.
* The confluence of Montana Creek should also work with a quarter of a mile.
* Goose Creek is closed to king fishing by reg and the mouth is too far for most loophole anglers.
* Caswell Creek may be more challenging because the confluence moves depending on water height.

I suggest that the Board could direct ADF&G to use proposal 266 from the 2011 BOF meetings that asked for "No fishing from boats at Willow Creek confluence". This proposal was carried as amended by the BOF, with locations and distances for marker signs. I could not find the R/C that amended this proposal.

**When I wrote this proposal in April 2023**, unit-2 of the Susitna drainage was closed to king salmon fishing by emergency order #23-3445 on March 2nd. S**o, in 2023 the only way to catch a king salmon on a Unit-2 creek is to do so with fly fishing gear despite the fact that fishing for king salmon is closed.**

Most of the king salmon caught "incidentally while fishing for other species" will be caught near the confluence of Montana, Sheep, and Willow creeks.

As I stated earlier, I have observed fishing for King salmon in Unit-2 creeks for the past six seasons. Mostly on Sheep Creek, but I went to most of the popular creeks (Willow and Montana).

I have never seen any law enforcement presence or ADF&G personnel when I was present.

**The Parks Unit-2 water was closed by emergency order every year from 2018-2023 except for 2021**. In 2021 an emergency order limited fishing for kings to Sundays and Mondays only.

**I have observed an increase in king salmon fishing during closed periods over the six years**.

**During the first two years (2018 & 2019**) there was little fishing activity during king closures. I consider myself to be fluent and up to date on any emergency order published for any of the rivers that I fish regularly. I read the emergency orders closing the Parks Unit-2 creeks in both 2018 and 2019, and I did not notice the change allowing fishing for other species. I do not believe very many other anglers realized the change either. **The result was very little "loop hole" fishing during those two seasons.**

My observations were the **same in 2020 and 2021**, and I believe that again the loop hole had not been discovered, and word had not gotten out. Even during the legal Sunday and Monday openings in 2021, there were very few anglers targeting kings. I did see a few fly fishermen on weekends in late June and over the fourth of July weekend.

**During the 2022 season I saw much more fishing activity.** I saw several persons using 8 or 10 weight fly rods with popular flies used for salmon. There was more fishing activity particularly on weekends. **All fishing activity that I observed in 2022 was using fly fishing equipment.**

**This past summer the pressure increased significantly**, and for the first time, I saw fishermen using **spinning reels with artificial lure**s. Over the 4th of July weekend I observed several persons fishing, again mostly with spinning reels, and two persons were **even using bait** and targeting kings.

**Clearly the word has gotten out, and the fishing tactics have changed. It needs to be stopped! If the Board does not approve my proposal this loophole fishing will get worse in the coming years.**

**I strongly recommend that the Board approve my proposal 219** and remove the loophole that allows anglers to target king salmon at the confluences of Unit-2 waters during periods when king fishing is closed.

The regulations need to **create a no fishing zone at the confluence of Susitna River unit-2 waters** when fishing for king salmon is closed. This change will remove the loop hole that was created in 2020.

My proposal calls for a distance of a quarter of a mile. This is not a hard/firm distance, and I have no issue with amending my proposal if the Board realizes a better solution after committee discussions. I would just like to see something done to close this loophole.

## **I submitted proposal 238**.

The river that I spend the most time fishing on is the Little Susitna River at the Little Susitna Public Use Facility (LSPUF). My fishing experience on the Little Susitna River over the past several years convinced me to submit **proposals 238 and 239**.

**My proposal 238**, if approved, **would establish a motor size restriction for the Little Susitna River**.

**This proposal is not so much about the size of the motor on a boat, as it is about the bank erosion and loss of fish habitat caused by the boats with larger motor sizes**.

As I wrote in my proposal about fishing at the Little Susitna PUF. There is a **cute informational sign** on the walking path just down the trail from the main parking lot by the boat launch. **This sign informs bank fishermen to be careful while fishing along the bank** of the river, so that we do not cause bank erosion to critical salmon spawning habitat. I now laugh at this sign when I see it because I have watched over the years how much erosion every motorized watercraft causes every day of the fishing season. It is not the few bank fishermen who are causing the majority of the habitat erosion on this river, it is the boats!

The worst boats on the river that cause the most erosion are the s**mall 12-15 foot "jet boats**". These small fast boats have only 2 seats and no deck. The back of the boat is all motor. I have no idea how many HP these boats have, but my experience in observing these boats is that every pass causes massive erosion. It is this type of motor boat that I feel does not need to be used on this river!

I understand that the Board of Fish is limited on it's authority to restrict boats and motor sizes on fishing waters. However because this is a fish habitat issue I am asking for this proposal to receive consideration.

I understand that the ADF&G position on my proposal is for the Board to take No Action because the Board does not have the authority to restrict motor sizes on rivers.

I believe that legal counsel will need to opine on this question of BOF authority.

**I have researched this issue and actions taken or not taken by the BOF at their past six meetings**, and the research shows that on some proposals the BOF took No Action, but on many other proposals that are similar to my #238, the BOF did discuss the proposals and vote. In a few cases proposals on motor restrictions have even been carried by the BOF, usually as amended with a record copy.

I would also like to remind the Board that my proposal applies to the **Little Susitna River at the Little Susitna Public Use Facility (LSPUF)**. **This is an ADF&G facility**, and not a State Park campground and boat launch.

For several years there were ADF&G personnel conducting **water sampling for hydro carbons on the Little Susitna River**. I do not know of any Department testing or monitoring of bank habitat erosion on the Little Susitna River. However I can show you places below the boat launch where more than 10 feet of bank has fallen into the river over the past few years.

**Here is what I found in my research** of actions taken or not taken by the BOF at their past six meetings, which were in the years 2020, 2017, 2014, 2011, 2008, and 2005.

**At the 2020 BOF** meetings there were **six proposals** addressing motor restriction. Five proposals were on the Kenai River. Of those, the Board took No Action on four. Two were withdrawn by the proposer, and two were No Acton based on the voting on the other proposal #168, which Failed 0-6. The final proposal on motor restrictions, #169 was for the Kasilof River. #169 also Failed 0-6.

**During the 2017 BOF** meeting, there were **four proposals** addressing motor restriction. #178 Failed 0-7 and two other proposals were voted No Action based on that decision. The other proposal #199 also Failed 0-7.

**I found that at the 2014 BOF** meeting there were **seven proposals** in the Kenai River vessel restriction area. Five of them Failed 0-7, and two were No Action based on the vote on another proposal. Also during the 2014 meetings was proposal 316 that required the use of 4-stroke outboard motor on the Little Susitna River. This proposal Carried 5-2 as amended and restricted the use of 2-stroke motors on the Little Susitna River

**During the 2011 BOF** meetings I only found **two proposals** about motor restrictions. The first #275, limiting motors on the Little Susitna River to no more than 25HP. The Board took No Action on this item. The second proposal #282 Carried.

**At the 2008 BOF** meetings there were **several proposals** about motor restrictions. Prop 221 Carried as Amended, proposals 290-296 were voted No Action by the Board, but prop 301 Carried as Amended. Proposal 347, limiting motors on the Little Susitna River to no more than 25HP(just like in 2011), Failed (but was voted on).

I found **one proposal of interest from the 2005 BOF meetings**. Proposal 279, Kenai River asking to increase motor size from 35HP to 50HP. The Board took No Action because the BOF lacks authority, AK DNR has authority to regulate HP on the Kenai River

**As you can see it is hard for a concerned angler to write an affective proposal on motor size restrictions based on action taken by the BOF in previous meetings**.

I have fished from the bank on the Little Susitna River on average 52 per year over the past 12 years. This fishery at the **Little Susitna Public Use Facility is primarily a boat access fishery**. Every day that I fish there I have several boats pass me. Every boat that passes me causes bank erosion, but there are some boats that are in my opinion, too big or too powerful and they cause excess erosion.

I have no experience with boats or motors, so I do not know what the motor size limit should be. That is why I did not specify any motor size restrictions in my proposal.

There are not many boats with propellers on the motor used on the Little Susitna River. Most of the motors use “jet” motors. After I wrote this proposal in April 2023, I paid more attention to motor sizes used on boats on the Little Susitna River. I noticed that most motors were 50 HP or smaller, with some 100 HP jet motors.

**I would like to see a limit of 120 HP motors**. As I understand it a motor that says 150 HP with a propeller, is in fact a 120 HP motor with a jet. I understand that there is a 20% reduction when the propeller is replaced with a jet. Additionally, I would like to see boats with any inboard motor restricted from use on the Little Susitna River.

**In conclusion**, My proposal 238, if approved, would establish a motor size restriction for the Little Susitna River. The LSPUF is a ADF&G facility, and I feel that the Board needs to tell the Department to limit motor size on this fishery. Again, this proposal is not so much about the size of the motor on a boat, as it is about the bank erosion and loss of fish habitat caused by the boats with larger motor sizes.

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## I submitted proposal 239.

**My proposal 239**, if approved, **would establish a large king salmon escapement goal for the Little Susitna River.**

This proposal is very similar to proposal 215 from the 2020 BOF meetings, asking the Board to create a Deshka River large King salmon Optimum Escapement Goal (OEG).

My issue is that currently, all king salmon are being counted at the ADF&G operated weir. I would like the Board to adopt a large fish Little Susitna River king salmon spawning escapement goal.
Amend the Little Susitna River king salmon management plan to differentiate between large kings and smaller jacks.

**I believe that the Little Susitna River currently has a "jack" problem**. The weir technicians could count jacks, but I believe the department does not want them to. I understand counting every Chinook salmon that passes through the weir. I do not agree with this practice, and I feel that it is bad management of the stock. Not counting the jacks could mean missing the escapement goal, which then would lead to more unpopular restrictions.

I just want to see the weir operators differentiate between large and small kings. With a few years worth of data the department can prove or disprove my theory that th Little Susitna River has a jack problem.

I believe that there is a problem of too many smaller (jack) kings returning annually on the Little Susitna River. **Over the past 10 years I have averaged 21 fishing days, 75 hours, and 53 kings caught per year on the Little Susitna River**. These data are based on the arbitrary size that jacks are Chinook salmon that are under 20 inches in length. Nearly all of these smaller jacks are male. The female component of a king salmon run consists almost entirely of older age-class "large" fish.

**Of my 532 kings caught in that 10 year period, 224 or 42% were under twenty inches** in length, and they are what we commonly call "Jacks". I realize that my sample size is small, but I realistically believe that at least one in three, or 33%, of king salmon returning to the Little Susitna river are undersized jacks! This also implies that only 33% of the counted spawning run are large females.

The weir is in place, and we have the technology to start differentiating between large king salmon and jacks. I do not want ADF&G to count jacks as part of the escapement goal. Even if ADF&G continues to count all kings at the weir they need to start differentiating between larger kings and jacks.

Additionally, I would like to see a change in regulations to address the "jack" issue on the Little Susitna River. Perhaps allow retention of jacks under 20 inches at all times even when fishing or retention is closed by emergency order. But that may be an idea for a separate proposal in 2027?

A similar proposal to my #239 was submitted for the BOF UCI meetings in 2020 except that proposal was for the Deshka River. Unfortunately that proposal was not approved by the Board. I understand that the same technology is used for the weirs on the Little Susitna and Deshka River. If weir operators differentiated between large and smaller kings on both rivers, it would help to determine if there are more jacks on one of the rivers.

As I said earlier, **I believe that the Little Susitna River has a jack problem**, and that ADF&G needs to address this issue.

Several questions come to my mind on this issue:

1. If jacks are viable and they contribute to the spawn, is that what we want?
2. Do eggs fertilized by jacks produce more jacks for future runs.
3. Is there such a thing as too many jacks?
4. What is a "normal" percentage of jacks for king salmon runs in Alaska?
5. **Even if ADF&G continues to count all kings at the weir would it not be better to know how many of those kings were jacks?**
6. Is 20 inches really the measurement that differentiates between two year old fish and three year old fish? I catch a lot of kings on the Little Susitna River between 15-24 inches in length.

During my research for this meeting I observed that **the "Jack" issue has been a frequent topic of discussion at the UCI BOF meetings**. I saw where the Board has adopted the Department's position that Chinook salmon under 20" are considered to be 1-ocean fish. Also that Chinook salmon larger than 20" and under 28" are considered 2-ocean fish.

After completing my research for these comments for this meeting **I have concluded that ADF&G does not want to differentiate between large and small king salmon**. I believe that because king salmon returns have declined over the past several years, the Department personnel feel that they must count every king regardless of size. If jacks are not counted the lower SEG may not be reached, and if that happens then restrictions must be applied through emergency orders.

**This is what is written on the Departments web site** when you look at fish counts for the Little Susitna River: **"ADF&G operates a weir that is located at river mile 32.5, approximately 4 miles upstream of the public use facility off Point MacKenzie Rd. Escapement is primarily monitored using a resistance board weir. An underwater video system is installed within the weir and motion-detected fish passage is recorded during nighttime hours and at times when the river is heavily glaciated."**

For many years the escapement goal has been between 2,100 and 4,300 king salmon on the Little Susitna River. Currently every king salmon that passes through the weir is counted (when water conditions permit).

ADF&G counts large fish on other fisheries in the State. Recent technology like the underwater video system and motion-detected fish passage for recording during nighttime hours are currently used on the Little Susitna River Weir. Technicians can differentiate between species even when multiple species are in the weir at the same time. **Why would managers not want to use this technology to differentiate between large king salmon and the smaller jacks?** Why would managers not want to count only larger fish?

## How Many Fish swim Through the Weir Daily?

Using 2022 Weir data from ADF&G Web site

* 2023 data is missing 8 key days due to high water 22-29 June, when the weir was **Not Fish Tight**!

**Kings are easy to count and determine large and small fish**:

* By 20 June only 100 Kings through weir
* From 20 June through 7 July 2,000 kings through weir
* **Total kings through weir in 2022 = 2,237**

**There are some sockeys going thru the weir early with kings**:

* By 20 June 600 sockeye through weir
* By 9 July 1,100 sockeye through weir
* **Total sockeye through weir in 2022 = 1,286**

**So by 9 July (51 days) there were a total of 3,111 fish counted at the weir in 2022**
This includes a total of **11 other salmon** by then including 0 coho, 8 pink, and 3 chum

**Compare that to the end of July and early August when the weir is very busy:**

* Over 12 days from 28 July through 8 August a total of 30,868 salmon were counted at the weir
* Including 104 kings, 120 sockeye, 3162 coho, 14,915 pink, and 12,567 chum
* the top day was 30 July when the weir counted **7,377 salmon in one day**
* On average the weir operators counted 2,664 salmon per day at its peak
* **Obviously the weir operators are able to differentiate between species**

**Bottom Line**, **I think the weir operators can count to a 95% confidence level and differentiate between sockeye, large kings and jacks.**

**I now believe that ADF&G does not want to differentiate between large and small king salmon:**

1. If my theory is correct, then at least 3**3% of the king run on the Little Susitna River are jacks**.
2. And if the weir operators did **not count the jacks** passing through the weir they would not reach the minimum SEG most years (**would have missed SEG in 2022, 2020, and 2017**).
3. When we add those three years to the missed minimum SEG in 2023 and 2018, then we would have **missed the minimum SEG 5 of the past 7 years.**
4. The Little Susitna River king salmon management plan would then force ADF&G to close the Little Susitna River for king salmon fishing more often (no catch & release).
5. By counting every king that swims through the weir, including jacks, the weir counts show that the minimum SEG has been reached 5 of those 7 years.

6. When you consider the high water and the weir not being fish tight in 2023 and 2018. We do not know how many kings passed the weir those two years. Perhaps the minimum SEG was achieved?
7. **One could argue that king escapement on the Little Susitna River has consistently reached the minimum SEG for the past 11 years** (all the years with weir data after the weir was moved to its current location).
8. So count jacks and reach the minimum SEG, or do not count jacks and not reach the minimum SEG!
9. **What is the best management strategy for sustained yield for the king salmon in this river?**

**In conclusion**, I fully expect this proposal to be opposed by ADF&G, and that the Board will vote to fail it. I am satisfied to just get the discussion started again on jacks. However I implore the Board to somehow direct ADF&G to **require their weir operators (on the Little Su and Deshka) to differentiate and document the number of large and small kings going through the weir**.

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## Finally, I am strongly opposed to proposal 242!

## Which Prohibits anglers from releasing coho salmon in the Little Susitna River

1. This proposal is nearly the exact same proposal submitted by the same Advisory Group f**or the 2000 BOF UCI meeting**. The BOF did not approve this idea in 2000, and it should not approve this new attempt. I recommend that the Board vote No Action on this proposal, but if it is discussed in the committee sessions, I will state my opinion as well.

2. **I disagree with the proposal's claim that coho are extremely susceptible to catch and release** mortality. Assuming a 69% mortality rate for all coho based on one study is a statistical miscalculation.

3. The proposal refers to a **"1993 ADF&G report on the "Mortality of coho salmon caught and released using sport tackle in the Little Susitna, Alaska-ADF&G** (Doug Vincent-Lang ,Marianna Alexandersdottir and Doug McBride) documented a **69% mortality on coho salmon** in the lower (10 to 15 miles) of fresh water systems when using bait".

4. This 30 year old study is a small sample size with two key variables. First the study took place at the mouth of the river when the fish were "fresh" and have softer mouths. Second the study was done while using bait.

5. In my experience, **there is a huge difference with coho mortality when fishing with bait when compared to using artificial lures**. Current regulations do not allow bait on the Little Susitna River until 6 August. That means that the first three weeks of coho season bait is not permitted.

6. Over the past several years **fishing with bait has often been further restricted by emergency orders (4 of last 7 years)**. Even when bait is not restricted by E/O fishing with bait has been severely restricted due to **high water in mid to late August (3 of last 7 years)**. Over the past 7 years using bait for coho on the Little Susitna River has been a challenge by regulations and water conditions. 2016 was the last year that the fishing for coho in the month of August was not restricted by either regs or water.

7. Over the past 15 years I have caught and released many coho salmon that I am confident did not die that day or that week. Of course every salmon that is caught and released will die eventually! Like most ethical sport fishermen, **I can tell when a fish that I just caught is going to die. When that happens I retain that fish.**

8. The Board of Fish has consistently rejected proposals of this type during earlier meetings. **I strongly encourage the Board to take No Action on this proposal.**

**Finally, in conclusion for these remarks to the Board** for the 2024 UCI meeting. I recommend that the Board consider and approve my proposals 219, 238, and 239. And that the Board take no action on proposal 242.

Thank you for your time and consideration

Daniel Page,
Eagle River AK
[redacted]

**PC167**

**Submitted by:** Kevin Patrick
**Community of Residence:** Federal Way, WA

To the Upper Cook Inlet Finfish Meeting

I am writing to express my fervent support for hatcheries in Southeast Alaska. Their economic contributions to the region are undeniable, fostering job creation and economic stability. Personally, my experiences with hatcheries have been overwhelmingly positive, amplifying my commitment to their cause. Furthermore, these facilities play a crucial role in environmental conservation, bolstering fish populations and preserving the delicate balance of our ecosystems. I urge thoughtful consideration of the substantial benefits hatcheries bring to both our local economy and the environment.

Best regards,

Kevin Patrick

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**PC168**

**Submitted by:** Zane Pellegrom
**Community of Residence:** kenai, alaska

I support proposal 128

Proposal 128: Support

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February 07, 2024

Dear Chairman Wood and Board of Fisheries members:

I have lived in Alaska for almost 24 years and have fished the Kenai River a great deal during that time. Fish habitat, our fisheries and their sustainability are so important to Alaskans.

Commercial fishing near the mouth of the Kasilof and Kenai Rivers is similar to an on/off switch allowing fish to enter the river. I support increasing the commercial fishing closure “window” from 36 hours to 48 hours to increase escapement and increase opportunity for Alaskan residents to harvest sockeye salmon. This is why I support Proposal 90.

Large escapements over the last 20 years continue to produce average to large returns of sockeye in the Kenai and Kasilof rivers. More fish in our rivers means more opportunity in sport and personal-use fisheries and likely greater numbers for future years. This is why I support Proposal 112 to increase the Kenai sockeye inriver goals.

The Board of Fish adopted a Mixed Stock Policy and I support decreasing time, methods and means and other commercial fishery limitations to protect weaker salmon stocks such as late-run Kenai kings and Susitna sockeye.

Large commercial sockeye harvests come at the expense of other species and stocks in Cook Inlet. The Inlet must be managed to share the burden of conservation among all user groups and no longer prioritize commercial harvest.

Available evidence proves shallow gillnets reduce king salmon harvest. We need to change the mesh depth gillnetters use to target sockeye to protect king salmon. This is why I support Proposal 106.

I thank the Board for historic actions taken in 2020 to protect late-run Kenai king salmon and other weak stocks of salmon. I support equitable sharing of the burden of conservation among all user groups to protect and rebuild these stocks. Now is not the time to expand commercial fishing or lower escapement goals. In times of low abundance, we must put the fish first and allow more fish onto the spawning grounds.

Sincerely,

Juna Penney
Anchorage, AK

**PC170**

**Submitted by:** Christopher Perry
**Community of Residence:** Homer,ak

Commenting on proposals 111,112,113,114,115, 121,122,123,124,125,126,143

| | | | |
|---|---|---|---|
| Proposal 111: Support | Proposal 112: Oppose | Proposal 113: Support | Proposal 114: Support |
| Proposal 115: Support | Proposal 121: Support | Proposal 122: Support | Proposal 123: Support |
| Proposal 124: Support | Proposal 125: Support | Proposal 126: Support | Proposal 143: Oppose |

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**PC171**

**Submitted by:** Richard Person
**Community of Residence:** Chugiak alaska

Proposal94 Support As written this proposal would clarify the amount of gear allowed to fish during step-down restrictions in the Chinook plan

Proposal98 Support As written this would provide a very limited fishery for the ESSN if the Kenai late run kings are closed.

Proposals 75,76,77,78 Support The point of these proposals is to remove the OEG for thelate-run Kenai Kings. That OEG was intended to "increase in -river opportunity" but has done the opposite and caused the river to be closed to king fishing.

If the BOF desires to give some limited opportunity to the ESSN there are plenty of proposals to pull from, however here are some points to consider:

-scheduled opening would allow folks to plan supplemental income streams

-June 20- July 1 Historically the early run of KIngs is past most of the Kasilof section and the Late run kings have not shown up yet

-limited fishing means limited crew as an economic reality so large catches are unlikely.

There are many, many other proposals to support or oppose but I will limit my online comments to these.

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Proposal 94: Support Proposal 98: Support With Amendments

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February 8, 2024

Alaska Board of Fisheries
P.O. Box 115526
Juneau, AK 99811-5526

Dear Board of Fisheries,

I'm part of the commercial, sport, and personal use fisheries in Ketchikan, Alaska. Hatchery raised fish are an important and sustainable source of nutrition for our nation. Not only is it a more environmentally sustainable source than much of what you see in the supermarket, but it is the only one under utilized with the potential to really improve the quality of life and health in our nation. Supporting hatcheries is good for Alaska and good for our nation as a whole.

I appreciate your dedication to the conservation and sustainable management of Alaska's salmon fisheries. The Board of Fisheries full consideration is crucial in shaping the future of our salmon resources.

**Support for Removing Proposal 59:**

I support the decision to remove Proposal 59 from the Kodiak meeting agenda because I believe it is essential to distinguish between proposals that modify regulatory changes within specific regions and those with statewide hatchery implications. This was an important action in regards to precedent and process. Statewide hatchery issues, including any regulations with statewide precedent, should be addressed at a statewide venue. This ensures consistency and fairness in the decision-making process.

**Statewide vs. Regional Precedent:**

When addressing statewide hatchery issues that have the potential to establish precedents or modify hatchery regulations impacting multiple regions, it is essential to do so within a statewide venue rather than restricting discussions to regional meetings. Salmon hatcheries are integral to Alaska's fisheries, influencing various regions and user groups. Numerous hatcheries are linked with Pacific Salmon Treaty mitigation obligations. Decisions made solely at the regional level may lack the comprehensive perspective necessary to ensure consistency and fairness in overarching hatchery management decisions. Holding these discussions at a statewide level allows for a more inclusive and well-informed decision-making process, involving stakeholders from all regions. This approach considers the diverse interests and nuances of Alaska's intricate salmon fishery landscape, ultimately contributing to the long-term sustainability of our fisheries and ensuring that hatchery-related regulations align with the overarching goals of responsible

resource management. Most hatcheries operate sport, personal use, and subsistence programs that can only exist with the financial support of the PNP organization.

**Opposition to Proposal 43:**

We continue to oppose Proposal 43, for the following key reasons.

(1) Lack of Scientific Evidence: Proposal 43 lacks substantial scientific evidence to support claims that hatchery fish have a detrimental impact on wild salmon populations or ecosystems. Decades of research and data show that hatcheries and wild salmon can coexist and even thrive together.
(2) Steady Increase in Wild Salmon Returns: Contrary to the proposal's assertions, regions with hatcheries in Alaska have witnessed steadily increasing wild salmon returns since the early 1970s when these programs were established. Hatcheries have not replaced wild salmon but have provided a stable supply for commercial, sport, and subsistence fisheries, while at the same time wild stock escapements are being met.
(3) Social and Economic Benefits: Hatchery programs have been instrumental in meeting the demand for salmon while preserving wild stocks and their habitats. They support the livelihoods of Alaskans, contribute to local economies, and provide a buffer against the variability of wild salmon runs.

As an Alaskan and supporter of responsible resource stewardship for future generations, I thank the Board for this opportunity to advocate for sustainable fisheries management practices and the long term, science-based decision making when it comes to hatchery resources.

Sincerely,
Greg Phillips
[redacted]
Ketchikan, Alaska

February 01, 2024

Dear Chairman Wood and Board of Fisheries members:

Hello, I have been going to Alaska to fish the Kenai River with my friends for the past 10 years. I love fishing the Kenai River so much that 4 years ago my family decided to buy a riverfront property on the middle section of the river. Unfortunately as we all know Commercial Fisherman with gillnets have killed the King Salmon with the genetics of being the largest in the World into almost extinction. That can NOT happen. We MUST STOP GILLNETING at the mouth of the Kenai River and in the river.

Available evidence proves shallow gillnets reduce king salmon harvest. We need to change the mesh depth gillnetters use to target sockeye to protect king salmon. This is why I support Proposal 106.

Commercial fishing near the mouth of the Kasilof and Kenai Rivers is similar to an on/off switch allowing fish to enter the river. I support increasing the commercial fishing closure “window” from 36 hours to 48 hours to increase escapement and increase opportunity for Alaskan residents to harvest sockeye salmon. This is why I support Proposal 90.

The Board of Fish adopted a Mixed Stock Policy and I support decreasing time, methods and means and other commercial fishery limitations to protect weaker salmon stocks such as late-run Kenai kings and Susitna sockeye.

Large escapements over the last 20 years continue to produce average to large returns of sockeye in the Kenai and Kasilof rivers. More fish in our rivers means more opportunity in sport and personal-use fisheries and likely greater numbers for future years. This is why I support Proposal 112 to increase the Kenai sockeye inriver goals.

Large commercial sockeye harvests come at the expense of other species and stocks in Cook Inlet. The Inlet must be managed to share the burden of conservation among all user groups and no longer prioritize commercial harvest.

I thank the Board for historic actions taken in 2020 to protect late-run Kenai king salmon and other weak stocks of salmon. I support equitable sharing of the burden of conservation among all user groups to protect and rebuild these stocks. Now is not the time to expand commercial fishing or lower escapement goals. In times of low abundance, we must put the fish first and allow more fish onto the spawning grounds.

Brent L. Pius

Sincerely,

BRENT PIUS
Shaver Lake, CA

To: Alaska Board of Fisheries February 8, 2024
UCI Meeting February 23 – March 6, 2024

From: Steve Reifenstuhl, representing PNP Statewide Hatchery Group

**Re: Opposition to Proposal 43 5 AAC 40.820 Basic Management Plans vis-à-vis Ocean Carrying Capacity**

Dear Chair Wood and Board Members:

The BOF is currently considering Proposal 43, which if adopted, would reduce the production of pink salmon in Cook Inlet Aquaculture hatcheries. The proposer has sought to reduce chum and pink production in all Alaska PNP hatcheries for several decades and therefore Proposal 43 is a state-wide issue of critical importance. Several research papers were submitted at the October 2023 BOF Hatchery Committee meeting in Anchorage as a basis for reducing pink salmon hatchery production. Proposal 43 was submitted by Fairbanks AC as were the Ruggerone and McMillan papers which suggest reducing hatchery production with the following logic:

1. Hatchery fish and production have been shown to have negative interactions with wild fish.
2. Pink salmon in the North Pacific are at historically high abundance, and their feeding capacity is disrupting food webs at a basin scale, causing a "trophic cascade" with negative impacts to a wide range of species, including other salmon.
3. Hatchery pink salmon are released in large numbers, and thus are major contributors to the disruption of oceanic food webs.

The effort to reduce hatchery production is reminiscent of a similar proposed action in 2018/2019. In fact, concerns about ocean carrying capacity have been raised for decades. In response to these issues raised in 2018, a detailed alternative view was submitted to the BOF: High Ocean Biomass of Salmon and Trends in Alaska Salmon in a Changing Climate, by Alex Wertheimer and Willaim Heard (2018).[1] We are resubmitting this paper for your consideration, as its assessment and conclusions are still relevant to proposal 43. Wertheimer & Heard conclusions

[1] Wertheimer A. & Heard W., 2018 High Ocean Biomass of Salmon and Trends in Alaska Salmon in a Changing Climate, by Alex Wertheimer and Willaim Heard

are that Alaska salmon harvest over the past 25 (now 30) years has been characterized by sustained high production from **wild stocks and large contributions of hatchery fish**. Enhancement has made large net contributions to supplement wild stock harvest in some areas of the state. Density-dependent interactions have been observed at different life history stages of salmon and in nearshore and oceanic habitats during this period but have not constrained the recovery of Alaska salmon from its nadir in the 1970's, or its sustained high abundance in recent years. Rather, density independent responses to climatic factors affecting ocean conditions appear to have largely driven the high and variable productivity of Alaska salmon. Pink salmon have shown the greatest variation in abundance among Alaska salmon, especially in response to anomalous ocean conditions. Thus, rather than restructuring the food webs, they appear to be the most sensitive to changes in marine conditions.

Before addressing the pink salmon carrying capacity issues, we would note that concerns about hatchery and wild fish interactions are also not a new or recently discovered issue. The Alaska hatchery program was established and evolved with a system of policies and practices for managing enhancement in Alaska to minimize negative impacts on the sustainability and optimum production of wild stocks (Gaudet et al 2017).[2] The BOF has been intensively involved in this process. Negative interactions can and do occur, and in order to benefit from the high production potential of large-scale enhancement, strategic and effective policies and management are essential. This is analogous to the necessity to effectively manage commercial, sport, and personal use fisheries. Salmon harvest, both sport and commercial also have genetic, ecological, and demographic impacts on populations of salmon, and therefore also must be managed to minimize negative impacts while optimizing production.

To speak to the attack on pink salmon hatcheries based on papers such as the Ruggerone et al (2023)[3] review, we need some basic understanding of the scale of pink salmon biomass in relation to North Pacific food webs, and how much hatchery pink salmon contribute to this biomass. The correlation leap is quickly made in the Ruggerone and McMillan papers that high abundance of pink salmon somehow equates to hatchery impacts because hundreds of millions of hatchery fish are released into the ocean. First and foremost, **hatchery pink** salmon (all Pacific

[2] Gaudet D., et.al. 2017. Precautionary Management of Alaska Salmon Fisheries Enhancement

[3] Ruggerone et.al. 2023. From diatoms to killer whales: impacts of pink salmon on North Pacific ecosystems

Rim countries) make up only **15% on average of the pink salmon in the North Pacific Ocean**; any impacts of pink salmon on oceanic food webs are predominately driven by wild pinks and other salmonids. Second, while pink salmon are typically the most abundant salmon in terms of numbers of adults each year, they make up only 22% of the total wild and hatchery biomass of salmon in the ocean, all countries combined. Chum salmon and sockeye salmon, which have multiple year classes, make up 60% and 18% respectively of oceanic salmon biomass. Third, while there are billions of salmon entering the North Pacific to rear and compete for food resources, there are trillions of other zooplanktovores such as herring, walleye pollack, cod, myctophids, and Japanese pilchards. Salmon have been estimated to make up 4-7% of the biomass of nekton feeding on zooplankton in the North Pacific. Pink salmon would thus compose 1-2% of this biomass, and hatchery pink salmon < 0.5%. The speculation that this small amount of biomass is causing the basin scale effects proposed by Ruggerone et al. (2023) is truly a case of the tail wagging the dog.

While density-dependent interactions, both intra- and interspecific, certainly exist and can be detected in the North Pacific ecosystem, this does not mean that such interactions are controlling abundance and run strength. Trends in populations of salmon and other species identified as impacted by high pink salmon abundance contradict the speculative doomsday hypothesis of basin-scale impacts. For example, sockeye salmon in Bristol Bay are identified as impacted by pink salmon abundance, but Bristol Bay sockeye salmon have been at sustained and record run strengths concurrent with high pink salmon abundance. Similarly, PWS pink salmon have been at sustained high levels of abundance in the past two decades, including the largest wild runs in the historical records. Sitka Sound herring, another population of concern noted by Ruggerone et al. (2023), has increased in spawning biomass simultaneously with high pink salmon abundance and concurrent with large-scale enhancement of chum salmon in Sitka Sound. The Sitka Sound herring stock had the highest spawning biomass ever recorded in 2023. The lack of recovery of PWS herring since the Exxon Valdez oil spill has also been attributed to pink salmon interactions, but current work on humpback whale predation of herring in PWS suggest that

increased numbers of whales are now removing more than 20% of the herring biomass annually, constraining recovery of the herring population (Straley et al. 2018).[4]

Perhaps the two most wildly speculative impacts of the "trophic cascade" hypothesis are the attributions of significant impacts to resident killer whales and humpback whales. Resident killer whales in the Gulf of Alaska have more than doubled in abundance concurrent with the increase and high abundance of pink salmon. The southern Puget Sound resident population of killer whales, cited by Ruggerone et al. (2023) as negatively impacted by pink salmon, is an exception to this trend. However, this population faces a wide array of factors affecting population recovery, ranging from Chinook salmon prey availability, historical disruption of social structure by aquarium captures and removals, as well as exposure to high levels of toxins in their environment. The proposed mechanism of interference of foraging behavior of killer whales by returning adult pink salmon seems highly unlikely, given the increasing numbers of northern resident whales in areas where pink salmon are much more abundant. Note also that the pink salmon interacting with southern resident killer whales are virtually all wild origin; there is no interaction with Alaska hatchery pink salmon.

Similarly, humpback whales have increased dramatically in the North Pacific Ocean since the cessation of commercial whaling for this species. This increase is also synoptic with the increasing abundance of pink salmon, and humpback whales in the eastern Pacific may now have reached or exceeded pre-whaling population sizes (Straley et al. 2018).[5] Humpback whales are known to predate on juvenile salmon, which may provide the whales some foraging opportunities in coastal waters as the salmon migrate into the Gulf of Alaska. Juvenile salmon are not considered an important fish prey component of humpback whales, which is consistent with the relatively low biomass and abundance of juvenile salmon compared to other forage fish species such as herring, sand lance, and walleye pollack. The odd/even year effects Ruggerone et al. (2023) report on calf production for humpback whales is the opposite of the pattern they report for southern killer whales. Using similar logic would indicate some positive response to

[4] Straley et.al. 2018. Seasonal presence and potential influence of humpback whales on wintering Pacific herring populations in the Gulf of Alaska

[5] Straley et.al. 2018. Seasonal presence and potential influence of humpback whales on wintering Pacific herring populations in the Gulf of Alaska

higher abundance of pink salmon juveniles the year prior to calving. Instead, the pattern is made negative by speculating that mating behavior is affected, putting a year lag into the time series.

Pink salmon production and returns to Prince William Sound have been focal points of the discussion on the impacts of enhancement. PWS hatcheries release 600-700 million juveniles annually. As noted above, there have been sustained and even record returns of wild fish from PWS wild stocks as well as very large returns of hatchery fish. From 2010-2019, harvests in Prince William Sound have averaged 50 million pink salmon annually, of which 80% are of hatchery origin. From 1960-1976, prior to the establishment of the enhancement program, harvests averaged 4 million fish annually. Ocean conditions favoring higher productivity of pink salmon are a major factor contributing to the large returns. Several studies have indicated that wild stock production could be higher if hatchery releases were reduced or eliminated. However, such actions would also reduce or eliminate the hatchery returns which could severely impact the fishery and associated local economies.

The paper by Ohlberger et al (2021)[6] is the latest in a series of analysis to examine factors affecting productivity of naturally spawning pink salmon in PWS. They found that the number of hatchery fry released negatively affected wild stock productivity and attributed this to competition of hatchery and wild juveniles in the nearshore environment. Using a similar spawner/recruit model but with different covariates, Wertheimer et al. (2004a)[7] also found an effect of hatchery releases on wild stock productivity, but that most of the variation in productivity could be attributed to annual variations in ocean conditions affecting marine survival. The relatively small yield loss attributed to hatchery fish abundance was associated with smaller size of returning adults at high abundance, which results in reduced fecundity (Wertheimer et al. 2004b). These models can be used to estimate the degree to which hatchery production provides net gains to the PWS fishery. Wertheimer et al. (2004b)[8] estimated a wild-

[6] Ohlberger J., et.al. 2021. Non- stationary and interactive effects of climate and competition on pink salmon productivity
[7] Wertheimer A. et.al. 2004a. Effects of hatchery releases and environmental variation on wild stock productivity: consequences for sea ranching of pink salmon in Prince William Sound, Alaska
[8] Wertheimer A. et.al. 2004b. Does size matter: environmental variability, adult size, and survival of wild and hatchery pink salmon in Prince William Sound, Alaska

stock yield loss of 1 million fish at a time hatchery harvests average 24 million, for a net gain of 23 million fish to the total harvest over the time period 1990-2000.

Ohlberger et al. (2021) estimated that a 50% reduction in hatchery releases would result in a 50% increase in wild productivity. If we use a simple linear application of these percentages to the average annual harvest data for 2010-2019, hatchery harvest would be reduced to 20 million fish annually while wild harvest would be increased to 15 million fish annually. This would result in a total harvest of 35 million fish, a reduction of 15 million fish (30%) of the current average harvest.

Large scale enhancement as designed by the State of Alaska has greatly increased harvest and fishing opportunities for all citizens of the State. The most explicit examples are pink and chum salmon fisheries in PWS, and chum salmon in SEAK, where increased harvests have been compatible with sustained and **record-breaking wild stock production**, while concurrently achieving wild stock escapement goals (Gaudet et al. 2017).[9] The economic benefits of these enhanced fisheries have large multiplier effects on local economies and employment. Large reductions in enhancement operations would seriously disrupt fisheries and associated economic benefits in the affected communities.

While the Ruggerone, McMillan, and Ohlberger papers are worthwhile explorations of salmon abundance and biomass as to how they may impact other species, they are a bridge too far vis-à-vis conclusions regarding humpback whales, Pacific herring, and the negative impacts of hatchery pink salmon. McMillan synthesizes many research papers heavily weighted by Pacific Northwest hatchery programs, programs which were designed to replace what has been lost due to elimination of habitat from dams, encroachment of riparian zones, human population growth, and industrialization. The Ohlberger paper focused on PWS wild and hatchery pink salmon but doesn't make the case that the hatchery pink simply replaces wild pink production. Alaska's enhancement program was designed to supplement harvest opportunities. Current harvest and escapement data proves it does just that.

[9] Gaudet D., et.al. 2017. Precautionary Management of Alaska Salmon Fisheries Enhancement

Thank you for dedicating your time, your attention, and your commitment to securing long-lasting and healthy salmon populations for the citizens of Alaska. We value your pursuit to understand the intricate interplay within our freshwater and oceanic ecosystems.

Our perspective presented here is well grounded in rigorous science and deserving of your consideration in your deliberations on this issue.

Sincerely,

Steve Reifenstuhl, Fisheries Biologist, 45 years' experience, General Manager NSRAA, retired.

Steve Reifenstuhl, Sitka AK

Alex Wertheimer, NOAA Fisheries Research Biologist, retired. Juneau AK

John Burke Ph.D., Pathologist and Regional Supervisor FRED, Deputy Director SF Division, Fisheries Scientist Commissioner's Office, retired, SSRAA General Manager, retired and Senior Science Panel.

# Board of Fisheries

October 15-16, 2018
Work Session Anchorage, Alaska

Dear Chairman Jensen and Board of Fish Members:

In the interest of understanding the complex topic of Ocean Carrying Capacity (OCC) this document written by two career fisheries research scientists is presented.

## High Ocean Biomass of Salmon and Trends in Alaska Salmon in a Changing Climate

**Alex Wertheimer, NOAA Fisheries Research Biologist (retired)[1]**
**Fishheads Technical Services**

**William Heard, NOAA Fisheries Research Biologist (retired)[2]**

### EXECUTIVE SUMMARY

The abundance and biomass of wild and hatchery pink, sockeye, and chum salmon in the North Pacific Ocean has been higher in the past 2.5 decades (1990-2015) than at any time in the 90-year time series. The high biomass has been remarkably consistent from 1990-2015. There has been higher variability in numbers of salmon than in biomass due to the variability in pink salmon abundance. The high sustained abundance and biomass is driven in no small part by historically high abundance of Alaska salmon, and corresponds with the renaissance of Alaska salmon fisheries from their nadir in the 1970s. Statewide commercial catches of salmon were just 22 million fish in 1973; for 1990-2015, statewide catches have averaged 177 million salmon, an eight-fold increase.

This remarkable recovery and historically high abundance of Alaska salmon can be attributed to five major factors: (1) large expanses of relatively pristine and undeveloped habitats; (2) salmon management policies that have evolved since statehood; (3) the elimination of high seas drift-net fisheries; (4) production from large-scale hatchery programs designed and managed to supplement natural production; and (5) favorable environmental conditions associated with the 1977 “regime shift” affecting the ecosystem dynamics of the North Pacific Ocean. Habitat, management, and enhancement set and maintain the productive capacity that responds to marine environmental conditions: ocean “carrying capacity”.

Carrying capacity has been defined as the ability of an ecosystem to sustain reproduction and normal functioning of a set of organisms. Ocean carrying capacity for Pacific salmon is not a fixed productivity limit, and the considerable regional and temporal variability in salmon stocks is a response to non-homogeneous ocean conditions. Over the past few decades, conditions in the North Pacific Ocean have

been generally favorable to Pacific salmon as reflected by the sustained high abundances and catches. However, extremes in survival and production have occurred both temporally and geographically. Survival and year-class strength of salmon is the result of responses to local, regional, and basin scale conditions. Marine conditions vary geographically and temporally within a given year, interannually, and in the context of oceanographic regimes favorable or unfavorable to salmon production.

There are concerns that the high abundance in the North Pacific Ocean, coupled with high variability in stock performances, indicate that carrying capacity is being exceeded, and that competitive interactions are negatively affecting growth and survival. These concerns have been raised for over 20 years. Rather than indicate that carrying capacity has been exceeded, the trend of the past three decades show that the North Pacific Ocean has had the capacity for the recovery and sustained production of wild stocks while supporting the expansion of large-scale enhancement production from Japan (chum salmon) and Alaska (chum and pink salmon).

A proposed mechanism for negative impacts of high abundance of salmon in the ocean is that their feeding capacity alters the biomass of oceanic zooplankton, and in turn the phytoplankton biomass. In this scenario, this "trophic cascade" and alteration of food webs then negatively impacts other species, including coho and Chinook salmon. The record numbers and abundance of Pacific salmon can appear to be an imposing load on the North Pacific Ocean ecosystem. However, assessments of nektonic trophic structure in the Gulf of Alaska and the western North Pacific Ocean indicate that salmon have low to moderate impacts on oceanic food webs, and they respond to, rather than control, changes in ocean productivity.

Pink salmon have been identified as a keystone predator restructuring oceanic food webs to the detriment of other species. Four lines of evidence call this conclusion into question. First, Russian researchers report that in extensive ocean research programs, they have found typically no significant correlations occur among pink salmon growth rate, stock abundance, or zooplankton standing crop. Second, high numbers of pink salmon in the North Pacific Ocean have been associated with record run sizes and continued sustained biomass of salmon, rather than a reversal in these trends when pink salmon abundance increased. Third, pink salmon have shown the greatest variation in abundance among Alaska salmon, especially in response to anomalous ocean conditions. Thus rather than restructuring the food webs, they appear to be the most sensitive to changes in marine conditions. Finally, the high predation pressure of pink salmon in the context of epipelagic food webs is justified because other species, especially chum and sockeye salmon, switch to other, poorer quality prey items when pink salmon are abundant. However, the obvious implication is that these other species will "switch back" to the prey with higher nutritional value when pink salmon are at lower levels of abundance. Because chum and sockeye salmon comprise almost 80% of the oceanic biomass of salmon, salmon predation pressure on the "high value" prey remains relatively constant.

Effects of pink salmon abundance are often used as a proxy for deleterious effects of large-scale enhancement in general. In fact, while pink salmon are the most numerous of the salmon species in the North Pacific Ocean, wild stocks of pink salmon contribute some 85% of the overall abundance.

Density dependent interactions have been identified within and between species of salmon. These interactions have been observed during both periods of low and high abundance. Changes in size, survival and age at maturity have been attributed to these interactions. Despite the existence of

competitive interactions in the marine environment, high productivity of Alaska salmon has persisted during this period of high abundance. In general, size declines of pink and chum salmon occurred prior to the 1977 regime shift, and thus are associated with poorer ocean conditions rather than ocean abundance of salmon, and sockeye salmon size has been stable over the past 60+ years.

There is also concern that the high ocean abundance of the big three (pink, chum, and sockeye salmon) negatively impact coho and Chinook salmon in Alaska. For coho salmon, size declines in Southeast Alaska have been linked to pink salmon abundance in the Gulf of Alaska, while in Canada recent size increases in coho salmon have been positively associated with the combined biomass of pinks, chums, and sockeye salmon. The high correlation of run strength between coho and pink salmon in Southeast Alaska is strong evidence that their abundance is driven by similar overall response to shared marine conditions. Density-dependent mechanism other than competition may also play a role in pink salmon/coho salmon dynamics. These include such as predator sheltering of coho salmon juveniles by the more abundant pink salmon juveniles (decreasing predation on coho juveniles), predator aggregation (increasing predation on coho juveniles), and direct predation of coho juveniles and adults on pink salmon juveniles.

Chinook salmon stocks in Alaska have been depressed in recent years due to reduced marine survival, and have declined in size at age for older fish, and age at maturity. These changes are not likely driven by the high abundance of salmon in oceanic habitats. Chinook salmon, by their propensity to utilize deeper depth strata and distribute more broadly on shelf and slope areas during marine residency, are segregated to a large degree from other salmon in their use of ocean habitats with correspondingly different temperatures, prey fields, and predator complexes. Size of Chinook salmon at ocean age 2 has not declined, indicating no density-dependent effect on growth through the first two years at sea. Size declines at older ages are more consistent with selective removal of older, larger fish.

Survival declines of Chinook salmon occurred well into the period of high ocean biomass. There is substantial evidence that much of the variation in Chinook salmon marine survival is due to conditions in the first summer and winter at sea. Changes in the North Pacific ecosystem, such as increased killer whale predation, could introduce more mortality at older ages, and further depress realized survival during periods of poorer environmental conditions for Chinook salmon.

Favorable ocean conditions rather than density-dependent interactions seem to be driving both the high abundance at the basin-scale and the high variability in salmon populations at local and regional scales. Recent climatic and oceanographic events such as the marine heat waves of 2004/2005 and 2014/2015 in the Gulf of Alaska are demonstrative of the intrinsic variability of ocean conditions affecting salmon at local and regional scales. Will density-dependent interactions become increasingly important if and when ocean conditions become less favorable to salmon, with large releases of hatchery fish putting wild stocks in more jeopardy? Or will hatchery fish provide a buffer to sustain fisheries when wild stock productivity is low in response to varying environmental conditions? We conclude the latter, because there is empirical evidence that large releases and returns of hatchery pink salmon in years of both low and high wild stock abundance did not limit the production potential of the wild stocks.

## Introduction

The Alaska Board of Fisheries (BOF) was recently petitioned to hold an emergency meeting asking the BOF to amend actions taken in Permit Alteration Requests (PARs) made by the Prince William Sound (PWS) Regional Planning Team and deny the increase in the number of pink salmon eggs taken in 2018 by 20 million eggs. One of the rationales the petitioners used for rescinding the PAR was "… great concern over the biological impacts associated with continued release of very large numbers of hatchery salmon into the North Pacific Ocean, including the Bering Sea and the Gulf of Alaska." To support this concern, the petitioners provided references to record high abundance and biomass of salmon in the North Pacific, as well as possible density-dependent effects of pink salmon on the trophic structure in the North Pacific Ocean and intra-specific and interspecific competition of pink salmon with other species of salmon and seabirds.

The BOF held the emergency meeting on July 17, 2018, and denied the request for rescinding the PAR. The BOF determined there was no need for such an emergency action, and deferred further consideration to the review of the State's salmon enhancement program scheduled for the October 2018 work session. The intention of that review is for members of the BOF to educate themselves about the program and understand the science the enhancement program is predicated on and the current scientific evaluation.

This paper provides a brief, broad overview of the issue of record abundance and biomass of Pacific salmon and the implications for the status of Alaska salmon. We present this overview in six sections. The first is a review of the recent information on abundance of salmon in the North Pacific. The second is an examination of trends in harvest of Alaska salmon, including enhanced production. The third is a discussion of oceanographic conditions and the concept of "carrying capacity" for salmon in the North Pacific. The fourth is a perspective on the relative role of salmon as a component of the North Pacific ecosystem. The fifth looks at intra- and interspecific competition and density dependence among salmon species, and its possible impacts on growth and abundance. The sixth section summarizes our conclusions from this overview.

## I. High Abundance and Biomass of Salmon in the North Pacific Ocean

In a recent paper, Ruggerone and Irvine (2018) published an excellent compendium of the available data on numbers and biomass of pink, chum, and sockeye salmon in the North Pacific Ocean over the time period 1925 through 2015. The authors have compiled diverse data sources of harvest, harvest rates, and escapement. They have used reasonable approaches to estimating total salmon escapements by species by region, and to estimate hatchery and wild origins.

They found that the abundance and biomass of pink, sockeye, and chum salmon has been higher in the past 2.5 decades (1990-2015) than at any time in the 90-year time series, averaging 665 million adult salmon each year (1.32 × million metric tons) during 1990–2015 (Figure 1). During 1990–2015, pink salmon dominated adult abundance (67% of total) and biomass (48%), followed by chum salmon (20%, 35%) and sockeye salmon (13%, 17%). When immature salmon biomass was included in the biomass estimates, biomass was dominated by chum salmon (60% of the combined biomass of all three species),

followed by pink salmon (22%) and sockeye salmon (18%).

The high biomass has been remarkably consistent over the 1990-2015 time period. There has been higher variability in numbers of salmon than in biomass due to the variability in pink salmon abundance.

Alaska produced approximately 39% of all pink salmon, 22% of chum Salmon, and 69% of sockeye salmon, while Japan and Russia produced most of the remainder. Approximately 60% of chum salmon, 15% of pink salmon, and 4% of sockeye salmon during 1990–2015 were of hatchery origin. Alaska generated 68% and 95% of hatchery pink salmon and sockeye salmon, respectively, while Japan produced 75% of hatchery chum salmon. Salmon abundance in large areas of Alaska (PWS and Southeast Alaska), Russia (Sakhalin and Kuril islands), Japan, and South Korea are dominated by hatchery salmon. During 1990–2015, hatchery salmon represented approximately 40% of the total biomass of adult and immature salmon in the ocean.

In the context of concern for the impacts of hatchery fish on wild salmon and the North Pacific ecosystem, we reiterate three facts about pink salmon noted above. Pink salmon are the most abundant of the species, have the greatest temporal variability in abundance, and are mostly (85%) wild origin (Ruggerone and Irvine 2018). As we will discuss below, the high variability of pink salmon and differences in abundance between odd-year and even-year lines is often used to examine competitive interactions and ecosystem level impacts of salmon in the North Pacific. At the basin-scale, to the extent that such effects may occur, effects of pink salmon are predominately from wild-stock populations rather than from enhanced fish.

## II. Trends in Harvest of Alaska Salmon

The high sustained abundance and biomass in the North Pacific Ocean reported by Ruggerone and Irvine (2018) is driven in no small part by historically high abundance of Alaska salmon. It is instructive to put the current levels of salmon harvest into perspective of the 115 year time series of Alaska commercial salmon harvests (Figure 2), to recognize the extent of recovery and extraordinary recent productivity of Alaska salmon. In the early 1970's, Alaska salmon harvests were at their nadir, with statewide catches of all species averaging just 22 million fish in 1973 and 1974 (Figure 2). In the "good old days" of the 1930s, catches sometimes exceeded 100 million. The State of Alaska initiated a number of management actions to address the decline and rebuild production (Clark et al. 2006), with a goal of once again reaching harvests of 100 million salmon. In 1971, the Alaska Legislature established the Division of Fisheries Rehabilitation Enhancement and Development (FRED) within the Alaska Department of Fish and Game (ADF&G) for hatchery development. In 1972, Alaska voters approved an amendment to the state Constitution (Article 8, section 15), providing for an exemption to the "no exclusive right of fishery" clause, enabling limited entry to Alaska's state fisheries and allowing harvest of salmon for broodstock and cost recovery for hatcheries. In 1974, the Alaska Legislature expanded the hatchery program, authorizing private nonprofit (PNP) corporations to operate salmon hatcheries.

Alaska's modern salmon hatchery system started in the 1970s and grew out of depressed fisheries that reached record low harvest levels. At the same time a century old Japanese salmon hatchery system was undergoing dramatic improvements in performance with record high marine survivals of young salmon, increased releases of up to 2 billion juveniles per year, and returns of adult chum salmon ranging from

40 to 60 million fish annually (Kobayashi 1980). These impressive results caught the attention of officials and scientists developing Alaska salmon hatchery program.

Exchanges between Japanese and Alaska scientists, fishermen, and industry helped forge the enhancement strategies and policies in Alaska, resulting in similarities in the two hatchery programs. Similarities include hatcheries operated by private fishermen groups where salmon catches are taxed under a user-pay system to help defray cost of hatchery operations, a focus mostly on pink or chum salmon production, and extensive short-term rearing of pink and chums salmon fry to improve marine survival. However, as reviewed by Heard (2011), there also are significant differences between salmon fisheries, policies, and hatchery operations in the two countries. Commercial salmon fisheries in Japan have been largely dependent on hatcheries while development of hatcheries in Alaska focused on fisheries based on a careful balance between wild and hatchery production (McGee 2004). Some important differences in the two systems include locating Alaska hatcheries on non-anadromous water sources and not on important wild stock river systems, careful selection of brood stocks within a region and restricting use of hatchery brood stocks to specific geographic areas.

Alaska salmon harvests recovered rapidly in the second half of the 1970s, and exceeded 100 million fish by 1980 (Figure 2). With the exception of 1986 (96 million), the statewide catch has been over 100 million salmon annually since 1980. For 1990-2015, harvest has averaged 177 million salmon. After 1980, hatchery production started making up an increasing portion of the harvest. In the last decade (2008-2017), hatchery salmon have composed about 33% of the total commercial harvest, averaging 67 million fish annually (Stopha 2018).

This remarkable recovery and historically high abundance of Alaska salmon can be attributed to five major factors: (1) large expanses of relatively pristine and undeveloped habitats; (2) salmon management policies that have evolved since statehood (Eggers 1992, Clark et al. 2006); (3) the elimination of high seas drift-net fisheries(Clark et al. 2006); (4) production from large-scale hatchery programs designed and managed to supplement natural production (McGee 2004, Stopha 2018); and (5) favorable environmental conditions associated with the 1977 “regime shift” affecting the ecosystem dynamics of the North Pacific Ocean.

## III. **Ocean Conditions and Carrying Capacity**

“*Trying to define ocean carrying capacity is like trying to catch a moonbeam in a jar”. O. Gritsenko, VINRO, Moscow. Member, NPAFC Committee on Scientific Research and Statistics.*

The recovery of Alaska salmon and the record abundances throughout the North Pacific have been repeatedly linked to changes in ocean conditions characterized as the 1977 regime shift. Warming ocean conditions resulted in striking increases in primary and secondary production (Brodeur and Ware 1992). These changes in temperature and lower-trophic level production were associated with profound changes in species composition of fish and crustaceans (Anderson and Piatt 1999). Salmon as a group benefitted (and are an important component of) these ecosystem level changes, with the dramatic increases in abundance observed around the Pacific rim. The importance of the marine ecosystem to the abundance trends is emphasized by the success of large-scale enhancement systems in both Alaska and

Japan concurrent with the high production of wild stocks from Alaska and Russia. Wild stocks are responding to the effects of climate on both freshwater and marine ecosystems, while variation in hatchery returns for a given level of production is driven entirely by the marine conditions encountered.

Carrying capacity has been defined as the ability of an ecosystem to sustain reproduction and normal functioning of a set of organisms (Farley et al. 2018). For salmon in the ocean, feeding and survival conditions are defined by a complex of physical and biological factors, involving both bottom-up (prey) and top-down (predators) processes (Radchenko et al. 2018). These are dynamic processes, resulting in annual variability in salmon production in the marine environment. The ocean conditions driving these processes vary over both short and long time periods, so that annual variability occurs in the context of "regimes" that can be favorable or unfavorable to salmon (Beamish et al. 1999,2004; Shuntov et al. 2017; Radchenko 2018).

Over the past few decades, "carrying capacity" conditions in the North Pacific Ocean have been generally favorable to Pacific salmon as reflected by the sustained high abundances and catches. However, responses of stocks of Pacific salmon have not been uniform during this period, and extremes in survival and production have occurred both temporally and geographically. Survival and year-class strength of salmon is the result of responses to local, regional, and basin scale conditions, and not a result of a homogeneous ocean carrying capacity (Heard and Wertheimer 2012).

Marine survival of Pacific salmon is more correlated between neighboring populations than with more distant ones (Mueter et al. 2005; Pyper et al. 2005; Sharma 2013), emphasizing the importance of local and regional conditions. The first few months at sea is the period of highest mortality per day for juvenile salmon in the marine environment (Heard 1991; Quinn 2005; Farley et al. 2007, 2018). Variability in mortality during this period can be large, and can be the major driver of year-class strength. An extreme example is the returns of Fraser River sockeye salmon in 2009 and 2010. In 2009, only 1.5 million fish returned, the lowest return since 1947; in 2010, 29 million fish returned, the highest number since 1913. Conditions during the early marine period are considered the primary factor affecting these changes in survival of Fraser River sockeye salmon (Beamish et al. 2012).

Salmon surviving the early marine period are exposed to continued mortality, albeit at a lower rate (Quinn 2005). The first winter at sea has been posited as a critical time period for determining year class strength (Beamish et al. 2004; Moss 2005). Older immature and maturing salmon have much lower mortality rates (Ricker 1976), but these extend over a longer period of time, from 1 year for pink salmon to 5 years for Chinook salmon. Forecasting approaches using juvenile salmon abundance index to predict returns (Wertheimer et al 2017; Murphy et al. 2017) assume that recruitment through the early marine stage has established year-class strength, and that subsequent mortality does not vary substantially from year-to-year. However, Radchenko (2018) reports that cumulative ocean mortality can vary 1.5-2 times. These ocean effects on survival can result in large deviations, positive and negative, from forecasts from juvenile salmon indexes (Figure 3). For 2006, the forecast for Southeast Alaska pink salmon harvest was 35 million fish; the actual harvest was 11 million fish, less than one third of the forecast. In contrast, the pink salmon forecast for 2013 was 53.8 M fish, but the forecast was 43% lower than the actual harvest of 94.7 million fish, the largest harvest since catch records were recorded dating back to 1900 (Figure 3, Figure 4).

These results illustrate that variations in marine survival between different local or regional areas occur in the context of larger basin-scale climatic influences on overall production levels of pink and chum salmon in the GOA. Prevailing basin-scale conditions likely strongly influence environmental factors that favor a higher or lower range or level of potential survival for juvenile salmon from different regions.

The "carrying capacity" encountered by a salmon population is a cumulative effect encompassing different life-history phases. The conditions encountered by the salmon will depend on their geographic origin and their ocean migration patterns, which differ by species and stocks. The ocean is a dynamic environment, with substantial variability throughout the North Pacific basin. In 2013, "carrying capacity" for pink salmon in the Gulf of Alaska (GOA) was high, with strong returns throughout the GOA. Returns in both Southeast Alaska and PWS were at record levels. In contrast, in 2015 pink salmon again returned to PWS in record numbers, while returns in Southeast Alaska were below the 1995-2015 average and below forecasts from juvenile salmon indexes, demonstrative of the regional nature of the response of pink salmon stocks to ocean conditions (nearshore and oceanic).

While the general warming in the North Pacific Ocean has been a feature of the high productivity for salmon (Brodeur and Ware 1992; Mantua et al. 1997; Farley et al. 2018), ocean warming events associated with climate change are occurring with more frequency, often with detrimental impacts on salmon (McKinnell 2017). Recent ocean warming events are associated with the decline of the even-year pink salmon in Southeast Alaska. From 1960 through 2005, there was no clear dominance of even or odd year lines of pink salmon in Southeast Alaska (Figure 4). In the summer of 2005, juvenile pink salmon from SEAK encountered anomalous warm conditions in the Gulf of Alaska (Figure 5). These ocean conditions were associated with the occurrence of neretic fish and invertebrates characteristic of more southern locales, including Humboldt squid, blue shark, Pacific sardine, and pomfret (Wing 2006). The resultant 2006 return was, as noted above, only one-third of forecast, and the lowest since 1988. Even year pink salmon appeared to be recovering relative to the 2006 return, attaining a harvest of 37 million in 2014.

In the winter of 2014/2015, another marine heatwave, aka the warm blob, reached the eastern GOA (DiLrenzo and Mantua 2016). The 2014-brood pink salmon that entered the GOA in 2015 again had poorer than expected survival, attaining only half of the forecast in 2016 (Figure 3). Poor pink salmon returns occurred throughout the Gulf of Alaska in 2016, resulting in a Federal disaster declaration for the fishery. The broad nature of the pink salmon run failure is indicative of shared ocean effects. However, regional and local variability were also apparent. In Southeast Alaska, harvests of pink salmon in the northern area were 20% of the recent 10-year average, whereas in the southern area harvest was 80% of the recent 10-year average. In PWS, much of the catch was supported by fish from Solomon Gulch Hatchery, which was still 50% below forecasts based on average marine survivals. Marine survivals were poorer yet for pink salmon from Prince William Sound Aquaculture Association hatcheries, where returns were less than 20% of forecast (Russell et al. 2017).

The 2005 and 2015 ocean heat waves thus had a broad-scale impact on the carrying capacity for pink salmon in the Gulf of Alaska, with 2015 having a more pervasive impact among regions. Both wild and hatchery fish were affected; the return to SEAK is predominately (> 95%) wild, and the hatchery return

to PWS was the lowest since 1993.

It is noteworthy that despite the poor returns of pink salmon, generally the most abundant species in the Alaska harvest, statewide harvest in 2016 was still above 100 million salmon (Figure 2). Variability in abundance numbers throughout the North Pacific reflects high variability in pink salmon, which appear to be the most sensitive salmon species to annual changes in ocean conditions because of their lack of multiple year-classes at sea.

Ruggerone and Irvine (2018) raised the concern that the high abundance of salmon coupled with variability in stock performances indicates that carrying capacity of the North Pacific Ocean for salmon has been reached or exceeded. This is not the first time such concerns have been raised. Various authors over the past 20 years have posited that high abundance of pink, sockeye, and hatchery chum salmon may have exceeded carrying capacity and be negatively affecting or constraining salmon production (e.g., Peterman et al. 1998; Ruggerone et al. 2003; Davis (2003); Sinyakov (2005, cited in Shuntov et al. 2017). In spite of these concerns, abundance and biomass have continued to be high, reaching record levels in recent years (Figure 1).

As Shuntov et al. (2017) noted, ocean carrying capacity for Pacific salmon is not a fixed productivity limit, and the considerable regional and temporal variability in salmon stocks is a response to non-homogeneous ocean conditions. Rather than indicate that carrying capacity has been exceeded, the trend of the past three decades show that the North Pacific Ocean has had the capacity for the recovery and sustained production of wild stocks while supporting the expansion of large-scale enhancement production from Japan (chum salmon) and Alaska (chum and pink salmon). The sky has not yet fallen. This is not to say that the high abundance will persist indefinitely. The shock of the marine heat waves of 2004/2005 and 2014/2015 to Alaska pink salmon demonstrates that carrying capacity can vary within a productive regime, and reminds us that the status of the current production regime is vulnerable to both gradual and abrupt changes driven by a warming climate. Continued warming could result in contraction of the range of Pacific salmon in the North Pacific Ocean (Welch et al. 1998).

## IV. Trophic Position of Salmon in the North Pacific Ecosystem

A major concern over the high abundance of salmon is that their feeding capacity alters the biomass of oceanic zooplankton, and in turn the phytoplankton biomass (Ruggerone and Irvine 2018; Batten et al., in press). This “trophic cascade” and alteration of the food web has been linked to decline in size and abundance of Alaska Chinook salmon and coho salmon (Ruggerone and Irvine 2018; Shaul and Geiger 2016); growth and diet of salmon (Davis 2003); and declines in seabird nesting success and survival (Springer and Van Vielt 2014; Springer et al. 2018).

Dominance of oceanic food webs by salmon is not consistent with the abundance and biomass of salmon relative to other components of the North Pacific ecosystem, including competitors and prey fields. In the western North Pacific, Shuntov et al. (2017) estimated the nekton biomass was 81.3 million t (from 50 to 100 million t in different years). Pacific salmon accounted for 1–2% of this biomass in the 1980s. Biomass of salmon subsequently increased to the current levels of 4-5 million t, representing 4-8% of total nektonic biomass during the current period of high abundance. During this period, the biomass of

the two most abundant fish species within their ranges in the North Pacific, walleye pollock (*Theragra chalcogramma*) and Japanese pilchard (*Sardinops melanostictus*), reached 50 million t each.

In the epipelagic layer, Shuntov et al. (2017) estimated that the mean annual food consumption (plankton and small nekton) by the nektonic fauna varied within 210.4–327.3 million t; in the 0–1000 m layer it ranged from 389.0 to 516.0 million t. The amount of food consumed by salmon was 4–8 million t. The proportion of total nekton ration consumed by salmon in the epipelagic layer was 1% - 15%, depending on oceanic area (Figure 6).

This view of low to moderate impact on epipelagic food webs is consistent with mass-balance modeling of North Pacific ecosystems by Pauley et al. (1996). Pacific salmon and steelhead were estimated to make up 4.6% of the epipelagic fish biomass in the Alaska gyre. If squid are including as competitive nekton for zooplankton production, Pacific salmon made up 3.4% of the nektonic biomass. Estimated salmon biomass was < 1% of the estimated zooplankton biomass.

Similarly, the impacts of juvenile salmon feeding during early marine residency on zooplankton has been found to be relatively low. As noted above, the early marine residency is a period of high and variable mortality which may determine year class strength. Given more limited areal habitat than the coastal zone and ocean basin, this period may represent a potential bottleneck for survival. Orsi et al. (2004) used a bioenergetics model to examine consumption of zooplankton by hatchery and wild chum salmon in Icy Strait, Southeast Alaska. They found that juvenile chum salmon consumed only 0.05% of the zooplankton/km2 in the upper 20-m of the water column, and 0.005% for the integrated water column to 200 m in June and July in 2001. Because juvenile salmon are typically in the upper water column, total standing crop of zooplankton is not likely to be available as forage on a daily basis, but does represent a source for zooplankton abundance in the surface layer through vertical diel migrations. The percentage of available prey consumed by juvenile salmon in the neritic habitat of Icy Strait was less than 0.05% of the available standing stock. Low consumption estimates were also estimated by several other studies. Karpenko (2002) reported that juvenile chum salmon consumed between 0.1 and 1.1% of the total stock of zooplankton in the upper 10 m of Karaginskii Bay, Kamchatka from June to August over a 5-year period. Cooney (1993) estimated juvenile salmon in PWS consumed 0.8–3.2% of the total herbivore production and 3.0–10.0% of the macrozooplankton production. Boldt and Haldorson (2002) reported that juvenile pink salmon near PWS could consume 15–19% of preferred prey taxa such as large calanoid copepods and amphipods if the available standing crop was fixed over a 10-day period; however, on a daily basis, consumption of no taxon exceeded 2% of the standing stock.

Pink salmon have been identified by some authors as the salmon species most affecting oceanic food webs (Ruggerone and Irvine 2018). Surface layer zooplankton indexes have been associated with differences in abundances of odd- and even-year pink salmon stocks (Batten et al. in press). However, there was no directed fish sampling or monitoring of zooplankton below the surface layer (7.5 m) in Batten et al.'s study. Radchenko et al. (2018) reviews studies showing that "as a rule, no significant correlations occur among pink salmon growth rate, stock abundance, or zooplankton standing crop."

A conceptual problem to assigning plankton depletion to pink salmon feeding is prey-switching by salmon species. Pink, chum, and sockeye salmon have substantial overlap in their diets, and the latter two species have been shown to switch to other, "lower-quality" prey when pink salmon are abundant

(e.g., Davis 2003). These changes in feeding habit are often used to support the concept of density-dependent interactions with pink salmon and their congeners, e.g., Ruggerone and Connors (2015). However, if other species switch prey in response to high pink salmon abundance, they certainly would switch back to the "higher value" prey when pinks are not as abundant. Chum and sockeye salmon make up on average 78% of the biomass of these three species. As a result, there is more of a constant prey demand among this feeding guild in spite of the high variability in pink salmon abundance in the North Pacific. Rather than shaping the ocean food web, pink salmon appear to be most sensitive to interannual changes in oceanic conditions, resulting in high variability in their numbers, both temporally and geographically.

Competition among species may also be minimized by the distribution of salmon in oceanic habitats. Unlike the schooling behavior characteristic of juvenile salmon and maturing salmon in nearshore and coastal areas, salmon at sea are widely dispersed (Shuntov 2017). This behavior reduces competitive interactions and makes their feeding, growth, and survival in the ocean more density-independent.

The record numbers and abundance of Pacific salmon can appear to be an imposing load on the North Pacific Ocean ecosystem. Four to five million tons of biomass is not a trivial amount. Of this 40% is hatchery origin, primarily chum salmon. Approximately 5 billion hatchery juveniles are released into the North Pacific annually (Figure 7). However, the North Pacific Ocean is a large marine ecosystem, and the numbers are not overwhelming when put into context of total nekton and forage bases. Not all nektonic prey is available to salmon due to depth distribution; Ayedin (2000) concluded local depletion of prey by salmon can occur as salmon school density increases, even if prey is not depleted over large ocean areas. This is an important point in understanding regional differences in changes in size at return.

The sustained high marine abundances of both natural- and hatchery-origin salmon over the past 25 years indicates that the trophic structure has not been altered in some way that inhibits salmon productivity. We agree with the conclusion of Shuntov et al. (2017): "… the role of salmon in the trophic webs of subarctic waters is rather moderate. Therefore, neither pink nor chum salmon can be considered as the species responsible for the large reorganization in ecosystems and the population fluctuations in other common nekton species."

## V. Competition and density dependence versus density independent responses

An intuitive concern with the high abundance of salmon in the context of ocean carrying capacity is that density-dependent competition for limited prey resources may affect growth and survival of salmon populations. Pink, chum, and sockeye salmon have substantial overlap in their diets (Davis 2003, Brodeur et al. 2007) and the latter two species have been shown to switch to other, "lower-quality" prey when pink salmon are abundant (e.g., Davis 2003). High abundance of pink salmon in the Gulf Alaska has been associated with growth and size at return of chum salmon, sockeye salmon, coho salmon, Chinook salmon, and pink salmon themselves (e.g., Agler et al. 2011; Jeffrey et al. 2017; Ruggerone et al. 2003, 2018: Shaul and Geiger 2017; Wertheimer et al. 2004a). Reduced growth can result in lower size-at-age, shifts in age at maturity for species spending multiple years at sea, and reduced fecundity, which can affect productivity of salmon populations. Ruggerone et al. (2003) ascribed large reductions

in marine survival of Bristol Bay sockeye salmon to the impact of Asian pink salmon on the sockeye salmon growth at sea. The concern for density-dependent competition is not new; Peterman (1984) found evidence of density-dependent interactions between Fraser River and Bristol Bay sockeye salmon. This was at a time when salmon abundance had not expanded to current levels and when hatchery fish made up a low proportion of the abundance and biomass. As salmon abundance and biomass increases, Aydin (2000) concluded that density-dependent interactions could result in negative feedback loops on prey availability in the ocean ecosystem.

Despite the existence of competitive interactions in the marine environment, high abundance and biomass have not resulted in consistent negative trends in salmon size or productivity. Ruggerone et al. (2018) reported that average size has declined for chum salmon and pink salmon since 1925, but not for sockeye salmon (Figure 8). Most of the size decline for pink and chum salmon occurred prior to 1977, which would suggest that pre-1977 regime change conditions were more important than density dependent interactions. Size of pink salmon and sockeye salmon remained stable during the recent period of high abundance, while chum salmon showed some continued decline. Jeffrey et al. (2017) reported similar results for average sizes of British Columbia pink, chum, and sockeye salmon since 1951. Pink salmon declined initially in size, and then have remained relatively stable since the 1990s at a size that is 20-30% less than in the 1950s and 1960s. There was little change over the time series in the average size of sockeye salmon. Regional differences have certainly been observed. For example, Wertheimer et al. (2004) found evidence of size declines in PWS pink salmon in relation to pink salmon abundance in the GOA, while. Shaul and Geiger (2017) reported that pink salmon size has increased in Southeast Alaska in recent years.

Helle et al. (2007) found that body-size of pink, chum, and sockeye salmon from Alaska to Oregon generally declined in after the 1977 regime shift as salmon abundance increased, until 1994. After 1994, body size of these species generally increased, during a period when biomass and abundance was at sustained high levels. They attributed the initial decline to density-dependent competition, and the lack of relationship of abundance to size in the latter period as an outcome of favorable ocean conditions. They concluded that the carrying capacity of the North Pacific Ocean for producing Pacific salmon is not a constant value and varies with changing environmental and biological factors.

In their study on size of British Columbia salmon, Jeffrey et al. (2017) examined the relationship of size trends to estimates of salmon biomass in the North Pacific Ocean. They found that the biomass of North American pink salmon entering the Gulf of Alaska was the most important biomass variable in explaining size variation in BC pink salmon. The direction of the effect was negative, suggesting intraspecific competition was affecting size. For chum salmon, combined biomass of North American pink, sockeye, and chum salmon was the most important biomass variable explaining size variation. The direction of the effect was negative, suggesting some degree of competition among these congeners. Biomass of North American chum salmon was the most important biomass variable explaining size variation in sockeye salmon. Adding Asian chum salmon to this (or combined measures of biomass) did not improve the fit. The direction of the effect was positive, indicating that when chums are abundant, growth conditions for sockeye are positive.

These associations (and lack of associations) between ocean abundance and size at return of Alaska and British Columbia salmon indicate that while competition can affect size and growth, density-

independent ocean conditions drive the variability in abundance and can override the impacts of density-dependent competition. We reiterate the findings of Radchenko et al. (2018) that generally, no significant correlations occur among pink salmon growth rate, stock abundance, or zooplankton standing crop.

Reduced survival and productivity of wild stocks in Alaska have been attributed to competitive interactions with Asian pink salmon (Bristol Bay sockeye salmon; Ruggerone et al. 2003) and hatchery pink salmon (PWS pink salmon; Hilborn and Eggers 2001). Alternate analyses and recent trends have refuted these conclusions. In Bristol Bay sockeye salmon, Ruggerone et al. (2003) estimated reduced survivals of even-year sockeye salmon smolts from Bristol Bay at 23-45% less than odd-year smolts for the 1977 to 1997 smolt years. Even-year smolts enter the ocean when odd-year pink salmon are on average more abundant. They concluded that competitive interactions with Russian pink salmon reduced growth of even-year smolts, and resulted in substantially lower average smolt survival. However, the abundance of Russian pink salmon was highly variable over the time period for both odd and even year lines. When pink salmon abundance was considered in a time series analysis of the survival data, rather than using odd/even year average survival, there was no discernable effect of pink salmon abundance on survival (Wertheimer and Farley 2012). Subsequent to the 1997 smolt year, both Asian pink salmon and Bristol Bay sockeye salmon increased in abundance, and a marine survival index for Bristol Bay sockeye salmon smolts was positively associated with abundance (Farley et al. 2018.) Thus increasing biomass of Asian pink salmon has not constrained the continued high productivity of Bristol Bay sockeye salmon.

In PWS, Hilborn and Eggers (2000) concluded that hatchery production provided no net benefit in terms of pink salmon harvest, but was simply replacing wild production through density-dependent interactions. However, Wertheimer et al. (2004a, 2004b) showed that a density-independent index of marine survival explained much of the variability in wild pink salmon productivity, and that there was a large net benefit from enhancement to the PWS pink salmon harvest, albeit with some reduction in wild stock production attributed to the effects of size at return on fecundity. Amorosa et al. (2017) also showed large net gains from hatchery production, albeit lower than would be expected from the authors own argument for proportionate increases in wild pink salmon production following the 1977 regime shift. They minimize the contribution of hatchery fish in PWS by focusing on changes in the common property fishery, dismissing the annual cost-recovery harvest of an average of eight million pink salmon in their evaluation of benefits. The cost-recovery harvest is important to the fisheries economy of PWS, and an important benefit of the enhancement program (Pinkerton 1994). The recent analysis of productivity of PWS pink salmon for the re-certification of sustainability of PWS pink salmon showed continued sustained production of wild stocks during the hatchery era (Figure 9; Gaudet et al. 2017). The historical record returns of wild pink salmon in 2013 and then again in 2015 are particularly demonstrative that wild stocks in PWS retain their high production capacity after 40 years of hatchery enhancement.

Our discussion thus far has focused primarily on the abundance trends of pink, chum, and sockeye salmon, which combined make up most of the biomass of salmon in the North Pacific Ocean. Besides interactions among these species, there is concern that their high overall abundance is negatively impacting coho and Chinook salmon (Ruggerone et al. 2018).

The commercial harvest of coho salmon averaged 1.5 million fish from 1970-1977, then increased rapidly following the 1977 regime shift, peaking at over 9 million in 1994. From 1995 until 2017 the harvest has ranged from 3 to over 6 million fish annually, averaging 4.5 million, with no apparent trend during this period (Figure 10). Approximately 22% of the commercial harvest during the latter period has been produced from Alaska hatcheries. Recreational harvest has increased in recent years, and averaged 1.2 million fish from 2007-2017 (M. Stopha, ADF&G, personal communication).

Mallick et al. (2008) examined marine survival of 14 stocks of coho salmon in Southeast Alaska. They found evidence of effects on marine survival at local, regional, and basin scales. There was high covariation in survival regionally, and no trend was noted over the recent time period. Abundance of juvenile hatchery releases in the year coho smolts went to sea was identified as affecting marine survival, but the effect could be positive or negative, depending on stock. This result exemplifies the complex competitor/predator interactions that have been posited for coho and pink salmon. Negative impacts of large hatchery releases could indicate competition for prey resources or aggregation of prey (Beamish et al. 2018). Positive influences could be a result of "predator sheltering," where the abundant hatchery juveniles act as a buffer on predation on the less abundant, larger coho smolts (Holtby et al. 1990; Briscoe 2004; LaCroix 2009). Abundant hatchery fry and juveniles could also provide an important forage base for coho salmon. Coho salmon juveniles are a major predator of juvenile pink salmon in nearshore marine areas (Parker 1971, Hargreaves and LeBrasseur 1985) and as adults when returning to coastal areas as the juvenile pink salmon emigrate towards the ocean (Sturdevant et al. 2012).

Shaul and Geiger (2017) showed a negative trend in marine survival in recent years for Berners River coho salmon which they related to ocean biomass of North American pink salmon. They attribute the negative impact to predation of pink salmon on squids that are the major prey for coho salmon in offshore areas. They propose that pink salmon are keystone predators of squid, exerting top-down control and thus directing the energy flow in the system. In contrast, Aydin (2000) concluded that the squid, with its high biomass and productivity, was controlling energy flow to salmon. Aydin (2000) found that squid abundance, while highly variable, had increased greatly (as did salmon) after the 1977/1978 regime shift. That squid abundance increased commensurate with salmon abundance indicates the species were responding similarly to the increased productivity in the North Pacific (Brodeur and Ware 1992). Aydin (2000) also found differences in odd and even year distributions of squid in the North Pacific, which could contribute to the odd/even differences in coho salmon size observed by Shaul and Geiger (2017).

If pink salmon impacts on squid were driving marine survival for coho salmon, we would also expect decreasing trends in abundance and marine survival for coho salmon over the 1995-2015 time period of high pink salmon abundance. Instead, catch has been stable, and marine survival declines, at least in southeast Alaska, are a recent phenomenon. Commercial harvest data for coho salmon and pink salmon show very strong correlation annually (LaCroix et al. 2009). If density-dependent interactions were primary, we would expect negative correlation. The correlation is actually strongly positive; from 1960 – 2017, it had an $r$ value of 0.82 ($P < 0.001$; Figure 10). Because returning adult coho and pink salmon have roughly the same period of time in the marine environment, this indicates that shared ocean conditions are driving their year-class strength.

Size trends in coho salmon have varied regionally, with very different relationships to ocean salmon biomass. Shaul and Geiger (2017) found that size at harvest of coho salmon in southeast Alaska increased from 1970 until 1984, then declined from 1985 to 2015. They associated the decline with an index of the biomass of North American pink salmon. Their model did not indicate direct competition, but rather lagged effects at 2- and 4- years affecting the population dynamics of the squid (*Berryteuthis anonychus*). The lag response model requires that the squid have an obligate two-year life-history cycle as proposed by Jorgensen (2011). This is contradicted by other literature, which characterizes *B. anonychus* as an annual species with high productivity (Katugin et al. 2005, Drobney et al. 2008). Aydin (2000) cites studies showing that *B. anonychus* is highly productive, and spawns twice a year.

Regardless of mechanism, coho salmon size has declined in Southeast Alaska. In contrast, coho salmon body size has increased in British Columbia in recent years. Jeffrey et al. (2017) showed coho body weight declined from the 1950s, and did not reach its minimum until around 1985. Since then it has increased and is now at the highest level in the data series. The combined biomass of North American pink, sockeye, and chum salmon was the most important biomass variable explaining size variation in coho salmon, and had a positive effect on size. The authors speculate that the positive relationship may be driven by environmental conditions, which when favorable allow for greater total biomass of salmon species and higher growth (thus larger size) in coho salmon. Shaul and Geiger (2017) and Jeffrey et al. (2017) both use basin-scale measures of environmental conditions in their models exploring factors affecting coho salmon size. The contrasting results for Southeast Alaska and British Columbia are indicative of the variability in response of different populations to these conditions. This may be caused by different migration patterns in the ocean environment, or different local and regional responses of availability of salmon forage to basin-scale environmental factors.

The recent disastrous returns of Chinook salmon in Alaska has precipitated considerable focus on the least abundant but (on a fish by fish basis) most highly valued salmon species (ADF&G 2013). Chinook salmon have a highly varied and diverse life history, generally more complex than other Pacific salmon exemplified by numerous variations in run and spawn timing, freshwater biology, ocean distribution and behavior patterns, diet, slower ocean growth, and older age at maturity (Healey 1991). In the eastern North Pacific most juvenile Chinook salmon from Oregon to Southeast Alaska remained within 100-200km of their natal rivers until their second year at sea, regardless of their freshwater history (sub-yearling or yearling) and spring, summer, or fall adult run timing (Trudel et al. 2009). Healey (1983) reported that most fall type Chinook salmon tend to remain continental shelf and slope oriented during much of their ocean life history whereas many spring type fish spend much of their ocean life in more offshore waters. In recent years, based on coded-wire tag recoveries, it was found that many Alaska spring-type Chinook salmon also utilize slope and continental shelf waters as immature adults. Coded - wire tagged Chinook salmon from Southeast Alaska (SEAK) and Cook Inlet frequently are recovered in Bering Sea Aleutian Island and Gulf of Alaska trawl fisheries for Walleye Pollock (Meyers et al. 2001; Celewycz et al. 2006).

Marine habitats of Chinook salmon related to depth distribution and migration patterns are diverse and often distinct from most other Pacific salmon. Juvenile Chinook salmon distribute deeper than coho and other juvenile salmon in their first summer and fall at sea (Orsi and Wertheimer 1995; Beamish 2011). Immature Chinook salmon are associated with colder temperatures and deeper depths than other salmon species (Walker et al. 2007; Walker and Myers 2009; Riddell et al. 2018). Diel vertical migrations have

been documented in a number of data storage telemetry studies, with movement to greater depths during daylight hours (Radchenko and Glebov 1998; Murphy and Heard 2001; Walker et al. 2007). One Chinook salmon tagged in the Bering sea typically was between the surface and 100 m depth, but occasionally moved to depths in excess of 350 m (Walker and Meyers 2009).

Marine diets of Chinook salmon are distinctly different than diets of pink, chum, and sockeye salmon and more similar to coho salmon (Brodeur et al. 2007; Riddell et al. 2018). Juvenile (first-ocean year) Chinook salmon in coastal waters initially have highly varied diets composed of fish, zooplankton, and insects, then become predominately piscivorous in costal habitats (Brodeur et al. 2007). Fish made up from 65% to 99% of stomach contents by weight for juvenile (ocean- age 0) Chinook salmon sampled within the inside and outer coastal waters of SEAK (Landingham et al. 1998: Weitkamp and Sturdevant 2008). Fish were also the primary prey for immature (mostly ocean-age 1) fish in SEAK (Cook and Sturdevant 2013), coastal British Columbia (Herz et al. 2017), and northern and southern Bering Sea (Farley et al. 2009). Primary prey species included capelin, sand lance, lanternfish, and Pacific herring. In more offshore habitats, Chinook salmon consume primarily fish and squid, although euphasids can make up a substantial portion of their diet (Davis 2003; Shuntov et al. 2010; Karpenko et al. 2013). Herring and sandlance dominate the diets of older immature and maturing Chinook salmon (ocean-ages 2+) in coastal waters (Reid 1961; ATA 2016), with sandlance the dominant prey in outside waters of southeast Alaska and herring the dominate prey in inside waters (ATA 2016).

Run sizes increased across AK after the 1977 regime shift, and were variable but consistently above average until a precipitous decline starting in 2006 (Figure 11). This decline was consistent with reduced marine survival of southeast Alaska stocks after the 2000 and 2001 brood years (ADF&G 2013; Ohlberger et al. 2016; CTC 2018). Thus the decline began well after the current period of high biomass of salmon in the ocean started (Figure 1), and well after hatchery releases into the North Pacific peaked and stabilized at 5 billion per year in 1988 (Figure 7).

Size at maturity and age at maturation has declined over the last three decades for Alaska Chinook salmon stocks from southern Southeast Alaska to the Yukon River (Lewis et al. 2017). The size declines are coincident with high abundances and biomass of the Big Three (pink, chum, and sockeye salmon). Could competitive interactions with the Big Three be driving the decline? There are several lines of evidence that indicate this is not the case.

First, the differences in marine ecology we noted in the preceding paragraphs suggest that Chinook salmon, by their propensity to utilize deeper depth strata and distribute more broadly on shelf and slope areas during marine residency, are segregated to a large degree from other salmon in their use of ocean habitats with correspondingly different temperatures, prey fields, and predator complexes. These differences are exemplified by the growth differences of Chinook salmon and coho salmon in their first winter at sea. Although approximately the same size in the fall, by the following year coho salmon of the same ocean cohort are over three times larger than Chinook salmon (Riddell et al. 2018).

Second, while Lewis et al. (2017) found predominately declining size for older (ocean age 3 and 4) Chinook salmon, size of ocean age 2 fish has generally not changed over the time period (Figure 12). If competition was driving the size decline, competition should be most intense for the younger age Chinook salmon, which have a more extensive overlap in size and type of prey with other salmon. Also, lower ocean growth in Pacific salmon is typically associated with shifts in age distribution towards older

ages (Hard et al. 2008), but instead average age at maturity has declined. Thus there has not been an apparent decline in growth of 1-ocean and 2-ocean age Chinook salmon during the "high abundance" period.

Third, British Columbia Chinook salmon have been increasing in average size over this time period (Jeffrey et al. 2017). These authors found a positive relationship between biomass of North American salmon and British Columbia Chinook salmon average size, indicating that size was a function of the same favorable ocean conditions sustaining the record overall biomass.

Size declines of Chinook salmon are not new in Alaska waters; Ricker (1981) found a significant decrease in size of Chinook salmon harvested in the SEAK troll fisheries from 1960 to 1974, and identified selective fishing for older, larger fish as a factor in the decline. Research by Hard et al. (2009) and others indicate selective harvesting of large older age groups of Chinook salmon can introduce reductions in fitness and cause genetic drift in growth, size, and age of maturity due to the heritability of these characteristics. However, fishing alone does not explain the decline across the geographic range of Alaska Chinook salmon, because the degree to which populations are exposed to directed selective fishing varies considerably across the range. It also does not explain the sudden decline in marine survival, as fishing pressure and exploitation rates in the ocean have not increased (CTC 2018b).

Another large predator besides humans also target larger, older Chinook salmon. Resident killer whales have been found to preferentially feed on larger Chinook salmon (Olesiuk et al. 1990; Hanson et al. 2010). In northern British Columbia and southern Alaska waters killer whales have increased at annual rates of 2.9% and 3.5%, respectively (Hilborn et al. 2012; Matkin et al.2014), more than doubling their abundance since the 1970s. Intense predation on larger fish, coupled with lower marine survival, could contribute to the changes at size at age and age at maturity of Alaska Chinook salmon.

There is substantial evidence that much of the variation in Chinook salmon marine survival is due to conditions in the first summer and winter at sea (e.g., Greene et al. 2005: Duffy and Beuchamp 2011; Sharma et al. 2013; Murphy et al. 2017). Local conditions encountered by juvenile Chinook salmon during early marine residency thus play an important role in determining year-class strength. However, the concordant trends in survival across such a broad geographic range indicate that large-scale processes are affecting stocks across regions. Increasing populations of pinnipeds could also be affecting early marine survival. Chasco et al. (2017) estimated predation on juvenile Chinook salmon by pinnipeds in Puget Sound had increased an order of magnitude from 1970 to 2015, and was now, expressed as adult equivalences, more than six times greater than the combined commercial and recreational catches in Puget Sound.

For Pacific salmon species that spend multiple years at sea, annual marine survival generally increases with size and age (Ricker 1976). For cohort reconstruction of Pacific northwest and SEAK Chinook salmon, natural mortality is assumed not to vary interannually and to decrease with ocean age, from 40% for ocean-age 1, 30% for ocean-age 2, 20% for ocean-age 3, and 10% for ocean-age 5 or older (Sharma et al. 2013; CTC 2018b). These assumptions are simplistic and undoubtedly not always correct, but there is little information to better inform the assumptions. Changes in the North Pacific ecosystem, such as increased killer whale populations, could introduce more mortality at older ages, and further depress realized survival during periods of poorer environmental conditions for Chinook salmon.

## VI. **Conclusions**

In spite of concerns over exceeding the carrying capacity of the ocean, Alaska salmon have been at unprecedented levels of abundance over the past 25 years. Conditions influencing survival in the ocean, rather than density-dependent interactions, seem to be driving both the high abundance at the basin-scale and the high variability in salmon populations at local and regional scales. The Alaska salmon harvest over the past 25 years has been characterized by sustained high production from wild stocks and large contributions of hatchery fish. Enhancement has made large net contributions to supplement wild stock harvest in some areas of the state. Density-dependent interactions have been observed at different life history stages of salmon and in nearshore and oceanic habitats during this period, but have not constrained the recovery of Alaska salmon from its nadir in the 1970's, or it sustained high abundance. Rather, density independent responses to climatic factors affecting ocean conditions appear to have largely driven the high and variable productivity of Alaska salmon.

Recent climatic and oceanographic events such as the marine heat waves of 2004/2005 and 2014/2015 in the Gulf of Alaska are demonstrative of the intrinsic variability of ocean conditions affecting salmon at local and regional scales. Will density-dependent interactions become increasingly important if and when ocean conditions become less favorable to salmon? Would then large releases of hatchery fish put wild stocks in more jeopardy? Or will hatchery fish provide a buffer to sustain fisheries when wild stock productivity is low in response to varying environmental conditions? The enhancement program in PWS offers empirical support for the latter concept. Even during the recent period of generally high productivity, wild pink salmon production in PWS has fluctuated dramatically (Figure 9). In 2009, wild stock harvests were below one million fish, while over 17 million hatchery fish were harvested. By focusing harvest on hatchery fish, managers met escapement goals (Gaudet et al. 2017). Subsequently, both hatchery and wild pink salmon set new historical highs for harvest and production in 2013 and 2015. Large releases and returns of hatchery pink salmon in years of both low and high wild stock abundance did not limit the production potential of the wild stocks.

## Authors

Alex Wertheimer retired after 35 years working for the National Marine Fisheries Service Fisheries as a Fisheries Research Biologist in Alaska. He has carried out research and published extensively on salmon in Alaska on issues including salmon enhancement technology and strategies, hatchery and wild salmon interactions, bycatch mortality of Pacific salmon, the impact of the Exxon Valdez oil spill on salmon in Prince William Sound, and the nearshore and pelagic marine ecology of Pacific salmon. He was a member of the science team that wrote the Alaska Genetic Policy, the National Oceanic and Atmospheric Administration (NOAA) Biological Review Team assessing status of Chinook salmon in the Pacific northwest, and the Chinook Technical Committee of the Pacific Salmon Commission. He was awarded the Wally Nuremberg Award for Fisheries Excellence by the American Fisheries Society Alaska Chapter. Upon retirement in 2009 after 35 years of Federal service, he received the NOAA Distinguished Career Award. Since retirement, he has continued to consult on scientific studies and reviews, including forecasting of Pacific salmon, quantification of by-catch mortality, and the Pacific Salmon Recovery Plan. He currently serves on the Pacific Salmon Commission's Standing Committee on Scientific Cooperation and on the Science Panel overseeing the Alaska Hatchery Research Program. He is the President of the Board of Directors of the Southeast Alaska Land Trust, and is a member of the Board of Directors for DIPAC, Inc., a major non-association private non-profit hatchery based in Juneau. He was supported in his work on this paper by the Northern Southeast Alaska Aquaculture Association.

William (Bill) Heard retired in 2012 after 52 years of Federal Service as Fishery Research Biologist. Much of his career was with NOAA Fisheries Alaska Fisheries Science Center's Auke Bay Laboratories, but he also worked for the U.S Fish and Wildlife Service Bureau of Commercial Fisheries and Bureau of Sport Fisheries and Wildlife. He did extensive research and published frequently on Alaska salmon and other fishes. Bill authored or co-authored peer reviewed publications on all five species of North American Pacific salmon. For over 35 years he supervised research at Little Port Marine Research Station focused on enhancement technology and ecology of pink, coho and Chinook salmon. He actively participated on many technical committees and focused groups involved with Alaska, National, and International salmon issues, including Governor Jay Hammond's Fisheries Council concerned with policies and development of salmon hatcheries in Alaska, North Pacific Fishery Management Council Plan Development Team for Fishery Management Plan (FMP) on salmon fisheries, Pacific Salmon Commission (PSC) Northern Boundary Technical Committee, North Pacific Anadromous Fish Commissions (NPAFC) Committee on Scientific Research and Statistics (CSRS) and U.S.-Japan Natural Resources (UJNR) Aquaculture Panel involved with salmon hatcheries in Japan. Participating in NPAFC, PSC, and UJNR afforded opportunity for travel to most North Pacific rim countries with populations of salmon including Russia and Republic of Korea . Bill received fre awards for research excellence in fisheries from ADF&G, Alaska Chapter American Fisheries Society, U.S. Department of Commerce Bronze Medal Award, NOAA Fisheries Employee of the Year and NOAA Fisheries Distinguished Career Award. He was an Affiliate Associate Professor, University of Alaska Fairbanks, School of Fisheries and Ocean Sciences.

## Figures

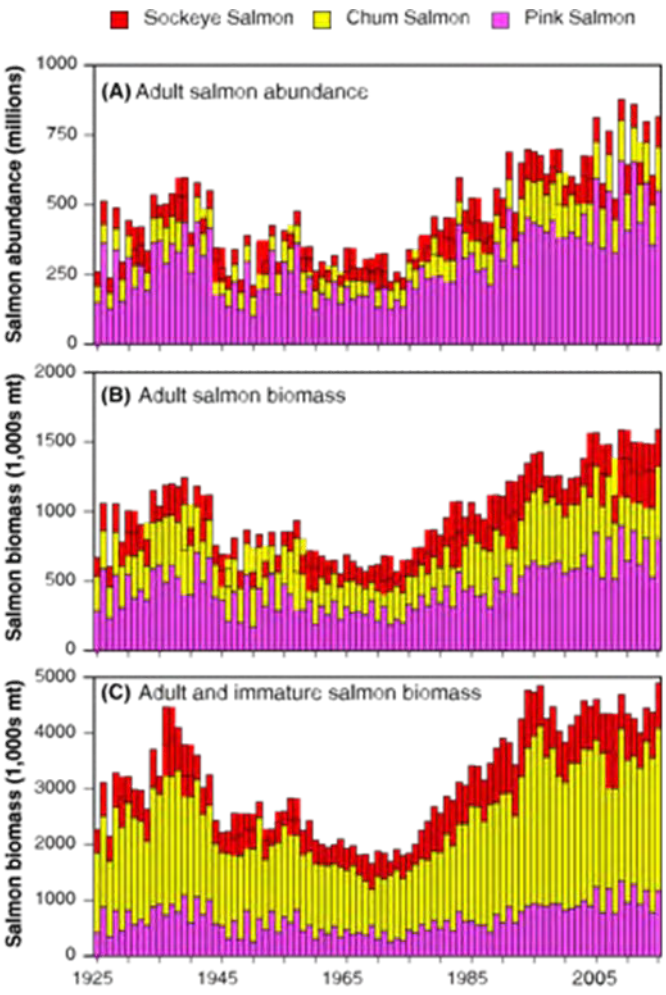


Figure 1. (A) Abundance (millions of fish), (B) adult biomass (thousands of metric tons), and (C) adult and immature biomass (thousands of metric tons) of Sockeye Salmon, Chum Salmon, and Pink Salmon in the North Pacific Ocean, 1925–2015. From Ruggerone and Irvine (2018).

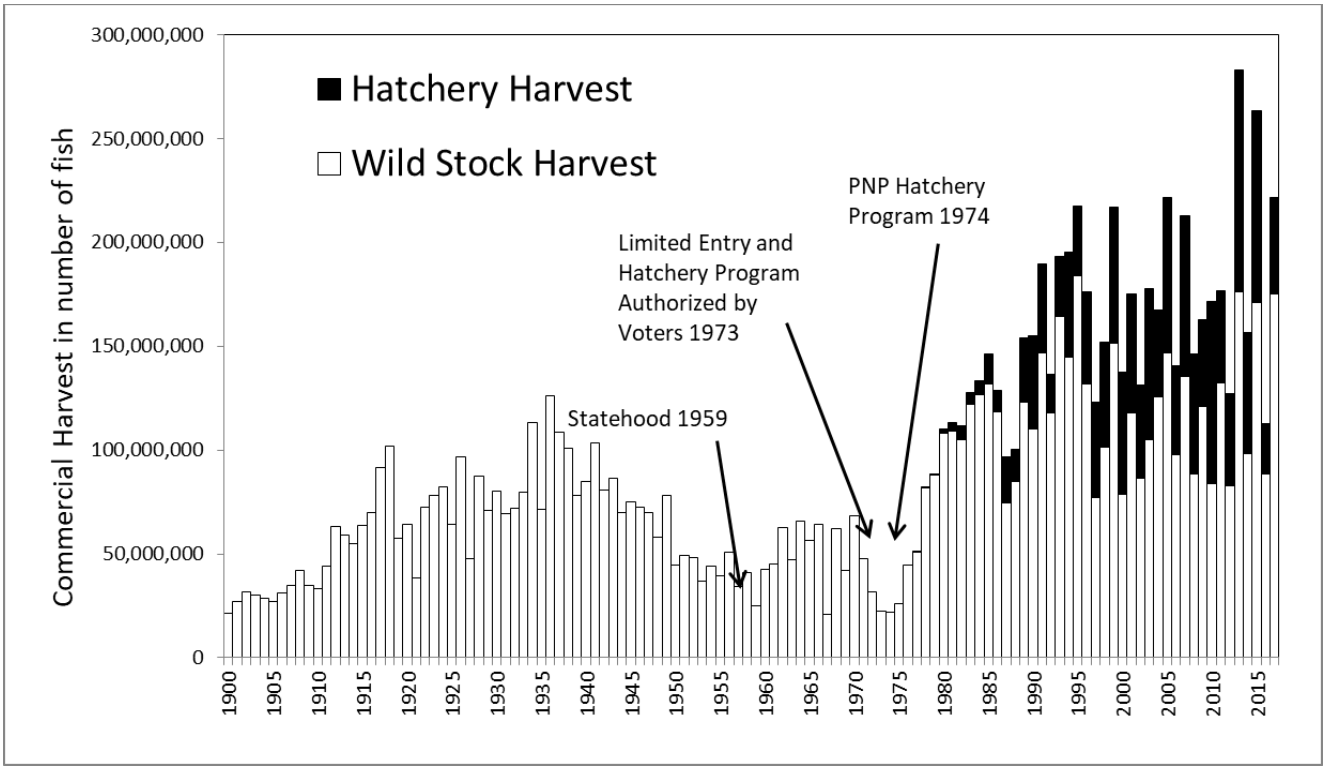


Figure 2. Commercial salmon harvest in Alaska, 1900-2017. From Stopha (2018).

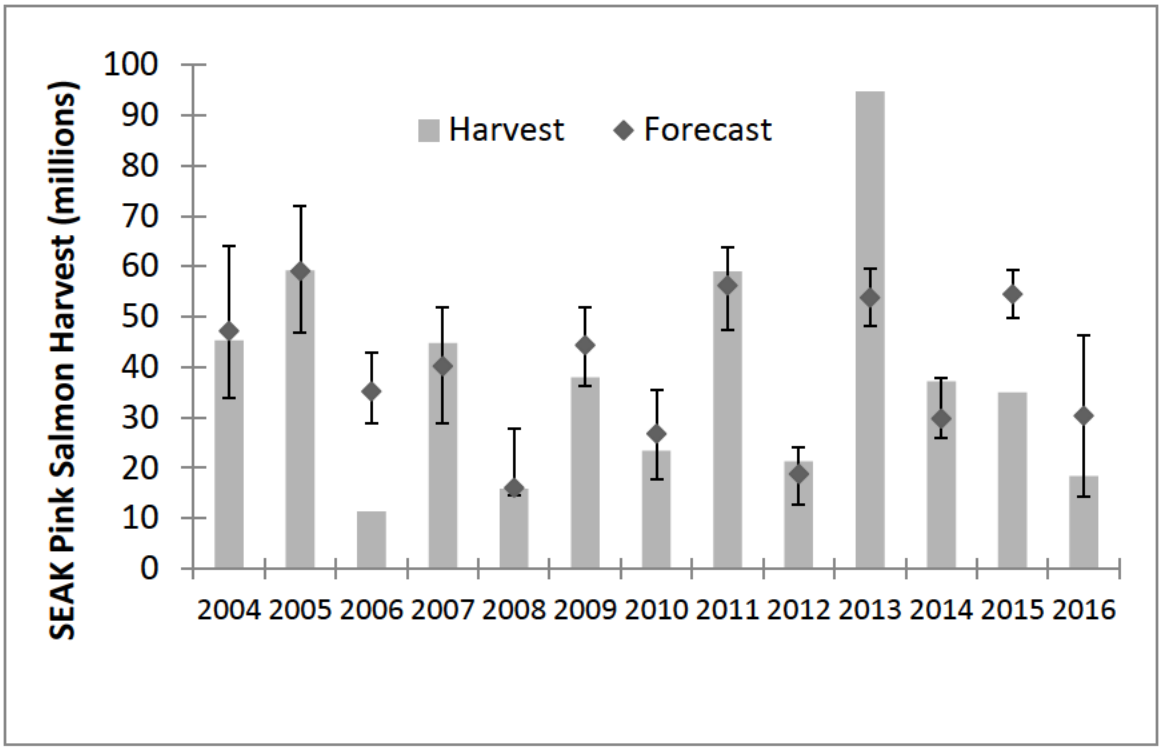


Figure 3.—Southeast Coastal Monitoring (SECM) project pink salmon harvest forecasts for Southeast Alaska (SEAK; symbols), associated 80% confidence intervals (lines), and actual SEAK pink salmon harvests (grey bars), 2004-2016.

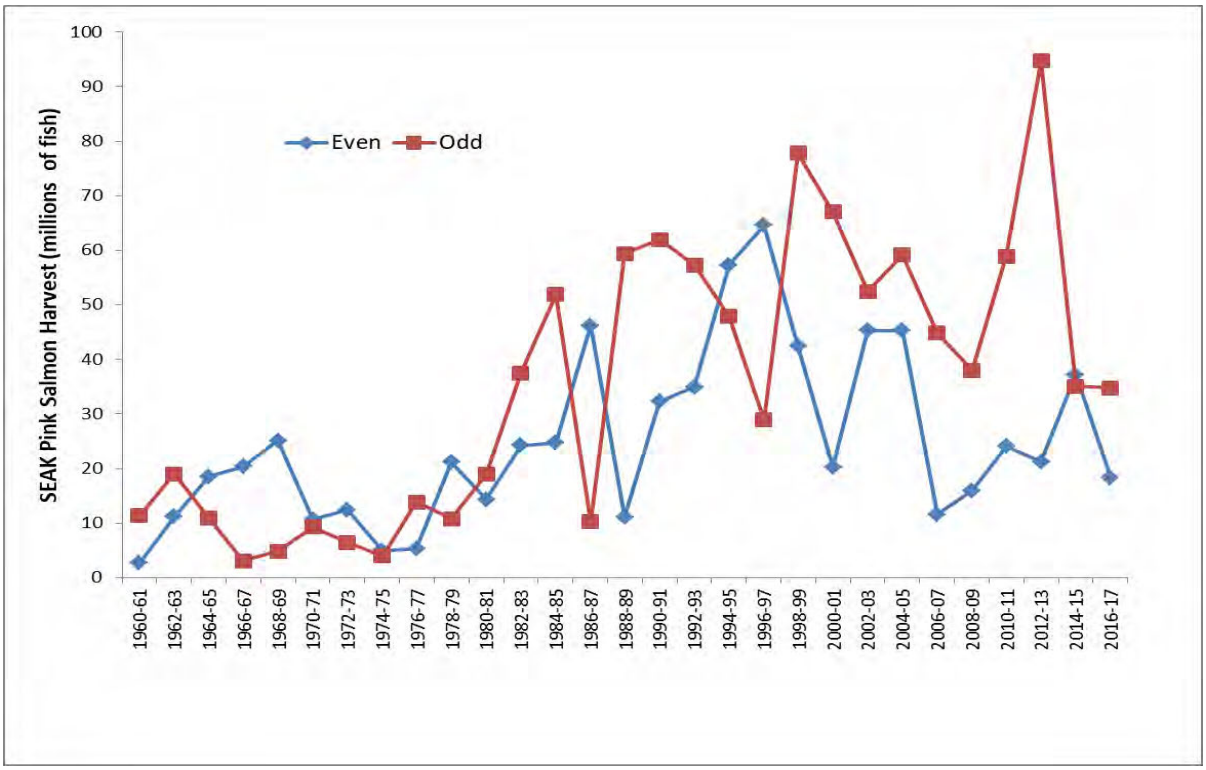


Figure 4. Even- and odd-year harvests of Southeast Alaska pink salmon, 1960-2017. Data are from Alaska Department of Fish and Game catch statistics.

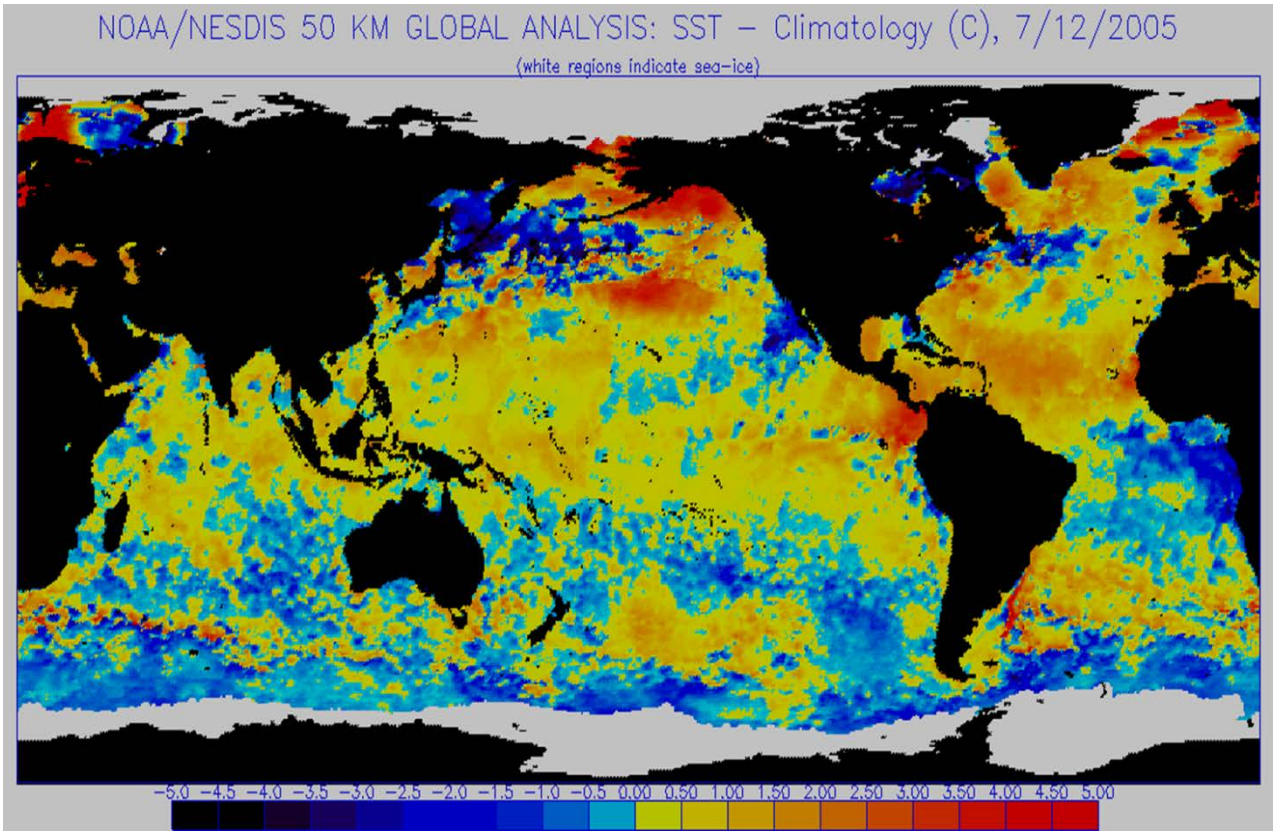


Figure 5. Sea surface temperature anomalies, July 12, 2005. NOAA Satellite and Information Service, National Environmental Satellite, Data, and Information Service (NESDIS) http://www.osdpd.noaa.gov/PSB/EPS/EPS.html

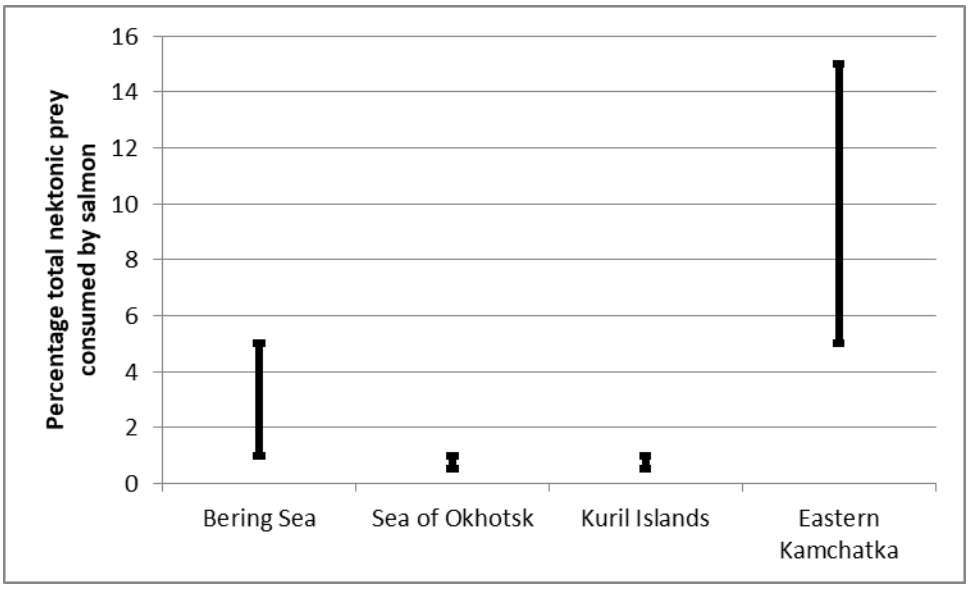


Figure 6. Percentage total nektonic prey consumed by salmon in the western North Pacific Ocean. Estimates are from Shuntov et al. (2017).

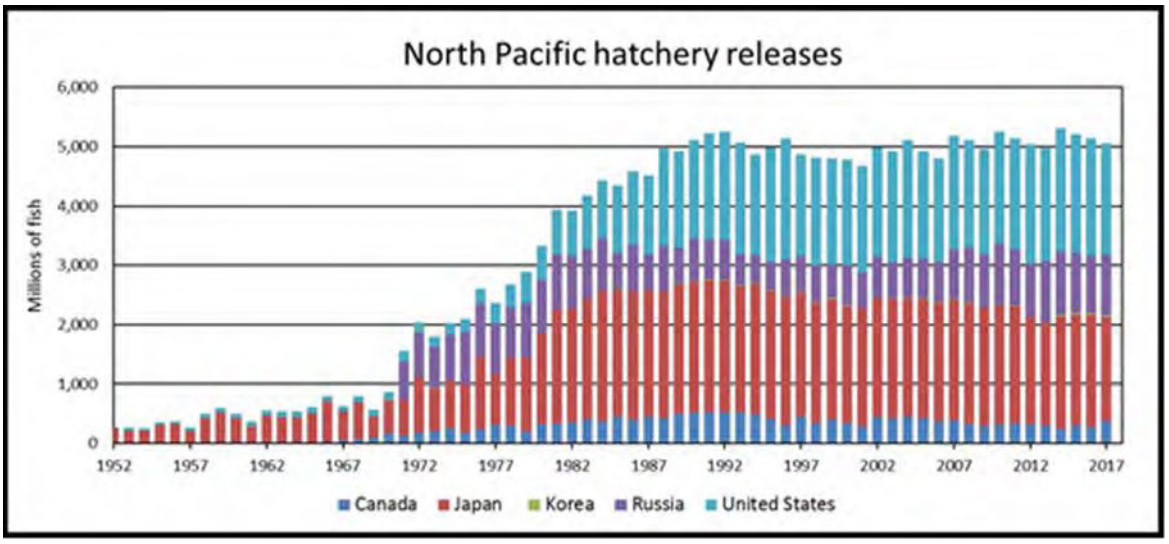


Figure 7. Hatchery releases of salmon into the North Pacific Ocean, 1952-2017. Source: North Pacific Anadromous Fish Commission.

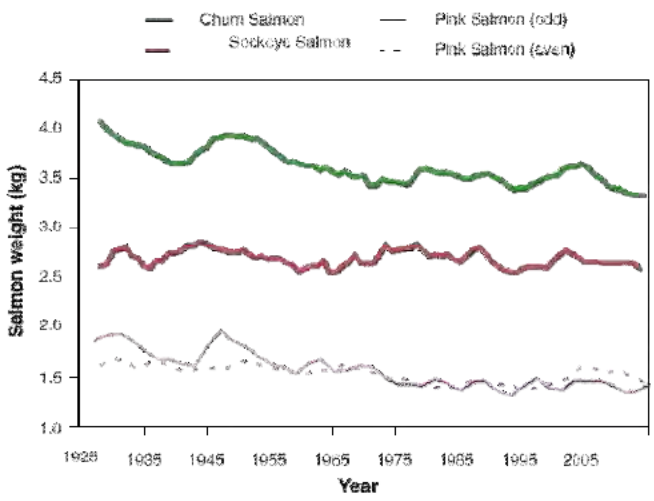


Figure 8. Average weight of pink salmon, chum salmon, and sockeye salmon captured in commercial fisheries, 1925-2015. From Ruggerone and Irvine (2018).

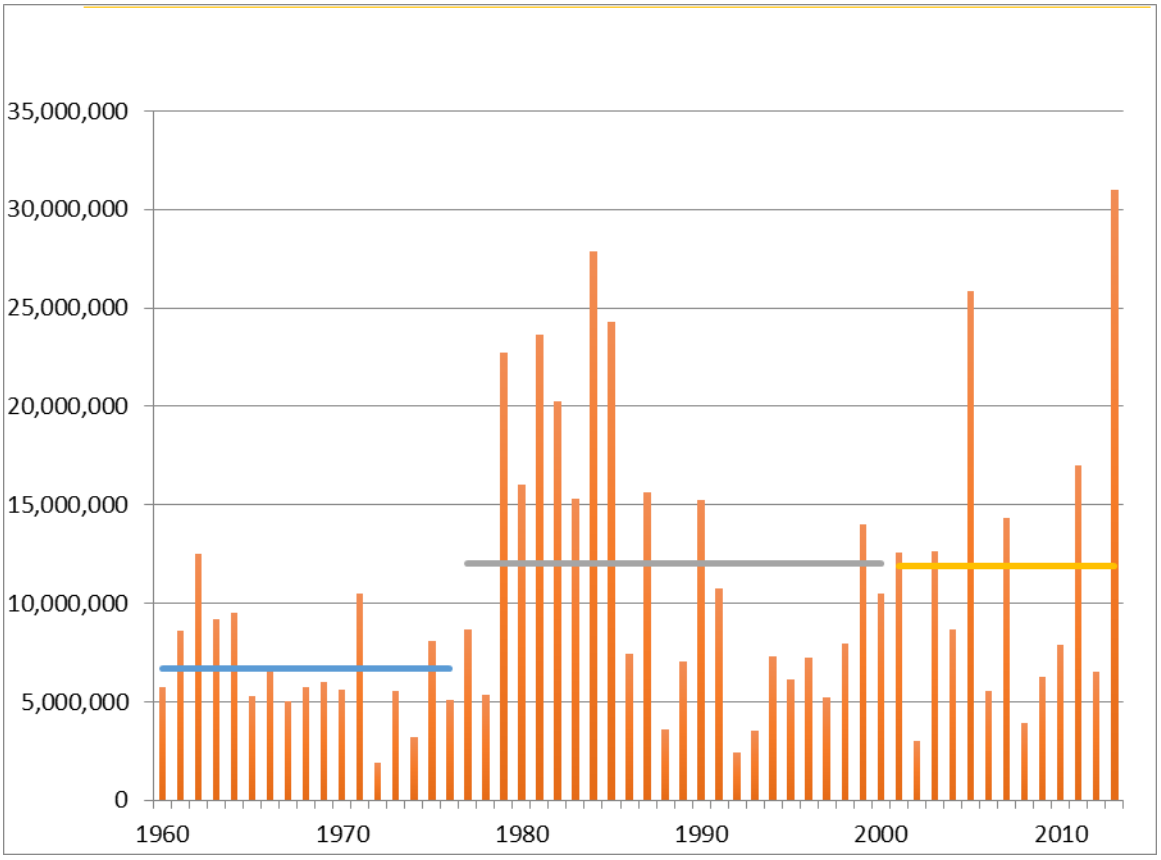


Figure 9. PWS Wild Pink Salmon Production for 1960-2013. Lines indicate average production for pre-hatchery years (1960–1976) and two hatchery time periods: 1977–2000 and 2001–2013. From Gaudet et al. (2017).

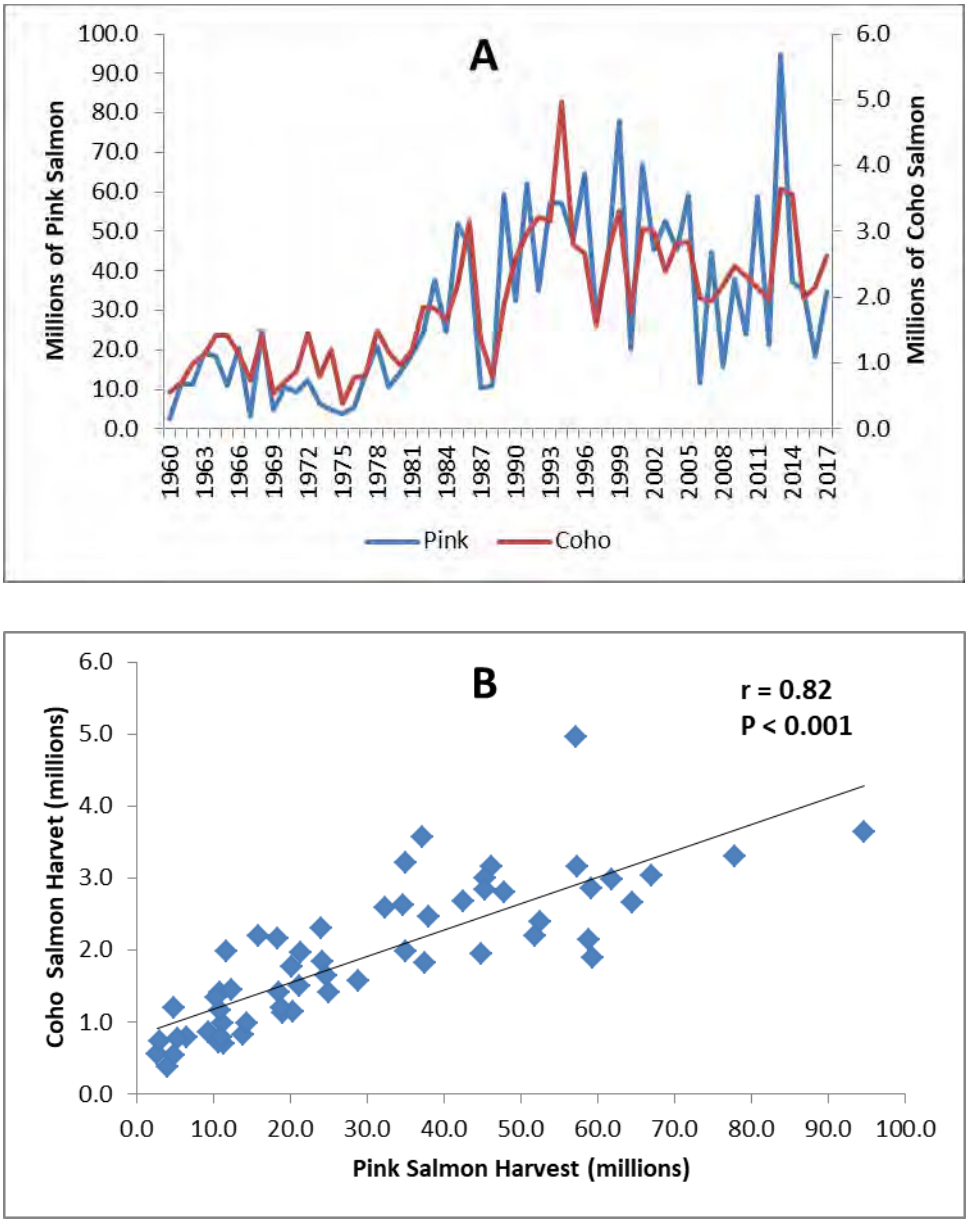


Figure 10. Commercial harvest of Southeast Alaska pink and coho salmon, 1960-2017 (A), and their correlation (B). Data are from Alaska Department of Fish and Game catch statistics.

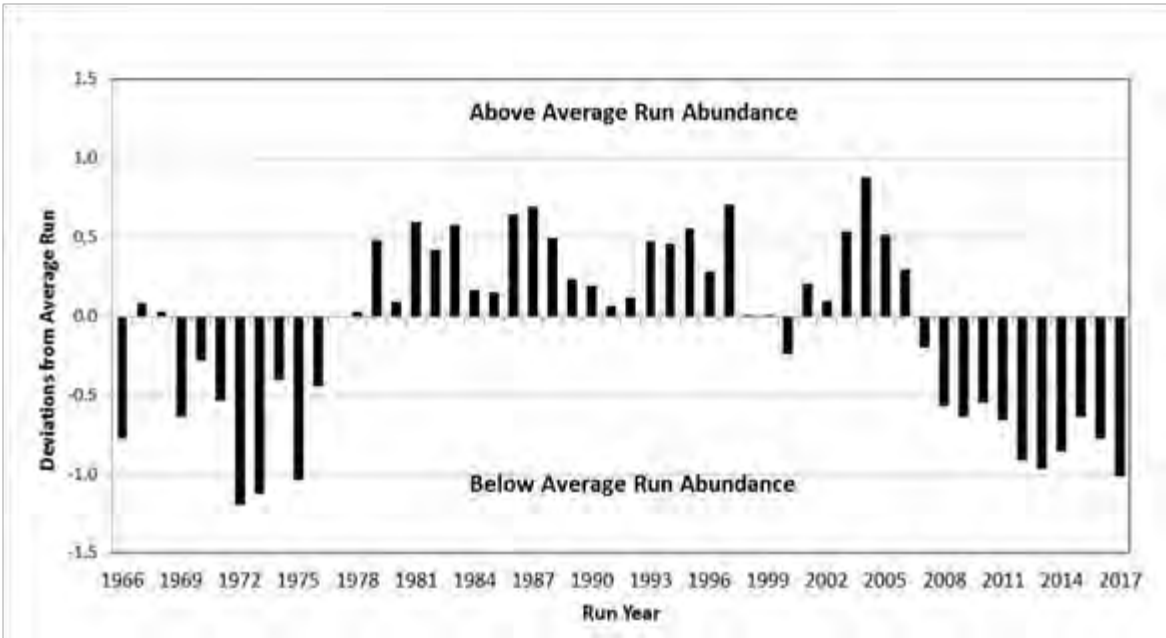


Figure 11–Average of standardized deviations from average run abundance for 21 stocks of Chinook salmon in Alaska (the Unalakleet, Nushagak, Goodnews and Kuskokwim in western Alaska; the Chena and Salcha on the Yukon River; the Canadian Yukon, the Chignik and Nelson on the Alaska Peninsula; the Karluk and Ayakulik on Kodiak Island; the Deshka, Anchor and late run Kenai in Cook Inlet, the Copper in the northeastern Gulf of Alaska, and the Situk, Alsek, Chilkat, Taku, Stikine, and Unuk in Southeastern Alaska). From CTC (2018a).

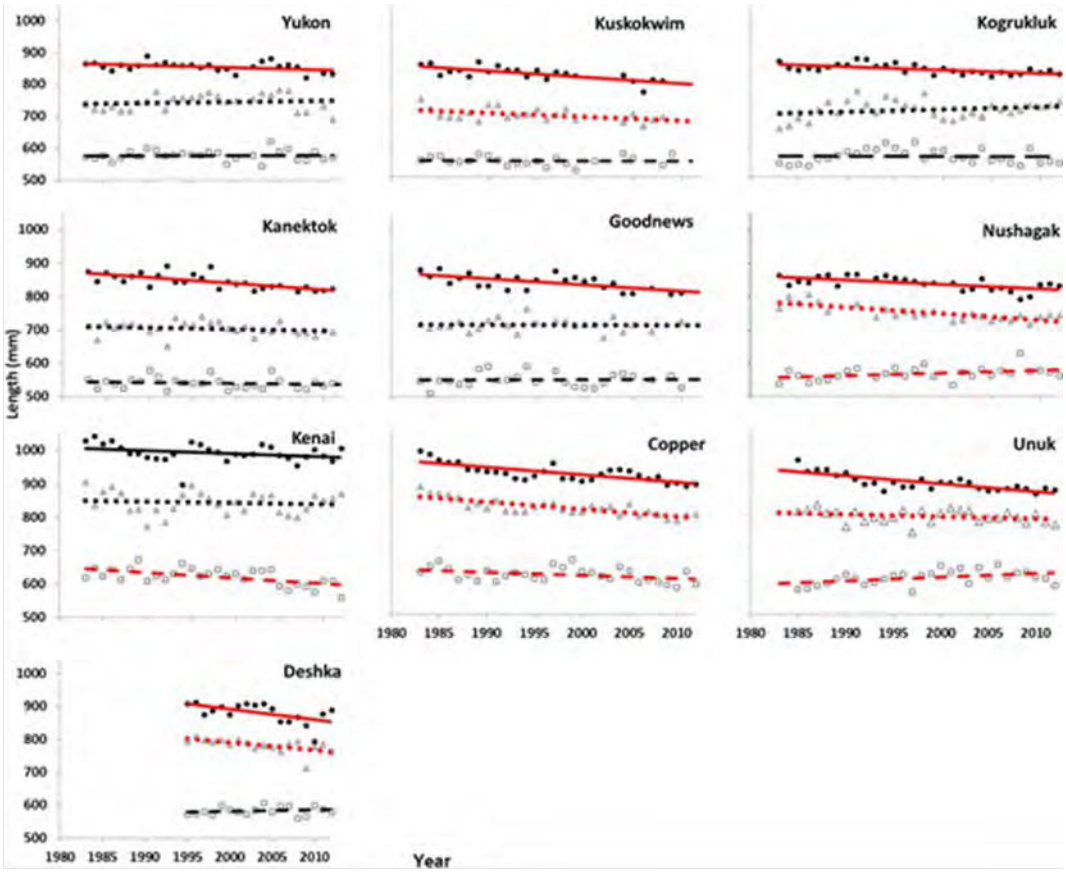


Fig 12. Linear regression of mean annual length (mm) Chinook salmon by stock, age class, and year. Closed circles and solid line = 4-ocean; triangles and dotted line = 3-ocean, open square and dashed line = 2-ocean. Red lines indicate slopes significantly different from zero ($P < 0.05$). From Lewis et al. (2017).

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Prince William Sound
Aquaculture Corporation
DEVELOPING SUSTAINABLE SALMON FISHERIES
FOR ALASKA AND THE WORLD

February 7, 2024

Alaska Department of Fish and Game
Boards Support Section
P.O. Box 115526
Juneau, AK 99811-5526
Submitted via online comment form and email: dfg.bof.comments@alaska.gov

**RE: PWSAC opposes Proposal 43**

Dear Alaska Board of Fisheries Members:

The Prince William Sound Aquaculture Corporation (PWSAC) is a regional nonprofit hatchery organization operating four salmon hatcheries in Prince William Sound (PWS) and one on the Gulkana River, raising all five species of Pacific salmon for harvest in subsistence, sport, personal use, and commercial fisheries. Founded in 1974, PWSAC was initiated by local fishermen to support the region's serious financial distress following several years of low salmon abundance. Today, PWSAC is Alaska's largest hatchery organization, employing 54 full-time staff members and approximately 75 seasonal workers with an annual operating budget that exceeds $14 million, funded by salmon enhancement taxes and cost recovery fish sales. PWSAC is governed by a diverse board of 45 members who represent over 750 commercial salmon fishing permit holders, and thousands more stakeholders who benefit from PWSAC production, including commercial fishermen, sport fishermen, subsistence fishermen, personal use fishermen, PWS municipalities, Alaska Native organizations, scientists, and salmon processors. Since inception, PWSAC has returned on average 70% of fish produced to common property fisheries.

**Proposal 43 –5 AAC 40.820. Basic Management Plan**

Proposal 43 looks to reduce hatchery production to 25% of the year 2000 production by amending the *Cook Inlet Salmon Enhancement Allocation Plan*. This proposal in similar form has asked the board to reduce hatchery eggtakes on at least three other occasions. With unsubstantiated claims, each time the board has rejected the proposal that would dramatically affect fishermen's small businesses, families, as well as sport, subsistence, and personal use programs across large regions of Alaska.

ACR 2 – Submitted by Virgil Umphenour at the October 2018 BOF Work Session sought to cap statewide private non-profit salmon hatchery egg take capacity at 75% of the level permitted in 2000 (5 AAC40.XXX). **Failed 2-5 (Public comment was 11 in favor and 116 opposed)**

Proposal 54 – Submitted by Virgil Umphenour at the December 2021 PWS/Upper Copper/Upper Susitna Finfish/Shellfish meeting sought to amend the PWS Management and

Salmon Enhancement Allocation Plan to specify hatchery chum salmon production by reducing to 24% of year 2000 levels. **Failed 0-6 (Public comment was 5 in favor and 94 opposed)**

Proposal 55 – Submitted by Virgil Umphenour at the December 2021 PWS/Upper Copper/Upper Susitna Finfish meeting sought to amend private-non-profit hatchery permits to decrease allowable hatchery production to 75% of year 2000 levels. **N/A 6-0 (Public Comment was 4 in favor and 102 opposed)**

The assertion of over-production of hatchery fish is not supported by Ruggerone and Irvine (2018) or the North Pacific Anadromous Fish Commission who provides the best available data on numbers and biomass of hatchery and natural origin adult (mature) and juvenile (immature) salmon. PWS pink production for example has been relatively stable since 1990, 30+ years. Estimates for the years 1990-2015, PWS adult and juvenile hatchery pink salmon biomass average <8% of the total pink salmon biomass in the North Pacific Ocean. When the adult and juvenile chum and sockeye salmon biomass are included for the same time, PWS adult and juvenile hatchery pink salmon biomass is estimated to average <2% of the annual total biomass for these three salmon species in the North Pacific Ocean. The vast majority of pink salmon in the ocean at any given time are of natural origin. When further compared to other pelagic fish (herring, pollock, cod, flatfish, squid) PWS hatchery pink biomass is estimated to average <0.03% of the total North Pacific Ocean food chain.

PWSAC continues to support constant scientific review and evaluation of the Alaska Salmon Hatchery Program and supports the current laws and regulations that guide it. PWSAC also supports the iterative process involving department staff, hatchery operators, and stakeholders. In the absence of compelling data or analysis supporting a reduction for conservation reasons, any significant changes need to be thoroughly examined by hatchery board members for hatchery needs and consider stakeholder input to ensure a well-informed decision.

Over the last 40 years Prince William Sound Aquaculture's programs have been an enormous success in helping rebuild Prince William Sound salmon stocks from the historic lows of the 1970s. Alaska's Salmon Hatchery Program has provided hundreds of millions of dollars in economic activity across the state since its inception and fed billions of people across our globe.

It is important to note that hatchery associations, ADF&G staff, and BOF members have spent considerable time and money addressing repeat proposals. Author and word changes have not brought any new or substantive information to the table. There is no supporting data that suggests these repeat proposals would help the intended stakeholders, but it is clear a proposal such as 43 would definitively hurt many more in the process.

PWSAC **opposes Proposal 43** and would respectfully ask that **the board reject Proposal 43** or any other request to reduce hatchery production that would usurp aquaculture associations board's ability to establish annual goals and to operate hatchery operations with fiscal and fiduciary responsibility. PWSAC has returned on average since inception 70% of fish produced to common property fisheries.

We look forward to working with Board of Fish members to answer any questions they have and help inform the public process during the meeting.

Sincerely,

Geoff Clark
General Manager/CEO

DEVELOPING SUSTAINABLE SALMON FISHERIES
FOR ALASKA AND THE WORLD

P.O. Box 1110 · Cordova, Alaska 99574
P. 907 424 7511 · F. 907 424 5508

www.pwsac.com

**Submitted by:** Nicholas Raggio
**Community of Residence:** sterling, VA

As an east coast resident, I'm one of the people who loves the yearly striped bass fishing. The striped bass are in a similar condition as current salmon. sometimes extreme measures need to be taken to insure the future success and profitability of a fishery. striped bass have had booms and bust. currently we're in a bust but it's for better future fishing which is why I'm in support of proposal 83, which as I understand it, should be the beginning of improving the species. while it's understandable that some people have their livelihoods wrapped up in fishing, these same people will be only shooting themselves in the foot if the status quo isn't changed

February 8, 2024

Alaska Board of Fisheries
P.O. Box 115526
Juneau, AK 99811-5526

Dear Board of Fisheries,

We have been running a small ship cruise business in Prince William Sound for over 30 years. We support Prince William Sound Aquaculture's ongoing salmon hatchery program for a number of reasons. Obviously, hatchery salmon production is a huge, if not the greatest, economic engine in our region. We, as long time tour operators, visit some of the local hatchery locations regularly to show our paying guests how successful the salmon hatchery program is and how other wildlife such as bears, sea lions, eagles, etc., thrive, because of the high returns of hatchery reared salmon in these locations. We also visit many local PWS streams via skiff, kayaks, and hiking where we get to see the natural runs of salmon unfolding annually. In our over 30 years of visiting 100s if not 1,000s of salmon producing wild rivers and streams in the PWS area, we have not seen any noticeable reduction in wild salmon runs with the exception of some smaller streams in the central Sound area such as Knight Island, where there was serious damage to the local runs caused by the 1989 Exxon Valdez Oil Spill.

I appreciate your dedication to the conservation and sustainable management of Alaska's salmon fisheries. The Board of Fisheries full consideration is crucial in shaping the future of our salmon resources.

**Support for Removing Proposal 59:**

I support the decision to remove Proposal 59 from the Kodiak meeting agenda because I believe it is essential to distinguish between proposals that modify regulatory changes within specific regions and those with statewide hatchery implications. This was an important action in regards to precedent and process. Statewide hatchery issues, including any regulations with statewide precedent, should be addressed at a statewide venue. This ensures consistency and fairness in the decision-making process.

**Statewide vs. Regional Precedent:**

When addressing statewide hatchery issues that have the potential to establish precedents or modify hatchery regulations impacting multiple regions, it is essential to do so within a statewide venue rather than restricting discussions to regional meetings. Salmon hatcheries are integral to Alaska's fisheries, influencing various regions and user groups. Numerous hatcheries are linked

with Pacific Salmon Treaty mitigation obligations. Decisions made solely at the regional level may lack the comprehensive perspective necessary to ensure consistency and fairness in overarching hatchery management decisions. Holding these discussions at a statewide level allows for a more inclusive and well-informed decision-making process, involving stakeholders from all regions. This approach considers the diverse interests and nuances of Alaska's intricate salmon fishery landscape, ultimately contributing to the long-term sustainability of our fisheries and ensuring that hatchery-related regulations align with the overarching goals of responsible resource management. Most hatcheries operate sport, personal use, and subsistence programs that can only exist with the financial support of the PNP organization.

**Opposition to Proposal 43:**

We continue to oppose Proposal 43, for the following key reasons.

(1) Lack of Scientific Evidence: Proposal 43 lacks substantial scientific evidence to support claims that hatchery fish have a detrimental impact on wild salmon populations or ecosystems. Decades of research and data show that hatcheries and wild salmon can coexist and even thrive together.
(2) Steady Increase in Wild Salmon Returns: Contrary to the proposal's assertions, regions with hatcheries in Alaska have witnessed steadily increasing wild salmon returns since the early 1970s when these programs were established. Hatcheries have not replaced wild salmon but have provided a stable supply for commercial, sport, and subsistence fisheries, while at the same time wild stock escapements are being met.
(3) Social and Economic Benefits: Hatchery programs have been instrumental in meeting the demand for salmon while preserving wild stocks and their habitats. They support the livelihoods of Alaskans, contribute to local economies, and provide a buffer against the variability of wild salmon runs.

As an Alaskan and supporter of responsible resource stewardship for future generations, I thank the Board for this opportunity to advocate for sustainable fisheries management practices and the long term, science-based decision making when it comes to hatchery resources.

Sincerely,
Dean Rand
[redacted]
Whittier/Cordova, Alaska

February 02, 2024

Dear Chairman Wood and Board of Fisheries members:

I do most of my sport fishing on the Kenai Peninsula, mostly for sockeye. I used to fish for kings as well, but of course, that's no longer a real option. My wife and I depend on our annual trips to the Russian and occasional dipnetting trips to the Kenai to put enough salmon in the freezer for the year and have been doing so for over 35 years.

I support decreasing time, methods and means and other commercial fishery limitations to protect weaker salmon stocks such as late-run Kenai kings and Susitna sockeye. Many families depend on a sustainable source of protein that we can eat all year round, and we should be getting better treatment from the board. Commercial interests should always be secondary to the needs and preferences of Alaska citizens.

I thank the Board for historic actions taken in 2020 to protect late-run Kenai king salmon and other weak stocks of salmon. I support equitable sharing of the burden of conservation among all user groups to protect and rebuild these stocks. Now is not the time to expand commercial fishing or lower escapement goals. In times of low abundance, we must put the fish first and allow more fish onto the spawning grounds.

Sincerely,

Tom Reale
ANCHORAGE, AK

**PC179**

**Submitted by:** Brian Reid
**Community of Residence:** Eagle river, alaska

Proposal 167 - No Bait middle river Skilak Lake to Moose River.

#1 to protect coho stocks which the department has little to no data on.

#2 to protect trophy resident species that are being caught and mishandled as bycatch

The problem is that anglers are fishing coho salmon in staging (prespawn) areas with bait. Due to the lifecycle timing of the coho in these areas many of them have changed color (turned red) and are no longer desirable for harvest. The angers are then forced to catch and release undesired coho in large numbers in order to high grade fresher coho in that area. With the data on high mortality rates of coho in catch and release fisheries, the fishery being currently prosecuted as such is unsustainable and needs to be addressed.

The resident species require equal protection under catch and release fisheries - prosecution of a bait fishery is unsustainable.

Proposal 167: Support

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**PC180**

**Submitted by:** Micah Robert
**Community of Residence:** Kenai, AK

King salmon in the Kenai need better protection, set nets are an issue that regardless of the allowed take kill kings. Additionally, target run numbers should be increased to 40,000. The current runs are not sustainable and lowering the goal will only make the problem worse. We should not be so greedy as to kill tomorrows opportunities to bring in more money today.

Proposal 83: Support

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**PC181**

**Submitted by:** Lisa Rodgers
**Community of Residence:** Kenai, AK

Tikahtnu' is the Dena'ina name for Cook Inlet meaning Ocean River & Lord Ruler is our chinook salmon named by my father who has fished our land & waters since the late 50's.

I, acknowledge the Dena'ina as the traditional owners of the land on which our family lives and salmon fish. I respectfully also honor the Inupiat, Aleut, Eyak, Tlingit, Haida, Shim-She-Un and a number of Northern Athabaskan people as stewards of the land. I PAY RESPECT TO ALL ELDERS PAST, PRESENT and EMERGING.

My question to our board of fish is, do you?

I am an Alaskan born & raised native women who owns, runs and operates our set net site along the Cook Inlet. Our family has fished these waters for over 100 years. I am 3rd generation commercial fisherwoman, passing it down to my children and their children, making our fishery a 5 generation legacy .

This last summer 2023, I couldn't help but wonder what would our ancestors & elders say of our dying resource which God created to be naturally sustainable and renewable as the most valued resource to our livelihoods nutritionally and spiritually?

Sitting above on the bluff and looking down at the inlet and watching the salmon swim by was devistating and heartbreaking. For the first time in our fishing history our small business was forced to be shut down along with three hundred plus other permit holders/family run businesses. While all the other fisheries surrounding us had the opportunity to salmon fish.

It's really hard not to take our recent 2023 season closure personal.

Our fishery has experienced endless regulation changes from our gear type to how many days we can fish. To not give up on our industry & lifestyle we keep adapting to them.

Our fishery has had so many restrictions and forced regulations - and eventually for the very first time in fishing history an entire season shut down - it's all been taken away from us. What more can we give? Even with our nets out of the water last season the king numbers didnt change, they are the same as they were 4/6 - 15/20 years ago.

Our nets have been on restriction & tucked away in our totes all season long & the escapement numbers for the large kings are relatively identical to 6 plus generations of Chinook...approx. 36-40 years.

The high end of a king salmons life span is 7 years. Once they hatch to fry, they stay in fresh water one and sometimes two years. If you take a maximum of 7 year old king and go back 6 generations at maximum age that is 7x6=42 years ago. That's if they live to be 7, which very few do.

The large kings aren’t going to come back in any number good enough to satisfy any specific user group, ever again.

Unless we listen to the people who have fished and sustained these species longer than most have been alive...the local commercial fisherman. Have you ever taken into consideration to talk to the ones who have more experince & knowledge than most of your board members?

They aren’t staying in the ocean long enough to be massive like they used to be.

The big ones are getting caught by trawlers and are competing for food.

The whales eat them.

Sharks eat them.

Trawlers scrape them off the ground floor all the way to the surface and are allowed to throw them back dead as bycatch...wasted.

They get caught on their spawning grounds and also at the same time flushed from them while being chased out of the river and back to sea all the while being robbed of what strength they have left to continue the cycle.

Data proves almost 40% of sport caught salmon hooked and released die before spawning; in other words wasted.

Yes, commercial set netters ocassionally catch a chinook, but not as often as most have been groomed to believe. Most the chinook we've caught are blushed and/or have hooks in them meaning they were in the river.

When we caught them they were either kept for personal use or sold, always cherished, but never ever wasted or taken for granted.

And for each king we caught we were enforced and regulated to report how many we caught.

We are the only fishery that is enforced to report how many we caught. Sport fishery doesn’t have to report how many kings they caught, nor substance or trawlers. Only us. Why is that?

Back in the inlet they are unable to preform what nature intended them to do…. Spawn.

And they don't start eating again either.

Fresh water tells them it's time to spawn and their oil content is their energy to do so. Once released or forced back to sea it is mostly a suffocation death or death by exhaustion.

Not saying killing any salmon is fun or enjoyable for either party, however our nets have been made and designed, mostly by conservative commercial fisherman who are conservationists by nature that don't want to catch "them all" and work themselves out of annual income, careers, and future opportunity.

This sacred resource has been molested and abused and treated like an entitlement to those who are purely blinded to their true nature & essence.

Humans have this sense of entitlement of greed & ego to harvest these treasures of the sea to mount on their walls & stories to share with their buddies.

I can tell you, this is not how god intended this sacred salmon to be used as.

Most won't appreciate when I say this but the river system is where it should be shut down first as that is where the magic take place.

To create more babies in families, it's done in the intimacy of your bedroom, in a sacred space. It's the same for our fish, caribou, moose, all of our sacred creatures of the earth

How would you like an audience in your sacred space poking & proding you while you are putting in the intentional effort in the making to create new life? You wouldn't!

The king salmon are not staying out in the ocean as long as they used, which used to be 5/6 years. Now because of all these factors they are coming back earlier after year two, three or even fours years of age which means they are coming back smaller.

Smaller as in 34 inches and most likely getting counted as a red salmon thru the sonar versus a large size king salmon over 34 inches.

There are larger species of salmon & other fish that are over 34 inches like large rainbow trout, silvers, chums and reds that are all over 34 inches.

Which are most likely getting mistakenly counted as a large king over 34 inches.

As I sit in silence I hear the words of our ancestors and they say,

The Spirit of the King Salmon and the Wisdom within them is here to teach us but are we humans paying attention?

These majestic giants of the sea represent authority, power, grandeur, and leadership.

What's ironic is is their own spiritual medicine is what's decimating them from earth!!! By the hands of us humans.

Put the *authority* back in the fish they will rebound!

Put the *power* back in the fish and they will rebound!

Take the govt power out of nature! When has gov intervention made anything better?

They are not following the Science for our fishery.

They need to go back to science and leave politics out of it.

Perhaps it’s time for those in power of our fishery begin to reflect on the wisdom these royal salmon have to tell us instead of padding their pockets

It’s time we begin to learn from the Salmon on what they have to teach us by their wild, natural and untampered spirit.

You won’t ever find a salmon that is confused on who he/she is or undeceived . They haven’t been injected with the poison of society, media, social media, peers etc.

They are who they are.

Wild and untethered

This is so overwhelming with all these proposals, managment plans and arguments. What happened to letting science & nature dictate our fishery? Instead it's become a game of politics.

We need to leave partisan politics out of the issue and simplfy the fishery for Alaskan user groups and residents as the primary. Our local town of Kenai took a huge defecit to the economy last year and a hard hit for the past ten years with restriction after restriction. Most of us permit holders are full time and permanent residents of Alaska who spend our hard earned money here in our very own state. In the summers our fishery feeds the Kenai Peninsula with our income and also feeds Americans products they most times can't get.

Proposal 77: Support Proposal 80: Support Proposal 81: Support Proposal 85: Support
Proposal 86: Support Proposal 90: Oppose Proposal 101: Oppose Proposal 106: Oppose
Proposal 109: Oppose Proposal 110: Support Proposal 111: Support Proposal 112: Oppose
Proposal 113: Support With Amendments Proposal 114: Support With Amendments
Proposal 115: Support With Amendments Proposal 116: Support Proposal 117: Support
Proposal 122: Support Proposal 123: Support Proposal 124: Support Proposal 126: Oppose
Proposal 127: Oppose Proposal 128: Support With Amendments
Proposal 130: Support With Amendments Proposal 131: Oppose
Proposal 132: Support With Amendments Proposal 133: Oppose
Proposal 134: Support With Amendments Proposal 135: Oppose
Proposal 136: Support Proposal 137: Oppose Proposal 139: Support With Amendments
Proposal 140: Support With Amendments Proposal 141: Oppose Proposal 142: Oppose
Proposal 143: Support With Amendments Proposal 144: Support Proposal 145: Support
Proposal 146: Support Proposal 147: Support Proposal 148: Support Proposal 149: Support
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Proposal 191: Oppose Proposal 192: Oppose Proposal 193: Oppose Proposal 194: Oppose
Proposal 195: Support Proposal 196: Support Proposal 197: Support Proposal 198: Support
Proposal 199: Support Proposal 200: Support Proposal 203: Oppose Proposal 205: Oppose
Proposal 207: Oppose Proposal 208: Oppose Proposal 209: Oppose Proposal 210: Oppose
Proposal 211: Support Proposal 212: Oppose Proposal 213: Oppose Proposal 214: Oppose
Proposal 215: Support Proposal 217: Oppose Proposal 230: Oppose Proposal 231: Oppose
Proposal 232: Oppose

**PC181**

**Submitted by:** Lisa Rodgers
**Community of Residence:** Kenai, AK

Please add this to my prior submission

I am proudly a Kenaitze Tribal Member and a shareholder of the Bering Straits Native Corporation and descendent of the Aleut Corporation.

Trevor Rollman
PO Box 7073
Nikiski, AK 99635
[redacted]

Board Member – Northern District Set-Netters Association

I am submitting these comments on behalf of myself and my family, NOT the NDSNA.

Cook Inlet Set-net Permit Holders: Trevor Rollman (2), Tom M. Rollman, Ella Rollman, Brandt Rollman

We fish sites near Moose Point in the Eastern Sub-District of the Northen District, about halfway between Kenai and Anchorage. Our family is in its third generation fishing these sites where my father Tom began in 1971.

My primary submission is an article I wrote for the Mat-Su Valley Frontiersman this past fall, entitled Northern District Commercial Fishing Perspective. My intent is that this essay will serve as background information for you, the Board of Fisheries members as you consider the litany of proposals aimed at restricting and closing much of our traditional fishery. After the essay I'll offer comments on discrete proposals with insight on falsehoods and misleading rhetoric as well as new information not in the essay.

This essay has information pertinent to Proposals 210, 212, 213, 214.

Northern District Commercial Fishing Perspective (Frontiersman; August 31, 2023)

Every summer, one of the Valley's prominent professional sport-fishing guides pens a weekly column in the Frontiersman updating anglers on fishing opportunities and conditions. He often also uses this opportunity to offer his opinion on why catching isn't optimal and regularly pins the blame on the Northern District commercial fishermen and ADF&G's failure to restrict them more. I am one of those commercial fishermen and I'm offering this article as a counter to the misinformation given about our fishery in one of the most recent articles, "'Management Trainwrecks' . . .". I'd also like to reasonably show that our small fishery cannot affect sport-fishing success in any manner near to what this columnist would like everyone to believe, and garner some support for the traditional livelihoods of Northern District commercial fishermen in the eyes of the public.

I have been set-netting for salmon near Moose Point on the Kenai Peninsula since I was a child with my family in the mid-80s. Mom and Dad began fishing there in 1970 and I have carried on with my wife and 3 kids taking over the operation about 10 years ago. In 2017 we began Rollman Family Salmon LLC to be able to sell our catch directly to the public and have since provided salmon to hundreds of families in the Valley, Anchorage and on the Peninsula.

Conflict between user groups is nothing new; sport and commercial fisher-folks have been accusing each other of getting more than they deserve forever. The question is, is each group being given a reasonable opportunity? The author claims that our opportunity is "unfair", saying things like "they are allowed to harvest salmon without limit." I'll provide a handful of facts to correct these assertions and balance the conversation around reasonable opportunity.

First and foremost, there is one primary, simple and sobering piece of information the public needs to know about our fishery with regard to reasonable opportunity. Here it is: Northern District commercial fishermen, at the full extent of their legal ability, are allowed to use three set-nets, each 210 feet long, during two (2) fishing periods per week - Mondays and Thursdays, 7 AM to 7 PM. That is all we are allowed, unless given extra time by Emergency Order, which has happened only twice in the last 35 years.

In other words, at full strength, we get to *try* to harvest salmon for 24 hours per week, or the equivalent of one out of seven days, and that's when the weather allows, the tide is in, and driftwood doesn't prevent us from fishing. This means fish get to swim freely through Northern Cook Inlet a minimum of six out of seven days per week. 1/7 is hardly an unreasonable or "unfair" opportunity. The article asks for "setting commercial regulations at a more realistic level." Is this level not realistic? Common sense should tell anyone that when fish are allowed to freely pass 6/7 of the time, our small fishery of less than 100 permits – even when fishing full-strength (which we often are not) – cannot consequentially impact runs to Northern District streams. I could rest my case there, but if you're curious to learn more about our fishery, read on.

Of those 100 or so permits, they are spread out over 100 miles of coastline in a body of water that averages nearly 15 miles across. Our nets are needles in a huge haystack which the fish only get to look for twice a week for 12 hours.

And speaking of Northern District streams, here are some more pertinent facts for consideration: Our fishery catches salmon going to over 1000 different streams – not just favorite sport fishing locations like Deshka, Little Su and Jim Creek. According to the Anadromous Waters Catalog there are over 600 different streams in which coho salmon are present in the Northern District. Most of these 600-plus streams are in pristine watersheds that rarely, if ever get tracked by a human foot. Only about 6 of them are enumerated for escapement by ADF&G. The only streams with salmon-counting weirs for Coho are the Deshka River, the Little-Su, Fish Creek and Jim Creek. That's it. These are four of the most heavily trafficked and fished in streams in the entire Mat-Su and yet they are utilized as the primary index for the health of coho runs throughout all of Northern Cook Inlet. When there aren't enough fish counted in even two of these weirs, regardless of what may actually be happening at the hundreds of other streams, commercial fishing in the Northern District usually gets restricted or closed.

At the time of writing this article, we have been closed by emergency order for 2 weeks because of low coho passage at the Deshka and Little-Su weirs while Jim Creek and Fish Creek have met their minimum escapement goals. Sport fishing for silvers at Deshka and LIttle-Su is also closed, appropriately. But, anglers can still bag 1 silver on many upper Susitna tributaries and Fish Creek. That is opportunity being given to sport fishermen while commercial fishermen have no opportunity. But don't read me wrong - I'm not saying I think we should be fishing right now. If it is a bad year for coho, which it seems like it is, then we should all be closed. We commercial fishermen are happy to share in the burden of conservation for the sake of the resource - I applaud ADF&G for sound science and doing what is best for the fish. Conservation of the resource is of paramount importance and each user group should bear that burden equitably.

Another way the author spreads misinformation is through his rhetoric. One of his favorite adjectives for our fishery is "liberal". He used a variant of it seven times in the "Management Trainwrecks" article alone. The average reader would think from his language that this meant we were allowed to fish extra time or get to use more than three nets. On the contrary, for the last 20 years or so, every season for

five consecutive fishing periods during the peak of the red run, ADF&G has reduced our number of nets from three per-permit down to one. It seems the author has gotten used to this annual restriction on our ability to remain viable (many have quit over the years because with one net they can't make it pay) and in his mind our restrictions have become codified. So, when in more recent years the Department has relaxed the restriction from one net to two in part of our district he asserts that we are being "liberalized", propagandizing in his column that the Department has "doubled" our nets. The truth is that we were still being restricted to ⅔ of our regular gear, and still only fishing two days per week. Those are the facts. Now for a little perspective from the commercial fisherman's side.

We all like to recall the glory-days of last century when nearly every Alaska stream was teeming with salmon. Unfortunately for all of us, this is not our current reality. Everyone wants to know how we got here and who is responsible. It is always easiest to point fingers while not examining one's self, which is exactly the approach of the author. Undoubtedly, the influx of human beings into south-central Alaska and our activities here are the culprit. Which specific activities? - that's the question. The Alaska Department of Fish and Game has proven to be a phenomenal manager of salmon runs, optimizing returns when other variables are kept to a minimum - Bristol Bay has been a model for the world in successful salmon stock management. Consider for a moment if the Cook Inlet region had never been populated by hundreds of thousands of humans and there was only a well-managed commercial fishery here. I believe our incredible ecosystems would be producing salmon on par with Bristol Bay. But, with people abounding in watersheds and multiple user groups clamoring for salmon stocks that overlap each other in the Inlet and the rivers, there are more variables than Fish & Game managers can be expected to overcome. Judging from the blame he places on ADF&G for the lack of salmon in the most heavily fished sport fishing streams in the Valley it seems the author expects the Department to wave its magic wand and make more salmon appear. A discussion of human-induced deterioration of spawning stream habitat must be on the table. The problem of over-loving salmon streams is real. Rubber tire particle run-off contamination is a science proven problem for salmon reproduction. We must safeguard habitat so that we don't turn into the Lower 48. And, maybe enhancement/stocking programs are needed on the most popular sport-fish streams to offset low production and increase sport-harvest – stocking has produced bountiful sport harvests at Ship Creek and Eklutna so far this year. These are all action items.

I hope the next time you read one of these weekly fishing reports you remember the information presented here (1/7, 6/7) and aren't fooled by the rhetoric into thinking that the Northern District commercial salmon fishery is getting anything but a reasonable opportunity to make a living.

Trevor Rollman is a husband, father, former resident of Wasilla, current resident of Soldotna and second generation set-netter on the east side of Cook-Inlet's Northern District.

<u>Proposals 75-115 General Commentary on Kenai River King Salmon Sport Fishery (rationale to be applied to any King Salmon sport fishery, including ND)</u> –

I think it is a terrible idea to allow fishing for King Salmon in one of their most vulnerable and concentrated venues, their spawning beds. It is understandable that when sport fishermen first discovered these prime fishing holes they exploited them. Anyone would do it. We humans did the same thing with fish traps. We identified a very successful way of harvesting and exploited it. But, when we realized this was too effective, decimating Cook Inlet's salmon populations, we outlawed it and required fishermen to use alternate methods of harvest. Just because we have been doing it forever doesn't mean it can go on sustainably. I believe it is time to outlaw sport fishing for King Salmon in

spawning holes on the Kenai River, and any river for that matter. If we are going to target king salmon by sport fishing, it should never be in a spawning bed and may need to be kept out of rivers all together.

Umbrella Comment for Proposals 131-252:
To avoid having to mention it repeatedly in each comment, I'll make a blanket comment here which I also noted in my essay. In many of these proposals the adjective "liberalized" is used to describe what happens when Northen District set netters get our second or third net back during or after the annual restricted period that lasts from July 20th to August 6th. A more accurate and appropriate term would be "restored".

Discreet Proposal Comments:

131 & 132 – In Favor – Getting to increase our weekly fishing time from 1/7 of the week to 3/14 would be great.

134 – In Favor – Two, 12 hr periods a week is predictable, reasonable and sustainable opportunity. It allows for fish passage at least 6/7 of the time.

137 – Opposed – The Susitna River already has a commercial fishing boundary established at its mouth. This is unnecessary. It has already been established where commercial fishing can't happen. Passage of this proposal may cause Shore-Fishery Leases from the State to be revoked and it would put a traditional family fish-site out of business.

142 & 239 – In Favor – I think differentiating between Jacks and big Kings is a good idea. Including Jacks in the counts is giving everyone a false sense of King escapement.

143 – Opposed – Set net fishermen have had to choose where they fish for a reason. There are advantages and disadvantages to each of the different annually permanent fishing districts. You choose one and stay there. Many families have long-established traditional fishing locations that are honored by all the fishing neighbors. This proposal would likely encourage an influx of opportunists who will likely squeeze in on established fish sites, potentially fishing too close or even site jumping, causing grief for everyone, including law enforcement.

43 – In Favor – I think we have messed with ocean ecosystems enough by pumping millions of pink salmon out there. Could they be affecting King salmon populations by consuming the same ocean food supply? I don't fish pinks so it is easy for me to say that this enhanced fishery is over-enhanced and would be better if it went away, and I wouldn't like it one bit if the shoe was on the other foot. WE need to do what is best for ecosystems and salmon at large and it doesn't seem like artificially bolstering pink salmon populations is helping in that regard.

205-210 - General Commentary on suite of Proposals aimed at restricting or closing the Northern District Commercial King Season –

King season in the ND has been an opportunity for commercial fishermen to diversify their catch early in an unpredictable line of work. It provides fishermen a "warm-up" to the sockeye season and an opportunity to catch a few early fish that command a high price. If the ensuing red season isn't good, the money made during king season can offset what otherwise could be a losing year. Therefore, any of these proposals aimed at restricting or closing the King season will make it more difficult for ND commercial fishermen to stay in business.

Lacking in any of these proposals is any responsibility for or acknowledgement of, by the proposers, the rivers and drainage habitat and what affect the sport fishing user group has had and is having. I make this general argument in my essay more aimed at the Sockeye and Coho stocks, but please take into account the same rationale with regard to kings. Over-using streams is a real problem that is hurting the resource. The answer cannot be to just get rid of the user group in front of you. We all need to clean up our own back yards. We have to work to revive the resource and share that responsibility. Commercial fishermen give 2% of our revenue to Cook Inlet Aquaculture for this purpose.

205 – Opposed – Taking the Northern District King Salmon Management Plan off the books is not necessary and would take away permanently what hopefully may one day again be an opportunity for commercial fishermen to diversify their catch toward a viable season.

At the last board cycle Northern District Set Netters and Valley Sport Fishermen worked hard together and came up with the current King Salmon Management Plan which is equitable and is working well. It has enacted equitable paired restrictions, most recently closing the commercial king season entirely in 2023. If we need to stay closed and the sport fishermen need to keep their lines out of the water for the next 15 years to see this stock recover, then so be it. That can happen perfectly well under the current KSMP, and restrictions can be relaxed equitably as determined by Management, both Sport and Commercial working together.

206 – Opposed – The cap on the commercial king fishery does seem high, but reducing it to the level proposed is too low. I'm not sure how to come up with a number in our current season of low abundance that is appropriate, but to put a cap on it based on catches from recent years when the commercial season has been restricted or closed more often than it has been fully fished, isn't right. Maybe a cap could be determined using years when all 4 or 5 king periods were fished in their 12-hour entirety. In hopes that stocks someday rebound, a cap as low as this proposal asks for would be unduly burdensome to commercial fisherman. Honestly, I'm opposed to any cap; it doesn't seem like a useful tool at all. There is no cap on Sockeye. Commercial king salmon catches should be limited by time and area and gear as a proportion of the total run, in accord with sustainability, just like other stocks.

207 – Opposed – See comments on 205. Also, rationale in this proposal is circular, and impossible to enact. Limiting commercial harvest to a percentage of combined Sport and Commercial harvest is circular. Also, there is no way to accurately measure the total run in-season in real time. This proposal is fraught with impracticalities.

Additionally, this proposal brings up the issue of sport "harvest". I think this could use reconsideration. The ethic of sport fishermen globally is transitioning to catch-and-release in effort of consciousness to preserve the resource. It may be time to remove the word "harvest" from the plan in relation to sport and guided sport catching.

Also, to correct mis-information, there is no way that with one net per permit and fishing one 12-hour period per week that the ND commercial fishermen could ever "overharvest" king salmon stocks. Our King Salmon Management Plan allows free passage 13 of 14 tides per week. ADF&G once said that our king fishery is "statistically insignificant," harvesting less than 2 percent of the total run to the ND. King salmon command a high price though, so the few we are able to harvest make it worth our time.

208 – Opposed – Again, we negotiated a ND KSMP last cycle that is working. A premise introduced in this proposal, that the ND commercial fishery should be restricted if some marker is triggered in any one of a list of streams, is remarkably inequitable. We don't like it that our king fishery is indexed to a single system, the Deshka, but we had to agree on something and the Deshka seemed like the most

appropriate index to serve as a gauge for the health of the entire ND, as obviously flawed as that is. An "and" clause may be ok – Deshka, *and* Little Su, *and* Susitna Unit 2, *and* . . . – but certainly not "or".

209 – Opposed – See comments on 205.

210 – Opposed – Passage of this proposal would put a traditional family fishery out of business.

The Smiths may be the only 'registered' sites for miles, but that doesn't mean others don't fish nearby. State law does not require site registration so the "vast majority of this statistical area" may be populated with other fish sites. And, if, as the proposer assumes, there is open beach, there is a reason it is open. It may not be fishable or may be very un-lucrative. Traditional fish sites are where they are because over the years these are the places that have proved to be worth fishing. If this family is forced from this traditional location, it will likely mean the end of their business/lifestyle.

The Little Susitna has problems unique to itself that its users need to deal with and fix for the health of the system and its contribution to the salmon stocks of Northen Cook Inlet. See proposal 238 comment. The idea of using this stream that is being damaged by in-river users as a metric by which to determine the fate of the entire ND commercial fishery is ludicrous.

Also, "large and excessive harvests" is mis-leading rhetoric. This language is not factual and intended to sway the mind and emotions of the reader.

211 – In Favor – Contrary to what it seems most sport users believe, the part of the NDSMP which has restricted our gear from 3 nets to 1 net every summer for approximately 20 years now, **has nothing to do with coho.** This part of the plan was established because Susitna River sockeye were once listed by ADF&G as a "stock of yield concern". It was intended to reduce harvest of Susitna River sockeye, which it was successful at doing. In the minds of some people, this annual temporary gear reduction has become the new normal. That is why language like "liberalized" gets used when the Department began to allow the Eastern Subdistrict to use 2 nets per permit during this time period, beginning in 2016.

This proposal is based on sound logic: the stock-of-yield-concern for Susitna River sockeye has been officially removed, therefore this section of the NDSMP should be repealed. At only 2 days of fishing per week, it is already a restricted fishery.

As an alternate solution, if this part of the plan isn't repealed, language should be added to the plan which makes it explicit that the escapement goal referred to in this part of the plan is for Susitna river sockeye (not coho).

212 – Opposed – If this proposal were to pass it would effectively put Northen District commercial fishermen out of business. We cannot remain economically viable if reduced to 1/3 of our gear for the entire season. Many of us have already had to resort to alternative marketing strategies in recent years to value-add in order to make what we do worth it because of declining prices relative to rising costs of everything else but salmon. With even fewer fish to work with most of us would likely be forced to quit.

213 – Opposed – Allowance of only 1 net per permit in August may put some ND set-netters out of business. Many of us have such thin profit margins already that taking away a viable second half of the season may likely make the whole endeavor no longer worth it.

This and other proposers seek "minimization" of our efforts at harvesting coho. This critical point must not be overlooked: Already written in the NDSMP is language which clearly describes how the commercial harvest of coho is minimized. Here it is (emphasis added):

(d) In addition to the provisions specified in (b) and (c) of this section, the department shall manage the Northern District commercial salmon fisheries <u>to minimize the</u>

incidental take of coho salmon stocks bound for the Northern District ***in the following manner:***

(1) additional fishing periods, other than the weekly fishing periods described in 5 AAC 21.320(a)(1), may not be provided when coho salmon are expected to be the most abundant species harvested during that period; additional fishing periods may not be provided based on the abundance of Northern District coho salmon;

(2) after August 15, the department shall limit the harvest of coho salmon in the Northern District by limiting commercial fishing time to the weekly fishing periods described in 5 AAC 21.320(a)(1).

Commercial fishing for two 12 hour periods per week *is* minimized fishing. Every time I tell people about our fishery they respond with amazement: "You only fish 2 days a week???" Yes, that is it.

214 – Opposed – Passage of this proposal would place such a burden on the already-struggling Northern District commercial fishery that many traditional fish-sites would be put out of business.

The "paired restrictive" nature of this proposal is not equitable. It seeks to tie the entire ND setnet fishery to triggers that may occur among multiple discrete locations and user groups – specifically the PU fishery at the Susitna River and the sport fishery at the Little Su. Just because one system doesn't meet a certain threshold is not reasonable grounds to close a fishery which is harvesting fish at a low rate from myriad other streams/systems that are doing fine. Basing restrictions or closures on triggers from one system OR another, OR another… is not reasonable.

This proposal notes that commercial harvests have increased while sport harvests have decreased. To my knowledge, the effort of the ND commercial fleet has remained relatively static in recent years. The number of permits fished in the Northern District has decreased year by year since the 1980s, with some kind of EO restriction or closure almost every season. If we are harvesting more fish, it is likely because there are more fish to be harvested. Our catches are evidence of abundance.

There are many, many streams throughout Northern Cook inlet where salmon spawn, most of which don't see significant sport angling, yet there are a handful of sport fishing hot-spots where numbers are counted. This proposal seeks to make commercial fishermen accountable to that handful of streams. That's not right.

215 – In Favor – If there is a harvestable surplus, fishermen should be given an opportunity to harvest them.

228 – In Favor – I generally support the Department's proposals which are focused on doing what is best for the fish.

229-231 – Neutral – Personal use is important but it must be monitored properly. The only thing I'd like to point out is Mr. Warta's flawed logic in Proposal 230: that if the ND set-netters are fishing 3 nets twice per week, then a concurrent PU fishery on the Susitna River is justified. It must be remembered that ND set-netters are harvesting fish bound for hundreds of different streams, not just the Susitna, and 3 nets twice a week is the standard minimum, not extra time.

238 – In Favor – I've heard of damaging erosion on the Little Su for years ; now Mr. Page has given us a first-hand account. This small river has been over-boated for years and the salmon have paid the price. We MUST protect habitat. In addition to restricting motor size, I would also suggest a day-use permit lottery system to limit the number of boats on the river per day and per summer. We give streams

riparian zone protections, why shouldn't we protect them in this way also? With the population boom in the Valley, unlimited access may cause unlimited damage.

241 – Opposed – Unlimited sport harvest and liberalized methods (allowance of bait) in conjunction with commercial fishing periods may result in over-harvest of the resource and fails to recognize the inherent differences between sport fishing and commercial fishing - one is for *sport*, the other is commercial harvesting. To argue that these two different types of fishing should be regulated the same way is non-sensical. It would be like making the regulations used for feed-lots apply to a family raising a single cow for food. These fisheries serve different purposes and each has its place.

These 'facts' need to be checked. There is one family with 2 permits that fish in the 1 mile area near the mouth of the Little Su – the Smiths. From what I understand, they often neither fish their full compliment of gear nor their full, two 12-hour periods per week due to limited help.

246 – In Favor – Anything to enhance or protect habitat is a big yes in my book.

251 – In Favor – If the Department agrees with NVE's assessment of struggling populations of reds and silvers in the Eklutna River then I support the intent of this proposal, to curtail sport fishing to allow stocks to rebound to healthy levels.

243 and 252 – Opposed – Liberalizing bag/possession limits for sport fishermen on coho salmon may result in damaging over-harvest of the resource. This is a 50% potential harvest increase for an ever-increasing population of potential fishermen.

The "recollection" of the proposer (252) is incorrect and so is the rationale of proposal 243. Making a connection between the sport bag limit reduction and the ND 1 net restriction as a "paired restriction" is a falsehood. The 1 net restriction is based on Susitna Sockeye, not coho – re: my comment on proposal 211.

The size of the Northen District fishing fleet is fairly static, having only gotten smaller since the '80s. On the 30 mile stretch of beach where I and my neighbors fish, generally the same number of nets have been fished in the same places for the past 40 years, with some fluctuation but the trend over time has been downward. During that same time period, the population of the Valley and popularity of sport fishing has grown significantly. It stands to reason that bag limits were reduced to offset the growing number of sport fishermen. Bag limits should be established by volume of fishing effort and resource available.

Increases in ND commercial harvest numbers of coho over the past couple seasons is being used again as rationale for increasing sport opportunity in the limited number of popular sport fishing areas, not recognizing that commercial fishermen harvest from hundreds of different streams. Sport fishermen should seek to enhance their favorite fishing spots instead of blaming others.

In any given year ND set-netters will continue to harvest at a relatively static rate (percentage) of the total return. Generally, when returns are larger, we catch more, and smaller returns yield smaller catches. When returns are small enough that spawning needs are in question, we get restricted along with the sport fishermen. When returns are abundant and sport bag limits are increased, we are not liberalized. We stay minimized at our normal 2 days per week.

February 12, 2024

Alaska Board of Fisheries
P.O. Box 115526
Juneau, AK 99811-5526

Dear Board of Fisheries,

I participate in the commercial and personal use fisheries in Homer, Alaska. I appreciate your dedication to the conservation and sustainable management of Alaska's salmon fisheries. The Board of Fisheries full consideration is crucial in shaping the future of our salmon resources.

**Support for Removing Proposal 59:**

I support the decision to remove Proposal 59 from the Kodiak meeting agenda because I believe it is essential to distinguish between proposals that modify regulatory changes within specific regions and those with statewide hatchery implications. This was an important action in regards to precedent and process. Statewide hatchery issues, including any regulations with statewide precedent, should be addressed at a statewide venue. This ensures consistency and fairness in the decision-making process.

**Statewide vs. Regional Precedent:**

When addressing statewide hatchery issues that have the potential to establish precedents or modify hatchery regulations impacting multiple regions, it is essential to do so within a statewide venue rather than restricting discussions to regional meetings. Salmon hatcheries are integral to Alaska's fisheries, influencing various regions and user groups. Numerous hatcheries are linked with Pacific Salmon Treaty mitigation obligations. Decisions made solely at the regional level may lack the comprehensive perspective necessary to ensure consistency and fairness in overarching hatchery management decisions. Holding these discussions at a statewide level allows for a more inclusive and well-informed decision-making process, involving stakeholders from all regions. This approach considers the diverse interests and nuances of Alaska's intricate salmon fishery landscape, ultimately contributing to the long-term sustainability of our fisheries and ensuring that hatchery-related regulations align with the overarching goals of responsible resource management. Most hatcheries operate sport, personal use, and subsistence programs that can only exist with the financial support of the PNP organization

**Opposition to Proposal 43:**

We continue to oppose Proposal 43, for the following key reasons.

(1) Lack of Scientific Evidence: Proposal 43 lacks substantial scientific evidence to support claims that hatchery fish have a detrimental impact on wild salmon populations or ecosystems. Decades of research and data show that hatcheries and wild salmon can coexist and even thrive together.
(2) Steady Increase in Wild Salmon Returns: Contrary to the proposal's assertions, regions with hatcheries in Alaska have witnessed steadily increasing wild salmon returns since the early 1970s when these programs were established. Hatcheries have not replaced wild salmon but have provided a stable supply for commercial, sport, and subsistence fisheries, while at the same time wild stock escapements are being met.
(3) Social and Economic Benefits: Hatchery programs have been instrumental in meeting the demand for salmon while preserving wild stocks and their habitats. They support the livelihoods of Alaskans, contribute to local economies, and provide a buffer against the variability of wild salmon runs.

As an Alaskan and supporter of responsible resource stewardship for future generations, I thank the Board for this opportunity to advocate for sustainable fisheries management practices and the long term, science-based decision making when it comes to hatchery resources.

Sincerely,
Steven Roth
[redacted]
Homer, AK

Greetings respected Board Members,

I am writing to you in regards to the recent over escapement of the Kenai river watershed in the past handful of years. To date, I have heard the theory that over escapement will lead to the salmon fry starving to death due to the abundance of nutrition being depleted by large abundances of salmon fry. I haven't seen any evidence fry abundance limited by the abundance of nutrition in the Kenai watershed. Thus, I was skeptical. The theory is sound, but the upper end of the bell curve for the carrying capacity of the Kenai Watershed hasn't been tested until now.

The recent over escapements has historically never been done in consecutive years. Also, the relatively enormous amounts of fry detected in the acoustic surveys for most of those respective years has never been observed to be as large as recently observed.

Of note, is the largest age 0 fry class of 2022 reaching nearly 59 million ever recorded! Then we look at the next years 2023 age 1 fry class and it is nearly 43,000 which is the lowest age 1 fry class ever recorded! They starved.

I am making the case that because of the recent previous and subsequent over-escapement of the Kenai river watershed that the largest fry abundance ever recorded in the Kenai river watersheds history has starved to death as is evidenced in the fry survey.

I asked if there was any anomalies or differences in the acoustic survey that would account for the low fry count of age 1…. NO.

I asked if there were any equipment malfunctions….No

I asked why there wasn't any lengths and weights recorded for age 1 fry… we didn't catch enough for those numbers to be representative of the population.

Let me repeat: They couldn't catch enough age 1 fry in a trawl survey. This is evidence that the methodologies used to count age 1 fry was accurate and the fry weren't there.

The department has stated two reasons for the low number:

1. Over-winter mortality…… I wholly agree. They starved to death.
2. Out migration during spring…… I wholly disagree. The Ratio for out-migration compared to the previous years makes that theory illogical given the 38 years of data we have. Furthermore, If someone would be a proponent of an illogical and improbable idea such as a larger early out-migration, Prudence would dictate that we act to protect the progeny of future salmon populations by acting as though the fry had starved.

I understand the current management policy is to protect the Kings. I have asked where the Kenai Kings spawning beds are? The department has no maps or studies to refer me too. They say that King and Sockeye beds are different in the regards of the speed of the flowing river in their respective beds. One lays in slower water and the other in faster water.

Have we done any studies that show whether or not in the event of a crowded spawning bed due to over-escapement that the Sockeye salmon will spawn in a Kings bed? I think intuitively we know the answer. A million extra competitors digging around and fry starvation are not factors the Kenai King can or should contend with.

Please reduce the amount of sockeye salmon going up the Kenai river system, because the current management plan has not managed for MSY for any user group in the returning years of this brood stock and this management policy will continue to cause run crashes as it already has in 2026 and 2027. I hope I'm wrong, but if we use logic I'm not. This community needs good reasonable leadership, I hope you provide that to the multitudes of people depending on you.

Respectfully, Roy Rudy

Attached is the Fry surveys.

Skilak and Kenai

| Year | Fry Age-0 | Fry Age-0 Weight (g) | Fry Age-0 Length (mm) | Fry Age-1 | Fry Age-1 Weight (g) | Fry Age-1 Length (mm) |
|---|---|---|---|---|---|---|
| 1986 | 22,217,486 | | 55 | 2,536,536 | | 76 |
| 1987 | 10,182,400 | | | - | | |
| 1988 | 37,071,211 | | | 94,089 | | |
| 1989 | 13,987,502 | 1.1 | 49 | 11,066,228 | 2.7 | 64 |
| 1990 | 24,601,413 | 1.4 | 51 | 782,393 | 3.8 | 71 |
| 1991 | 7,126,711 | 1.8 | 52 | 387,674 | 5.1 | 75 |
| 1992 | 9,540,536 | 1.9 | 55 | 104,391 | 6.3 | |
| 1993 | 35,687,389 | 1.1 | 47 | 1,732,650 | 3.9 | 72 |
| 1994 | 11,159,398 | 1.7 | 52 | 1,280,854 | 4.4 | 72 |
| 1995 | 8,812,895 | 2.0 | 55 | 473,112 | 5.5 | 76 |
| 1996 | 5,582,452 | 2.0 | 54 | 368,644 | 5.0 | 74 |
| 1997 | 25,316,385 | 1.1 | 45 | 239,582 | | |
| 1998 | 21,193,560 | 0.8 | 40 | 2,459,746 | | |
| 1999 | 8,330,506 | 1.1 | 46 | 629,011 | 3.8 | 69 |
| 2000 | 19,950,396 | 1.9 | 54 | 472,469 | 5.1 | 76 |
| 2001 | 22,515,422 | 1.9 | 54 | 520,673 | 6.8 | 83 |
| 2002 | 8,748,692 | 1.2 | 48 | 3,342,145 | 2.8 | 63 |
| 2003 | 12,753,378 | 1.6 | 54 | 434,723 | 3.9 | 73 |
| 2004 | 27,574,335 | 1.0 | 45 | 711,475 | | |
| 2005 | 41,836,439 | 1.3 | 49 | 106,971 | | |
| 2006 | 29,401,222 | 1.3 | 50 | 7,859,788 | | |
| 2007 | 9,189,447 | 1.3 | 52 | 8,945,722 | 4.0 | 73 |
| 2008 | 20,217,614 | 1.7 | 54 | 186,842 | | |
| 2009 | 10,782,284 | 2.0 | 58 | 688,401 | | |
| 2010 | 17,859,888 | 1.5 | 53 | 461,324 | 6.3 | 84 |
| 2011 | 11,809,877 | 2.1 | 57 | 3,796,914 | 5.8 | 81 |
| 2012 | 23,560,643 | 1.8 | 56 | 5,442,362 | 6.6 | 87 |
| 2013 | 9,515,604 | 1.7 | 56 | 2,857,684 | 4.6 | 79 |
| 2014 | 16,200,661 | 1.0 | 50 | 1,402,592 | | |
| 2015 | 22,171,908 | 1.1 | 51 | 996,399 | 2.8 | 71 |
| 2016 | 26,128,228 | 1.5 | 55 | 1,405,944 | 4.7 | 80 |
| 2017 | 19,730,476 | 1.9 | 59 | 3,751,208 | 5.0 | 81 |
| 2018 | 14,383,343 | 2.6 | 63 | 4,997,740 | 7.0 | 89 |
| 2019 | 6,934,650 | 2.1 | 61 | 1,904,854 | | |
| 2020 | 52,868,531 | 1.1 | 49 | 111,709 | 3.4 | 73 |
| 2021 | 7,063,607 | 1.9 | 58 | 6,628,646 | 4.3 | 77 |
| 2022 | 58,947,459 | 1.7 | 56 | 3,930,539 | 5.4 | 82 |
| 2023 | 41,484,943 | 1.3 | 50 | 42,932 | | |

Dear Board of Fish,

My name is Revelle Russell. I live in Homer, AK and have been commercial fishing since 1994, participating in numerous fisheries, both state and federal, across the state. One of my first crewing jobs was in the Inlet in 1994. I am a UCI drift permit holder, have my own vessel (well, jointly owned by the State of Alaska) and have fished the Inlet since 2010. My main source of income is the UCI drift fishery and halibut longlining.

My main concerns are with the Kenai Late-Run Sockeye Management Plan and over escapement of the Kenai and the Kasilof as well. The late run Kenai River sockeye escapement should be 600,000 to 800,000. I support Proposals 111,112,113,114, and 115 in some form. I oppose Proposal 112.

The 1% rule regarding sockeye harvest is ridiculous. Whenever I have explained this rule to salmon fishermen who participate in other fisheries around the state I always receive the same look. One of disbelief and puzzlement. All it does is punish the vessels still engaged in the fishery after August 1st for no good reason. I support proposals 121, 122,123,124,125, and 126.

I also oppose Proposal 143.

Salmon prices for Cook Inlet sockeye were among the highest in the state last year yet participation was at its lowest I have seen. The drift fleet is basically down to 3 processors. I counted 47 UCI drift permits for sale listed by a local broker. This is not a sign of a healthy fishery and not something the State of Alaska should be proud of. The Board of Fish, not the current board, has put over hundred of small businesses out of operation.

I don't believe it is a salmon problem, at least not with sockeye. I believe it's a management problem. I ask the Board to consider this over the next couple of weeks of hearings,
Thank you. Revelle Russell

February 5, 2024

Alaska Board of Fisheries
P.O. Box 115526
Juneau, AK 99811-5526

Dear Board of Fisheries,

I participate in subsistence, commercial, and sport fishing in Cordova, Alaska.

I appreciate your dedication to the conservation and sustainable management of Alaska's salmon fisheries. The Board of Fisheries full consideration is crucial in shaping the future of our salmon resources.

**Support for Removing Proposal 59:**

I support the decision to remove Proposal 59 from the Kodiak meeting agenda because I believe it is essential to distinguish between proposals that modify regulatory changes within specific regions and those with statewide hatchery implications. This was an important action in regards to precedent and process. Statewide hatchery issues, including any regulations with statewide precedent, should be addressed at a statewide venue. This ensures consistency and fairness in the decision-making process.

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**Opposition to Proposal 43:**

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(1) Lack of Scientific Evidence: Proposal 43 lacks substantial scientific evidence to support claims that hatchery fish have a detrimental impact on wild salmon populations or ecosystems. Decades of research and data show that hatcheries and wild salmon can coexist and even thrive together.
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As an Alaskan and supporter of responsible resource stewardship for future generations, I thank the Board for this opportunity to advocate for sustainable fisheries management practices and the long term, science-based decision making when it comes to hatchery resources.

Sincerely,
Justin Ryan
[redacted]
Cordova, Alaska

PC187

110 N. Willow St., STE 127, Kenai, AK 99611
P.O. Box 1425 Kenai, AK 99611
Phone: 907-283-2700 Fax: 907-331-0511

Art Nelson
Board of Fisheries Executive Director
Alaska Board of Fisheries
P.O. Box 115526
Juneau, Ak. 99811-5526

Jan 15, 2024

Re: Incorporation of Knowledge in Alaska Board of Fisheries Reports

Director Nelson;

First and foremost, the State of Alaska needs to acknowledge the ruling in the US Supreme Court case of Katie John and adopt the requirements mandated by the ruling. Without adaption of the recommended findings the State of Alaska continues to discriminate against Alaska Natives in their endeavor to preserve their traditions and cultural lifestyle. There are many steps to take before the Board of Fisheries decides to allow traditional knowledge. In the first instance the Board lacks representation of traditional users on the board. Many on the board speak of holding a subsistence preference permit but their primary reason for sitting on the board is their interests lie in commercial, guiding and sports interests. Subsistence use for Alaska Natives is not a casual use but a means to uphold and honor the traditional and customary lifestyle and to provide for their families. These Alaska Natives for the most part do not hold regular jobs because as you are aware meaningful employment in many villages is lacking. There is no monetary economy, there is only a subsistence economy.

Federal agencies are now working to correct the discrimination that exists for Alaska Natives due to the management of Alaska fisheries that heavily favors commercial, sports and guiding interests. We witness this daily when Alaska Native subsistence users are fined for taking more that their allotment which for this scenario averages 25 per person per household while sports fisherman travel home with hundreds of fish due to daily allocation. In your board hearings over the years that I have attended I have yet to witness a subsistence staff person attend a meeting which is usually staffed by the commercial staff of the department of fish and will also enjoy the testimony of sports fisher staff of the department. In this scenario I can only see traditional knowledge being accepted as a footnote to record that the state has accepted these statements for the record but will not have an impact on board members whose interest it is to minimize subsistence use that may affect commercial, guiding, or sports interests.

I have years ago have lost any expectation of the Alaska Board of Fisheries reflecting on subsistence use except to minimize it. I welcome the fact that because of this history the federal government through many departments are working to reverse the damage caused by the Alaska Department of Fish to Alaska Natives and Alaska Native communities. Despite this fact we as Alaska Native Tribal leaders will begin our work to restore the fish habitat with local communities and organizations that are willing to work with us.

Sincerely,

Eric Morrison
Executive Director

SALMON HATCHERIES
FOR ALASKA

February 12th, 2024

Alaska Board of Fisheries
P.O. Box 115526
1255 W. 8th Street
Juneau, AK 99811-5526

Dear Members of the Alaska Board of Fisheries,

With Proposal 43 being considered again at this meeting, we think it is important to acknowledge previously submitted public input. This list of public comments serves as a reminder of the overwhelming opposition to Proposal 43 voiced at the Lower Cook Inlet Board of Fisheries meeting. Many on this list highlighted the importance of following regulatory authority, iterative process, and comprehensive planning. Similarly, many shared concerns about conservation, a lack of evidence, and lowering hatchery production levels. Please review this public input before making a final decision on Proposal 43.

Below is a list of previously submitted public comments opposing Proposal 43:

- Baumgart, Hank (PC13)
- Berger, Jeff (PC16)
- Blake, David (PC18)
- Bright, Jared (PC22)
- Brown, Kacey (PC25)
- Burton, James (PC28)
- Corazza, Megan (PC40)
- Corazza, Richard (PC41)
- Corazza, Sonja (PC42)
- Cotten, Gus (PC44)
- Crump, Nick (PC48)
- Day, Edward (PC49)
- Eckley, Andrew (PC63)
- Eckley, Elias (PC64)
- Eckley, Richard (PC65)
- Flora, Mikee (PC77)

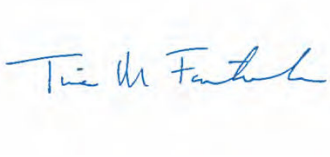
- Grocott, John (PC90)
- Hagen, Camron (PC91)
- Hatch, Arne (PC96)
- Jarvis, Anna (PC109)
- Jenkins, Forest (PC110)
- Johnson, Brent (PC112)
- Johnson, Eli (PC113)
- Jones, David (PC114)
- Jones, Ken (PC115)
- Kimball, Nicole (PC121)
- Kodiak Regional Aquaculture Association (KRAA) (PC124)
- Leese, William (PC127)
- Liddicoat, John (PC131)
- Lindholm, Joe (PC132)
- Lohse, Tyee (PC134)
- Martin, David (PC141)
- Maxwell, Brandon (PC143)
- Maxwell, Matthew (PC144)
- McBride, Barb (PC145)
- Moore, Evenn (PC162)
- Moore, James (PC163)
- Morgan, Kenneth (PC164)
- Nakao, Jenny (PC168)
- Northern Southeast Regional Aquaculture Association (NSRAA) (PC174)
- Nuzzi, Sam (PC175)
- Nuzzi, Tracey (PC176)
- Poirot, Brooke (PC184)
- Poppe, Chad (PC186)
- Prince William Sound Aquaculture Corporation (PWSAC) (PC188)
- Ryan, Justin (PC198)
- Salmon Hatcheries for Alaska (PC200)
- Skeele, John (PC215)
- Smilie, Jason (PC216)
- Smith, Mackenzie (PC217)
- Southern Southeast Regional Aquaculture Association (SSRAA) (PC223)
- Stonorov, Ivan (PC233)

- Stover, Jordan (PC234)
- Thomas, Russell (PC239)
- Towle, Malani (PC241)
- Tueller, Nathan (PC244)
- Tutt, Colten (PC245)
- Valdez Fisheries Development Assoc., Inc. (VFDA) (PC248)
- Van Saun, Roderic (PC250)
- Williams, Shawna (PC267)

Please find attached to this letter RC 61 - Salmon Hatcheries for Alaska PWSAC Response To Fairbanks AC Regarding Proposal 43. Please don't hesitate to contact us with questions or for more information prior to or during the UCI meeting in Anchorage. To contact our group, please email Geoff Clark at geoff.clark@pwsac.com or Rachel Kallander at rachel@kallanderassociates.com.

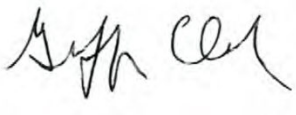
Sincerely,

Dean Day
Executive Director
Cook Inlet Aquaculture Association

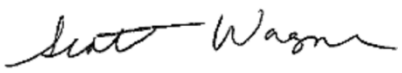


Tina Fairbanks
Executive Director
Kodiak Regional Aquaculture Association

Mike H. Wells
Executive Director
Valdez Fisheries Development Association, Inc.



Geoff Clark
Interim General Manager
Prince William Sound Aquaculture Association



Scott Wagner
General Manager
Northern Southeast Regional Aquaculture Assoc.

Susan Doherty
General Manager
Southern Southeast Regional Aquaculture Assoc.

**Re: Response to Fairbanks AC's Submission Regarding Proposal 43 (RC-21)**

Board of Fisheries Members:

We appreciate the opportunity to respond formally to the concerns and recommendations raised by the Fairbanks Fish and Game Advisory Committee (Fairbanks AC) in their submission, RC-21, regarding Proposal 43 and other issues. It should be noted that RC-21 is a draft and has not been formally adopted by the AC itself, but was submitted by a member of the AC.

As representatives of the PNP hatcheries, it is essential to address the allegations and arguments put forth by the Fairbanks AC, RC-21, and provide a comprehensive response.

**INTRODUCTION**

The Fairbanks AC expresses concerns in Proposal 43, primarily related to hatchery pink salmon production reduction and its potential impact on wild salmon stocks. While we respect the Fairbanks AC's dedication to conservation, their submission contains several unfounded claims that require clarification and a more nuanced understanding of the issue.

**HATCHERIES AND THEIR ROLE**

Alaska's salmon hatcheries play a pivotal role in preserving the state's salmon populations by reducing the directed harvest of wild stocks, supporting diverse user groups, and bolstering local economies. These hatcheries are a testament to sustainable economic development, providing vital income and sustenance for thousands of Alaskans while coexisting harmoniously with wild salmon stocks. They are a critical part of Alaska's rich fishing heritage, promoting the responsible management of our fisheries and ensuring the enduring legacy of salmon for generations to come.

The following sections will address specific allegations or statements made in RC-21.

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**RESOURCE COMPETITION**

**The Fairbanks AC's Argument:** The Fairbanks AC emphasizes the importance of wild salmon stocks over hatchery-produced salmon and raises concerns about resource competition in the North Pacific.

**Salmon Hatcheries for Alaska Response:** We acknowledge the importance of wild salmon stocks in Alaska’s history and that they must be protected. Hatcheries can and do play a crucial role in supporting the overall health of wild salmon populations. They have successfully coexisted with wild stocks for decades, throughout which time, Alaskans have witnessed dozens of record wild stock return years. Alaska's hatchery program is designed to supplement wild

stock harvest, not replace them. This mission is clearly stated throughout the Department's literature on hatchery programs.

Alleging that Alaska hatchery pinks are impacting other salmon populations to the extent that is alleged is not supported by the data. The PNP hatcheries in Alaska know the importance of carrying capacity and competition; this topic is discussed frequently with research colleagues and among the PNPs. ADF&G also considers this concern in the determination of requests for changes to permitted egg capacity.

According to research estimates, hatchery-produced pink salmon (from all countries) represent 15% of total pink salmon biomass in the North Pacific. Alaska hatchery-produced pink salmon make up 10% of total pink salmon biomass. Alaska hatchery-produced pink salmon make up less than 1% of total nektonic biomass in the North Pacific according to the research estimates cited in the Ruggerone and Irvine (2018) publication, which references data from the years of 1990-2015.

*Definition of Nekton: The collection of marine and freshwater organisms that can swim freely and are generally independent of currents, ranging in size from microscopic organisms to whales.*

With regard to competition in the ocean, please see RC-45 submitted by Valdez Fisheries Devleopment Association. RC-45 is an excerpt of a larger paper on high ocean biomass of salmon and ocean trends.

As the board members are well aware, topics such as ocean biomass involve a significant amount of data, research, and scientific analysis. This topic is covered in many publications that contain a diverse array of scientific conclusions and evidence. It is important to take that diversity into account and consider publications of many conclusions when it comes to a topic as large as ocean biomass and North Pacific salmon.

Please find below references to a number of journal articles that provide a narrative on ocean productivity that does not include competition with pink salmon as a primary driver. The references below include a brief overview of each article's focus with the citation reference. We will provide the full publication copies to the board members prior to the Kodiak Board of Fisheries meeting in January 2024.

- An in-depth look at phytoplankton, including diatoms, and zooplankton abundance, biomass, and control during recent cold years (2008-2010) in the eastern Bering Sea did not mention top-down control of pink salmon on plankton (Baumann et al. 2014).
- Juvenile salmon, including pink salmon, were not creating a top-down zooplankton resource bottle neck in the Gulf of Alaska (Daly et al. 2019)
- Temperature and ice retreat timing, bottom up forces, drive the Bering Sea marine ecosystems (Hunt and Stabeno 2002).

- Oscillating control hypothesis; zooplankton blooms are tied to water temperature, and bloom timing related to late (ice-associated) and early ice retreat (Hunt and Stabeno 2002).
- During recent anomalously warm conditions, when top-down pressures are thought to have controlled forage fish abundance in the northern Gulf of Alaska, salmon were not the suspected predators (Arimitsu et al. 2021).

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**POTENTIAL IMPACT OF PROPOSAL 43**

**Fairbanks AC's Argument:** The Fairbanks AC expresses concerns about the potential consequences of Proposal 43, including job loss and reduced revenue.

**Salmon Hatcheries for Alaska Response:** While we share concerns about the economic impact, the Fairbanks AC is grossly underestimating the broader consequences of Proposal 43. Proposal 43 threatens jobs and jeopardizes the stability of coastal communities from Ketchikan to Kodiak and the livelihoods of thousands of Alaskans who depend on hatcheries for food in their freezer to operating a small business. This applies to all user groups, especially those of personal use and sport fishermen who testified before the Board this week in Homer at the Lower Cook Inlet meeting.

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**SCIENTIFIC RESEARCH SUPPORTING CONCERNS**

**Fairbanks AC's Argument:** The Fairbanks AC references peer-reviewed research indicating the increase in pink salmon production and its potential impact on wild stocks.

**Salmon Hatcheries for Alaska Response:** We acknowledge the importance of scientific research in informing policy decisions. That is the exact process the State of Alaska implemented for the PNP hatcheries when they were first established. Furthermore, this is the driving force behind the Alaska Hatchery Research Project, which focuses on Alaskan Hatcheries and their potential impacts. ADF&G has evaluated new data, collected reports from all PNPs, reviewed permits, and more. This process is thorough and also includes the public. However, there is diverse research on this topic, and not all studies reach the same conclusions. The Department of Fish and Game has not found compelling evidence to support the proposed reduction in hatchery production. The Department provided lengthy commentary on Proposal 43 in their staff comments. See page 103 of RC-2.

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**COMPREHENSIVE ASSESSMENT**

**Fairbanks AC's Argument:** The Fairbanks AC argues that a comprehensive assessment of Alaska's hatchery program is necessary and implies that the evaluation is lacking or does not exist in all instances.

**Salmon Hatcheries for Alaska Response:** We support comprehensive assessments to ensure the responsible management of hatcheries and annual evaluations, and year-long cooperation with the Department is already well established. Hatcheries are overseen and reviewed by ADF&G which conducts these assessments based on data and scientific rigor. We agree that involving all stakeholders in this process is essential, including those who depend on hatcheries for their livelihoods and harvests. This is precisely what happens through evaluating program contributions within the diversity of aquaculture boards and the public regional planning team (RPT) process. The process includes comprehensive salmon updates, PRT review, and stakeholder engagement.

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**BOARD OF FISHERIES INVOLVEMENT**

**Fairbanks AC's Argument:** The Fairbanks AC emphasizes the role of the Board of Fisheries in addressing hatchery-related issues.

**Salmon Hatcheries for Alaska Response:** We agree that the Board of Fisheries plays an important role. However, we recognize that previous decisions to defer hatchery-related action to the ADF&G Commissioner have been proper and highlight the need for a more thorough review. We encourage the Board to address these issues with an open and inclusive approach within the existing regulatory structure and in clear communication with ADF&G. We also welcome all opportunities to tour board members through any hatchery location.

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**CONSERVATION AND REFERENCES TO THE 2000 AGREEMENT**

**Fairbanks AC's Argument:** The Fairbanks AC suggests that Proposal 43 is rooted in conservation efforts and holding hatcheries accountable to an agreement set between the state and the hatcheries in 2000.

**Salmon Hatcheries for Alaska Response:** Conservation is a shared goal, and we all want to ensure the health of wild salmon stocks. However, the inferences to the 2000 agreement are vague and conflict with statements made on the record by ADF&G. Please see RC-39 submitted by Steve Reifenstuhl who was present at the board of fish meeting in 2000, upon which the Fairbanks AC predicates their argument. In short, RC-39 states: “No agreement was signed or otherwise agreed upon to cut pink and/or chum production by 25% or any other

amount. Some people wanted that outcome, but it was not the result. Repeating something that is incorrect over and over is a strategy, not the fact-based reality at the 2000 BOF meeting."

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**CONCLUSION**

A comprehensive and balanced approach, rooted in verifiable scientific principles and data, is necessary to review or evaluate Alaska's salmon hatcheries. We call upon the Board of Fisheries to consider the long-term sustainability of salmon runs, the impact on local economies, and the potential consequences of Proposal 43.

We are committed to collaborative efforts that benefit all Alaskans and ensure the responsible management of our fisheries. We look forward to continued discussions and working together to protect the legacy of Alaska's fisheries heritage. The PNP hatchery associations are standing by to work closely with board members and the Department to ensure transparent, effective, and thoughtful processes and dialogue can occur now and long into the future.

*Submitted by Salmon Hatcheries for Alaska leaders present at the Homer Board of Fisheries meeting: Tina Fairbanks of KRAA, Mike Wells of VFDA, and Geoff Clark of PWSAC.*

Comments on Proposal 239
By Gene J Sandone
[redacted]

Comments on Proposal 239
By Gene J Sandone
[redacted]

Proposal 239
**Establish a large king salmon escapement goal for the Little Susitna River.**

**I am in support of Proposal 239, as Amended by the Matanuska Advisory Committee, as follows:**

**Proposal 239:** Establish a large king salmon escapement goal for the Little Susitna River.

- Amendment 1: **Prohibit retention of king salmon less than 20 inches when fishery is closed; allow retention of king salmon less than 20 inches when catch and release fishing for king salmon is allowed.**
- Amendment 2: **Establish Large king salmon escapement goals for the Deshka & Little Su Rivers.**

I specifically support Amendment 2 because of the low escapement in recent years and the apparent increasing number of very young king salmon, age-3 and age-4. Although an incomplete count, the 2023 king salmon escapement to the Little Susitna River of 796 king salmon was 62% below the low end of the Sustainable Escapement Goal (SEG) of 2,100 king salmon. Similarly, the 2023 Deshka River king salmon escapement of 3,741 king salmon was 58% below the SEG of 9,000 king salmon (Table 239-1). To make matters worse, 76% of the Deshka River escapement was composed of the very young king salmon, age-3 fish and age-4 salmon. No age-6 king salmon were sampled at the weir in 2023 and, accordingly, no age-6 salmon were included in the age-class composition analysis (Table 239-1).

At the Deshka and Little Susitna rivers weir, ADF&G sexes king salmon using external characteristics. It is very difficult to accurately determine the sex of king salmon through external characteristics, especially during the early portion of the salmon migration. Published reports (John Carlos Garza et al., 2022) and unpublished data (Yukon king salmon fecundity study) report a sex determination error rate, when using external sex characteristics, of 30% and 32%, respectively. Although ADF&G estimates that the female component of the 2023 Deshka River king salmon escapement was 44.9% (Table 239-1), I respectfully question that estimate.

Comments on Proposal 239
By Gene J Sandone
[redacted]

**Table 239-1. Deshka River age, sex, and length composition of samples taken at the weir, expanded for the weir passage estimate, 2023. Data from ADF&G.**

| ADF&G Deshka Weir Chinook Age, sex and length, 2023 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | age_lab | Sample size | Proportion (SE) | Number of females sampled | Female Prop.[a] | Weir Passage Est.(SE) | Mean Length (in) | Range (in) | |
| 3 | 1.1 | 118 | 0.383 (0.028) | 9 | 0.076 | 1,432 (105) | 20.7 | 17.3 | 26 |
| 4 | 1.2 | 106 | 0.377 (0.029) | 69 | 0.651 | 1,409 (107) | 27.5 | 20.5 | 31.7 |
| 5 | 1.3 | 70 | 0.241 (0.025) | 48 | 0.686 | 900 (93) | 29.8 | 27.2 | 37.8 |
| | All age | 294 | 1.000 (0) | 126 | 0.429 | 3,741 (0) | 25.4 | 17.3 | 37.8 |

[a] Calculated from data provided by ADF&G. Estimates of the female proportion may vary slightly from ADF&G' values.

From my experience as a fisheries research biologist, the sex composition of king salmon age classes varies from 0% females in true jack king salmon, age-3, to between 60% to 70% female age-6 king salmon. I have observed that there are extremely few, if any female king salmon that are age-3, 10%, or less are age-4, and although males usually outnumber females in age-5 king salmon age class, the difference between the sex composition is usually small. Age-6 is usually dominated by females. Although the annual runs may vary as to age- and sex- composition, the brood year return composition has been fairly stable. It may be changing because of poor ocean conditions.

I want to qualify my statements because most of my experience is from king salmon stocks in the Arctic-Yukon-Kuskokwim Region and the sex composition by age may be different in more southerly stocks. But the apparent discrepancy needs some attention.

Using those sex composition data from my experiences, I constructed Table 239-2.

Comments on Proposal 239
By Gene J Sandone
[redacted]

Table 239-2. Deshka River king salmon estimated escapement statistics, female component when using assumed sex composition of age classes, and comparisons of the proportion between the two female composition estimates based on the assumed associated number of females that the low end of the SEG should contain, 2023[a].

| | | Number | Prop of | Prop below |
|---|---|---|---|---|
| 1 | Low end of the Deshka River king salmon SEG | 9,000 | | |
| 2 | The ADFG 2023 estimated number of king salmon passing through the weir. | 3,741 | | |
| 3 | The 2023 estimated king salmon weir passase as a prop of low end of the SEG: | | 0.416 | 0.584 |
| 4 | ADF&G estimated number/prop of female king salmon in the 2023 weir passage | 1,680 | 0.449 | |
| 5 | Assume a necessary 1/3 female component in the escapement | | | |
| | a. Number of females associated with the low end of the SEG | 3,000 | | |
| | b. Estimate prop of the female king salmon based on the assumed associated number of females needed to achieve the low end of the SEG, 5. | | 0.560 | 0.440 |
| 6 | Assume: age-3 has 0% females, age-4 has 10% female; and age-5 has 50% female. | | | |
| | a. Estimated number/prop of females in the 2023 Deshka River escapement | 585 | 0.156 | |
| | b. Estimated number of females as a proportion of 5a. | | 0.195 | 0.805 |

[a] Data contained in number 1, 2, and 4 are from ADF&G. Estimates in 3, are calculated from ADF&G data. Estimates in 5a and 6 are an assumption from experience. 5b is calculated from ADF&G data divided by 5a. 6a, and 6b are calculated values from assumptions.

My analysis indicates that the poor king salmon escapement to the Deshka River may be much worse than it seems. Based on ADF&G data, the 2023 escapement to the Deshka River was 58.4% below the low end of the established SEG. Additionally, based on ADF&G data, female kings numbered 1,680, which accounted for 44.9% of the escapement (Table 239-2, 4). However, the number of female king salmon in the escapement may be as low as 585 salmon and account for only 15.6% of the escapement (Table 239-2, 6a). Additionally, based on the assumption that female king salmon should account for at least a third of the low end of the SEG (Table 239-2 5a), the 2023 female king salmon escapement, based on my estimate of female composition of the age classes, indicates that the female component of the Deshka River escapement may be 80.5% below that female threshold number (Table 239-26b). In other words, the Deshka River escapement may only contains 19.5% of the female SEG threshold. If this is true, we have a severe problem with the king salmon escapement in the Deshka River, probably the Little Susitna River, and quite possible throughout the entire Northern Cook Inlet Management Area (NCIMA). Comparatively, using ADF&G's estimate of the female component, it would be 44.0% below that female threshold. However, it could be much worse if ADF&G believes that the female component of the SEG should be more than 33.3% female.

Escapement goals are based on many years of data. In most cases, the escapement goals are based on, and expressed, in numbers of king salmon, all king salmon. Changes in the age class composition of the run may indeed point to a shift in the age and sex composition of the brood year return. This shift toward a higher proportion of age-3 and age-4 king salmon, which I

believe are primarily male fish, is at the least, troubling. If this is true, the standard way of doing business in developing escapement goals will have to change. The reproductive capacity of the king salmon resource lies solely in female king salmon, specifically the eggs. The present king salmon escapement goals in the (NCIMA) may rely too much on numbers of salmon and may not adequately address the quality of the escapement, or the percent females in the run. Because sexing king salmon early in their migration is error-prone, it is my belief that a large king salmon escapement goal is necessary to address these changes. Simply put, a large king salmon escapement goal is a surrogate for a female goal. This is true because the older king salmon age classes comprise substantially more and larger female salmon. Accordingly, I believe that the escapement should be assessed as the number of age-5 and older king salmon. There is extremely very little reproductive capacity in age-3 and age-4 king salmon since there are few females in these age classes and because of their small size, the fecundity is very low. The few female king salmon in these age classes would not substantially add to the reproductive capacity of the stock.

From my experience as a fisherman, fishing the Little Susitna River this year, I suspect that the 2023 age class composition of the Little Susitna River king salmon escapement may be very similar to the 2023 Deshka River king escapement. Therefore, I believe that a large king salmon escapement goal is appropriate for both rivers and any other river that monitors king salmon through a weir in the NCIMA.

Accordingly, I propose that ADF&G establish a large king salmon goal in the Little Susitna and Deshka River to be used as an index for all spawning streams within the NCIMA. Because the range in size of the age-5 component of the 2023 Deshka River king salmon escapement is approximately 27 to 38 inches (Table 239-1), I additionally propose that the large king salmon standard is set at a minimum 28 inches (or 700 mm). This would encompass most age-5 and older king salmon and include the largest age-4 king salmon. In this way, we would be setting an escapement goal that sets a higher standard for the quality of the escapement instead of diluting the quality of the escapement with the very large number of young, primarily male king salmon that we have observed in recent years.

I believe that ADF&G has the data, tools, and expertise to develop such an escapement goal and to use this goal as an inseason indicator of king salmon run strength. Problems associated with the in-season management for a large king salmon goal can be addressed. I have some ideas.

Literature Cited

**J**ohn Carlos Garza , Eric C. Anderson, Kerry Reid, Peter Westley, and Eric P. Palkovacs. 2022. Genomics of maturation age in Yukon Chinook. Arctic-Yukon-Kuskokwim Sustainable Salmon Initiative Project Final Product

February 5, 2024

Alaska Board of Fisheries
P.O. Box 115526
Juneau, AK 99811-5526

Dear Board of Fisheries,

I'm part of the commercial, sport, and personal use fisheries, as well as seafood processing, in Wrangell, Alaska.

I am a commercial fisherman. I earn a good portion of my catch from hatcheries. This in turn goes back to my crew, the community and all the people involved. It is a valuable resource for me in the beginning of the season, throughout the season, and at the end, when there isn't much wild stock salmon available. Hatcheries are crucial in reducing pressure on wild salmon stocks, especially during years of lower abundance. This coming year should be a lesser year with poor prices. Hatcheries will help me and the community pay our bills.

Sincerely,
Amy Schaub
[redacted]@[redacted]
Wrangell, Alaska

February 06, 2024

Dear Chairman Wood and Board of Fisheries members:

I am a long-time resident of the Matanuska Susitna Valley who has enjoyed fishing the Southcentral fisheries since I moved to Alaska as a young kid. The ability for my family to have fresh fish on our table and in our freezer has been a staple of our livelihood and a passion we enjoy together so I hope the opportunity continues to be there as my daughters grow up.

I support Proposal 112 to increase the Kenai sockeye salmon in-river goals. Large escapements over the last 20 years continue to produce average to large returns of sockeye salmon in the Kenai and Kasilof rivers. More fish in our rivers means more opportunity in sport and personal-use fisheries and likely greater numbers for the future.

I support Proposal 90 to increase the commercial fishing closure “window” from 36 hours to 48 hours . Commercial fishing near the mouth of the Kasilof and Kenai Rivers nearly blocks fish to enter the river and takes away opportunity from the personal-use fishery. This commercial closure increases escapement and opportunity for Alaskan residents to harvest sockeye salmon.

The Board of Fish adopted a Mixed Stock Policy and I support decreasing time, means and methods, and other privileges of the commercial fishery to protect weaker salmon stocks, such as late-run Kenai chinook salmon and Susitna sockeye salmon.

I support Proposal 106 to change the mesh depth gillnetters use to target sockeye salmon. Available evidence proves shallow gillnets reduce chinook salmon harvest; therefore, this change is necessary to protect chinook salmon.

Large commercial sockeye salmon harvests come at the expense of other species and stocks in Cook Inlet. Cook Inlet (and Alaska as a whole) must be managed to share the burden of conservation among all user groups and no longer prioritize commercial harvest.

Thanks for the consideration of my comments on these proposals. I greatly appreciate the Board of Fish for taking actions in 2020 to protect late-run Kenai chinook salmon and other weak stocks of salmon. I support equitable sharing of the burden of conservation among all user groups to protect and rebuild these stocks. In times of low abundance, we must put the fish first and allow more fish onto the spawning grounds. Now is not the time to expand commercial fishing or lower escapement goals.

Sincerely,

Chad Schierman
Wasilla, AK

**Submitted by:** Mike Schierman
**Community of Residence:** Wasilla, Alaska

I Support: Proposals 1, 2,3,4,43,82,90,100,112,114,135-37,141,143,146,150,161,163,164,166,167,173,176,183-189,195,202,208,210,214,221,228,230,234-237,239,241,243,244,246-250,252

I Oppose : Proposals 81,89,91,97,100,103,157,158,169,172,174,180,181,211,232,238,252

Proposal 1: Support With Amendments Proposal 2: Support Proposal 3: Support
Proposal 4: Support Proposal 43: Support Proposal 81: Oppose Proposal 82: Support
Proposal 89: Oppose Proposal 90: Support Proposal 91: Oppose Proposal 97: Oppose
Proposal 100: Oppose Proposal 103: Oppose Proposal 106: Support Proposal 112: Support
Proposal 114: Support Proposal 135: Support Proposal 136: Support Proposal 137: Support
Proposal 141: Support Proposal 143: Support Proposal 146: Support Proposal 150: Support
Proposal 157: Oppose Proposal 158: Oppose Proposal 161: Support Proposal 163: Support
Proposal 164: Support Proposal 166: Support Proposal 167: Support Proposal 169: Oppose
Proposal 172: Oppose Proposal 173: Support Proposal 174: Oppose Proposal 176: Support
Proposal 180: Oppose Proposal 181: Oppose Proposal 183: Support Proposal 184: Support
Proposal 185: Support Proposal 186: Support Proposal 187: Support Proposal 188: Support
Proposal 189: Support Proposal 195: Support Proposal 202:Support Proposal 208: Support
Proposal 210: Support Proposal 211: Oppose Proposal 214: Support Proposal 221: Support
Proposal 228: Support Proposal 230: Support Proposal 232: Oppose Proposal 234: Support
Proposal 235: Support Proposal 236: Support Proposal 237: Support Proposal 238: Oppose
Proposal 239: Support Proposal 241: Support Proposal 243: Support Proposal 244: Support
Proposal 246: Support Proposal 247: Support Proposal 248: Support Proposal 249: Support
Proposal 250: Support Proposal 251: Oppose Proposal 252: Support

**PC193**

**Submitted by:** Luke Schultz
**Community of Residence:** Cora, Wyoming

While I understand the pressures that come with trying to maintain the sockeye net fishery in the Kenai, lowering the current OEG for late-run king salmon in order to allow/justify commercial fishing and netting in the inlet is entirely unacceptable and should not be considered. I ask you to consider the proposal 83 that suggests a conservative start to the fishery and then liberalizing the season as escapement goals are met. Many other potential solutions could, and should, be considered, but this is the one I am most familiar with.

Proposal 83: Support

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**PC194**

**Submitted by:** James Scott
**Community of Residence:** Anchorage, AK

Hey y'all. Heard there's a chance ADFG might consider reducing the overall escapement goal for Kenai River Kings. Please protect our King fishery. Do not reduce the escapement goal. We must control what we can control and build this fishery back toward what it once was. Thank you for helping keep all of our best interests in mind.

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**PC195**

**Submitted by:** Brian Scow
**Community of Residence:** Kenai Alaska

The Board of fisheries closed the east side set net fisheries in 2023 due to not meeting the king escapement goals kings are in decline state wide we had zero opportunity to fish the 600 ft rule already in place could have been used instead we were closed all other user groups still fished and with 24 hour dip netting up to 12 a day sport fishing that looks like discrimination the state constitution of Alaska says you can not reallocate fish stocks from one user group to another by way of vote this is exactly what the board of fisheries is doing when the vote on goals that are unattainable at the very least let us commercial dip net when we can not use our nets maybe it's time to have NOOA manage our fishery at least we might get fishing time anyone of the board of fisheries members are welcome to come and vist my East side set net site so I can provide proof of allmost no kings caught in the beach nets 600 ft from the mean high tide half the day the nets are dry kings do not like to swim shallow or when lots of sockeye are are running to the Kenai River why are you taking one away one of the most effective tools the state of Alaska Biologists have to stop the over escaping 2.4 million sockeye in the Kenai river as a matter of fact the pink salmon are already paying the price of over escaping the river 2022 no pinks as before at Eagle rock every one in town I talk to said the same thing even the biologist agreed

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**Submitted by:** Nancy Scow
scow fishing llc

**Community of Residence:** Kenai Alaska

Please find a way to let the East side set net fishery fish after we were closed in 2023 not because there was over escaping sockeye salmon but because of the goal of 15000 kings which has not been achieved in the past 5 years or more this is not realistic king salmon are in decline state wide there are plenty of sockeye salmon for all fisheries ask the state of Alaska Biologists tell you when you keep over escaping the river year after year take away the only effective tool at his disposal the 600 ft beach net from mean high tide to stop the over escaping sockeye lost revenue destroying the Kenai peninsula economy and commercial fishing and much needed local summer jobs for local kids also processing plants will close after any more closures to our fishery

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|---|---|---|---|
| Proposal 1: Oppose | Proposal 2: Oppose | Proposal 3: Oppose | Proposal 4: Oppose |
| Proposal 43: Oppose | Proposal 75: Oppose | Proposal 76: Oppose | Proposal 77: Support |
| Proposal 78: Oppose | Proposal 79: Oppose | Proposal 80: Support | Proposal 81: Support |
| Proposal 82: Oppose | Proposal 83: Oppose | Proposal 84: Oppose | Proposal 85: Support |
| Proposal 86: Support | Proposal 87: Support | Proposal 88: Support | Proposal 89: Oppose |
| Proposal 90: Oppose | Proposal 91: Support | Proposal 92: Oppose | Proposal 93: Oppose |
| Proposal 94: Oppose | Proposal 95: Oppose | Proposal 96: Oppose | Proposal 97: Support |
| Proposal 98: Oppose | Proposal 99: Oppose | Proposal 100: Support | Proposal 101: Oppose |
| Proposal 102: Support | Proposal 103: Support | Proposal 104: Oppose | Proposal 105: Oppose |
| Proposal 106: Oppose | Proposal 107: Oppose | Proposal 108: Oppose | Proposal 109: Oppose |
| Proposal 110: Support | Proposal 111: Oppose | Proposal 112: Oppose | Proposal 113: Oppose |
| Proposal 114: Support | Proposal 115: Oppose | Proposal 116: Support | Proposal 117: Support |
| Proposal 118: Oppose | Proposal 119: Support | Proposal 120: Support | Proposal 121: Oppose |
| Proposal 122: Oppose | Proposal 123: Oppose | Proposal 124: Oppose | Proposal 125: Oppose |
| Proposal 126: Oppose | Proposal 127: Oppose | Proposal 128: Support | Proposal 129: Oppose |
| Proposal 130: Support | Proposal 131: Oppose | Proposal 132: Oppose | Proposal 133: Support |
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| Proposal 138: Oppose | Proposal 139: Oppose | Proposal 140: Oppose | Proposal 141: Oppose |
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| Proposal 198: Support | Proposal 199: Support | Proposal 200: Support | Proposal 201: Oppose |
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| Proposal 210: Oppose | Proposal 211: Support | Proposal 212: Oppose | Proposal 213: Oppose |

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| Proposal 218: Oppose | Proposal 219: Oppose | Proposal 220: Oppose | Proposal 221: Oppose |
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| Proposal 250: Oppose | Proposal 251: Oppose | Proposal 252: Oppose | Proposal 253: Oppose |
| Proposal 254: Oppose | Proposal 255: Oppose | | |

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February 5, 2024

Alaska Board of Fisheries
P.O. Box 115526
Juneau, AK 99811-5526

Dear Board of Fisheries,

I'm a commercial fisherman from Valdez. I appreciate your dedication to the conservation and sustainable management of Alaska's salmon fisheries. The Board of Fisheries full consideration is crucial in shaping the future of our salmon resources.

**Support for Removing Proposal 59:**

I support the decision to remove Proposal 59 from the Kodiak meeting agenda because I believe it is essential to distinguish between proposals that modify regulatory changes within specific regions and those with statewide hatchery implications. This was an important action in regards to precedent and process. Statewide hatchery issues, including any regulations with statewide precedent, should be addressed at a statewide venue. This ensures consistency and fairness in the decision-making process.

**Statewide vs. Regional Precedent:**

When addressing statewide hatchery issues that have the potential to establish precedents or modify hatchery regulations impacting multiple regions, it is essential to do so within a statewide venue rather than restricting discussions to regional meetings. Salmon hatcheries are integral to Alaska's fisheries, influencing various regions and user groups. Numerous hatcheries are linked with Pacific Salmon Treaty mitigation obligations. Decisions made solely at the regional level may lack the comprehensive perspective necessary to ensure consistency and fairness in overarching hatchery management decisions. Holding these discussions at a statewide level allows for a more inclusive and well-informed decision-making process, involving stakeholders from all regions. This approach considers the diverse interests and nuances of Alaska's intricate salmon fishery landscape, ultimately contributing to the long-term sustainability of our fisheries and ensuring that hatchery-related regulations align with the overarching goals of responsible resource management. Most hatcheries operate sport, personal use, and subsistence programs that can only exist with the financial support of the PNP organization.

**Opposition to Proposal 43:**

We continue to oppose Proposal 43, for the following key reasons.

(1) Lack of Scientific Evidence: Proposal 43 lacks substantial scientific evidence to support claims that hatchery fish have a detrimental impact on wild salmon populations or ecosystems. Decades of research and data show that hatcheries and wild salmon can coexist and even thrive together.
(2) Steady Increase in Wild Salmon Returns: Contrary to the proposal's assertions, regions with hatcheries in Alaska have witnessed steadily increasing wild salmon returns since the early 1970s when these programs were established. Hatcheries have not replaced wild salmon but have provided a stable supply for commercial, sport, and subsistence fisheries, while at the same time wild stock escapements are being met.
(3) Social and Economic Benefits: Hatchery programs have been instrumental in meeting the demand for salmon while preserving wild stocks and their habitats. They support the livelihoods of Alaskans, contribute to local economies, and provide a buffer against the variability of wild salmon runs.

Sincerely,
Andrew Scudder
[redacted]@[redacted]
Valdez, Alaska

**Submitted by:** Ryhan Sempler
**Community of Residence:** Missoula, Montana

As a Montana resident who doesn't have sea run salmonids, I spend a lot of time and dollars in your state to fish for kings on the Kenia river system. I urge you to not lower the OEG and wait until the Kenia has good numbers of king salmon to spawn. I support proposal 83. You have a great state and don't waste it.

Proposal 83: Support

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February 06, 2024

Dear Chairman Wood and Board of Fisheries members:

I am a life long resident born in Anchorage and I sportfish, commerical fish and sometimes dip net on the kasilof river. I believe the burden of conservation should be shared equally and that has not been the case the last few years as setnetters have been completely shut out of the fishery.

It is NOT true that large commercial sockeye harvests come at the expense of other species and stocks in Cook Inlet. There are plenty of fish for everyone and the "conservation" efforts have already been place at the feet of the commerical fisheries. The Inlet must be managed to share the burden of conservation among all user groups including In river commercial guides, and dipnetters.

I do not support increasing the commercial fishing closure “window” from 36 hours to 48 hours to cause more over escapement. Proposal 90 is just another attempt to close down commercial fishing and is a horrible management decision considering the fish do not know when it is Friday morning to Sunday morning.

Large escapements are actually holding back larger runs of fish in both rivers if you look at historical run sizes, especailly in the 80's and 90's. Proposal 112 is another attempt to close commercial fishing and should not even be considered a legitimate proposal.

The actions taken by the board in 2020 have been disastrous causing massive economic waste and over escapement in both the kenai and kasilof rivers. The conservation burden is not being shared equally as all other user groups continue to fish and kill king salmon, while setnetters have been kicked completely out of the state fishery.

Sincerely,

Philip Sheridan
SOLDOTNA, AK

I have read the proposals. Most seem to be written by commercial fishers either set or drift net. The most interesting is 88. Which would like to limit the guides and non-resident fishing somewhat. There are way too many guides on the river. I do believe it is detrimental to the king population to have a boat going right over them full speed every 5 minutes or so. It is annoying to me and I'm just fishing, not trying to reproduce. I spend a lot of time on the Kenai in the summer. The lack of kings is disturbing. What is more disturbing is the lack of anyone willing to sacrifice anything to help try to get the population back. I have not been able to fish for kings on the Kenai for years and I live here.

The Problem as I see it is the commercial fishing. Last year we could not even fish the inlet let alone the river and the numbers are still awful. Awful everywhere. They keep saying it is unknown ocean conditions. I doubt that. The commercial drift nets just kept getting emergency order after emergency order for range closer to shore, longer days, extra days and longer season. Just netting every fish they could. Heaven forbid they let anything in to the river. Meanwhile the king population plummets. You could track on the counter the days the commercial guys were out and within a half mile from shore. The number of kings coming went down those days. You think that is a coincidence?

I don't think the OEG or SEG should be lowered it is not unachievable or unrealistic. It will and can happen if we regulate the commercial fishing properly. We should stick to the hours for their season. 36 to 48 hours a week and that is it. 1 to 1.5 miles from shore. No emergency orders for a half-mile and no extra days. Just have a normal season. We should also limit the number of commercial boats allowed to fish the inlet. For example they can fish Monday through Thursday, there are 200 boats. Boats 1-100 fish week one Monday and Wednesday week 2 they fish Tuesday and Thursday. Opposite for boats 101-200.

Set nets should be limited too. Either shorter, shallower or less nets per operation. This business about "Over Escapement" is garbage. No one was regulating the run before man decided to and the river was thriving. You can't have "too many" fish in the system more fish make for a healthier ecosystem period.

I don't think limiting bait the first half of August is doing anything for the population. I have never hooked a King while sitting on eggs, ever.

I have come to terms with the fact I won't be able to fish for kings, on the Kenai, any time soon. I am hopeful I will be able to again in a few years. I hope you guys are really taking this seriously this year and are willing to stand up to commercial fishing.

You could always give up on the native salmon population and start stocking the river but no one wants that.

I have been to the meetings you have in Anchorage. The commercial guys are for the most part flown up from Seattle. They show up late, smelling like booze, read their prepared statements and leave as soon as they are done. It is obvious they don't care about Alaska and its fisheries. They just want all the fish until there is no more to take. Just like they did to Puget Sound. The meetings are so jammed with them the sport fishermen rarely get to read statements.

Sincerely,

Jeffrey Sherman