Alaska Salmon Research Task Force

Presentation to the
North Pacific Fishery Management Council

October 3, 2024

Presented by:

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Alaska Fisheries Science Center
Juneau, AK

Reference: S.3429 An Act

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Purposes of the Act

1. to ensure that Pacific salmon trends in Alaska regarding productivity and abundance are characterized and that research needs are identified;
2. to prioritize scientific research needs for Pacific salmon in Alaska;
3. to address the increased variability or decline in Pacific salmon returns in Alaska by creating a coordinated salmon research strategy; and
4. to support collaboration and coordination for Pacific salmon conservations efforts in Alaska.

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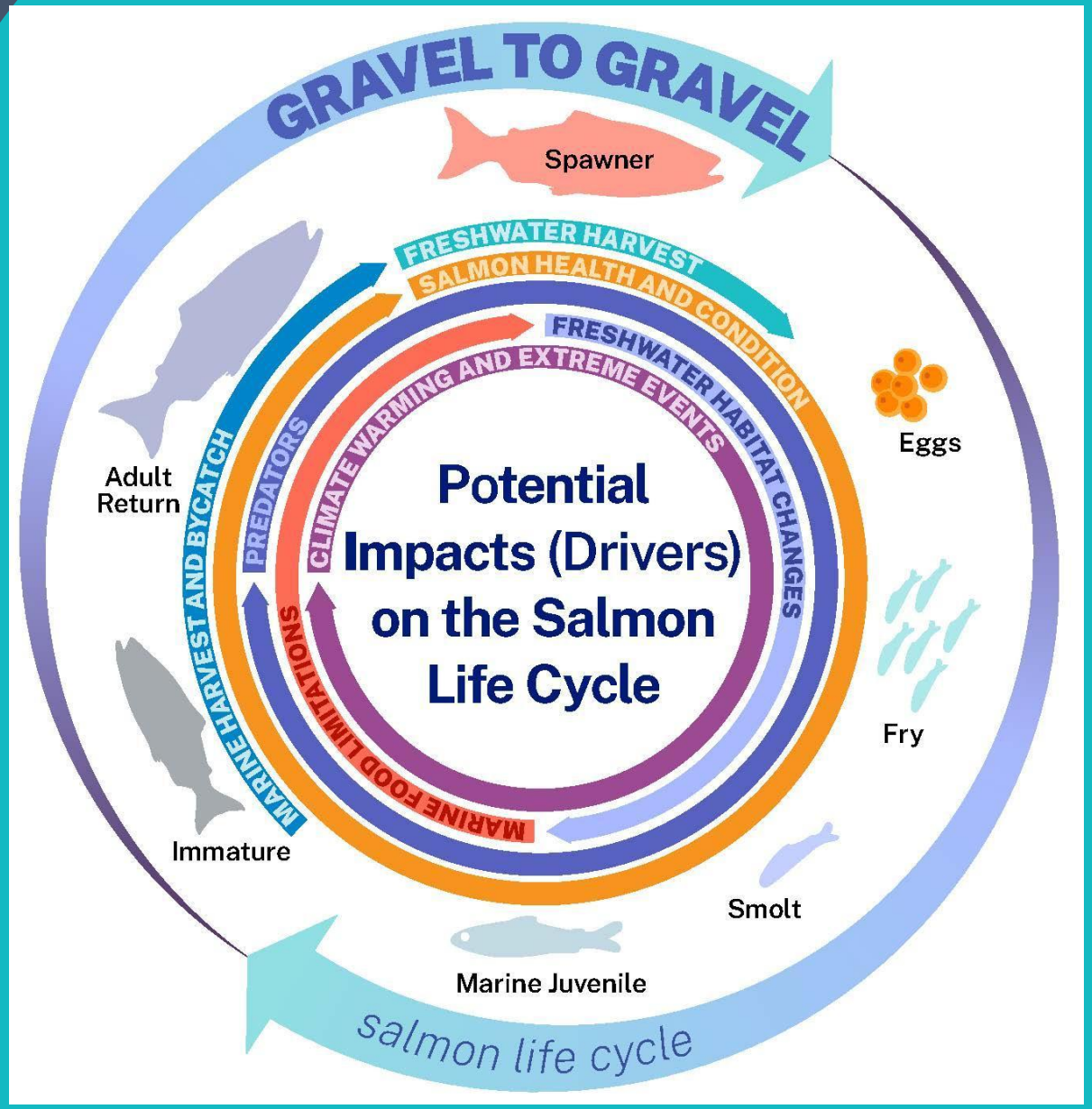

Coordinated Research Strategy

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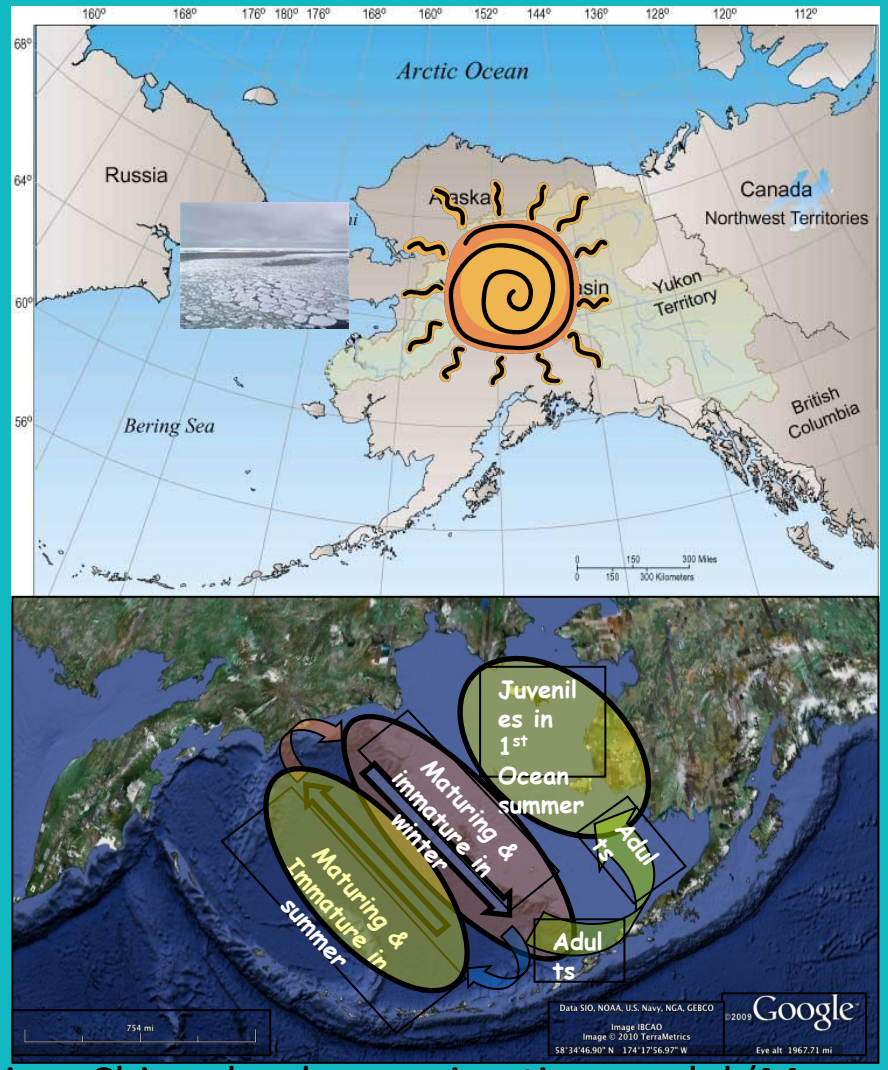
Recommended Applied Research Needs

Warming Climate and Extreme Events



Yukon River Chinook salmon migration model (Myers et al. 2007)

Research to understand and quantify the effects of natural environmental variability and warming climate on Alaska salmon distribution and abundance.

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Recommended Applied Research Needs

Salmon Health and Condition

Ichthyophonus in Chinook salmon

Research to understand the connections between freshwater, estuarine, and the marine environment that lead to pathogens or declines in some vitamin levels for salmon.

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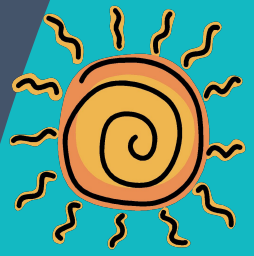
Recommended Applied Research Needs

Salmon Health and Condition



Climate

Prey
Quality and Quantity

Fish Size and Fat Reserves

Research to understand prey quality and quantity on health and condition of salmon in marine estuarine and freshwater habitats.

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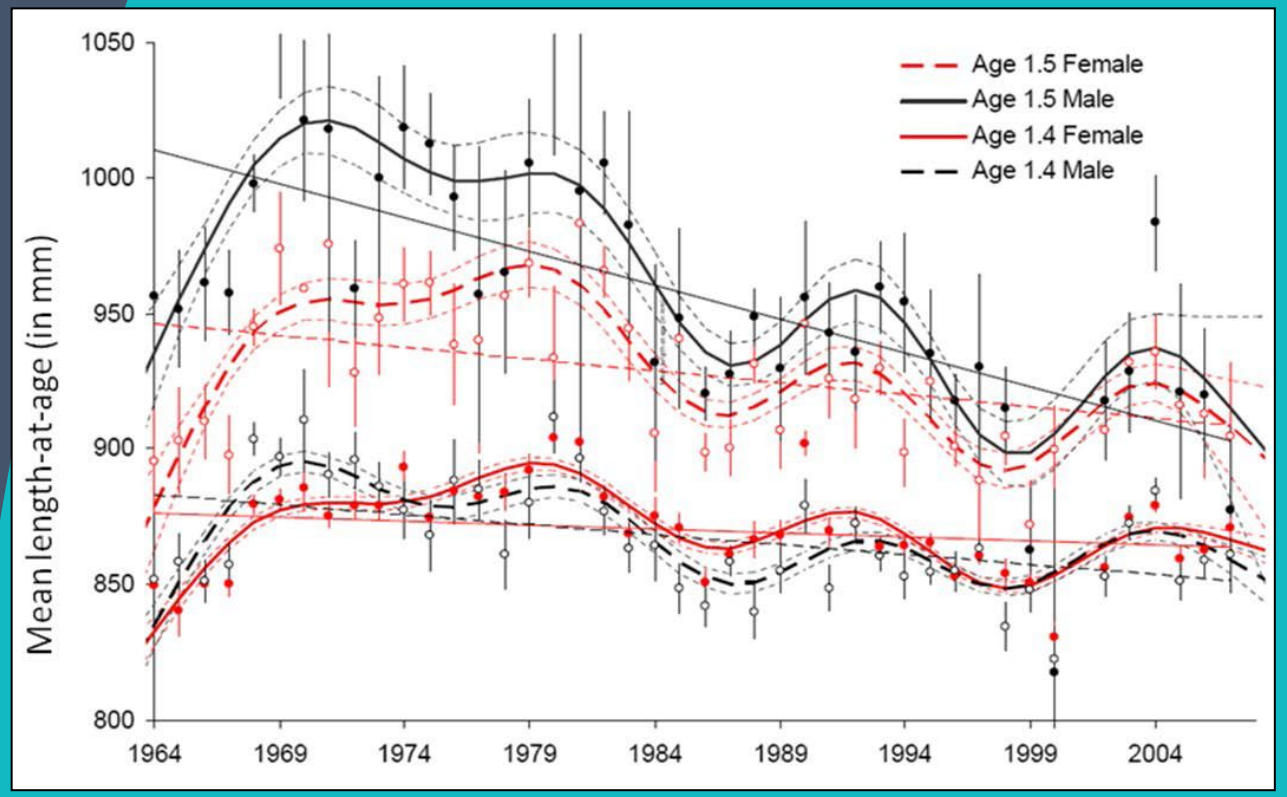
Recommended Applied Research Needs

Salmon Health and Condition



Yukon Chinook Salmon Length at Age

Research to understand the mechanism(s) behind **declining size at age** as these declines impact the amount of food available per fish, the size and number of eggs per female for future generations, and can contribute to declining run sizes.

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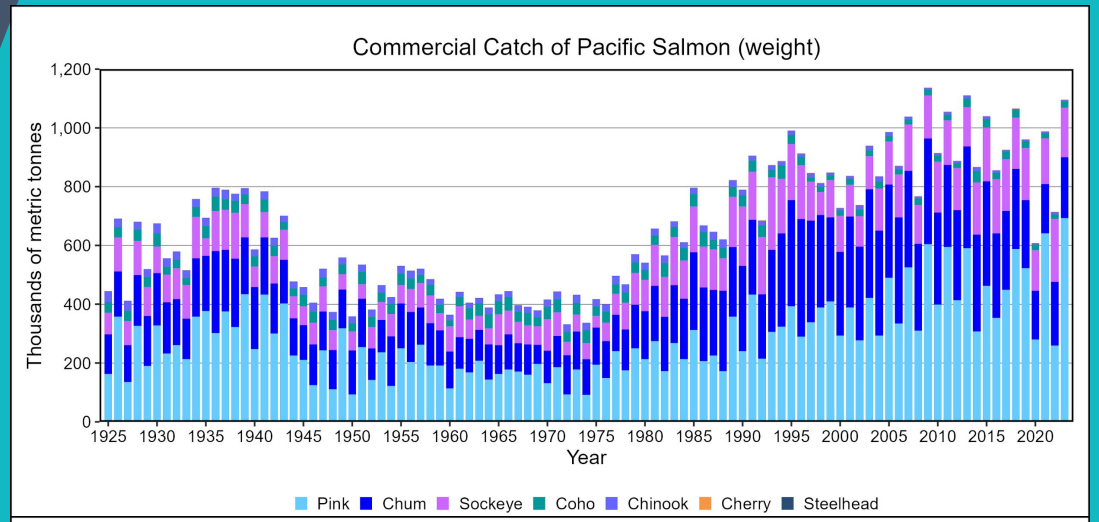
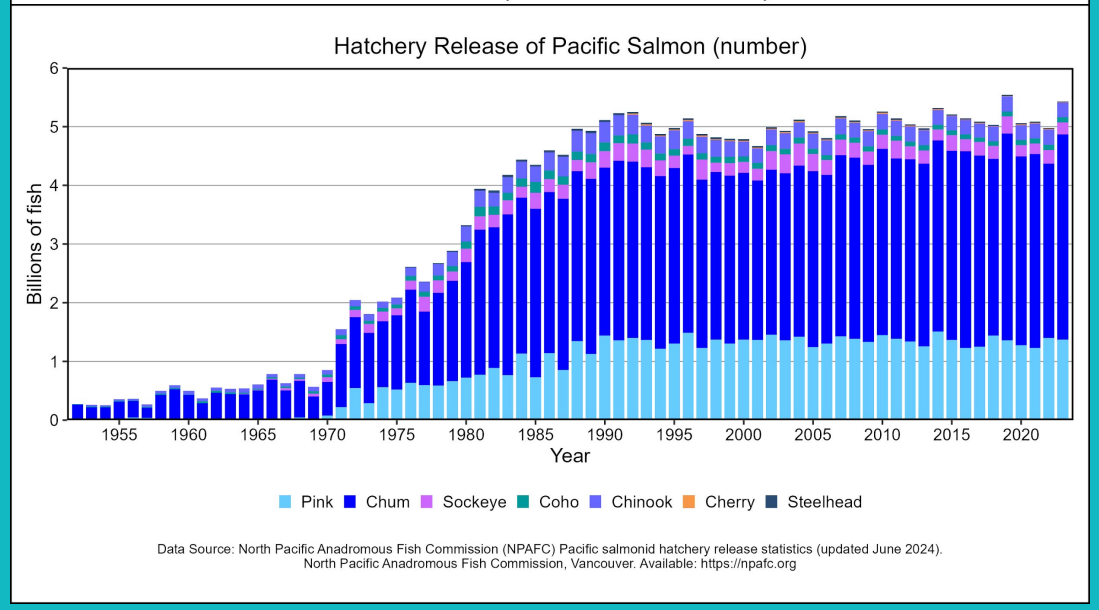
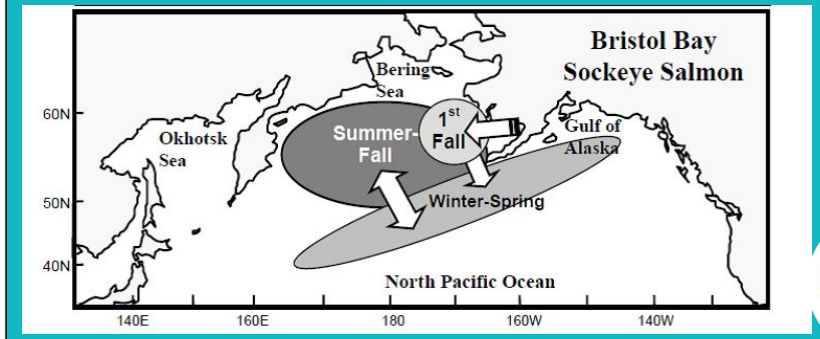
Recommended Applied Research Needs

Marine Food Limitations





Research to understand the implications of habitat use by Alaska salmon populations at various levels of abundance, the productive capacity of habitats for each life stage, and the potential implications of density-dependent effects.



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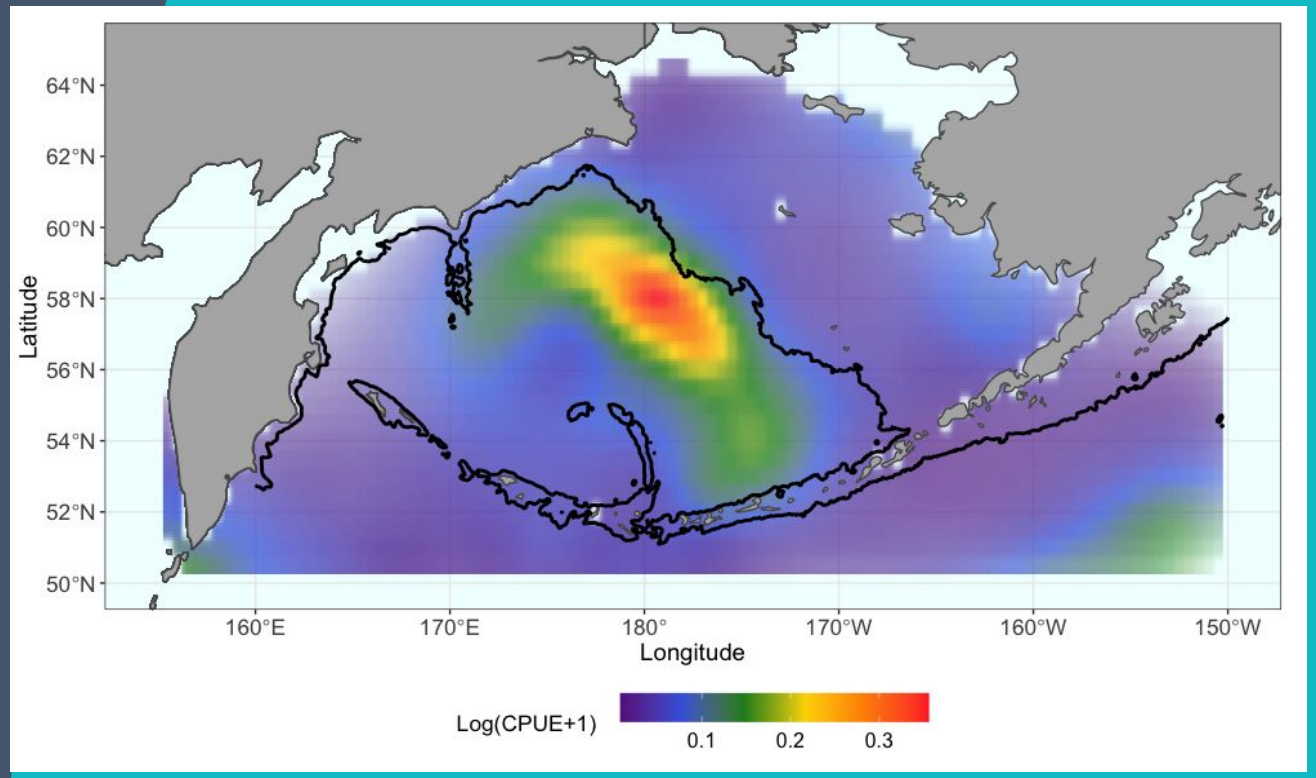
Recommended Applied Research Needs

Marine Harvest and Bycatch

Chinook Salmon summer “hotspot” distribution prediction



Research to reduce bycatch, interception, and Illegal, Unreported, and Unregulated (IUU) fishing through **improved understanding of distribution and migration patterns of Alaska salmon stocks to better predict and avoid incidental harvest in the migratory corridors for Alaska salmon including Bering Sea, Aleutian Island, and Gulf of Alaska areas and regions in the North Pacific where there is increased potential for IUU fishing.**

Langan et al. 2024

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Recommended Applied Strategies to Address Priority Research Needs

- Improved understanding of the social impacts
- Improved stock identification methods
- Better characterization of ocean distributions and marine migration routes
- Expanded ocean ecosystem surveys
- Strategies to minimize human impacts on freshwater and coastal habitats
- Making use of new technologies
- More effective monitoring of salmon indicator stocks
- Improved stock assessments for in-season management
- Life-cycle modeling and management strategy evaluations for climate resilience
- Better data management and sharing

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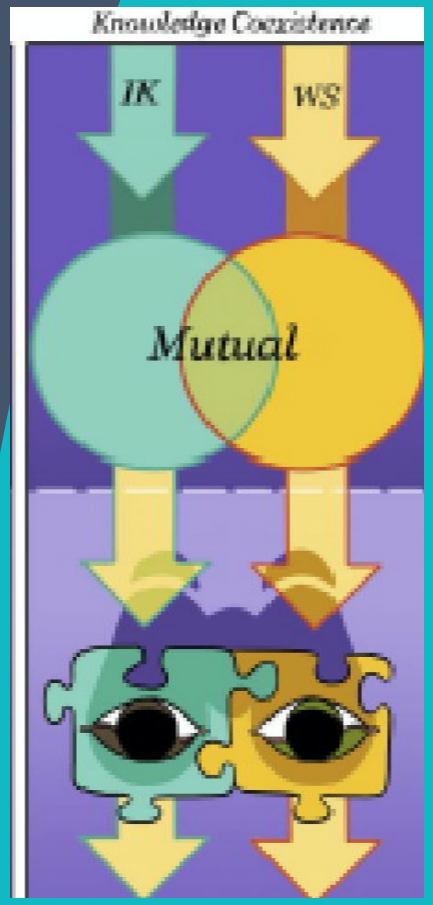
Recommended Framework - Research project development should include a framework that involves “salmon people” across tribal, federal, state, non-profit, international, and other entities



Reid et al. 2020

One example would be to initiate “Two-Eyed Seeing” framework that embraces “learning to see from one eye with the strengths of Indigenous knowledge and ways of knowing, and from the other eye with the strengths of mainstream knowledge and ways of knowing

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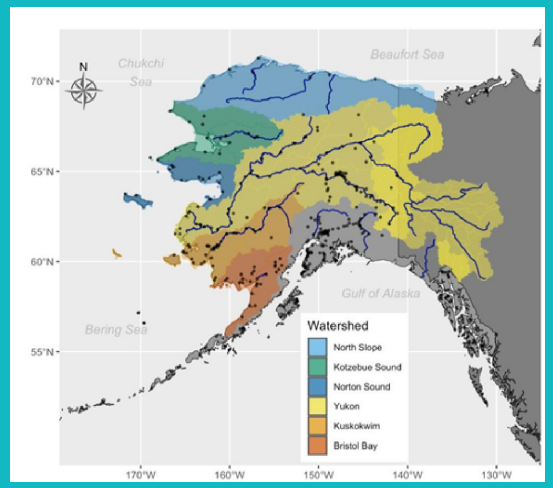
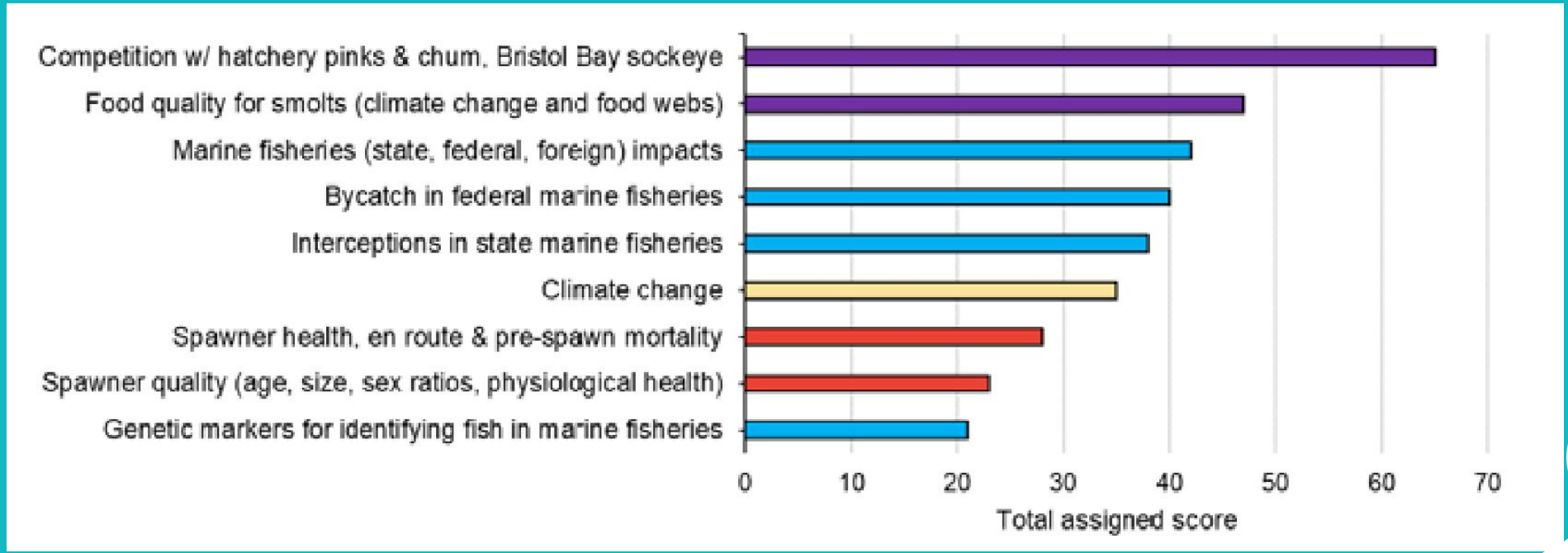
Arctic Yukon Kuskokwim Working Group Report



Identify Research Needs for that region of Alaska



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AKSRTF Research Priorities and Strategies Link to NPFMC Research Priorities

Further research to reduce **western Alaska salmon bycatch** in Bering Sea groundfish fisheries (e.g. research on salmon and drivers of salmon distribution, as well as drivers of groundfish fishery behavior including avoidance of other PSC species).

Continue to acquire **basic life history information** with an emphasis on improved estimates of size/age at maturity to advance understanding of the mechanisms for how maturity changes over space and through time.

Examine the economic, social, and cultural **effects of fisheries and fishery management policy on communities** over time (including impacts from fishery policy changes and Tribal citizen and Tribal Nation reliance on, participation in, and impacts of federally managed fisheries).

Develop predictive tools and **models that evaluate the impact of multiple projected climate scenarios** on managed resources to inform management options related to ecosystem production and resilience and adaptation of fishing communities.

Maintain the core biological and oceanographic data (e.g., biophysical moorings, stomach data, zooplankton, age 0 surveys, benthic production) necessary to support integrated ecosystem assessment

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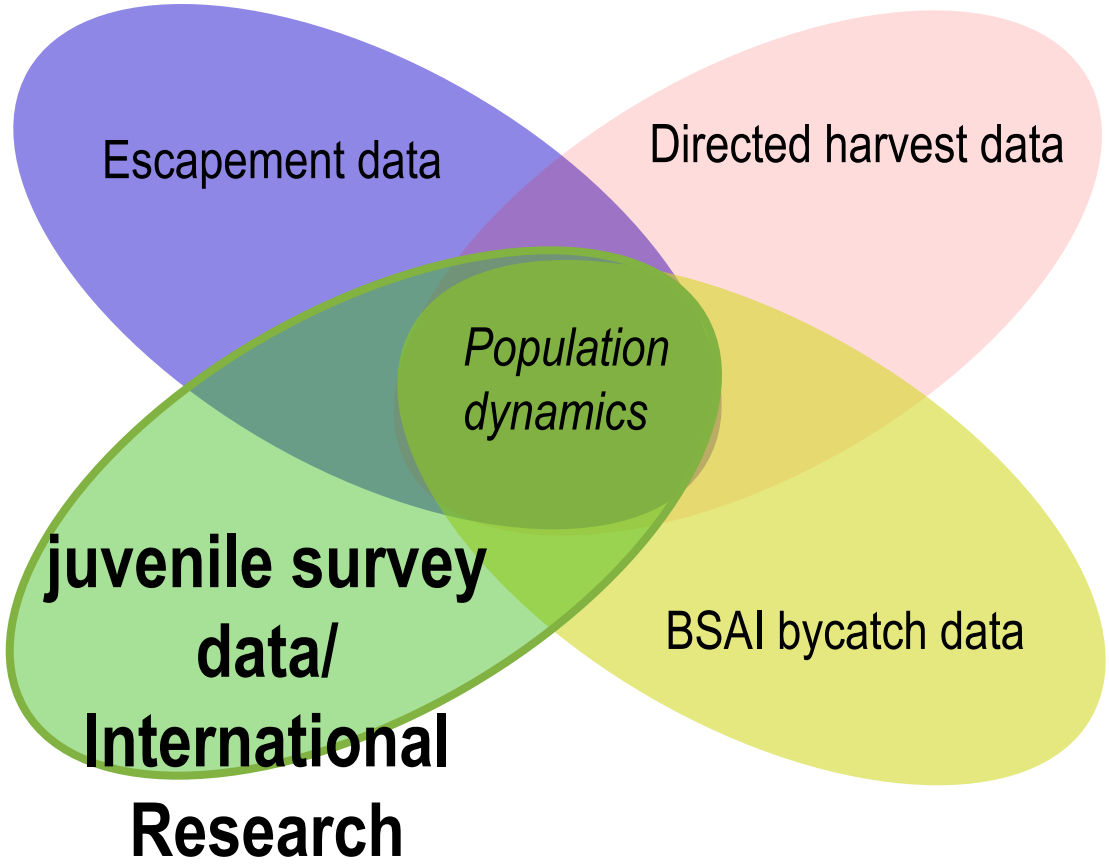
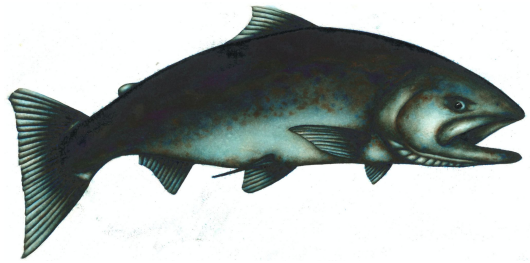
Salmon Life cycle models

- Difficult to estimate **key life history processes** from traditional adult monitoring data alone
- **Addition of juvenile/International research survey data** from fishery independent surveys greatly expands ability to estimate:
  - **Marine survival**
  - **Maturation schedules**
  - **Spawner-recruitment patterns**
  - **Environmental and anthropogenic impacts**
  - **Distribution and migration models**



- **Life cycle models** informed by **juvenile survey /International Research survey data** can be used to identify drivers of population variability and evaluate alternative management/environmental scenarios using best available science
  - **Adult Equivalent Models**
  - **Forecasts of Adult returns**
  - **Management Strategy Evaluations**



AYK Working Group Members

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Andrew Munro	Alaska Department of Fish and Game
Estabrooks	At-Sea Processors Association
Bill Templin	Alaska Department of Fish and Game
Caroline Brown	Alaska Department of Fish and Game
Ed Farley	NOAA Fisheries, Alaska Fisheries Science Center
Jacob Ivanoff	Native Village of Unalakleet
Justin Leon	Kuskokwim River Inter-Tribal Fish Commission
Megan McPhee	University of Alaska Fairbanks
Megan Williams	Ocean Conservancy
Michelle Stratton	Alaska Marine Conservation Council/ Fisherman
Noelle Yochum	Trident Seafoods
Oscar Evon	Coastal Villages Region Fund (CVRF)
Steve Reifenstuhl	Salmon Biologist/Consultant (Retired)
Tom Carpenter	Commercial Fisherman
Adolph Lupie	Lower Kuskokwim River
Andy Bassich	Upper Yukon River
Bill Alstrom	Lower Yukon River
Brooke Woods	Yukon River
Charlie Lean	Norton Sound
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Austin

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Jennifer Hooper	Association of Village Council Presidents, Yukon-Kuskokwim Delta Region
Jessica Black	Associate vice chancellor for rural, community education and Native education. University of Alaska - Fairbanks
Joe Spaeder	Arctic-Yukon-Kuskokwim Sustainable Salmon Initiative
Mark McNeley	Native Village of Nelson Lagoon
Martin Andrew	Kuskokwim region
Marvin Okitkun	Kotlik, lower Yukon Delta
Michelle Quillin	Tanana Chiefs Conference, Fairbanks
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Todd Sformo	North Slope Borough - Department of Wildlife Management
Vanessa von Biela	U.S. Geological Survey, Alaska Science Center
Virgil Umphenour	Upper Yukon River

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Task Force

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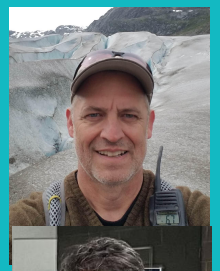

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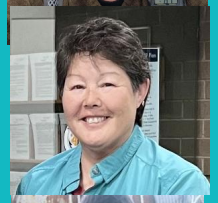
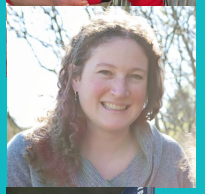
Andrew Munro, *North Pacific Fishery Management Council*



Karla Jensen, *Native Village of Pedro Bay*



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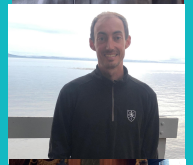

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Steve Reifenstuhl, *retired, Northern Southeast Regional Aquaculture Association*

Tom Carpenter, *Commercial Fisherman*

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Andrew Piston, *Pacific Salmon Commission*

https://www.fisheries.noaa.gov/resource/outreach-materials/alaska-salmon-research-task-force-report

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