

## **Collaborators**

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## **Background and Approach**

Chinook salmon (*Oncorhynchus tsawytscha*) are captured incidentally in federally managed commercial groundfish fisheries. These prohibited species catch (PSC) are referred to as bycatch. Annual estimates of Chinook salmon bycatch are highly variable ranging from 4,242 to 122,255 in the eastern Bering Sea fishery. Efforts to reduce bycatch in the EBS fishery have been underway within the North Pacific Fishery Management Council and there is currently a cap on the number of Chinook salmon that can be taken as bycatch within the EBS groundfish fishery (Amendment 91). Recent adult returns of western Alaska Chinook salmon have been historically low, increasing the concern on the levels of PSC Chinook salmon in the EBS fishery. The question is: “what is driving marine mortality for western Alaska Chinook salmon?”

We propose to conduct a 25-day research cruise in the northern Bering Sea during September 2016. Integrated ecosystem surveys (fishes and bio/physical oceanographic data) in this area have been conducted annually since 2002. The first summer at sea is a critical period for juvenile Chinook salmon where survival is dependent on rapid growth in nearshore habitats and attaining sufficient size and energy reserves before winter. Annual estimates of juvenile Yukon River Chinook salmon abundance from the survey are used as a “leading indicator” for future adult returns. Survey data are critical to addressing our question because this region is experiencing rapid change in climate that may be impacting success of young salmon. Our hypothesis “*Ocean conditions (physical and biological) have changed in the Bering Sea, causing an increase in mortality of Chinook salmon during their early marine portion of their life cycle and contributing to declines of AYK Chinook salmon stocks*” links our oceanographic data to juvenile Chinook salmon collected in the region. Our goal is to assess the effect of climate change and variability on growth, fitness, and survival of juvenile Yukon River Chinook salmon during critical life stages.

## Budget

Travel	\$0
Supplies	\$0
Contractual	\$77,000
Other (shipping)	\$0
Total	\$77,000

- Contractual:
  - The Chartered Fishing Vessel, R/V Cape Flattery will conduct the survey in the eastern Bering Sea during September 2016. We request partial funding to support this research effort. Approximately \$325K in charter funds (daily rate + fuel) are needed to conduct the 25 day survey. Funds from Loss of Sea Ice (\$100K) and from the Alaska Fishery Science Center (\$148K) are already expected and will cover \$248K of the survey. We request an additional \$77K to fully fund the charter vessel contract.