

**DRAFT****2021 KUSKOKWIM RIVER SALMON MANAGEMENT STRATEGY*****Draft of April 27, 2021***

**PURPOSE:** This 2021 Kuskokwim River Salmon Management Strategy (Strategy) is intended to provide guidelines for a conservation and cooperative management framework for the Kuskokwim River Inter-Tribal Fish Commission (Commission) and the U.S. Fish and Wildlife Service (USFWS) at the Yukon Delta National Wildlife Refuge (YDNWR). As partners the Commission and the YDNWR are committed to collaboratively utilizing this Strategy in the 2021 salmon season, and to further develop this Strategy into a longer-term salmon management plan as per the Memorandum of Understanding (MOU) signed by both entities in 2016.

**Guiding Principles & Objectives**

- **Avoid collective overharvest of salmon and rebuild Chinook salmon populations** within the Kuskokwim River watershed through application of a precautionary approach to harvest management.
  - Prioritize meeting drainage-wide and tributary escapement targets over other objectives during the near-term Chinook salmon recovery and rebuilding phase.
  - Take a conservation-based approach to management by considering sources of uncertainty and external risk factors, out of direct management control, including the cumulative effects of multiple risk factors.
  - Implement Chinook salmon conservation and management actions based on a mixed stock / multi-stock management approach, that addresses the inherent differences in productivity among various stocks.

## Risk Factors & Management Challenges Facing the 2021 Run(s)

In addition to uncertainties in forecasts and in-season data that present challenges in meeting our management objectives, new research has documented several risk factors (Figure 4) most of which are not accounted for in salmon Biological Escapement Goal or management metrics.

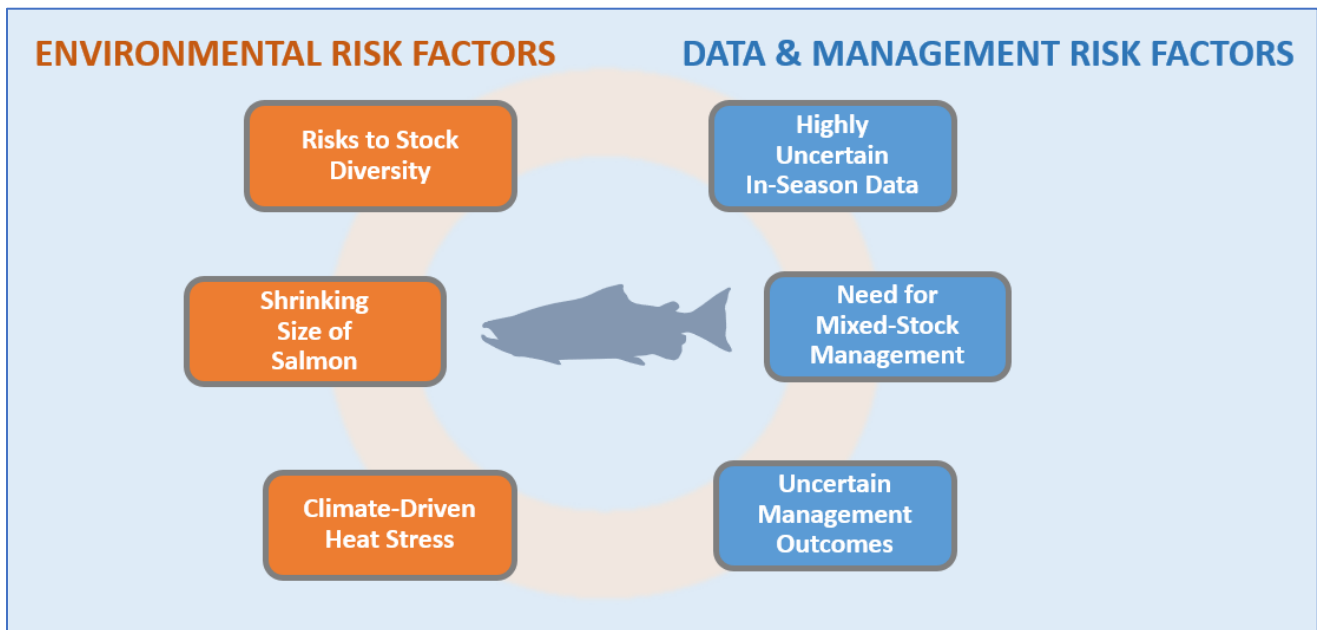


Figure 4: Overview of environmental / ecological risk factors, and data and management related risk factors.

### ENVIRONMENTAL RISK FACTORS

#### Risks to Stock Diversity

**Stock Diversity in a Mixed Stock Fishery:** Protecting diversity is hard when many salmon stocks are harvested in a **mixed fishery** because not all salmon stocks are productive enough to sustain the same level of harvest as shown in (Figure 5). (Connors *et al.* 2020)

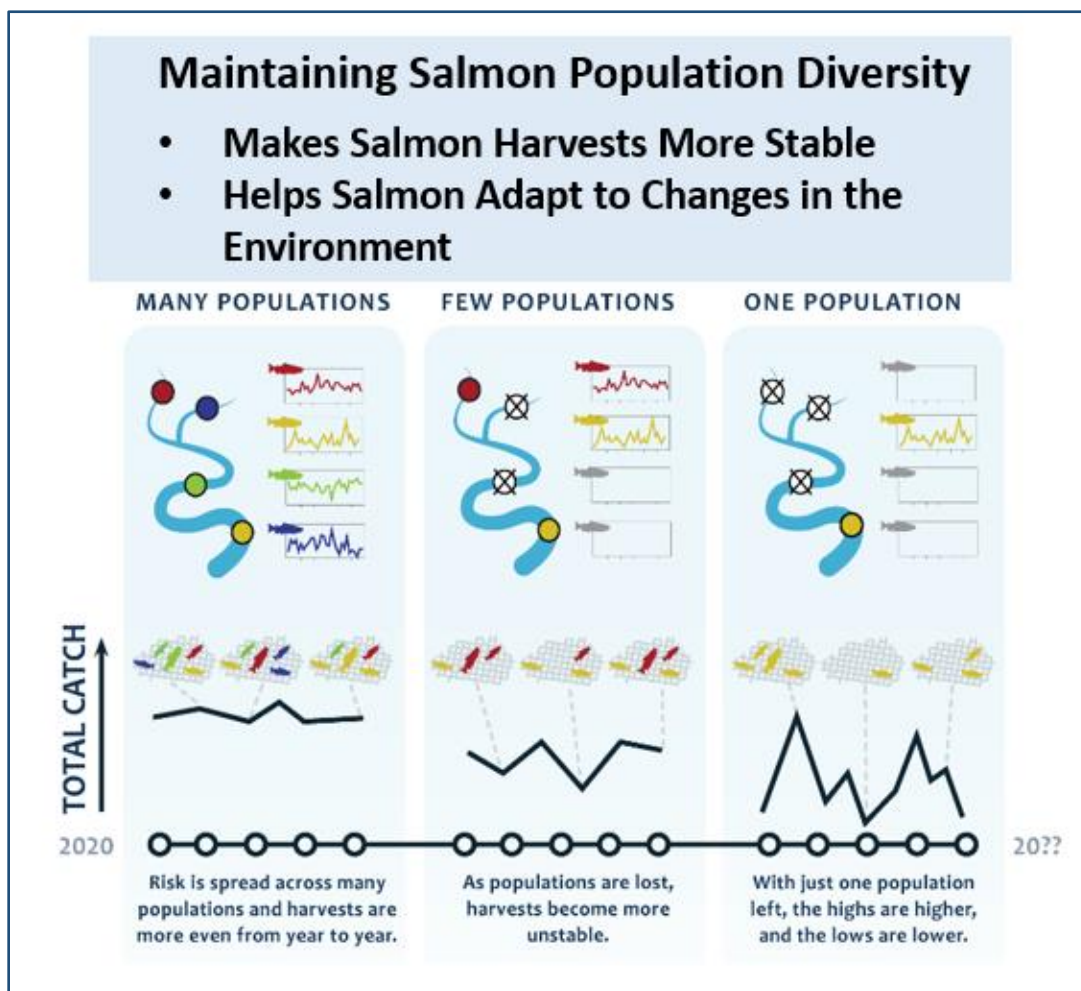
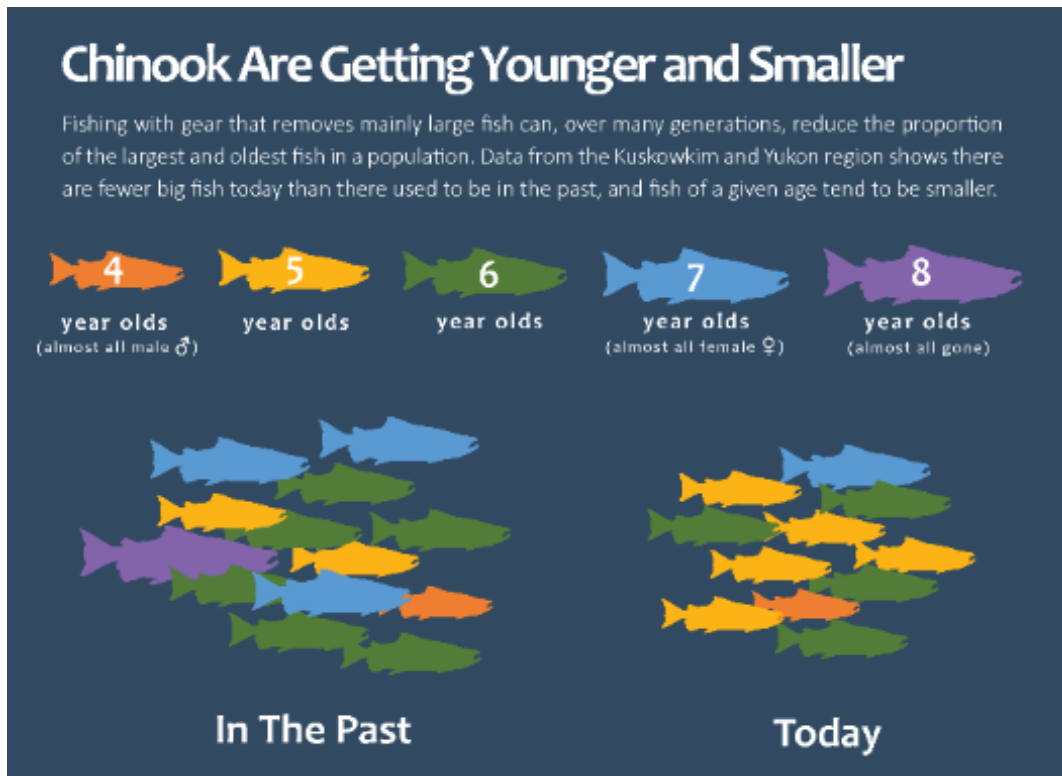


Figure 5: Overview of the benefits of maintaining salmon population diversity

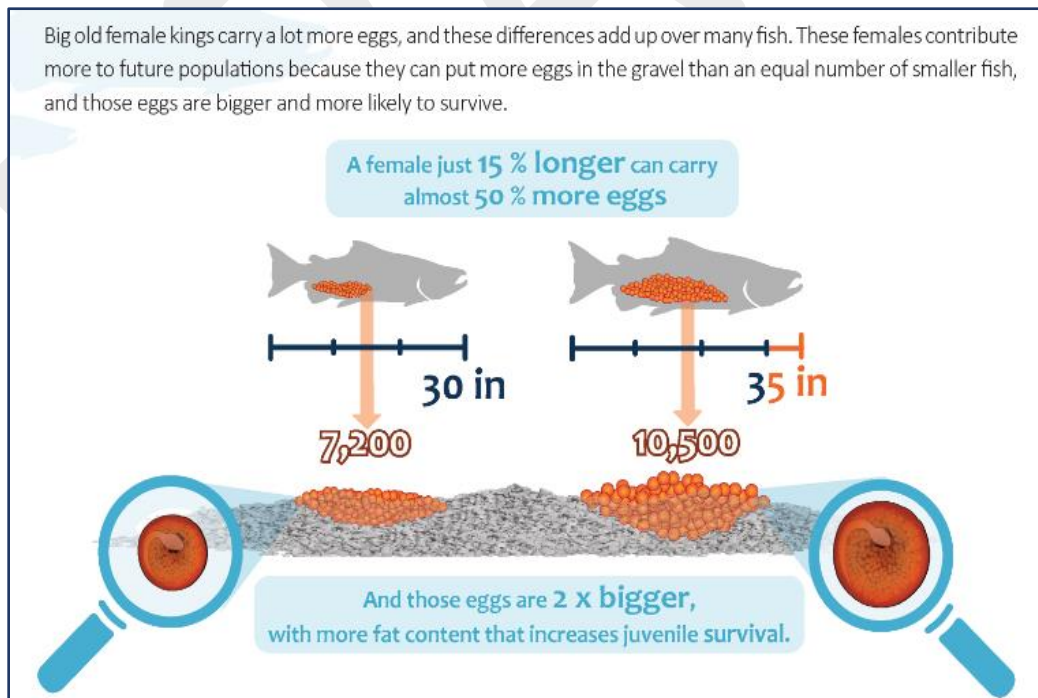
#### Shrinking Size of Salmon

**Significant Long-Term Decline in the Size of Returning Adult Salmon:** An independent expert panel that reviewed declines in the size and reproductive potential of Alaska-Yukon-Kuskokwim region Chinook salmon found a 40% decline in average total reproductive potential of Kuskokwim River Chinook salmon over the period 1976-2018 (*Ohlberger et al. 2019*) (Figures 6 and 7).

*Decline in Caloric Value of Salmon:* Due to this documented long-term decline in the size of returning adult Chinook salmon, we now know that 100 fish caught in the early 1970s provided on average the same amount of caloric energy as approximately 138 fish caught in recent years in the Kuskokwim River.



**Figure 6:** Data from the Kuskokwim and Yukon region shows that there are fewer big fish today than in the past, and fish of a given age tend to be smaller (Ohlberger et al. 2019).



**Figure 7:** Adult salmon are younger and smaller, which means female spawners carry fewer and smaller eggs. Spawner and egg size thus carry a significant impact on juvenile salmon survival (Ohlberger et al. 2019).

**REFERENCES**

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