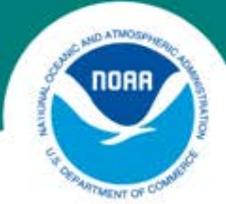




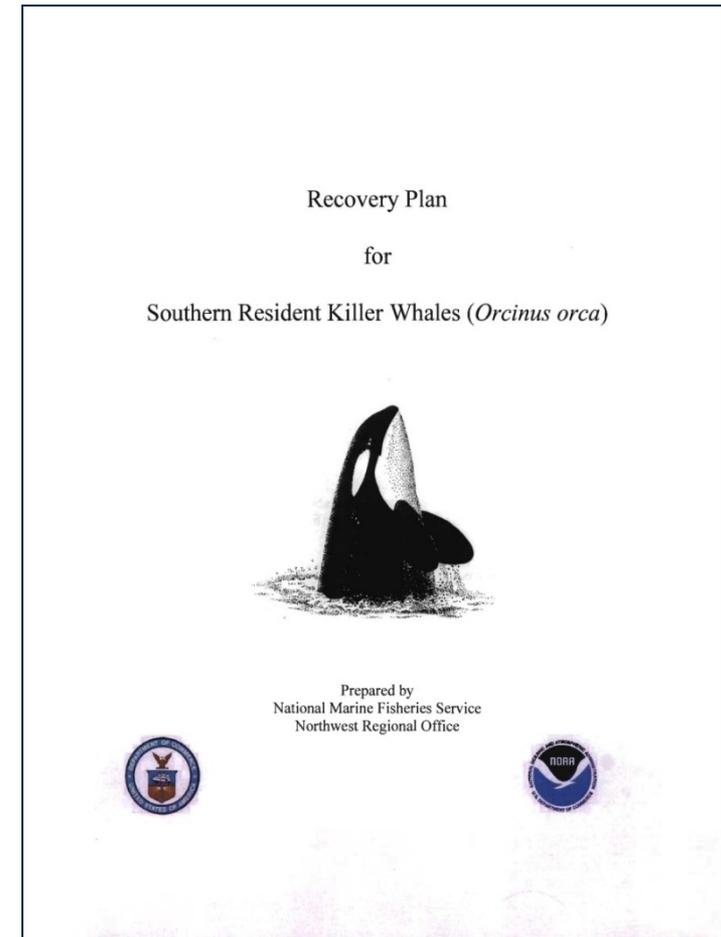
# **A Bilateral NOAA/CDFO Evaluation of the Effects of Salmon Fisheries on Southern Resident Killer Whales**

**An Overview for the PFMC  
March, 2012**



## SRKW Recovery Plan

- SRKW are listed as “endangered” by both U.S. ESA and Canada’s Species at Risk Act (SARA)
- NOAA started implementing actions in 2003 with funding for research, enforcement, education
- Recovery Plan completed in 2008
- Identifies and addresses all known threats
- Includes adaptive process to incorporate research results as they become available

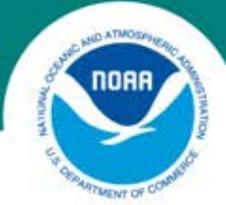




## SRKW's Preference for Chinook

Observation of predation events & prey samples:

- Inland waters May-Sept, very high percentage of Chinook; shift to chum in the fall
- Predominance of Chinook & preference for large Chinook in diets is consistent for both Northern and Southern residents
- Available information (chemical analyses & limited prey samples) indicates that salmon, and particularly Chinook may be important year-round



## Status and Ecology of Southern Resident Killer Whales (SRKW)

- SRKW population currently is growing, but more slowly than called for in the ESA recovery plan
- Down-listing objective: average 2.3% annual growth rate over 14 years;
- Delisting objective: average 2.3% over 28 years



## SRKW and salmon fisheries

- Most SRKW feeding data have been gathered during the summer in San Juan Islands area; data are much more difficult to collect when SRKW are in the ocean
- Much less is known about SRKW feeding ecology during winter months, especially in the ocean, but salmon likely are important food source then, too
- Any fishery that affects the abundance of Chinook salmon available within the known range of the SRKW is a potential concern

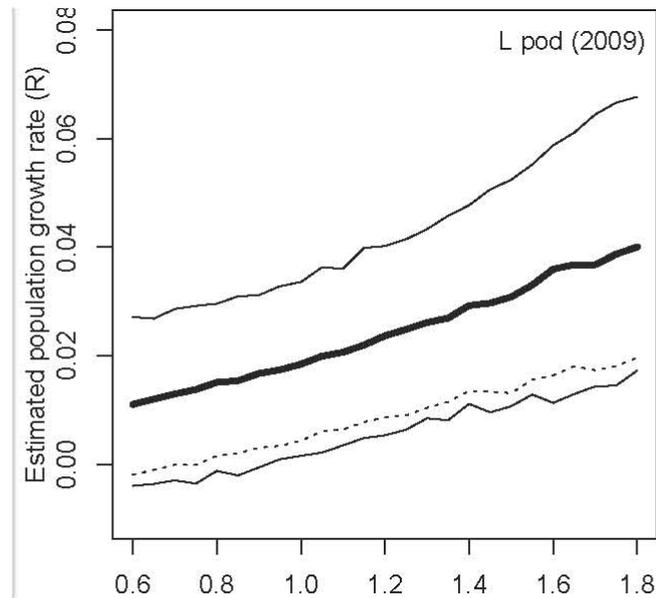
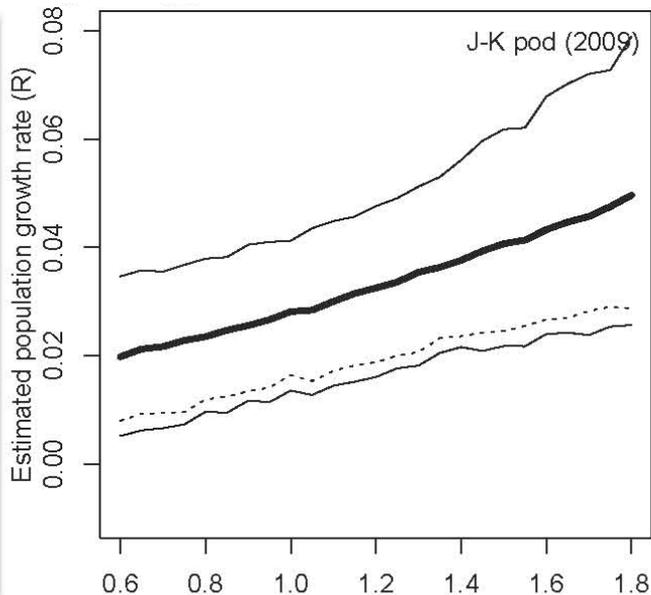


## Salmon Fishing and SRKW: what is the issue?

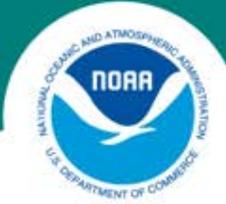
- SRKW population growth rate has been correlated with various indices of abundance of Chinook salmon (by both NOAA and Canada's DFO)
- Rate appears to be driven mostly by survival, not fecundity of SRKW, and varies by pod (J&K > L)
- Effect of fisheries on SRKW food supply likely is greater in years when Chinook abundance is low
- Reduced growth rate of an endangered population over time increases its extinction risk



# Relationship between SRKW population growth rate and Chinook abundance varies by pod

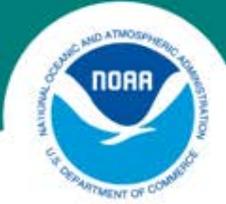


FRAM Chinook abundance (% relative to 1984-2008 mean, 1.4 million) FRAM Chinook abundance (% relative to 1984-2008 mean, 1.4 million)



## Salmon Fishing and SRKW

- Fisheries reduce the abundance of salmon available to SRKW, but to what extent and effect?
- Analyses of Puget Sound Chinook Management Plan in 2011 suggested the reduction in prey by the proposed fishery could retard the growth rate of the SRKW population
- Reduced abundance of Chinook resulted in an estimated 0.6 fewer whales being born after three years of fishing under the plan

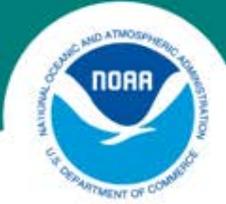


## Summary



John Durban

- Fisheries cause a measurable reduction in prey available
- the amount of prey available compared to the whales' needs may already be low
- This analysis taken together with other contextual information (demographic modeling and body condition), the whales' small population size, and other threats to the population, raises concerns about the effects of fisheries on Southern Residents.



## What is being done about it?

- NOAA Fisheries and DFO have convened a series of three bilateral scientific workshops to examine the science relating the effects of salmon fishing on SRKW by reducing their prey
- An independent science panel was established to oversee the process and produce a report on the status of the science
- Workshop schedule: W1 → September 2011; W2 → March 2012; W3 → September 2012)



## What is the focus of each of the three workshops?

- W1: Available information re: SRKW and salmon fisheries and NOAA & DFO and other analyses were presented to Panel and discussed with ~ 100 invited scientists
- W2: Additional analyses done in response to Panel guidance and W1 discussions will be presented (especially relationships between Chinook abundance and SRKW populations)
- W3: Panel and participants will consider and synthesize public comments on Panel's draft report



## What happens next?

- The Panel will produce a draft report this spring for public comment (monitor NOAA/NWR website)
- The final report will be issued by Nov. 30, 2012
- NOAA and DFO will consider the findings in future consultations on fisheries and other actions affecting prey abundance
- Depending on the findings of the panel, this may involve re-initiation of ESA consultations on fisheries coast-wide that impact Chinook abundance



For more information:



Center for Whale Research

<http://www.nwr.noaa.gov/Marine-Mammals/Whales-Dolphins-Porpoise/Killer-Whales/ESA-Status/KW-Chnk.cfm>