

**NOAA
FISHERIES**

**Northwest
Region**

The effects of salmon fisheries on Southern Resident Killer Whales

A briefing for the
Washington State Fish and Wildlife Commission
June 7, 2013

prepared and presented by:

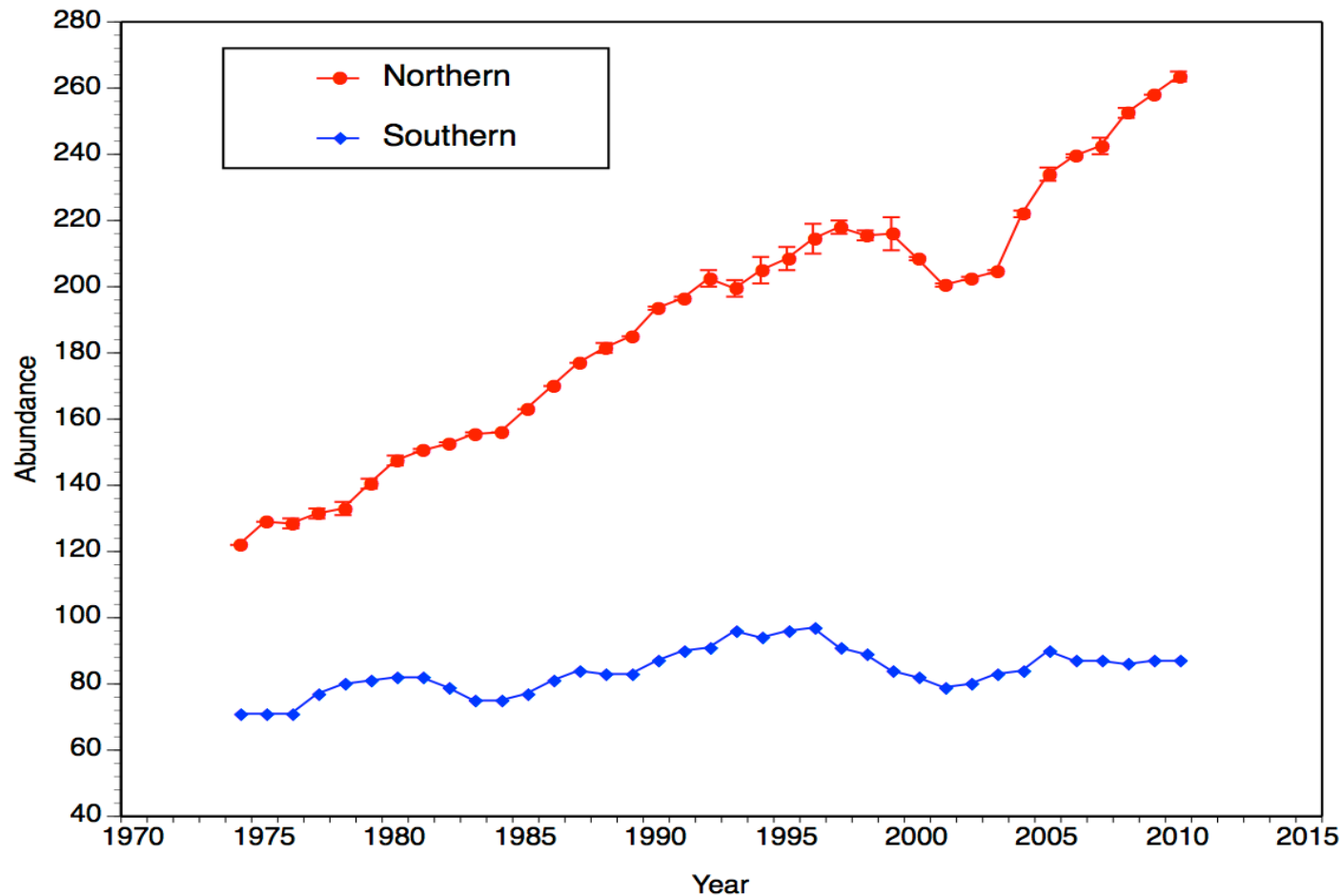
Larry Rutter, Sr. Policy Assistant, Salmon Management Division
and U.S Federal Commissioner to the Pacific Salmon Commission
and

Lynne Barre, Puget Sound Ecosystem and Marine Mammals
Branch Chief

Our presentation today:

- Some background on Southern Resident Killer Whales
- Overview of threats identified in our recovery plan
- The ESA section 7 consultation process and how it relates to fisheries
- Description of the scientific workshop process convened by NOAA Fisheries and Fisheries and Oceans Canada (DFO)
- Key findings of the Independent Science Panel
- What's happening now, and what happens next
- Q & A

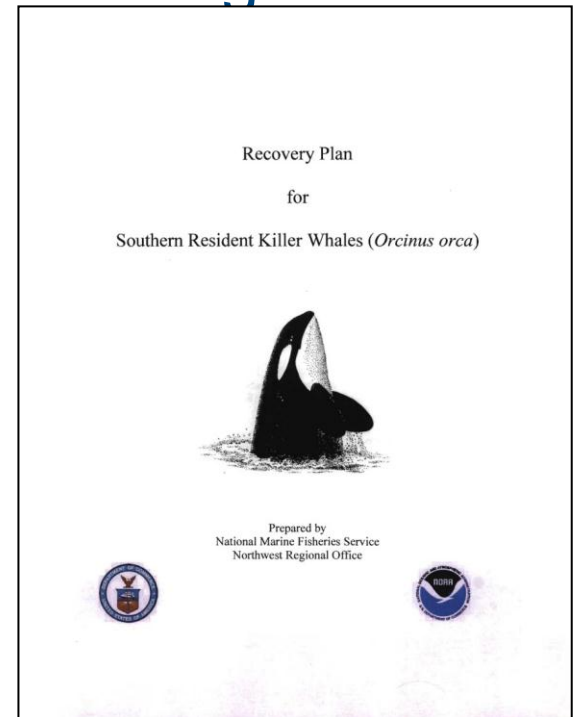
Population trends of NRKW and SRKW



Note contrasting growth of Northern and Southern residents, and coincident declines in both populations in late 1990's

Background: Southern Resident Killer Whales

- SRKW are listed as “endangered” under U.S. ESA and Canada’s Species at Risk Act (SARA)
 - SRKW population as of Dec. 2012 = 84 whales
- NOAA initiated actions in 2003 with funding for research, enforcement, education
- Recovery Plan completed in 2008
 - Identifies and addresses threats
 - Includes adaptive process to incorporate new research results as they emerge



Listing factors and threats to recovery

- Prey abundance
- Pollution & contaminants
- Vessels
- Anthropogenic noise

Also:

- Oil spills
- Small population size



Fishing and the ESA section 7 consultation process

- Federal agencies must ensure that activities they authorize, fund, or carry out are not likely to *jeopardize the continued existence* of a listed species, or to adversely modify critical habitat
- “*Jeopardize the continued existence of*” means to engage in an action that would reasonably be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species
- Because insufficient prey abundance has been identified as a possible threat to recovery, NOAA must evaluate the effect of a fishery on the abundance of prey available to SRKW when we consider approval of fishing plans
- It was during our review of the proposed Puget Sound Chinook Salmon Management Plan when new information about SRKW prey preferences emerged, increasing our concerns about fishing

the NOAA / DFO scientific workshop process

- NOAA and DFO co-convened a series of three bilateral scientific workshops in 2011 and 2012
 - W1 – Sept. 2011; W2 - March 2012; W3 Sept. 2012
- A multidisciplinary panel of seven independent scientists chaired by Dr. Ray Hilborn was engaged to oversee the process and produce a final report by November 30, 2012
- Workshops focused on the science relevant to the following key question:

To what extent are salmon fisheries affecting recovery of SRKW by reducing the abundance of their available prey, and what are the consequences to their survival and recovery?
- ~100 invited scientists attended the workshops to present, evaluate, and critique the available information in an open and inclusive process

Key findings of the Independent Science Panel

- Status: SRKW population has on average increased slowly ($\sim 0.71\%/year$) since 1970s
 - Observed fluctuations might be due to random events and small population size, but coincident periods of growth and decline with NRKW suggest a common causal factor influencing both groups
- Prey preference: the panel found strong reliance on Chinook salmon in the summer, but noted:
 - SRKW switch prey to chum and other species in the fall when Chinook of suitable size and quality are less abundant
 - relatively little is known about SRKW diet in non-summer months
 - Summer abundance of Chinook is unlikely to be the critical period affecting SRKW vital rates; coastal abundance during non-summer months is probably more important

Key findings of the Independent Science Panel

- Correlations with Chinook abundance: the statistical analysis by NOAA and DFO scientists linking indices of Chinook abundance with SRKW vital rates are excellent, yet caution is warranted in interpreting the results of correlative studies as confirming a causal relationship between Chinook abundance and SRKW vital rates
- Poor condition of some whales: photographic evidence shows poor condition in some whales which is linked to mortality, and may be indicative of nutritional stress, however:
 - Unless a large fraction of the population is observed in poor condition, and lacking ancillary information suggesting a coincident shortage of prey, malnutrition remains only one of several possible causes of poor condition and other causes, e.g., toxins or disease cannot be ruled out

Key findings of the Independent Science Panel

- Chinook salmon abundance has been greatly reduced relative to historic levels largely due to habitat damage. However, changes in abundance have been relatively modest in the past 30 years, the period when SRKW have been closely monitored
- Ocean fishery exploitation rates have been significantly reduced in recent decades as Chinook status has declined and in response to fishery policy changes in the U.S. and Canada

Key findings of the Independent Science Panel

- It would be a “gross extrapolation” to implicate any particular fishery as affecting SRKW population growth rate. Instead, a more plausible hypothesis is that highly mobile SRKW respond to larger spatial scale changes in Chinook abundance than can be appreciably affected by any specific fishery
- This latter finding has major ramifications to the possibility of adjusting salmon fishing to benefit SRKW: it means that no “surgical adjustment” of fishing is likely to be effective, reducing available fishery options essentially to two:
 - (1) maintain status quo with ocean exploitation rates of ~ 20%
 - (2) close all ocean fisheries

Key findings of the Independent Science Panel

- The complete elimination of U.S. and Canadian ocean salmon catches would increase abundance of Chinook by ~20%, but not all would become available to SRKW
 - many would be lost to other predators or die of other causes
 - some would not return to places or at times when they would be available to SRKW
- The panel is not confident that our current understanding of the interaction between Chinook salmon fisheries, other predators and SRKW vital rates is sufficient to expect the model predictions of increased SRKWs to be accurate, especially beyond a very few years

Key findings of the Independent Science Panel

- Elimination of ocean catch of Chinook salmon would impact Chinook salmon abundance far less than the variations that have been seen since the 1970s.
- The model predictions of increased numbers of SRKW resulting from the elimination of salmon fishing probably overestimate the benefit to SRKW
- The impact of reduced Chinook salmon harvest on future availability of Chinook salmon to SRKW is not clear
- The best potential for increased Chinook abundance is restoration of freshwater habitat, reducing downstream migration mortality and a change in ocean conditions

What's happening now, and what happens next

- NOAA Fisheries chose not to seek reductions in fisheries for the 2013 season
- DFO made essentially the same decision
- NOAA and DFO scientists are formalizing (i.e., subjecting to scientific peer review) the study results they presented informally to the workshop process
- The Panel's report will be carefully considered as both agencies consider future fishery plans.
- NOAA and DFO remain committed to a coordinated and complementary approach to SRKW recovery