Were record pink salmon returns to Alaska in 2013 a consequence of favorable 2012 ocean conditions, and can forecasting tools be developed to better account for survival at sea?

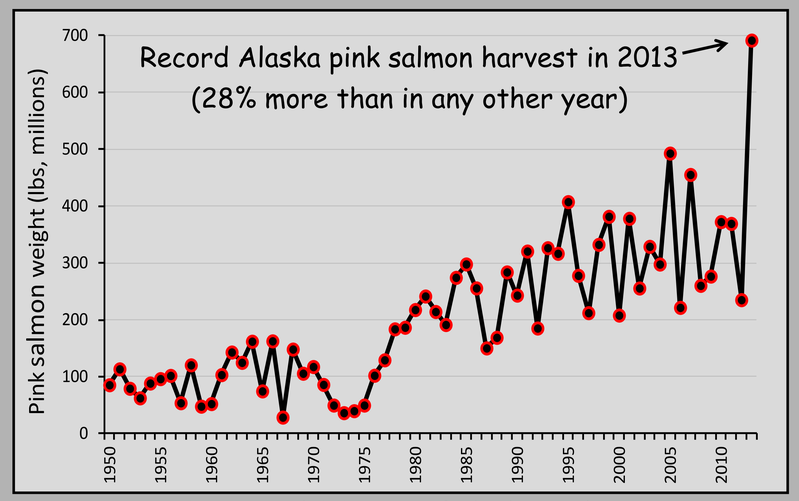
Joseph A. Orsi [1], Emily A. Fergusson [1], Andrew W. Piston [2], Richard E. Brenner [3], and Steven C. Heinl [2]

[1]Alaska Fisheries Science Center, Auke Bay Laboratories, 17109 Point Lena Loop Road, Juneau, AK 99801, USA
[2]Alaska Department of Fish and Game, 2030 Sea Level Drive, Suite 205, Ketchikan, Alaska 99901, USA
[3]Alaska Department of Fish and Game, Commercial Fisheries Division, PO Box 669, Cordova, AK 99574-0669, USA

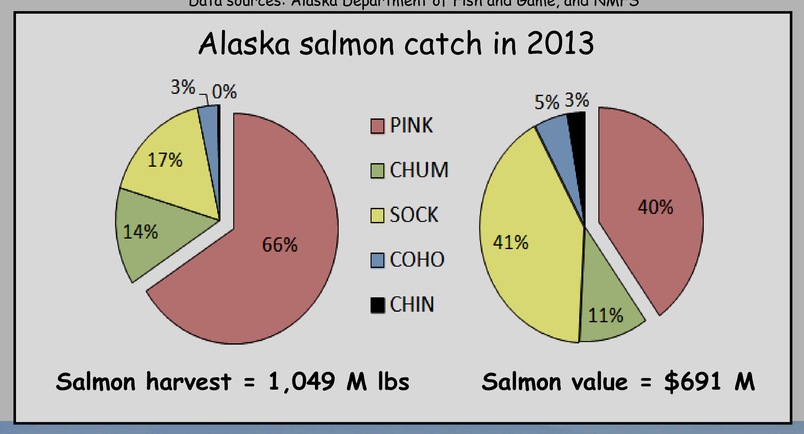
Background:

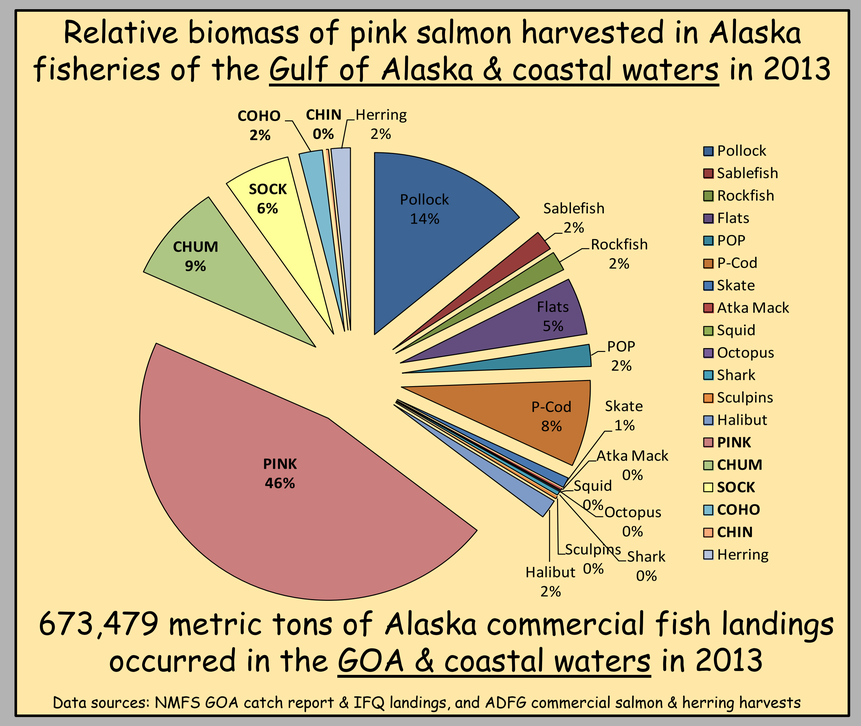
The 2013 Alaska pink salmon harvest was the largest in state history!

- The magnitude of this pink salmon harvest was 692 M lbs: 28% more biomass than in any other year
- Of the >1 billion pounds of commercial salmon landings in Alaska, pink salmon comprised 66%, and was worth 40% ($277 M) of the total resource value



Data sources: Alaska Department of Fish and Game, and NMFS





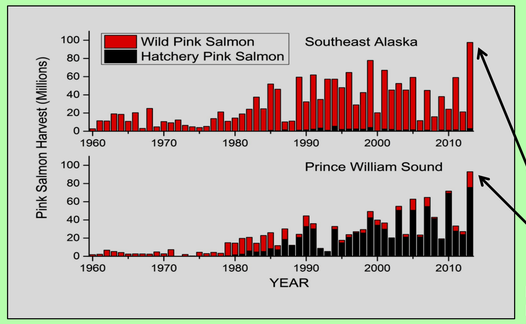
Questions:

1. Were ocean conditions favorable for Alaska pink salmon in 2012?

2. Did other salmon species and life history stages (jacks or immatures) respond to 2012 ocean conditions?

3. What type of next-generation forecasting tools can be developed to improve pre-season forecasts ?

Ocean conditions in 2012 were equally favorable to both wild and hatchery pink salmon stocks…

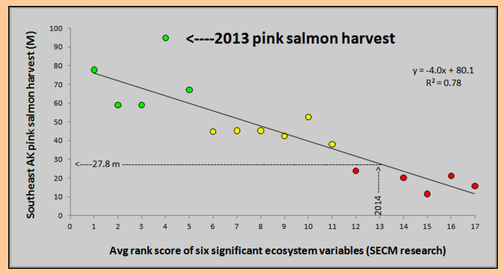


…suggesting freshwater conditions in 2012 were not a limiting factor

2013 returns

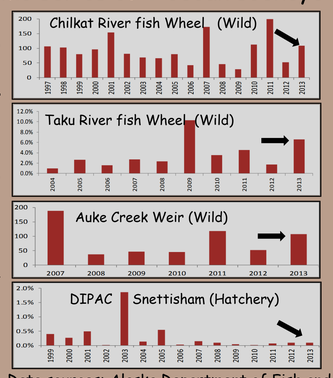
Data source: Alaska Department of Fish and Game

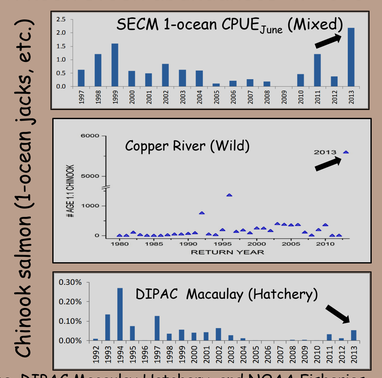
Forecast models using early ocean conditions underestimated the 2013 pink salmon harvest in SE AK



Data source: NOAA Southeast Alaska Coastal Monitoring project

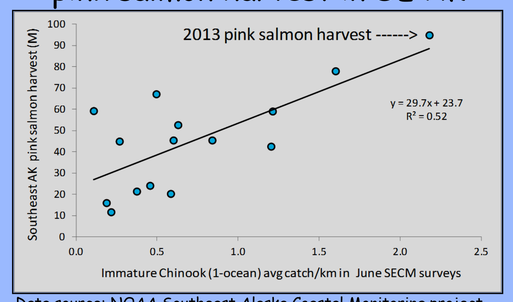
Time series of 1-ocean sockeye & Chinook stock abundances in 2013





Data sources: Alaska Department of Fish and Game, DIPAC Macaulay Hatchery, and NOAA Fisheries

Immature Chinook salmon catch rates (1-ocean) and associated pink salmon harvest in SE AK



Data source: NOAA Southeast Alaska Coastal Monitoring project

Summary:

- The record 2013 pink salmon harvest in Alaska was the highest biomass landed for any Alaska commercial fish species in the Gulf of Alaska ecosystem
- Both wild and hatchery stocks of pink salmon across the GOA returned strong in 2013, suggesting large scale, favorable freshwater and ocean conditions
- All pre-season forecast models underestimated pink salmon harvest in 2013: are we missing a later ocean ecosystem indicator?
- Pink salmon may be an ecological indicator of a future production increase for Chinook salmon

The recommendations and general content presented in this poster do not necessarily represent the views or official position of the Department of Commerce, the National Oceanic and Atmospheric Administration, or the National Marine Fisheries Service