# Alaska Hatchery Research Program: Overview of results and products to date

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Alaska Board of Fisheries Hatchery Committee
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Background

- Hatcheries began making substantial contributions to harvest in 1980's
- Hatchery production largest part of pink and chum salmon harvest in PWS and chum salmon harvest in SEAK
- Policies and statutes to protect wild fish developed early
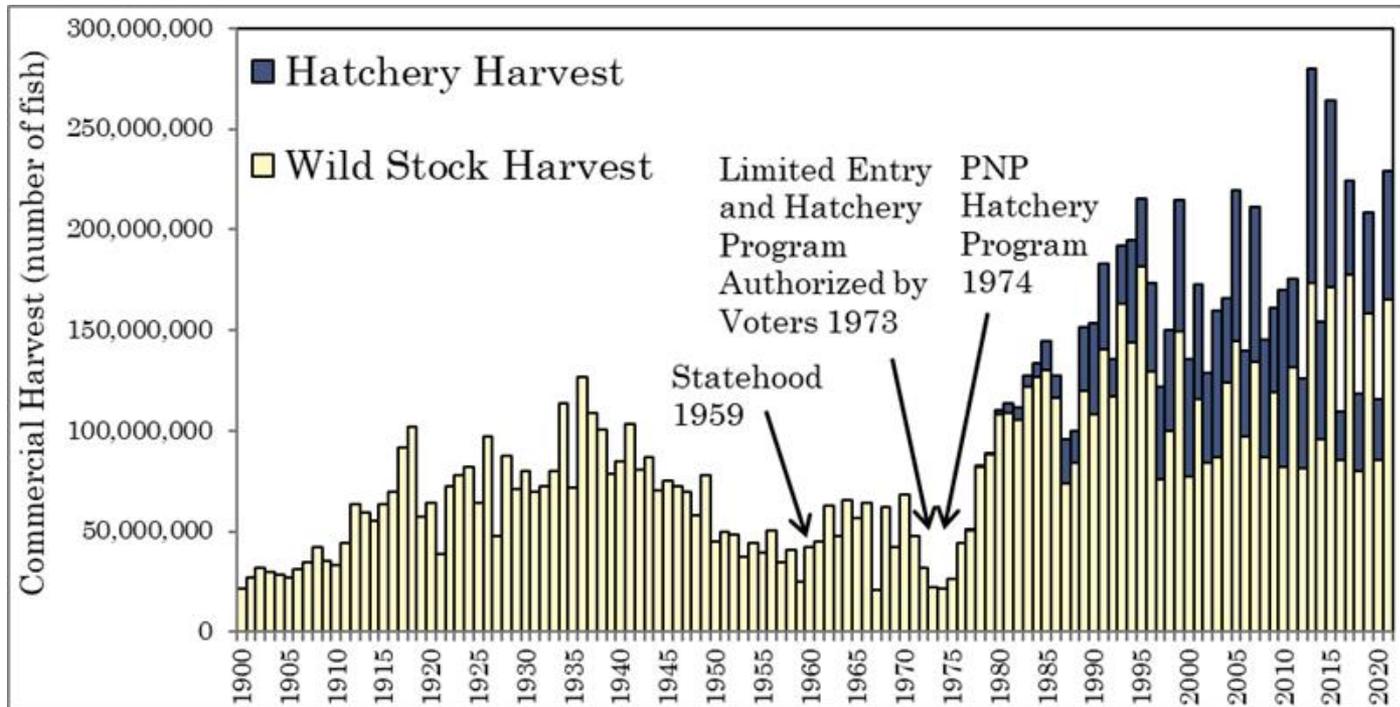
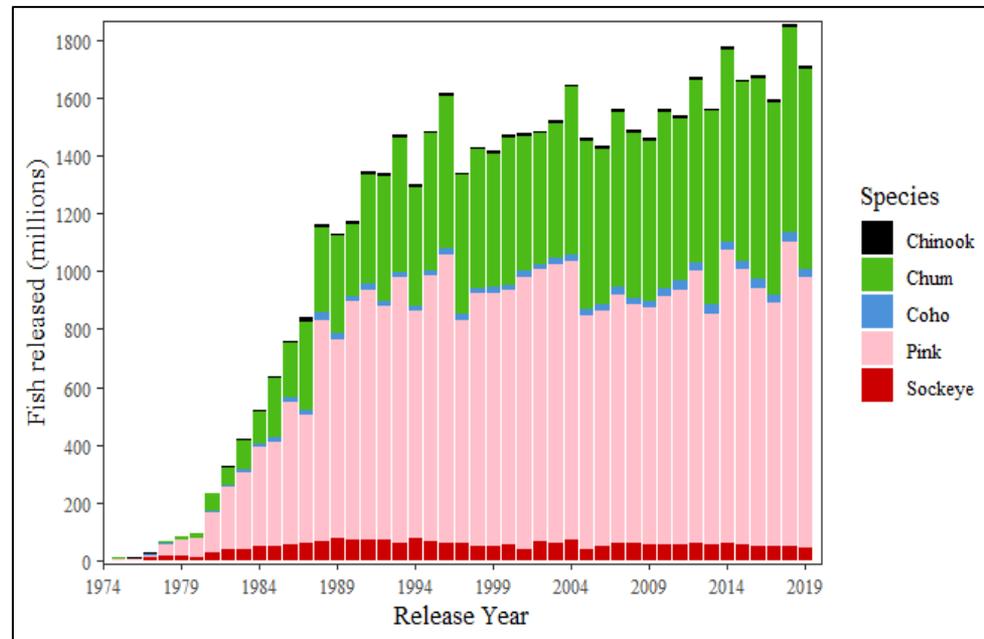Alaska commercial harvest of wild and hatchery salmon, 1900-2021
Vercessi (2022)

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Background

Large-scale salmon releases raise concerns for effect on wild stocks

Do hatchery fish detrimentally affect productivity and sustainability of wild stocks?

Alaska policy mandates sustainable productivity of wild stocks

Alaska hatchery releases

Background

Plan:

PNPs proposed that ADF&G organize science panel to design/implement a research project to inform resource management decisions

Funding partnership:

State, Operators & Industry

Purpose:

Examine potential effect of hatchery straying on fitness of wild stocks

- Pink and chum salmon PWS
- Chum salmon SEAK

Structure of AHRP

Science Panel

Current Members

Dr. Milo Adkison – UAF
Dr. David Bernard – ADF&G Retired
Dr. John Burke – ADF&G Retired; SSRAA
Dr. John H. Clark – ADF&G
Chris Habicht – ADF&G
Dr. Jeff Hard – NOAA Fisheries
Ron Josephson – ADF&G Retired
Dr. William Smoker – UAF Emeritus; PWSAC
William Templin – ADF&G
Alex Wertheimer – NOAA Fisheries; DIPAC
Dr. Peter Westley – UAF
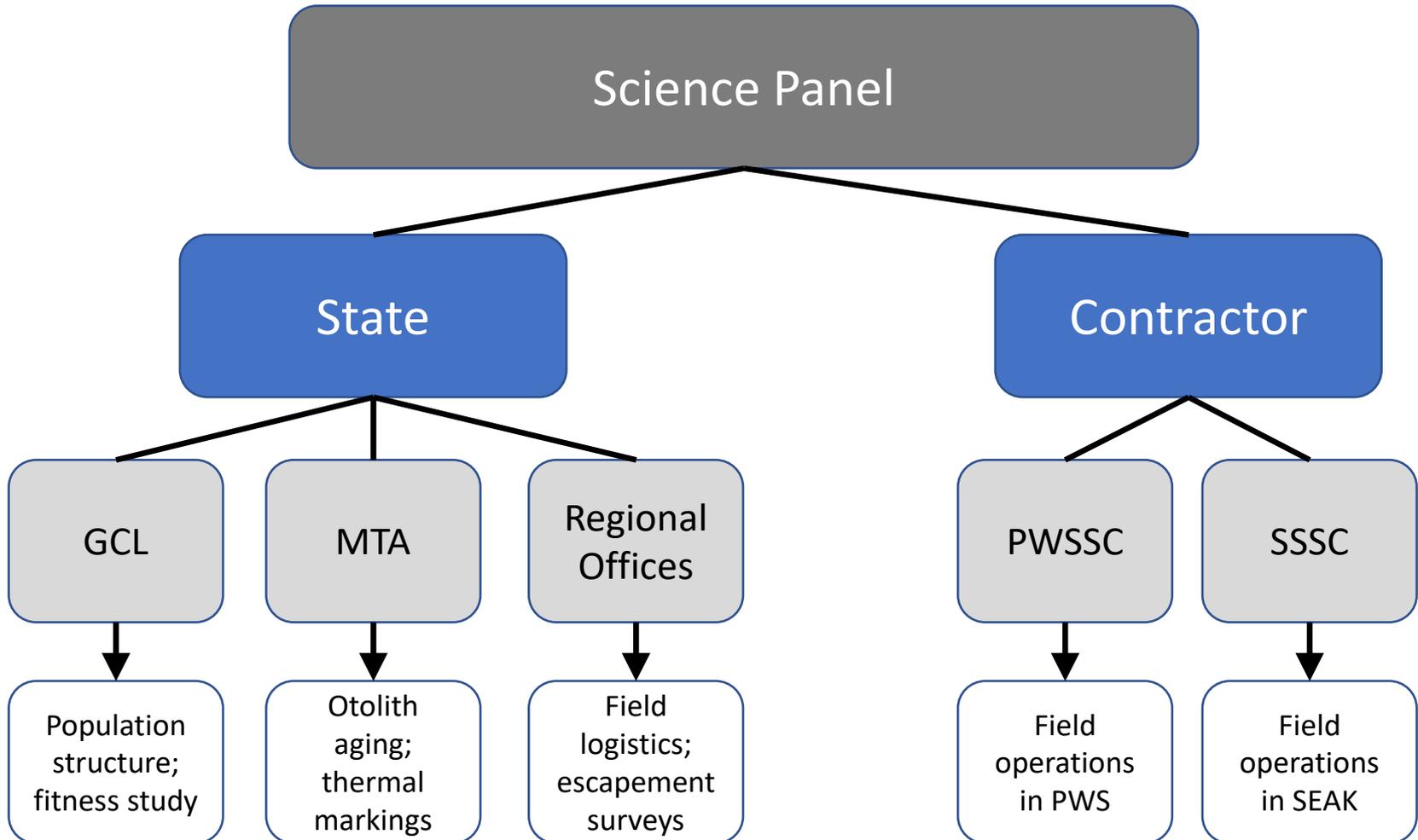
Former Members

Jeff Regnart – ADF&G
Steve Reifenstuhl – NSRAA
Thomas Sheridan – ADF&G;
                Silver Bay Seafoods
Eric Volk – ADF&G

More detailed information available at
http://www.adfg.alaska.gov/static/fishing/PDFs/hatcheries/research/2018.12.19_hwi_sp_roster.pdf

Structure of AHRP

AHRP Research Questions

1) What is the genetic stock structure of pink and chum in PWS and SEAK?

2) What is the extent and annual variability of straying?

3) What is the impact on fitness (*productivity*) of natural pink and chum stocks?

AHRP Research Questions

1) What is the genetic stock structure of pink and chum in PWS and SEAK?

Why is this important?

- Provides perspective on degree of diversity
  - Within area
  - Across the species range

- Insight into temporal changes associated with hatchery production

- Capacity to track future changes

AHRP Research Questions

2) What is the extent and annual variability of straying?
Part 1 – Patterns and Proportions of Strays

<u>Why is this important?</u>

- Prerequisite for genetic risk is interaction while spawning

- Patterns in magnitude and occurrence of straying in space and time inform evaluation of risk

AHRP Research Questions

2) What is the extent and annual variability of straying?
Part 2 – Run reconstruction 2013-2015

Why is this important?

Ocean sampling of salmon entering PWS allows reconstruction of the run of wild and hatchery fish

- Total size of hatchery and wild runs
- Independent estimates of wild escapement
- Number of hatchery strays
- Harvest rates of hatchery and wild runs
- Hatchery donor stray rate

AHRP Research Questions

3) What is the impact on fitness (productivity) of wild pink and chum stocks?

Why is this important?

Wild stocks of salmon have priority

- Policy for the Management of Sustainable Salmon Fisheries [5 AAC 39.222]: "*…wild salmon stocks and fisheries on those stocks should be protected from **adverse** impacts from artificial propagation and enhancement efforts*"
- Genetic Policy: "*First priority will be given to the protection of wild stocks from possible **harmful** interactions with introduced stocks*"

Harmful & adverse genetic interactions include:

- Loss of diversity among populations
- Introduction of poorly adapted traits

Questions?

J. Hyde