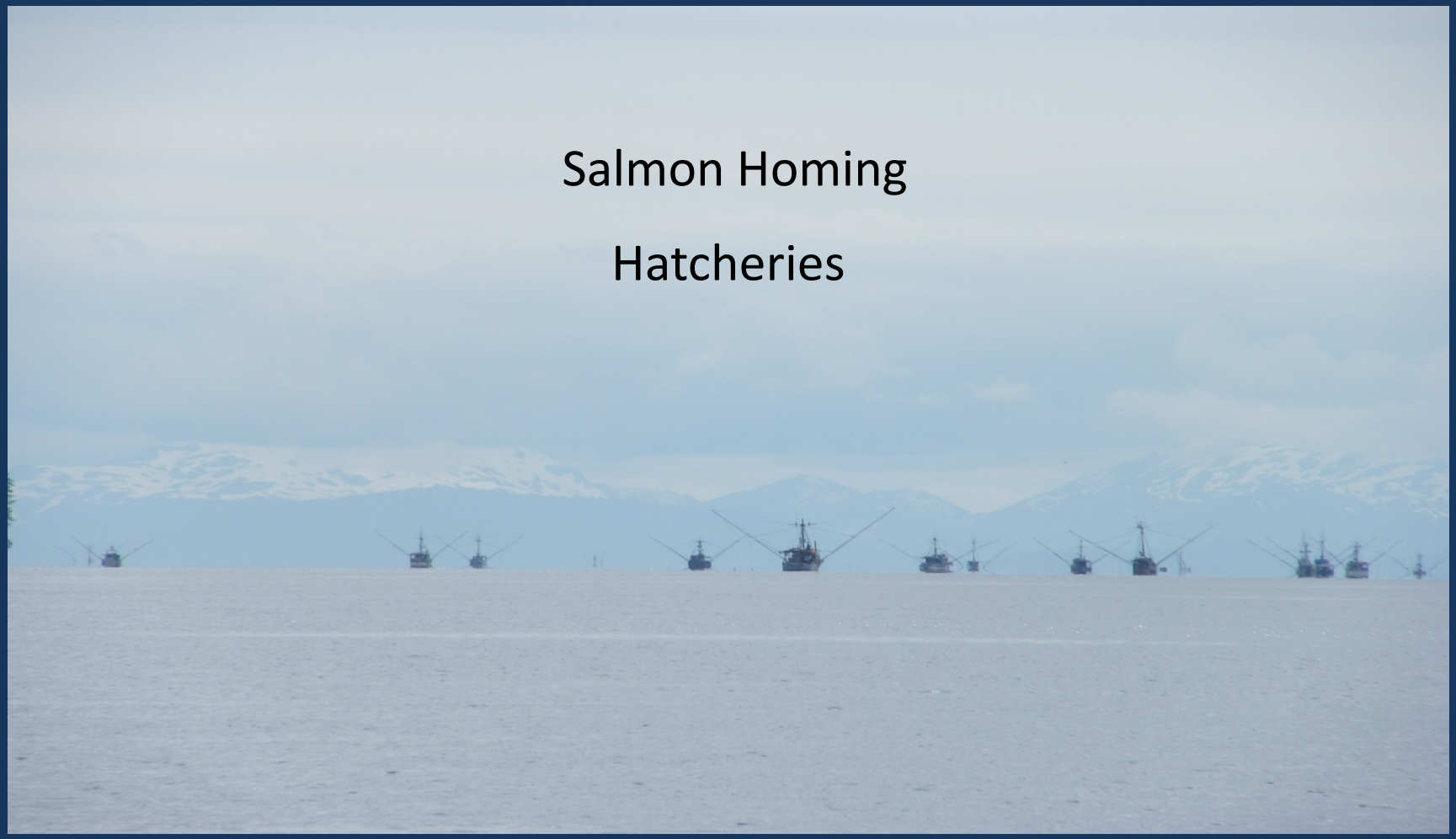
Alaska Hatchery Research Program

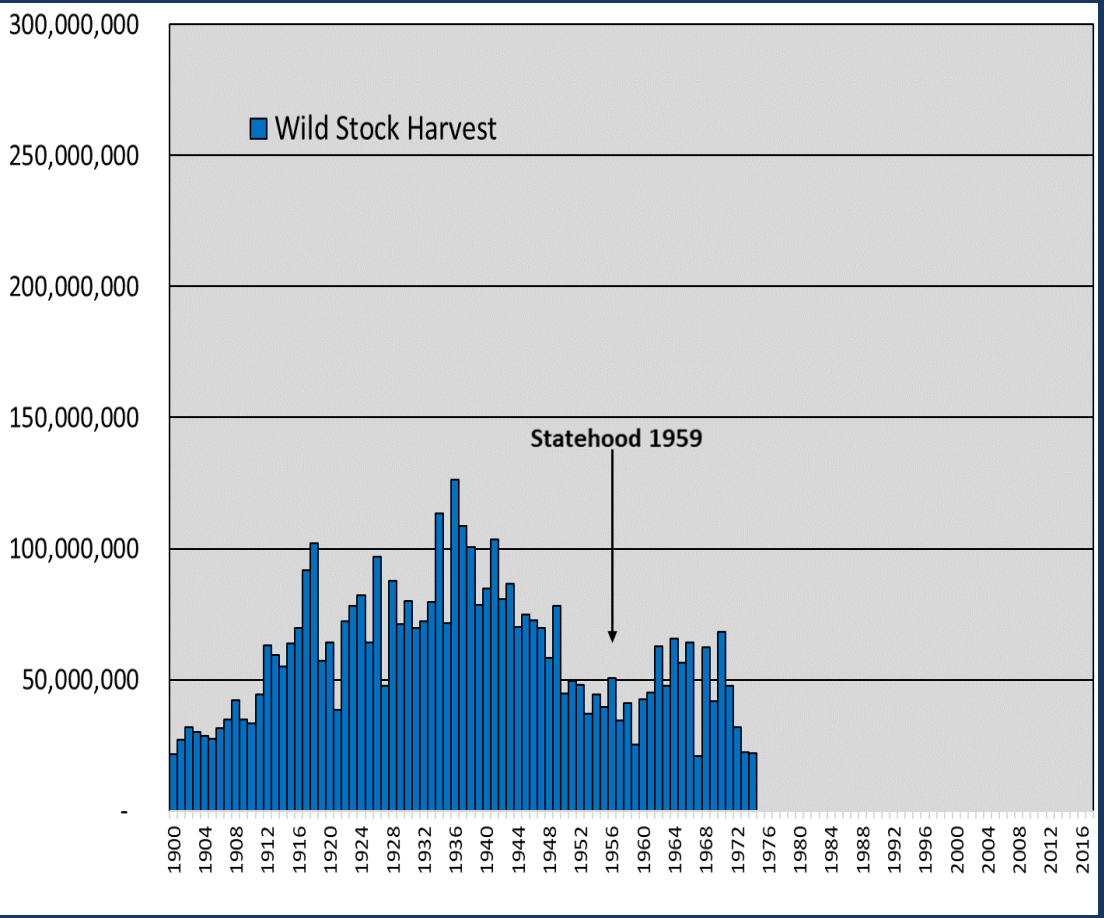
- Why the program was initiated
- Program structure
- Key questions addressed
- Study design

Background/Salmon Enhancement Issues



Background

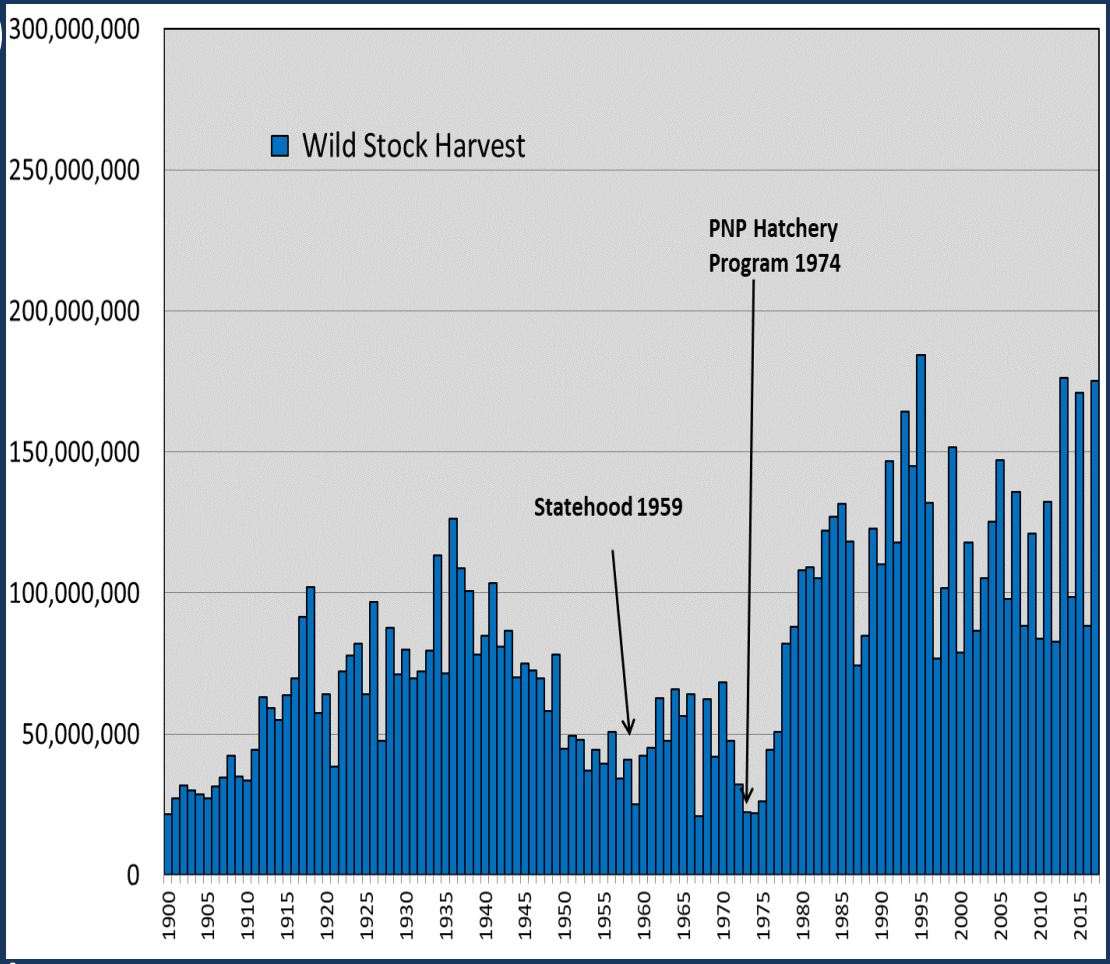
- Alaska salmon fisheries were severely depressed at statehood, and reached their nadir in 1973 and 1974, when statewide harvest of all species was 22 M



Alaska commercial salmon harvest
1900-1974
Stopha (2018)

Background

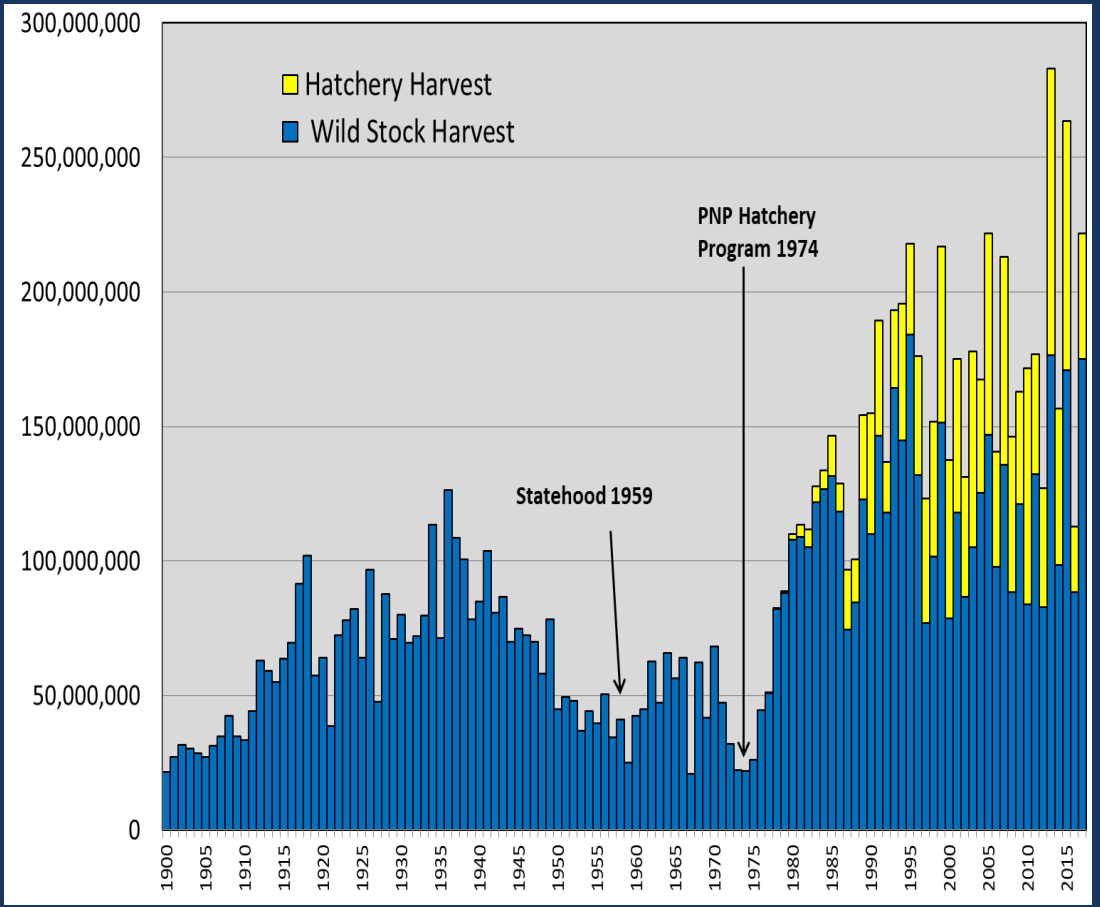
- Alaska initiated State (1971) and PNP (1974) hatchery programs to support the recovery and enhancement of Alaska salmon fisheries.
- Remarkable renaissance of Alaska salmon following 1977 “regime” shift and in response to improved management practices.
- Wild stock harvest exceeded 100 M in 1980, averaged > 100 million since 1980



Alaska commercial harvest of wild salmon 1900-2017.
Stopha (2018)

Background

- Hatcheries began making substantial contributions to harvest in 1980's
- Statewide harvests (wild and hatchery) have averaged 175 M annually for 2008-2017
- Hatcheries produced an annual average of 67 M, 33% of the harvest, 2008-2017



Alaska commercial harvest of wild and hatchery salmon, 1900-2017.
Stopha (2018)

- Hatchery production now dominates the harvest of pink and chum salmon in PWS and chum salmon in SEAK

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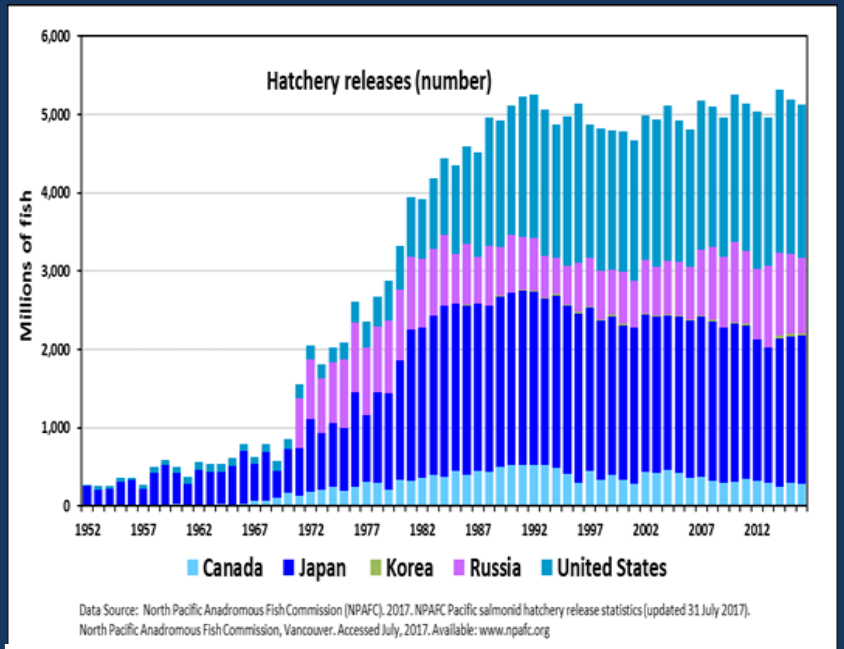
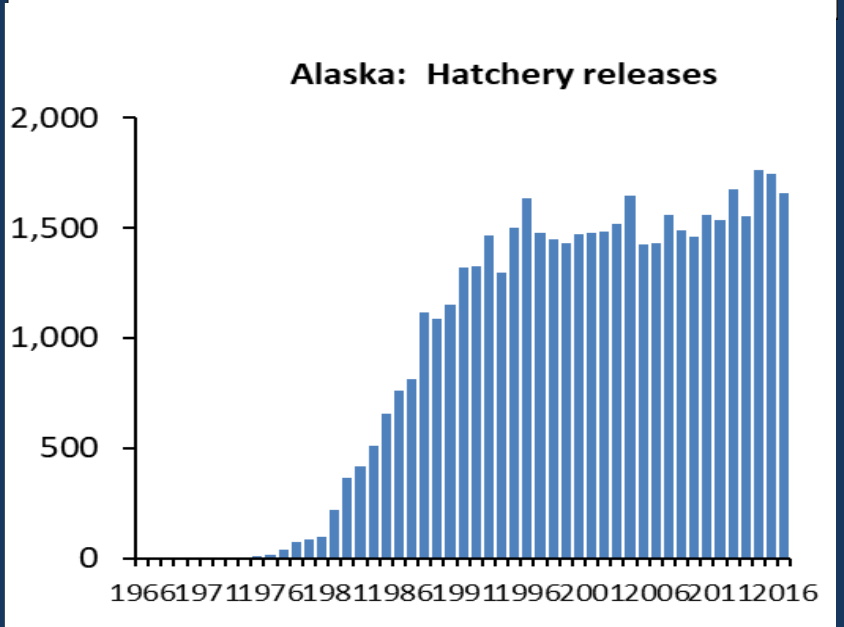
BACKGROUND

Large-scale salmon releases raise concerns for wild stock impacts

- Do hatchery fish detrimentally affect productivity and sustainability of wild stocks?
- Alaska policy mandates sustainable productivity of wild stocks
- Not a new concern: Alaska first state to have a Genetics Policy in 1985





ADF&G Genetic Policy

➢*Contains protections for wild stocks while allowing increased productivity for enhancement programs.*

➢*… priority will be given to protection of wild stocks from possible harmful interactions with introduced stocks.*

➢ Reduce gene flow from hatchery to wild

- Minimize introgression of ill-adapted genes
- Minimize hybrid depression
- Maintain stock fitness
- Minimize magnitude of straying
- Temporal and spatial isolation are important

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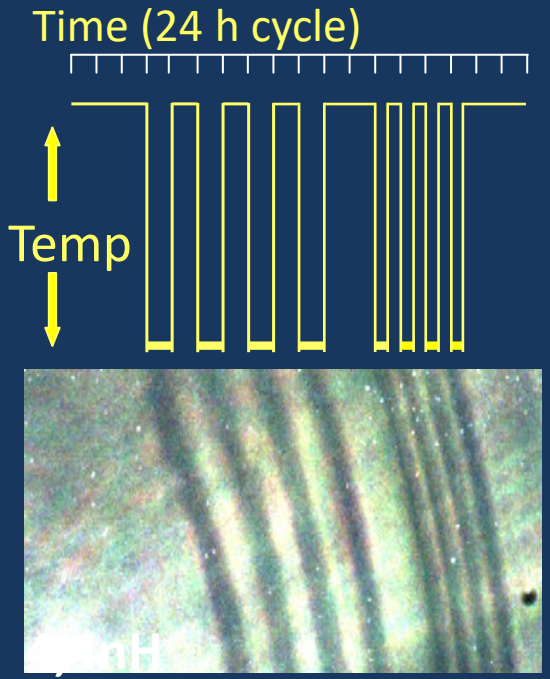
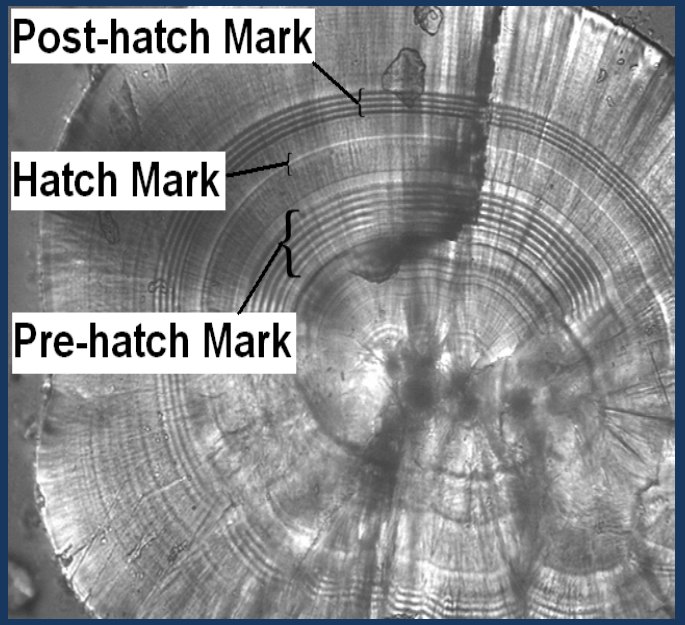
Tool for identifying hatchery fish

Otolith Thermal Marking





Alaska marks > 80% of hatchery fish ~ 1.2 Billion
(100% for PWS and SEAK pink and chum)

- NPAFC Voucher DB (Images & Data): http://npafc.taglab.org/MarkSummary.asp

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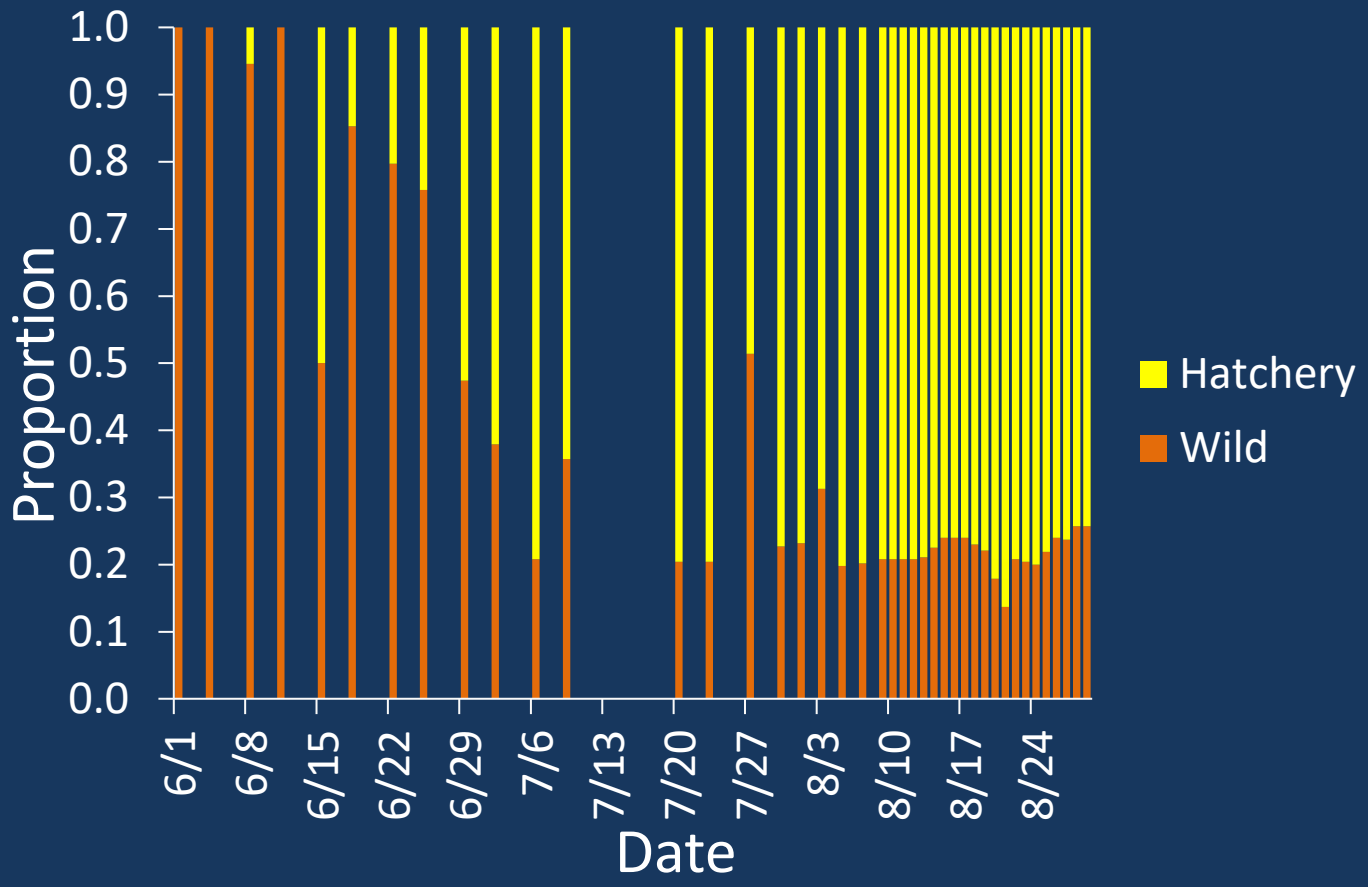
Otolith Mark Use 1
In-Season Harvest Monitoring

Example: Pink salmon, PWS SW District, 2015



Haught, S., J. Botz, S. Moffitt, and B. Lewis. 2017. 2015 Prince William Sound area finfish management report. Alaska Department of Fish and Game, Fishery Management Report No. 17-17, Anchorage.

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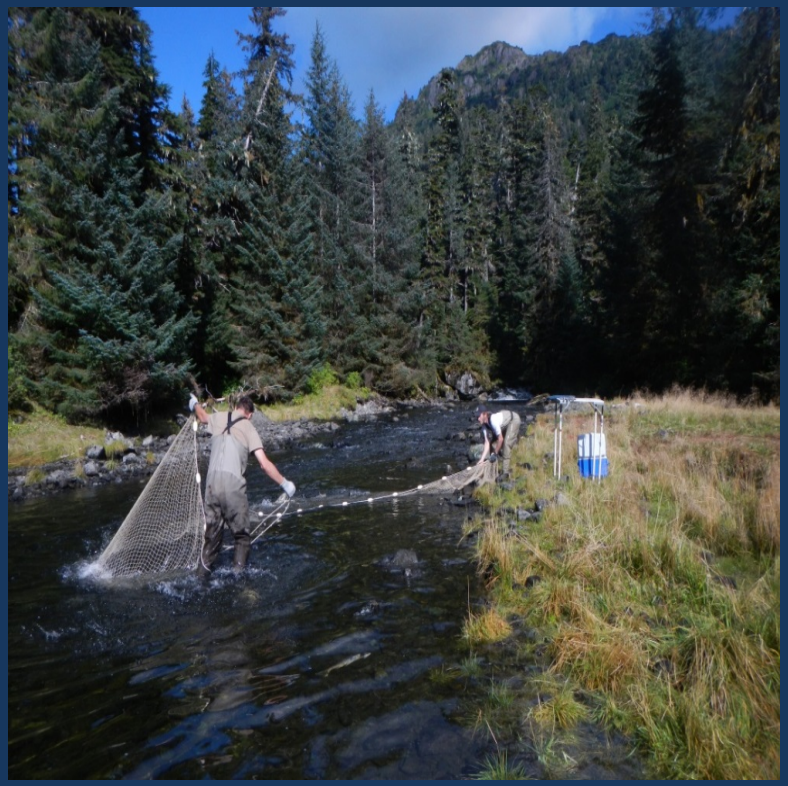
Otolith Mark Use 2

Measure Straying

Are hatchery fish straying? If so, how many fish are straying?

- SE Alaska - chum
  Heinl and Piston (2008-2010)
- Prince William Sound - pink, chum & sockeye
  Joyce and Evans (1997-1999)
  Brenner and Moffitt (2004-2010)



- These studies found widespread distribution of hatchery strays in their respective regions, and high rates of hatchery strays in streams near hatchery release sites

Recognition of need to examine extent and impact of hatchery strays on wild stock fitness and productivity

- PNP operators proposed that ADF&G organize a science panel of experts to design and implement a long term research project to inform future resource management decisions

- Funding partnership: State, Operators & Industry

- Fundamental questions aimed at examining extent and potential impacts of hatchery straying on fitness of wild stocks
  - * Pink and chum salmon PWS
  - * Chum salmon SEAK

AHRP Science Panel

Panel Charge –

Identify priority research questions and develop a framework for research that could be used to address these questions.

Panel Makeup – 13 members:

- Alaska Department of Fish and Game
- National Marine Fisheries Service
- University of Alaska
- Aquaculture associations

AHRP Structure