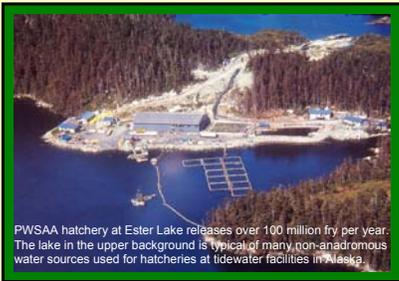




Can Wild and Hatchery Salmon Successfully Coexist ?

Consider the Alaska Model

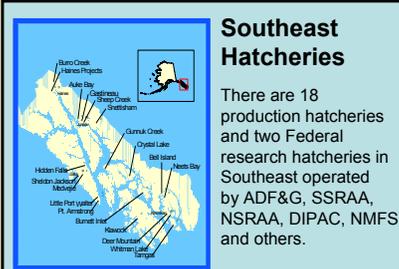
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PWSAA hatchery at Ester Lake releases over 100 million fry per year. The lake in the upper background is typical of many non-anadromous water sources used for hatcheries at tidewater facilities in Alaska.

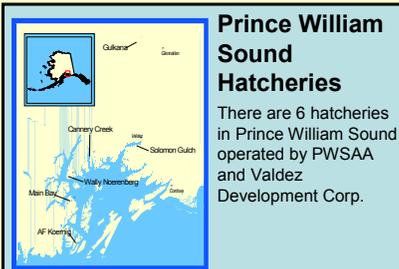
Salmon Hatcheries in Alaska

- Are designed to favor wild stock policies
- Mitigate poor fisheries, not enhance wild stocks
- Use conservative fish culture practices
- Involve stakeholder participation, cost sharing
- Use of innovative technologies



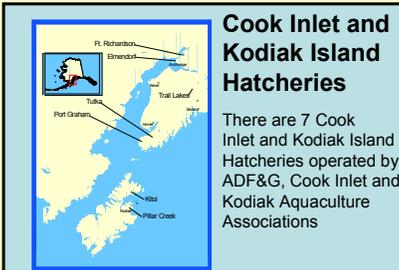
Southeast Hatcheries

There are 18 production hatcheries and two Federal research hatcheries in Southeast operated by ADF&G, SSRAA, NSRAA, DIPAC, NMFS and others.



Prince William Sound Hatcheries

There are 6 hatcheries in Prince William Sound operated by PWSAA and Valdez Development Corp.

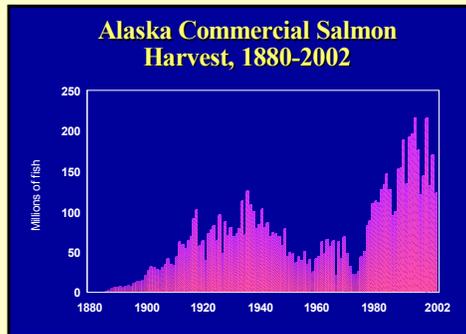


Cook Inlet and Kodiak Island Hatcheries

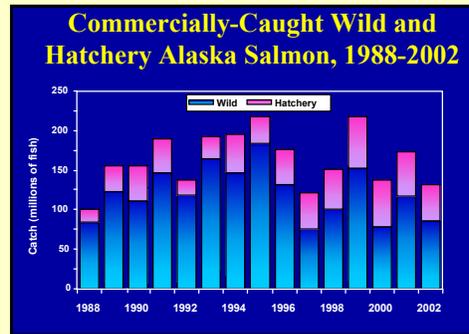
There are 7 Cook Inlet and Kodiak Island Hatcheries operated by ADF&G, Cook Inlet and Kodiak Aquaculture Associations

ABSTRACT

Alaska salmon, focus of major commercial harvesting since the late 1800s, is characterized by cyclic fluctuations in abundance resulting in varied levels of harvest. Poor catches from weak wild stock runs causes statewide socioeconomic disruptions. Modern hatcheries, developed in response to record low wild-stock runs in the 1970s now provide important supplements to fisheries even though natural runs have mostly recovered. Hatcheries in Alaska were developed specifically to complement fisheries under management protocols to protect and maintain healthy wild stocks by promoting vigorous habitat protection, avoiding mixed stock fisheries where possible, and where hatchery stakeholders help pay cost. Hatchery siting, capacity, general operations, and restricted brood stock origins are carefully regulated through statewide genetic and pathology policies and statutes. The state's 33 production hatcheries are mostly located on nonanadromous water sources not on productive salmon streams. Collectively these policies allow Alaska to maintain robust wild salmon stocks balanced with integrated development of hatchery production to supplement fisheries. A cornerstone of the Alaska model is a priority focus on escapement based management where wild stocks achieve spawning goals rather than target harvest levels. Some hatcheries release over 100 million juveniles annually; statewide totals are 1.2 to 1.4 billion annually over the last decade. Beginning in the late 1980s commercial harvest of salmon have remained at or near historic high levels although wild stocks in Western Alaska, a region without hatcheries, remain at depressed levels. In the last decade hatcheries have produced 27 to 63 million adults annually accounting for 14 to 37% of common property harvest. Contrary to oft held beliefs about permanence, 13 Alaska hatcheries have closed since 1979 for various reasons. In spite of healthy wild stock fisheries supplemented with hatchery fish Alaska's commercial salmon industry, based on capture fisheries, is economically threatened by continued worldwide production of farmed salmon.



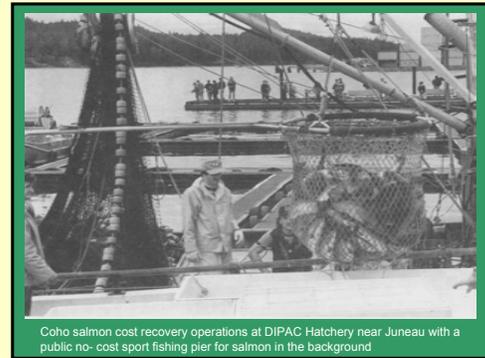
- ### Salmon management in Alaska
- Highest priority is to protect and maintain wild stocks
 - Escapement based management, no targets for fishery harvest
 - Vigorous habitat protection; no dams on salmon rivers
 - Mixed stock fisheries avoided, whenever possible
 - Hatcheries supplement, not replace, wild stocks in fisheries
 - Stakeholders pay cost of producing hatchery fish
 - Conservative hatcheries coexist with abundant wild stocks



- ### Minimize hatchery-wild stock interactions
- Hatcheries begin with comprehensive regional planning programs
 - Most hatcheries are located on non-anadromous water sources
 - Statewide genetics policy protects and maintains wild stocks
 - Strict fish health rules and statewide fish disease statutes
 - Careful siting of hatcheries with terminal harvest zones
 - Brood stock diversity in regions, no transfers between regions
 - Major marking of fry and smolts to target hatchery fish in fisheries

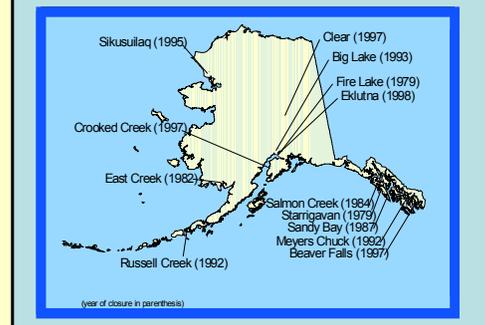


While Alaska hatcheries supplement commercial catches without major adverse impacts on wild stocks, catch values are declining (upper graph) due to increased world-wide production of farmed salmon from many countries (lower graph)



Coho salmon cost recovery operations at DIPAC Hatchery near Juneau with a public no-cost sport fishing pier for salmon in the background

Since 1979 a total of 13 hatcheries in Alaska have been closed for various reasons including genetic, disease, fishery management concerns, and poor performance



- ### Conclusions
- Modern Alaska hatcheries started in 1970s when wild runs were at record low levels
 - Private-Non-Profit statutes allow Regional Aquaculture Associations to build and run hatcheries
 - Associations operate hatcheries in 5 of 8 regions where stakeholders pay cost of producing fish
 - Alaska hatcheries are designed to supplement fisheries, not rebuild weak wild stocks
 - Commercial catches now at record levels, 145 million salmon annually; 14-37% from hatcheries
 - Alaska's wild stocks now are generally strong and healthy with minimal adverse hatchery influence
 - Recent ocean survivals are high for both wild and hatchery fish
 - Capture fisheries for salmon in Alaska and elsewhere are depressed economically from farmed salmon



Alaska hatcheries use a variety of technologies for fish culture including: (left) substrate incubators for large quantities of quality fry, and (right) marine net pens for short-term rearing of salmon fry and smolts to increase marine survival.

- ### Acronyms
- ADF&G- Alaska Department of Fish and Game
 - DIPAC- Douglas Island Pink and Chum Cooperation
 - NMFS- National Marine Fisheries Service
 - NSRAA- Northern Southeast Regional Aquaculture Association
 - PWSAA- Prince William Sound Aquaculture Association
 - SSRAA- Southern Southeast Regional Aquaculture Association